IBM Planning Analytics
2.1

Installation and Configuration

Note

Before you use this information and the product it supports, read the information in “Notices” on page 315.

Product Information

This document applies to IBM Planning Analytics Version 2.0 and might also apply to subsequent releases.

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Contents

Introduction

This document describes how to install, upgrade, and configure IBM® Planning Analytics Local software components on Microsoft Windows and Linux operating systems.

Audience

Planning Analytics Local integrates business planning, performance measurement, and operational data to enable companies to optimize business effectiveness and customer interaction. Planning Analytics provides immediate visibility into data, accountability within a collaborative process, and a consistent view of information, allowing managers to quickly stabilize operational fluctuations and take advantage of new opportunities.

To use this document, you should be familiar with:

- Installation concepts
- Security issues
- Basic Windows or Linux administration skills
- The existing server environment and security infrastructure in your organization
- Your Planning Analytics system and network requirements

Finding information

To find documentation on the web, including all translated documentation, access IBM Documentation (http://www.ibm.com/support/knowledgecenter).

Security considerations

For security considerations for IBM Planning Analytics Local, see Chapter 15, “Planning Analytics Local security,” on page 173.

Accessibility features

Accessibility features help users who have a physical disability, such as restricted mobility or limited vision, to use information technology products. The installation wizard has accessibility features. For more information, see Accessibility features.

IBM HTML documentation has accessibility features. PDF documents are supplemental and include no added accessibility features.

Accessibility checklist

This product's IBM Knowledge Center documentation is hosted in the IBM Knowledge Center - Hosted Edition service. To request the current accessibility status for the IBM Knowledge Center, visit the IBM Accessibility Research information web page (https://www.ibm.com/able/guidelines/ci162/accessibility_checklist.html) .

Forward-looking statements

This documentation describes the current functionality of the product. References to items that are not currently available may be included. No implication of any future availability should be inferred. Any such references are not a commitment, promise, or legal obligation to deliver any material, code, or functionality. The development, release, and timing of features or functionality remain at the sole discretion of IBM.

Samples disclaimer

The Sample Outdoors Company, Great Outdoors Company, GO Sales, any variation of the Sample Outdoors or Great Outdoors names, and Planning Sample depict fictitious business operations with sample data used to develop sample applications for IBM and IBM customers. These fictitious records include sample data for sales transactions, product distribution, finance, and human resources. Any resemblance to actual names, addresses, contact numbers, or transaction values is coincidental. Other sample files may contain fictional data manually or machine generated, factual data compiled from academic or public sources, or data used with permission of the copyright holder, for use as sample data to develop sample applications. Product names referenced may be the trademarks of their respective owners. Unauthorized duplication is prohibited.

Chapter 1. What's new in IBM Planning Analytics

Read about what's new or updated in IBM Planning Analytics Local and components that are installed with Planning Analytics, such as Planning Analytics database, Planning Analytics Workspace, and Planning Analytics Spreadsheet Services.

For a full accounting of new and changed features by component, see the Planning Analytics New Features Guide.

Planning Analytics 2.1.16 - December 8, 2025

IBM Planning Analytics version 2.1.16 includes updates for IBM TM1® Server version 11.8.03200.3.

Important: Planning Analytics 2.1 is a direct upgrade from Planning Analytics 2.0. The upgrade to 2.1 does not require changes to your TM1 databases, Planning Analytics Workspace content, Planning Analytics for Excel reports, or Websheets.

Planning Analytics 2.1 does not include TM1 Architect, TM1 Perspectives, TM1 Applications, Performance Modeler, or Cognos Insight. These components are not supported in Planning Analytics 2.1

For details on upgrading to Planning Analytics 2.1, see Upgrading to Planning Analytics Local 2.1.

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Planning Analytics 2.1.15 - October 28, 2025

IBM Planning Analytics version 2.1.15 includes updates for IBM TM1 Server version 11.8.03200.3.

Important: Planning Analytics 2.1 is a direct upgrade from Planning Analytics 2.0. The upgrade to 2.1 does not require changes to your TM1 databases, Planning Analytics Workspace content, Planning Analytics for Excel reports, or Websheets.

Planning Analytics 2.1 does not include TM1 Architect, TM1 Perspectives, TM1 Applications, Performance Modeler, or Cognos Insight. These components are not supported in Planning Analytics 2.1

For details on upgrading to Planning Analytics 2.1, see Upgrading to Planning Analytics Local 2.1.

Planning Analytics 2.1.14 - September 30, 2025

IBM Planning Analytics Local version 2.1.14 includes updates for IBM TM1 Server version 11.8.03200.3.

Planning Analytics 2.1 is a local-only version; it is not available on IBM Planning Analytics on Cloud, IBM Cloud Pak® Software Hub, or IBM Planning Analytics as a Service.

Important: Planning Analytics 2.1 is a direct upgrade from Planning Analytics 2.0. The upgrade to 2.1 does not require changes to your TM1 databases, Planning Analytics Workspace content, Planning Analytics for Excel reports, or Websheets.

Planning Analytics 2.1 does not include TM1 Architect, TM1 Perspectives, TM1 Applications, Performance Modeler, or Cognos Insight. These components are not supported in Planning Analytics 2.1

For details on upgrading to Planning Analytics 2.1, see Upgrading to Planning Analytics Local 2.1.

Planning Analytics 2.1.13 - July 28, 2025

IBM Planning Analytics Local version 2.1.13 includes updates for IBM TM1 Server version 11.8.03200.3.

Planning Analytics 2.1 is a local-only version; it is not available on IBM Planning Analytics on Cloud, IBM Software Hub, or IBM Planning Analytics as a Service.

Important: Planning Analytics 2.1 is a direct upgrade from Planning Analytics 2.0. The upgrade to 2.1 does not require changes to your TM1 databases, Planning Analytics Workspace content, Planning Analytics for Excel reports, or Websheets.

Planning Analytics 2.1 does not include TM1 Architect, TM1 Perspectives, TM1 Applications, Performance Modeler, or Cognos Insight. These components are not supported in Planning Analytics 2.1

For details on upgrading to Planning Analytics 2.1, see Upgrading to Planning Analytics Local 2.1.

Planning Analytics 2.1.12 - June 25, 2025

IBM Planning Analytics Local version 2.1.12 includes updates for IBM TM1 Server version 11.8.03100.4.

Planning Analytics 2.1 is a local-only version; it is not available on IBM Planning Analytics on Cloud, IBM Software Hub, or IBM Planning Analytics as a Service.

Important: Planning Analytics 2.1 is a direct upgrade from Planning Analytics 2.0. The upgrade to 2.1 does not require changes to your TM1 databases, Planning Analytics Workspace content, Planning Analytics for Excel reports, or Websheets.

Planning Analytics 2.1 does not include TM1 Architect, TM1 Perspectives, TM1 Applications, Performance Modeler, or Cognos Insight. These components are not supported in Planning Analytics 2.1

For details on upgrading to Planning Analytics 2.1, see Upgrading to Planning Analytics Local 2.1.

Planning Analytics 2.1.11 - May 20, 2025

IBM Planning Analytics Local version 2.1.11 includes updates for IBM TM1 Server version 11.8.03000.9.

Planning Analytics 2.1 is a local-only version; it is not available on IBM Planning Analytics on Cloud, IBM Software Hub, or IBM Planning Analytics as a Service.

Important: Planning Analytics 2.1 is a direct upgrade from Planning Analytics 2.0. The upgrade to 2.1 does not require changes to your TM1 databases, Planning Analytics Workspace content, Planning Analytics for Excel reports, or Websheets.

Planning Analytics 2.1 does not include TM1 Architect, TM1 Perspectives, TM1 Applications, Performance Modeler, or Cognos Insight. These components are not supported in Planning Analytics 2.1

For details on upgrading to Planning Analytics 2.1, see Upgrading to Planning Analytics Local 2.1.

Planning Analytics 2.1.10 - April 22, 2025

IBM Planning Analytics Local version 2.1.10 includes updates for IBM TM1 Server version 11.8.02900.8.

Planning Analytics 2.1 is a local-only version; it is not available on IBM Planning Analytics on Cloud, IBM Software Hub, or IBM Planning Analytics as a Service.

Important: Planning Analytics 2.1 is a direct upgrade from Planning Analytics 2.0. The upgrade to 2.1 does not require changes to your TM1 databases, Planning Analytics Workspace content, Planning Analytics for Excel reports, or Websheets.

Planning Analytics 2.1 does not include TM1 Architect, TM1 Perspectives, TM1 Applications, Performance Modeler, or Cognos Insight. These components are not supported in Planning Analytics 2.1

For details on upgrading to Planning Analytics 2.1, see Upgrading to Planning Analytics Local 2.1.

Planning Analytics 2.1.9 - March 24, 2025

IBM Planning Analytics Local version 2.1.9 includes updates for IBM TM1 Server version 11.8.02900.8.

Planning Analytics 2.1 is a local-only version; it is not available on IBM Planning Analytics on Cloud, IBM Software Hub, or IBM Planning Analytics as a Service.

Important: Planning Analytics 2.1 is a direct upgrade from Planning Analytics 2.0. The upgrade to 2.1 does not require changes to your TM1 databases, Planning Analytics Workspace content, Planning Analytics for Excel reports, or Websheets.

Planning Analytics 2.1 does not include TM1 Architect, TM1 Perspectives, TM1 Applications, Performance Modeler, or Cognos Insight. These components are not supported in Planning Analytics 2.1

For details on upgrading to Planning Analytics 2.1, see Upgrading to Planning Analytics Local 2.1.

Planning Analytics 2.1.8 - March 10, 2025

IBM Planning Analytics Local version 2.1.8 includes updates for IBM TM1 Server version 11.8.02900.8.

IBM Planning Analytics version 2.1.8 includes numerous improvements and defect fixes

The Data Tier for this version is installed via a new installation program that varies from previous installations. The new installation program, prerequisites, and upgrade considerations are described in Installing the Data Tier for Planning Analytics.

Additionally, Cognos Configuration is no longer installed as part of the Data Tier.

Planning Analytics 2.1 is a local-only version; it is not available on IBM Planning Analytics on Cloud, IBM Software Hub, or IBM Planning Analytics as a Service.

Important: Planning Analytics 2.1 is a direct upgrade from Planning Analytics 2.0. The upgrade to 2.1 does not require changes to your TM1 databases, Planning Analytics Workspace content, Planning Analytics for Excel reports, or Websheets.

Planning Analytics 2.1 does not include TM1 Architect, TM1 Perspectives, TM1 Applications, Performance Modeler, or Cognos Insight. These components are not supported in Planning Analytics 2.1

For details on upgrading to Planning Analytics 2.1, see Upgrading to Planning Analytics Local 2.1.

New installation program

Starting with the Planning Analytics Local 2.1.8 release, the Planning Analytics Data Tier installation program switches from InstallStream to InstallAnywhere.

InstallAnywhere will be familiar if you have installed a recent version of Planning Analytics Spreadsheet Services. InstallAnywhere is smaller and faster than the previous install program. The installation file is less than 1 GB and installation takes less than 5 minutes.

The new installation program, prerequisites, and upgrade considerations are described in Installing the Data Tier for Planning Analytics.

Removal of Cognos Configuration

Planning Analytics 2.1.8 does not include Cognos Configuration.

The removal of Cognos Configuration reduces the complexity of TM1 Server deployment. Cognos Configuration included several open-source components that previously required updates to address vulnerabilities. Removing Cognos Configuration removes almost all of the open-source components that could be identified by vulnerability scanning tools.

In place of Cognos Configuration, TM1 Admin Server and TM1 Server can be registered as Windows services using the executables found in the `<install_dir>\bin64` directory. See Registering and running the TM1 Admin Server as a Windows service and Registering and running the TM1 Admin Server as a Windows service.

Configuration of the TM1 Admin Server in is applied in a new .json configuration file. See New Admin Server configuration file for more information.

Known issues in Planning Analytics 2.1.8

The following are known issues in Planning Analytics 2.1.8. These issues will be resolved in a future release.

SSL configuration for TM1 Applications not saved in Cognos Configuration

While the Data Tier components for Planning Analytics 2.1.8 and later use a new InstallAnywhere installation program and do not use Cognos Configuration, TM1 Applications continues to use the older InstallStream installer and *does* use Cognos Configuration.

A known issue prevents SSL configuration from being saved and applied in Cognos Configuration. To resolve this issue, see Resolving CAM-CRP-1093 Keystore Error while Generating Planning Analytics Cryptographic Information

Configuring Cognos Controller with Planning Analytics Local

The procedure to configure Cognos Controller integration with Planning Analytics Local has changed.

If you use Cognos Controller with Planning Analytics Local, please review the tech note How to configure Financial Analytics Publish (FAP), to allow publishing of Controller data to Planning Analytics for configuration details.

Planning Analytics 2.1.2 - July 30, 2024

IBM Planning Analytics Local version 2.1.2 includes updates for IBM TM1 Server version 11.8.27.

The cloud release of IBM Planning Analytics version 2.0.9.20 will coincide with the Planning Analytics Workspace/Planning Analytics for Excel/Planning Analytics Spreadsheet Services 2.0.98 release in August 2024.

Planning Analytics 2.1 is a local-only version; it is not available on IBM Planning Analytics on Cloud, IBM Software Hub, or IBM Planning Analytics as a Service.

Important: Planning Analytics 2.1 is a direct upgrade from Planning Analytics 2.0. The upgrade to 2.1 does not require changes to your TM1 databases, Planning Analytics Workspace content, Planning Analytics for Excel reports, or Websheets.

Planning Analytics 2.1 does not include TM1 Architect, TM1 Perspectives, TM1 Applications, Performance Modeler, or Cognos Insight. These components are not supported in Planning Analytics 2.1

For details on upgrading to Planning Analytics 2.1, see Upgrading to Planning Analytics Local 2.1.

Planning Analytics 2.1.1 - March 28, 2024

IBM Planning Analytics Local version 2.1.1 includes updates for IBM TM1 Server version 11.8.23.

IBM Planning Analytics Local 2.1.1 if the first release in Planning Analytics version 2.1.

Planning Analytics 2.1 is a local-only version; it is not available on IBM Planning Analytics on Cloud, IBM Software Hub, or IBM Planning Analytics as a Service.

Important: Planning Analytics 2.1 is a direct upgrade from Planning Analytics 2.0. The upgrade to 2.1 does not require changes to your TM1 databases, Planning Analytics Workspace content, Planning Analytics for Excel reports, or Websheets.

Planning Analytics 2.1 does not include TM1 Architect, TM1 Perspectives, TM1 Applications, Performance Modeler, or Cognos Insight. These components are not supported in Planning Analytics 2.1

For details on upgrading to Planning Analytics 2.1, see Upgrading to Planning Analytics Local 2.1.

Modifications required when FIPSOperationMode set to 1 (Basic)

Due to a recent security update, customers who have the non-default `FIPSOperationMode=1` set in their `Tm1s.cfg` should remove or deprioritize the TLS RSA CipherSuites for a successful handshake to occur. Note that the default for this parameter is `FIPSOperationMode=2`.

This includes all CipherSuites that are prefixed with `TLS_RSA_`. This also means that TLS V1.2 and/or higher must be enabled, as TLS 1.1 and lower do not support alternatives. In the case of TLS V1.2, the ECDHE CipherSuites must also be enabled.

Chapter 2. Planning your installation

You can decide how to install and configure IBM Planning Analytics Local to provide the best possible performance. The installation and configuration choices that you make depend on your requirements, resources, and preferences.

Software requirements

Before you install IBM Planning Analytics Local or client components, review system requirements and set up prerequisite software in your environment.

Supported environments

For an updated list of environments that are supported by IBM Planning Analytics including information about operating systems, servers, and databases, create a detailed system requirements report with the Software Product Compatibility Reports tool.

Prerequisite software

Planning Analytics requires the installation of specific software components before it can be installed and used.

Download and install the following components on the target system before you install the related Planning Analytics components.

Table 1. Prerequisite software

Prerequisite Component	Description
Microsoft Excel	Required for Planning Analytics for Microsoft Excel.

Available installation programs

IBM Planning Analytics Local provides installation programs for Planning Analytics components on different operating systems and for different deployment scenarios. You can download all of the Planning Analytics Local installation programs from IBM Passport Advantage®.

The installation programs and component options are organized by operating system and architecture tier to support deployment in single and multiple computer environments.

Planning Analytics Local for Windows 64-bit
Includes 64-bit components for installation on a 64-bit Microsoft Windows system.

This installation program runs only on a 64-bit Windows system.

Use this installation program to install all components on a single 64-bit Windows system or to selectively install individual components, such as the IBM TM1 Admin Server and IBM TM1 Server, on separate 64-bit Windows systems.

By default, this installation program automatically installs the IBM Cognos® Configuration tool for managing the TM1 Admin Server andPlanning Analytics database.

Planning Analytics Local for Linux®
Includes only the Linux versions of the following TM1 components.

- TM1 Server
- TM1 Admin Server
- IBM Planning Analytics TM1 Web

Use the installation program to install these components on any of the supported or Linux operating systems. A separate installation program is available for each of these supported operating systems.

By default, this installation program automatically installs the IBM Cognos Configuration tool for managing the TM1 Admin Server and TM1 Server components.

IBM Planning Analytics Workspace

Use this installation program to install Planning Analytics Workspace as part of your Planning Analytics Local on-premises installation. Planning Analytics Workspace is the web-based interface for IBM Planning Analytics.

Before you install Planning Analytics Workspace, you must have IBM Planning Analytics Local version 2.0.0 or greater installed.

For more information, see Chapter 10, “Installing Planning Analytics Workspace Local,” on page 95.

IBM Planning Analytics for Microsoft Excel

Use this installation program to distribute and install Planning Analytics for Microsoft Excel.

Planning Analytics Local includes samples that you can use with Planning Analytics for Microsoft Excel.

For more information, see Chapter 12, “Installing and configuring Planning Analytics for Microsoft Excel,” on page 133.

You can also set up an unattended installation and configuration.

Available components

IBM Planning Analytics Local includes a collection of server and client components for administering, monitoring, modeling, analyzing, and interacting with TM1 data.

The installation program organizes TM1 components into groups based on architecture tier. You can install different combinations of components onto a single computer or across multiple computers, depending on your specific requirements, operating system and environment. Each component requires a specific operating system and software environment.

By default, IBM Planning Analytics uses a WebSphere Application Server Liberty Profile as the application server. You can configure Planning Analytics to run on other supported application servers that you currently use in your environment.

TM1 Server installation components

The TM1 Server installation program includes the fundamental components such as the IBM TM1 Admin server and IBM TM1 Server components.

The following table includes the description and operating system for each TM1 component in the Data Tier. For more information, see Chapter 7, “Installing TM1 Server components on Planning Analytics 2.1.7 and earlier,” on page 41.

Table 2. System requirements for TM1 Data Tier components

Component	Operating System	Description
TM1 Server	64-bit Windows 64-bit Linux	The TM1 Server manages requests from TM1 clients. It loads the names of all available permanent objects, such as cubes and dimensions into memory. It responds to client requests by completing calculations, consolidations, and updates as required. The TM1 Server also manages security by granting or denying access to server objects and maintaining a log of changes to the database. See “TM1 Server installation” on page 41.

Table 2. System requirements for TM1 Data Tier components (continued)		
Component	**Operating System**	**Description**
TM Admin Server	64-bit Windows 64-bit Linux	A process that tracks all TM1 servers that run on a network. An Admin Server runs on an Admin Host server. When a TM1 server starts, the server registers itself with an Admin Server that is running on a specified Admin Host. TM1 clients reference the Admin Server to determine which TM1 servers are available on the network. See "TM1 Server installation" on page 41.
TM1 Tools	Supported operating systems vary by tool.	Includes the following collection of tools and utilities for TM1 administrators, developers, and modelers: TIRunTI TM1xfer See "IBM TM1 Server tools installation" on page 54.
Samples	64-bit Windows 64-bit Linux	Installs TM1 samples databases: See "TM1 sample databases installation" on page 55.
Planning Analytics Administration agent	64-bit Windows 64-bit Linux	Installs the Planning Analytics Administration agent, which is required in Planning Analytics Workspace Local. See "Install and configure the Planning Analytics Administration agent (local only)" on page 63.

Additional installation components not listed

Some components are not listed or selectable in the installation program.

The following table includes the description and operating system for required components that are not listed or selectable in the installation program but are installed by default with the installation of other selectable components.

Table 3. Additional Planning Analytics components not listed in the installation wizard		
Component	**Operating System**	**Description**
Planning Analytics Workspace	64-bit Windows	A web-based interface for IBM Planning Analytics. It provides an interface to TM1 data, with ways to plan, create, and analyze your content. See Chapter 10, "Installing Planning Analytics Workspace Local," on page 95.

Table 3. Additional Planning Analytics components not listed in the installation wizard (continued)		
Component	**Operating System**	**Description**
Planning Analytics for Microsoft Excel	64-bit Windows	A Microsoft Excel-based tool that professional report authors use to build sophisticated, multiple-sheet, multiple-query reports against multiple databases. See Chapter 12, "Installing and configuring Planning Analytics for Microsoft Excel," on page 133.

IBM Planning Analytics client differentiation

Planning Analytics provides multiple clients for developers, administrators, and users. Understanding these clients and their differences can help you decide which client is most appropriate for your needs.

All clients are described fully in the Planning Analytics documentation.

End-user clients

You can use several user clients to interact with Planning Analytics data.

IBM Planning Analytics Workspace

IBM Planning Analytics Workspace is a web-based interface for IBM Planning Analytics. You can connect to Planning Analytics data to plan, create, and analyze your content.

For more information, see Planning Analytics Workspace.

IBM Planning Analytics for Microsoft Excel

IBM Planning Analytics for Microsoft Excel is intended for users who work in global networked environments. It is the client of choice for users who primarily employ Microsoft Excel for analyzing Planning Analytics data and build their own custom layouts by using Microsoft Excel functions. Planning Analytics for Microsoft Excel is also beneficial for users who need to access both Planning Analytics and Cognos Analyticsdata from the same Excel client interface.

Planning Analytics for Microsoft Excel offers the following benefits:

- Optimized for wide area networks
- Provides a familiar spreadsheet environment that does not require a power-user level of knowledge in Excel to analyze and contribute to Planning Analytics data
- Combines the capabilities of Microsoft Excel with a drag and drop approach to analyzing Planning Analytics cubes
- Provides a flexible range-based mode to add formats and user calculations directly within a spreadsheet
- Provides access to Planning Analytics data objects, such as cubes, views, dimension subsets, aliases, and sandboxes

For more information, see Planning Analytics for Microsoft Excel.

Planning Analytics Spreadsheet Services (TM1 Web)

Planning Analytics Spreadsheet Services (TM1 Web) is a zero-footprint web client that you can use to analyze and modify Planning Analytics data from any supported web browser.

For more information, see TM1 Web.

Configuration overview

After you install IBM Planning Analytics Local, use the Cognos Configuration tool and the TM1 configuration file parameters to configure the program for optimal performance.

Default installation values

IBM Planning Analytics Local uses the following default configuration values.

Table 4. Default configuration values for Planning Analytics installation

Item	**Description and Default Value**
Default installation location	On a 64-bit Microsoft Windows system: `C:\Program Files\IBM\cognos\tm1_64`
Admin Server port number	The TCP/IP port number on which the Admin Server listens for client requests. The default value is 5495 (unsecured). This value is set in IBM Cognos Configuration.
Admin Server SSL port number	The TCP/IP port number on which all TM1 components communicate with the Cognos TM1 Admin Server using Transport Layer Security (TLS). The default value is 5498 (secured) This value is set in IBM Cognos Configuration.
TM1 server port number	The port on which the TM1 server runs. This parameter is used to distinguish multiple TM1 servers running on the same computer. Valid port values fall between 5000 and 65535. The default value is 12345. This value is set with the **`PortNumber`** parameter in the `Tm1s.cfg` server configuration file.

Table 4. Default configuration values for Planning Analytics installation (continued)	
Item	**Description and Default Value**
TM1 Client Message port number	This port number establishes a secondary port for client progress messages to use when a lengthy operation is waiting to be canceled. This value is set with the **`ClientMessagePortNumber`** parameter in the `Tm1s.cfg` server configuration file. The default value is blank. By default, this port number is automatically and dynamically assigned when the TM1 server starts. You do not have to set **`ClientMessagePortNumber`** to a specific number unless firewalls or other network issues require the listener port to be a well-known number. **CAUTION:** If you choose to set a specific value for the ClientMessagePortNumber parameter, instead of having it dynamically assigned, be sure to assign unique port numbers for all the TM1 server and client message ports you are using. If you have two servers running on the same machine using the same port number, the message activity may cause a system conflict or hang.
Admin Server to REST API unsecured communication port number (`tm1AdminHTTPPortNumber`)	Specifies the HTTP port number that is used by TM1 Admin Server to communicate with the TM1 REST API for unsecured communication. The default value is 5895. This value cannot be changed using IBM Cognos Configuration. For more information, see Appendix 1: TM1 Admin Host in the *TM1 REST API* documentation.
Admin Server to REST API secured communication port number (`tm1AdminHTTPSPortNumber`)	Specifies the HTTPS port number that is used by TM1 Admin Server to communicate with the TM1 REST API for secured (SSL) communication. The default value is 5898. This value cannot be changed using IBM Cognos Configuration. For more information, see Appendix 1: TM1 Admin Host in the *TM1 REST API* documentation.

Table 4. Default configuration values for Planning Analytics installation (continued)	
Item	**Description and Default Value**
Admin Server host name	Specifies the computer name or IP address of the Admin Host on which a Cognos TM1 Admin Server is running. The default value is blank, which uses `localhost` to represent the computer on which the installation is run. This value is set with the **`AdminHost`** parameter in the `Tm1s.cfg` and `Tm1p.cfg` configuration files.
Sample TM1 server names	Planning Analytics Sample PlanSamp SData GO_New_Stores PData Proven_Techniques GO_scorecards 24Retail Login credentials: **User name:** `admin` **Password:** `apple`
Default port numbers for sample servers	PlanSamp - port 12354 SData - port 8010 GO_New_Stores - port 5010 PData - port 8011 Proven_Techniques - port 5011 GO_scorecards - port 44312 24Retail - port 8014 You can change a port number for a server by editing the HTTPPortNumber value in the tm1s.cfg file. For more information, see “HTTPPortNumber” on page 257.

Table 4. Default configuration values for Planning Analytics installation (continued)	
Item	**Description and Default Value**

Default data directory for sample TM1 servers	`C:\Program Files\IBM\cognos\tm1_64\samples\tm1\PlanSamp`
	`C:\Program Files\IBM\cognos\tm1_64\samples\tm1\SData`
	`C:\Program Files\IBM\cognos\tm1_64\samples\tm1\GO_New_Stores`
	`C:\Program Files\IBM\cognos\tm1_64\samples\tm1\PData`
	`C:\Program Files\IBM\cognos\tm1_64\samples\tm1\Proven_Techniques`
	`C:\Program Files\IBM\cognos\tm1_64\samples\tm1\GO_scorecards`
	`C:\Program Files\IBM\cognos\tm1_64\samples\tm1\24Retail`

Security mode	A Standard installation uses Cognos TM1 Authentication. In this mode, the TM1 server prompts users for a user name and password when they log in to TM1 components.

Planning Analytics database and Cognos Configuration

The IBM Cognos Configuration tool is used to start, stop, configure, and save the setting for each Planning Analytics database.

Use Cognos Configuration to manage the following components and tasks:

Table 5. Cognos Configuration tasks	
Component/task	**Action**
TM1 Admin Server	Start and stop the server.
TM1 Server	Start, stop, and add aPlanning Analytics database (sometimes referred to as known as TM1 database or TM1 server).

Table 5. Cognos Configuration tasks (continued)	
Component/task	**Action**
Saving configuration information	When you save the configuration setting in Cognos Configuration, the tool: • verifies the configuration • generates cryptographic information • checks integrity of encrypted data • saves configuration for Planning Analytics database • backs up configuration files • saves configuration parameters

TM1 configuration files and parameters

IBM Planning Analytics uses a collection of configuration files and parameters to control the behavior of IBM TM1 Server and client components.

Table 6. Summary of configuration options for different TM1 components	
Configuration	**Description**
`Tm1s.cfg` file	TM1 Server configuration See "The tm1s.cfg configuration file" on page 232.
Planning Analytics Administration agent `bootstrap.properties` file	Planning Analytics Administration agent configuration files See "Sample bootstrap.properties file" on page 68.

User accounts for running TM1 services on Windows

When you use IBM Cognos Configuration to start the TM1 Admin Server and IBM TM1 Server, they are registered to run as Windows services with the predefined Microsoft Windows Local System Account. You must manually change these services to run under a specific user account.

Note: If TM1 Server requires access to external data sources with ODBC you must manually change it to run under a specific user account that has access to these data sources.

Run TM1 services under a specific Windows user account

By default, Cognos Configuration registers the following TM1 services to run under the Microsoft Windows Local System Account:

- IBM TM1 Server
- Cognos TM1 Admin Server

Important: Change these TM1 services to run under a specific user account on Microsoft Windows.

For more information, see "Changing TM1 services to run as a specific user account on Windows" on page 43.

After you make these changes, you will still be able to use Cognos Configuration to start and stop these services.

Required privileges for a specific Windows user account

The user account for running TM1 services on Windows must be included in the database owner group to access SQL tables and views.

The user account must have read and write privileges to the TM1 database and log directories.

The account must have the following privileges on the local computer:

- Act as part of the operating system
- Bypass traverse checking
- Increase quotas (Adjust memory quotas for a process)
- Replace a process level token
- Log on as a service
- Have read and write privileges on the Windows Registry item

Note: Not all of these properties are available in all versions of Windows. Refer to Microsoft Windows documentation for the currently available properties.

You can use the Security Settings and Group Policy features in Microsoft Windows to configure these security privileges.

To set read and write privileges for the Windows Registry, use the Windows Registry editor.

Installing IBM Planning Analytics Local on Networks without domains

If you install IBM Planning Analytics Local in a network that does not use a domain controller, you can set your TM1 services to use local accounts.

For details on configuring TM1 services, see "Changing TM1 services to run as a specific user account on Windows" on page 43.

If you use one or more local accounts for your TM1 services, you must be sure these accounts have the following privileges on their local machines:

- Act as part of the operating system
- Bypass traverse checking
- Increase quotas
- Replace a process-level token
- Log on as a service

If you set up file shares in your Windows network for use by TM1 components, be sure that each local account that you set up to run a TM1 service has access to those shares.

Note: If you install on a machine that does not participate in a Microsoft Windows domain, you cannot use Integrated Login.

Local machine syntax

Do not use dot (.) as an abbreviation for the local machine domain when you specify login information.

You must explicitly enter the machine name. In certain configurations, using the `.\username` syntax may cause serious problems.

Accessibility

Accessibility features help users who have a physical disability, such as restricted mobility or limited vision, to use information technology products.

For more information about the commitment that IBM has to accessibility, see the IBM Accessibility Center at http://www.ibm.com/able.

Keyboard shortcuts for the installation wizard

Keyboard shortcuts, or shortcut keys, provide you with an easier and often faster method of navigating and using software.

The installation wizard uses standard Microsoft Windows operating system navigation keys in addition to application-specific keys.

Note: The following keyboard shortcuts are based on US standard keyboards.

The following table lists the keyboard shortcuts that you can use to perform some of the main tasks in the installation wizard on the Windows operating system.

Table 7. Installation wizard keyboard shortcuts on Windows

Action	**Shortcut key**
Move to the next field on a page	Tab
Return to the previous field on a page	Shift+Tab
Close the installation wizard	Alt+F4
Move to the next configuration step	Alt+N
Return to the previous configuration step	Alt+B
Move to the next selection in a list	Down arrow
Move to the previous selection in a list	Up arrow

The following table lists the keyboard shortcuts you can use to perform some of the main tasks in the installation wizard on the UNIX or Linux operating system.

Table 8. Installation wizard keyboard shortcuts on UNIX or Linux

Action	**Shortcut key**
Move to the next field on a page	Tab
Return to the previous field on a page	Shift+Tab
Close the installation wizard	Alt+F4
Move to the next selection in a list	Down arrow
Move to the previous selection in a list	Up arrow

The following table lists the keyboard shortcuts you can use to perform some of the main tasks in the License Agreement page of the installation wizard.

Table 9. License Agreement keyboard shortcuts

Action	**Shortcut key**
Accept the license agreement	Alt+A
Decline the license agreement	Alt+D
Quit the installation wizard	Alt+x

Keyboard shortcuts for Cognos Configuration

Keyboard shortcuts, or shortcut keys, provide you with an easier and often faster method of navigating and using software.

The following keyboard shortcuts are based on US standard keyboards.

The following table lists the keyboard shortcuts that you can use to perform some of the main tasks in IBM Cognos Configuration on the Windows operating system.

Table 10. Keyboard shortcuts for Cognos Configuration on Windows

Action	**Shortcut key**
Save the current configuration	Ctrl+S
Close Cognos Configuration	Alt+F4
Rename the selected item	F2
Display the File menu	Alt+F
Display the Edit menuAlt+H	Alt+E
Display the View menu	Alt+V
Display the Actions menu	Alt+A
Display the Help menu	Alt+H

The following table lists the keyboard shortcuts that you can use to perform some of the main tasks in Cognos Configuration on the UNIX or Linux operating system.

Action	**Shortcut key**
Save the current configuration	Tab
Close Cognos Configuration	Shift+Tab
Rename the selected item	Alt+F4

Chapter 3. Planning Analytics Local architecture

To understand the architecture of the major IBM Planning Analytics Local components, you should be familiar with your information technology infrastructure and with the business needs of people in your organization who will use Planning Analytics Local.

For details about Planning Analytics Local login authentication and communication security, see “Authentication security ” on page 174.

Planning Analytics architecture

IBM Planning Analytics employs a distributed, client-server architecture that consists of the IBM TM1 Server to which a combination of different clients can connect.

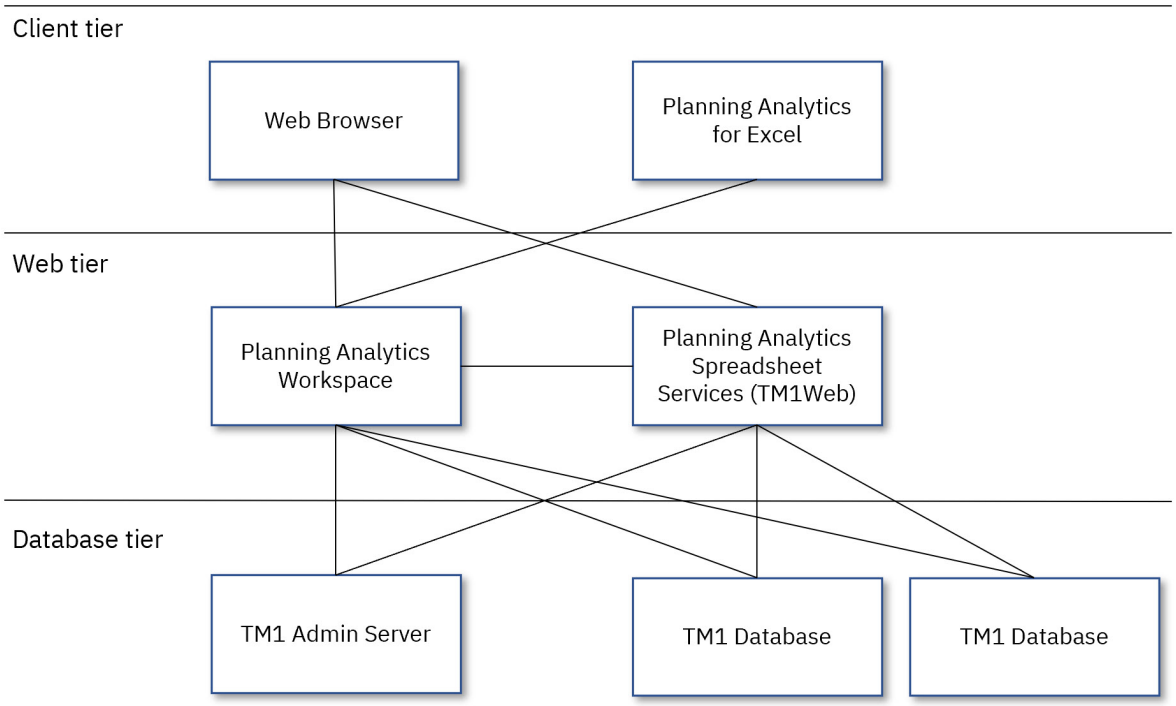


Figure 1. High-level overview of the IBM Planning Analytics client-server architecture

In this environment, corporate data resides on remote servers, which authorized clients can access. Depending on how you set up the system, clients can access one or more remote TM1 Servers to obtain different kinds of data.

TM1 Admin Server overview

The IBM Cognos TM1 Admin Server is a process that keeps track of all TM1 servers running on a network. An Admin Server runs on a computer known as an Admin Host.

When the IBM TM1 Server starts, the server registers itself with an Admin Server that is running on a specified Admin Host. TM1 clients reference the Admin Server to determine which TM1 servers are available on the network.

The Admin Server maintains the following information for each available TM1 Server:

- Server name
- IP address
- Protocol

- Port number

All this information is supplied by the TM1 Server when the server registers itself on the Admin Server.

An Admin Server must be running before a TM1 Server can start. If you have specified an Admin Host in the Tm1s.cfg file or the server command line, the TM1 Server will attempt to connect to an Admin Server on that host. The TM1 Server will fail to come up if it is unable to connect to the Admin Server for any reason.

If you have not specified an Admin Host, the TM1 Server attempts to connect to an Admin Server on the local machine. If an Admin Server is not currently running on the local machine, the TM1 Server starts a new Admin Server and connects to it.

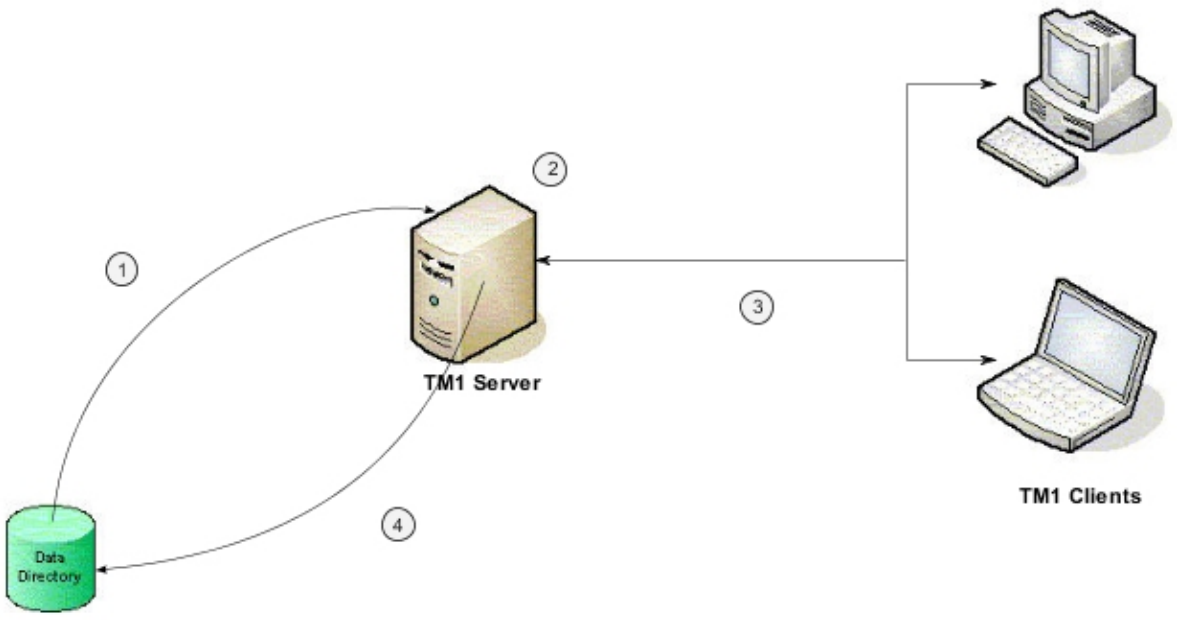
The Admin Server becomes aware of a TM1 Server on the network by listening for notification from the server. Usually, the TM1 Server sends notification of its presence at a regular interval called the "heartbeat interval," which is 60 seconds by default. When the Admin Server detects theTM1 Server, that server becomes registered and available to clients on the network. However, if the Admin Server does not detect the presence of a registered TM1 Server over a period equal to three times the heartbeat interval, that TM1 Server is removed from the list of servers available on the network. Consequently, the TM1 Server will not be available to clients on the network.

By default, the Admin Server uses port 5495. If port 5495 is already in use, you can assign a new port number by creating a new service called Tm1admsrv. All TM1 applications look for a named service called Tm1admsrv, and if that service exists, the applications use the port number assigned to the service. If the service does not exist, TM1 applications use port 5495.

TM1 Server overview

The IBM TM1 Server manages access to the TM1 data directory for TM1 clients.

The following figure illustrates the operations of a remote TM1 Server server. These operations are explained in the text that follows.



1. When the TM1 server is started, all TM1 data is loaded from the TM1 data directory into RAM on the server machine. At the same time, the server opens a new transactional log file called tm1s.log in the data directory. After the cubes are loaded, the remote server is available.

The remote TM1 Server registers itself with one or more Admin Servers so that clients can connect to the remote TM1 Server. Client applications contact Admin Servers to locate available TM1 Servers. The clients log into the TM1 Servers whose data they want to access.

2. While the TM1 server is running, all cube data resides in RAM. All edits received from TM1 clients are stored in a transaction log file named tm1s.log.

   As new values are received from clients, the TM1 Serverwrites the records to the tm1s.log file, keeping track of every data change, including the date and time the edit occurred, and the ID of the client who made the edit.

3. TM1 clients retrieve cube values from the server. Clients also send edits to cube values to the TM1 server. As the server calculates new values in response to client requests, the server stores them in memory, increasing the amount of memory used by the server.

4. When the TM1 server is shut down, or when an explicit **Save Data** command is issued, any changes to cube values are written from the transactional log file to the data directory.

   All records in the tm1s.log file are saved to disk, and the transaction log file is renamed by appending a date/time stamp to it. The tm1s.log file is saved in the server's data directory to back out data transactions. For details, see the topic Backing out transactions using the transaction log in the *TM1 Operations* documentation.

   If the server is intentionally shut down without saving the changes, the log file is saved with a time/date stamp and the extension is changed to .rej. You can process the tm1s*yyyymmddhhmmss*.rej file through TurboIntegrator to recover the transactions.

   To save all changes to the data on a TM1 Server at any time without shutting down the server, right-click a server in Server Explorer and click **Save Data**. All records in the tm1s.log file are immediately written to disk, the transaction log file is renamed by appending a date/time stamp to it, and a new tm1s.log file is created to accept any subsequent edits to cube values.

   Any changes to the metadata, such as dimension definitions and cube definitions, are immediately saved to disk. The changes to the metadata are not written to the transaction log file.

TM1 files overview

IBM TM1 Server requires many object and system files, most of which are stored in the TM1 Server's data directory.

Some of these files are installed with the product, while others are generated for each dimension and cube you create. Yet other files are generated by TM1 to store metadata, such as security information.

The following table lists the files that define cubes, dimensions, and other TM1 objects. These files are located in the data directory, which is described later in this documentation.

Table 11. Files that define cubes, dimensions, and other objects

File Extension	Description
.blb	Cube formatting file
.cho	Chore definition file
.cub	Cube database file
.dim	Compiled dimension
.dit	ASCII dimension source file
.pro	TurboIntegrator process definition file

Table 11. Files that define cubes, dimensions, and other objects (continued)	
File Extension	**Description**
.rux	Compiled rule
.sub	Dimension subset
.tbu	ASCII source for view file
.tqu	Saved query
.tru	ASCII source for a rule file
.vue	Saved view

Data directory overview

The data directory contains the cubes, dimensions, and system information that are loaded into memory when an IBM TM1 Server is started. When you access a server from any TM1 client, TM1 reads data from that server's data directory.

When you run TM1, the changes you make to cube values are immediately stored in memory and in the transaction log (Tm1s.log). TM1 then saves the data back to the data directory when any of the following occur:

- TM1 Server is shut down.
- An administrator right-clicks a server icon in Server Explorer and chooses **Save Data** from the menu. TM1 saves the changes to the selected server.
- An administrator chooses **File** > **Save Data All** in Server Explorer. TM1 saves the changes to all the connected servers, if you have the proper authority.
- A user saves the batch updates.

Choose the path for your data directory when you install TM1 Server.

Table 12. Default Data Directory Paths	
Data Directory	**Default Path**
Local TM1 Server	*installation_location*\custom\tm1data\pdata
Remote Windows TM1 Server for sample data	*installation_location*\custom\tm1data\sdata
Linux TM1 Server	*installation_location*/custom/tm1data/sdata

Required network access

A client's ability to save data is determined by the IBM TM1 security scheme.

For more information, see the *TM1 Developer* documentation.

Important: Make this directory visible only to administrators and to the login account that is used by the server.

Multiple data directories

You can specify that you want IBM TM1 Server to use multiple data directories by separating the directory names with semicolons. When you specify multiple data directories, TM1 does the following.

- Accesses cubes and dimensions from each of the specified directories. If there is a duplicate object, TM1 accesses the object from the first directory specified.
- Writes changes to the directory where the object is located. When you create a new object, TM1 writes to the first directory you had specified.

For example, suppose you want to store dimensions in a directory called tm1dims, and cubes in a directory called tm1cubes. You would specify the following in the Tm1s.cfg file:

```
DatabaseDirectory="c:\tm1dims;c:\tm1cubes"
```

By concatenating the two directories, you can access these objects through Server Explorer as if they were in a single location.

Note: You cannot store cube (.cub) and rules (.rux) files in separate data directories. The .rux file must reside in the same directory as the .cub file with which it is associated. If the .rux file is not in the same directory as the associated .cub file, rules will not load properly.

Data directory location

You specify the location of the data directory differently for local and remote servers.

For information on server parameters, see "The tm1s.cfg configuration file" on page 232.

A remote server must be able to recognize the drive where the data directory resides. If the directory is on a remote drive, you must map that drive to a local drive letter.

Tip: When you access a remote server, you do not need to map to the drive where the server data directory resides.

If you do not specify the location of the data directory, the IBM TM1 Server cannot start and the following error message displays.

```
Data Directory not specified. Aborting server startup.
```

TM1 Web architecture

IBM Cognos TM1 Web uses a multi-tiered architecture that enables users to access and interact with TM1 data using any supported web browser.

The IBM TM1 Web multi-tiered architecture includes web client, web application server, and data component tiers.

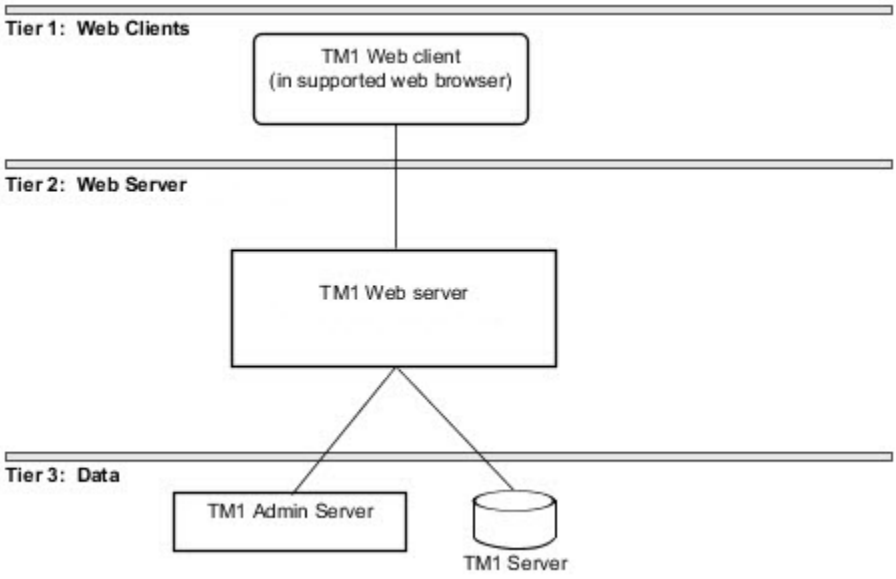


Figure 2. TM1 Web architecture overview diagram

Tier 1: Web clients

The web clients tier allows users to access and interact with TM1 data using any of the supported web browsers. Users can work with TM1 cubes and TM1 Websheets.

For an updated list of environments that are supported by TM1 including information about operating systems, TM1 servers, and databases, create a detailed system requirements report using the Software Product Compatibility Reports tool (https://www.ibm.com/software/reports/compatibility/clarity/index.html).

Tier 2: Web server

TM1 Web runs on a Java-based web server.

This tier provides support for converting and displaying Microsoft Excel worksheets as TM1 Websheets. This service also exports Websheets back to Microsoft Excel and PDF formats.

Tier 3: Data

This tier includes the TM1 Admin Server and at least one TM1 Server.

IBM TM1 Admin server

The TM1 Admin Server can be installed on any computer on your LAN but it must reside in the same LAN segment as your TM1 Server. Typically, the TM1 Server and the TM1 Admin Server are installed on the same computer.

IBM TM1 server

The TM1 server can be installed on the same computer that hosts your Web server, but installing on a separate computer is more efficient.

The version of the TM1 Server that is used in your TM1 Web environment must be equal to or more recent than the version of TM1 Web that you are running. If the version of TM1 Web you are running is more recent than the version of the TM1 server, users will receive an error when attempting to log in to TM1 Web.

Accessing multiple TM1 servers from TM1 Web

IBM TM1 Web provides multi-database support, allowing users to access multiple TM1 Servers that are registered on the same TM1 Admin Server and where users have the same user name and password combination.

When you log in, TM1 Web displays the Navigation pane for the primary server that you selected on the login screen. However, if your user name and password combination matches other TM1 Servers registered under the same TM1 Admin Server, then TM1 Web will automatically log you in to these other servers on an as-needed basis.

Multi-database support mainly applies to Websheets because they can contain TM1 formulas and references that point to other TM1 Servers. For example, if you open a Websheet that does contain TM1 references to another server registered under the same Admin Server, TM1 Web will attempt to log you into this other server using your current user name and password.

Limiting access to a single TM1 Server from TM1 Web

If you want to prevent TM1 Web users from using multi-database support to access other TM1 servers under the same Admin Server, you can use a different Admin Server to register each IBM TM1 Server.

For example, with this configuration, if you log into TM1 Web and try to open a Websheet that references another TM1 Server registered under a different Admin Server, the data will not display even if you have the same user name and password for that server.

Tip: If you configure your TM1 servers to run under separate Admin Servers, but still want to access them from TM1 Web you can use the AdminHost parameter. This parameter lets you specify multiple Admin Hosts so users can access any TM1 Servers that are registered with the Admin Servers on the specified hosts.

- For information about configuring TM1 Web to access multiple Admin Servers, see "Configuring the Login Page using AdminHostName and TM1ServerName" in *TM1 Operation*.

Chapter 4. Deploying Planning Analytics Local

You can install and deploy components on a single computer or across multiple computers in a networked environment.

For each component you want to install on a different computer, run the TM1 Installation Wizard on that computer.

Server components

You can install the following server components on separate dedicated computers:

- TM1 Admin Server and IBM TM1 Server

Deploying Planning Analytics on a single Windows computer

Installing Planning Analytics components on one computer running Microsoft Windows is a practical approach for proof of concept, test, demonstration, development and training environments.

Installation on a single Windows computer is primarily intended for a single user on 64-bit Windows operating systems. However these are not server class, production level operating systems and this type of deployment should only be used for individual use and not in a production environment with multiple users.

Typical single computer installation

A typical Planning Analytics installation on a single Windows computer includes the following components:

Data Tier

- TM1 Server
- TM1 Admin server
- TM1 Tools
- Samples

Web Tier

- Planning Analytics Workspace
- Planning Analytics Spreadsheet Services(TM1 Web)

You can adjust which components you install based on your specific needs.

Deploying TM1 Admin Server and TM1 Server

You can install the IBM TM1 Server and IBM TM1 Admin Server components on a separate computer in your hardware environment.

For each component you want to install on a different computer, run the installation program on that computer.

You can install the TM1 Admin Server on the same computer on which the TM1 Server is installed or another computer on your network.

When a TM1 Server is running, it registers itself on the specified Admin Server. TM1 clients then connect to this Admin Server to obtain information about TM1 servers available on a network.

If you distribute the server components throughout your network, you must know certain information about where your components will be installed, and the configuration of those components. The following list provides information about what you need to know to install each component.

Table 13. Installing TM1 server components	
Component	**Description**
TM1 Server	To install and configure the TM1 Server, you must know the name of the computer on which the TM1 Admin Server is running.
TM1 Admin Server	This can be installed without any knowledge of your network topology.

Important Notes on Distributed Installations

TM1 services must run on computers set to the same locale. You cannot, for example, install some services on a computer running the US English locale, and other services on a computer running the German locale. Set the locale using the Standards and Formats option in Microsoft Windows **Start Menu**, **Regional and Local Settings**.

Chapter 5. Upgrading Planning Analytics Local 2.0

You should upgrade an earlier version to the current version of IBM Planning Analytics 2.0 in stages. Follow these basic steps to upgrade.

Procedure

1. Required: Stop all related IBM TM1 and IBM Planning Analytics services.
2. Back up your existing data, configuration settings, and applications.
3. Optional: Remove the previous version of the product.
4. Install the new version of the product.
5. Restore your data, configuration settings, and applications with the new version of the product.
6. Restart all required IBM TM1 and IBM Planning Analytics services.

Prerequisites for upgrading

Before you upgrade, backup your existing data, application, and configuration files to a safe place. You must also stop all related IBM TM1 and IBM Planning Analytics services before performing an upgrade.

Backup your existing data

Depending on your network architecture and deployment of IBM Planning Analytics, your data might be on more than one computer. Make a list of where this data is located and create a plan to back up the data.

The following files must be backed up:

- IBM TM1 Server configuration and database files
- Planning Analytics Administration agent configuration files (`bootstrap.properties`)
- TM1 Admin Server configuration files
- TM1 Web server configuration and custom files

Upgrading from Planning Analytics version 2.0.0

When you upgrade IBM Planning Analytics Local from version 2.0.0 to version 2.0.x, you do not need to uninstall the previous version. You can install IBM Planning Analytics Local version 2.0.x directly over version 2.0.0.

Note: A change made in IBM Planning Analytics version 2.0.2 IF4 updates a data type field in the TM1 database. If you upgrade to version 2.0.2 or any later version, you can't downgrade to an earlier version. For more information, see Database structure change affects TM1 and Planning Analytics.

Planning Analytics Local supports Java 8 starting in Planning Analytics version 2.0.6. If you install Planning Analytics version 2.0.6 over an older version of Planning Analytics, your installation removes the existing Java 7 directories and installs the Java 8 directories.

Important: You must stop all related IBM TM1 and IBM Planning Analytics services before you upgrade to a new version of Planning Analytics.

If you use the TM1 samples and want to keep any updates you made to them, you must back them up before you start the upgrade. After you upgrade, you can copy or move the samples back to the installation location.

For more information, see the following topics, depending on your computer environment and which TM1 components you want to install.

- Chapter 7, “Installing TM1 Server components on Planning Analytics 2.1.7 and earlier,” on page 41

-
-
- Chapter 10, “Installing Planning Analytics Workspace Local,” on page 95
- Chapter 12, “Installing and configuring Planning Analytics for Microsoft Excel,” on page 133
- Chapter 14, “Integrating Planning Analytics Local with IBM Cognos software,” on page 171

Note: If you are upgrading to Planning Analytics version 2.0.6 on top of version 2.0.5 plus a fix pack on a single computer on Windows, you must uninstall and reinstall IBM TM1 Performance Modeler and IBM® Cognos Insight to take advantage of the upgrade to Java 8:

1. Install Planning Analytics version 2.0.6.
2. Uninstall IBM TM1 Performance Modeler and IBM® Cognos Insight.
3. Reinstall IBM TM1 Performance Modeler and IBM® Cognos Insight by running the `PerformanceModeler.msi` and `CognosInsight.msi` in *`pa_installation_location`*`\webapps\pmpsvc\rcp_installs`.

Upgrading Planning Analytics for Microsoft Excel

When you upgrade IBM Planning Analytics for Microsoft Excel, you need to uninstall the previous version and then install the current version. You cannot install Planning Analytics for Microsoft Excel directly over the previous version.

Before you begin

You must back up existing data and configuration files before you uninstall the previous version.

Procedure

1. Close all Microsoft Excel windows.
2. Back up existing data and configuration files.
3. Uninstall the previous version of Planning Analytics for Microsoft Excel. For more information, see“Uninstall IBM Planning Analytics for Microsoft Excel” on page 138.
4. Download and extract the installation program.
5. Install the new version of Planning Analytics for Microsoft Excel. For more information, see Chapter 12, “Installing and configuring Planning Analytics for Microsoft Excel,” on page 133.

   Note: If you are upgrading from Cognos Analysis for Microsoft Excel to Planning Analytics for Microsoft Excel, you must delete the `C:\Users\<user>\AppData\Local\Cognos\Office Connection` folder.

Upgrading from Cognos TM1 version 10.2.x

When you upgrade IBM Cognos TM1 version 10.2.x to IBM Planning Analytics version 2.0.0, you need to uninstall the previous version and then install the current version. You cannot install IBM Planning Analytics version 2.0.0 directly over version 10.2.x. You should also plan to back up existing data and configuration files before uninstalling the previous version.

About this task

The following steps provide guidelines for upgrading Cognos TM1 version 10.2.x to the current version.

Procedure

1. Back up existing data and configuration files:

   You should plan to back up existing data and configuration files to a safe location for all computers where Cognos TM1 components were installed. For details see the following topics:

- “Backing up data and configuration files for IBM Planning Analytics Local” on page 230

2. Uninstall all Cognos TM1 components:

   If you installed the previous version of Cognos TM1 in a distributed environment, you will need to uninstall the TM1 components from each computer.

   - “Uninstalling IBM Planning Analytics” on page 231

3. Install the current version of IBM Cognos TM1:

   Refer to the following topics, depending on your computer environment and which Cognos TM1 components you want to install.

   - “TM1 Server installation” on page 41
   -
   -
   -

4. After installing the new version of Cognos TM1 Applications, remove the cache of your web browser. If the cache is not removed, the browser may mix old Cognos TM1 Applications and new Cognos TM1 Applications files together.
5. Restore previous Cognos TM1 data and configuration files:

Chapter 6. Installing Planning Analytics Local 2.1.7 and earlier on a single computer

This type of installation puts Planning Analytics on a single computer running the Microsoft Windows operating system and using default settings. Use this kind of installation to get up and running quickly with Planning Analytics or to install a test or evaluation environment.

The single computer installation explains how to install and run:

- TM1 Admin Server
- TM1 Server
- IBM TM1 Application Server

This installation scenario assumes:

- You are on a single 64-bit computer running the Microsoft Windows operating system.
- You use the WebSphere® Liberty web server software installed by the Planning Analytics installation.
- You use the default standard TM1 authentication.
- You accept the default configurations including English as the language.

Remember: Your browser may use a slightly different interface than the browser used in the steps described here.

Install the prerequisite software

You need the prerequisite software before you can install IBM Planning Analytics. If you do not have these prerequisites in place, the installation wizard displays a message about them. If you are missing any of the prerequisites, you need to install them before you can continue. You might already have this software installed.

About this task

Review the environments that are supported by Planning Analytics including information on operating systems, patches, web servers, and web browsers, by using the Software Product Compatibility Reports tool.

Procedure

1. For IBM Planning Analytics for Microsoft Excel and IBM TM1 Perspectives, install or confirm that you have
   - Microsoft Excel
2. For IBM TM1 Perspectives or IBMTM1 Architect, install or confirm that you have:
   - Microsoft .NET Framework

Install the basic Planning Analytics components

Use the installation program to select the components you want to install and the location on your computer where you want to install them.

Before you begin

- Ensure that you have administrator privileges for the computer on which you are installing software.

- Ensure that the computer has a TEMP system variable that points to the directory where you want to store temporary files. During installation, files are temporarily copied to this directory.
- Ensure that the directories where you install Planning Analytics components contain only ASCII characters in the path name. Some Microsoft Windows web server software does not support non-ASCII characters in directory names.
- Ensure that all of the prerequisite software has been installed.

Procedure

1. To start the installation:
   - Go to the download location for the IBM Planning Analytics installation program that you want to use.
   - If the installation wizard does not open automatically, go to the operating system directory to locate the `issetup.exe` command.
2. Right-click the `issetup.exe` file and click **Run as Administrator**.
3. Follow the directions in the installation wizard to select all of the components.

   The components that you need to run the software are selected by default.
4. Click **Next** until the installation begins.

   The installation runs until all components have been installed. This may take a significant amount of time.

   Tip: For earlier Windows operating systems, you can check **Start Cognos Configuration** on the last screen of the installation to immediately run the configuration tool. On Microsoft Windows 7 or later and Windows Server operating system software, do not check that box and instead use the **Start** menu so you can choose **Run as Administrator** when launching the Cognos Configuration tool.
5. Click **Finish**.

Use Cognos Configuration to start Planning Analytics components in Planning Analytics 2.1.7 and earlier

Before you can use Planning Analytics, you need to start the IBM TM1 Admin Server, the IBM TM1 Application Server, and at least one IBM TM1 sample database server. This action registers the servers in the Windows service registry. Then you need to configure the services so that they run under a specific user. Servers that are running in a Microsoft Windows environment are referred to as services.

Procedure

1. If it is not already running, start the configuration tool by clicking **Start** > **All Programs** > **IBM Cognos TM1** > **IBM Cognos Configuration**.

   Remember: Right-click and use **Run as Administrator** on Windows and Windows Server operating system software.
2. In the Cognos Configuration **Explorer** pane, expand **Local Configuration** > **Environment.**
3. Right-click the **TM1 Admin Server** component and select **Start**.

   Start the TM1 Admin Server first since that server must be running before any sample database can run.

   The Cognos Configuration tool prompts you to save any edits made to the configuration settings. This process will take longer the first time you save a setting as the cryptographic settings and other actions take place for the first time. Click **Yes** in response to the message asking you to save the settings. You will also see this type of message when you close Cognos Configuration.
4. Expand **IBM Cognos TM1 services**. Right-click **IBM Cognos TM1** and select **Start**.
5. Expand the **Data Access** > **TM1 Server** node and right-click each TM1 sample database server that you want to start and select **Start**.

For example, start the provided sample databases:

a) **SData**

b) **Planning Sample**

c) **GO_New_Stores**

6. Click **File** > **Save**.
7. Now that the services are all registered in the Windows services registry, you can reconfigure them to use a specific user account:
   a) In Cognos Configuration, right-click each service you want to change and select **Stop**.
   b) Open Windows Services.
   c) Right-click on each service and select **Properties**.
   d) Enter a user name and password valid on your system with the appropriate rights for the service.
   See " User accounts for running TM1 services on Windows" on page 15.
   e) Close Windows Services.
8. In Cognos Configuration, right-click each server and select **Start**.
9. Close Cognos Configuration.

Run Cognos TM1 Perspectives

After installation, you can run IBM Cognos TM1 Perspectives.

Procedure

1. From the Windows **Start** menu, click **IBM Cognos TM1** > **Perspectives**.
   If the component does not start, ensure that the servers you started with Cognos Configuration are still running.
2. Click **Enable Macros** when the security warning displays.
3. Click **TM1** > **Server Explorer**, then expand **TM1** to see the servers that are available.
4. Double-click a TM1 Server to log in.

   For SData, Planning Sample, or GO_New_Stores use these login credentials:

   - **User name:** `admin`
   - **Password:** `apple`

   Tip: To load Cognos TM1 Perspectives automatically whenever you start Microsoft Excel, add *TM1_location*`/Tm1p.xla` to Microsoft Excel's add-in tool list, where *TM1_location* is the file directory where TM1 is installed. After completing this step, "TM1" displays on the Microsoft Excel menu bar.

Run Cognos TM1 Architect

After installation, you can run IBM Cognos TM1 Architect.

Procedure

1. From the Windows **Start** click **All Programs** > **IBM Cognos TM1** > **Architect**. If Cognos TM1 Architect does not start up, ensure that the servers you started with Cognos Configuration are still running.
2. Expand **TM1** to see the servers that are available.
3. Double-click a TM1 Server to log in.
4. Use these credentials to log into the SData, Planning Sample, or GO_New_Stores sample databases:

   - **User name:** `admin`
   - **Password:** `apple`

Run Cognos TM1 Web

The IBM Planning Analytics installation configures IBM Cognos TM1 Web to run with the provided version of the WebSphere® Liberty web application server.

Procedure

1. In a web browser, enter the following URL: `http://localhost:9510/tm1web/`

   You can use the "localhost" term to make the computer location default to use your current computer. Or you can explicitly enter the IP address or name for the computer where you installed Planning Analytics.
2. Depending on what other components you have launched, the Log In box values will usually be automatically entered for you. If they are not, you can enter or change those values as needed.
3. Click **Log In**.

Run Cognos TM1 Application Web

IBM Cognos TM1 Application Web is the web-based client and portal used to run planning applications built using IBM TM1 data.

About this task

Cognos TM1 Application Web is also used to launch IBM Cognos TM1 Performance Modeler and can be used to launch IBM Cognos Insight.

Procedure

1. In a web browser, enter the following URL: `http://localhost:9510/pmpsvc` where 9510 is the usual port used by Cognos TM1 Application Server. If you used a different port when you installed, enter that other value here.
2. Specify the configuration settings the Admin Host, server, types of clients, and the URL for Cognos TM1 Application Web.
3. Click **OK**.
4. Enter **admin** and **apple** for the **username** and **password** for the sample TM1 servers.
5. To complete the installation, dismiss the message about editing the following parameters in the `tm1s.cfg` file.

   - **AllowSeparateNandCRules**
   - **ForceReevaluationOfFeedersForFedCellsOnDataChange**
   - **DistributedPlanningOutputDir**

   You do not need to edit these parameters until you begin working with the clients.

   The portal is empty until you build an application using Cognos TM1 Performance Modeler or import an existing application.

Run Cognos TM1 Performance Modeler

IBM Cognos TM1 Performance Modeler is available as an unselected component of the IBM Planning Analytics installation. You launch Cognos TM1 Performance Modeler from the IBM Cognos TM1 Applications portal.

About this task

After Cognos TM1 Performance Modeler is installed, you can also start the program from the desktop icon that gets installed or from the Microsoft Windows Start menu. Click **Start** > **All Programs** > **IBM Cognos TM1 Performance Modeler** > **IBM Cognos TM1 Performance Modeler**.

Procedure

1. From the Cognos TM1 Applications portal, click the **Open Performance Modeler**  icon.

   Remember: Depending on your browser, you may see slightly different steps used to install downloaded components such as Cognos TM1 Performance Modeler.
2. Click **OK** with the **Open with IBM Cognos RCP Application Updater** selected on the `provagent.cogrcp_modeler` dialog box.
3. Click **OK** to dismiss the configuration settings message and complete the installation.

   You do not need to edit those parameters until you begin working with the clients.
4. Click the **Model Design** tab to see the GO_New_Stores data cubes and structure.
5. Click the **Application Design** tab to build a new application using GO_New_Stores.

   The *TM1 Performance Modeler* documentation provides details on building models.

Run Cognos Insight

IBM Cognos Insight is available as an unselected component of the IBM Planning Analytics installation. Cognos Insight can be used as a client for contributing to applications and also as a dynamic workspace builder for creating interactive contributing user experiences.

Procedure

1. To run Cognos Insight, complete one of the following actions:

   - From the Cognos TM1 Applications portal, click the Cognos Insight icon  .

     Or you can:
   - Right-click a node of an application that has been configured to use Cognos Insight.
   - You can also click the Cognos Insight desktop icon that gets installed.
   - Use the Microsoft Windows Start menu. Click **Start** > **All Programs** > **IBM Cognos Insight** > **IBM Cognos Insight**.
   - Cognos Insight can also be installed as a stand-alone component.

   Remember: Depending on your browser, you may see slightly different steps used to install downloaded components such as Cognos Insight.
2. Click **OK** with the **Open With IBM Cognos RCP Application Updater** selected on the `provagent.cogrcp_insight` dialog box.
3. If you see an Executable file warning, click **OK** to proceed with the installation.

What to do next

See the *Cognos Insight* documentation for details about creating Cognos Insight workspaces and using Cognos Insight as a client for contributing to applications.

Use Cognos TM1 Application Web

The IBM Cognos TM1 Application Web is a web-based client used to contribute to planning applications and to work with IBM TM1 Websheets.

Before you begin

You need a planning application before you can use Cognos TM1 Application Web. The application designer identifies which clients can be used with a particular application.

Tip: You can see which clients the designer made available for an application by right-clicking a node of the application when it is displayed in the IBM Cognos TM1 Application Web.

Procedure

1. In Cognos TM1 Application Web, click a planning application.
2. Click **Open Cognos TM1 Application** to launch the Cognos TM1 Application Web client.

   See the *TM1 Web*, *TM1 Architect and Perspectives*, and the *TM1 Applications* documentation for details on how to contribute to an application using Cognos TM1 Application Web.

Other Planning Analytics components

The IBM Planning Analytics installation makes many other components available and has many other ways to customize the installation.

See the following the documentation and components for details about other ways to install, deploy, and configure Planning Analytics:

Other Planning Analytics components

See the related documentation for details on these additional components for Planning Analytics.

IBM Planning Analytics Workspace Local

Use IBM Planning Analytics Workspace Local with IBM TM1 data sources to plan, create, and analyze your content.

IBM Planning Analytics Administration

Use IBM Planning Analytics Administration to monitor your IBM TM1 data sources.

IBM Planning Analytics for Microsoft Excel

Use IBM Planning Analytics for Microsoft Excel with IBM TM1 data sources to enter and write back values to TM1 cubes.

IBM Planning Analytics TM1 Web

Use the zero-footprint IBM Planning Analytics TM1 Web client to analyze and modify TM1 data from any supported web browser.

IBM Cognos TM1 Operations Console (Deprecated in v2.0.9)

The IBM Cognos TM1 Operations Console is a tool used by administrators to monitor the activity of TM1 servers on the network. See *TM1 Operations* for more information.

Scorecarding with Planning Analytics

Scorecarding with Planning Analytics integrates scorecarding and strategy management capabilities into Planning Analytics to provide better integration of performance management with planning. You can create scorecard solutions that contain interactive impact diagrams, strategy maps, and custom diagrams that monitor your key performance indicators (KPIs). For more information, see *TM1 Performance Modeler*.

Planning Analytics integration with other IBM Cognos software

IBM Cognos Analytics security

You can configure the IBM TM1 Server to authenticate users using IBM Cognos Analytics security.

IBM Cognos TM1 Package Connector Removed in v2.0.8

The IBM Cognos TM1 Package Connector is used to import IBM Cognos Framework Manager packages. See *TM1 TurboIntegrator* for more information.

IBM Cognos Analytics reporting

You can configure IBM Cognos Analytics to access TM1 servers and cubes from Cognos Analytics applications such as Cognos Report Studio and Cognos Query Studio.

iWidgets in IBM Cognos Workspace

You can display IBM Cognos TM1 Web data objects, such as cube views, charts, and Websheets as iWidgets in IBM Cognos Workspace.

For more information, see Chapter 14, “Integrating Planning Analytics Local with IBM Cognos software,” on page 171.

Chapter 7. Installing TM1 Server components on Planning Analytics 2.1.7 and earlier

You can install TM1 Server components for Planning Analytics 2.1.7 and earlierTM1 Server components for Planning Analytics 2.1.7 and earlier using the installation program.

You can install the following Data Tier components on Planning Analytics 2.1.7 and earlier:

- TM1 Server
- TM1 Admin Server
- TM1 Tools
- TM1 Samples
- Planning Analytics Administration agent

TM1 Server installation

You can install and configure the IBM TM1 Admin Server and IBM TM1 Server on a dedicated computer running either the Microsoft Windows, UNIX, or Linux operating system.

The TM1 Admin Server can reside on the same computer as the TM1 Server or another computer on your network.

The server components can be installed on a 64-bit computer running Microsoft Windows or Linux operating systems.

Server components

The TM1 Server components include the following:

- TM1 Admin Server (required)
- TM1 Server (required)
- TM1 Tools (optional)

These components are grouped together under the TM1 Data Tier in the installation program.

You can install any combination of server components without installing any client components. It is not required to update clients when you update the server.

IBM Cognos Configuration

By default, IBM Cognos Configuration is also installed with the required components on Windows and Linux as the primary tool for managing the TM1 Admin Server and TM1 Server. This tool provides a user interface for stopping and starting the server components.

Installing IBM TM1 Server on Windows

You can install the TM1 Server server components on 64-bit computers running the Microsoft Windows operating system. Use this type of installation to install and run the TM1 Server on a dedicated computer that remote users can access.

Install IBM TM1 Server components on Windows

Install the IBM TM1 Server components on a computer that uses Microsoft Windows.

Procedure

1. Choose the installation program that matches the type of computer being used for the TM1 Server:
2. Right-click the `issetup.exe` file and click **Run as Administrator**.
3. Follow the directions in the installation wizard and advance to the **Component Selection** page.
4. Clear all the components. By default, all components are initially selected.
5. Expand the **TM1 Data Tier** and select the following components:
   - **TM1 Server**
   - **TM1 Admin Server**
   - **TM1 Tools** (optional)
   - **TM1 Samples** (optional)
6. Follow the directions in the installation wizard to complete the installation.
7. In the **Finish** page of the installation wizard, click **Finish**.

Use Cognos Configuration to start TM1 servers on Windows

Before you can use the IBM TM1 Server, you need to start the IBM TM1 Admin Server in IBM Cognos Configuration. Servers that are running in a Microsoft Windows environment are referred to as services.

About this task

By default, Cognos Configuration registers TM1 Server components to run as Windows services using the predefined Local System account. However, the TM1 components should be run as a specific user.

Important: Change the following TM1 services that are created by Cognos Configuration so that the services run under a specific user account on Microsoft Windows:

- TM1 Admin Server
- TM1 Server

For details, see, " User accounts for running TM1 services on Windows" on page 15.

Procedure

1. If it is not already running, start the configuration tool by clicking **Start** > **All Programs** > **IBM Cognos TM1** > **IBM Cognos Configuration**.

   Remember: Right-click and use **Run as Administrator** on Windows and Windows Server operating system software.
2. In the Cognos Configuration **Explorer** pane, expand **Local Configuration** > **Environment.**
3. Right-click each server that you want to start and select **Start**:
   a) **TM1 Admin Server**

      Tip: The Cognos Configuration tool prompts you to save any edits made to the configuration settings. This process will take longer the first time you save a setting as the cryptographic settings and other actions take place for the first time. Click **Yes** in response to the message asking you to save the settings. You will also see this type of message when you close Cognos Configuration.
4. Expand the **Data Access** > **TM1 Server** node and right-click each TM1 sample database server that you want to start and select **Start**.

   For example, start the provided sample databases:
   a) **SData**
   b) **Planning Sample**
   c) **GO_New_Stores**
5. Click **File** > **Save**.

6. Edit the entries for the TM1 components in Windows Services so that they run under a specific user account.

   For details, see, “Changing TM1 services to run as a specific user account on Windows” on page 43.

Changing TM1 services to run as a specific user account on Windows

When you use IBM Cognos Configuration to manage TM1 services, you need to change the default user account that runs the Microsoft Windows services for the TM1 Admin Server and any TM1 servers that you start with Cognos Configuration. By default, Cognos Configuration registers these services under the predefined Microsoft Windows Local System account. However, these services should be changed to run as a specific user account.

Before you begin

Review the required account privileges for using a user account other than Local System account. For details, see “ User accounts for running TM1 services on Windows” on page 15.

About this task

Use Windows Services to change the user account for a TM1 component that is configured to run as a service.

Procedure

1. Open IBM Cognos Configuration.
2. Expand the **Explorer** > **Local Configuration** tree:
   a) Expand the **Local Configuration** > **Environment** node.
   b) Expand the **Data Access** > **TM1 Server** node.
3. Right-click on each TM1 component you want to change and select **Stop**.
   - **TM1 Admin Server**
   - *TM1 Server name* - the name for each server you have in Cognos Configuration.

   Tip: You don't need to stop the **IBM Cognos TM1** component in **IBM Cognos TM1 services**.
4. Open Windows Services.
5. Locate the TM1 component that you want to update and change the user account for the Windows service that runs it:
   a) Right-click on the service, select **Properties** and then click the **Log On** tab.
   b) Enter a new user name and password for the service.
   c) Repeat these steps for any other TM1 component running as a Windows service that you want to change.
6. Close Windows Services.
7. In Cognos Configuration, right-click on the item and select **Start** to restart each service that you changed.
8. Close Cognos Configuration.

Installing IBM TM1 Server Linux

You can install the TM1 Server components on a 64-bit computer that is running a Linux operating system. Use this type of installation to install and run the TM1 Server on a dedicated computer that remote users can access.

Prerequisites

As of IBM Planning Analytics version 2.0.2, IBM TM1 Server uses `nmap()` or `nunmap()` for large block allocation on Linux. Therefore, you must be aware of the `vm.max_map_count` limit. By default on Linux, the `vm.max_map_count` is 65530 and this count is insufficient when large data models are used.

When the limit of 65530 is reached, you might receive an error message that TM1 Server is unable to allocate memory for a large block or a memory leak might occur.

To update the `vm.max_map_count`, run the following command as root:

```
sysctl -w vm.max_map_count=655300
```

To set this value permanently, update the `vm.max_map_count` setting in your `/etc/sysctl.conf` file.

To verify the setting, after you restart your TM1 Server, run the following command:

```
sysctl vm.max_map_count
```

Managing components after installation

After you install, you can use the start and stop scripts that are provided with the installation to manage your TM1 Server. You can also use IBM Cognos Configuration to manage the servers you want to run in some cases.

TM1 Server on Linux requires the Java shared object libjsig.so to be in the LD_LIBRARY_PATH

As of TM1 Server version 11.8.2 (Planning Analytics 2.0.9.3), the TM1 Server executable (`tm1s.exe`) requires the Java shared object `libjsig.so` to be in the server's `LD_LIBRARY_PATH` to successfully start up or shut down a TM1 Server on Linux.

The TM1 Server requires Java to support the `ExecuteJavaN` or `ExecuteJavaS` TurboIntegrator functions. Additionally, with the later versions of Java 8, the TM1 Server needs to be able to shut down the JVM via the `libjsig.so` library. This library is required whether you use `ExecuteJavaN` or `ExecuteJavaS` functions or not. The link to the `libjsig.so`, which is necessitated to support the noted Turbointegrator functions, is also required to successfully start or stop the TM1 Server. If the library is missing, you cannot start or stop the server.

The `start_tm1.sh` script has been modified to find the required Java shared object `libjsig.so` by looking for the `JAVA_HOME` environment variable and loading the required library according to processor architecture.

Depending on your processor architecture, `libjsig.so` is located in one of these locations:

- `${JAVA_HOME}/lib/amd64/libjsig.so` for x86_64
- `${JAVA_HOME}/lib/s390x/libjsig.so` for s390x
- `${JAVA_HOME}/lib/ppc64le/libjsig.so` for ppc64le

It is important to have Java 8 installed and the `JAVA_HOME` environment variable set, otherwise the TM1 Server cannot start up or shut down.

Install IBM TM1 Server components on Linux

You can use the installation wizard to select the server components for installation and the installation location on your computer.

For a complete list of supported Linux operating systems, create a detailed system requirements report for IBM Planning Analytics Local software by using the Software Product Compatibility Reports tool (https://www.ibm.com/software/reports/compatibility/clarity/index.html).

Before you begin

When you install TM1 Server on Linux, configure the components to run as a user with appropriate permissions for TM1 binary files and TM1 databases.

Note: Only the TM1 Server components can run on Linux. You cannot run TM1 clients on Linux.

Complete the following prerequisites:

- Familiarize yourself with TM1 terms and concepts.

  For more information, see the *TM1 for Developers* documentation.
- Determine which components you want to install and how they must be distributed across your hardware environment.

  For more information on how to design the optimal TM1 environment, see Chapter 3, "Planning Analytics Local architecture," on page 19 and Chapter 4, "Deploying Planning Analytics Local," on page 27.
- Determine your hardware and software requirements.

  Review a list of supported environments, including operating systems, patches, web servers, and web browsers, by creating a detailed system requirements report for IBM Planning Analytics Local software with the Software Product Compatibility Reports tool (https://www.ibm.com/software/reports/compatibility/clarity/index.html).

  – If you plan to import data from another relational database, install your database software first.

  – If you are running on Red Hat Enterprise Linux, install the required runtime C/C++ libraries that are listed in the **Prerequisites** tab of the **Detailed Systems Requirements Report** or verify that they are already available. Additional libraries might need to be installed, depending on your version of Red Hat Enterprise Linux. For example, on Red Hat Enterprise Linux (RHEL) Server 7, run the following command to install additional libraries:

  ```
  yum -y install libstdc++ libstdc++.i686 motif libXm.so.4 libXtst
  ```
- **Optional:** Install and configure the TM1 components to run as a user with appropriate permissions for TM1 binary files and TM1 databases.

Procedure

1. Go to the location where the installation files were downloaded and extracted, or insert the product disk.
2. Go to the operating system directory and then type the following command:

   ```
   ./issetup
   ```
3. Follow the directions in the installation wizard and copy the required files to your computer.
4. Select the components that you want to install. By default, all components are installed.
5. In the **Finish** page of the installation wizard, click **Finish**.

Use Cognos Configuration on Linux

You can IBM Cognos Configuration to configure your TM1 components and to start and stop services.

Before you begin

You must have set the *JAVA_HOME* environment variable before you can start IBM Cognos Configuration. Ensure that the *JAVA_HOME* environment variable is set to a valid JRE location.

To use IBM Cognos Configuration to start and stop your IBM TM1 Server on UNIX, follow these steps.

Procedure

1. Go to the *install_location*/bin64 directory and then type

   ```
   ./cogconfig.sh
   ```
2. In the **Explorer** window, click **Local Configuration** > **Environment**.
3. Right-click **TM1 Admin Server**, and click **Start**.
4. Under **Data Access** > **TM1 Server**, right-click a server, and click **Start**.

Use scripts to start a TM1 Server on Linux

You can use the start and stop scripts that are provided with the installation to start and stop your IBM TM1 Server on Linux.

About this task

On Linux, you can use the following commands and scripts to start and stop TM1 Server.

- `startup_tm1admsrv.sh` - start TM1 Admin Server
- `shutdown_tm1admsrv.sh` - shut down TM1 Admin Server
- `startup_tm1s.sh` - start TM1 Server
- `tm1srvstop.exe` - utility for stopping a TM1 Server
- `shutdown_tm1s.sh` - alternate method to shut down a TM1 Server

Character Encoding for TM1 Object Names on UNIX and Windows Systems

The following guidelines are related to ensuring correct and consistent character encoding in your TM1 object names for objects such as cubes, views, dimensions, and subsets.

Moving TM1 Databases Between Windows and UNIX Systems

Do not manually move and use TM1 database files from a Microsoft Windows system to a UNIX system (or from UNIX to Windows) when your TM1 object names contain non-ASCII characters (characters beyond the original 128 ASCII character set).

Manually moving files is an issue because of the possible incompatible character encoding or mapping between these two platforms. The Windows operating system stores directory and file names in UTF-16 character encoding, while the UNIX operating system can store names using different character encodings, depending on which locale is currently being used.

For example, TM1 object names for cubes and dimensions that include non-ASCII characters would not display correctly in TM1 client applications if the TM1 database files were copied from one platform and run on another where different character encoding is used.

Instead of manually moving files, use the tm1xfer utility to move TM1 data between different platforms.

Use the tm1xfer utility

The tm1xfer utility compresses and moves TM1 server objects from one platform to another platform while preserving mixed case names for objects on both Microsoft Windows and UNIX platforms. For more information, see the "tm1xfer" topic in *TM1 Operations*.

Use the same locale as the UNIX system when starting a TM1 Server with non-ASCII characters in the name

If your TM1 object names (for cubes, views, dimensions, subsets, etc.) include non-ASCII characters, use the same locale when starting up a TM1 Server on a UNIX system.

This ensures that TM1 object names and the related TM1 directory and file names on the UNIX system always use the same character encoding. Starting the TM1 Server under a different locale than previously used could cause TM1 object names to display incorrectly if the names were originally created and stored in a different locale.

For example, TM1 object names for cubes and dimensions that are saved when the server is running under the en_US locale might not display correctly if the server is re-started using the `ja_JP` locale.

TM1 language configuration

IBM Planning Analytics automatically configures language for the IBM TM1 Server, client user interfaces, and messages by detecting the current language of the operating system user account or web browser where they are running. You can override this automatic configuration and configure TM1 Server to use a specific language from any of the supported languages.

For details about supported languages, see "TM1 language codes" on page 48.

Automatic detection of language

TM1 uses the following process to automatically detect and configure language at runtime:

1. The TM1 Server and clients that run in Microsoft Windows try to detect and use the language that is configured in the locale of the operating system for the current user. On Windows, this is configured with **Regional and Language Options**. The detected language will be used if it matches one of the supported languages.

   Important: By default, any TM1 Server that you start with IBM Cognos Configuration is initially configured to run as a Windows service using the Windows Local System reserved user account. If you want the TM1 Server to use the language based on a specific user account, change the service to run as that user and configure the language for the user with the Windows **Regional and Language Options**. For details, see "Changing TM1 services to run as a specific user account on Windows" on page 43.
2. The server and client components also check for an override based on the TM1 **Language** configuration parameter:
   - The server checks the **Language** parameter in the `Tm1s.cfg` configuration file. If a valid language code is configured, that language is used for the server messages.
3. If the language configured in any of the above does not match a valid supported language, English is used.

Language configuration for TM1 components

Languages are set separately for the following TM1 components.

Table 14. Summary of language configuration for TM1 components

Component	Language Configuration
TM1 Server	Use the Language parameter in the `Tm1s.cfg` file to configure a specific language for a TM1 Server. For details, see "Configuring language for the IBM TM1 Server" on page 49

Table 14. Summary of language configuration for TM1 components (continued)	
Component	**Language Configuration**
TM1 Web	Use the language settings in your web browser to select a specific language for TM1 Web. For details, see "Configuring web browser language for TM1 Web" on page 169

TM1 language codes

The following table summarizes the language codes for the supported languages in IBM TM1.

Table 15. Language codes	
Language	**Code**
Brazilian Portuguese	bra
Croatian	hrv
Czech	csy
Chinese (Simplified)	sch
Chinese (Traditional)	tch
Danish	dan
Dutch	nld
German	deu
Finnish	fin
French	fra
Hungarian	hun
Italian	ita
Japanese	jpn
Kazakh	kaz
Korean	kor
Norwegian	nor
Polish	pol
Romanian	rom
Russian	rus
Spanish	esp
Slovenian	slv
Swedish	sve
Thai	tha
Turkish	trk

Configuring language for the IBM TM1 Server

Use the **Language** parameter in the `Tm1s.cfg` file to configure a specific language for the IBM TM1 Server.

About this task

The **Language** configuration parameter for the TM1 Server controls the language for messages generated by the server. The parameter also applies to the user interface of the dialog box when you run the server as an application instead of a Windows service.

For more details about the TM1 Server **Language** parameter, see Language parameter in the Tm1s.cfg file.

Note: If you want the TM1 Server to use a language based on a user account instead of the **Language** parameter, change the Microsoft Windows service that runs the TM1 Server to run as a specific user. For details, see "Changing TM1 services to run as a specific user account on Windows" on page 43.

Procedure

1. Use a text editor to open the TM1 Server configuration file, `Tm1s.cfg`.

   For location details, see "Location of the tm1s.cfg file" on page 232.
2. Edit or add the **Language** parameter with the language code you want to use.

   For example:

   ```
   Language=deu
   ```

   For a list of supported language codes, see "TM1 language codes" on page 48.
3. Save and close the `Tm1s.cfg` file.
4. Restart the TM1 Server.

Advanced TM1 Admin Server and TM1 Server configuration

You can use advanced configuration to customize IBM TM1 Server for your specific business requirements and environment after you have completed the initial installation steps.

Creating a new empty TM1 Server in Cognos Configuration

You can use IBM Cognos Configuration to create a new empty IBM TM1 Server.

About this task

These steps create the `tms.cfg` configuration file and other required files for a new empty TM1 Server. Perform these steps only on an empty directory that does not contain any other files.

Procedure

1. Use your operating system to create an empty folder for the new TM1 Server files.
2. Open IBM Cognos Configuration.
3. In the **Explorer** panel, under **Data Access**, right click **TM1 Server**, and click **New Resource** > **TM1 Server Instances**.
4. In the **Name** box, enter a name for your server.
5. In the **Type** box, select **TM1 Server instance** and click **OK**.

   The new server is added under the **TM1 Server** node and the properties for it are displayed in the **TM1 Server instances - Resource Properties** list.
6. In the **Resource Properties** list, click the entry box and click the edit icon.

7. Enter or browse to the path for the empty folder where you want to create the new TM1 Server.

   Tip: Do not include the file name in this path. You only need to select the folder.
8. Click **Select**.
9. Click **File** > **Save**.

   A new `tms.cfg` file is automatically created in the folder. Values for the following configuration parameters are automatically added to the file.

   - The **`ServerName`** parameter is set to the server name that you specified.
   - The **`DataBaseDirectory`** parameter is set to the data directory that you specified.
   - The **`PortNumber`** parameter is set to a random auto-generated port number.
10. In the Cognos Configuration **Explorer** panel, right-click the new server and click **Start**.

    The basic files for the new TM1 Server are created in the folder.
11. To test the new TM1 Server, start TM1 Architect and log in to the database with user name `admin` and no password.

Adding an existing TM1 Server in Cognos Configuration

You can manage an existing IBM TM1 Server by adding it to IBM Cognos Configuration.

Before you begin

This procedure requires that you have an existing TM1 data directory with a valid `tm1s.cfg` file.

Procedure

1. Open IBM Cognos Configuration.
2. In the **Explorer** panel, under **Data Access**, right click **TM1 Server**, and click **New Resource** > **TM1 Server Instances**.
3. In the **Name** box, enter the same name that is set for the **`ServerName`** parameter in the `tm1s.cfg` file.
4. In the **Type** box, select **TM1 Server instance** and click **OK**.

   The new server is added under the **TM1 Server** node and the properties for it are displayed in the **TM1 Server instances - Resource Properties** list.
5. In the **Resource Properties** list, click the box to the right of the **TM1 Server configuration path** and click the edit icon.
6. Enter or browse to the path for the existing TM1 data directory.

   Tip: Do not include the file name in this path. You only need to select the folder.
7. Click **Select**.
8. Click **File** > **Save**.
9. In the Cognos Configuration **Explorer** panel, right-click the new server and click **Start**.
10. To test this TM1 Server, start TM1 Architect and log in to the database.

Specifying the location of the Cognos TM1 Admin Host

You specify the location of the IBM Cognos TM1 Admin Host differently for clients (user interfaces) and remote servers.

About this task

The Admin Host is the computer where the Cognos TM1 Admin Server is running.

Procedure

To specify the Admin Host with which remote servers register, use one of the following methods:

- Edit the **AdminHost** parameter in the `Tm1s.cfg` file.
- Use the -v command-line parameter when you bring up the Windows version of the IBM TM1 Server.

For information, see "The tm1s.cfg configuration file" on page 232.

Specifying multiple Cognos TM1 Admin Hosts

You can configure an IBM Cognos TM1 client to reference multiple Admin Hosts by separating host names with semicolons.

About this task

A client that specifies multiple Admin Hosts can access any TM1 servers that are registered with the Cognos TM1 Admin Servers on the specified hosts.

Procedure

To specify multiple Admin Hosts, separate the host names with semicolons:

Changing default port numbers for TM1 Admin Server

If you change the default values for the **TM1 Admin Server host port number** or the **TM1 Admin Server SSL port number** in IBM Cognos Configuration, you need to manually update the new values in the UNIX and Microsoft Windows services file across all the affected computers in your environment. This operating system file is not updated by TM1.

About this task

Update the operating system services file on any computer running TM1 components that need to communicate with the TM1 Admin Server. For example:

- IBM TM1 Server
- TM1 desktop clients such as Cognos TM1 Architect or Cognos TM1 Perspectives
- TM1 Web (web server only)
- Custom TM1 applications created with the TM1 API

Procedure

1. Locate and open the services file for the specific operating system.
   - For UNIX, the typical location of the services file is:

     `/etc/services`
   - For Windows, the typical location of the services file is:

     `C:\WINDOWS\system32\drivers\etc\services`
2. Add or edit the following entries in the services file with the new port numbers. For example:

   `tm1adminsvr` **`5400`**`/tcp # Added by IBM Cognos TM1`

   `tm1admsrv_ssl` **`5403`**`/tcp # Added by IBM Cognos TM1`
3. Save and close the file.
4. Repeat these steps for each computer running TM1 components that communicate with the TM1 Admin Server.
5. Edit the `tm1web_config.xml` file to specify the port number of the Admin Server.

- If you are using TLS, edit the AdminHostSSLPort parameter.
- If you are not using TLS, edit the AdminHostPort parameter.

The `tm1web_config.xml` file is located in `<TM1 install location>\webapps\tm1web\WEB-INF\configuration\`.

For more details about the `tm1web_config.xml` file, see "Editing the Planning Analytics Spreadsheet Services configuration file" on page 159 and "Planning Analytics Spreadsheet Services/TM1 Web configuration parameters" on page 152.

Configuring TM1 Server to use IPv6

By default, TM1 uses IPv4. To use IBM TM1 Server with internet protocol version 6 (IPv6), you configure a combination of TM1 parameters and an operating system environment variable.

About this task

You can configure TM1 to use one of the following modes to specify which internet protocol that you want TM1 to use with your network.

ipv4
Default setting. Used for IPv4 networks.

dual
Used to transition from IPv4 to IPv6. Both protocols are supported.

ipv6
Used for IPv6 networks.

Procedure

1. Configure the TM1 Admin Server:
   a) On the computer where the TM1 Admin Server is running, open Cognos Configuration.
   b) Expand the **Local Configuration** > **Environment** node and click **TM1 Admin Server**.
   c) In the **Component Properties** pane, set the **TM1 Admin Server IP support** option to either **Dual (IPv4 and IPv6)**, **IPv4**, or **IPv6**.
   d) If needed, add the IPv6 address to the `/etc/hosts` operating system file on UNIX and Microsoft Windows. In some cases, depending on your network environment and DNS configuration, you may need to perform this additional step to successfully run the TM1 Admin Server and TM1 Server in IPv6 mode.
   e) Add the **TM1_IPVersion** environment variable as described in step 3.
2. Configure the TM1 Server:
   a) On the computer where the TM1 Server is running, open the `tm1s.cfg` file.
   b) Set the **IPversion** parameter to the IP mode that you want to use.

      For example, to specify that your network uses the IPv6 protocol, add the parameter as follows:

      `IPVersion=`**`ipv6`**

      For more details, see "IPVersion" on page 260.
   c) If needed, add the IPv6 address to the `/etc/hosts` operating system file on UNIX and Microsoft Windows.
   d) Add the **TM1_IPVersion** environment variable as described in step 3.
3. Add the **TM1_IPVersion** environment variable to the operating system for each computer that communicates directly with the TM1 Admin Server or TM1 Server.

   Use the following variable name and value format:

   `TM1_IPVersion=`*`ip_mode`*

where *ip_mode* can be one of the following values:

- `Dual`
- `IPv6`
- `IPv4`

The **`TM1_IPVersion`** environment variable is required on any computer that is running any of the following TM1 components:

- TM1 Admin Server
- TM1 Server
- TM1 administrator tools
- TM1 Web (web server only)
- TM1 Application server
- TM1 clients:
  - Cognos TM1 Architect
  - Cognos TM1 Perspectives
  - Cognos TM1 Performance Modeler
  - Cognos Insight
- Custom applications that use the Cognos TM1 API.

Note: You do *not* need to set this environment variable on computers that use only a web browser to access TM1 Web.

4. Restart any TM1 servers that you modified.
5. Test the connection between your TM1 server and client applications.

Monitoring TM1 Server license usage

IBM TM1 Server generates IBM Software License Metric Tag (SLMT) files. Versions of IBM License Metric Tool that support SLMT files can generate License Consumption Reports that provide information about license usage for your TM1 Server.

For complete details on installing and using IBM License Metric Tool, see IBM License Metric Tool on IBM Knowledge Center.

The initial generation of SLMT files is determined by the `LicenseMetricTime` Tm1s.cfg parameter. When the generation of SMLT files is enabled with `LicenseMetricTime`, a new SLMT file is created every 24 hours.

The AUTHORIZED_USER metric

The AUTHORIZED_USER metric can have the following subtypes:

- IBM Cognos Enterprise Planning TM1 **Modeler** - Any user that is a member of the Admin, DataAdmin, or SecurityAdmin user groups on the TM1 Server.
- IBM Cognos Enterprise Planning TM1 **Contributor** - Any user that is not a Modeler, but is assigned to a group with write access to at least one cube on a TM1 Server. A group is defined to have write access for a cube if the group is assigned one of the following security permissions for the cube: Write, Lock, Reserve, or Admin.
- IBM Cognos Enterprise Planning TM1 **Explorer** - Any user that is not a Modeler or a Contributor.

For each of these subtypes, the AUTHORIZED_USER metric records the number of users who have logged on to the TM1 Server during the period identified in the SLMT file.

Location of Software License Metric Tag files

On all operating systems, the SLMT files are created in the `slmtag` directory at the same level as the `bin64` directory in the TM1 install location. For example, `C:\Program Files\IBM\cognos\tm1_64\slmtag`. All SLMT files use the .slmtag file extension.

Troubleshooting

To help you understand how the number of Modelers, Contributors, and Explorers are calculated when producing an SLMT file, the TM1 server also produces an identically named file, but with the .slmtagraw file extension. These .slmtagraw files are created in a folder named `slmtagraw`, which exists at the same level as the `slmtag` folder.

The .slmtagraw files are not consumed by the IBM License Metric Tool. They exist solely to provide you with insight regarding metric calculation. For instance, in the following excerpt from a .slmtagraw file you can see that the user named Planner is a Contributor. The user belongs to the BUDGET PLANNER group, and that group has WRITE permission on the plan_BudgetPlan cube.

```
<Metric LogTime="2016-10-18T14:45:20Z">
    <Type>GROUP_INFO</Type>
    <SubType>GROUP_DETAIL</SubType>
    <Value><![CDATA[Group BUDGET PLANNER is a contributor
              group: Group BUDGET PLANNER has
              WRITE permission on cube plan_BudgetPlan.]]>
      </Value>
    <Period>
        <StartTime>2016-10-18T14:44:50Z</StartTime>
        <EndTime>2016-10-18T14:45:20Z</EndTime>
    </Period>
</Metric>

<Metric LogTime="2016-10-18T14:45:20Z">
    <Type>USER_INFO</Type>
    <SubType>MODELER</SubType>
    <Value><![CDATA[User Planner is a Contributor.
               Belongs to group BUDGET PLANNER.
               Group BUDGET PLANNER has WRITE permission
               on cube plan_BudgetPlan.]]>
       </Value>
    <Period>
        <StartTime>2016-10-18T14:44:50Z</StartTime>
        <EndTime>2016-10-18T14:45:20Z</EndTime>
    </Period>
</Metric>
```

IBM TM1 Server tools installation

TM1 Servertools and utilities are installed when the **TM1 Data Tier** > **TM1 Tools** component is selected during installation.

These tools are optional components that you can choose not to install by clearing the **TM1 Tools** component check box during installation. These tools are installed in *<install_location>/bin64*.

The tools that are installed in this group include:

TM1RunTI
: TM1RunTI is a command line interface tool that can initiate a TurboIntegrator process from within any application capable of issuing operating system commands.

  Location: *<install_location>/bin64*

  Filename: `tm1runti.exe`

  See the *Editing Advanced Procedures* chapter of *TM1 TurboIntegrator*.

tm1xfer
: The tm1xfer utility compresses and moves IBM TM1 server objects from one platform to another platform while preserving mixed case names for objects on both Microsoft Windows and UNIX platforms.

Location: *<install_location>/bin64*

Filename: `tm1xfer.cmd` and `tm1xfer.jar`

See the *Tools and Utilities* chapter of *TM1 Operations*.

TM1 Top

TM1 Top monitors a single TM1 server. Installed by default. See the *System Performance and Monitoring* chapter of *TM1 Operations* for details.

odbc_test

The odbc_test tool is used to diagnose and test an IBM TM1 ODBC connection on UNIX. See the *Tools and Utilities* chapter of *TM1 Operations* for details.

TM1 sample databases installation

IBM TM1 samples illustrate product features and technical and business best practices. You can also use them for learning the product, testing, and troubleshooting.

TM1 samples overview

TM1 samples are available for a variety of uses and are optimized for different clients. Some of the samples are ready to use right after installation while others require extra steps to use them. TM1 samples are installed in *TM1_installation_location*`\samples\tm1`.

Important: If you are upgrading Planning Analytics Local and don't need to keep your existing TM1 samples, then delete the files in *TM1_installation_location*`\samples\tm1` before you install Planning Analytics Local.

The product samples are installed as follows:

`SData`, `Planning Sample`, `GO_New_Stores`, `GO_Scorecards`, `Proven_Techniques`, and `24Retail`

These samples are installed by default in the *TM1_installation_location*`\samples\tm1` location.

`SData` and `Planning Sample` were specifically designed to be used with Planning Analytics.

To use them, start each sample database in Cognos Configuration after installation.

The `24Retail` sample represents a fictitious company, named 24Retail, that sells cellphones, computers, and other widgets. Its data can be used by Planning Analytics Workspace, Planning Analytics for Microsoft Excel, Architect, and TM1 Web.

See "Using the sample databases installed by default" on page 56 for more information.

`Rules_Guide_Data`, `TI_Data`

These samples are designed specifically for TM1. To use them you must first add each server in Cognos Configuration and then start them individually. They are installed into the *TM1_installation_location*`\samples\tm1` location.

`GO_Contributor.zip`, `sample_outdoors.zip`, `advanced_techniques.zip`, `greatoutdoors.zip`, and `GreatOutdoorsSales.zip`

These samples are installed only if you select the **TM1 Samples** component in the TM1 Data Tier in the installation wizard.

The `GreatOutdoorsSales.zip` samples require you to restore a database and connect to the database using an OLAP data source. The database files are installed with the samples, and are provided for IBM Db2®, Microsoft SQL Server, and Oracle databases.

The other samples are based on `.csv` files for their content and do not require a database to be restored.

On Linux, use the `./startup_tm1s.sh` command to start sample database servers.

Using the sample databases installed by default

Sample databases are installed by default and can all be started from Cognos Configuration

Procedure

1. In Cognos Configuration, right-click the database you want to start and select **Start**.
2. To open the databases in a client, use the default username of `admin` and password of `apple`.

Using the Great Outdoors Sales server samples based on the sample database

The Great Outdoors Sales sample uses data from a database. To use this sample you must restore the database, create an ODBC connection to the database, and then add the sample server to your system.

The database is provided for IBM Db2, Microsoft SQL Server, and Oracle.

The sample database and the Cognos TM1 server using the database are installed with Cognos TM1 server in the *tm1_location*`/webcontent/samples/datasources` folder.

When you create your ODBC connection, use `GOSALESDW` as the data source name. On Microsoft Windows operating systems, create the ODBC connection as a System DSN.

Restoring backup files for IBM Db2

Use the script that is provided to restore sample databases on IBM Db2.

To set up the sample database, you must extract the `GS_DB tar.gz` file, customize a configuration file, and run the setup script.

Procedure

1. Go to the *tm1_location*`/webcontent/samples/datasources` folder.
2. Extract the `GS_DB.tar.gz` file and retain the original directory structure.

   If you use WinZip to extract the `GS_DB.tar.gz` file on a Microsoft Windows operating system, ensure that the **`TAR file smart CR/LF conversion`** option is not selected.
3. On Linux and UNIX operating systems, modify the file permissions on the `setupGSDB.sh` file so that it is executable.

   For example,

   ```
   chmod u+x setupGSDB.sh
   ```
4. If you want to change the sample configuration file to use settings other than the default values, edit the `GOSalesConfig` file.

   The configuration file on Windows is `GOSalesConfig.bat`. The configuration file on Linux and UNIX is `GOSalesConfig.sh`.

   The `GOSalesConfig` configuration file contains the default configuration options that are used when creating the GOSALES data. The default configuration settings are listed in the following table

Table 16. Default configuration settings for GOSALES data

Configuration Setting	Default	Description
GOSALES_INST	GS_DB	Used to set the name or alias of the database.

Table 16. Default configuration settings for GOSALES data (continued)		
Configuration Setting	**Default**	**Description**
GOSALES_CREATEDB		Optional: Causes an existing database with the same name to be dropped.
GOSALES_DB_TERRITORY	US	When creating a database this is the territory of the UTF-8 database that is created.
GOSALES_BP GOSALES_TS	GOSALES_BP GOSALES_TS	Optional: Enter the buffer pool and tablespace name, if these are to be created by the script.
GOSALES_GRANTEES	GOSALES, DB2ADMIN	Enter the list of users, groups or PUBLIC that will have CONTROL permissions for the GOSALES, GOSALESHR, GOSALESMR and GOSALESRT schemas. This string needs to follow the syntax of the GRANT command.
GOSALESDW_GRANTEES	GOSALESDW DB2ADMIN	Enter the list of users, groups or PUBLIC that will have CONTROL permissions for the GOSALESDW schema.
GOSALES_DPF	N	Change to 'Y' if installing a database partitioned environment (DPF)
GOSALES_SCHEMA GOSALESHR_SCHEMA GOSALESMR_SCHEMA GOSALESRT_SCHEMA GOSALESDW_SCHEMA	GOSALES GOSALESHR GOSALESMR GOSALESRT GOSALESDW	Enter the names to be used for each schema.

By default, the GS_DB database name is used and permissions are granted to the DB2ADMIN (Linux, UNIX, Windows) and GOSALES users.

5. To run the `setupGSDB` script in interactive mode, run following command:
   - On Windows computers, in an IBM Db2 command window, change to the `GS_DB\win` directory and run the `setupGSDB.bat` script.
   - On UNIX computers, from a shell prompt, source the `db2profile`, change to the `GS_DB/unix` directory, and run the `setupGSDB.sh` script.

   The script displays a summary of your choices before you commit to changes to your environment. If you approve the choices, press Enter.
6. To run the `setupGSDB` script from the command line, run the following command:
   - On Windows computers, run the `setupGSDB.bat` script.
   - On UNIX computers, run the `setupGSDB.sh` script.

You can run the setupGSDB script with the following options:

Table 17. setupGSDB options

Option	Description
-createdb	Creates the database. This option drops any existing database with the same name. It creates the required buffer pool and table space.
-database database name	Specifies the name of the database. This value overrides the default value of GS_DB.
-userid administration_user_ID	Specifies the name of the Db2 administrator user ID that is used to create the database.
-password administration_user_ID	Specifies the password for the Db2 administrator user ID.
-noprompt	Indicates that no prompt will display. This option runs the script in silent mode. Any missing information causes the script to fail. You will not be prompted for any confirmations.

For example, if you are an IBM Db2 administrator and want to create the default GS_DB database on the local node, use the following command:

```
setupGSDB -createDB -noprompt
```

If you want to create the tables in an existing database named SAMPLE, and you want to use the administrator user ID db2admin, run the following command:

```
setupGSDB -database SAMPLE -userid db2admin
```

The script prompts you for the password when it connects to the database. The script will replace any tables that already exist in the database, unless you choose to drop the database.

7. If the GS_DB sample database is installed on a remote server in your environment, you can link to it by cataloguing the remote database on your local computer and then running the setup script locally.
   a) If the sample database does not yet exist on the remote server, create it by using **CREATE DATABASE** command.

      The database requires a UTF-8 codeset and a default table space with a pagesize of 16 KB or larger. For example, on the remote server, create the database by running the following command:

      ```
      CREATE
      DATABASE GS_DB USING CODESET UTF-8 TERRITORY US PAGESIZE 16k
      ```

   b) On your local computer, catalog the remote database by using the following command:

      ```
      db2
      catalog tcpip node nodename remote ipaddr server port_number
      db2 catalog database GS_DB as GS_DB at node nodename
      ```

   c) On your local computer, run the following command:

      ```
      setupGSDB -database GS_DB -userid administration_user_ID
      ```

      You are prompted for a password to connect to the database.

Restoring backup files for Oracle

Use the scripts that are installed with TM1 to quickly and conveniently restore backup files for sample databases in Oracle.

About this task

To set up the sample database, you must extract the `GS_DB_ORA.tar.gz,` file, customize a configuration file, and run the setup script.

Procedure

1. Go to the *tm1_location*`/webcontent/samples/datasources`.
2. Extract the `GS_DB_ORA.tar.gz` file and retain the original directory structure.
3. On Linux and UNIX operating systems, modify the file permissions on the `setupGSDB.sh` file so that it is executable:

   ```
   chmod u+x setupGSDB.sh
   ```

4. Ensure that the user ID used to set up the Oracle database has authority to create users and run the import utility.
5. Optional - If you want to change the sample configuration file to use settings other than the default values, edit the `GOSalesConfig` file.

   The configuration file on Windows is `GOSalesConfig.bat`. The configuration file on UNIX is `GOSalesConfig.sh`.

   The `GOSalesConfig` configuration file contains the default configuration options that are used when creating the GOSALES data. The default configuration settings are listed in the following table

Table 18. Default configuration settings for GOSALES data

Configuration Setting	Default	Description
GOSALES_IMP_CMD	imp	If necessary can be modified to specify the complete path to the correct version of the import utility.
GOSALES_INST		Oracle host string.
GOSALES_TS	GOSALES_TS	If users are created by scripts, used to enter the tablespace name to assign to users.
GOSALES_CREATE_TS		Optional: Used to create the default tablespace for users.
GOSALES_TEMP_TS		If users are created by scripts, used to name a temporary tablespace to assign to users. Leave blank to use the default temporary tablespace.

Table 18. Default configuration settings for GOSALES data (continued)		
Configuration Setting	**Default**	**Description**
GOSALES_SCHEMA GOSALES_SCHEMA_PW	GOSALES GOSALESPW	Used to enter the username and password for the GOSALES user. You will be prompted for a password if not entered.
GOSALESHR_SCHEMA GOSALESHR_SCHEMA_PW	GOSALESHR GOSALESHRPW	Used to enter the username and password for the GOSALESHR user. You will be prompted for a password if not entered.
GOSALESMR_SCHEMA GOSALESMR_SCHEMA_PW	GOSALESMR GOSALESMRPW	Used to enter the username and password for the GOSALESMR user. You will be prompted for a password if not entered.
GOSALESSRT_SCHEMA GOSALESRT_SCHEMA_PW	GOSALESRT GOSALESRTPW	Used to enter the username and password for the GOSALESRT user. You will be prompted for a password if not entered.
GOSALESDW_SCHEMA GOSALESDW_SCHEMA_PW	GOSALESDW GOSALESDWPW	Used to enter the username and password for the GOSALESDW user. You will be prompted for a password if not entered.
GOSALES_GRANTEES	GOSALES	Used to enter the users that will have SELECT, INSERT, DELETE, UPDATE, and ALTER permissions for GOSALES, GOSALESHR, GOSALESMR and GOSALESRT schemas. **Note**: The owner of the GOSALES_SCHEMA will always be granted SELECT, INSERT, DELETE, UPDATE and ALTER privilege on all schemas.
GOSALESDW_GRANTEES	GOSALESDW	Used to enter the users that will have SELECT, INSERT, DELETE, UPDATE and ALTER permissions for GOSALESDW schema.

6. To run the `setupGSDB` script in interactive mode, run following command:
   - On Windows computers, in a DOS command window, change to the `GS_DB_ORA\win` directory and run the `setupGSDB.bat` script.

- On UNIX computers, from a shell prompt, change to the GS_DB_ORA/unix directory, and run the setupGSDB.sh script.

Press Enter to proceed. The script displays a summary of your choices before you commit to changes to your environment. If you approve the choices, press Enter and the script makes the changes

7. To run the setupGSDB script from the command line, run the following command:
   - On Windows computers, run the setupGSDB.bat script.
   - On UNIX computers, run the setupGSDB.sh script.

   You can run the setupGSDB script with the following options:

Table 19. setupGSDB options

Option	Description
-createdb	Creates the database. This option drops any existing database with the same name. It creates the required buffer pool and table space.
-database database name	Specifies the name of the database. This value overrides the default value of GS_DB.
-userid administration_user_ID	Specifies the name of the Db2 administrator user ID that is used to create the database.
-password administration_user_ID	Specifies the password for the Db2 administrator user ID.
-noprompt	Indicates that no prompt will display. This option runs the script in silent mode. Any missing information causes the script to fail. You will not be prompted for any confirmations.

   For example, if you are an Oracle administrator and want to create the default sample database schemas, run the following command:

```
setupGSDB -createDB -noprompt
```

   You want to create the tables in the existing schemas specified in the configuration file, and you want to use the administrator user ID sys. run the following command:

```
setupGSDB -YourOracleInstance-userid sys -sysdba
```

   The script prompts you for the password when it connects to the Oracle instance. The script deletes any existing tables or views in the specified schemas and replaces them.

Restoring backup files for Microsoft SQL Server

Use the Microsoft SQL Server database management tool to quickly and conveniently restore backup files for sample databases.

Procedure

1. On the computer where you installed TM1 server, go to the following directory:

   tm1_location/webcontent/samples/datasource/Source files/sqlserver
2. If required, copy the backup files for the samples databases to your database backup directory.

3. Restore the database from a device, and ensure that the restore locations are correct for the `.ldf` and `.mdf` database files.
4. Create at least one user who has select permissions for all the tables in the restored databases.

Setting up Great Outdoors Sales sample

The Great Outdoors Sales sample uses data from the database you restored.

Procedure

1. Create an ODBC data source connection to the restored database.

   Use `GOSALESDW` as the data source name. On Windows operating systems, create the ODBC connection as a System DSN.
2. On the computer where you installed the TM1 server component, go to the *`tm1_location`*`\webcontent\samples\datasources\cubes\amdtool` folder.
3. Extract the contents of the `GreatOutdoorsSales.zip` file.

   Be sure to do the extraction close to the root location such as `c:` so that the file path is not too long.
4. In the folder where you extracted the `GreatOutdoorsSales.zip` file, go to the `DataFiles` folder, and open the `tm1s.cfg` file in a text editor.
   a) Ensure that the `DatabaseDirectory` location and the `LoggingDirectory` location use the correct path for the location where you extracted the `GreatOutdoorsSales.zip` file.
   b) Save and close the file.
5. Open IBM Cognos Configuration.
6. In the **Explorer** panel, under **Data Access**, right click **TM1 Server**, and click **New Resource** > **TM1 Server Instances**.
   a) In the **Name** box, enter `GreatOutdoorsSales`.
   b) For the TM1 Server configuration path value, enter the path to the `DataFiles` folder where you extracted the `GreatOutdoorsSales.zip` file.

      For example, *`tm1_location`*`\webcontent\samples\datasources\cubes\amdtool\GreatOutdoorsSales\DataFiles`
   c) In the **Explorer** panel, right-click **GreatOutdoorSales** and click **Start**.
7. Test that the new GreatOutdoorsSales server is available to Architect.
   a) Open Architect.
   b) Double click the GreatOutdoorsSales server.
   c) In the **Server Login** box, enter `admin` in the **UserName** box and `apple` in the **Password** box.
8. Test that the new GreatOutdoorsSales server is available in the IBM Cognos Applications portal.
   a) Open the portal by typing the following: `http://`**`server_name`**`:9510/pmpsvc`.
   b) Click the **Administer IBM Cognos Application** icon on the far right hand side
   c) Under **Server Names**, click **Add**.
   d) Type the server name in **Admin Host** and then click the **Refresh** button.
   e) Select the GreatOutdoorsSales sample you just added, and click **OK**.

Install and configure the Planning Analytics Administration agent (local only)

If you have IBM Planning Analytics Local version 2.0.5 or later installed, you can install and configure the Planning Analytics Administration agent for Microsoft Windows or Linux operating systems.

To use IBM Planning Analytics Administration on Planning Analytics Workspace Local, you must install and configure the Planning Analytics Administration agent wherever you have installed IBM TM1 Server. The default port of the Planning Analytics Administration agent is 9012.

By default, the Planning Analytics Administration agent is selected as a component when you install Planning Analytics Local but it is not configured or started.

Note: You can upgrade your Planning Analytics Administration agent by installing a new version of Planning Analytics Local or by downloading a new version of the agent from Planning Analytics Workspace. For more information, see Planning Analytics Administration agent in Download additional components.

To upgrade an Planning Analytics Administration agent as part of a Planning Analytics Local upgrade, you must stop the Planning Analytics Administration agent service, back up your `bootstrap.properties` file, upgrade Planning Analytics Local selecting the Planning Analytics Administration agent component in the installation wizard, and then restart the Planning Analytics Administration agent. For more information, see Upgrading Planning Analytics Local.

Your changes to the `bootstrap.propertes` file are preserved when you upgrade the Planning Analytics Administration agent, however, the version of the agent is updated. On Windows, the version is updated when you upgrade using the Planning Analytics Local installation wizard. On Linux, the version is updated when you run `./startup_agent.sh install`.

After you install or upgrade the agent, you must configure it. For more information, see "Configure the agent for Windows" on page 63 or "Configure the agent for Linux" on page 63.

Configure the agent for Windows

Procedure

1. Open the Windows Services desktop application.
2. Stop the **IBM Planning Analytics Administration Agent** service if it is running.
3. Navigate to *<PA_install_location>*`/paa_agent/bin`.
4. Run `PAAAgentSetJavaHome.bat` to set JAVA_HOME for your Planning Analytics Administration agent.
5. Start the **IBM Planning Analytics Administration Agent** Windows service.

   Note: You can also navigate to *<PA_install_location>*`/paa_agent/bin` and run the `PAAAgentStart.bat` script to start the Planning Analytics Administration agent Windows service.

What to do next

Navigate to Planning Analytics Administration in Planning Analytics Workspace Local and verify that the TM1 databases appear.

Note: If you change the `bootstrap.properties` file later, you must restart the **IBM Planning Analytics Administration Agent** Windows service by running `PAAAgentStart.bat` script.

Configure the agent for Linux

Before you begin

Set the RunningInBackground parameter in your `tms1.cfg` file to `RunningInBackground=T`.

Note: The RunningInBackground parameter is required for Linux only. It is used to suppress the prompts displayed by TM1 Server. Since Planning Analytics Administration uses scripts to start and stop databases on TM1 Server, you must set RunningInBackground=T on Linux.

Procedure

1. Navigate to *<PA_install_location>*/paa_agent/bin.
2. Run the ./shutdown_agent.sh command to stop the **IBM Planning Analytics Administration Agent** if it is running.
3. Navigate to *<PA_install_location>*/paa_agent/wlp/usr/servers/kate-agent.
4. In a text editor, open the bootstrap.properties file.
5. Set the full path of the directory that contains TM1 databases data directories to SERVERS_DIR.

   Note: Multiple paths must be separated by a semicolon. For example, /opt/ibm/cognos/tm1_64/samples/tm1/;/srv/prod/servers/.
6. Save and close the bootstrap.properties file.
7. Navigate to *<PA_install_location>*/paa_agent/bin.
8. Run ./set_java_home.sh <Full path to JRE> to set JAVA_HOME for your Planning Analytics Administration agent.
9. Run ./startup_agent.sh install to set up the Planning Analytics Administration agent service.

   Note: You must have root or sudo privileges to perform this step.
10. Run ./startup_agent.sh command to start the Planning Analytics Administration agent.

What to do next

Navigate to Planning Analytics Administration in Planning Analytics Workspace Local and verify that the TM1 databases appear.

Note: If you change the bootstrap.properties file later, you must restart the **IBM Planning Analytics Administration Agent** by running ./startup_agent.sh command.

Set an agent API key

When a request is sent from Planning Analytics Workspace to a local agent, an authentication token is also sent. This token is created using a key that must be set to the same value in both the bootstrap.properties file for the local agent and Planning Analytics Workspace Local configuration file.

Procedure

1. Open the Windows Services desktop application.
2. Stop the **IBM Planning Analytics Administration Agent** service if it is running.
3. Open the bootstrap.properties file for the local agent.

   The default location of bootstrap.properties is C:\Program Files\ibm\cognos\tm1_64\paa_agent\wlp\usr\servers\kate-agent\.
4. Add the **AGENT_API_KEY** property to bootstrap.properties and set the key property value to any plain text string of your choice.

   Important: Take note of the string you enter. You'll need it when you add the **AdminAgentAPIKey** parameter to the Planning Analytics Workspace Local configuration file in Step 8.
5. Save and close the bootstrap.properties file.
6. Restart the **IBM Planning Analytics Administration Agent** service.

After the agent starts, the key property value you entered is encoded. The **AGENT_API_KEY** property is removed from `bootstrap.properties` and replaced with the **AGENT_API_KEY_ENCODED** property, which is set to the encoded version of the key property value you entered.

If you want to change the key value, you must again add the **AGENT_API_KEY** property to the `bootstrap.properties` file. The **AGENT_API_KEY_ENCODED** property will then be updated to contain the encoded key.

7. Open the Planning Analytics Workspace Local configuration file.

   The configuration file is located in the `<planning_analytics_install_dir>\config` directory and is named `paw.ps1` (Windows) or `paw.env` (Linux).
8. Add the **AdminAgentAPIKey** parameter to the Planning Analytics Workspace Local configuration file and set the parameter value to match the **AGENT_API_KEY** plain text property value that you entered in Step 4.
9. Save the configuration file.
10. Run `./scripts/paw.ps1` (Windows) or `./scripts/paw.sh` to apply the configuration changes.

Configure the Planning Analytics Administration Agent with an existing keystore

You can replace the default keystore used by Planning Analytics Administration agent with your own.

Before you begin

The TM1 Admin Server and TM1 Server must already be secured using custom certificates/keystore

Back up the `<pa_install_dir>\paa_agent\wlp\usr\servers\kate-agent\server.xml` file to a different directory.

Set the PA_INSTALL_DIR environment variable

Procedure

1. Open a Command Prompt as administrator.
2. Execute this command to set the environment variable:

   ```
   set PA_INSTALL_DIR=<path_to_Planning_Analytics_installation_dir>
   ```

   For example, `PA_INSTALL_DIR=C:\Program Files\ibm\tm1_64`.

Convert the IBMTM1 keystore to PKCS12 format for Planning Analytics Administration agent

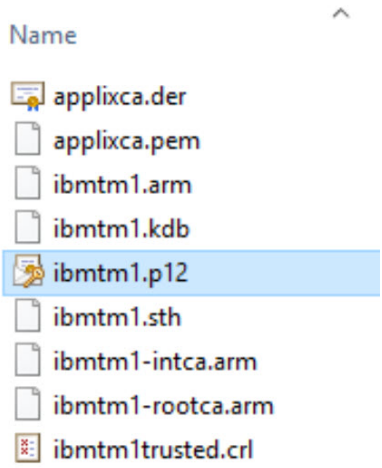
Procedure

1. Open Windows Services panel.
2. Stop the **IBM Planning Analytics Administration Agent** service.
3. Open a Command Prompt as administrator.
4. Execute this command to navigate to the `\bin64` directory in the Planning Analytics installation directory:

   ```
   cd "%PA_INSTALL_DIR%\bin64\"
   ```
5. Execute this command to convert the `ibmtm1` keystore file to a PKCS12 keystore for the Planning Analytics Administration Agent:

   ```
   gsk8capicmd_64 -keydb -convert -db "%PA_INSTALL_DIR%\bin64\ssl\ibmtm1.kdb" -stashed
   -old_format kdb
   -new_db "%PA_INSTALL_DIR%\bin64\ssl\ibmtm1.p12" -new_pw "CustomPA!@" -new_format pkcs12
   ```

6. Review the <Planning_Analytics_installation_dir>\bin64\ssl\ directory to confirm that the ibmtm1.p12 file is present.



7. Open the <Planning_Analytics_installation_dir>\paa_agent\wlp\usr\servers\kate-agent\server.xml file.
8. Update the **keyStore** to point to the new ibmtm1.p12 custom keystore:

   ```
   <keyStore id="defaultKeyStore" location="../../../../../bin64/ssl/
   ibmtm1.p12" type="pkcs12" password="CustomPA!@"/>
   ```

9. Save and close server.xml.

What to do next

Any applications that communicate with the Planning Analytics Administration Agent must be updated to trust the new custom certificates For example, Configure TLS between Planning Analytics Workspace Local and other servers.

Configure event notifications

About this task

To get notifications from Planning Analytics Administration for Planning Analytics Local, you must configure the following functionality:

Procedure

1. Set the following bootstrap properties for SMTP notifications:

   For example, set these properties:

   ```
   SMTP_EMAIL_PORT=587
   SMTP_EMAIL_AUTH=true
   SMTP_EMAIL_HOST=example.com
   SMTP_EMAIL_USERNAME=user@example.com
   SMTP_EMAIL_PASSWORD=Analytics123
   PAA_EMAIL_ADDRESS=noreply@example.com
   ```

   The PAA_EMAIL_ADDRESS must be a registered alias, otherwise set it to a primary alias, for example, the user name noreply@example.com.
2. Optional: Set SMTP_EMAIL_START_TLS_ENABLE=true and add the certificates to the TLS certificate store:
   a) Run the following command in a command prompt on Windows or a terminal on Linux.

   ```
   openssl s_client -showcerts -starttls smtp -crlf -connect example.com:587
   ```

This command prints out the certificates used by the SMTP server. Each certificate begins with "-----BEGIN CERTIFICATE-----" and ends with "-----END CERTIFICATE-----".

b) Copy these two certificates (including the BEGIN CERTIFICATE and END CERTIFICATE lines) to Example_1.cer and Example_2.cer and remember the location.

For example, <PA install directory>/paa_agent/wlp/usr/servers/kate-agent/resources/security. You use this location in the next step.

c) Import Example_1.cer to the Planning Analytics Administration agent store by using the following command and the location of the Example_1.cer file from step "2.b" on page 67.

On Windows:

```
keytool.exe -importcert -keystore "<PA install directory>/paa_agent/wlp/usr/servers/kate-agent/resources/security/server_store.p12" -storetype PKCS12
-trustcacerts -storepass applix -file "<PA install directory>/paa_agent/wlp/usr/servers/kate-agent/resources/security/Example_1.cer" -alias example1
```

On Linux:

```
./keytool -import -keystore "<PA install directory>/paa_agent/wlp/usr/servers/kate-agent/resources/security/server_store.p12" -storetype PKCS12
-trustcacerts -storepass applix -file "<PA install directory>/paa_agent/wlp/usr/servers/kate-agent/resources/security/Example.cer" -alias example1
```

d) Repeat the previous step to import the second certificate, Example_2.cer.

What to do next

You can get notifications for threads that are in a run state, threads in a wait state, and more. For more information, see Set system resource thresholds and alerts in the *Planning Analytics Workspace* documentation.

Enable email notifications

You can configure a connection to your SMTP or SendGrid email services so that you can share assets such as books, views, images, and links with others.

To enable the email service, specify the following parameters in the Planning Analytics Workspace Local configuration file:

1. Set ENABLE_EMAIL to true to enable email service in Planning Analytics Workspace Local.
2. Use the EMAIL_SMTP_URL or SENDGRID_API_KEY parameter to configure settings.

   If you specify both EMAIL_SMTP_URL and SENDGRID_API_KEY parameters, only EMAIL_SMTP_URL is used.

   EMAIL_SMTP_URL

   Use the EMAIL_SMTP_URL parameter to enable the SMTP email service. The default value of this parameter is empty. The following are examples of SMTP URLs:

   - EMAIL_SMTP_URL="smtp://username:password@smtp.example.com:587"
   - EMAIL_SMTP_URL="smtp://username:password@smtp.example.com:587?secure=false"
   - EMAIL_SMTP_URL="smtps://username:password@smtp.example.com:465"

   Where, username and password are your credentials and smtp.example.com is the server (for example, smtp.office365.com).

   Note: If the port number of your SMTP server is 465, the SMTP URL starts with "smtps://". Port 465 is typically the secure port for SMTP servers. For port number 587, use "smtp://" in the SMTP URL. Port 587 is a non-TLS port connection to an SMTP server.

SENDGRID_API_KEY

Use this parameter to enable the SendGrid email service; default is empty. This parameter specifies the API key for the SendGrid email account.

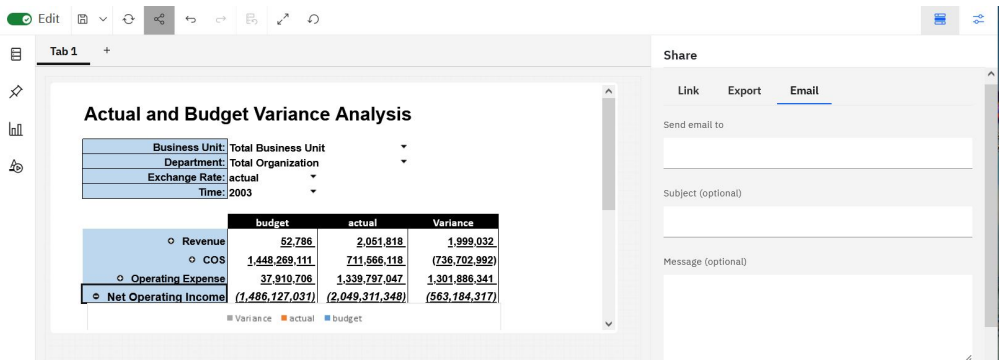
You might need to contact the email administrator for your organization to obtain the API key that is specific to your email service.

Note: If you use SENDGRID_API_KEY, you need to also specify the EMAIL_FROM parameter.

3. Use EMAIL_FROM to specify the sender's email address. This parameter might be required by the email server and is mandatory when you use SENDGRID_API_KEY.
4. If your SMTP server uses a custom TLS certificate, add the certificate to the paw/config/certs folder.
5. Restart Planning Analytics Workspace services.

   Note: When you change a paw configuration file, you must run ./scripts/paw for your operating system or click **Start** in the Planning Analytics Workspace administration tool for your changes to take effect. Only services that are affected by the configuration change will restart.

The **Email** tab is now available in the user interface when you share a book or view.



Sample bootstrap.properties file

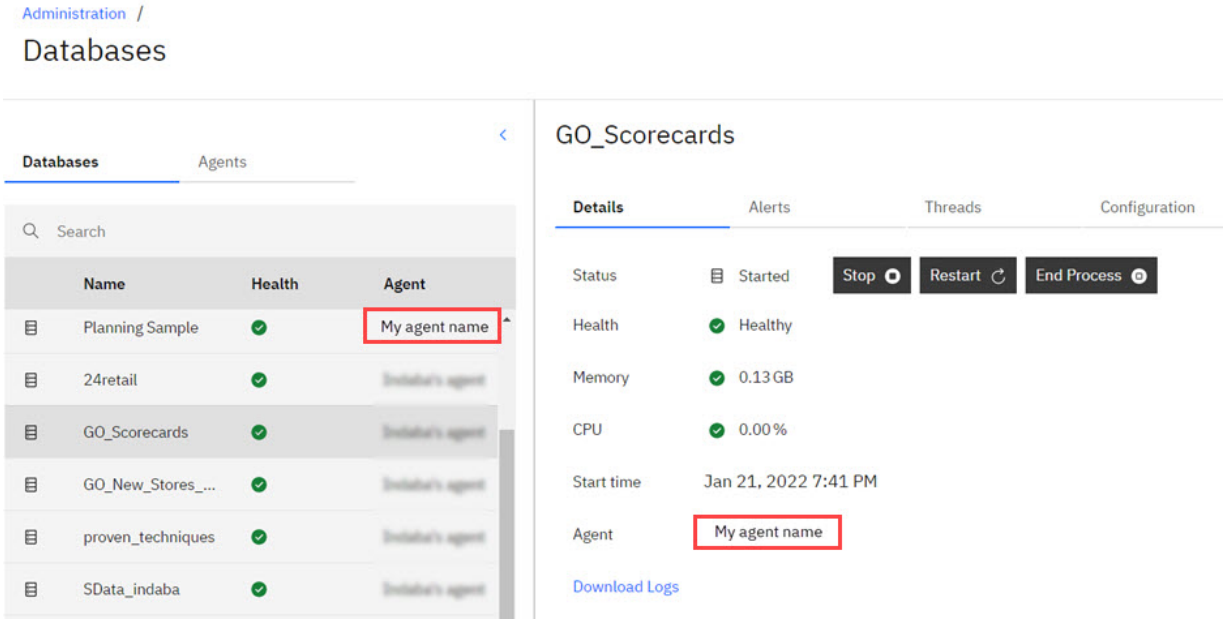
```
# General properties
SERVERS_DIR=<PA_install_location>/samples/tm1
EXE_PATH=<PA_install_location>/bin64/tm1s.exe
SERVER_INFO_PATH=<PA_install_location>/paa_agent/paaAgentCache
AGENT_LABEL=<"agent name">

TM1_SERVER_INFO_PROCESS_TIME_INTERVAL=20000
NOTIFICATION_MEM_USAGE_INTERVAL=30000
NOTIFICATION_SERVER_UNRESPONSIVE_INTERVAL=40000
FILE_TAILER_REFRESH_INTERVAL=86400000
PAA_EMAIL_ADDRESS=administration@planning-analytics.ibmcloud.com
MODEL_UPLOAD=model_upload
SCRIPT_TIMEOUT=15

# SMTP Properties
SMTP_EMAIL_PORT=<port>
SMTP_EMAIL_AUTH=false
SMTP_EMAIL_HOST=<host>
SMTP_EMAIL_START_TLS_ENABLE=false
SMTP_EMAIL_USERNAME=<username>
SMTP_EMAIL_PASSWORD=<encrypted_pwd>

# Logging properties
com.ibm.ws.logging.console.log.level=OFF
com.ibm.ws.logging.trace.specification="*\=audit\:com.ibm.pa.kate.agent.*\=warning"
com.ibm.ws.logging.max.file.size=10
com.ibm.ws.logging.max.files=4

VERSION=1.0.nn.nnn
```

General properties

AGENT_LABEL

Use this setting to display a specified agent label (name) in place of the agent IP address in Planning Analytics Administration.

If an agent label is set, the label appears on the **Databases** and **Agent** tabs wherever an agent is identified. The agent IP address is not reported. For example:



If an **AGENT_LABEL** is not specified, the agent IP address is displayed wherever an agent is identified.

EXE_PATH

Internal use only. Do not change.

FILE_TAILER_REFRESH_INTERVAL

Internal use only. Do not change.

Time in milliseconds between successive task executions. Used in scheduler that tails server logs for every TM1 Server.

MODEL_UPLOAD

Internal use only. Do not change.

NOTIFICATION_MEM_USAGE_INTERVAL

Internal use only. Do not change.

Not currently used.

NOTIFICATION_SERVER_UNRESPONSIVE_INTERVAL

Internal use only. Do not change.

Time in milliseconds between successive task executions. Used in the scheduler that checks for server unresponsiveness.

PAA_EMAIL_ADDRESS

Internal use only. Do not change.

SCRIPT_TIMEOUT

Internal use only. Do not change.

SERVERS_DIR

This parameter is applicable to Linux only. It specifies the full path of the directory that contains the TM1 databases directories.

Note:

Multiple paths must be separated by a semicolon. For example,

`SERVERS_DIR=C:/tm1/samples/tm1/;C:/prod/servers/`

You can specify the parent directory of your databases. You don't need to specify each database separately.

SERVER_INFO_PATH
Internal use only. Do not change.

TM1_SERVER_INFO_PROCESS_TIME_INTERVAL
Internal use only. Do not change.

Time in milliseconds between successive task executions. Used in the scheduler that checks system health.

SMTP properties

SMTP_EMAIL_PORT
Set to a free port. For example, `2500`.

SMTP_EMAIL_AUTH
Default is `false`.

SMTP_EMAIL_HOST
Set based on your email server. For example, `localhost`.

SMTP_EMAIL_START_TLS_ENABLE
Default is `false`. Whether you need to configure certificates and set START_TLS_ENABLE=`true` depends on your email server configuration.

SMTP_EMAIL_USERNAME
Full email address. For example, example@my domain.com.

SMTP_EMAIL_PASSWORD
Email password for SMTP_EMAIL_USERNAME.

Logging properties

com.ibm.ws.logging.console.log.level
This setting controls the granularity of messages that go to the console.

When this log is enabled, a `console.log` is generated with the agent `message.log` at *<PA_install_location>*/paa_agent/wlp/usr/servers/kate-agent/logs.

Valid values are: INFO, AUDIT, WARNING, ERROR, and OFF.

Default is OFF.

com.ibm.ws.logging.trace.specification="*=audit:com.ibm.pa.kate.agent.*=warning"
This setting is used to selectively enable trace.

This entry refers to the agent `message.log`.

Valid values are: INFO, AUDIT, WARNING, ERROR, and OFF.

A restart of the Planning Analytics Administration agent is required for a logging value to take effect when you change this property.

com.ibm.ws.logging.max.file.size
The maximum size (in MB) that a log file can reach before it is rolled.

Default is 10. For more information, see Logging and Trace.

com.ibm.ws.logging.max.files
If an enforced maximum file size exists, this setting is used to determine how many of each of the logs files are kept.

Default is 4. For more information, see Logging and Trace.

Chapter 8. Installing the Web Tier

You can install Web Tier components using the IBM Planning Analytics Local installation program.

You can install the following Web Tier components:

- TM1 Application Gateway
- TM1 Application Server
- Cognos Access Manager

TM1 Application Server installation

You can install the web application server components for IBM Planning Analytics on a separate, dedicated computer so that users in a network environment can access them. These components include the TM1 Application Server and the TM1 Application Gateway.

The TM1 Application Server must be deployed on a Java-based web application server.

Deploying with the provided version of WebSphere Liberty Profile server

The fastest and easiest way to install and deploy TM1 Application Server is to use the version of WebSphere Liberty Profile server that is provided and installed with the Planning Analytics installation program. This method uses Cognos Configuration to start and stop the TM1 Application Server.

For more information, see “Install TM1 Application Server” on page 72.

TM1 Application Server with x64 Windows

When running TM1 Application Server on an x64 Microsoft Windows system with WebSphere Liberty Profile server, use the same 64-bit versions of the Java™ Runtime Environment (JRE) and WebSphere Liberty Profile web server. Do not mix platform versions. For example, if you are using the 64-bit version of JRE, then you should also use the 64-bit version of WebSphere Liberty Profile.

Integrating TM1 Application Server with Cognos Analytics and Cognos Connection portal

If your Planning Analytics installation uses Cognos security for authentication, your Cognos Analytics users can use the Cognos Connection portal to open Planning Analytics applications instead of the TM1 Applications Web portal. However, administrators still need to use TM1 Applications Web to configure and manage applications.

When you configure TM1 Application Server to use Cognos security, you also enable the Cognos Connection portal to display a folder that contains links to the available Planning Analytics applications. The exact list of displayed applications depends on the rights of the current user.

The `planning.html` file provides the information for Cognos Analytics and the Cognos Connection portal to display links to Planning Analytics applications.

Install TM1 Application Server

You can install IBM TM1 Application Server on a separate computer and deploy it with the instance of WebSphere Liberty Profile that is provided with the installation. This type of installation is intended for an environment where the TM1 Admin Server and TM1 Server are running on another computer.

Installing TM1 Web Tier components

Follow these steps to install the required files for TM1 Application Server and its components on a separate computer. If you plan to use the TM1 Web client, you need an installation of TM1 Web on either the same computer or a different computer in your network.

Procedure

1. Right-click the `issetup.exe` file and click **Run as Administrator** to run the IBM Planning Analytics installation program.
2. In the installation program select only the following components:
   - **TM1 Application Gateway**
   - **TM1 Application Server**
   - **TM1 Web** - This component is optional. Select this to install TM1 Web on the same computer as TM1 Application Server.
3. Follow the prompts to complete the installation.

Deploying the TM1 Application Server with the provided WebSphere Liberty Profile application server

The TM1 Application Server runs in the WebSphere Liberty Profile application server that is provided with the installation. Use Cognos Configuration to deploy and start WebSphere Liberty and TM1 Application Server.

Procedure

1. Click **Start** > **All Programs** > **IBM Cognos TM1** > **IBM Cognos Configuration**.

   If you installed the product from the Program Files (x86) directory on a computer running Windows 7, start IBM Cognos Configuration as an Administrator.
2. In the Cognos Configuration **Explorer** panel, expand the **Local Configuration** > **Environment** > **IBM Cognos TM1 Services** , right-click **IBM Cognos TM1** and select **Start**.

   This will start the provided version of WebSphere Liberty Profile server and then deploy and start the TM1 Application Server.
3. Click **File** > **Save** and close **IBM Cognos Configuration**.

Configuring authentication security for TM1 Application Web

For IBM TM1 Server used with TM1 Application Web, use either TM1 standard security authentication or IBM Cognos security.

About this task

Configure the authentication login mode using the **`IntegratedSecurityMode`** parameter in the `Tm1s.cfg` file of each TM1 Server that you want to use.

TM1 Application Web is compatible only with the following TM1 security authentication modes:

- Authentication mode 1 - TM1 standard security authentication
- Authentication mode 5 - Cognos security

Important: Do not use a combination of different security authentication modes for the same installation of TM1 Application Web.

For best practice, determine the security mode before you configure TM1 Application Web to use a TM1 Server and use that same security mode with any additional servers you add.

For more details about security authentication and the **IntegratedSecurityMode** parameter, see:

- "Authentication security " on page 174
- "IntegratedSecurityMode" on page 258

Procedure

1. Open the file *TM1 server data directory*/Tm1s.cfg
2. Set the **IntegratedSecurityMode** parameter for the TM1 Server.
   - To use TM1 standard security authentication, set IntegratedSecurityMode=**1**
   - To use Cognos security, set IntegratedSecurityMode=**5**

   For details about using Cognos security, see:
   - "Cognos security" on page 188
3. Save and close the Tm1s.cfg file.
4. Restart the TM1 Server.

Configuring the server and client environment for TM1 Application Web

Before you use IBM TM1 Application Web, you need to specify the TM1 Admin Host, TM1 Server, and client user interfaces that you want to use. The first time that you start TM1 Application Web, the program prompts you to configure these options.

Before you begin

Ensure that the TM1 Admin Server and at least one TM1 Server is running on the local computer or a remote computer that you can access.

Ensure that each TM1 Server that you want to use is configured with the required parameter values. For more information, see "Configuring a TM1 Server to work with TM1 Application Web" on page 75 .

If you plan to use Cognos TM1 Application Web, ensure that you know the web server name and port number where Cognos TM1 Web is running.

Procedure

1. Start and log in to TM1 Application Web:
   a) In a web browser, type the URL for TM1 Application Web:

      http://localhost:9510/pmpsvc

   b) Replace localhost with the name of the computer where the TM1 Application Server is installed.
2. Open the Cognos TM1 Application Configuration page:
   - If this is the first time that TM1 Application Web has been started since the installation, the Configuration page opens.
   - If TM1 Application Web has already been configured, you are prompted for a user name and password and then you can open the configuration page by clicking the Administer IBM Cognos TM1 Applications button  on the toolbar of the Cognos TM1 Application Web main page.
3. In the **Admin Host** field, enter the name or IP address of the computer where the TM1 Admin Server is running.

Note: The **Admin Host** and **Server Name** fields appear blank if you have not started the TM1 Admin Server and at least one TM1 Server.

4. In the **Server Name** field, enter the name of the TM1 Server that you want to use with TM1 Application Web.

   For example, you can specify the sample TM1 Server **GO_New_Stores**.

   Click the **Refresh** button to refresh the list of available servers.

5. Select the data contribution clients that you want to use with TM1 Application Web.

   These clients will be available when you create applications with TM1 Performance Modeler.

   - **Include Cognos Insight - Connected** - Cognos Insight client using real time processing with the TM1 Server.
   - **Include TM1 Application Web** - Default client. Processing is in real time with the server. This option uses the data grid and charting client infrastructure from TM1 Web and requires that you enter a value for the **TM1 Application Web URL** option.

6. If you selected the **Include TM1 Application Web** option, enter a value for the **TM1 Application Web URL** option.

   This URL points to the `Contributor.jsp` file on the web server that is hosting TM1 Web.

   For example:

   `http://`*`WebServer`*`:9510/tm1web/Contributor.jsp`

   where *WebServer* is the name of the computer where TM1 Web is installed.

7. Click **OK**.
8. If prompted, enter the **username** and **password** for the server and click **Login**.

   Tip: Use **admin** and **apple** for the user name and password if you are using one of the installed sample databases.

   The TM1 Application Web main page displays. This page appears blank until you build and deploy applications inside of TM1 Application Web.

Results

The following message indicates that the TM1 Server that you are using is not properly configured for use with TM1 Application Web:

```
The new server can be added but it may not be configured with all the options
required by IBM Cognos TM1 Applications.
```

For information on how to configure this server, see "Configuring a TM1 Server to work with TM1 Application Web" on page 75.

TM1 Application Server settings in Cognos Configuration

You can configure settings for IBM TM1 Application Server in IBM Cognos Configuration.

In Cognos Configuration, click **Environment** > **TM1 Applications**.

Session timeout (min)
Time after which if there is no activity that the TM1 Server disconnects. Default is 60 minutes.

Force qualified paths
When set to True, a machine name that is provided as the Admin Host resolves to a fully qualified domain name. When set to False, only the machine name is used.

Notifications provider

- DLS (Delivery Service): If a mail server is configured, emails are sent but no notifications display in the Cognos Inbox.

- HTS (Human Task Service): Notifications are sent to the Cognos Inbox, and emails also sent if a mail server is configured.

By default, left blank for no notifications.

Enable Business Viewpoint
True means Business Viewpoint can interact with this installation. False prevents Business Viewpoint from interacting.

Cognos Connection Folder Name
Specifies the name of the Cognos Connection folder in which hyperlinks to deployed TM1 applications are contained. Default is IBM Cognos TM1 Application - My Applications

TM1 Application Server Dispatcher URI
The URI used for the dispatcher servlet, for example `http://localhost:9510/pmpsvc/dispatcher/servlet`

User ID and Password
User ID and Password used to authenticate.

Under TM1 Applications, click **TM1 Clients**.

Provisioning URI
Specifies a URI to use to manually set the msi locations.

Allow provisioned installs
True permits users without the clients installed to provision and install them from TM1 Application Server. False blocks users from provisioning and installing client software.

Allow provisioned updates
True permits updates that are installed on the TM1 Application Server such as a Fix Pack version to be provisioned to clients when users next connect. False prevents updates from being provisioned.

Enable publish from Cognos Insight®
True permits a user with Admin rights to publish from Cognos Insight. False disallows the Publish operation for all users.

Cognos Insight ping frequency (seconds)
Determines the frequency with which Cognos Insight verifies connectivity to the TM1 Application Server. Default is 30 seconds.

Configuring a TM1 Server to work with TM1 Application Web

Before you use IBM TM1 Server with IBM TM1 Application Web, edit the TM1 Server configuration file (Tm1s.cfg) to include the required parameters and values.

About this task

The following configuration parameters in the `Tm1s.cfg` file support different subcomponents of TM1 Application Web.

AllowSeparateNandCRules
Supports TM1 Performance Modeler with TM1 Application Web.

See "AllowSeparateNandCRules" on page 240.

ForceReevaluationOfFeedersForFedCellsOnDataChange
Supports TM1 Performance Modeler with TM1 Application Web. When this parameter is set, a feeder statement is forced to be re-evaluated when data changes.

See "ForceReevaluationOfFeedersForFedCellsOnDataChange" on page 255.

Procedure

1. Open the TM1 Server configuration file, `Tm1s.cfg`.
2. To support TM1 Performance Modeler, edit or add the following line:

AllowSeparateNandCRules=T

3. Edit or add the ForceReevaluationOfFeedersForFedCellsOnDataChange parameter.
4. Save the Tm1s.cfg file.
5. Restart the TM1 Server.
6. Repeat these steps for any other TM1 Servers you want to use with TM1 Application Web.

Determining the URL startup link for TM1 Application Web

The exact link to start and log on to Cognos TM1 Application Web depends on which web server you are running and how it is configured.

You can see the default startup URL for TM1 Application Web in IBM Cognos Configuration.

1. Open Cognos Configuration.
2. Click to expand **Local Configuration** > **Environment** and then select **TM1 Applications**.
3. The URL is listed in the value column for the **TM1 Application Server Gateway URI** field.

   For example: http://localhost:9510/pmpsvc

Link Parameters

Use the following format for the URL to log in to TM1 Application Web.

https://*WebServer*:*PortNumber*/pmpsvc

Table 20. TM1 Application Web - URL parameters

Parameter	Description
WebServer	Can be one of the following: The keyword localhost if you are currently logged on to the web server that is running TM1 Application Server. The machine name or domain name of the web server hosting the TM1 Application Server. The IP address of the web server hosting the TM1 Application Server.
PortNumber	The port number you configured with web application server. IBM WebSphere® - Click the **Web Server** link in the WebSphere Administrative Console to view and edit port settings.

Link Examples

Table 21. TM1 Application Web - link examples

Web Application Server	Header
WebSphere Liberty Profile provided with the installation	The default link when using the provided version of WebSphere Liberty Profile is: `http://localhost:9510/pmpsvc`
IBM WebSphere Application Server	The usual link for TM1 Application Web running on IBM WebSphere Application Server is: `https://localhost:8443/pmpsvc`

Configuring TM1 Application Web

IBM Planning Analytics Local uses IBM Cognos TM1 Web to support the Cognos TM1 Application Web client. TM1 Application Web enables users to view and edit planning application data in grid format. If you want to allow users to use TM1 Application Web, you need to configure this option.

About this task

When you install TM1 Web, the required files for TM1 Application Web are copied to the TM1 Web installation location.

The main file for TM1 Application Web is:

`Contributor.jsp`

The default install location is:

PA_install_location`\webapps\tm1web`

Configure the TM1 Application Web URL parameter in TM1 Application Web to point to the `Contributor.jsp` file in this location.

Procedure

1. Open the Configuration page in TM1 Application Web:
   - If you are running TM1 Application Web for the first time, use the Configuration page that opens when you start the program.

     For more details, see "Configuring the server and client environment for TM1 Application Web" on page 73.
   - If you are already using TM1 Application Web, you can re-open the Configuration page by clicking the Administer IBM Cognos TM1 Applications button  on the toolbar in TM1 Application Web.
2. In the **TM1 Application Web URL** field, enter the URL location of the `Contributor.jsp` file.

   Use the format:

   `http://`*WebServer:port_number*`/tm1web/Contributor.jsp`

   For example:

   `http://webserver.example.com:9510/tm1web/Contributor.jsp`
3. Click **OK**.

   The Login page for TM1 Application Web is displayed.

TM1 Application Server advanced installation and configuration

You can perform advanced installation and configuration tasks to customize your installation of the IBM TM1 Application Server components.

Configuring TM1 Application Web to use multiple TM1 Servers

When you start IBM TM1 Application Web for the first time, you can enter only one IBM TM1 Server that you want to work with.

To enter more servers, use the Configuration page in TM1 Application Web.

Important: To use multiple TM1 Servers in Cognos TM1 Application Web, the servers must all use the same security authentication (either TM1 standard authentication or Cognos Analytics security) and include the same administrator user name and password. For more information, see "Security considerations when using TM1 Applications" on page 174.

After you add multiple TM1 Servers, they are available when you use IBM TM1 Performance Modeler to design your planning applications.

For more details, see the *TM1 Performance Modeler* documentation.

Procedure

1. Log in to Cognos TM1 Application Web.
2. On the toolbar, click the Administer Cognos TM1 Applications button  .
   The **IBM Cognos TM1 Applications Configuration** page opens
3. In the **Server Names** section, click **Add**.
   The **Add Server** dialog box opens.
4. Enter the following values:
   - **Admin Host** - Specify the computer name or IP address of the Admin Host on which the Cognos TM1 Admin Server is running.

     Click the **Refresh** button to update the **Server Name** list with the available servers for the Admin Host you entered.
   - **Server Name** - Select a TM1 Server to use with Cognos TM1 Application Web. For example: Planning Sample.
5. Click **OK**.

   If you receive a warning message about the configuration of the TM1 Server, make a note of the warnings and then click **Close** to continue. For more information, see "Configuring a TM1 Server to work with TM1 Application Web" on page 75.

   The Admin Host and TM1 Server name you entered are added to the **Server Names** section.
6. To add more servers, click **Add** and repeat the steps.
7. When you are finished adding TM1 Servers, click **OK** on the **IBM Cognos TM1 Applications Configuration** page.

Results

The TM1 Servers you added can now be used to design your planning applications.

Disabling the X-Frame-Options header

The X-Frame-Options header is enabled by default to help prevent cross-frame scripting attacks. If necessary, you can disable it.

Procedure

1. Locate the `fpmsvc_config.xml` file in the *`Cognos_TM1_install_location`*`\webapps\pmpsvc\WEB-INF\configuration` directory.
2. Set the **`value`** attribute of the **`httpHeader`** element to empty string.
   For example, `<httpHeader name="XFrames" value=""/>`

Monitoring TM1 Application Server logs

You can monitor the activity and performance of IBM TM1 Application Server by configuring and viewing the TM1 Application Server log file.

The TM1 Application Server uses the log4j framework to control the Planning Services (pmpsvc) logging. The logging settings are dynamic. Any changes that you make to the logging properties file will be detected while the service is running.

Logging properties file

Logging is configured in the following file:

<tm1_installation_location>\webapps\pmpsvc\WEB-INF\configuration\log4j.properties

For example, the default installation location on a 64-bit Microsoft Windows system is:

C:\Program Files\IBM\cognos\tm1_64\webapps\pmpsvc\WEB-INF\configuration\

Log file output

By default, the service is configured to log only **ERROR** messages into a text file which contains all the log entries for a 24 hour period. The log file and directory are located here:

<tm1_installation_location>\webapps\pmpsvc\WEB-INF\logs\pmpsvc.log

Older log files for previous days are named with the format:

pmpsvc.log.*YYYY-MM-DD*

Log file message levels

There are four levels of detail which can be logged. Each level contains all log entries for that level and each higher level.

Table 22. Level Description

Level	Description
ERROR	Outputs exceptional events which cause the service not to be able to complete the current operation.
WARNING	Outputs conditions from which the service can continue but should be addressed by an administrator.
INFO	Outputs information for each of the service operations.
DEBUG	Outputs details tracing information for the service operations.

Examples of enabling logging

The logging level of information is controlled by changing the level under the following two roots of the service:

- log4j.logger.com.ibm.cognos
- log4j.logger.com.cognos

All the components of the service are situated beneath these trees, so changing the logging level for these will log all events at that level.

For example, to change the service to log at the **INFO** level, change these entries to the following:

```
#System logging settings
log4j.rootLogger=ERROR, TextFile
log4j.logger.com.ibm.cognos=INFO
log4j.logger.com.cognos=INFO
```

More specific logging is available by changing the logging level for classes lower than these top levels. For example, it is possible to get **WARNING** logging for everything but to log TurboIntegrator process calls at the **DEBUG** level.

```
#System logging settings
log4j.rootLogger=ERROR, TextFile
log4j.logger.com.ibm.cognos=WARNING
```

```
log4j.logger.com.cognos=WARNING
log4j.logger.com.ibm.cognos.pmpsvc.handler.util.PmtaProcessUtil=DEBUG
```

You can enable performance logging in the service by commenting out the standard logging and including the following performance entries in the properties file:

```
# System logging settings
#log4j.rootLogger=ERROR, Console, TextFile
#log4j.logger.com.ibm.cognos=DEBUG
#log4j.logger.com.cognos=DEBUG
#log4j.logger.com.cognos.org=ERROR
#log4j.logger.com.ibm.cognos.perf=ERROR

# Performance logging settings
log4j.rootLogger=ERROR, perfConsole, perfText
log4j.logger.com.ibm.cognos.perf=DEBUG
```

Chapter 9. Installing the Rich Tier

You can install Rich Tier components using the IBM Planning Analytics Local installation program or the TM1 client installation program.

You can install the following Rich Tier components:

- TM1 Architect
- Performance Modeler
- TM1 Perspectives
- Cognos Insight
- Cognos TM1 APIs

For information about using the TM1 APIs to enable Cognos Analytics reporting against Cognos TM1 data sources, see "TM1 as a datasource with Cognos Analytics" on page 171.

Installing Cognos TM1 Architect

You can install IBM Cognos TM1 Architect by performing the following steps.

Before you begin

Before you install Cognos TM1 Architect, complete the following tasks:

- Install the software that is necessary for you to run Cognos TM1 Architect. For more information, see "Install the prerequisite software" on page 33.
- Ensure that the Cognos TM1 Admin Server and the Cognos TM1 Server that you want to connect to are running on an accessible computer in your network. For details, see "TM1 Server installation" on page 41.
- Ensure that users have access to the Cognos TM1 servers that they need to use running under that Cognos TM1 Admin Server. As a Cognos TM1 administrator, you must set up a user name and password for each user before a user can access that server.

About this task

You can configure IBM Cognos TM1 Architect to locate a Cognos TM1 Administration Server on your network, and then connect to a server. You can also create an unattended installation.

Attention: If you are upgrading and leave your old `Tm1p.ini` client configuration files in place, you might need to update the directory path in the file for the **`AdminSvrSSLCertAuthority`** parameter. For example, if you are using the default Cognos TM1 SSL certificate, manually change the value for this parameter to the new install path `C:\Program Files\IBM\cognos\tm1\bin64\ssl\applixca.pem`.

Procedure

1. Install Cognos TM1 Architect:
   a) Right-click the `issetup.exe` file and click **Run as Administrator**.
   b) On the **Component Selection** page, expand **TM1 Rich Tier**, and select the **TM1 Architect** check box.
      Leave all the other check boxes unselected.
   c) Follow the prompts and click **Finish** to complete the installation.
2. Run Cognos TM1 Architect:
   a) Click **Start** > **IBM Cognos TM1** > **Architect**.

If the component does not start, ensure that the servers you started with Cognos Configuration are still running.

3. Configure Cognos TM1 Architect to locate a Cognos TM1 Admin Server:
   a) Open Server Explorer.
   b) Select **TM1**.
   c) Click **File** > **TM1 Options**.
   d) In the **Admin Host** field, specify the name of the computer on which the TM1 Admin Server is running. You must enter a name, not an IP address, in the Admin Host field.

      Tip: If you want to access servers registered on different Admin Servers, use a semicolon to separate the name of each Admin Host.
   e) Click **OK**.
   f) When prompted about disconnecting from currently accessed servers, click **Yes** if you want to access a new list of servers. Servers available through Admin Server on the specified Admin Host appear. If you want to continue to see the current list of remote servers during this session, click **No**.
4. Double-click a Cognos TM1 Server to log in.

   For either Planning Sample or SData, use these login credentials:

   - **User name:** `admin`
   - **Password:** `apple`
5. If you want to install Cognos TM1 Architect on multiple computers, use the previous steps to create an unattended installation. For details, see "Setting up unattended installations and configurations" on page 227.

Installing Cognos TM1 Performance Modeler

You can choose different ways to distribute and install IBM Cognos TM1 Performance Modeler across multiple computers.

The following table summarizes the different ways to distribute and install Cognos TM1 Performance Modeler across multiple computers.

Table 23. Multiple computer installation options for Cognos TM1 Performance Modeler

Installation option	Description
"Installing Cognos TM1 Performance Modeler using the installation program" on page 83	Administrators or end users can install Cognos TM1 Performance Modeler on a single computer using the IBM Cognos TM1 Client-only installation program. Optionally, use these steps to create an unattended installation to install Cognos TM1 Performance Modeler on multiple computers.
"Installing Cognos TM1 Performance Modeler from the Cognos TM1 Applications portal" on page 83	As a prerequisite, an administrator must install Planning Analytics Applications. This allows Planning Analytics users to install Cognos TM1 Performance Modeler onto their computers the first time that they launch it from the IBM Cognos Applications Portal. This is called a provisioned installation. For more information about publishing workspaces, see *IBM Cognos TM1 Performance Modeler*.

Table 23. Multiple computer installation options for Cognos TM1 Performance Modeler (continued)	
Installation option	**Description**
"Remotely installing Cognos TM1 Performance Modeler on multiple computers" on page 84	An administrator can use third-party network installation tools to push Cognos TM1 Performance Modeler out to multiple remote client systems.

Installing Cognos TM1 Performance Modeler using the installation program

You can interactively install a stand-alone version of IBM Cognos TM1 Performance Modeler on one or more computers.

Procedure

1. Right-click the `issetup.exe` file and click **Run as Administrator** to run the IBM Planning Analytics installation program.
2. On the **Component Selection** page, expand **TM1 Rich Tier**, and select the **Performance Modeler** check box.

   Leave all the other check boxes unselected.
3. Follow the prompts and click **Finish** to complete the installation.
4. To test the installation, open Cognos TM1 Performance Modeler from the toolbar of the Cognos TM1 Applications portal page.
   a) In a web browser, type the Cognos TM1 Applications URI:

      For example, `http://localhost:9510/pmpsvc`

      - Replace *localhost* with the name of the computer where the Cognos TM1 Application Server is installed.
      - If required, change the port number if you used a different value in IBM Cognos Configuration for the **TM1 Application Server Gateway URI** property.

   b) From the Cognos TM1 Applications portal, click the **Open Performance Modeler**  icon.
5. If you want to install the program on multiple computers, use the previous steps to create an unattended installation. For details, see "Setting up unattended installations and configurations" on page 227.

Installing Cognos TM1 Performance Modeler from the Cognos TM1 Applications portal

You can install IBM Cognos TM1 Performance Modeler the first time you run the component from the IBM Cognos TM1 Applications portal.

Before you begin

Before you install Cognos TM1 Performance Modeler from the Cognos TM1 Applications portal, the administrator must install Cognos TM1 Applications.

Procedure

1. In a web browser, type the Cognos TM1 Applications portal URI:

   For example, `http://localhost:9510/pmpsvc`

   a) Replace *localhost* with the name of the computer where the Cognos TM1 Application Server is installed.

   b) If required, change the port number if you used a different value in IBM Cognos Configuration for the **TM1 Application Server Gateway URI** property.

2. From the Cognos TM1 Applications portal, click the **Open Performance Modeler** icon.

   If this is the first time you have used Cognos TM1 Performance Modeler, the **Install Now** icon displays to indicate that you are about to install the Cognos TM1 Performance Modeler client to your computer.
3. Click **Install Now**.
4. Click **Finish** to complete the installation.

What to do next

For information on using IBM Cognos TM1 Performance Modeler, see the *TM1 Performance Modeler* documentation.

Remotely installing Cognos TM1 Performance Modeler on multiple computers

As an administrator, you can push the IBM Cognos TM1 Performance Modeler installation to users automatically. First, you make the Cognos TM1 Performance Modeler installer file available in a shared folder on your network. You can then use an application such as Microsoft Active Directory to automatically install the client application to authenticated users.

About this task

Cognos TM1 Performance Modeler is installed using an installer file that you put in a shared location. You can use Active Directory to install Cognos TM1 Performance Modeler directly to users' computers.

Use the `PerformanceModeler.msi` file to install Cognos TM1 Performance Modeler. This file is installed to the following location when you install the Cognos TM1 Application Gateway component:

`tm1 location``\webapps\pmpsvc\rcp_installs`

You can use the `PerformanceModeler.msi` file with Windows Installer command line options and also use Active Directory or other software management tools to push the install out to remote computers.

The `PerformanceModeler.msi` file is a standard Microsoft Windows Installer file. You can use the `PerformanceModeler.msi` file with Windows Installer command line options and also use Active Directory or other software management tools to push the install out to remote computers.

The following table lists some of the property values that administrators can use to install the `PerformanceModeler.msi` file. For complete details, see the Microsoft developer web site for documentation about the "Windows Installer Guide" and "Windows Installer Property Reference".

Table 24. Property values for Cognos TM1 Performance Modeler

Property	Property Value	Description
ALLUSERS	1	Installs Cognos TM1 Performance Modeler for all users. This property value ensures that the registry entries for Cognos TM1 Performance Modeler are located in HKEY_LOCAL_MACHINE. **Note:** You must use this property with the TARGETDIR property.
ALLUSERS	"" (default value)	Installs Cognos TM1 Performance Modeler only for the user who is running the installation. Only that user will have access to the application.

Table 24. Property values for Cognos TM1 Performance Modeler (continued)		
Property	**Property Value**	**Description**
TARGETDIR	"*Performance Modeler_install location*"	Specifies the installation location for Cognos TM1 Performance Modeler. For example, TARGETDIR="C:\Program Files"
TARGETDIR	"" (default value)	Sets the installation location for Cognos TM1 Performance Modeler when TARGETDIR is not specified and ALLUSERS is specified as follows: When used with ALLUSERS="": On Windows 7, the installation location is C:\Users*username*\AppData\Roaming\IBM\Cognos TM1 Performance Modeler When used with ALLUSERS=1: On Windows 7, the installation location is C:\Program Data\IBM\Cognos TM1 Performance Modeler
NOUPDATE	Yes	Prevents Cognos TM1 Performance Modeler users from receiving automatic updates. This value is recommended when end users do not have write access to the application installation location. Auto-updating requires that Cognos TM1 Performance Modeler users can write to the location specified, or defaulted to, by the TARGETDIR property.
NOUPDATE	No (default value)	Allows Cognos TM1 Performance Modeler users to receive automatic updates.

An example is shown in the following steps.

Procedure

1. Open a command prompt, and navigate to the location of the PerformanceModeler.msi file.
2. To install Cognos TM1 Performance Modeler for all users, type the following command

```
PerformanceModeler.msi TARGETDIR="install_location" ALLUSERS=1
```

Configuring logging for Cognos TM1 Performance Modeler

You can enable logging for IBM Cognos TM1 Performance Modeler using the same logging framework as other components in IBM Cognos TM1.

Procedure

1. Locate the provagent_NOT.ini and rename the file to provagent.ini.

   This file is located here:

   C:\Users\<*user_name*>\AppData\Roaming\IBM\Cognos Performance Modeler
2. Edit the provagent.ini to uncomment the following line.

   Change #app-debug=true to app-debug=true.

3. In this same directory location, open and edit the `defaultLog.properties` file to configure logging.

   Note: By default, logging is configured to log ERROR level messages for day-to-day purposes and typically does not need to be adjusted. This can be changed to `WARNING`, `INFO`, or `DEBUG` level messages to get varying levels of logging information. Work with IBM Customer Support to change the logging configuration to record more specific messages.

Results

Log files are typically written out to the following location:

%appdata%`/IBM/`*application_name*`/logs`

Installing Cognos TM1 Perspectives

You can install IBM Cognos TM1 Perspectives, which is an add-in for Microsoft Excel.

Before you begin

Before you install IBM Cognos TM1 Perspectives, complete the following tasks:

1. Install the software that is necessary for you to run Cognos TM1 Perspectives. For more information, see "Install the prerequisite software" on page 33.
2. Ensure that the Cognos TM1 Admin Server and the Cognos TM1 Server that you want to connect to are running on an accessible computer in your network. For details, see "TM1 Server installation" on page 41.
3. Ensure that users have access to the Cognos TM1 servers that they need to use running under that Cognos TM1 Admin Server. As a Cognos TM1 administrator, you must set up a user name and password for each user before a user can access that server.

About this task

The following steps install Cognos TM1 Perspectives on a single computer, configure it to locate a Cognos TM1 Administration Server on your network, and then connect to a server. You can also create an unattended installation.

Attention: If you are upgrading and leave your old `Tm1p.ini` client configuration files in place, you might need to update the directory path in the file for the **`AdminSvrSSLCertAuthority`** parameter. For example, if you are using the default Cognos TM1 SSL certificate, manually change the value for this parameter to the new install path `C:\Program Files\IBM\cognos\tm1_64\bin64\ssl\applixca.pem`.

Procedure

1. Install Cognos TM1 Perspectives:
   a) Right-click the `issetup.exe` file and click **Run as Administrator**.
   b) On the **Component Selection** page, expand **TM1 Rich Tier**, and select the **TM1 Perspectives** check box.

      Leave all the other check boxes unselected.
   c) Follow the prompts and click **Finish** to complete the installation.
2. Run Cognos TM1 Perspectives:
   a) Click **Start** > **IBM Cognos TM1** > **Perspectives for MS Excel**.

      If the component does not start, ensure that the servers you started with Cognos Configuration are still running.
   b) Click **Enable Macros** when the security warning displays.
3. Configure Cognos TM1 Perspectives to locate a Cognos TM1 Admin Server:

a) In Microsoft Excel, click **TM1** > **Options**.

The **TM1 Options** dialog box opens.

b) In the **Admin Host** field, specify the name of the computer on which the Cognos TM1 Admin Server is running. If you want to access servers registered on different Admin Servers, use a semicolon to separate the name of each Admin Host. You must enter a name, not an IP address, in the Admin Host field.

c) Click **OK**.

d) When prompted about disconnecting from currently accessed servers, click **Yes** if you want to access a new list of servers. Servers available through Admin Server on the specified Admin Host appear. If you want to continue to see the current list of remote servers during this session, click **No**.

4. Launch Server Explorer.
5. Double-click a Cognos TM1 Server to log in.

   For either Planning Sample or SData, use these login credentials:

   - **User name:** `admin`
   - **Password:** `apple`

   Tip: To load Cognos TM1 Perspectives automatically whenever you start Microsoft Excel, add *TM1_location*`/Tm1p.xla` to Microsoft Excel's add-in tool list. The default location is `C:\Program Files\IBM\cognos\tm1_64\bin64\`. After completing this step, "TM1" displays on the Microsoft Excel menu bar.
6. If you want to install Cognos TM1 Perspectives on multiple computers, use the previous steps to create an unattended installation that can. For details, see "Setting up unattended installations and configurations" on page 227.

Installing Cognos Insight

You can choose different ways to distribute and install IBM Cognos Insight across multiple computers.

Depending on your computer network environment and business needs, you can install the application, allow users to install as needed, or remotely push the application out.

The following table summarizes the different ways to distribute and install IBM Cognos Insight across multiple computers.

Table 25. Multiple computer installation options for Cognos Insight

Installation option	Description
"Installing Cognos Insight using the installation program" on page 88	Administrators or end users can install Cognos Insight on a single computer using the IBM Cognos TM1 Client-only installation program. Optionally, use these steps to create an unattended installation to install Cognos Insight on multiple computers.
"Installing Cognos Insight from the Cognos TM1 Applications portal" on page 88	As a prerequisite, an administrator must install Cognos TM1 Applications. This allows Cognos TM1 users to install Cognos Insight onto their computers the first time that they launch it from the IBM Cognos TM1 Applications portal. This is called a provisioned installation.
"Remotely installing Cognos Insight on multiple computers" on page 89	An administrator can use third-party network installation tools to push Cognos Insight out to multiple remote client systems.

Installing Cognos Insight using the installation program

You can interactively install a stand-alone version of IBM Cognos Insight on one or more computers.

Procedure

1. On Microsoft Windows, right-click the `issetup.exe` file and click **Run as Administrator**.
2. On the **Component Selection** page, expand **TM1 Rich Tier** and select the **Cognos Insight** check box.
   Leave all the other check boxes unselected.
3. Follow the prompts and click **Finish** to complete the installation.
4. To test the installation, open Cognos Insight from **Start** > **Programs** > **IBM Cognos Insight** > **IBM Cognos Insight**.
5. To install the program on multiple computers, use the previous steps to create an unattended installation. For details, see "Setting up unattended installations and configurations" on page 227.

Installing Cognos Insight from the Cognos TM1 Applications portal

You can install IBM Cognos Insight the first time you run the component from the toolbar of the IBM Cognos TM1 Applications portal.

Before you begin

Before you install Cognos Insight from Cognos TM1 Applications, the administrator must install Cognos TM1 Applications.

Procedure

1. In a web browser, type the Cognos TM1 Applications portal URI:

   For example, `http://localhost:9510/pmpsvc`

   a) Replace *localhost* with the name of the computer where the Cognos TM1 Applications Portal is installed.

   b) If required, change the port number if you used a different value in IBM Cognos Configuration for the **TM1 Application Gateway URI** property.

2. From the Cognos TM1 Applications portal, click the **Open IBM Cognos Insight** icon  .

   If this is the first time you have used Cognos Insight, the **Install Now** icon displays to indicate that you are about to install the Cognos Insight client to your computer.
3. Click **Install Now**.
4. Click **Finish** to complete the installation.

What to do next

Cognos Insight is now installed in a folder on your computer. You will be able to run and use Cognos Insight in the following ways:

- You can launch Cognos Insight using the **Open Cognos Insight** icon  in Cognos TM1 Applications.
- You can launch the Cognos Insight client by right-clicking a node of an application that has been configured to use Cognos Insight.

  Cognos Insight is available as a client from an application only if you configured the client environment for Cognos TM1 Applications to use the Cognos Insight Connected client. For more information, see "Configuring the server and client environment for TM1 Application Web" on page 73.
- You can launch Cognos Insight as a stand-alone product from the Windows **Start** > **Programs** > **IBM Cognos Insight** menu.

Remotely installing Cognos Insight on multiple computers

As an administrator, you can push the IBM Cognos Insight installation to users automatically. First, you make the Cognos Insight installer file available in a shared folder on your network. Then, you can use an application such as Microsoft Active Directory to directly install the client application to authenticated users.

About this task

Cognos Insight is installed by using the `CognosInsight.msi` file that you put in a shared location. This file is installed to the following location when you install the IBM Cognos TM1 Application Gateway component:

tm1 location`\webapps\pmpsvc\rcp_installs`

The `CognosInsight.msi` file is a standard Microsoft Windows Installer file. You can use the `CognosInsight.msi` file with Windows Installer command line options and also use Active Directory or other software management tools to push the install out to remote computers.

The format for the command is the Cognos Insight MSI file name followed by the property values. For example, you could enter `CognosInsight.msi TARGETDIR="C:\Program Files" USERDATADIR=%%USERNAME%%`.

You can use the following property values alone or in combination with each other.

Table 26. Property values for Cognos Insight

Property	Property Value	Description
ALLUSERS	1	Installs Cognos Insight for all users. Setting this property value sets the default installation location to `C:\Program Files`.
ALLUSERS	"" (default value)	Installs Cognos Insight only for the user who is running the installation. Only that user will have access to the application. Setting `ALLUSERS=""` or omitting the ALLUSERS property installs Cognos Insight in the user's context, and sets the TARGETDIR property to `C:\Users\`*username*`\AppData\Local\Programs\IBM\Cognos Insight`.
TARGETDIR	"*Cognos_Insight_install_location*"	Specifies the installation location for Cognos Insight. For example, `TARGETDIR="C:\Program Files"`

Table 26. Property values for Cognos Insight (continued)		
Property	**Property Value**	**Description**
TARGETDIR	(default value)	Sets the installation location for Cognos Insight when TARGETDIR is not specified and ALLUSERS is specified as follows: When used with ALLUSERS="": On a Microsoft Windows 7 operating system, the installation location is C:\Users*username*\AppData\Local\Programs When used with ALLUSERS="1": On a 64-bit Microsoft Windows operating system, the installation location is C:\Program Files (x86)
NOUPDATE	Yes	Prevents Cognos Insight users from receiving automatic updates. This value is recommended when users do not have write access to the application installation location. Automatic updates require that Cognos Insight users can write to the installation location specified by the TARGETDIR property.
NOUPDATE	No (default value)	Allows Cognos Insight users to receive automatic updates.
USERDATADIR	"*location*"	Specifies the location for the .CognosInsight folder. The .CognosInsight folder contains Cognos Insight themes, IBM Cognos TM1 data that is copied to your computer when you work from a Cognos TM1 server, and the thumbnail graphics of recent workspaces that appear on the Getting Started page of Cognos Insight.
USERDATADIR	"" (default value)	When USERDATADIR is not specified, the .CognosInsight folder is located in C:\Users*username*\.CognosInsight. When ALLUSERS=1, and you want to specify the USERDATADIR, the USERDATADIR property should include an environment variable that will resolve differently for each user. For example, the command CognosInsight.msi ALLUSERS=1 USERDATADIR=^%USERPROFILE^% specifies that Cognos Insight be installed at C:\Program Files and that the .CognosInsight folder be installed in each user's user profile folder.

For complete details, see the Microsoft developer website for documentation about the Microsoft Windows Installer Guide and Microsoft Windows Installer Property Reference.

An example is shown in the following steps.

Procedure

1. Open a command prompt, and navigate to the location of the `CognosInsight.msi` file.
2. To install Cognos Insight for all users, type the following command

```
CognosInsight.msi TARGETDIR="install_location" ALLUSERS=1
```

Configuring Cognos TM1 TurboIntegrator function security in Cognos Insight

When you open an IBM Cognos Insight workspace that has been shared through IBM Cognos Connection, you might want to restrict the execution of some TurboIntegrator functions, especially functions that can destroy or modify data files.

Several TurboIntegrator functions exist that can write files, delete files, and execute commands. When you receive a shared Insight workspace, it is possible that TurboIntegrator processes within the workspace might include functions that perform undesirable actions. To prevent processes from performing potentially harmful actions, your Insight installation includes a configuration file that is named `TMIFunctions.cfg`, which can be used to prevent or restrict the execution of TurboIntegrator functions.

Any TurboIntegrator function can be entirely prevented from executing. The `ASCIIOutput`, `TextOutput`, and `ASCIIDelete` functions can also be configured to run in restricted mode. When a function runs in restricted mode, it is limited to acting upon files within the TM1 server data directory and its subdirectories.

When you install IBM Cognos Insight, a default version of the `TM1Functions.cfg` file is created in <*pa_install_directory*>\tm1_64\coginsight\bins\bin_10.3.1.1514\tm1\bin. You can modify this configuration file to further restrict function execution or allow function execution.

The default version of the `TM1Functions.cfg` file appears as follows:

```
ExecuteCommand=0
AsciiOutput=1
TextOutput=1
AsciiDelete=1
```

When a function is set to 0 in `TM1Functions.cfg`, the function is prevented from executing. Any attempt to execute that function causes TurboIntegrator to throw a security exception.

When a function is set to 1 in `TM1Functions.cfg`, the function runs in restricted mode. Only the ASCIIOutput, TextOutput, and ASCIIDelete functions can be set to run in restricted mode.

When a function is not present in `TM1Functions.cfg`, it runs completely unrestricted.

Examples of functions running in restricted mode

When a function is configured to run in restricted mode, any relative path passed as an argument to the function is assumed to be rooted in the TM1 server data directory and is allowed. Any absolute path to a directory above the TM1 server data directory prevents the function from executing and causes a security exception to be thrown at runtime.

Editing the TM1Functions.cfg file

1. Open the `TM1Functions.cfg` file in a text editor.
2. To completely prevent a function from executing, set the function name to 0. For example, `ExecuteCommand=0` or `ServerShutdown=0`.

3. To allow a function to run in restricted mode, set the function name to 1. For example, AsciiDelete=1.Only the ASCIIOutput, TextOutput, and ASCIIDelete functions can be set to run in restricted mode.
4. To allow a function to run unimpeded, delete the function name from the TM1Functions.cfg file.
5. Save and close the TM1Functions.cfg file.

Example 1

Assume AsciiDelete=1 in TM1Functions.cfg. In this case, the function

```
ASCIIDelete('logs\sample.log');
```

is allowed and deletes the file sample.log from the logs subdirectory of the TM1 server data directory.

However, the function

```
ASCIIDelete('c:\autoexec.bat');
```

will not execute and will cause a security exception because it specifies a file at the root level of the drive, which is above the TM1 server data directory.

Example 2

Assume TextOutput=1 in TM1Functions.cfg. In this case, the function

```
TextOutput('logs\sample.txt', 'this is sample text');
```

is allowed and writes a string to the sample.txt file in the logs subdirectory of the TM1 server data directory.

Conversely, the function

```
TextOutput('c:\autoexec.bat', 'del *.* -r –f');
```

is not allowed due to the path being specified at the root level of the drive. This function will cause a security exception to be thrown at runtime.

Configuring logging for Cognos Insight

You can enable logging for IBM Cognos Insight using the same logging framework as other components in IBM Cognos TM1.

Procedure

1. Locate the provagent_NOT.ini and rename the file to provagent.ini.

   This file is located here:

   C:\Users\<*user_name*>\AppData\Local\Programs\IBM\Cognos Insight
2. Edit the provagent.ini to uncomment the following line:

   Change #app-debug=true to app-debug=true.
3. In this same directory location, open and edit the defaultLog.properties file to configure logging.

   Note: By default, logging is configured to log ERROR level messages for day-to-day purposes and typically does not need to be adjusted. This can be changed to WARNING, INFO, or DEBUG level messages to get varying levels of logging information. Work with IBM Customer Support to change the logging configuration to record more specific messages.

Results

Log files are typically written out to the following location:

%appdata%/IBM/*application_name*/logs

Installing Cognos TM1 APIs

Use the TM1 API installation option to install the required files that enable programmers to work with the Cognos TM1 application programming interfaces (APIs). This installation option can also be installed on Cognos Analytics servers to enable Cognos Analytics reporting against Cognos TM1 data sources.

About this task

This option installs files for the following Cognos TM1 APIs:

TM1 API
Allows developers to create custom C, C++, and VB applications that interact with TM1.

TM1 Java API
Allows developers to create custom Java applications that interact with TM1.

TM1 .NET API
Allows developers to create custom Microsoft .NET applications that interact with TM1.

Attention: For information about using the TM1 APIs to enable Cognos Analytics reporting against Cognos TM1 data sources, see "TM1 as a datasource with Cognos Analytics" on page 171.

Procedure

1. Right-click the `issetup.exe` file and click **Run as Administrator** to run either the full IBM Planning Analytics installation program or the client-only installation program:
2. Select the installation location on the **Installation Location** page:
   - If you are planning on using the TM1 APIs for programming, accept the default installation.
   - If you are using the TM1 APIs to enable Cognos Analytics reporting against Cognos TM1 data sources, select an adjacent directory on the Cognos Analytics server that is running report services on Microsoft Windows.
3. On the **Component Selection** page:
   a) Expand the **TM1 Client Tier** and select the **TM1 APIs** option.
   b) Clear the check boxes for all the other components.
4. Follow the prompts and click **Finish** to complete the installation.

Chapter 10. Installing Planning Analytics Workspace Local

IBM Planning Analytics Workspace Local is a web-based interface for IBM Planning Analytics. It provides an interface to TM1 databases, with ways to plan, create, and analyze your content.

In IBM Planning Analytics Workspace Local version 2.0.74 or later, you can install on Windows Server 2019. If you're on 2.0.96 or a later version, you can also install on install on Windows Server 2022.

When you run the `start.ps1` script, validation checks run automatically and the host server is repaired if possible. The script checks your Windows Server version, prerequisite software, network configuration, and free ports. It also checks for unsupported anti-virus software that conflicts with Planning Analytics Workspace Local.

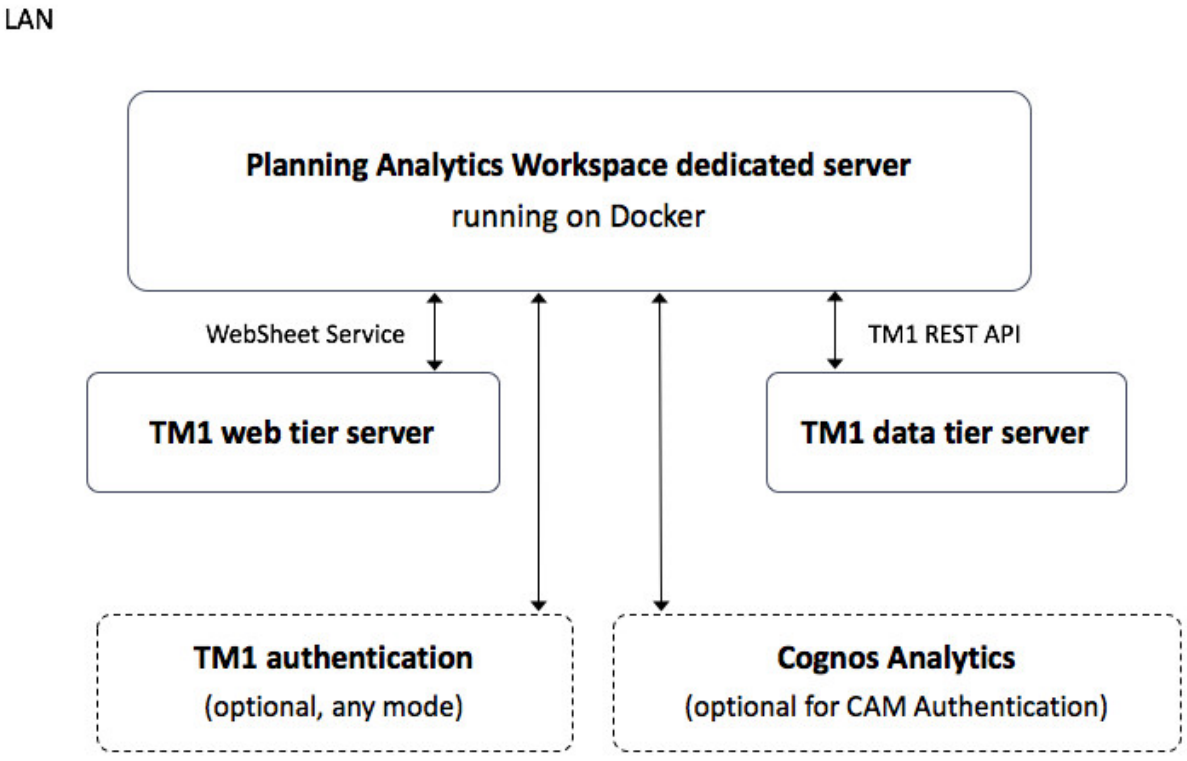
In IBM Planning Analytics Workspace Local version 2.0.45 or later, it is also simpler to install on Red Hat Enterprise Linux . When you run the `start.sh` script, validation checks run automatically and required packages and services are installed. See “Install Planning Analytics Workspace Local on Red Hat Enterprise Linux ” on page 101 for more details.

For information about Planning Analytics Workspace, see the *Planning Analytics Workspace* documentation.

Planning Analytics Workspace Local architecture

IBM Planning Analytics Workspace Local can be co-located with IBM Planning Analytics Local or it can be installed on its own dedicated server. Installing Planning Analytics Workspace on its own server is recommended. In both cases, Planning Analytics Workspace must connect to the TM1 databases in your Planning Analytics Local system and to an authentication system.

The following diagram shows where Planning Analytics Workspace fits into your Planning Analytics Local architecture:



Users in Planning Analytics Workspace

The first user that logs in to IBM Planning Analytics Workspace is given the administrator role. Users that log in after the first user are given the analyst role.

For more information about managing users, see the *Planning Analytics Workspace* documentation.

Authentication modes

You can use a TM1 Server configured in any authentication mode to authenticate Planning Analytics Workspace users.

Prerequisites

Before you install IBM Planning Analytics Workspace, you must install IBM Planning Analytics Local version 2.0.0 or later.

Important: To review an up-to-date list of operating systems supported by IBM Planning Analytics Local, create a detailed system requirements report by using the Software Product Compatibility Reports tool (https://www.ibm.com/software/reports/compatibility/clarity/index.html).

Planning Analytics Workspace is included as part of IBM Planning Analytics Local. For more information, see the IBM Planning Analytics Local download document for instructions.

If you are using IBM Cognos Analytics as your authentication provider, then you must have IBM Cognos Analytics 11.2.0 or later installed.

Planning Analytics Workspace communicates with TM1 servers by using the TM1 REST API. In the `Tm1s.cfg` file for all TM1 Servers, set the `HTTPPortNumber` property to a free port on the server.

The following list contains information about requirements and the installation kit name for different operating systems that are supported by Planning Analytics Workspace.

Microsoft Windows Server 2022

- The installation kit is ipa_workspace_win_2022_<version>.zip.
- Install Mirantis Container Runtime (https://www.mirantis.com/blog/getting-started-with-mirantis-container-runtime-on-windows-server/).
- You must have at least 100 GB of free space on the C:\ drive for Microsoft Windows Server 2022.
- When you run the `start.ps1` script, validation checks run automatically and the host server is repaired if possible. The script checks your Windows Server version, prerequisite software, network configuration, and free ports. It also checks for unsupported anti-virus software that conflicts with Planning Analytics Workspace Local. You can jump directly to Install Planning Analytics Workspace Local on Windows Server 2019 or 2022.

Microsoft Windows Server 2019

- The installation kit is ipa_workspace_win_2019_<version>.zip.
- Install Mirantis Container Runtime (https://www.mirantis.com/blog/getting-started-with-mirantis-container-runtime-on-windows-server/).
- You must have at least 100 GB of free space on the C:\ drive for Microsoft Windows Server 2019.
- When you run the `start.ps1` script, validation checks run automatically and the host server is repaired if possible. The script checks your Windows Server version, prerequisite software, network configuration, and free ports. It also checks for unsupported anti-virus software that conflicts with Planning Analytics Workspace Local. You can jump directly to Install Planning Analytics Workspace Local on Windows Server 2019 or 2022.

Red Hat Enterprise Linux 8 and 9

- The installation kit is ipa_workspace_local_<version>.zip.

- Podman 4.6 or later is required. Any version of Podman provided with a supported version of RHEL is supported.
- Planning Analytics Workspace on Red Hat Enterprise Linux supports non-distributed installation on RHEL 8 or 9 using the Podman container engine and can be installed by either root or a non-root user.

  Rootless Podman containers are supported in Planning Analytics Workspace Local 2.0.103 and later versions.

  Rootless configuration

  Here is an example on how to configure a system service user with no login access that will be used to run Planning Analytics Workspace and enable rootless Podman:

  Note: The following is one example of a configuration. For more information, see Basic setup and Use of Podman in a Rootless Environment.

  1. Create an unprivileged system service user named `paw` with home in `/opt/ibm/paw`:

     ```
     sudo useradd -r -m -d /opt/ibm/paw -s /sbin/nologin paw
     ```

  2. Enable user lingering *systemd* to allow for user containers to remain after the user exits:

     ```
     sudo loginctl enable-linger paw
     ```

  3. Rootless Podman requires the run user to have a range of sub-UIDs and sub-GIDs assigned. These are configured in `/etc/subuid` and `/etc/subgid`. Review existing range assignments to ensure a unique range is assigned to Planning Analytics Workspace. Here is how to set up `paw` with range `100000-165535`:

     ```
     sudo usermod paw --add-subuids 100000-165535 --add-subgids 100000-165535
     ```

  4. Enable `podman.socket` for *docker-compose* communication with *podman* (required by Planning Analytics Workspace deployment) and enable the `podman-restarts` ervice to automatically start Planning Analytics Workspace on system startups:

     ```
     sudo -u paw XDG_RUNTIME_DIR=/run/user/$(id -u paw) systemctl enable --user --now
     podman.socket
     sudo -u paw XDG_RUNTIME_DIR=/run/user/$(id -u paw) systemctl enable --user --now
     podman-restart.service
     ```

  Important: If a user is configured to access both the root and rootless (user-mode) Podman socket, the rootless socket takes priority over the root socket.

  Once installation and startup are complete, Planning Analytics Workspace is available on ports `8000` and 8443.

  To run any management scripts, or upgrade and restore scripts found in the Planning Analytics Workspace installation, it's best to run in a `paw` system user shell. Switch to a `paw` user shell by running the following:

  ```
  sudo -H -u paw bash
  ```

- When you run the `start.sh` script, validation checks run automatically. You can jump directly to “Install Planning Analytics Workspace Local on Red Hat Enterprise Linux ” on page 101.
- For all currently supported Linux distributions, `overlay2` is the preferred storage driver and requires no extra configuration. For more information, see *Docker storage drivers* at https://docs.docker.com/storage/storagedriver/select-storage-driver/.
- Storage requirements can vary, you need at least 100 GB for the `/var/lib/docker` directory and sufficient space for at least two Planning Analytics Workspace installation packages wherever you choose to install them.

Free ports

The following ports are required for Planning Analytics Workspace Local.

Table 27. Planning Analytics Workspace Local required ports

Port	Protocols	Description
80	TCP	The PAGatewayHTTPPort is an HTTP port that is mapped to the host by pa-gateway. The default value is 80.
443	TCP	The PAGatewayHTTPSPort is an HTTPS port that is mapped to the host by pa-gateway. The default value is 443.
9012	TCP	To use IBM Planning Analytics Administration on Planning Analytics Workspace Local, you install and configure the Planning Analytics Administration agent wherever you install IBM TM1 Server. The default port of the Planning Analytics Administration agent is 9012.
8888	TCP	By default, the Planning Analytics Workspace administration tool is accessible on http://127.0.0.1:8888. In IBM Planning Analytics Workspace Local version 2.0.44 or later, if port 8888 is not free, you can configure Planning Analytics Workspace Local to access the Planning Analytics Workspace administration tool remotely on Windows Server. For more information, see “Access the Planning Analytics Workspace administration tool remotely on Windows Server” on page 112. If you can't run a browser on the localhost interface, you can configure Planning Analytics Workspace Local to access the Planning Analytics Workspace administration tool on another IP address. For more information, see “Access the Planning Analytics Workspace administration tool remotely on Linux” on page 113.

Install Planning Analytics Workspace Local on Windows Server 2019 or 2022

To install Planning Analytics Workspace Local version 2.0.74 or later directly on Windows Server 2019 run the `./Start.ps1` script. You can run the same script to install Planning Analytics Workspace Local 2.0.96 and later versions on Windows Server 2022.

About this task

In Planning Analytics Workspace Local version 2.0.74 or later, configuration parameters control whether validation checks are performed automatically when you install Planning Analytics Workspace Local on Windows Server.

VALIDATE_HOST

Indicates whether to perform host validation and repair.

Set to "true" to validate until `Start.ps1` is successful and then don't validate when `Start.ps1` is run again. The default is "true".

Set to "always" to always validate.

Set to "false" to never validate. If you want to skip the validation check, then add `$env:VALIDATE_HOST="false"` to your `paw.ps1` file.

Host validation runs as the first step of executing the `Start.ps1` script. Successful validation is marked by writing the `config/HostValidated` file with the current time stamp. If `$env:VALIDATE_HOST` is `true`, validation is skipped if the `confing/HostValidated` file exists. If you are upgrading, validation is performed because that file is absent in the new kit.

VALIDATE_ANTI_VIRUS

Indicates whether to check for unsupported anti-virus software while validating the host. If anti-virus software is found, the validation process fails.

Set to "true" to check for anti-virus software. The default is "true".

Set to "false" to skip checks for anti-virus software.

FREE_SPACE_REQUIRED_GB

Indicates how much free space is required (in GB) before you are notified that it might be insufficient.

Set to "0" to suppress warning messages.

Default is "50".

If free space is below this value, the script warns you but continues to load images because it is difficult to know how much space is required for the images. This check is done outside of the main container host validation because it is related to image loading instead, and it is not controlled by the `$env:VALIDATE_HOST` setting.

The start script performs the following checks:

1. Checks that you are running the `Start.ps1` script as an administrator. If the PowerShell is not running elevated, the script does not run.
2. Verifies that the version of Windows Server is supported.
3. Checks for unsupported anti-virus software installed. If the script finds any unsupported software, it displays an error and exits. You must uninstall the anti-virus software and run the script again.
4. Checks to make sure that the required modules, such as HostNetworkingService PowerShell, and features, such as Hyper-V PowerShell and Containers, are installed and configured correctly on the server. If it can, the script installs the required software or updates the configuration.
5. Checks for an existing version of Docker and validates that it is a supported version. Verifies that the Docker service exists and is configured as **Automatic (Delayed Start)**.

   If a Docker service doesn't exist, download Mirantis Container Runtime (https://www.mirantis.com/blog/getting-started-with-mirantis-container-runtime-on-windows-server/).

6. Checks that the Docker service is running, the docker.exe is on the PATH, and Docker is registered in the EventLog service.

   If the state of the service is not "Running", the script starts it. If it fails to start, the script displays an error and exits. If it is not on the PATH, it automatically adds it. If the service is not registered, it is repaired.
7. Verifies permission to use the Docker daemon.
8. Checks that docker-compose.exe is installed. If docker-compose.exe is not found on the PATH, the script copies it from the Planning Analytics Workspace installation location to `C:\Program Files\docker\docker-compose.exe`.
9. Validates that Windows container settings are correct and updates any that are required.
10. Checks that there are free ports available. Ensures that the defined Planning Analytics Workspace ports (80 and 443 by default) are free. If the pa-gateway container is running, these tests are not run.
11. Checks that there is sufficient space to install the required software. First, it reads the currently configured Docker storage directory. Then, it fetches the free space on its drive and converts it to GB. It outputs the amount of free space on the drive.

    If the free space is less than `$env:FREE_SPACE_REQUIRED_GB`, a warning is displayed that indicates you might have insufficient space to load the images. A link is displayed where you can read how to switch the *"Docker Root Dir"* to another drive.
12. Installs the Planning Analytics Workspace Docker images.
13. Opens the Planning Analytics Workspace administration tool.

Any check that results in an unrepairable error causes the script to exit and the following message to be displayed:

```
Run Start.ps1 again to revalidate your system after resolving the identified issues.
```

Follow these steps to install Planning Analytics Workspace Local.

Procedure

1. Open a PowerShell terminal window, go to the directory where you extracted the installation kit, and type the following command:

   ```
   ./Start.ps1
   ```

   Note: If you want to skip the validation check, then add `$env:VALIDATE_HOST="false"` to your `paw.ps1` file. To skip the validation check if you are deploying for the first time, create a file named `paw.ps1` in the `config` directory and add `$env:VALIDATE_HOST="false"` to the file. Save the file and run `Start.ps1` again.
2. Install the software that the validation requires and then restart your server. After a restart, run `./Start.ps1` to continue the validation and installation.

   Note: The first time that you run the start script, it automatically installs the Docker images. The next time that you run the start script, you can skip installing or updating the Docker images and go straight into the administration tool.
3. Reply "y" when you are asked whether you want to start the administration tool.

   The Planning Analytics Workspace administration tool opens in your browser.

   Note: Keep the command or terminal window open. Closing the window stops the administration tool.

What to do next

- If there are any warnings or errors that can't be resolved, view container host validation errors in the `log\validation.log` file. View Windows event logs in the `.log\docker_event_logs.csv` file.

- If the administration tool doesn't open, copy and paste the address shown in the command or terminal window into a browser window.
- If you have other issues when you connect to Planning Analytics Workspace, see "How do I fix my Planning Analytics Workspace Local installation?" on page 299

Install Planning Analytics Workspace Local on Red Hat Enterprise Linux

To install Planning Analytics Workspace Local on Red Hat Enterprise Linux, run the `./Start.sh` script.

Before you begin

Review "Prerequisites" on page 96 to ensure that you meet the prerequisites for your version of Red Hat Enterprise Linux.

All versions of Planning Analytics Workspace Local are supported on Red Hat Enterprise Linux version 7.

Important: Support for Planning Analytics Workspace Local on Red Hat Enterprise Linux 7 will end in June 2024.This coincides with Red Hat's announced end of maintenance support for Red Hat Enterprise Linux 7. For more information, see https://www.redhat.com/en/blog/end-maintenance-red-hat-enterprise-linux-7-almost-here.

Planning Analytics Workspace Local versions 2.0.70 and later are supported on Red Hat Enterprise Linux version 8.

Planning Analytics Workspace Local versions 2.0.93 and later are supported on Red Hat Enterprise Linux version 9.

About this task

The start script performs the following checks:

Red Hat Enterprise Linux 7

1. Checks if Docker is installed. If Docker is not found, the script tries to install it:

   Note: If the Red Hat system is not registered with the Red Hat subscription manager, the script displays an error and exits.

   - Installs the Docker package.
   - Adds the Docker group.
   - Adds the current user to the Docker group.
   - Starts the Docker service.
   - Configures the Docker service to start on reboot.
   - Prints the Docker version to the terminal window.
   - Prints a success message and tells you that you must log off and log in again for the group membership to take effect.
2. Installs the Planning Analytics Workspace Docker images.
3. Opens the Planning Analytics Workspace administration tool

Red Hat Enterprise Linux 8 or 9

1. Checks if Podman is installed. If Podman is not found, the script tries to install it:
   - Installs the Podman package.
   - Starts the Podman service.
   - Starts the Podman socket .
   - Adds the current user to the root group.

- Enables group read and execute permissions to the Podman socket (`/run/podman/podman.sock`)

2. If Podman is already installed, checks that the current user has access to the Podman socket. If you do not have access to the Podman socket, the script prints a message indicating the required access configuration.

The installation does not set Planning Analytics Workspace containers to start automatically upon computer restart. You must start the Planning Analytics Workspace containers after a system restart.

Follow these steps to install Planning Analytics Workspace Local.

Procedure

1. Open a terminal window, go to the directory where you extracted the installation kit, and type the following command:

```
./Start.sh
```

Note: The first time you run the start script, it automatically installs the Docker images. The next time you run the start script, you can skip installing or updating the Docker images and go straight into the administration tool.

2. Reply "y" when you are asked if you want to start the administration tool.

The Planning Analytics Workspace administration tool opens in your browser.

Note: Keep the command or terminal window open. Closing the window stops the administration tool.

What to do next

If the administration tool doesn't open, copy and paste the address shown in the command or terminal window into a browser window. If you have issues connecting to Planning Analytics Workspace on Linux OS, see “Access the Planning Analytics Workspace administration tool remotely on Linux” on page 113.

Configuring Planning Analytics Workspace Local

Perform administration tasks to monitor, configure, and upgrade Planning Analytics Workspace Local.

Configure parameters

You can change the configuration of Planning Analytics Workspace Local by modifying the `paw.ps1` (Windows) or `paw.env` (Linux) configuration file.

Note: When you change a paw configuration file, you must run `./scripts/paw` for your operating system or click **Start** in the Planning Analytics Workspace administration tool for your changes to take effect. Only services that are affected by the configuration change will restart.

Important: Do not change the values in `defaults.ps1`. Use `paw.ps1` to override a value in `defaults.ps1`.

Do not change the values in `defaults.env`. Use `paw.env` to override a value in `defaults.env`.

The default values for the configuration parameters are stored in `defaults.ps1` for the Microsoft Windows operating system and `defaults.env` for Linux. If you want to change any of the parameters, open the `paw.ps1` file or `paw.env` in a text editor, and modify the parameters. If a parameter is specified in `paw.ps1` or `paw.env`, the value in `paw.ps1` or `paw.env` overrides the value in `defaults.ps1` or `defaults.env`.

Tip: When you specify a parameter in `paw.ps1`, use the format that is shown in `defaults.ps1`. When you specify a parameter in `paw.env`, use the format that is shown in `defaults.env`. Some parameters are specified with quotation marks and some are not, depending on your operating system.

The following list describes the parameters in `defaults.env` and `defaults.ps1`.

AdminAgentAPIKey

When a request is sent from Planning Analytics Workspace to a local agent, an authentication token is also sent. This token is created using a key that must be set to the same value in both the `bootstrap.properties` file for the local agent and Planning Analytics Workspace Local configuration file.

Set **AdminAgentAPIKey** to match the **AGENT_API_KEY** plain text property value in `bootstrap.properties`, as described in Set an agent API key.

AdminAgentTimeout

Sets a timeout, in seconds, for all API calls from a monitor to a local agent. For example,

```
AdminAgentTimeout="120"
```

If **AdminAgentTimeout** is not specified, the default timeout is 5 seconds.

ADMINTOOL_PORT

In IBM Planning Analytics Workspace Local version 2.0.44 or later, you can access the Planning Analytics Workspace administration tool remotely on Windows Server by specifying the ADMINTOOL_PORT environment variable in the `config/paw.ps1` file.

For example:

```
ADMINTOOL_PORT="8888"
```

This configuration parameter applies to Planning Analytics Workspace Local installed on a Windows Server only.

API_ALLOW_ORIGINS

This parameter allows cross-origins to access API endpoints. Set to a space-separated list of domains. You can use * for global matching. By default, only `same-origin` is allowed. For example,

```
API_ALLOW_ORIGINS="*.example.com http://*.enterprise.com"
```

This parameter is required to embed URL links to Planning Analytics Workspace within an iframe in another product such as IBM Cognos Analytics. This technique is an example of Cross-Origin Resource Sharing (CORS).

For more information, see Access-Control-Allow-Origin and Same-origin policy.

CSP_FRAME_ANCESTORS

This parameter enables the HTTP Content Security Policy frame-ancestors directive. Enter values as the list of valid parent frame sources separated by a space. The default is `self`.

This parameter is required to embed URL links to Planning Analytics Workspace within an iframe in another product such as IBM Cognos Analytics. This technique is an example of Cross-Origin Resource Sharing (CORS).

For more information, see CSP: frame-ancestors.

DISABLED_SPREAD_OPTIONS

Use this parameter to disable select data spreading methods in cube views and single cell widgets.

When you disable a data spreading method, the method cannot be applied in a cube view or in a single cell widget. The method is grayed-out and cannot be selected in the **Data spread options** window and the spreading method cannot be applied using data spread keyboard shortcuts.

Important: This parameter disables data spreading only in a cube view or in a single cell widget in Planning Analytics Workspace. If Planning Analytics for Microsoft Excel is also available in your local environment, these settings have no impact on data spreading in Planning Analytics for Microsoft Excel.

Valid parameter values are :

- Repeat
- RepeatLeaves

- EqualLeaves
- StraightLine

If you specify multiple data spreading methods, separate each method by a comma and enclose the entire parameter value string in quotation marks. For example,

```
DISABLED_SPREAD_OPTIONS="Repeat,RepeatLeaves,EqualLeaves,StraightLine"
```

ENABLE_EMAIL
Set this property to true to enable the email service in Planning Analytics Workspace Local. Either **EMAIL_SMTP_URL** or **SENDGRID_API_KEY** parameter must also be specified. If both parameters are specified, **EMAIL_SMTP_URL** is used.

Default: false

EMAIL_SMTP_URL
Use this parameter to enable the SMTP email service. The parameter specifies the SMTP server URL. The following are examples of such URLs:

```
smtp://username:password@smtp.example.com:587
```

```
smtp://username:password@smtp.example.com:587?secure=false
```

```
smtps://username:password@smtp.example.com:465
```

If you specify this parameter, the **SENDGRID_API_KEY** is not used, even if it's specified.

Default: empty (no URL is specified)

SENDGRID_API_KEY
Use this parameter to enable the SendGrid email service. The parameter specifies the API key for the SendGrid email account.

Note: You might need to contact the email administrator for your organization to obtain the API key that is specific to your email service.

If you specify this parameter, specify also **EMAIL_FROM**, but don't specify **EMAIL_SMTP_URL**.

Default: empty (no API key is specified)

EMAIL_FROM
Specifies the sender address if it is required by the email server. This parameter is mandatory when **SENDGRID_API_KEY** is specified.

EnableIPv6
Set to FALSE to disable the natural language search on the intent bar. You might want to set this parameter to false to avoid long running search processes that are created with the intent bar.

Default is `True`.

ENABLE_MULTI_ENV
Set to TRUE to enable multiple environments (multi-tenancy).

When is parameter is set to TRUE, the **ENABLE_USER_IMPORT** parameter is ignored and the behavior in all environments is the same as if `ENABLE_USER_IMPORT=FALSE`.

ENABLE_PASTE_SPECIAL
Set to TRUE to enable mixed cell paste. For more information, see Paste values to a mixed range of leaves and consolidated cells (https://www.ibm.com/support/knowledgecenter/SSD29G_2.0.0/com.ibm.swg.ba.cognos.tm1_prism_gs.2.0.0.doc/c_paw_paste_special.html).

Default is FALSE.

EnableSSL
Set to TRUE if you are using SSL. Default is FALSE. Leave all other SSL options at default values if you want to run by using a self-signed test certificate.

ENABLE_USER_IMPORT
Default is TRUE. However, when `ENABLE_MULTI_ENV=TRUE`, this parameter is ignored and the behavior in all environments is the same as if `ENABLE_USER_IMPORT=FALSE`.

If set to TRUE, when a user logs in, they are immediately added as a user in Planning Analytics Workspace. When this parameter is set to true, you cannot activate, deactivate, or delete users from the **Administer** page of Planning Analytics Workspace.

If set to FALSE, a user must first be added to Planning Analytics Workspace before they can log in to Planning Analytics Workspace. If a user has not been added and tries to log in, they see an error message. Users are added by an administrator. For more information, see Add users (https://www.ibm.com/support/knowledgecenter/SSD29G_2.0.0/com.ibm.swg.ba.cognos.tm1_prism_gs.2.0.0.doc/t_prism_administer.html).

When this parameter is set to FALSE, an administrator can activate, deactivate, and delete users. For more information, see Activate or deactivate a user (https://www.ibm.com/support/knowledgecenter/SSD29G_2.0.0/com.ibm.swg.ba.cognos.tm1_prism_gs.2.0.0.doc/t_paw_activate_deactivate_users_locally.html) and Delete a user (https://www.ibm.com/support/knowledgecenter/SSD29G_2.0.0/com.ibm.swg.ba.cognos.tm1_prism_gs.2.0.0.doc/t_paw_delete_users_locally.html).

ENABLE_VIEW_EXCHANGE

Set to TRUE to enable Exploration View exchanges between Planning Analytics Workspace and Planning Analytics for Microsoft Excel in the Content Store.

For more information, see Save to the Planning Analytics Workspace Content Store(https://www.ibm.com/support/knowledgecenter/SSD29G_2.0.0/com.ibm.swg.ba.cognos.ug_cxr.2.0.0.doc/t_pax_save_commonview.html).

Note: If you are using Planning Analytics for Microsoft Excel version 2.0.43 or earlier, setting this parameter to `true` will prevent Planning Analytics for Microsoft Excel from connecting to TM1 and authentication servers with security modes 2 or 3 enabled.

ENABLE_WATSONX_ASSISTANT

Set to TRUE to enable the Planning Analytics AI assistant. When this parameter is enabled, you must also set the **WATSONX_ASSISTANT_CONFIG** parameter.

FREE_SPACE_REQUIRED_GB

Indicates how much free space is required (in GB) before you are notified that it might be insufficient.

Set to "0" to suppress warning messages.

Default is "50".

If free space is less than this value, the script warns you but continues to load images because it is difficult to know how much space is required for the images. This check is done outside of the main container host validation because it is related to image loading instead, and it is not controlled by the `$env:VALIDATE_HOST` setting.

LOG_DIR

Host directory for storing service logs. Ensure that services can create directories here. Value is log.

PA_KUBE_USE_POD_DISRUPTION_POLICIES

Set this property to true to enable PodDistruptionBudgets. If this property is not present in the configuration file, the default is false.

PAGatewayHTTPPort

HTTP port that is mapped to the host by pa-gateway. Value is 80.

PAGatewayHTTPSPort

HTTPS port that is mapped to the host by pa-gateway. Value is 443.

PAW_NET

Name of the PAW bridge network. Value is paw_net.

PAW_V6_SUBNET

IPV6 subnet for Docker containers. Value is fdfb:297:e511:0:d0c::/80.

ProxyTimeoutSeconds

Maximum number of seconds the gateway waits for a backend service response. Value is 120.

REGISTRY

Docker registry. Value is `pa-docker:5000/planninganalytics`.

ServerName
Domain name that is used to access Planning Analytics Workspace. This value is used by the gateway as the redirect target for non-SSL requests. Value is pa-gateway.

SessionTimeout
The amount of time a Planning Analytics Workspace login session can go unused before it is no longer valid. Specify a positive integer followed by a unit of time, which can be hours (h), minutes (m), or seconds (s).

For example, specify 30 seconds as 30s. You can include multiple values in a single entry. For example, 1m30s is equivalent to 90 seconds.

Default is 60 minutes.

For example, `SessionTimeout="60m"`.

SslCertificateFile
Path to a PEM-encoded file that contains the private key, server certificate, and optionally, the entire certificate Trust Chain. Value is `config/ssl/pa-workspace.pem` on Microsoft Windows Server 2016 OS or `config/pa-workspace.pem` on Linux OS.

TM1APIPort
Port for the TM1 Admin Host. The value is empty, which means to use the default port.

TM1CredentialStoreKeyFile
Path to and name of the random credential store key, which is generated the first time that you start Planning Analytics Workspace. Value is `config/credential_store.key`.

VALIDATE_HOST
Indicates whether to perform host validation and repair.

Set to "true" to validate until `Start.ps1` is successful and then don't validate when `Start.ps1` is run again. The default is "true".

Set to "always" to always validate.

Set to "false" to never validate.

Host validation runs as the first step of executing the `Start.ps1` script. Successful validation is marked by writing the `config/HostValidated` file with the current time stamp. If `$env:VALIDATE_HOST` is `true`, validation is skipped if the `confing/HostValidated` file exists. If you are upgrading, validation is performed because that file is absent in the new kit.

VALIDATE_ANTI_VIRUS
Indicates whether to check for unsupported anti-virus software while validating the host. If anti-virus software is found, the validation process fails.

Set to "true" to check for anti-virus software. The default is "true".

Set to "false" to skip checks for anti-virus software.

VIRTUAL_BOX_AS_SERVICE
If you are running the VM as a service using "VBoxVmService", set this parameter to true to suppress scripts from probing or starting the VM by using VirtualBox tools. Value is false.

WATSONX_ASSISTANT_CONFIG
This parameter must be set when `ENABLE_WATSONX_ASSISTANT=TRUE`.

Set this parameter to the licensing value that is provided when you purchase the Planning Analytics AI assistant. For example, `WATSONX_ASSISTANT_CONFIG=`*`license_value`*

.

X_FRAME_OPTIONS
This parameter enables the X-Frame-Options header as an alternative to Content-Security-Policy (CSP) frame-ancestors for browsers that don't support CSP (Internet Explorer). The default is `sameorigin`.

This parameter is required to embed URL links to Planning Analytics Workspace within an iframe in another product such as IBM Cognos Analytics. This technique is an example of Cross-Origin Resource Sharing (CORS).

For more information, see X-Frame-Options.

You configure the following values as part of the Planning Analytics Workspace installation process by using the Planning Analytics Workspace administration tool. After the initial installation, you can change these values by modifying the `paw.ps1` or `paw.env` file in a text editor or through the Planning Analytics Workspace administration tool. For more information about the Planning Analytics Workspace administration tool, see "Connect to TM1 and authentication servers" on page 107.

CAMLoginNamespace
IBM Cognos Analytics CAM authentication namespace ID. Specify only when *PAAuthMode* = cam.

IBMCognosGateway
Gateway URI of the IBM Cognos Analytics server. Specify only when *PAAuthMode* = cam. To enable SSO for Planning Analytics Workspace, you must enter a value in this field.

IBMCognosServlet
Dispatcher URI of your IBM Cognos Analytics server. Specify only when *PAAuthMode* = cam.

PAAuthMode
Supported authentication modes. Value must be `cam` for IBM Cognos Analytics security authentication or `tm1` for standard TM1 authentication.

TM1ApplicationsLocation
URI of the TM1 Application Server. Value is `http://tm1appshost:9510`.

TM1Location
URI of the TM1 Admin Host. Value is `https://tm1adminhost:5898`.

TM1LoginServerURL
URI of the TM1 server to be used for Planning Analytics Workspace authentication. Specify only when `PAAuthMode = tm1`.

`TM1LoginServerURL` can be set to either a host_name:port or IP_address:port.

If you want to identify the database used for authentication in the Planning Analytics Administration interface, **`TM1LoginServerURL`** must be set using an IP address and port. The IP address must match the address specified by the IPAddressV4 parameter in your `tm1s.cfg` file. The port number must match the port specified by the HttpPortNumber parameter in your `tm1s.cfg` file.

`TM1LoginServerURL=https://`
`IPAddressV4_from_tm1s.cfg``:`*`HttpPortNumber_from_tm1s.cfg`*

Connect to TM1 and authentication servers

You must use the Planning Analytics Workspace administration tool to configure the TM1 URIs that point to the TM1 servers and authentication servers.

About this task

Use fully qualified host names or IP addresses for the URIs. Do not use localhost.

Important: If Planning Analytics Workspace is installed on a Microsoft Windows Server 2016 OS, then you must access it from a different computer. This is a limitation of the Microsoft NAT network driver.

Procedure

1. In the Planning Analytics Workspace administration tool on the **Configuration** tab, enter the following server URIs:

   TM1 Admin Server URI
   You can specify multiple URIs. Separate each entry by a semi-colon. This is useful if your system has redundant TM1 Admin Hosts or you have groups of servers managed by different Admin Hosts.

   Note: The default value for the HTTPS REST API port is 5898, and 5895 for the HTTP REST API port.

TM1 Application Server Gateway URI
The TM1 Application Gateway provides access to TM1 Applications.

2. Under Authentication Mode, select **TM1** or **CAM**.

   Choose **TM1** if you're using standard TM1 authentication or Integrated Windows Authentication. Choose **CAM** if you're using IBM Cognos security for authentication.

   a) If you selected **TM1**, enter the value for the **TM1 Login Server URI**.

   Planning Analytics Workspace users authenticate to the system by logging in to the TM1 Login Server. Users must have the same credentials on any other TM1 server they access. You can specify a TM1 server that uses any security mode (1 - 5) for authentication. The following security modes are commonly used:

   Security mode 1
   Standard (native) TM1 authentication

   Security mode 3
   Integrated Windows Authentication

   Security mode 2
   Security modes 1 and 3 are supported. When a user logs in to Planning Analytics Workspace, they can choose between standard TM1 authentication or Integrated Windows Authentication.

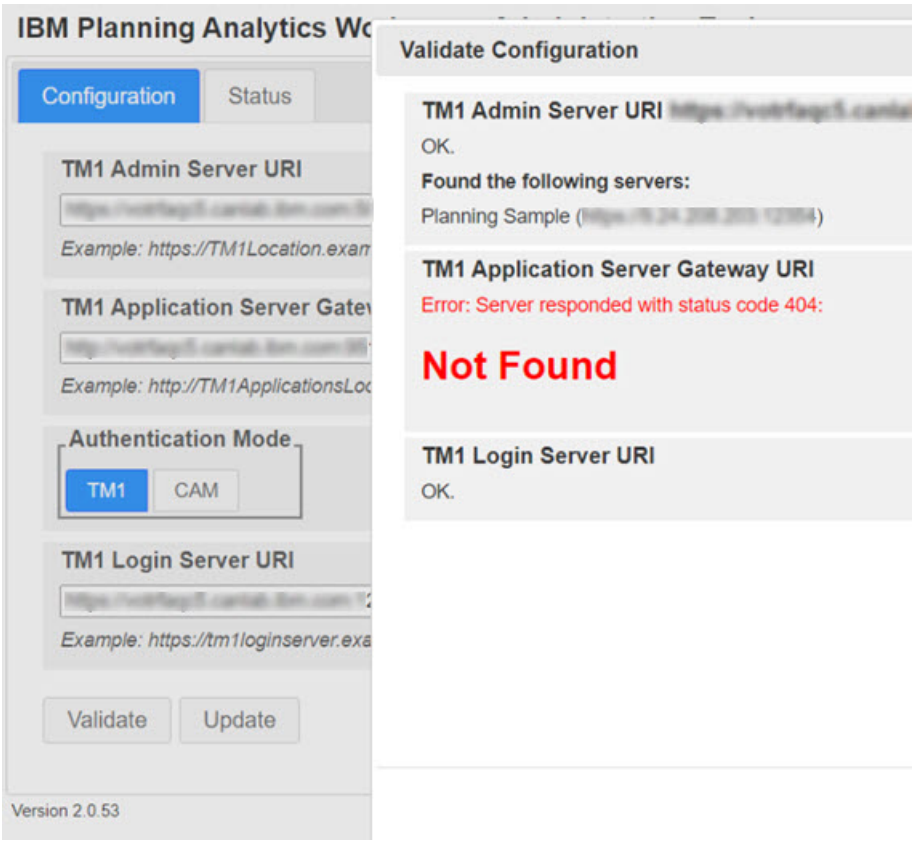
   b) If you selected **CAM**, enter the following values:

   - **IBM Cognos BI Gateway URI** To enable SSO for Planning Analytics Workspace, you must enter a value in this field.
   - **IBM Cognos BI Dispatcher URI**
   - **IBM Cognos BI Authentication Namespace ID**

3. Click **Validate**.

   Planning Analytics Workspace verifies that it can communicate with the servers and that they are configured for use with it. If a server is not successfully validated, an error message is displayed.

   Note: After installing TM1 Web, you might receive an error when validating your configuration with the IBM Planning Analytics Workspace Administration tool. The error indicates that the TM1 Application Server Gateway cannot be found.



This error is the result of an attempt to verify the presence of pmhub. As TM1 Web does not use pmhub, you can dismiss this error and continue verification.

4. Click **OK**.
5. Click **Update** and **OK** to save your configuration settings.

What to do next

- Verify that the Planning Analytics Workspace services started. For more information, see "Check the status of the services" on page 111.
- Access Planning Analytics Workspace by entering `http://<host-name>/` where *<host-name>* is the host name or IP address of your computer, in the address field of your browser.

Configure TLS for Planning Analytics Workspace Local

To configure Transport Layer Security (TLS) for IBM Planning Analytics Workspace, you create a privacy enhanced mail (pem) file that contains your security certificates.

Before you begin

You must have the private key, primary, intermediate, and root certificates from your certificate authority provider.

Procedure

1. Open a text editor and paste the body of each certificate into the file in the following order. Make sure you include the beginning and end tags on each certificate:

   private key
   <your_domain_name>.key

   primary certificate
   <your_domain_name>.crt

intermediate certificate
IntermediateCA.crt

root certificate
TrustedRoot.crt

Here is an example:

```
-----BEGIN RSA PRIVATE KEY-----
 (Your Private Key: your_domain_name.key)
-----END RSA PRIVATE KEY-----
-----BEGIN CERTIFICATE-----
 (Your Server certificate: your_domain_name.crt)
-----END CERTIFICATE-----
-----BEGIN CERTIFICATE-----
 (Your Intermediate certificate: IntermediateCA.crt)
-----END CERTIFICATE-----
-----BEGIN CERTIFICATE-----
 (Your Root certificate: TrustedRoot.crt)
-----END CERTIFICATE-----
```

2. Save the file as `pa-workspace.pem` and then copy or move it to the following location:
   - `<paw_install_location>/config/ssl` directory for Microsoft Windows Server 2016 OS.
   - `<paw_install_location>/config` directory for Linux OS.

   If the `pa-workspace.pem` already exists in the directory, overwrite it.
3. For Microsoft Windows Server 2016 OS:
   a) Open the `<paw_install_location>/config/paw.ps1` file and add the following lines at the end:

   ```
   $env:EnableSSL="true"
   $env:ServerName="<paw-server-name>"
   ```

   where *<paw-server-name>* is the name of the server on which Planning Analytics Workspace is installed.
   b) Save the `<paw_install_location>/config/paw.ps1` file.
4. For Linux OS:
   a) Open the `<paw_install_location>/config/paw.env` file and add the following lines at the end:

   ```
   export EnableSSL=true
   export ServerName=<paw-server-name>
   ```

   where *<paw-server-name>* is the name of the server on which Planning Analytics Workspace is installed.
   b) Save the `<paw_install_location>/config/paw.env` file.
5. Open the Planning Analytics Workspace administration tool and restart all services.
   For information about how to open the administration tool, see "Check the status of the services" on page 111.

Configure TLS between Planning Analytics Workspace Local and other servers

If you are using self-signed certificates for TM1 servers or IBM Cognos Analytics, you might need to add the certificate authority certificates for them to the list of CA certificates that are used by IBM Planning Analytics Workspace.

About this task

This task creates a file called `cacerts` that contains your CA certificates. The `cacerts` file is used by the Java services in Planning Analytics Workspace.

If you get a Java certificate chaining error when you log in to Cognos Analytics, performing these steps will resolve it.

Procedure

1. Put the certificate authority (CA) certificates files in the *paw_install_location*>/config/certs directory.
2. Run the *paw_install_location*>/scripts/process_certs.ps1 (Microsoft Windows Server 2016 OS) or process_certs.sh (Linux OS) script.
3. Open the Planning Analytics Workspace administration tool and restart all services.

   For information about how to open the administration tool, see “Check the status of the services” on page 111.

What to do next

The cacerts file is created in the <*paw_install_location*>/config directory. If you need to change the set of CA certificates, put the CA certificates into the <*paw_install_location*>/config/certs directory and run the process_certs script again.

Check the status of the services

The **Status** tab in the Planning Analytics Workspace administration tool displays the status, up time, CPU usage, memory usage, and percentage of memory used for each service.

Procedure

1. Run the Start.ps1 (Microsoft Windows Server 2016) or Start.sh (Linux) script.
2. Reply "n" when you are prompted to install the Docker images.
3. Reply "y" when you are prompted to start the administration tool.

   If the administration tool doesn't open, copy and paste the address shown in the command or terminal window into a browser window.
4. In the Planning Analytics Workspace administration tool, click the **Status** tab.
5. Click **Refresh** and then verify that all services in the list have a status of "running".

   When you are installing, wait until all services have started (the CPU % for services drops) before accessing Planning Analytics Workspace.
6. To stop, start, or restart one service, select (highlight) it in the list, and then click **Stop**, **Start**, or **Restart**.
7. To stop, start, or restart all services, make sure that no services are selected in the list, and then click **Stop**, **Start**, or **Restart**.

View logs

You can use the **Status** tab of the Planning Analytics Workspace administration tool to view logs.

About this task

The log directory in the installation directory contains a subdirectory for each service.

Procedure

1. Run one of the following scripts from the <*paw_install_location*> folder:

Operating system	Script to run
Microsoft Windows Server 2016	Start.ps1
Linux	Start.sh

2. Reply "n" when you are prompted to install the Docker images.
3. Reply "y" when you are prompted to start the administration tool.

   If the administration tool doesn't open, copy and paste the address shown in the command or terminal window into a browser window.
4. In the Planning Analytics Workspace administration tool, click the **Status** tab.
5. To see the logs of one service, select (highlight) a service in the list by clicking it, and then clicking **Logs**.

   The last 1000 lines in the log file for the service are displayed.

   Tip: If you want to see more content, you can open the file from the `log` directory in a text editor. This is also a way to view the logs without using the administration tool.

Shut down MongoDB cleanly on Windows Server 2016

When you shut down Planning Analytics Workspace on a Windows 2016, you must make sure that you shut down the MongoDB container cleanly. To perform this shutdown safely, use the Local Group Policy Editor to add the Planning Analytics Workspace `shutdown.ps1` script to the scripts that are launched at shutdown.

About this task

Important: You must **not** stop the MongoDB container by using docker commands such as **`docker stop`**. Always use the Planning Analytics Workspace administration tool or the `<paw_install>/scripts/paw.ps1` script.

The `<paw_install>/scripts/paw.ps1` script calls the `<paw_install>/scripts/shutdown.ps1` script whenever an operation that might shut down MongoDB is invoked. Use the Local Group Policy Editor to add `shutdown.ps1` to the scripts that are launched at shutdown.

Procedure

1. In a command window, open the Group Policy Editor (GPE) by running **`gpedit.msc`**.
2. Expand **Computer Configuration** and select **Windows Settings**.
3. Double-click **Scripts (Startup/Shutdown)**.
4. Switch to the **PowerShell Scripts** tab.
5. Click **Add** and add `<paw_install>/scripts/shutdown.ps1`.

Access the Planning Analytics Workspace administration tool remotely on Windows Server

On Windows Server, by default you access the Planning Analytics Workspace administration tool from the computer that it is installed on using port 8888. To access the administration tool remotely, you can set the ADMINTOOL_PORT environment variable.

About this task

This task applies to Planning Analytics Workspace Local version 2.0.44 or later installed on a Windows Server only.

Note: Accessing the Planning Analytics Workspace administration tool locally on port 8888 is the preferred configuration for security reasons.

Procedure

1. Open the `<paw_install_location>/config/paw.ps1` file and add the ADMINTOOL_PORT environment variable in the file:

```
$env:ADMINTOOL_PORT="<admintool_port>"
```

where *<admintool_port>* is a free port on the localhost.

2. Run the `Start.ps1` script.
3. Reply "n" when you are prompted to install the Docker images.
4. Reply "y" when you are asked whether you want to start the administration tool.

   The Planning Analytics Workspace administration tool opens in your browser on the port specified.

   Note: Keep the command or terminal window open. Closing the window stops the administration tool.

What to do next

- If the administration tool doesn't open, copy and paste the address shown in the command or terminal window into a browser window.

Access the Planning Analytics Workspace administration tool remotely on Linux

By default you access the Planning Analytics Workspace administration tool from the computer on which it is installed. To access the administration tool from another computer, you can set the ADMINTOOL_IP environment variable.

About this task

This task applies to Planning Analytics Workspace Local installed on a Linux OS only.

Important: Running the Planning Analytics Workspace administration tool this way is not secure, so you might want to restrict access to specific remote IP addresses using the OS firewall.

Procedure

1. In a terminal window, enter the following command:

   ```
   export ADMINTOOL_IP=<ip address>
   ```

   Where *<ip address>* is the IP address of the computer that is running Planning Analytics Workspace Local.
2. Run the `Start.sh` script.
3. Access the administration tool from the remote computer by copying and pasting the address that is shown in the command or terminal window into a browser window on the remote computer.

Backup or restore Planning Analytics Workspace Local

When you backup Planning Analytics Workspace Local, you are saving user information such as preferences, book assets, chat history, recently visited sites, and book marks.

About this task

All data is backed up or restored. You can't selectively backup or restore.

You should back up Planning Analytics Workspace Local regularly to be prepared for disaster recovery.

To perform disaster recovery, follow the steps to install Planning Analytics Workspace Local on a new system. Then follow the steps to restore the application from a backup.

Important: You must perform this task during a system maintenance window because services are stopped and started.

Note: The backup and restore scripts can be used to migrate from Windows Server to Planning Analytics Workspace Distributed only in Planning Analytics Workspace versions 2.0.74 and later.

Procedure

To backup:

1. If you are backing up from a Microsoft Windows version *other* than Microsoft Windows Server 2016, then complete the following steps:
   a) Run the `Start.bat` script.
   b) Answer n to the questions about installing Docker images and starting the administration tool.
2. Run one of the following scripts from the *<paw_install_location>*`/scripts` folder:
   - For Microsoft Windows Server, use the `backup.ps1` *<folder-name>* script.
   - For Linux, use the `backup.sh` *<folder-name>* script.

   where *<folder-name>* is the file path and name of the folder to back up to. If you omit *<folder-name>*, a folder with the current time is created in the `backup` directory.

To restore:

3. Run one of the following scripts from the *<paw_install_location>*`/scripts` folder:
   - For Microsoft Windows Server, use the `restore.ps1` *<folder-name>* script.
   - For Linux, use the `restore.sh` *<folder-name>* script.

   where *<folder-name>* is the path and name that contains the data to restore.

Upgrade Planning Analytics Workspace Local

To upgrade Planning Analytics Workspace Local, you install a new version of Planning Analytics Workspace Local in a new location.

Before you begin

Go to Fix Central (https://www.ibm.com/support/fixcentral/) and download the version of Planning Analytics Workspace Local software that you want to upgrade to. Put the ipa_workspace_local_<version>.zip file in a directory that is different from your current installation and extract it.

Important: You must upgrade during a system maintenance window because services are stopped and started.

Procedure

1. Copy the `<paw_install_location>/config/paw.ps1` file from your current installation to the new installation location.
2. Copy the `<paw_install_location>/config/certs` directory from your current installation to the new installation location.
3. Optional: If you configured SSL, copy the `<paw_install_location>/config/ssl` directory from your current installation to the new installation location.
4. Install Planning Analytics Workspace Local in the new installation location. See Chapter 10, “Installing Planning Analytics Workspace Local,” on page 95.

   Reply "y" when you are prompted to install the Docker images. Reply "y" when you are prompted to open the administration tool.
5. In the Planning Analytics Workspace administration tool, verify that all of the TM1 URIs are defined correctly, and restart all the services.

What to do next

Planning Analytics Workspace Local includes a `/clean` script in the `<paw_install_location>/scripts` folder. Running the `/clean.ps1` or `/clean.sh` script removes images for the release in which it is run. After you upgrade, you can run this script to remove images from the installation location of the previous release.

Uninstall Planning Analytics Workspace Local

When you follow these steps to uninstall Planning Analytics Workspace Local, you delete all Docker containers, databases, images, networks, and volumes that were created for Planning Analytics Workspace Local.

Procedure

1. If you are uninstalling Planning Analytics Workspace Local from:
   a) Microsoft Windows Server 2019/2022 OS

      Open a command window, go to the directory where you extracted the installation kit, and enter the following command:

      ```
      scripts/paw.ps1 down --rmi all -v
      ```

   b) Linux OS (Red Hat Enterprise Linux version 7 or 8)

      Open a terminal window, go to the directory where you extracted the installation kit, and enter the following command:

      ```
      scripts/paw.sh down --rmi all -v
      ```

2. Some utility containers and images might remain. To remove all unused items, run the following command:
   a) Microsoft Windows Server 2019/2022

      ```
      docker system prune -a
      ```

   b) Red Hat Enterprise Linux version 7

      ```
      docker system prune -a
      ```

   c) Red Hat Enterprise Linux version 8

      ```
      podman system prune -a
      ```

3. Delete the files in the directory where you extracted the installation kit.

Chapter 11. Planning Analytics Workspace Distributed

IBM Planning Analytics Workspace Distributed is a deployment of IBM Planning Analytics Workspace that uses Red Hat® OpenShift® for high availability, failover, scalability, and fault tolerance.

For more information about Red Hat OpenShift, see the Red Hat OpenShift website (Red Hat OpenShift).

Important upgrade considerations for Planning Analytics Workspace Distributed

A mandatory backup and restore is required to successfully upgrade specific versions of Planning Analytics Workspace Distributed on select platforms. This backup and restore is necessary to avoid data loss during the upgrade process.

You must perform a backup and restore on the following platform when upgrading from a version **prior** to 2.0.64 to version 2.0.64 or later.

- OpenShift Container Platform 4.x

For example, you must perform a backup and restore when upgrading from 2.0.62 to version 2.0.64. Similarly, you must perform a backup and restore when upgrading from 2.0.63 to version 2.0.65. However, you **do not** need to perform a backup and restore when upgrading from version 2.0.64 (or later) to a more recent version.

During the upgrade installation, you will see a notice alerting you to the requirement for a backup.

```
*UPDGRADE NOTICE*
You are about to upgrade from a Planning Analytics Workspace release prior to 2.0.64 and will
require a backup of your data to complete the upgrade process. If you have not taken a backup,
please STOP here and do so. Do you want to continue with this upgrade (y/n)? (default n)
```

To back up the Planning Analytics Workspace Distributed databases, run the **tools/backup.sh** script:

```
tools/backup.sh
```

If no parameters are supplied, the script creates a folder that is called backup in the current working directory and stores the backup data in a folder with a name generated based on the current date and time.

You can also supply a folder path for the backup. If the folder exists, it must be empty. If the path does not exist, the script creates it.

```
tools/backup.sh my/backup/folder
```

Schedule backups according to your business requirements. You might want to compress and encrypt the contents of the backup folder before you archive it.

After the upgrade installation is complete, you'll also see a notice alerting you to restore the backup you created.

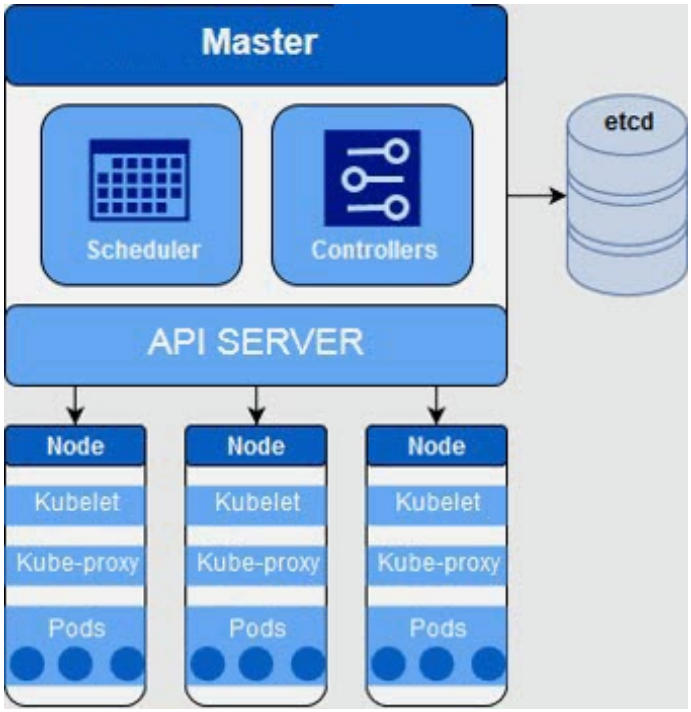
```
*UPDGRADE NOTICE*
Please note that to complete this upgrade you will need to restore the Planning Analytics
Workspace backup of the previous version.
```

While Planning Analytics Workspace Distributed is running, execute the **tools/restore.sh** script:

```
tools/restore.sh path-to-backup-folder
```

Install on OpenShift

Planning Analytics Workspace Distributed supports deployment on Red Hat OpenShift Container Platform, a container orchestration system for automating application deployment, scaling, and management of containerized applications..



An OpenShift environment can have one or more of the following features activated:

- A private docker registry for the OpenShift deployment
- An active helm within the OpenShift deployment
- An ingress controller configured for the OpenShift environment

Install OpenShift prerequisites

Before you install Planning Analytics Workspace Distributed on OpenShift, make sure that you have the following prerequisites.

OpenShift

You must use OpenShift version 4.6 and later.

Worker node requirements

Planning Analytics Workspace Distributed requires worker nodes that meet or exceed the following capacities.

- 4 CPUs
- 8 Gb of random-access memory (RAM)
- 400 Gb of storage

The install script automatically detects worker nodes in the cluster if they are assigned one of the following labels:

- `node-role.kubernetes.io/compute`
- `node-role.kubernetes.io/worker`

If you want the start script to automatically detect the worker nodes to use, make sure that one of these labels is specified for the worker node.

Or, you can manually configure the OpenShift node configuration file.

Environment

The following utilities must be available on the system where you run the deployment scripts:

- Bash version 3 or higher must be present on the system where the deployment scripts run.
- The *sed* utility must be present on the system.
- If the *tee* utility is on your system, then the deployment scripts display the output from the initialization job on the screen. Otherwise, it waits until initialization finishes.

If your environment employs a docker registry for image management, you must also install the docker client on your system. Otherwise, the following utilities must be available:

- scp
- ssh

If you don't have this configuration, see "Configure advanced OpenShift settings" on page 123 to configure the installation so that it does not assume these options.

Extract the Planning Analytics Workspace Distributed archive

To extract the Planning Analytics Workspace Distributed archive, enter the following command in a terminal.

```
unzip -o <archive-name>.zip -d <destination-folder>
```

The **unzip** creates the destination folder if it does not exist.

Configure basic OpenShift settings

In most cases, the default configuration settings are sufficient for your OpenShift cluster. All default configuration settings can be found in `kubernetes/config/defaults.env`. If the default configuration settings are not sufficient, you can override any settings in a `config/paw.env` file.

Note: Do not change the values in `kubernetes/config/defaults.env`. Use `config/paw.env` to override a value in `defaults.env`.

Other advanced options also exist that allow different configuration. For more information, see "More basic configuration settings" on page 126.

Configure the OpenShift project

By default, the start script configures an OpenShift project named `paw`. If you wish to use a different name, add **`export PA_KUBE_NAMESPACE=<project>`** to `paw.env`.

For example: **`export PA_KUBE_NAMESPACE=myns`**

Important: Do not specify the default project, or any of the OpenShift system projects as the value of **`PA_KUBE_NAMESPACE`**.

Configure deployment of images

You can configure Planning Analytics Workspace Distributed to copy the docker image files to all worker nodes or employ a private docker registry if one is configured for the OpenShift cluster.

The start script asks whether you want to use a private registry. If you don't want to use a private registry, the start script uses *ssh* and *scp* to copy the image archive to all designated worker and storage nodes.

Note: A worker node must have at least 5 Gb of space for the image copy to succeed.

By default, the scripts assume that the same ssh user is to be used on all nodes. If your cluster uses different ssh users, set SSH_SAME_USER to `false` in `config/paw.env`.

If you want to use a private registry, then the `docker` command is used to push the images to the configured private registry. The start script prompts for the host name and port of the private registry. You are prompted for the registry user name and password when applicable.

You can use more configuration settings to change the image copy path, tag prefix, and to support unattended installs. For more information, see “Advanced image deployment settings” on page 127.

Configure an ingress controller

By default, an ingress controller is assumed to be configured for the OpenShift deployment. A TLS certificate is generated for the ingress controller to use.

If you have your own key and certificate that you want to use instead, see “Advanced ingress controller configuration settings” on page 129.

Configure storage

The storage services in Planning Analytics Workspace Distributed employ OpenShift persistent volume claims to persist data.

Three storage types are supported:

- node
- shared
- pod

The desired storage type is configured by specifying `node`, `shared`, or `pod` as the value for **PA_KUBE_STORAGE_TYPE** in `paw.env`. If **PA_KUBE_STORAGE_TYPE** is not specified, the start script prompts you for the desired storage type.

Note: If your OpenShift policy restricts the use of `emptyDir` volumes, Planning Analytics Workspace now supports ephemeral volumes using transient persistent volume claims. Ensure your cluster supports dynamic provisioning and specify a compatible storage class during deployment.

Configure node storage

By default, Planning Analytics Workspace Distributed uses the node storage type. The node storage type uses OpenShift node persistent storage that is pinned to three worker nodes, as specified by the **PA_KUBE_STORAGE_NODES** environment variable in `paw.env`.

The storage containers are also pinned to these same nodes, allowing the application to continue to function if one of the nodes becomes inactive. If **PA_KUBE_STORAGE_NODES** is not specified, then the start script selects three worker nodes to act as the storage nodes.

Node storage employs three persistent volume claims, one for each of the three storage nodes. Storage containers are grouped into three sets: storage-node1, storage-node2, and storage-node3.

For node persistent storage to work properly, the root location on each storage node must exist before the node can be used. The start script asks you whether you would like the script to configure the storage location on each storage node automatically. Note that this requires ssh access to the three storage nodes. If you do not have ssh access to the storage nodes, or wish to configure the storage nodes manually, specify n when prompted.

Configure shared storage

Shared storage employs a single persistent volume claim that is shared by all storage containers. If you are planning to use NFS or another shared storage provider such as Portworx, select `shared` when prompted. **PA_KUBE_STORAGE_NODES** is not used with shared storage.

Shared storage supports two types of volumes: NFS and `other`. The volume type is configurable via the **PA_KUBE_VOLUME_TYPE** environment variable in `paw.env`. If **PA_KUBE_VOLUME_TYPE** is not specified, you are prompted to select the desired type. Shared storage employs a single persistent volume claim, and all storage services reference the single volume claim.

Configure pod storage

Pod storage employs a separate persistent volume claim for each storage container. This allows for a finer grain of persistence to be specified, allowing storage providers to make optimal decisions regarding placement.

Pod storage supports three types of volumes: `node`, NFS, and `other`. The volume type is configured with the **PA_KUBE_VOLUME_TYPE** environment variable in `paw.env`.

If **PA_KUBE_VOLUME_TYPE** is not specified, you are prompted to select the desired type. If `local` is specified for the volume type, then storage exhibits the same semantics as if **PA_KUBE_STORAGE_TYPE** was set to `node`. Storage is pinned to three worker nodes, as specified by the **PA_KUBE_STORAGE_NODES** environment variable in `paw.env`. The storage containers are also pinned to these same nodes, allowing the application to continue to function if one of the nodes becomes inactive.

Set the desired storage class

Some storage providers expose storage classes that need to be specified in any persistent volume claims.

If the storage provider configured for your cluster employs such storage-classes, **PA_KUBE_STORAGE_CLASS** can be set to specify the desired storage class. If **PA_KUBE_STORAGE_CLASS** is not specified in `paw.env`, you are prompted to specify the desired storage class.

Storage providers and init container execution

Some storage providers may require that the ownership of the mounted volumes be changed within the pods. If the storage class that you are using requires this action, set **PA_KUBE_INIT_CONTAINERS** to `true` within `paw.env`.

Note that this also requires that your cluster be configured to allow the init containers to run as root. To minimize the security exposure, the installation configures a service account called `pa-allow-rootuid` that is used for all storage pods. The `pa-allow-rootuid` service account must be added to the appropriate security context object in your cluster that allows containers to run as root.

Set OpenShift resource limits

By default, all Planning Analytics Workspace Distributed containers execute without any limits on the amount of CPU and memory that they consume. However, some environments may require that explicit limits be specified for all containers running in the cluster.

If your deployment has such a requirement, set **PA_KUBE_EXPLICIT_LIMITS** to `true` in `paw.env`. The default configuration values can be found in `kubernetes/config/defaults.env`. If you need to increase the values, override the appropriate environment variable in `paw.env`.

Deferred deployment

If your environment employs a DevOps pipeline environment, you may want to deploy Planning Analytics Workspace Distributed via the pipeline, as opposed to executing `start.sh`. To support such environments, Planning Analytics Workspace Distributed contains two scripts: `push.sh` and `configure.sh`.

The `push.sh` script lets you push container images as an independent operation.

The `configure.sh` scripts performs the same operations as `start.sh`, but it does not deploy the application. It simply prepares the Helm chart or standalone YAML files (depending on configuration), so that the objects can be deployed by another process. The `configure.sh` script may also generate a `predeploy.sh script`, which contains commands that must be executed before deploying the application.

Standard YAML files are generated by configuration. Use the following standard OpenShift or Helm commands to deploy the application:

- `oc apply`
- `helm install`

Configure Red Hat OpenShift deployment

For Red Hat OpenShift, the following configuration settings must be performed on the deployment.

Log in with a user that has the `cluster-admin` role, then execute the following commands:

```
oc new-project paw
oc adm policy add-scc-to-user nonroot -z pa-config-secret -n paw
oc adm policy add-scc-to-user nonroot -z default -n paw
```

If the storage provider configured for your cluster requires that the ownership of the mounted volumes be changed within the pods, then execute the following additional commands:

```
oc create serviceaccount pa-allow-rootuid -n paw
oc adm policy add-scc-to-user anyuid -z pa-allow-rootuid -n paw
```

Note: Replace *paw* in the above commands if you have overridden the default project value.

Start Planning Analytics Workspace Distributed

Follow these steps to start Planning Analytics Workspace Distributed.

Procedure

1. Run the `start.sh` script:

   ```
   ./start.sh
   ```

   The script checks your cluster environment. If any prerequisites are not satisfied, review the output, update your environment, and rerun the script.
2. Provide values for the configuration prompts that the start script presents:

   ```
   Enter the host name of your primary node: myhost.com
       Helm detected - configuring install to use helm for deployment
       Would you like to use a private docker registry? (default 'n'):
       Worker nodes configuration successfully validated
       Kubernetes version successfully validated
       Storage class (default: 'paw-storageclass'):
       Storage type - dedicated | local | shared (default: 'local'):
       Storage root for local persistent volumes (default: '/opt/ibm/planninganalytics/paw'):
       Storage nodes configuration successfully validated
       Ingress type - controller | nodeport | none (default: 'controller'):
       Ingress host (default: ‘myhost.com'):
   ```
3. Verify that the script created all Planning Analytics Workspace Distributed services. Wait a few minutes for the system to complete its initial configuration.

Reinstall or uninstall Planning Analytics Workspace Distributed

To reinstall or uninstall Planning Analytics Workspace Distributed, run the `uninstall.sh` script.

The script asks whether you want to clean up the persistent storage used by the installation. If you are reinstalling and want to reuse your existing content, answer 'n' to the prompt.

The script also asks whether you want to remove the project configuration from the cluster. If you want to completely uninstall Planning Analytics Workspace Distributed from your cluster, answer 'y' to the prompt.

Configure advanced OpenShift settings

You can used advanced configuration settings to customize your installation of Planning Analytics Workspace Distributed.

Node configuration

The node configuration file, found at `config/paw.env`, specifies information about the OpenShift nodes that the installation needs.

The configuration file contains four environment variables: COPY_NODE, WORKER_NODES, STORAGE_NODES, and NFS_SERVER:

Example node configuration

```
#
        # If you are not employing a docker registry, specify the
        # host portion of the primary node URI returned from the
        # clusterInfo.sh script.
        #
        export COPY_NODE=()

        #
        # Specify the values of all worker nodes returned from the clusterInfo.sh script.
        # Space separated. e.g. (value1 value2 value3) where value is hostname of each worker.
        #
        export WORKER_NODES=()

        #
        # Specify the values of three of the nodes listed in the WORKER_NODES variable.
        # Space separated. e.g. (value1 value2 value3) where value is hostname of each worker.
        #
        export STORAGE_NODES=()

        #
        # Specify the IP address of the nfs server if employing nfs
        # based persistent volumes
        #
        export NFS_SERVER=()
```

Configure the persistent volume locations on the storage nodes

By default, the storage services use OpenShift local persistent volumes within the designated storage nodes. The start script asks you whether you would like the script to configure the storage locations automatically.

About this task

Note: If you changed the value of **PA_KUBE_STORAGE_ROOT**, replace `/opt/ibm/planninganalytics/paw` in these commands with the new value.

Procedure

1. If you have ssh access to the storage nodes, specify y when you are prompted. The start script will ask you to log in to each storage node and will configure the storage folders for you.
2. If you do not have ssh access to the storage nodes, an administrator must complete the following steps:
   a) Log on to first storage node that you have specified in the `config/paw.env` file and run the following command:

   ```
   sudo mkdir -p /opt/ibm/planninganalytics/paw/storage-node1
   ```

   b) Log on to the second storage node and run the following command:

   ```
   sudo mkdir -p /opt/ibm/planninganalytics/paw/storage-node2
   ```

c) Log on to the third storage node and run the following command:

```
sudo mkdir -p /opt/ibm/planninganalytics/paw/storage-node3
```

What to do next

If you want to use another volume type, see "Configure a different storage type" on page 124.

Configure the NFS persistent volume locations

If you decide to use a Network File System (NFS) server for storage, you must perform the following operations.

About this task

Note: If you changed the value of **PA_KUBE_STORAGE_ROOT**, replace `/opt/ibm/planninganalytics/paw` in these commands with the new value.

Procedure

1. Add the following lines to `config/paw.env`:

```
export PA_KUBE_STORAGE_TYPE=shared
export PA_KUBE_VOLUME_TYPE=nfs
```

2. 2. Add the IP address of the NFS server to `config/paw.env`.
3. 3. Configure the storage folders on the NFS server.
4. If the OpenShift cluster does not support dynamic provisioning for NFS persistent volumes, log on to the NFS server and execute the following commands:

```
sudo mkdir -p /opt/ibm/planninganalytics/paw/storage-node1
sudo mkdir -p /opt/ibm/planninganalytics/paw/storage-node2
sudo mkdir -p /opt/ibm/planninganalytics/paw/storage-node3
```

5. Configure your NFS server to export the following location:

```
/opt/ibm/planninganalytics/paw
```

6. On each of the three storage nodes, mount the following NFS directory:

```
/opt/ibm/planninganalytics/paw
```

Configure a different storage type

If your deployment uses a different storage type, for example, GlusterFS, you must modify the contents of the `other.yaml` file in the `/templates/volumes` directory.

Before you begin

The `other.yaml` file contains all persistent volume definitions that are required for the storage services. You can update the persistent volume definitions; however, the metadata section of each persistent volume definition must remain as specified.

Procedure

1. Add the following line to `/config/paw.env`:

```
export PA_KUBE_STORAGE_TYPE=shared
export PA_KUBE_VOLUME_TYPE=other
```

2. Configure the volume definitions in `templates/volumes/other.yaml`. Each persistent volume definition in `templates/volumes/other.yaml` contains a comment block. Replace the comment block with details associated with the storage type.

```
#
# Place your volume configuration here
#
```

Configure Red Hat OpenShift security

To enable the OpenShift cluster to create Planning Analytics Workspace Distributed secrets, the installation configures the `pa-config-secret` service account.

If your storage provider requires that the ownership of mounted volumes be changed within the container, the installation configures a service account called `pa-allow-rootuid` that is used for all storage pods. The `pa-allow-rootuid` service account must be added to the appropriate security context object in your cluster that allows containers to run as root.

Both of these service accounts are restricted to the Planning Analytics Workspace Distributed project, which is `paw` by default. These service accounts are used only by the containers that are associated with Planning Analytics Workspace Distributed.

1. The `pa-allow-rootuid` service account allows the Planning Analytics Workspace Distributed storage services to temporarily run as root so that correct file permissions can be set. After this step completes, the storage services run as a non-root user.
2. The `pa-config-secret` service accounts allow the installation to create secrets in the cluster. Secrets are created in the cluster by a configuration container that is run during the installation of Planning Analytics Workspace Distributed. The installation also configures `pa-config-secret` role and role-binding objects that restrict the service account to manage only secrets within the Planning Analytics Workspace Distributed project.

   Note: Secrets configuration runs during the installation, it does not run as part of Planning Analytics Workspace Distributed itself.

Configure the primary node and worker nodes

Use the **`tools/clusterInfo.sh`** command to determine the values to specify within each section of `config/paw.env`.

Procedure

1. Run the **`tools/clusterInfo.sh`** command to determine the values for each section of the `config/paw.env`.

   The command returns information on the primary node and worker nodes in the OpenShift cluster.

   For example:

   ```
   Kubernetes primary is running at https://9.245.133.29:8001

   Worker nodes:
   10.31.100.101
   10.31.100.102
   10.31.100.103
   10.31.100.104
   ```

2. Configure the host of the primary node that is returned from step “1” on page 125 in the COPY_NODE environment variable so that image archives are placed on the worker nodes.

   For example:

   ```
   export COPY_NODE=(9.245.133.29)
   ```

3. Copy the list of returned worker nodes that are returned from step “1” on page 125 to the WORKER_NODES environment variable to specify the addresses of all worker nodes in the deployment..

For example:

```
export WORKER_NODES=(10.31.100.101 10.31.100.102 10.31.100.103 10.31.100.104)
```

4. Select three worker nodes to act as storage nodes and specify them within the STORAGE_NODES environment variable.

   Planning Analytics Workspace Distributed pins the storage services to three worker nodes. All other services are distributed across all worker nodes as OpenShift determines.

   For example:

```
export STORAGE_NODES=(10.31.100.101 10.31.100.102 10.31.100.103)
```

More basic configuration settings

You can use more basic configuration options to customize projects, logging, and backup capabilities for Planning Analytics Workspace Distributed.

KUBERNETES_CMD
Possible values: any valid path

Default value: `kubectl`

Name of `kubectl` command. Specify a fully qualified path if `kubectl` is not already within your path.

PA_KUBE_CHART
Possible values: any

Default value: `pa-workspace`

Helm chart name. Must not be blank.

PA_KUBE_HOST
Possible values: any

Default value: none

Hostname of external access point for Planning Analytics Workspace.

This value is typically the hostname of your proxy node, or an external load balancer. Must not be blank.

If not specified, you are prompted for a value.

PA_KUBE_INGRESS_CONTROLLER
Possible values: `true` | `false`

Default value: ()

Indicates whether an ingress controller is configured for the OpenShift cluster.

If not specified, the deployment script automatically tries to detect the existence of an ingress controller.

PA_KUBE_INGRESS_HOST
Possible values: any

Default value: The value of PA_KUBE_HOST

Allows for the specification of an ingress host for your application.

If not specified, you are prompted whether you would like an ingress host, and if so, what the host value should be.

PA_KUBE_NAMESPACE
Possible values: ()

Default value: `paw`

Specifies the OpenShift project.

PA_LOG_MODE
Possible values: `file` | `console`

Default value: `file`

Indicates whether the deployment script writes logs to the console or to a file.

PA_ZIP_BACKUP

Possible values: `true` | `false`

Default value: `false`

Indicates whether backups are to be stored as a compressed file.

Advanced image deployment settings

If ssh and scp are not already within your path, you can update the following settings to point to their locations.

PA_KUBE_USE_PRIVATE_REGISTRY

Possible values: `true | false`

Default value: none

Indicates whether to use a private docker registry.

If not specified, you are prompted for a value.

PA_KUBE_PRIVATE_REGISTRY_SECRET

Possible values: any

Default value: `pa-registry-secret`

Indicates the name of the private registry secret that is used to pull images. If the specified value is the default, then you are prompted to create the secret, otherwise it is assumed to already exist.

SCP_CMD

Possible values: any valid path

Default value: `scp`

Name of scp command. Specify a fully qualified path if scp is not already within your path.

SCP_PATH

Possible values: any valid path

Default value: .

Location on worker node where to place image archives. Can either be an absolute or relative path.

SSH_CMD

Possible values: any valid path

Default value: ssh

Name of ssh command. Specify a fully qualified path if ssh is not already within your path.

SSH_SAME_USER

Possible values: `true` | `false`

Default value: `true`

Indicates whether the ssh user is the same on all worker and storage nodes.

If docker is not already within your path, update the DOCKER_CMD setting:

DOCKER_CMD

Possible values: any valid path

Default value: `docker`

Name of docker command. Specify a fully qualified path if docker is not already within your path.

For unattended installs, you can specify the user name, password, and email address of the docker private registry user:

PULL_REGISTRY

Possible values: (any)

Default value: The value assigned to the **REGISTRY** variable.

Docker private registry host and port. If the registry URL that you push the images to is different than the registry URL that worker nodes need to pull from, specify this here.

REGISTRY
Possible values: (any)

Default value: `127.0.0.1:5000`

Docker private registry host and port. Must not be blank.

REGISTRY_USER
Possible values: any

Default value: none

Docker private registry user. If blank, you are prompted for the value.

REGISTRY_PASSWORD
Possible values: any

Default value: none

Docker private registry password. If blank, you are prompted for the value.

REGISTRY_EMAIL
Possible values: any

Default value: none

Docker private registry user email address. If blank, you are prompted for the value.

When using Private Registry, ensure that the image pull secret is properly added to the required service accounts:

PA_KUBE_PRIVATE_REGISTRY_SECRET
Possible values: any

Default value: pa-registry-secret

PA_KUBE_USE_IMAGE_PULL_SECRETS
Possible values: `true` | `false`

Default value: `true`

The shipped images are predefined to use an image tag prefix of `planninganalytics`. If you want to change the default value, update the following setting:

REPO_NAME
Possible values: any

Default value: `planninganalytics`

Image tag prefix. Must not be blank.

Advanced helm configuration settings

If the helm command is not already on your path, you can update the following settings.

HELM_CMD
Possible values: any valid path

Default value: `helm`

Name of helm command. Specify a fully qualified path if helm is not already within your path.

HELM_CONFIGURED
Possible values: `true | false`

Default value: `true`

Indicates whether helm is configured for the deployment.

HELM_TLS
Possible values: `true` | `false`

Default value: `true`

Indicates whether helm uses HTTPS/TLS.

Advanced ingress controller configuration settings

By default, a TLS certificate is generated for the ingress controller to use. If you have your own TLS key and certificate that you want to use instead, update the following settings.

PA_KUBE_INGRESS_KEY
Possible values: any valid path

Default value: none

Path to key to be used by the ingress controller.

PA_KUBE_INGRESS_CERT
Possible values: any valid path

Default value: none

Path to certificate to be used by the ingress controller.

Advanced storage service configuration settings

You can use the following settings to customize storage requirements for Planning Analytics Workspace Distributed.

PA_KUBE_INIT_CONTAINERS
Possible values: `true` | `false`

Default value: `false`

Indicates whether storage provider requires ownership of mounted volumes be changed by the pods.

PA_KUBE_NUM_STORAGE_NODES
Possible values: 1-3

Default value: 3

Number of nodes in the cluster that are to be used for storage nodes. All storage services are pinned to run only on these nodes.

PA_KUBE_STORAGE_CLASS
Possible values: any

Default value: `pa-local-storage`

OpenShift storage class.

PA_KUBE_STORAGE_DEDICATED_ACCESS_MODE
Possible values: `ReadWriteMany` | `ReadWriteOnce`

Default value: `ReadWriteMany`

The access mode used by the selected **PA_KUBE_STORAGE_CLASS**.

PA_KUBE_STORAGE_DYNAMIC_PROVISIONING
Possible values: `true` | `false`

Default value: `false`

Indicates whether the storage type supports dynamic provisioning.

PA_KUBE_STORAGE_ROOT
Possible values: any

Default value: `/opt/ibm/planninganalytics/paw`

Path to local storage on each worker node that runs the storage services. Can either be an absolute or relative path.

PA_KUBE_ STORAGE_SIZE
Possible values: > 1Gi

Default value: `10Gi`

Space requirements for the storage services configured on each storage node. The value must be of the format 'xxGi', where xx is an integer value.

PA_KUBE_STORAGE_TYPE
Possible values: `dedicated` | `local` | `shared`

Default value: `local`

Indicates whether storage is local or shared.

PA_KUBE_VOLUME_TYPE
Possible values: `local` | `nfs` | `other`

The value `local` is only valid when **PA_KUBE_STORAGE_TYPE** is set to `shared`.

Default value: none

Indicates which OpenShift volume type to use when **PA_KUBE_STORAGE_TYPE** is set to `shared`.

Configure Red Hat OpenShift Service Mesh in Planning Analytics Workspace Distributed

You can configure IBM Planning Analytics Workspace Distributed to use Service Mesh if Red Hat OpenShift Service Mesh was enabled for your cluster.

Note: You need to first install and configure Red Hat OpenShift Service Mesh before you can enable Service Mesh in Planning Analytics Workspace Distributed. You also need to add the namespace in which Planning Analytics Workspace Distributed was installed, to the Service Mesh Member Roll.

To enable Service Mesh support in Planning Analytics Workspace Distributed, add the following to `paw.env`:

```
export PA_KUBE_ISTIO_CONFIGURED=true
export PA_KUBE_INGRESS_CERT=<path to public key to be used by istio ingress gateway>
export PA_KUBE_INGRESS_KEY=<path to private key to be used by istio ingress gateway>
```

When `PA_KUBE_ISTIO_CONFIGURED` is set to true, Planning Analytics Workspace Distributed configures as follows:

Important: Service Mesh does not currently support NTLM authentication (integrated security mode 3).

- `PA_KUBE_INGRESS_TYPE` is set to `istio-ingressgateway`
- All deployments configure with the following annotations:
  - `sidecar.istio.io/inject: “true”`
  - `sidecar.istio.ioi/rewriteAppHTTPProbers: “true”`
- All jobs are configured to end the Istio sidecar when processing completes. The job is then marked as completed.

Troubleshooting Planning Analytics Distributed

Use troubleshooting information as a resource to help you solve specific problems you may encounter during or after the installation of IBM® Planning Analytics Distributed.

One of my databases is unresponsive. How do I selectively backup and restore individual Planning Analytics Workspace Distributed databases?

If one of your Planning Analytics Workspace Distributed databases is unresponsive, a normal backup and restore cannot be executed. In this case, you can selectively backup and restore only the databases that are responsive.

CAUTION: Use the selective backup and restore options only when a database is unresponsive. Using the selective options when all databases are responsive can result in unsynchronized databases and unexpected behavior.

Selectively backup databases

You can backup any of the following databases individually or in combination with other databases:

- MongoDB (-mongo)
- MySQL (-mysql)
- Redis (-redis)

To backup an individual database, run the `backup.sh` script and specify the database you want to back up.

The script creates a folder that is called `backup` in the current working directory *and stores the backup data in a folder with a name generated based on the current date and time*.

MongoDb

```
./backup.sh -mongo
```

When backup is complete, the backup folder contains a `mongo.tgz` archive with your backup data.

MySQL

```
./backup.sh -mysql
```

When backup is complete, the backup folder contains a `mysql.tgz` archive with your backup data.

Redis

```
./backup.sh -redis
```

When backup is complete, the backup folder contains a `redis.tgz` archive with your backup data.

You can also backup multiple databases simultaneously by passing multiple database parameters to the the `backup.sh` script. For example, use `./backup.sh -mongo -redis` to backup the MongoDB and Redis databases simultaneously. The backup directory contains a separate archive for each database you backup, using the names described above.

Selectively restore databases

You can restore any of the databases individually. If multiple databases were backed up simultaneously to the same backup directory, you can also restore those multiple databases simultaneously.

To restore an individual database, run the `restore.sh` script and specify the database you want to back up along with the directory that contains the archive you want to restore.

MongoDb

```
./restore.sh -mongo <backup_dir_containing_mongo.tgz>
```

MySQL

```
./restore.sh -mysql <backup_dir_containing_mysql.tgz>
```

Redis

```
./restore.sh -redis <backup_dir_containing_redis.tgz>
```

You can also restore multiple databases simultaneously *if they were backed up simultaneously to the same directory* by passing multiple database parameters to the `restore.sh` script. For example, use

```
./restore.sh -mongo -redis <backup_dir_containing_tgz_archives_for_all_databases>
```

to restore the MongoDB and Redis databases simultaneously.

Chapter 12. Installing and configuring Planning Analytics for Microsoft Excel

IBM Planning Analytics for Microsoft Excel is a Microsoft Excel-based tool that professional report authors use to build sophisticated, multiple-sheet, multiple-query reports against multiple databases.

Users can build sophisticated multiple-sheet, multiple-query reports in Excel from different kinds of data sources, and analyze and explore IBM Cognos dimensionally modeled data. The application provides formula-based data access so that users can solve business problems and present key results in a format that is most convenient to them.

For IBM Cognos Analytics, this application is used to analyze enterprise data to identify trends, opportunities, problems, or project characteristics.

For IBM Planning Analytics, this application is used by financial analysts and planners who plan and measure business and operational data.

What's new?

This section contains a list of new or changed features for this release. It helps you to plan your upgrade and application deployment strategies and the training requirements for your users.

New features in version 2.0.0

- IBM Planning Analytics for Microsoft Excel requires Microsoft .NET Framework 4.6.1 or later to be installed.
- IBM Planning Analytics for Microsoft Excel supports security authentication modes 1, 2, 3, 4, 5. Previous versions supported modes 1 and 5.

  However, when connecting to IBM Planning Analytics Workspace, only security authentication modes 1 and 5 can be used.

  Forms based authentication is no longer supported for IBM Planning Analytics servers in IBM Planning Analytics for Microsoft Excel.

New features in version 10.3.0

- If your servers use Transport Layer Security (TLS), you must use Microsoft .NET Framework 4.5 or later with IBM Cognos Analysis for Microsoft Excel. New servers, and servers that have been patched to address the POODLE security vulnerability in SSL use TLS.

New features in version 10.2.0

- IBM Cognos Office products, such as IBM Cognos Analysis for Microsoft Excel and IBM Cognos BI for Microsoft Office now require the use of Microsoft .NET Framework 4.

  This updated conformance has implications for upgrading systems. If you are a current user of an IBM Cognos Office product and installed only Microsoft .NET Framework 2, you must also install .NET Framework 4. You must install the updated .NET Framework before installing IBM Cognos Office products. Microsoft .NET Framework versions can work along side each other. You do not need to uninstall previous versions.
- The following additional languages are available for IBM Cognos Office products: Croatian, Danish, Kazakh, Slovenian, and Thai.

Installation overview

To use IBM Planning Analytics for Microsoft Excel, you must install Microsoft .NET Framework and the IBM Planning Analytics for Microsoft Excel components.

IBM Cognos TM1 includes samples that you can use with IBM Planning Analytics for Microsoft Excel. The samples illustrate product features and technical and business best practices using fictitious data. You can also use the samples to experiment with and share report design techniques, and for troubleshooting. To use the samples, your administrator must set up and configure them. Contact your administrator to find out where they are installed.

Procedure

1. Complete the prerequisite tasks.
   a) Install Microsoft.NET Framework.

      For more information, see Installing Microsoft .NET Framework.

   b) Install Primary Interop Assemblies.

      For more information, see Installing Primary Interop Assemblies.

   c) "Connect to IBM Planning Analytics Workspace" on page 137.

   d) Configure your antivirus software to allow connections from Microsoft .NET Runtime and Microsoft Excel.
2. Install IBM Planning Analytics for Microsoft Excel components.

   For more information, see Chapter 12, "Installing and configuring Planning Analytics for Microsoft Excel," on page 133.
3. Test IBM Planning Analytics for Microsoft Excel.

   For more information, see Testing IBM Cognos Analysis for Microsoft Excel.

Prerequisites for installing Planning Analytics for Microsoft Excel

You must complete the tasks in this section before you install Planning Analytics for Microsoft Excel.

Find the version information for IBM Planning Analytics for Microsoft Excel

You can find the version information for Planning Analytics for Microsoft Excel in the IBM Planning Analytics ribbon.

Procedure

1. Click the IBM Planning Analytics tab to open the IBM Planning Analytics ribbon.
2. Click the **Help** drop down, located in the **Getting Started** group.
3. Click **About**.
4. Click **Show Version...** to open the version text file.
5. The `CORCSP_version` line contains the version number for your installation of Planning Analytics for Microsoft Excel.

Example

If the value of `CORCSP_version` is `COR-AW64-ML-RTM-2.0.47.4-0`, the version number is `47.4`.

Install Microsoft .NET Framework

IBM Planning Analytics for Microsoft Excel requires Microsoft .NET Framework version 4.8 or later to be installed on all user computers.

For a list of supported versions of Microsoft .NET Framework, see the IBM Software Product Compatibility Reports (https://www.ibm.com/software/reports/compatibility/clarity/index.html).

When you install Microsoft .NET Framework on a non-English operating system, Microsoft .NET error messages, shortcuts, and utilities appear in English.

For a language other than English, you can apply the Microsoft .NET Framework Language Pack to view error messages, shortcuts, and utilities in the language of your operating system. For example, if your operating system is French and you installed Microsoft .NET Framework, you must also apply Microsoft .NET French Language Pack.

Procedure

1. Go to the Microsoft download website.
2. Search for .NET Framework 4.8 or later, select the redistributable package, and follow the instructions to download it.
3. Check for other security updates that relate to your version of .NET Framework and download them.

Primary interop assemblies (PIAs) for Microsoft Excel

To use the features of IBM Planning Analytics for Microsoft Excel, you must have installed the primary interop assemblies (PIAs) for Excel. Typically, the PIAs are installed automatically when you install Microsoft Office on the computer. However, in some cases you might need to install the PIAs separately.

Computer workstations must have the PIAs installed and registered in the global assembly cache to run Office solutions that target .NET Framework.

You can install the complete set of PIAs in the global assembly cache in two ways:

- Modify the Microsoft Office setup.

  If you did not install .NET Framework before you installed the Office system, the PIAs are not installed with your Office installation. If you installed .NET Framework after you installed the Office system, you can install the PIAs by modifying the Office setup.
- Install them from the redistributable PIA package.

The Microsoft Office PIAs are installed in the global assembly cache in *drive*:/WINDOWS/assembly or *drive*:/WINNT/assembly.

Modify the Microsoft Office setup to install primary interop assemblies for Excel

If you did not install .NET Framework before you installed the Office system, the PIAs are not installed with your Office installation. If you installed .NET Framework after you installed the Office system, you can install the PIAs by modifying the Office setup.

Before you begin

The Microsoft Office PIAs are installed in the global assembly cache in *drive*:/WINDOWS/assembly or *drive*:/WINNT/assembly.

You must be an administrator on the computer to install the .NET Framework and the Microsoft Office PIAs.

Procedure

1. From the **Start** menu, click **Control Panel**, and then click **Programs and Features**.

2. In the list of programs, click the Microsoft Office version, and then click **Change**.
3. In the **Microsoft Office Setup** wizard, select **Add or Remove Features**, and then click **Continue**.
4. In the **Installation Options** page, expand **Microsoft Excel**.
5. Click the symbol next to the **.Net Programmability Support** feature, and then click **Run from my computer**.
6. Click **Continue**.
7. Click **Close**.

Install PIAs for Microsoft Excel

If you did not install .NET Framework before you installed the Office system, the PIAs are not installed with your Office installation. You can install them from the redistributable PIA package.

Before you begin

Computer workstations must have the PIAs installed and registered in the global assembly cache to run Office solutions that target the .NET Framework 4.5 or later.

The Microsoft Office PIAs are installed in the global assembly cache in *drive*:/WINDOWS/assembly or *drive*:/WINNT/assembly.

You must be an administrator on the computer to install .NET Framework and the Microsoft Office PIAs.

Procedure

1. Ensure that .NET Framework is installed. For more information, see "Install Microsoft .NET Framework" on page 135.
2. Go to the Microsoft download website.
3. Follow the instructions in the download page to install the primary interop assemblies.

Uninstall previous versions of IBM Cognos Analysis for Microsoft Excel

Previous versions of IBM Planning Analytics for Microsoft Excel were called IBM Cognos Analysis for Microsoft Excel. If you have a version of Cognos Analysis for Microsoft Excel, you must uninstall it before you can install the new version of IBM Planning Analytics for Microsoft Excel.

The uninstall does not completely remove all application files or directories during the uninstall process; therefore, you may have to perform this action manually.

If you installed more than one component in the same location, you can choose the packages to uninstall using the uninstall wizard. All components of the package will be uninstalled.

Before you begin

Before uninstalling, close all Microsoft Office applications.

Procedure

1. From the **Start** menu, click **Programs**, **IBM Cognos for Microsoft Office**, **Uninstall IBM Cognos**, **Uninstall IBM Cognos**.

   The **Uninstall** wizard appears.

   Tip: IBM Cognos for Microsoft Office was the default name of the Program Folder that was created during previous installations. If you chose another name, go to that folder to find the program.
2. Follow the instructions to uninstall the component.

   The cognos_uninst_log.txt file records the activities that the Uninstall wizard performs while uninstalling files.

Tip: To find the log file, look in the Temp directory.

3. If you are upgrading to Planning Analytics for Microsoft Excel or migrating another version of Cognos Analysis for Microsoft Excel, you must ensure that the `Office Connection` directory is removed before installation. The `Office Connection` directory can be found at the following location:

```
C:\Users\<user name>\AppData\Local\Cognos\Office Connection
```

Connect to IBM Planning Analytics Workspace

Before users run Planning Analytics for Microsoft Excel, they must connect to an instance of Planning Analytics Workspace.

Planning Analytics Workspace is required in order to use the set editor and the cube viewer.

Set up connections for TM1 REST APIs

IBM Planning Analytics for Microsoft Excel requires the use of TM1 REST APIs. To enable these APIs in IBM TM1 Server, an administrator may need to configure the HTTP port number in the IBM TM1 Server configuration files for each TM1 Server.

Before you begin

When an IBM TM1 Server is created, the HTTP port number may not be set by default. This task requires you to edit the configuration file for each IBM TM1 Server and set the HTTP port number. Contact your administrator if you do not have access to the configuration file.

Procedure

1. Stop the TM1 Server
2. Locate the tm1s.cfg file. The location of the file may differ depending on the type of server you are using.
3. Open the tm1s.cfg file in an editor.
4. Locate the line containing the following: `HTTPPortNumber = XXXX`.
5. Replace XXXX with a valid port number which is not currently in use.
6. Save the tm1s.cfg file.
7. Restart IBM TM1 Server

Results

IBM Planning Analytics for Microsoft Excel will have access to TM1 Server data through the TM1 REST APIs.

Configure your antivirus software

To run Planning Analytics for Microsoft Excel, you must first configure your antivirus software to allow connections from both Microsoft .NET Runtime and Microsoft Excel.

If you do not configure your antivirus software to allow these two connections, an error message may appear, as described in COI-ERR-2019 Connection failed.

Installation tasks

To install Planning Analytics for Microsoft Excel, download and install a single `.xll` file add-in to Excel.

For more information, see “Downloading and upgrading to Planning Analytics for Microsoft Excel with a single .xll add-in” on page 140.

Test IBM Planning Analytics for Microsoft Excel

You can test the installation of the client components by starting the application.

Before you begin

For full access to IBM Planning Analytics for Microsoft Excel, you should be a member of the Express Authors or Report Administrators role in IBM Cognos Analytics. An administrator must configure these privileges using IBM Cognos Administration.

Procedure

1. Start Microsoft Excel or open a Microsoft Excel spreadsheet.
2. Confirm that IBM Planning Analytics appears in the ribbon.

   If the IBM Planning Analytics tab is not displayed on the ribbon, see The Cognos Office interface fails to initialize in Microsoft Office.
3. Click the IBM Planning Analytics tab, and then click **Task Pane**.

   The IBM pane is displayed.

What to do next

To start working with IBM Planning Analytics for Microsoft Excel, you must configure connections to IBM Planning Analytics servers. See the *IBM Planning Analytics for Microsoft Excel User Guide*.

Uninstall IBM Planning Analytics for Microsoft Excel

This topic describes how you can uninstall the current version of IBM Planning Analytics for Microsoft Excel.

If you installed more than one component in the same location, you can choose the packages to uninstall using the uninstall wizard. All components of the package will be uninstalled.

Before you begin

Before uninstalling, close all Microsoft Office applications.

Procedure

1. From the **Start** menu, click **Programs**, **IBM Planning Analytics for Microsoft Office**, **Uninstall IBM Office Addins**, **Uninstall IBM Office Addins**.

   The **Uninstall** wizard appears.

   Tip: IBM Planning Analytics for Microsoft Office is the default name of the Program Folder that is created during the installation. If you chose another name, go to that folder to find the program.
2. Follow the instructions to uninstall the component.

   You can find log files that record the uninstall process in the *install_location*/ibm/cognos/IBM for Microsoft Office/instlog/ directory

Results

Planning Analytics for Microsoft Excel is uninstalled.

Note: The uninstall may not completely remove all application files or directories during the uninstall process. You can remove the application files or directories manually, or edit the \uninstall\uninst.ini file and set the **RemoveAllCompsFlag** parameter to **1** before running the uninstall wizard.

Register the IBM Cognos Office Reporting TM1 Addin using a script

You can use a script to register the IBM Cognos Office Reporting TM1 Addin (`CognosOfficeTM1.xll`) with Microsoft Excel. You can use a registry command or you can modify and then use the `Register Cognos XLL.vbs` script.

Register the IBM Cognos Office Reporting TM1 Addin using a registry command

You can use a registry command to register the IBM Cognos Office Reporting TM1 Addin (`CognosOfficeTM1.xll`) with Microsoft Excel.

The following sample script shows the basic registry command to add the `CognosOfficeTM1.xll` reference to Microsoft Excel.

```
[HKEY_CURRENT_USER\Software\Microsoft\Office\15.0\Excel\Options]
"OPEN"="/R \"C:\\Program Files\\IBM\\cognos\\Cognos for Microsoft
Office\\CognosOfficeTM1.xll\""
```

Note: This is a sample only. You must modify the command to use the appropriate path and key for your environment.

Register the IBM Cognos Office Reporting TM1 Addin using the Register Cognos XLL.vbs script

Cognos Analysis for Microsoft Excel provides a VBS script called `Register Cognos XLL.vbs`. By default, this script is set up to register `CognosOfficeBI.xll`, which is the Cognos for Microsoft Office Addin. You can modify this script to register the IBM Cognos Office Reporting TM1 Addin. You can then run the script directly or include it in a deployment script.

Procedure

1. Go to the location where Cognos Analysis for Microsoft Excel is installed.
   On Windows 7, the default installation location is `C:\Program Files (x86)\IBM\cognos\Cognos for Microsoft Office`.
2. Create a backup copy of `Register Cognos XLL.vbs`.
3. Open the file `Register Cognos XLL.vbs` in a text editor.
4. On line 19, set the path to the location of the `CognosOfficeTM1.xll` file.
   For example:

   ```
   path = "C:\Program Files (x86)\IBM\cognos\Cognos for Microsoft Office\”
   ```

5. On line 20, replace `CognosOfficeBI.xll` with `CognosOfficeTM1.xll`.
   For example:

   ```
   file = "CognosOfficeTM1.xll "
   ```

6. Save the file.

Configure IBM Planning Analytics for Microsoft Excel for use with high DPI displays

If you are using IBM Planning Analytics for Microsoft Excel version 2.0.53 or earlier, you may need to configure your display settings to ensure that elements are rendered properly on high DPI displays.

About this task

Missing elements can include but are not limited to the IBM Task Pane and the Overview Area. For more information, see Office support for high definition displays. The **Optimize for compatibility** option is enabled by default, starting in Planning Analytics for Microsoft Excel version 2.0.54.

Procedure

1. Open Microsoft Office.
2. Click **File** > **Option** > **General**.
3. Select **Optimize for compatilitiy**.
4. Click **OK**.
5. Restart the application.

Downloading and upgrading to Planning Analytics for Microsoft Excel with a single .xll add-in

Install Planning Analytics for Microsoft Excel by using a Planning Analytics for Microsoft Excel `.xll` file. An `.xll` file is sometimes referred to as an "add-in" file.

Planning Analytics for Microsoft Excel uses a Planning Analytics for Microsoft Excel `.xll` file for installation, which can be downloaded from IBM Support Fix Central. By using the Planning Analytics for Microsoft Excel `.xll` file, users can choose to launch Planning Analytics for Microsoft Excel for a single session by double-clicking the `.xll` file or have Planning Analytics for Microsoft Excel persist across Excel sessions by installing the `.xll` file as an add-in to Microsoft Excel.

Third-party software settings can directly affect the ability of Planning Analytics for Microsoft Excel to perform in your environment.

The single file delivery of the Planning Analytics for Microsoft Excel `.xll` file, introduced in version 2.0.65, is an intricate system. The `.xll` add-in and executable parts are delivered and signed by IBM, and should be trusted by your system. Excel trust settings, anti-virus, system management tools, and so on, should be configured to allow the add-in to proceed.

The add-in itself requires no privileges beyond user level, and leverages the read/write access that is associated with the user profile AppData, as before, for supporting runtime functionality.

Where possible, launch Planning Analytics for Microsoft Excel by opening the `.xll` file for a single session, as opposed to installing the file as a persistent add-in to Excel.

Downloading the Planning Analytics for Microsoft Excel .xll file

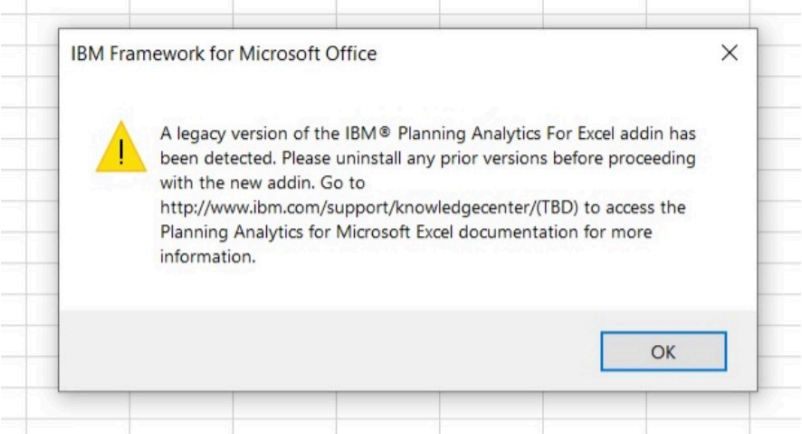
The `.xll` files are available in IBM Support Fix Central. Depending on your environment, two versions of the `.xll` file are available. You can choose between the x64 or the x86 version of the file.

Planning Analytics Workspace on Cloud administrators can also download an archive containing both the x64 and the x86 versions of the Planning Analytics for Microsoft Excel `.xll` file. For details, see Download Planning Analytics for Microsoft Excel in Planning Analytics Workspace.

Upgrading from Planning Analytics for Microsoft Excel version 2.0.64 or older

Before you use the Planning Analytics for Microsoft Excel `.xll` file to upgrade to a newer version of Planning Analytics for Microsoft Excel, you must uninstall any version of Planning Analytics for Microsoft Excel that used the `.iss` installer. For more information on uninstalling Planning Analytics for Microsoft Excel versions 2.0.64 or older, see “Uninstall IBM Planning Analytics for Microsoft Excel” on page 138.

If you do not uninstall Planning Analytics for Microsoft Excel version 2.0.64 or older before upgrading to Planning Analytics for Microsoft Excel version 2.0.65 or newer, an error message will be displayed in Microsoft Excel.



Launching IBM Planning Analytics for Microsoft Excel for a single session

You can launch IBM Planning Analytics for Microsoft Excel for a single session.

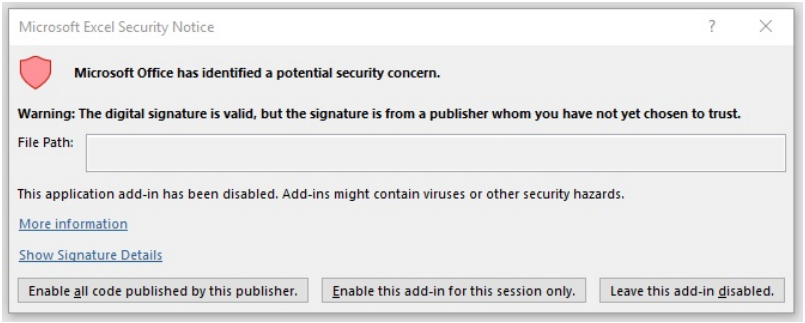
About this task

If you do not install the Planning Analytics for Microsoft Excel `.xll` file as an add-in to Microsoft Excel, the IBM Planning Analytics tab will not be visible on the ribbon when Excel is launched. If you do not want to install the Planning Analytics for Microsoft Excel `.xll` file as an add-in, you can still use the `.xll` file to launch Planning Analytics for Microsoft Excel for a single session.

Note: You cannot double-click the `.xll` file to launch Planning Analytics for Microsoft Excel if the `.xll` file was installed as an add-in in Microsoft Excel. This can cause Excel to crash.

Procedure

1. Download the Planning Analytics for Microsoft Excel `.xll` add-in file from IBM Support Fix Central or download from Planning Analytics Workspace.
2. Move the add-in file to your desired directory. Ensure that the directory is listed in Microsoft Excel as a Trusted Location. For more information about Trusted Locations, see Add, remove, or change a trusted location.
3. Double-click the add-in file to launch Planning Analytics for Microsoft Excel.
4. Enable the add-in if prompted by Microsoft Excel Security Notice.



Installing the Planning Analytics for Microsoft Excel .xll file as an add-in to Microsoft Excel

You can install the Planning Analytics for Microsoft Excel .xll file as an add-in to Excel.

About this task

By installing the Planning Analytics for Microsoft Excel `.xll` file as an add-in to Microsoft Excel, the Planning Analytics tab is available every time you open Excel.

Tip: You can rename the Planning Analytics for Microsoft Excel .xll file before installing it in Microsoft Excel. When you download an .xll from IBM Support Fix Central, the filename includes the version number, which changes for each release. If you rename the .xll file before installing, the upgrade process is simplified. For example, if you rename the add-in to `PAforExcel.xll`, you replace the existing add-in with a more recent version of the add-in using the same filename to perform an upgrade. Renaming the .xll applies only when installing versions 2.0.65 and later; don't rename the .xll in any installations of 2.0.64 or previous.

As explained in "Downloading and upgrading to Planning Analytics for Microsoft Excel with a single .xll add-in" on page 140, you must uninstall any version of Planning Analytics for Microsoft Excel that used the .iss installer before you use the Planning Analytics for Microsoft Excel add-in file to upgrade to a newer version of Planning Analytics for Microsoft Excel, For more information on uninstalling Planning Analytics for Microsoft Excel versions 2.0.64 or previous, see Uninstall IBM Planning Analytics for Microsoft Excel

Procedure

1. Download the Planning Analytics for Microsoft Excel .xll file from IBM Support Fix Central or from Planning Analytics Workspace.
2. Move the .xll file to your desired directory.
3. Launch Microsoft Excel.

   When you install the Planning Analytics for Microsoft Excel `.xll` as an add-in to Excel, **do not double-click** the `.xll` file to open Planning Analytics for Microsoft Excel. This causes Excel to crash.
4. Click the **Developer** tab.
5. Click **Excel Addins** in the ribbon.
6. Click **Browse...**.
7. Select the Planning Analytics for Microsoft Excel .xll file.
8. Click **OK**.

Results

After installing the .xll file as an add-in to Excel, the Planning Analytics tab is available on the ribbon every time you open Excel.

Removing the Planning Analytics for Microsoft Excel add-in

If you have installed the Planning Analytics for Microsoft Excel .xll file as a persistent add-in to Excel, you must remove your existing Planning Analytics for Microsoft Excel add-in file before upgrading to a newer Planning Analytics for Microsoft Excel add-in file.

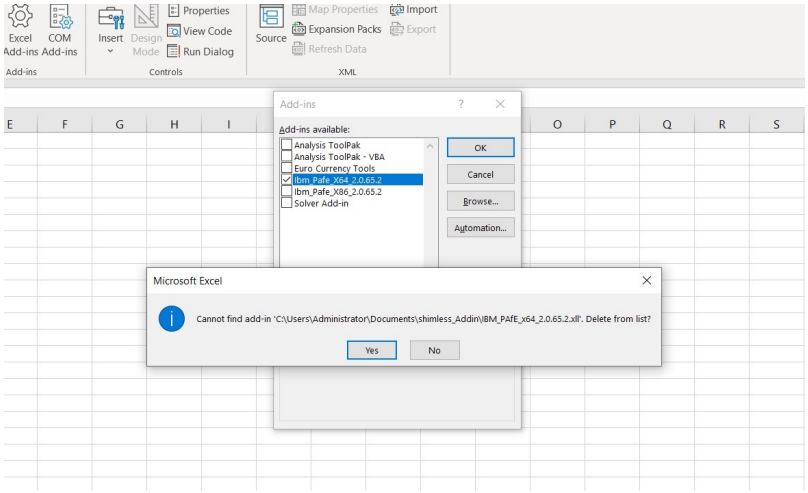
About this task

Important: Do not remove the Planning Analytics for Microsoft Excel add-in while Excel is running. This will cause Excel to crash.

Procedure

1. Close Microsoft Excel.
2. Locate the existing Planning Analytics for Microsoft Excel .xll file within your file system.

   Tip: You selected the location of the Planning Analytics for Microsoft Excel .xll file when you initially installed the add-in to a Trusted Location. If you can't recall the location, open Excel then click **File** > **Options** > **Add-ins**. Review the list of add-ins and identify the location of the Planning Analytics for Microsoft Excel .xll file. Close Excel again before proceeding.
3. Remove the existing Planning Analytics for Microsoft Excel .xll file from your file system.
4. Launch Microsoft Excel.
5. Click **OK** to dismiss Microsoft Excel's warning that the add-in was removed.
6. Click the **Developer** tab.
7. Click the **Excel Add-Ins** button in the ribbon.
8. Unchecked the Planning Analytics for Microsoft Excel add-in from the **Add-ins** list.
9. Click **Yes** when prompted to delete the add-in from the list.



10. Click **OK**.

Upgrading the Planning Analytics for Microsoft Excel add-in

Upgrade is accomplished by replacing the existing Planning Analytics for Microsoft Excel .xll file with a newer version of the .xll file.

About this task

The procedure for upgrade varies depending upon whether you renamed the ,xll file before installing it as an add-in to Microsoft Excel.

Procedure

1. If you did not rename the .xll file before installing it in Microsoft Excel:
   a) Remove the existing .xll file.
   b) Download and install a newer version of the .xll file.
2. If you did rename the .xll file before installing it in Microsoft Excel:
   a) Download a new version of the .xll file from IBM Support Fix Central.
   b) Rename the new version of the .xll file using the **same name** you used when you initially installed the .xll file as an add-in to Excel.
   c) Shut down Excel.

d) Save the new version of the .xll file to the directory where the previous version is located, replacing the previous version.

e) Restart Excel.

Troubleshoot

Use troubleshooting information as a resource to help you solve specific problems you may encounter during or after the installation of IBM Planning Analytics for Microsoft Excel.

For more information, see What are some common errors when installing Planning Analytics for Microsoft Excel?

Chapter 13. Installing IBM Planning Analytics Spreadsheet Services (TM1 Web)

You can install Planning Analytics Spreadsheet Services on a computer that is separate from the computer where you installed the TM1 Server and other TM1 or Planning Analytics components.

This documentation describes how to install TM1 Web with the Planning Analytics Spreadsheet Services installer. If you need details on installing TM1 Web as part of the web tier within the Planning Analytics Local 2.0.9.1 LC or earlier, see Installing the web tier.

For a list of frequently asked questions about the TM1 Web deployment introduced with the 2.0.55 SC release, see Changes to TM1 Web deployment.

For conformance documentation that describes compatibility between versions of Planning Analytics TM1 Web, Planning Analytics for Microsoft Excel, and Planning Analytics Workspace, see IBM Planning Analytics TM1 Web conformance requirements.

Note: Customers using IBM Planning Analytics 2.0.98 Workspace or earlier versions who are having trouble embedding websheet content in Analytics Content Hub or other embedded applications should contact support. This issue is due to the removal of X-Frames support in browsers. Our team can provide a compatible version that works with the latest browser updates.

Check for changes to `web.xml` file

If you are upgrading Planning Analytics Spreadsheet Services (TM1 Web) to a new version, you install a new version of the `web.xml` file called `web.xml.new` and your existing `web.xml` file is preserved.

To take advantage of fixes applied in the new release, you must use the `web.xml.new` file and you must reapply any changes that you made to your previous configuration settings. In particular, restore your values for **`session-timeout`**.

1. Back up the existing `web.xml` file in `<installation_location>/webapps/tm1web/WEB-INF`. For example, rename `web.xml` to `web.xml.old`. This step backs up your current settings.
2. Rename `web.xml.new` to `web.xml`. This step uses the new version of `web.xml` that is supplied with the latest version of Planning Analytics Spreadsheet Services.
3. Replace the entry for **`session-timeout`** in `web.xml` with the entry from `web.xml.old`. This step restores any changes that you made to this property previously.

   For example:

```
<session-config>
    <session-timeout>20</session-timeout>
</session-config>
```

Install Planning Analytics Spreadsheet Services

The following items are an overall checklist for installing Planning Analytics Spreadsheet Services.

1. Check prerequisites.
2. Install Planning Analytics Spreadsheet Services.
3. Start the IBM Planning Analytics Spreadsheet Services service.
4. Run and test Planning Analytics Spreadsheet Services from your network environment.
5. Edit the Planning Analytics Spreadsheet Services configuration file to support a multiple computer environment.
6. Configure the TM1 Web login page using AdminHostName and TM1ServerName parameters.
7. Configure authentication and data transmission security.

8. Modify Planning Analytics Spreadsheet Services configuration parameters.
9. Configure the web browsers in your environment.
10. Configure JVM settings for Planning Analytics Spreadsheet Services.

Installing Planning Analytics Spreadsheet Services

You can install Planning Analytics Spreadsheet Services on a separate computer and deploy it with the instance of WebSphere® Liberty web application server that is provided with the installation.

After you have installed Planning Analytics Spreadsheet Services on the separate computer, edit the Planning Analytics Spreadsheet Services/TM1 Web configuration file to identify the remote computer where the TM1 Admin Server is running.

Installing and configuring Planning Analytics Spreadsheet Services on Microsoft Windows

These steps describe how to install Planning Analytics Spreadsheet Services on a separate computer that is running Microsoft Windows.

Procedure

1. The IBM Planning Analytics Spreadsheet Services installer is delivered in a .zip archive.

   The zip archive contains two files: the repository for TM1 Web and the IBM Planning Analytics Spreadsheet Services installer.

   Extract the contents of the zip file into a single separate directory.
2. Run the Planning Analytics Spreadsheet Services installer.
3. Select your installation language and click **Next**.
4. Select **IBM Planning Analytics Spreadsheet Services** and click **Next**.
5. Accept the license agreement and click **Next**.
6. Specify the **Installation location** and **Shortcut folder**, then click **Next**.

   The default installation location is `C:\Program Files\ibm\cognos\tm1web`.

   The default shortcut folder is IBM Planning Analytics Spreadsheet Services. You can also choose to make the shortcut visible to user on the Windows **Start** menu.

   Note: If you are installing TM1 Web on Windows 11, a shortcut folder for **IBM Planning Analytics Spreadsheet Services** is not installed on the **Start** menu. Instead, the only option that would have been part of the shortcut folder, **Uninstall IBM Planning Analytics Spreadsheet Services**, appears on the **Start** menu. This is expected behavior for **Start** menu folders that contain a single item.
7. Review the **Pre-installation Summary**, then click **Install**.
8. Click **OK** when you view the **Pre-Installation Action message**.
9. Click **Done** when installation is complete.
10. Click **OK** when you view the **Post-Installation Action message**.

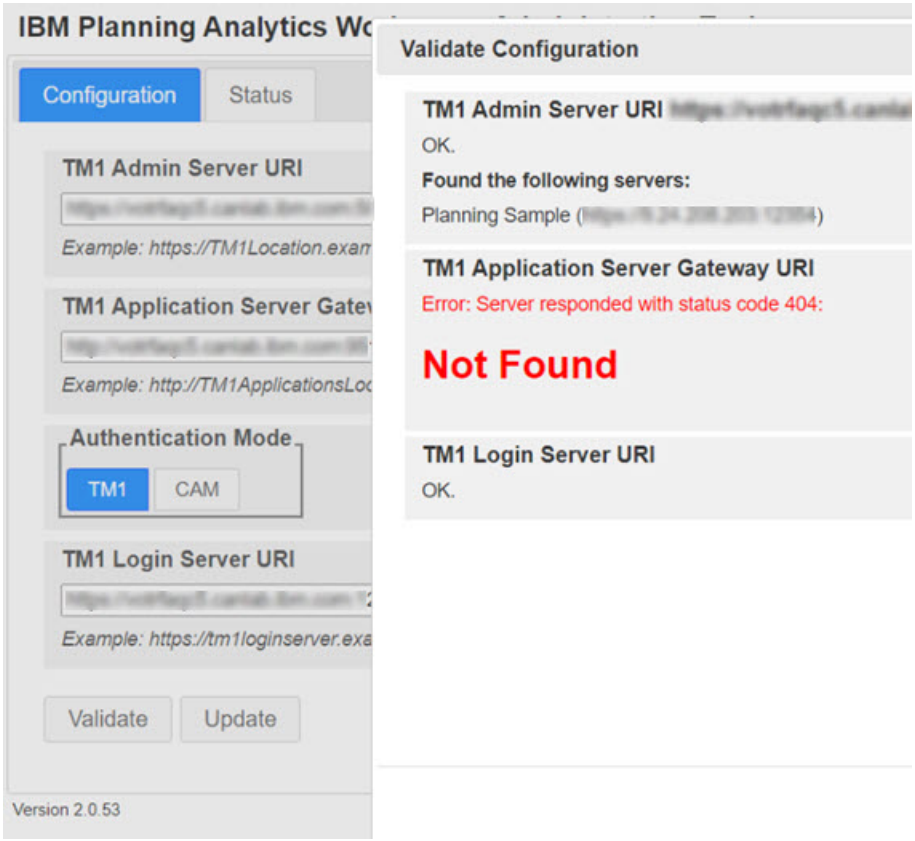
Results

If you previously installed TM1 Web as part of a Planning Analytics web tier installation, the `tm1web_config.xml` file is copied to the new installation location, preserving your configuration settings.

The installation creates a new service named IBM Planning Analytics Spreadsheet Services. The service is configured with an Automatic startup type, but is **not** started as part of the installation process. Review the `tm1web_config.xml` file and confirm configuration before you start the IBM Planning Analytics Spreadsheet Services service and use TM1 Web.

If you previously installed TM1 Web as part of a Planning Analytics web tier installation, the TM1 Web service was named IBM TM1. This service is disabled and set to Manual startup when you install a new version of TM1 Web with the IBM Planning Analytics Spreadsheet Services installer.

Note: After you install Planning Analytics Spreadsheet Services/TM1 Web, you might receive an error when you validate your configuration with the IBM Planning Analytics Workspace Administration tool. The error indicates that the TM1 Application Server Gateway cannot be found.



This error is the result of an attempt to verify the presence of pmhub. As Planning Analytics Spreadsheet Services does not use pmhub, you can close this error and continue using your applications.

Configuring and running unattended Planning Analytics Spreadsheet Services installations on Windows

You can set up an unattended installation and configuration to install an identical configuration of Planning Analytics Spreadsheet Services across several computers on your network.

About this task

An unattended installation requires you to create a response file, which is generated based on your responses to a regular graphic installer. The responses you provide during the graphic installation are applied to all unattended installations.

Procedure

1. Create a response file to be used for unattended installations by running the Planning Analytics Spreadsheet Services graphic installer from a command line with this command: `analytics-installer-`*`version`*`-win.exe -DREPO=<TM1 Web repository name> -r <FullPathOfYourResponseFile>`.
2. Complete all steps required to complete the installation.
3. To run an unattended installation, run this command from a command line: `analytics-installer-`*`version`*`-win.exe -DREPO=<TM1 Web repository name> -f <FullPathOfYourResponseFile> -i silent`.

Installing and configuring Planning Analytics Spreadsheet Services on Linux

These steps describe how to install Planning Analytics Spreadsheet Services on a separate computer that is running Linux.

Procedure

1. The IBM Planning Analytics Spreadsheet Services installer for TM1 Web is delivered in a .gz archive.

   The .gz archive contains two files: the repository for TM1 Web and the IBM Planning Analytics Spreadsheet Services installer.

   Extract the contents of the .gz archive into a single separate directory.
2. Run the IBM Planning Analytics Spreadsheet Services installer, `analytics-installer-nnnn-linuxx86.bin`.
3. Select your installation language and click **Next**.
4. Select **IBM Planning Analytics Spreadsheet Services** and click **Next**.
5. Accept the license agreement and click **Next**.
6. Specify the **Installation location**, then click **Next**.

   The default installation location is `/opt/ibm/cognos/tm1web`.

   Note: If you have previously installed TM1 Web as part of the web tier in a multi-component Planning Analytics installation, you must install to a different location when initially installing TM1 Web with the IBM Planning Analytics Spreadsheet Services installer.
7. Review the **Pre-installation Summary**, then click **Install**.
8. Click **OK** when you view the **Pre-Installation Action message**.
9. Click **Done** when installation is complete.
10. Click **OK** when you view the **Post-Installation Action message**.

Configuring and running unattended Planning Analytics Spreadsheet Services installations on Linux

You can set up an unattended installation and configuration to install an identical configuration of Planning Analytics Spreadsheet Services across several computers on your network.

About this task

An unattended installation requires you to create a response file, which is generated based on your responses to a regular graphic installer. The responses you provide during the graphic installation are applied to all unattended installations.

Procedure

1. Create a response file to be used for unattended installations by running the Planning Analytics Spreadsheet Services graphic installer from a command line with this command: `analytics-installer-version-linuxx86.bin -DREPO=<TM1 Web repository name> -r <FullPathOfYourResponseFile>`.
2. Complete all steps required to complete the installation.
3. To run an unattended installation, run this command from a command line: `analytics-installer-version-linuxx86.bin -DREPO=<TM1 Web repository name> -f <FullPathOfYourResponseFile> -i silent`.

Example

For example, a full command to run a silent install looks like this:

```
analytics-installer-3.0.20091714-linuxx86.bin -DREPO=/workspace/install/
tm1web-11.0.58-20101403-linuxi38664h.zip -f /workspace/install-props/
installer.properties -i silent
```

Configuring SSL for Planning Analytics Spreadsheet Services

When configuring SSL for Planning Analytics Spreadsheet Services, custom key stores and certificates should be stored in a directory outside of the installation directory. A directory "next to" (at the same level as) the installation directory is recommended.

For example if your installation directory is `C:\Program Files\ibm\cognos\tm1web`, the key stores and certificates could be placed in `C:\Program Files\ibm\cognos\certificates`.

This is necessary because the Planning Analytics Spreadsheet Services upgrade process removes most files under the installation directory, preserving only selected files. Placing the certificates outside the installation directory ensures that they are not deleted during an upgrade.

Configuring SSL for new deployments of Planning Analytics Spreadsheet Services/ TM1 Web

You can configure the SSL settings for new deployments of Planning Analytics Spreadsheet Services/ TM1 Web.

Planning Analytics Spreadsheet Services does not include a user interface for generating and configuring SSL. To configure the SSL for a new deployment of Planning Analytics, you need to enable SSL communication in WebSphere Liberty and your associated JRE. For more information, see Enabling SSL communication in Liberty. You can also see Configuring the Java Runtime Environment to use SSL for an example of JRE configuration.

You can copy the default or generated materials, such as the keystore file or key stash file, from your TM1 deployment environment. Alternatively you can also install TM1 Web 2.0.9.1, generate or configure the SSL using the included UI tools, and then update that installation to Planning Analytics Spreadsheet Services.

For more information on configuring SSL in Planning Analytics, see the following links:

- How to Configure SSL on Planning Analytics Data Tier using GSKit (New Certificate Signing Request)
- How to Configure SSL on Planning Analytics Web Tier using GSKit (Using Existing Signed Certificate)
- How to Configure Custom SSL Certificates for Planning Analytics 2.0 and 2.0.1
- Configure the Web Tier to use custom TLS

Configuring SSL for Planning Analytics Spreadsheet Services/ TM1 Web with an existing keystore

These procedures let you secure Planning Analytics Spreadsheet Servicesusing a custom keystore.

About this task

The following conditions must be met before you can configure SSL for Planning Analytics Spreadsheet Services:

- Your keystore/certificate file must already be in PKCS12/PFX format and contain the complete certificate chain.
- The file must be placed in a location outside the IBM Planning Analytics Spreadsheet Service installation directory. A directory "next to" (at the same level as) the installation directory is recommended. For example if your installation directory is `C:\Program Files\ibm\cognos\tm1web`, the file could be placed in `C:\Program Files\ibm\cognos\certificates`.

- In this document, we use the path `C:\Program Files\ibm\cognos\certificates` to refer to the location of your keystore file, and `C:\Program Files\ibm\cognos\certificates\customKeystore.pfx` as the file path for your keystore file. Your actual file path will differ.
- The IBM Planning Analytics Spreadsheet Service must be stopped before you can proceed with configuration.

You must also know the location of the following items before executing the `keytool` command:

- `keytool.exe` - located in `<install_dir>\tm1web\jre\bin\`
- `ibmtm1.arm` - located in `<install_dir>\tm1_64\bin64\ssl`

Procedure

1. Configure the Planning Analytics Spreadsheet Services service with a custom keystore.
   a) Open Windows Services and check the status of your IBM Planning Analytics Spreadsheet Services. If the service is running, stop it before you proceed to the next step.

   b) Open `<install_dir>\tm1web\wlp\usr\servers\tm1web\server.xml` in a text editor.
   c) Update the **`httpPort`** and **`httpsPort`** parameters to reflect the ports you would like to use. To disable HTTP altogether, set **`httpPort="-1"`**. For example,

   ```
   <httpEndpoint id="defaultHttpEndpoint" httpPort="-1" httpsPort="9510" host="*"
   removeServerHeader="true">
   </httpEndpoint>
   ```

   d) In `server.xml`, replace the existing **`keyStore`** entry with:

   ```
   <keyStore id="defaultKeyStore" location="C:\Program
   Files\ibm\cognos\certificates\customKeystore.pfx" password="your_password" />
   ```

   If `server.xml` *does not* have a **`keyStore`** entry, add the following line immediately following the last **`<application>`** tag in `server.xml`:

   ```
   <keyStore id="defaultKeyStore" location="C:\Program
   Files\ibm\cognos\certificates\customKeystore.pfx" password="your_password" />
   ```

   e) Save and close the `server.xml` file.
   f) Open a Command Prompt as an administrator, then go to `<install_dir>\tm1web\jre\bin\`.
   g) Because TM1 Web is using a new keystore, you must include the TM1 Server certificates in the keystore file. If the TM1 Server certificates are not present, you can't see your TM1 Servers in TM1 Web. Execute the following command:

   ```
   keytool -importcert -keystore "C:\Program
   Files\ibm\cognos\certificates\customKeystore.pfx" -storepass your_password -storetype
   pkcs12 -noprompt -alias ibmtm1 -file ..\..\bin64\ssl\ibmtm1.arm
   ```

   h) If you communicate with any other TM1 Servers or applications that use different certificates, you must repeat the previous step, importing any additional certificates you require.
   i) Restart Planning Analytics Spreadsheet Services in Windows Services.
2. Validate your SSL configuration.

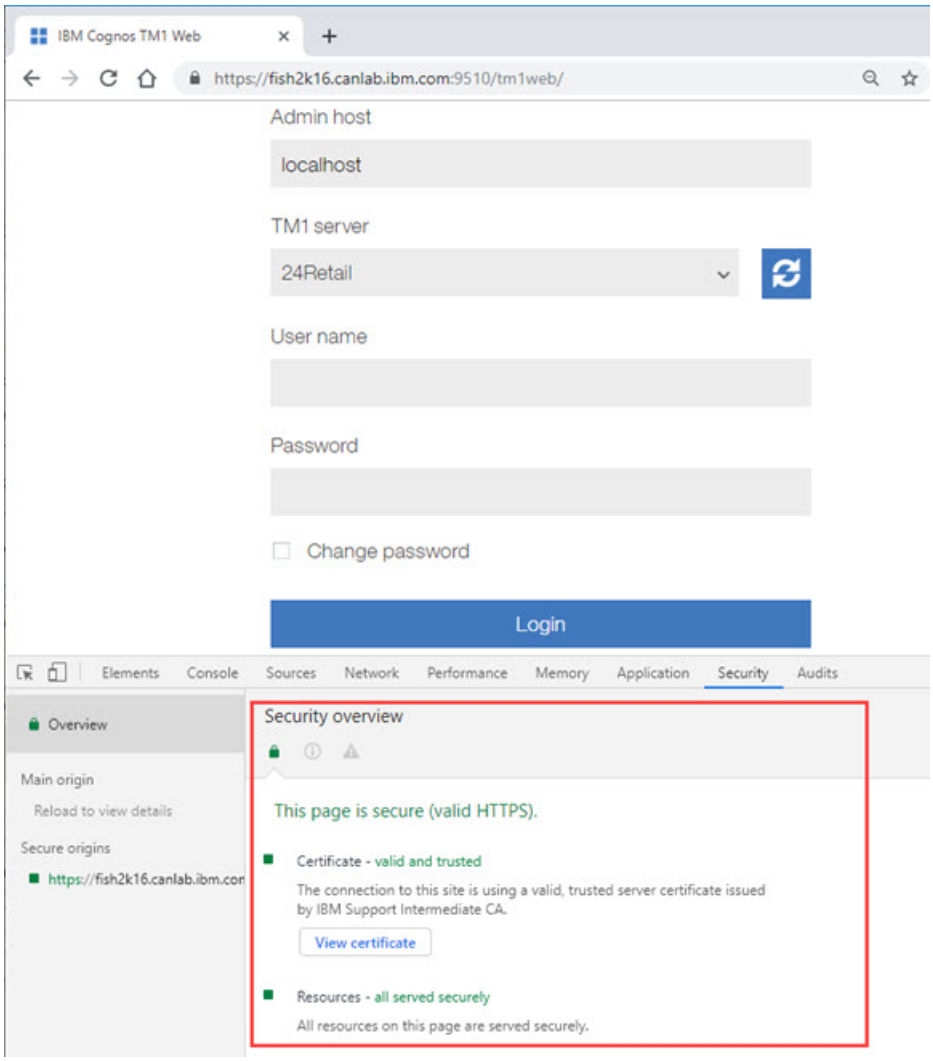
   The following validation steps apply to the Chrome web browser. If you are using another browser, you'll need to adjust the steps as necessary.

   a) After the IBM Planning Analytics Spreadsheet Services service starts, access your TM1 Web URL using Chrome, for example: `https://machine_name:9510/tm1web`.

   You may encounter a warning. If you do, it is likely because you haven't told your computer to trust the Root Certificate Authority and Intermediate Certificate Authority that are used to sign

the Planning Analytics certificate. To resolve the untrusted certificate warning, see the following technote: http://www.ibm.com/support/docview.wss?uid=ibm10879929.

b) If your certificates are valid and trusted, you should see something similar to this on the **Security** tab of the Chrome developer tools:



c) If you don't see a particular TM1 Server in your list of servers in TM1 Web, you may not have imported the TM1 Server certificate in to your keystore. Please see step 1h for details on importing TM1 Server certificates to your keystore.

Relocating custom SSL files

If you have installed custom SSL files in a location under the Planning Analytics Spreadsheet Services installation directory, you must relocate these files to a directory outside the installation directory and update your server.xml to the new location. This ensures that the files are not deleted during an upgrade and the installation continues to work correctly after upgrade.

About this task

This procedure assumes that the outside directory is `C:\Program Files\ibm\cognos\certificates` and your custom SSL keystore file is `customKeyStore.pfx`. The full path for the relocated file is thus `C:\Program Files\ibm\cognos\certificates\customKeyStore.pfx`.

Procedure

1. Open Windows services and check the status of your IBM Planning Analytics Spreadsheet Services. If the service is running, stop it before you proceed to the next step.
2. Move the custom key store and other files to the new location.

   For example if your custom key store is at `<install_dir>\tm1web\bin64\ssl\customKeystore.pfx`, you would move that file to `C:\Program Files\ibm\cognos\certificates\customKeyStore.pfx`.

   If you located any other custom SSL files such as certificates under <install_dir>, you should also move those files to the external location so they are not deleted by an upgrade.
3. Edit the `server.xml` to use the new location of the custom key store.
   a) Open `<install_dir>\tm1web\wlp\usr\servers\tm1web\server.xml` in a text editor.
   b) Find the `keyStore` configuration line, which may look like:

   ```
    <keyStore id="defaultKeyStore" location="${wlp.user.dir}/../../bin64/ssl/
   customKeyStore.pfx" password="your_password" />
   ```

   c) Change the location in that line to reference the new location of the key store using the full path, for example:

   ```
   <keyStore id="defaultKeyStore" location="C:/Proram Files/ibm/cognos/certificates/
   customKeyStore.pfx" password="your_password" />
   ```

   d) Save and close `server.xml`.
4. Validate your SSL configuration as described in "Configuring SSL for Planning Analytics Spreadsheet Services/ TM1 Web with an existing keystore" on page 149.

Upgrading Planning Analytics Spreadsheet Services/TM1 Web

Whether you have never installed Planning Analytics Spreadsheet Services before or are performing an upgrade, the installation procedure is identical.

However, you should be aware of these issues when performing an upgrade.

Upgrading from a previous Planning Analytics web tier installation

If you had previously installed TM1 Web as part of a Planning Analytics web tier installation, the TM1 Web service was named IBM Cognos TM1. This service is disabled and set to Manual startup when you install a new version of TM1 Web with the IBM Planning Analytics Spreadsheet Services installer.

If you had previously installed TM1 Web as part of a Planning Analytics web tier installation, the `tm1web_config.xml` file is copied to the new installation location, preserving your configuration setting.

Modifying Planning Analytics Spreadsheet Services configuration parameters

The `tm1web_config.xml` file is an XML file that contains configuration parameters for Planning Analytics Spreadsheet Services/ TM1 Web.

Planning Analytics Spreadsheet Services/TM1 Web configuration parameters

The configuration parameters for Planning Analytics Spreadsheet Services are stored in the `tm1web_config.xml` file.

The `tm1web_config.xml` file is located in the following location:

<TM1 install location>`\webapps\tm1web\WEB-INF\configuration\`

The following parameters are available.

ActionButtonFullRecalculationEnabled

Determines the level of recalculation that occurs as part of the execution of an action button. This parameter is only applicable to action buttons that use **Automatically Recalculate Sheet** as the **Calculation** type.

If set to true, a full recalculation occurs on the target workbook.

If set to false, a partial recalculation occurs on the target workbook. Only the visible portions of the target workbook are recalculated. This recalculation includes any Active Forms, DBS/DBSW/DBR/DBRW/DBRA/DBSA formulas, and dependencies of cells in the visible area. Any portions beyond the scrolling boundary of the target workbook are *not* recalculated. False is the default value, which can result in improved performance, especially in large workbooks.

AdminHostName

If set, users are not asked to enter a value for Admin Host during login.

See "Configuring the TM1 Web login page using AdminHostName and TM1ServerName parameters" on page 159.

AdminHostPort

If set, the client tries to use this port instead of the default Admin Host port.

AdminHostSSLPort

If set, the client tries to use this port instead of the default Admin SSL Host port.

CamLoginApiRedirectEnabled

Default value is `false`.

When enabled, CAM authentication from the TM1 Web API (either URL API or JavaScript Library) performs a redirect to the CAM login page of Cognos Analytics. This behavior differs from the default behavior of showing CAM login page of Cognos Analytics in a dialog box. This parameter must be enabled in cases where Cognos Analytics includes an `X-Frame-Options` header with a value of `SAMEORIGIN` or `DENY`, which is used to improve protection against Click-jacking attacks.

CleanDimensionMetaDataCache

During websheet calculation, the CleanDimensionMetaDataCache parameter specifies whether dimension elements are retrieved from the TM1 Server or by using cached elements from TM1 Web.

Default value: `false`

- If CleanDimensionMetaDataCache is set to false, elements from the tm1web cache are used.
- If CleanDimensionMetaDataCache is set to true: tm1web dimension elements are cleaned from the cache and the elements are retrieved directly from the TM1 Server.

CrossDomainAccessList

Specifies a list of cross-domain URLs that are allowed to access TM1 Web.

You can use this parameter to specify the domain where IBM Cognos Workspace is running, if it's running on a domain separate from TM1 Web.

Use an asterisk (*) to allow any domain to access TM1 Web.

If you specify multiple URLs, separate each one by using a comma.

If this parameter is not set or the parameter value is empty, no cross-domain access to TM1 Web is allowed.

CubeViewerColumnPageSize

Specifies the number of columns to fetch in a page of Cubeviewer.

See "Changing the Cube Viewer page size" on page 167.

CubeViewerHiddenDimensionsEnabled

Hides dimensions in the TM1 Web cube viewer.

Hidden dimensions are part of the context of a view, but do not show up as context dimensions in the TM1 Web cube viewer. Instead, they reside in a region of the dimension bar labeled **Hidden**.

To use hidden dimensions in the TM1 Web cube viewer, you must set `CubeViewerHiddenDimensionsEnabled" ="true"` in the `tm1web_config.xml` file. When the feature is enabled, the **Hidden** region appears on the cube viewer.

You can drag dimensions to and from the **Hidden** region just as you can for the **Rows**, **Columns**, and **Context** regions.

When a view includes hidden dimensions, the number of hidden dimensions is displayed below the **Hidden** label. When you click the **Hidden** region, you can see which dimensions and elements are hidden.

You cannot change the element for a hidden dimension. If you want to change an element, you must show the dimensions by dragging it to the **Rows**, **Columns**, or **Context** region, and then change the element. You can then return the dimension to the hidden region.

CubeViewerRowPageSize
Specifies the number of rows to fetch in a page of Cubeviewer.

See "Changing the Cube Viewer page size" on page 167.

CubeviewerStringWrap
Settings for string cell wrapping in the Cubeviewer.

See "Wrapping string values in cube views" on page 167.

CustomCAMLogoutUrl

Specifies the URL of a dedicated Logout page for CA SiteMinder when TM1 Server is configured to use CAM security (mode 4 or 5). This Logout page must be accessed on logout so that the SiteMinder session cookie can be invalidated.

When a user clicks **Logoff** in TM1 Web, the CAM logout occurs first. Then, the SiteMinder Logout page is called.

EvaluationServiceURL
Specifies the location of the evaluation service. The evaluation service is included with IBM Planning Analytics Spreadsheet Services. It is used for rendering quick reports within TM1 Web and Planning Analytics websheets.

Valid value is *`hostname:port_number`*.

If no value is assigned, the default value is assumed to be `http://localhost:9510`.

ExportCellsThreshold
Specifies the maximum number of cells that an export of a websheet or a cube view can contain. If the number of selected cells exceeds the threshold, a warning message is displayed and the export does not start.

As of IBM Planning Analytics version 2.0.7, the default value is **1000000**.

Edit the **`ExportCellsThreshold`** parameter in the `tm1web_config.xml` file by using the following format:

```
<add key="ExportCellsThreshold" value="CellsThreshold" />
```

where *`CellsThreshold`* is the cell count threshold that is determined by multiplying the number of rows by the number of columns per sheet, and then multiplying that result by the number of iterations and context members that the export is selected for.

For example, if a websheet has two sheets and each sheet has 1000 rows and 25 columns, and the export is selected for four context members, the cell count is calculated as 25,000 * 2 sheets * 4 context members = 200,000 cells. If the <CellsThreshold> is 150, 000, this websheet export would be rejected.

ExternalUrl

Set the ExternalUrl parameter if you are using TM1 Web and Cognos security (CAM) authentication with an external load balancer that modifies the original startup URL for TM1 Web. The ExternalUrl parameter provides the correct URL so that Cognos security can successfully redirect back to TM1 Web.

Set the value to the same URL that you use to start TM1 Web, for example

```
<add key="ExternalUrl" value="http://mycomputer/TM1Web" />
```

GzipCompressionEnabled
Determines whether the web server responses will be compressed. Valid values are `true`/`false`.

HideCubeviewerToolBar
If set to true, all Cubeviewer toolbars are not displayed.

See "HideCubeviewerToolBar parameter" on page 166.

HideTabBar
If set to true, multiple tabs are not displayed.

See "HideTabBar parameter" on page 165.

HideWebsheetToolBar
If set to true, all websheet toolbars are not displayed.

See "HideWebsheetToolBar parameter" on page 166.

HomePageObject
If set, the object of type of websheet, Cubeviewer, or URL will be displayed after a user logs in.

See "Configuring a global homepage for all users" on page 161.

HttpSessionTimeout
This parameter defines the session timeout (in minutes) of the HTTP session for TM1 Web. If the parameter is missing, the value is less than 1, blank, or not a numerical value, the default session timeout that is defined for TM1 Web in the `web.xml` file is used.

See "Setting the TM1 Web session timeout" on page 168.

Note: As of IBM Planning Analytics Local version 2.0.6, you should not change the `session-timeout` value in the `web.xml` file.

LegacyUrlApiSessionDiscoveryEnabled
Use the **`LegacyUrlApiSessionDiscoveryEnabled`** configuration parameter to control how the TM1 Web URL API handles login sessions. Configure this parameter to specify whether the URL API tracks separate unique login sessions.

This parameter enables the URL API session to be reused based on the specified admin host, TM1 Server, and (optional) user name.

If you are using the session token login approach with the URL API, you must set the **`LegacyUrlApiSessionDiscoveryEnabled`** configuration parameter in the `tm1web_config.xml` file to `False`.

See TM1 Web API session login.

Use this format:

```
<add key="LegacyUrlApiSessionDiscoveryEnabled" value=True or False/>
```

For example:

```
<add key="LegacyUrlApiSessionDiscoveryEnabled" value="False"/>
```

The default value is `True`.

- **`True`**

TM1 Web tries to match new login request with an existing login session based on the provided information (TM1 Admin host, TM1 Server, user name).

This parameter should be set to `True` only if a single login will occur for a unique TM1 Admin Host, TM1 Server, and user name combination.

- **`False`**

  Specifies that a session token must be provided every time that you open a TM1 Web object with the TM1 Web URL API. Otherwise, the user is prompted.

  Set this parameter to `False` if you plan to use multiple login sessions with TM1 Web URL API. You also use this configuration if you are using multiple login sessions with the URL API and other TM1 Web clients such as TM1 Web and TM1 Application Web. This configuration uses the session token to keep the user sessions separate and unique.

MaximumConcurrentExports

Specifies the maximum number of concurrent exports that can be executed from TM1 Web. The default value is 5.

Before IBM Planning Analytics version 2.0.7, the default value is 5.

As of IBM Planning Analytics version 2.0.7, the default value is **4**.

You can set MaximumConcurrentExports to 0 to allow an unlimited number of concurrent exports. This setting is analogous to export behavior in TM1 Web before version 10.3.

If the maximum number of concurrent exports is reached, and more exports are then initiated, the additional exports are queued until an export slot is available. The initiator of a queued export does not receive notification of queuing.

The optimal parameter setting depends on your RAM capacity and your user requirements. Generally, the more RAM you have available to TM1 Web, the higher the parameter setting can be. Increasing the value results in increased memory consumption, but reduces export queuing. (Setting the parameter to 0 eliminates export queuing.) Conversely, decreasing the parameter value reduces memory consumption that results from exports, but can result in more frequent export queuing.

MaximumSheetsForExport

Specifies the maximum number of sheets that are allowed to export.

Before IBM Planning Analytics version 2.0.7, the default value is 100.

As of IBM Planning Analytics version 2.0.7, the default value is **50**.

See "Setting the maximum number of sheets to export from a websheet" on page 167.

MixedCellPaste

If the MixedCellPaste parameter is set to true, when you copy values to a mixed range of leaves and consolidated values in a websheet, the pasted values match exactly. The default value is `False`.

Note: This parameter applies to websheets only; it does not apply to CubeViewer.

NavTreeCollapsedOnStart

Determines whether the navigation panel will be collapsed or expanded after a user logs in.

See "NavTreeCollapsedOnStart parameter" on page 165.

NavTreeDisplayServerView

Specifies whether to display the Server View node in the navigation tree. Valid values are Y and N.

See "Displaying or hiding the Views node in the navigation pane" on page 166.

NavTreeHidden

Determines whether the navigation panel will be displayed after a user logs in.

See "NavTreeHidden parameter" on page 164.

RecalcOnActivate

If RecalcOnActivate is set to true, a recalculation is performed each time a websheet or cubeview is activated in TM1 Web, for example, when you switch tabs.

Valid values are `true` or `false`.

RecalcOnDataValidationChange

Specifies whether the default recalculation behavior will be overridden when you change the value of a data validation list.

If set to true, a recalculation will be triggered when a value in a data validation list is changed.

If set to false, a recalculation will not be triggered when a value in a data validation list is changed.

RecalcOnPicklistChange

Specifies whether the default recalculation behavior will be overridden when you change the value of a picklist.

If set to true, a recalculation will be triggered when a value in a picklist is changed.

If set to false, a recalculation will not be triggered when a value in a picklist is changed.

RelationalResultMaxRows

If a value greater than `-1` is specified, then relational query ResultSets are limited to returning the specified number of rows.

TM1DatabaseLabel

If set to "Y", the name of the database is displayed with the user on the TM1 Web banner. For example, "Welcome: Admin / Planning Sample". The default is "N". When this option is set to "N", nothing is displayed with the user.

See “TM1DatabaseLabel parameter” on page 166 in *Configuring IBM TM1 Web Startup and Appearance Settings*.

TM1ServerName

If set, users will not be asked to select a TM1 Server to connect to during login.

See “Configuring the TM1 Web login page using AdminHostName and TM1ServerName parameters” on page 159.

UseBookRecalcSetting

The UseBookRecalcSetting parameter is included in the `tm1web_config.xml` file. When set to true, the web server honors the mode in which the Excel sheet was published. If the Excel sheet was published in Manual recalc mode, websheet data is not resent to the client until a recalculation is performed.

The UseBookRecalcSetting parameter uses the following format in the `tm1web_config.xml` file:

```
<add key="UseBookRecalcSetting" value="false" />
```

where value is either "false" or "true"

If you set UseBookRecalcSetting to true, TM1 Web honors the recalculation settings in the Excel worksheet.

When Calculation Options is set to Automatic:

- If you set `UseBookRecalcSetting = "true"`, the websheet is recalculated automatically when you change the SUBNM function.
- If you set `UseBookRecalcSetting = "false"`, the websheet is recalculated automatically when you change the SUBNM function.

When Calculation Options is set to Manual:

- If you set `UseBookRecalcSetting = "true"`, the websheet is not recalculated automatically. To recalculate, you must manually click the **recalc** button.
- If you set `UseBookRecalcSetting = "false"`, the websheet is recalculated automatically when you change the SUBNM function.

WebsheetBackgroundRecalculationMode

Specifies the level of background recalculation that occurs for a websheet.

WebSheetService.scrollWebSheet calls can take several seconds because the data is not readily available. Use the WebsheetBackgroundRecalculationMode parameter to recalculate the book in the background so that the necessary data is ready when it is requested.

If set to 0 (default value), only the buffered (visible) area is calculated on a refresh of a sheet.

If set to 1, the area that is adjacent to the buffered area is calculated, in addition to the buffered area. This improves wait times if the user scrolls slightly away from the initially visible area.

If set to 2, the entire current worksheet is calculated. This improves wait times if the user scrolls to any area of the current sheet.

If set to 3, the entire current workbook is calculated. This improves wait times if the user moves to any area of the current worksheet or to another worksheet.

Note: The higher the setting number, the more cells are calculated meaning that there would be a higher load on the web server.

WorkbookMaxCellCount

Specifies the maximum cell count of a workbook as a number with no thousands separators.

The TM1Web application server validates the size of a workbook that is published to TM1 Server. Workbooks that contain ActiveForms might be uploaded only with their control row. At publish time, the workbook can have multiple rows but when it is opened and rebuilt it can display many more rows. You can use WorkbookMaxCellCount to avoid issues when you open workbooks with many cells.

If this parameter is present in `tm1web_config.xml` and it is not the default, when the user opens a workbook, the server validates its cell count against WorkbookMaxCellCount. If the cell count of the workbook exceeds WorkbookMaxCellCount, an error message is logged and the workbook is not opened. The user sees the *<book_name> exceeds maximum cell count* error message in the `tm1web.log` file.

See Using IBM Planning Analytics TM1 Web Logging.

- Leaving this parameter blank or setting it to 0 or less indicates that an unlimited cell count for workbooks is allowed.
- Before IBM Planning Analytics version 2.0.7, the default value is -1, which indicates an unlimited number of cells are allowed in a workbook.
- As of IBM Planning Analytics version 2.0.7, the default value is **500000**.

Note: Changes to this parameter require a restart of the application server.

CSPHeaderFrameAncestors

The `CSPHeaderFrameAncestors` parameter allows you to set a value for the `frame-ancestors` directive. You can specify the domains that can embed websheets inside a frame.

The following values can be set:

`'none'`
This value blocks any domain from framing websheets.

`'self'`
This value allows websheets to be framed in any parent.

`'self' <space separated list of sources>`
This value specifies the domains that are allowed to embed websheets inside a frame.

If CSPHeaderFrameAncestors is not specified, the default value is set as 'self'.

Editing the Planning Analytics Spreadsheet Services configuration file

You can edit the Planning Analytics Spreadsheet Services/ TM1 Web configuration file to modify the behavior of Planning Analytics Spreadsheet Services.

About this task

The Planning Analytics Spreadsheet Services configuration file is an xml file and should be opened only with an XML-type editor. Opening it using a regular text editor such as Microsoft Wordpad can result in incorrect characters being added that may corrupt the file.

Procedure

1. Locate and open the tm1web_config.xml file in the following location: <TM1 install location>\webapps\tm1web\WEB-INF\configuration\.

   The tm1web_config.xml file is an xml file and should be opened only with an XML-type editor. Opening it using a regular text editor such as Microsoft Word Pad can result in incorrect characters being added that may corrupt the file.
2. Edit the parameters and save your changes.
3. Log in to IBM TM1 Web to see the result of your edits.

Configuring the TM1 Web login page using AdminHostName and TM1ServerName parameters

The **AdminHostName** and **TM1ServerName** parameters control whether the IBM TM1 Web login page prompts the user to enter values for the TM1 Admin Host and TM1 server.

If you set a value for either of these parameters in the tm1web_config.xml file, then the login process uses the specified value and does not prompt the user for this information.

AdminHostName Parameter

This parameter specifies the name of the Admin Host on which a TM1 Admin Server is running. Edit the **AdminHostName** parameter in the tm1web_config.xml file using the following format:

```
<add key="AdminHostName" value="HostName"/>
```

where *HostName* can be one of the following values:

- If *HostName* is blank (default value), then the login page displays the Admin Host prompt.
- If *HostName* is set to the name of a valid TM1 Admin Host, then IBM TM1 Web uses that Admin Host for the login process and does not prompt the user.

TM1ServerName Parameter

This parameter sets the name of the TM1 server. Edit the **TM1ServerName** parameter in the tm1web_config.xml file using the following format:

```
<add key="TM1ServerName" value="ServerName"/>
```

where *ServerName* can be one of the following values:

- If *ServerName* is blank (default value), then the TM1 server prompt is displayed on the IBM TM1 Web login page.
- If *ServerName* is set to a valid TM1 server name, then the login page does not display a prompt for either the Admin Host or the TM1 server.

- If the **AdminSvrSSLCertID** parameter is incorrectly configured, the server name pull-down displays as empty and an error is logged in the TM1 Web log file. For more information, see *Running TM1 in Secure Mode using SSL* in *TM1 Operation*.

After the user enters a valid User Name and Password, IBM TM1 Web will log in to the TM1 server specified by the **TM1ServerName** parameter in the `tm1web_config.xml` file.

For example, the **TM1ServerName** parameter could be set to planning sample, as shown in the following code.

```
<add key="TM1ServerName" value="planning sample" />
```

Configuring a custom homepage for TM1 Web

You can configure a custom homepage for IBM TM1 Web to display a websheet, cube view, or a URL after users have successfully logged into IBM TM1 Web. This homepage can provide users with a starting point for accessing and working with TM1 data.

A homepage can be configured globally for all IBM TM1 Web users or assigned individually for different users or sets of users. For example, if you configure the homepage option to display an HTML file or other type of web page, then you can provide users with instructions, tasks, links, or any other content that can be displayed in a web page.

If a homepage is configured, it displays on the first tab in IBM TM1 Web and cannot be closed by users. When configured, a Home link is displayed in the header area of IBM TM1 Web that allows users to easily return to the homepage.

The homepage requires a stable path for the system name. Certain actions, such as updating a published sheet in IBM Planning Analytics for Microsoft Excel, results in a new file name and changes the path. References to the file name must be updated. For instance, when the file name is used as a TM1 Web homepage.

An IBM TM1 Web homepage can be configured in one of the following two ways:

Different homepage for different IBM TM1 Web users
Use the Client Settings dialog in TM1 Architect and Server Explorer to configure a startup homepage for different clients (users) of IBM TM1 Web.

Global homepage for all IBM TM1 Web users
Use the HomePageObject parameter in the `tm1web_config.xml` file to configure a homepage that applies globally to all IBM TM1 Web users.

Note: Any homepage assignment you make with the Client Settings dialog can override the global setting in the `tm1web_config.xml` file if you set `AllowOverwrite=true` in the `HomePageObject` parameter of the `tm1web_config.xml` file.

Configuring different homepages for individual users

The Client Settings dialog box, in Architect and Server Explorer, configures a startup homepage for different IBM TM1 Web clients (users).

For example, you can assign one homepage for TM1 Web users in the Sales department and another homepage for users in the Finance department.

Note: You can use the **Client Settings** dialog box to assign homepages for specific users, over-riding the global homepage setting for the **HomePageObject** parameter in the `tm1web_config.xml` file.

Procedure

1. In Architect or Server Explorer, right-click the server and select **Security**, **Clients/Groups**.

   The Clients/Groups dialog box opens.
2. Click **Settings**.

The Client Settings dialog box opens.

3. Select the client from the **Current Client** list for which the homepage setting will apply.
4. Enter a websheet, cube view, or URL for the homepage as follows:
   - To display a URL, type the URL address, including the http:// protocol, into the Homepage box. You can enter a URL for either a website or an individual file.
   - To select a websheet or cube view as the homepage, click **Browse**. The Select an TM1 Web Homepage dialog box opens where you can select a reference to a websheet or cube view from the Application tree.

   After selecting a websheet or cube view reference, click **OK** to return to the Client Settings dialog box.
5. Select the settings that control the appearance of the Navigation pane.

   Note: The Navigation pane settings you set here will only apply if the corresponding parameter in the `tm1web_config.xml` file is set to `AllowOverwrite=true`. For more information, see "Configuring TM1 Web startup and appearance settings" on page 164.

   The available settings for controlling the appearance of the Navigation pane include:
   - **Include the Navigation Pane** - Determines whether the Navigation pane is displayed or not displayed when the selected client logs in to TM1 Web.
   - **Open pane on Login** - Sets the Navigation pane to display in the expanded mode when the selected client logs in to TM1 Web.
   - **Close pane on Login** - Sets the Navigation pane to display in its minimized mode when the selected client logs in to TM1 Web.
   - **Save Client's Navigation Pane Settings** - Determines whether the personal settings for the Navigation pane are saved when the client logs out of TM1 Web.
6. Select one of the options from the **Apply To** list to configure which client or clients will be able to view the homepage.

   The available options include:
   - **Current Client** - Applies the homepage setting for only the client selected in the current Client list.
   - **Selected Clients** - Enables the Select button so you can open the Subset Editor to select a collection of clients that will use the same homepage setting.

     If you choose **Selected Clients**, and then click **Select**, the Subset Editor opens so you can select a subset of TM1 clients that can use the homepage.

     Use the Subset Editor to select a subset of clients and then click **OK** to return to the Client Settings dialog box. The number of clients selected in the Subset Editor is summarized in the Client Settings dialog box.
   - **All Clients** - Applies the same homepage setting to all TM1 clients.
7. Click **Apply Settings** to configure the homepage for the client or clients that you selected in the Apply To list.
8. Repeat steps 4, 5, 6, and 7 to configure a homepage for a different set of TM1 clients.
9. Click **OK** to close the Client Settings dialog box.

   You have now configured a homepage for TM1 Web. The selected TM1 Web clients will see the assigned homepage the next time they successfully log in to TM1 Web.

Configuring a global homepage for all users

The `HomePageObject` parameter, in the `tm1web_config.xml` file, enables a global homepage that displays for all IBM TM1 Web users.

Note: You can override the global `HomePageObject` parameter by using the Client Settings dialog to assign different homepage's for individual TM1 users. For more information, see "Configuring different homepages for individual users" on page 160

The HomePageObject parameter works for three types of objects:

- Cubeviewer
- Websheet
- URL

The homepage object displays after the user successfully logs in to TM1 Web.

Using the HomePageObject parameter

How to use the HomePageObject parameter.

The **HomePageObject** parameter uses the following format:

<add key="HomePageObject" value="*ObjectPath* ;Type= *ObjectType* ;Description= *ObjectTitle* ; *AllowOverwrite* =true" />

where:

- *ObjectPath* is the path to the websheet, cube view, or URL object that you want to open. The exact format of the path depends on the type of object.
- *ObjectType* is the keyword for the object you want to open; websheet, cubeviewer, or URL.
- *ObjectTitle* is a brief title you assign to the object that displays in the title bar of the web browser and on the homepage tab in IBM Cognos TM1 Web.
- *AllowOverwrite* can be set to a value of true or false as follows:

If you set AllowOverwrite=true then the HomePageObject parameter can be overridden by setting a different homepage for individual clients using the Client Settings dialog in Architect and Server Explorer.

If you set AllowOverwrite=false then the HomePageObject parameter applies globally to all TM1 users and can not be individually configured with the Client Settings dialog in Architect and Server Explorer.

The following sections describe using the HomePageObject parameter for websheets, cube views, and URLs.

Setting a global TM1 Web homepage to a Cube View

Use the following format to set a cube view as the homepage for IBM TM1 Web.

```
value=CubeName$$ViewName$$Status
```

where the following arguments are separated by $$ characters:

- *CubeName* is the name of cube to which the view belongs.
- *ViewName* is the name of the cube view to display.
- Status is the public or private status of the cube view.

Note: You must include a value of either PUBLIC or PRIVATE to correctly identify the specific cube view that you want to open.

For example, to open a public view named Price from the SalesCube:

```
&ltadd key="HomePageObject" value="SalesCube$$Price$$Public;Type=cubeviewer;
Description=MyStartCube;AllowOverwrite=true"
/>
```

Setting a global TM1 Web homepage to a websheet

You can assign a websheet as the IBM TM1 Web homepage, depending on how the Excel file was added to TM1.

Opening a websheet that references an Excel file outside of TM1

You can open a websheet that references an Excel file.

Procedure

Use the format:

```
value="WebsheetPath
```

where WebsheetPath is the location and name of the Excel file. This can be either a path for a local file, or a UNC path for a file located on a network.

For example, to set a UNC network path for websheet:

```
value=//MySystem/Samples/classic_slice.xls
```

Results

The complete HomePageObject parameter looks like this:

```
<add key="HomePageObject" value="//MySystem/Samples/classic_slice.xls;Type=websheet;
```

```
Description=MyWebsheet;AllowOverwrite=true"/>
```

Opening a websheet object that was uploaded to the TM1 server

You can open a websheet object that was uploaded.

Procedure

1. In Server Explorer, use the Properties pane to find the TM1 assigned name for the uploaded Excel file.

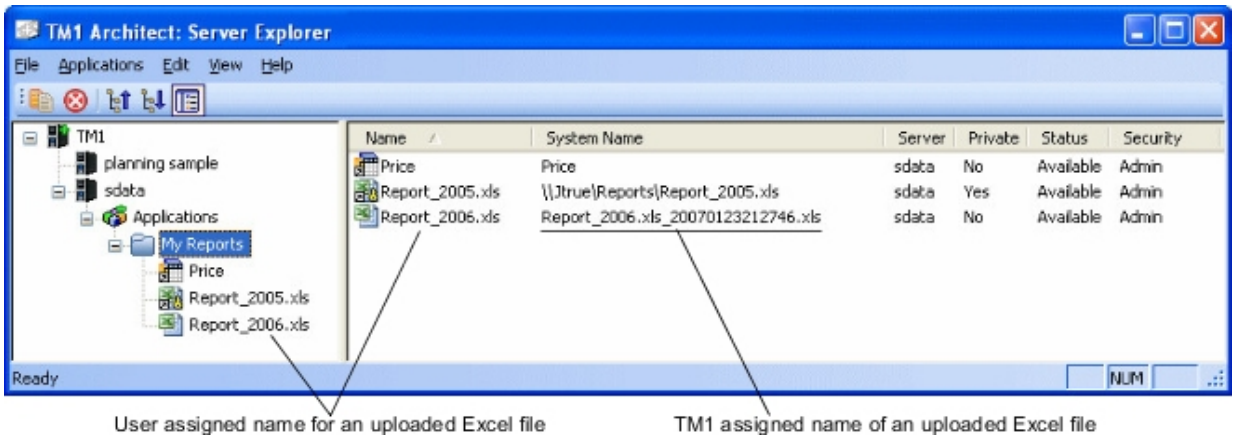


Figure 3. Example of an assigned name for an uploaded Excel file in Server Explorer

2. Set the value parameter using the following format:

```
value="TM1://ServerName/blob/PUBLIC/.\}Externals\
TM1_Filename
```

where:

- *ServerName* is the name of the TM1 sever where the Excel file is located.
- *TM1_Filename* is the name that TM1 assigned to the uploaded Excel file.

For example:

```
value="TM1://sdata/blob/PUBLIC/.\}Externals\Report_2006.xls_20070123212746.xls
```

The complete HomePageObject parameter line looks like this:

```
<add key="HomePageObject" value="TM1://sdata/blob/PUBLIC/.\}Externals\
Report_2006.xls_20070123212746.xls;Type=websheet;Description=My
Uploaded Websheet;AllowOverwrite=true" />
```

Setting a global TM1 Web homepage to a URL

You can set the `HomePageObject` parameter to a URL.

Use this format:

```
value="URL_Path
```

Where *URL_Path* can point to a web site or an individual web page file.

For example:

- To set the homepage to a URL that points to a file:

```
<addkey="HomePageObject" value="homepage.html;Type=URL;
```

```
Description=MyStart Page;AllowOverwrite=true"
/>
```

- To set the homepage to a URL that points to a web site:

```
<addkey="HomePageObject" value="http://www.ibm.com;Type=URL;
```

```
Description=IBM;AllowOverwrite=true"/>
```

Configuring TM1 Web startup and appearance settings

You can control the appearance of the Navigation pane, tab bar, and websheet and Cubeviewer toolbars when users log in to IBM TM1 Web.

These parameters are located in the `tm1web_config.xml` file and apply globally to all users of TM1 Web.

Note: For more information on using the HomePageObject parameter to set a custom homepage, see “Configuring a custom homepage for TM1 Web” on page 160.

NavTreeHidden parameter

The NavTreeHidden parameter determines if the Navigation pane displays when users log in to IBM TM1 Web.

This can be helpful if you are displaying a custom homepage for users and you want to completely hide the Navigation pane.

The NavTreeHidden parameter uses the following format in the `tm1web_config.xml` file:

```
<add key="NavTreeHidden" value="false;AllowOverwrite=true"
/>
```

where:

value can be either true or false

- If set to false, the Navigation pane will be displayed when user's log in to TM1 Web.
- If set to true, the Navigation pane will not be displayed when user's log in to TM1 Web.

AllowOverwrite can be set to true or false as follows:

- If you set `AllowOverwrite=true`, the NavTreeHidden parameter is assigned globally to all users, but can be overridden for individual clients using the Client Settings dialog in Architect and Server Explorer.

- If you set `AllowOverwrite=false`, the NavTreeHidden parameter applies globally to all TM1 users and can not be overridden for individual clients using the Client Settings dialog in Architect and Server Explorer.

NavTreeCollapsedOnStart parameter

The NavTreeCollapsedOnStart parameter determines if the Navigation pane will be minimized or expanded when users log in. If collapsed, a small vertical bar displays to provide the user with a way to restore the pane.

The NavTreeCollapsedOnStart parameter uses the following format in the `tm1web_config.xml` file:

```
<add key="NavTreeCollapsedOnStart" value="false;AllowOverwrite=true"
/>
```

where:

value can be either true or false.

- If value is set to false, the Navigation pane will be expanded and display in its default mode when user's log in to TM1 Web.
- If value is set to true, the Navigation pane will be collapsed when user's log in to TM1 Web.

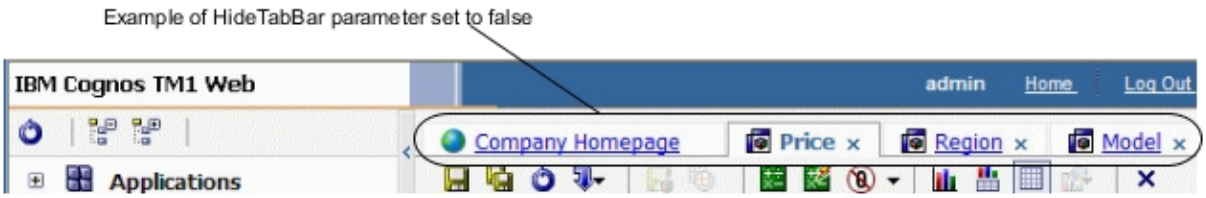
AllowOverwrite can be set to true or false as follows:

- If you set `AllowOverwrite=true`, the NavTreeCollapsedOnStart parameter is assigned globally to all users, but can be overridden for individual clients using the Client Settings dialog in TM1 Architect and Server Explorer.
- If you set `AllowOverwrite=false`, the NavTreeCollapsedOnStart parameter applies globally to all TM1 users and cannot be overridden for individual clients using the Client Settings dialog in TM1 Architect and Server Explorer.

HideTabBar parameter

The HideTabBar parameter determines if IBM TM1 Web can display multiple tabs when a user opens multiple TM1 Web objects, or if only one view is displayed.

This can be useful if you want to limit users to one view at a time.



The HideTabBar parameter uses the following format in the `tm1web_config.xml` file:

```
<add key="HideTabBar" value="false;AllowOverwrite=true"/>
```

where value can be either true or false.

- If value is set to false, multiple tabs can be displayed. This is the default behavior of TM1 Web.
- If value is set to true, multiple tabs are not displayed and only one object can be opened at a time.

The AllowOverwrite option is not currently used for this parameter.

HideWebsheetToolBar parameter

The HideWebsheetToolBar parameter determines if the websheet toolbar is displayed when users open a websheet.

The HideWebsheetToolBar parameter uses the following format in the `tm1web_config.xml` file:

```
<add key="HideWebsheetToolBar" value="false;AllowOverwrite=true"
/>
```

where value can be either true or false.

- If value is set to false, the websheet toolbar will display in TM1 Web.
- If value is set to true, the websheet toolbar will not display in TM1 Web.

The AllowOverwrite option is not currently used for this parameter.

HideCubeviewerToolBar parameter

The HideCubeviewerToolBar parameter determines if the Cubeviewer toolbar is displayed when users open a cube view.

The HideCubeviewerToolBar parameter uses the following format in the `tm1web_config.xml` file:

```
<add key="HideCubeviewerToolBar" value="false;AllowOverwrite=true"
/>
```

where value can be either true or false.

- If value is set to false, the websheet toolbar will display in TM1 Web.
- If value is set to true, the websheet toolbar will not display in TM1 Web.

The AllowOverwrite option is not currently used for this parameter.

Displaying or hiding the Views node in the navigation pane

You can display or hide the Views node in the Navigation pane.

Procedure

1. Edit `tm1web_config.xml` in the TM1 Web virtual directory.
2. Locate the NavTreeDisplayServerView, which controls the display of the **Server View** node. The default value, Y, displays the **Views** node in the Navigation pane.

   ```
   <!--NavTreeDisplayServerView: Y/N - Wether to display
   "Server View" node in navigation tree -->
   ```

   ```
   <add key="NavTreeDisplayServerView" value="Y" />
   ```
3. To hide the Views node, change the NavTreeDisplayServerView value to N.
4. Save `tm1web_config.xml`.
5. Log in to TM1 Web.

   Now the Navigation pane displays without the View node.

TM1DatabaseLabel parameter

This parameter displays the TM1 database label in the banner beside the user name.

Edit the **TM1DatabaseLabel** parameter in the `tm1web_config.xml` file using the following format:

```
<add key="TM1DatabaseLabel" value="Y"/>
```

where *TM1DatabaseLabel* can be either N or Y.

- If *TM1DatabaseLabel* is set to N, the database label is not displayed. This is the default behavior of TM1 Web.
- If *TM1DatabaseLabel* is set to Y, the database label appears in beside the logged in user name in the banner as "Welcome: <user name> / <TM1 database label>".

Changing the Cube Viewer page size

You can change the number of rows and columns displayed in the Cube Viewer of IBM TM1 Web.

By default, Web Cube Viewer displays pages of TM1 data with 20 columns and 100 rows, and includes the dimensions list in the row count.

Procedure

1. Edit `tm1web_config.xml`.
2. Locate the following code:

   `CubeViewerRowPageSize`

   `CubeViewerColumnPageSize`
3. Change the value for the row and/or column page size.
4. Save `tm1web_config.xml`.
5. Log in to TM1 Web.

   For example, if you set the row page size to 10, the Cube Viewer displays nine rows of data, plus the row of dimensions.

Setting the maximum number of sheets to export from a websheet

By default, the maximum number of sheets you can export from a websheet to a printer is 100. You can configure IBM TM1 Web to export more sheets.

Procedure

1. Edit `tm1web_config.xml`.
2. Locate the following code:

   ```
   MaximumSheetsForExport
   ```
3. Change the value for the maximum number of sheets to export.
4. Save `tm1web_config.xml`.
5. Log in to TM1 Web.

Wrapping string values in cube views

Use CubeviewerStringWrap to set the parameters used when viewing string element cells in a Web Cube View.

To control the way a view is displayed and wrapped, set the values using the CubeviewerStringWrap parameter and save the web configuration file. Cells that are not displayed are still editable in a scrollable area by clicking in the wrapped region.

Enabled
Turn wrapping of string cells in this view on or off. When set to "False" the column width is as wide as the longest string for any row in the current view. Set to "True" by default to turn on wrapping using these default parameters.

MinCharactersToWrap
Set the minimum number of characters needed before wrapping. For instance, string values with less than 50 characters will not wrap within a cell. Set to 50 by default.

MaxDisplayCharacters
Set the maximum number of characters to display within the string cell. The cell may contain more than this number of characters, but they will only be displayed when double-clicking on the cell. If the MinCharactersToWrap is 50 and the MaxDisplayCharacters is 200, string cells containing 200 or more characters will consume approximately 4 lines. Set to 200 by default.

WidthOfWrapCell
Set the number of characters used in the wrapped portion of the display. Set to 240 by default.

Use the following format in the `tm1web_config.xml` file (the following listing has a return in it for clarity but you should not enter a return).

```
<add key="CubeviewerStringWrap" value="Enabled=true;MinCharactersToWrap=50;
MaxDisplayCharacters=200;WidthOfWrapCell=240" />
```

Remember: CubeviewerStringWrap does not apply to websheets.

Setting the TM1 Web session timeout

The default TM1 Web session timeout is 20 minutes. When TM1 websheets are deployed to IBM Planning Analytics Workspace, you might encounter TM1 Web session timeouts. You can modify this setting in your environment.

About this task

When TM1 websheets are deployed to Planning Analytics Workspace, the recommended session timeout is 60 minutes.

Note: As of IBM Planning Analytics Local version 2.0.6, you must **not** change the `session-timeout` value in the `web.xml` file.

In IBM Planning Analytics Local version 2.0.6, there is a parameter in the `tm1web_config.xml` file called `HttpSessionTimeout`. You can use this parameter to customize the session timeout (in minutes) of the HTTP session for TM1 Web.

If the `HttpSessionTimeout` parameter is not specified (missing or blank), the value is less than 1 or not a numerical value, the default `session-timeout` that is defined in the `web.xml` file is used.

If you are using IBM Planning Analytics Local version 2.0.6 or later, to customize the session timeout for TM1 Web, set the `HttpSessionTimeout` parameter in `tm1web_config.xml`. See step “1” on page 168.

If you are using IBM Planning Analytics Local version 2.0.5 or earlier, to change the default session timeout, set the `<session-timeout>` parameter in `web.xml`. See step “2” on page 168.

Procedure

1. To customize the session timeout, follow these steps.
   a) Open the`tm1web_config.xml` in a text editor.
      The `tm1web_config.xml` file is located in your `<pa_installation_directory>\webapps\tm1web\WEB-INF\configuration` directory.
      For example, `C:\Program Files\IBM\cognos\tm1_64\webapps\tm1web\WEB-INF\configuration`.
   b) Change the `HttpSessionTimeout` to 60 or a value that is required by your environment.

      ```
      <add key="HttpSessionTimeout" value="60" />
      ```

   c) Save and close the `tm1web_config.xml`.
2. If you are using IBM Planning Analytics Local version 2.0.5 or earlier, to change the default session timeout, follow these steps.
   a) Open `web.xml` in a text editor.

The `web.xml` file is located in your `<pa_installation_directory>\webapps\tm1web\WEB-INF` directory.

For example, `C:\Program Files\IBM\cognos\tm1_64\webapps\tm1web\WEB-INF`.

b) Change the `<session-timeout>` value to 60 or a value that is required by your environment.

```
<session-config>
    <session-timeout>20</session-timeout>
</session-config>
```

c) Save and close `web.xml`.

3. Restart the IBM TM1 Application Server service.

Configuring web browsers for Cognos TM1 Web

This section describes web browser configuration steps for IBM Cognos TM1 Web that may be needed for your environment after you complete the initial installation.

Users connect to Cognos TM1 Web using one of the supported web browsers running on their own computers. Some additional configuration may be required.

Configuring web browser language for TM1 Web

The language settings in your web browser determine which language is used in the IBM TM1 Web interface.

About this task

Follow these general steps to configure Microsoft Internet Explorer and Mozilla Firefox to display IBM TM1 Web in your primary language. For more detailed information, see the documentation for your web browser.

Procedure

1. Depending on which web browser you are using, use the available language options to select and configure your primary language.
   - In Internet Explorer, the language options are typically located under Tools menu > Internet Options > General > Languages.
   - In Firefox, the language options are typically located under Tools menu > Options > Content > Languages.
2. Add your language to the language list.
3. Organize the list so that your preferred language is at the top of the list.

Displaying and entering numbers in Cognos TM1 Web based on Regional Settings

If you are running the IBM Cognos TM1 Web client in a language other than the language of your operating system, you must ensure that your web browser language and Microsoft Windows regional setting are set to the same value.

This will enable you to display and enter numbers in Cognos TM1 Web based on a specific regional setting.

For example, if you have an English OS, but want to run Cognos TM1 Web in French, your browser language must be set to French and your computer's regional setting language must be set to French.

Windows Regional and Language Settings

Access the Windows regional settings by opening the **Regional and Language Options** feature in the Windows Control Panel.

Web Browser Language Settings

Access the web browser language setting as described in the section "Configuring web browser language for TM1 Web" on page 169.

Installing plugins to use copy and paste with TM1 Web

To use the copy paste functionality in IBM Planning Analytics TM1 Web, you need to install the appropriate extension for your browser.

Important: If you are on TM1 Web 2.0.88, you no longer need a browser extension to copy and paste values in TM1 Web or Planning Analytics Workspace websheets. For more information, refer to Plugins no longer required to use copy and paste in TM1 Web.

In Mozilla Firefox:

1. Locate the IBM Cognos TM1 Web Clipboard Extension file (https://addons.mozilla.org/en-US/firefox/addon/tm1-web-clipboard-extension/)
2. Click the **+ Add to Firefox** button to install it.

In Google Chrome and Microsoft Edge:

1. Locate the IBM Cognos TM1 Web Clipboard Extension file (https://chrome.google.com/webstore/detail/ibm-cognos-tm1-web-clipbo/pfcpjkoiknombhfcjnjihpafmkhmdcjb) in the Chrome Store.

   Note: For Microsoft Edge, upgrade to Version 85.0.564.63 or later before loading the above link.
2. Click the **+ Add to Chrome** button to install it.

Chapter 14. Integrating Planning Analytics Local with IBM Cognos software

You can integrate IBM Planning Analytics with IBM Cognos Analytics and IBM Cognos applications. This topic summarizes some of the most typical integration approaches and includes links to the related documentation.

The main options for integrating Planning Analytics with Cognos software include authentication security, data reporting, and data/object interaction. Configuring integration between Planning Analytics and Cognos Analytics involves a combination of installation and configuration tasks on the computers hosting the server and web server components. In some cases, installation and configuration is required on individual end-user computers.

Authentication Security
You can configure the IBM TM1 Server to authenticate users using Cognos Analytics security. With this configuration, any TM1 user interface or other custom application must use a valid user name and password from the Cognos Analytics server to access TM1 data.

Using TM1 as a datasource with Cognos software
You can configure IBM Cognos Analytics to access TM1 servers and cubes from Cognos Analytics applications such as Cognos Report Studio and Cognos Query Studio.

TM1 as a datasource with Cognos Analytics

You can configure IBM Cognos Analytics to access IBM TM1 Server and cubes from Cognos Reporting and Dashboards.

To enable Cognos Analytics reporting against TM1 data sources, configure a Planning Analytics data source and publish a package .

For more details about Cognos Analytics, see the following resources:

- *IBM Cognos Analytics 11.0 documentation* on IBM Knowledge Center (https://www.ibm.com/support/knowledgecenter/SSEP7J_11.0.0).
- *Administration Guide* > "Data Sources and Connections" > "TM1 Data Sources"

Planning Analytics and Cognos Analytics security

You can configure the IBM TM1 Server to authenticate users using Cognos Analytics security.

With this configuration, any TM1 user interface or other custom application must use a valid user name and password from the Cognos Analytics server to access TM1 data.

For more information, see the following topics:

- “Cognos security” on page 188

Chapter 15. Planning Analytics Local security

After you install IBM Planning Analytics Local, you can configure the specific authentication and security modes that you want to use.

Configuration of authentication and data transmission security is part of the installation and configuration process. The steps for setting user, group, and object security are typically done after the initial installation and configuration process and are described in separate documentation.

Authentication security

Authentication or login security configuration includes selecting the type of login security that controls user access to the different Planning Analytics components.

For information about users in Planning Analytics Workspace, see Administer users in *Planning Analytics Workspace*.

Data transmission security

Security configuration includes configuring Planning Analytics to use an encrypted communication protocol for secure data transmission. The Planning Analytics Data Tier is deployed to IBM WebSphere Liberty Profile (WLP). Properties of encrypted communication for WLP such as protocols, ciphers, and the location and password of a keystore that contains required server key and certificates, must be configured through Cognos Configuration.

User and Group security

Planning Analytics manages security by organizing users into groups. Planning Analytics includes a set of three predefined administrative groups. You can create your own custom groups. Users can belong to one or multiple groups.

For information about configuring Planning Analytics user and group security, see Managing Users and Groups in *TM1 Operations*.

Object security

Another level of Planning Analytics security is object security. You can use this type of security to control access to the specific TM1 objects in your data model, but it is not configured during the initial installation and configuration process.

For more information about setting security for TM1 objects, see Controlling Access to TM1 Objects in *TM1 Developer*.

For more information about setting security for Planning Analytics Workspace objects, Security in *Planning Analytics Workspace*.

Related topics:

"Configure TLS for Planning Analytics Workspace Local" on page 109
To configure Transport Layer Security (TLS) for IBM Planning Analytics Workspace, you create a privacy enhanced mail (pem) file that contains your security certificates.

"Configure TLS between Planning Analytics Workspace Local and other servers" on page 110

If you are using self-signed certificates for TM1 servers or IBM Cognos Analytics, you might need to add the certificate authority certificates for them to the list of CA certificates that are used by IBM Planning Analytics Workspace.

Authentication security

Authentication or login security configuration includes selecting the type of login security that will control user access to the different IBM TM1 components.

You can configure IBM TM1 Server to use a specific authentication mode to control user login access.

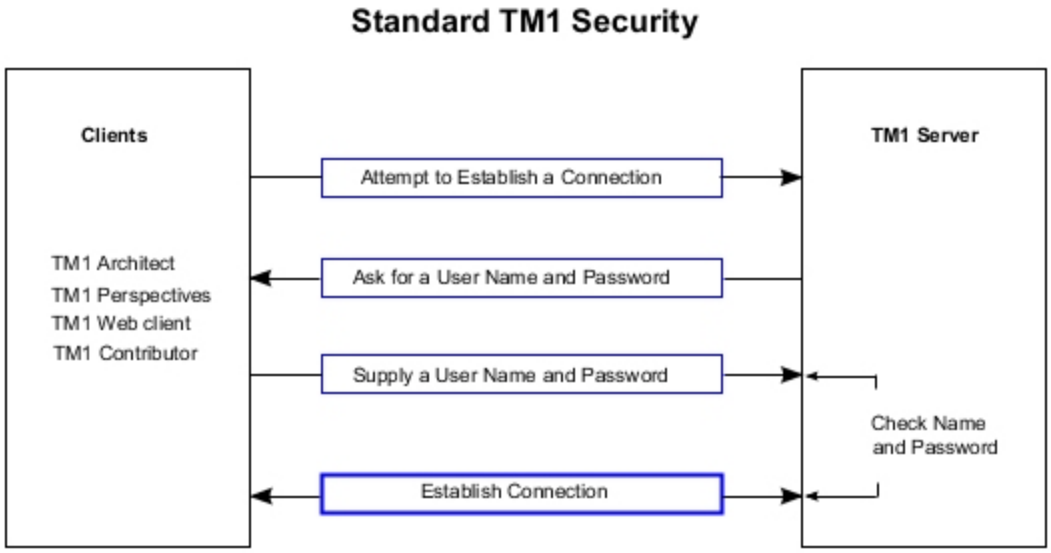
By default, when you install the TM1 Server it is configured to use the standard Cognos TM1 authentication.

After you install the TM1 Server, you can change the authentication method by changing the parameters in the TM1 configuration files.

Standard Cognos TM1 authentication

With IBM Cognos TM1 authentication, the Cognos TM1 server checks the user name and password against the user names and passwords in the Cognos TM1 database.

The following image shows the process of authenticating with the TM1 server.



TM1 Server asks you for a user name and password, and validates the login information against the security cube login information.

Security considerations when using TM1 Applications

You can use either IBM TM1 standard security authentication or IBM Cognos security for the TM1 servers you use with TM1 Applications.

Do not use a combination of different security authentication modes for the same installation of TM1 Applications.

Determine the security mode before you configure TM1 Applications to use a TM1 Server and use that same security mode with any additional servers you add.

Using the IntegratedSecurityMode parameter with TM1 Applications

To set the TM1 security authentication mode use the `IntegratedSecurityMode` parameter in the Tm1s.cfg file of each TM1 Server you want to use.

Important: The TM1 Applications component is compatible only with TM1 security authentication modes 1 and 5.

For example, to use TM1 standard security authentication, set the `IntegratedSecurityMode` parameter to 1 for each server.

```
IntegratedSecurityMode=1
```

To use IBM Cognos security, set the `IntegratedSecurityMode` parameter to 5.

```
IntegratedSecurityMode=5
```

For more details about the `IntegratedSecurityMode` parameter, see the "TM1 System Configuration" section in *TM1 Operations*.

If `IntegratedSecurityMode=5` is used for the TM1 Server and IBM Cognos TM1 Applications, it is not possible to assign rights to native TM1 groups within the **Manage rights** dialog. Only Cognos Groups imported into the TM1 Server, are available. This means you cannot use native TM1 groups and Cognos groups in parallel because the **SecMode** is limiting which groups can be used

Configuring TM1 Applications security for multiple TM1 Servers

If you want to use multiple TM1 servers with TM1 Applications, they must all be configured to use the same security authentication (either TM1 standard authentication or Cognos security) and include the same administrator user name and password.

Integrated login

Integrated login enables you to use Microsoft Integrated Windows Authentication (IWA) and control access to IBM TM1 data based on Users and Groups defined in Microsoft Active Directory (AD).

Note: Integrated login is supported on Microsoft Windows only. You cannot use integrated login to access TM1 Server running on UNIX.

In integrated login mode (security mode 3), TM1 authentication compares the user's domain-qualified Microsoft Windows login name to the contents of the `UniqueID` element of the `}ClientProperties` cube.

If there is a match, the user is authenticated to TM1. If Active Directory groups have been imported into the TM1 Server, Active Directory group memberships are honored.

If no match is found, TM1 displays an error message stating that the client name does not exist. TM1 Server does not prompt for login information.

To populate the `UniqueID` elements and import groups from Microsoft Active Directory, you can use the “ETLDAP utility” on page 199, TurboIntegrator jobs, or manual steps. For more information, see “Configure integrated login for the IBM TM1 Server” on page 176.

Users who want to access TM1 data in a server that is configured for integrated login must authenticate to Microsoft Windows first and then use TM1 clients to access the TM1 Server.

Example

Suppose a user with the user name "Robert", which is defined in the Windows domain "emea.company.com", logs in to his Windows workstation. When Robert uses a TM1 client that uses integrated login, such as TM1 Architect, to access a TM1 Server configured for security mode 3, the TM1 client forwards Robert's Windows login information to the TM1 Server using Integrated Windows Authentication. The TM1 Server looks for a match to "Robert@EMEA" in the UniqueID elements of the `}ClientProperties` cube. If there is a match, Robert is authenticated by TM1 successfully.

Note: Only the name of the actual domain that the user is defined in can be used. Using the fully qualified domain name (for example, "EMEA.COMPANY.COM") will fail.

Integrated login prerequisites

Use the following checklist as guidelines to configure IBM Planning Analytics components for integrated login.

1. Complete the installation of the IBM TM1 Server and make sure that you are able to run and log in to it.
2. Run the ETLDAP Utility to extract the user and group login data from your LDAP directory and load that data into the TM1 security cube. ETLDAP creates TM1 users from the LDAP data that you specify. These users are members of the same group to which they were assigned in your LDAP directory.

   For more information, see "Running ETLDAP" on page 201.
3. Configure the TM1 Server and client components to use integrated login.

Table 28. Integrated login configuration for Planning Analytics components

Component	Configuration
TM1 Server	Configure the integrated login parameters in the `tm1s.cfg` file for any TM1 database that you want to use with integrated login. For more information, see "Configure integrated login for the IBM TM1 Server" on page 176.
IBM Planning Analytics Workspace Local	Configure the URIs that point to the authentication servers. For more information, see "Connect to TM1 and authentication servers" on page 107.
TM1 Web	Configure parameters in the `tm1web_config.xml` file that enable integrated login. For more information, see "Configure integrated login for TM1 Web" on page 177 and "Enable web browsers for integrated login" on page 184.

4. Set access permissions for TM1 users.

   For more information, see "Configure access rights for Cognos TM1 users" on page 185.

Configure integrated login for the IBM TM1 Server

You can modify an IBM Planning Analytics installation to use integrated login without re-installing IBM TM1 Server. To do so, run ETLDAP and modify several TM1 configuration files.

Procedure

1. Run ETLDAP and import the user and group information from your LDAP server, as described in "Running ETLDAP" on page 201.
2. Shut down the TM1 Server.
3. Edit the following parameters in the `tm1s.cfg` file located in your TM1 Server data directory:
   - Set the `IntegratedSecurityMode` parameter to 3.
   - Set the `SecurityPackageName` parameter to the security protocol you use for integrated login.

   In the following example, the server is configured to use Kerberos.

```
[TM1S]
SecurityPackagename=Kerberos
IntegratedSecurityMode=3
```

```
Servername=myserver
DatabaseDirectory=C:\Program Files\
```

4. Save and close the `tm1s.cfg` file.
5. Restart the TM1 Server.
6. Optional: Configure the TM1 clients to use integrated login by setting the **Use Integrated Login** option in the associated user interface.

What to do next

- Connect Planning Analytics Workspace to authentication servers.
- "Configure integrated login for TM1 Web" on page 177.

Configure integrated login for TM1 Web

You can configure TM1 Web for integrated login. You can also set up single sign-on (SSO) for HTTP-based clients by using Integrated Windows Authentication (IWA) using the Kerberos protocol.

Overview

TM1 Web does not authenticate users but defers to TM1 Server for authentication. When you log in to TM1 Web, you are prompted for credentials based on the security mode that is configured on the IBM TM1 Server. When a user provides credentials, TM1 Web uses TM1 Server authentication on the user's behalf with the provided credentials. For integrated login, the server that is being accessed by TM1 Web must be configured for integrated login.

Integrated login works without any configuration in TM1 Web. You can select a server that is configured for integrated login and TM1 Web prompts for your credentials. When you enter your credentials, TM1 Web sends them to the TM1 Server for authentication.

Important: If you set up TM1 Server, TM1 Web, and Planning Analytics Workspace Local using security mode 2 or 3 (integrated login), websheets cannot be used in Planning Analytics Workspace. For more information, see "Configure security mode 2 or 3 to use websheets in Planning Analytics Workspace" on page 183.

You might want to configure single sign-on so that users are not prompted for credentials when they access TM1 Web. For this approach to work, TM1 Web must be configured to integrate with Windows Authentication (Kerberos) to accept a user's forwarded Windows credentials and then perform an integrated login to a TM1 Server on the user's behalf with those credentials. Since TM1 Web does not support Kerberos for authentication directly, you must set up the security features of the WebSphere Liberty Profile server that TM1 Web is deployed to.

The setup process requires the following double-hop authentication:

Single sign-on from the client to IBM WebSphere Liberty Profile

First, you must enable the IBM WebSphere Liberty Profile (WLP) application server's security. Next, a user registry must be configured for WebSphere Liberty Profile to authenticate users against it. Last, WebSphere Liberty Profile must be configured to allow SSO to it.

For Integrated Windows Authentication, you must use the Simple and Protected GSS-API Negotiation Mechanism (SPNEGO) web authentication provider. This provider allows Kerberos enabled clients to achieve single sign-on to WebSphere Liberty Profile. A user who is logged in to Windows using a client that supports Integrated Windows Authentication can authenticate to WebSphere Liberty Profile without getting prompted because of the Kerberos protocol.

Single sign-on from IBM WebSphere Liberty Profile to TM1 Server using TM1 Web

Single sign-on from IBM WebSphere Liberty Profile to each TM1 Server that is configured for integrated login uses the Java Generic Security Services API (JGSS) and Java Authentication and Authorization Services (JAAS) to delegate the received Kerberos user credentials to TM1 Web. TM1 Web performs a Kerberos-based authentication with TM1 Server on the user's behalf.

After you implement this setup successfully, users who are using browsers that are enabled for Integrated Windows Authentication can authenticate to TM1 Web configured to access a TM1 Server that is running security mode 2 or 3 (integrated login) with their Windows user credentials.

Before you begin

Make sure that the following prerequisites are configured:

- All computers that participate in the setup are running Microsoft Windows and are joined to a Windows domain.
- Mutual trust is set up between all domains that any computer from the setup is registered to.
- All computers in the setup can resolve the fully qualified domain name of all other computers and Windows domain controllers that are used in the configuration.
- An instance of TM1 Server is configured for integrated login. For more information, see "Configure integrated login for the IBM TM1 Server" on page 176. The following settings must be configured:
  - A Service Principal Name (SPN) is registered to a Windows account that runs the Windows service for the TM1 Server instance.
  - The SPN is specified in the `ServicePrincipalName` parameter in the `tm1s.cfg` file.
  - The `IntegratedSecurityMode` in the `tm1s.cfg` file is set to 2 or 3.
  - The `SecurityPackageName` is set to Kerberos.
  - For all users who access the TM1 Server, the `UniqueID` element in the `}ClientProperties` dimension is set to a string with the syntax `<sAMAccountName>@<DOMAIN>`.
- An instance of TM1 Application Server is installed on a computer in the setup.
- A domain user can log in to a client computer that is different from the computer that the TM1 Application Server components are installed on. The user must be able to run a supported browser to access TM1 Web. For more information, see "Enable web browsers for integrated login" on page 184.

Conventions

The setup uses the following conventions:

<PA>
The Planning Analytics installation root folder.

<PA_APP_DOMAIN>
The name of the Microsoft Windows domain, for example, `mydomain.sample.com`.

<PA_APP_REALM>
The *<PA_APP_DOMAIN>* in uppercase, for example, `MYDOMAIN.SAMPLE.COM`.

<PA_APP_HOST>
The fully qualified host name of the computer where TM1 Application Server is installed, for example, `appsrv1.mydomain.sample.com`.

<PA_APP_ACCOUNT>
A user account from a Windows domain that is used to run TM1 Application Server.

<PA_SPN>
A string composed of "HTTP" (in uppercase), the "/" delimiter, and the *<PA_APP_HOST>*. For example, "HTTP/appsrv1.mydomain.sample.com".

Set up an account for the TM1 Application Server

1. As a domain administrator, create a domain user account or find an existing domain user account that will be used to run the TM1 Application Server service. This user account is referred to as *<PA_APP_ACCOUNT>*. For example, `mydomain/pa11`.
2. Ensure *<PA_APP_ACCOUNT>* has sufficient file system permissions on *<PA_APP_HOST>*. In particular, the account requires **modify** permission on the following folders:

- <*PA*>/wlp
- <*PA*>/logs
- <*PA*>/temp

3. On <*PA_APP_HOST*>, make sure the "IBM Cognos TM1" service that runs the TM1 Application Server (WLP) is started by <*PA_APP_ACCOUNT*>. (See “1” on page 178).
   a. Using the Windows Services control pane, right-click the "IBM Cognos TM1" service and click **Properties**.
   b. On the **Log On** tab, add the <*PA_APP_ACCOUNT*> and password.
   c. Click **OK**.
4. On <*PA_APP_HOST*>, get a domain Administrator to create a Kerberos keytab file by using the Microsoft `ktpass` tool.

   Note: WebSphere Liberty Profile requires server credentials for supporting Kerberos authentication to it. These credentials are stored in a keytab file. To create this file, you must use the Microsoft `ktpass` tool.

   In a CMD window, type the following command:

   ```
   ktpass -out <keytab_file> -princ <PA_SPN>@<PA_APP_REALM>
   -mapuser <PA_APP_ACCOUNT> -pass <password> -mapOp set
   -ptype KRB5_NT_PRINCIPAL
   ```

   For example:

   ```
   ktpass -out pa.keytab -princ HTTP/appsrv1.mydomain.sample.com@MYDOMAIN.SAMPLE.COM
   -mapUser mydomain\pa11 -pass pssw0rd -mapOp set -ptype KRB5_NT_PRINCIPAL
   ```

   This command creates a `pa.keytab` file in the current folder that contains the Kerberos server credentials.

   Note: The keytab contains keys that are encrypted using a specific encryption scheme called "encryption type" in Windows. The Active Directory administrator knows which ones are supported by the Active Directory infrastructure. If in doubt, put keys into the keytab for all supported encryption types by using the `append -crypt all` option.

   When you use the `ktpass` tool, several things happen:

   - The principal specified in the `-princ` parameter will be registered as an SPN to the account specified for the `-mapuser` parameter.
   - The `UserPrincipalName (=User Login Name)` of the account will be changed in Active Directory to the SPN specified for the `-princ` parameter. This is intended and required and must not be reverted manually.
   - The output of this command is a binary keytab file. The file can be moved. It does not depend on a host or host name.

   CAUTION: The keytab contents can get invalidated if changes are applied to the PA_APP_ACCOUNT in Active Directory after the keytab has been created. If the supported encryption types for the Active Directory account or the User Login Name get changed, re-create the keytab.

   Tip:

   You can use the JRE `klist` tool in <*PA*>`\jre\bin\` to view the contents of the keytab file. For example:

   ```
   klist -k -t <PA>/pa.keytab
   ```

5. Ensure that the account is trusted for delegation.

a. Ask an Active Directory administrator use the **Active Directory Users and Computers** tool to investigate the account's properties.

b. Navigate to the **Delegation** tab.

c. Ensure that the account is set to **Trust this user for delegation to any service (Kerberos)**.

Configure SPNEGO/Kerberos web authentication for WebSphere Liberty Profile

1. On *<PA_APP_HOST>*, create a Kerberos configuration file for WebSphere Liberty Profile.
   - Using a text editor, create a text file in the *<PA>* folder named `krb5.conf`.
   - Copy and paste the following lines into the `krb5.conf` file.

```
[libdefaults]
    default_realm = <PA_APP_REALM>
    default_keytab_name = FILE:<keytab_file>
    default_tkt_enctypes = aes128-cts-hmac-sha1-96
    default_tgs_enctypes = aes128-cts-hmac-sha1-96
    forwardable = true
    renewable = true
    noaddresses = true
    clockskew = 300
    udp_preference_limit = 1
[realms] <PA_APP_REALM> =
    {
        kdc = <PA_APP_DOMAIN>:88
        default_domain = <PA_APP_DOMAIN>
    }
[domain_realm]
    .<PA_APP_DOMAIN> = <PA_APP_REALM>
```

   - Replace the variables with actual values in your environment and save the file as `krb5.conf`.

   Note:

   - The entry for `default_keytab_name =` must refer to the keytab file that is created in "4" on page 179.
   - The entry for `default_tkt_enctypes = aes128-cts-hmac-sha1-96` is an example from Windows 2012 R2. You must use the encryption types that are supported in your environment. Refer to your Active Directory Administrator for that information.
   - Depending on the structure of the domain trees in the Active Directory forest, the Kerberos configuration file might require more entries in the `[realms]` and `[domain_realm]` sections. Contact your Active Directory Administrator to learn about your domain structure. For more information about the Kerberos configuration file, see The Kerberos configuration file in the *WebSphere Application Server Network Deployment* documentation.

   A configuration based on the example values might look like the following example:

```
[libdefaults]
    default_realm = MYDOMAIN.SAMPLE.COM
    default_keytab_name = FILE:<PA>\pa.keytab
    default_tkt_enctypes = aes128-cts-hmac-sha1-96
    default_tgs_enctypes = aes128-cts-hmac-sha1-96
    forwardable = true
    renewable = true
    noaddresses = true
    clockskew = 300
    udp_preference_limit = 1
[realms]
    MYDOMAIN.SAMPLE.COM =
    {
        kdc = mydomain.sample.com:88
        default_domain = mydomain.sample.com
    }
[domain_realm]
     .mydomain.sample.com = MYDOMAIN.SAMPLE.COM
```

2. **Optional:** Use the `kinit` tool in *<PA>*`\jre\bin\` to verify the Kerberos configuration file:

a. Copy the `krb5.conf` file to *<PA>*`\jre\lib\security` folder. The file must be named `krb5.conf` for this test. When the test is complete, you will remove the file.

b. Request a Kerberos ticket for *<PA_SPN>*:

```
kinit -k -t <keytab_file> HTTP/<PA_APP_HOST>
```

For example:

```
kinit -k -t <PA>\pa.keytab HTTP/appsrv1.mydomain.sample.com
```

The tool confirms that a ticket has been stored to the default ticket cache.

c. **Optional:** Use the JRE `klist` tool in *<PA>*`\jre\bin\` to view the Kerberos ticket.

For example:

```
klist
```

d. Remove the `krb5.conf` file from *<PA>*`\jre\lib\security` folder to prevent confusion. It is not required in this location anymore.

Modify WebSphere Liberty Profile configuration

The following steps change the WebSphere Liberty Profile configuration file manually. These manual changes are reverted when you make any other changes that require regenerating the application server configuration file in Cognos Configuration. Therefore, you must back up the `server.xml` file when these manual configuration changes are complete and potentially restore it when Cognos Configuration overwrites the file.

1. Stop the TM1 Application service.
2. In a text editor, open the *<PA>*`/wlp/usr/server/tm1/server.xml` file.
3. Add the following feature elements before the `</featureManager>` element:

```
<feature>appSecurity-2.0</feature>
<feature>ldapRegistry-3.0</feature>
<feature>spnego-1.0</feature>
```

4. Before the `<application id="tm1"...>` tag, add the following element:

```
<ldapRegistry
    id="ldap"
    realm="<PA_APP_DOMAIN>"
    host="<PA_APP_DOMAIN>"
    port="389"
    ignoreCase="true"
    baseDN="<base_DN>"
    bindDN="<binduser_accountDN>"
    bindPassword="<binduser_password>"
    ldapType="Microsoft Active Directory"
/>
```

Tip: You can use the IBM WebSphere `securityUtility` to encode passwords in the `server.xml` file.

By using the domain name for `host`, the Microsoft DNS locator feature is used, which prevents a single point of failure in case the referenced Domain Controller becomes unavailable. The `baseDN` is generally composed of the string `cn=Users` and a comma-separated list of dc elements that represent each part of the domain name.

For example:

```
Domain: mydomain.sample.com
BaseDN: cn=Users,dc=mydomain,dc=sample,dc=com
```

The `binduser_accountDN` must be the Distinguished Name of a user account from the referenced domain, which has browsing privileges to all user entries in that domain.

Tip: You can also use the User Principal Name syntax.

For example:

```
cn=admin1,cn=Users,dc=mydomain,dc=sample,dc=com
```

Or

```
bindDN="admin1@mydomain.sample.com"
```

The LDAP registry element tells WebSphere Liberty Profile where to look up information for the user who tries to authenticate. Therefore, the LDAP registry must reference the domain that the authenticating user is from. For users from multiple domains to be able to authenticate, you must define one LDAP registry for each domain. Multiple LDAP registries will automatically become federated without explicit configuration. Add multiple <ldapRegistry> elements as required.

5. **Optional:** If user names in Active Directory contain the" /" character (forward slash), you must add another configuration element because the forward slash is a special character in WebSphere security realms.

   After the last <ldapRegistry> element, add the following <federatedRepository> element, which will configure WebSphere Liberty Profile to use the pipe character "|" instead so that it can tolerate the forward slash in user names.

```
<federatedRepository>
    <primaryRealm name="TM1Web Kerberized" delimiter="|" allowOpIfRepoDown="true">
        <participatingBaseEntry name="<baseDN_ofRegistry>"/>
        <uniqueUserIdMapping inputProperty="uniqueName" outputProperty="uniqueName"/>
        <userSecurityNameMapping inputProperty="principalName"
outputProperty="principalName"/>
        <userDisplayNameMapping inputProperty="principalName"
outputProperty="principalName"/>
    </primaryRealm>
</federatedRepository>
```

   Remember: Adjust the <baseDN_of_Registry> value in the <participatingBaseEntry> element to the value of the baseDN setting of your <ldapRegistry>. If you are using multiple <ldapRegistry> entries, add a <participatingBaseEntry> element for each <ldapRegistry> with the correct value set.

   For more information, see Configuring LDAP user registries in Liberty in the IBM Knowledge Center.

6. To enable SPNEGO/Kerberos based authentication for the WebSphere Liberty Profile, add the following element after the <ldapRegistry> element:

```
<spnego
    id="mySpnego"
    krb5Config="<krb5.conf>"
    krb5Keytab=”<keytab_file>"
    servicePrincipalNames="HTTP/<PA_APP_HOST>@<PA_APP_REALM>"
    canonicalHostName="true"
    disableFailOverToAppAuthType="false"
/>
```

   Remember: Replace <krb5.conf> and <keytab_file> with the path to the respective files created earlier.

Configure TM1 Web for WebSphere Liberty Profile security

1. In the server.xml file, find the TM1 Web application entry and modify it as shown in the following example:

```
<application id="tm1web"
    location="${wlp.user.dir}/../../webapps/tm1web"
    name="tm1web"
    type=”war” context-root=”tm1web”>
    <application-bnd>
        <security-role name="AllAuthenticated">
             <special-subject type="ALL_AUTHENTICATED_USERS" />
```

```
        </security-role>
    </application-bnd>
</application>
```

2. Save the `server.xml` file and back it up.
3. Add security constraints in the `web.xml` file of TM1 Web.

   On the *<PA_APP_HOST>*, use a text editor to edit the *<PA>*`/webapps/tm1web/WEB-INF/web.xml` file.

   Before the first `<filter>` element, add the following content:

```
<login-config>
    <auth-method>BASIC</auth-method>
    <realm-name>MYTM1SERVER.EXAMPLE.COM</realm-name>
</login-config>
<security-role>
    <role-name>AllAuthenticated</role-name>
</security-role>
<security-constraint>
    <web-resource-collection>
        <web-resource-name>tm1web</web-resource-name>
        <url-pattern>/*</url-pattern>
        <url-pattern>/</url-pattern>
        <http-method>POST</http-method>
        <http-method>GET</http-method>
    </web-resource-collection>
    <auth-constraint>
        <role-name>AllAuthenticated</role-name>
    </auth-constraint>
</security-constraint>
```

4. Save the file.
5. Start the TM1 Application server service.
6. In a browser on a remote computer (not on *<PA_APP_HOST>*), open a Kerberos enabled browser and access the following address:

```
HTTP://<PA_APP_HOST>:9510/tm1web
```

   When the TM1 Server instance is selected, you are authenticated without being prompted.

Configure security mode 2 or 3 to use websheets in Planning Analytics Workspace

If you set up TM1 Server, TM1 Web, and Planning Analytics Workspace Local using security mode 2 or 3 (integrated login), websheets cannot be used in Planning Analytics Workspace.

Note: Websheets will still work when accessed directly in TM1 Web.

To work around this limitation, you can choose to set up another instance of TM1 Web that is not configured for integrated login.

There are three possible scenarios:

- If you plan to consume websheets only in Planning Analytics Workspace, you can use a single instance of TM1 Web that is not configured for integrated login.
- If you plan to consume websheets only in TM1 Web and not Planning Analytics Workspace, you should set up a single instance of TM1 Web that is configured for integrated login.
- If you need to consume websheets in both TM1 Web and Planning Analytics Workspace, you must set up two instances of TM1 Web as follows.
  - One instance of TM1 Web must be configured for integrated login that will be accessed directly by users who use TM1 Web.
  - A second instance of TM1 Web must be configured without integrated login, and Planning Analytics Workspace must be configured to use this instance of TM1 Web with the Planning Analytics Workspace administration tool or directly in the `paw.env` file. For more information, see "Connect to TM1 and authentication servers" on page 107. You must not provide this URL directly to users.

Troubleshoot

- Make sure that your browser is correctly configured for SPNEGO/Kerberos. For more information, see "Enable web browsers for integrated login" on page 184 and Configuring the client browser to use SPNEGO.
- Access TM1 Web by host name. Accessing by IP address prevents Kerberos or SPNEGO authentication.
- Make sure that the Windows user that you are testing with is not a domain administrator. Domain administrators cannot be delegated through Kerberos.
- Make sure that testing is performed on a remote computer. If the browser is run on the same computer as TM1 Web, SPNEGO might fail.
- **Optional:** Edit the logging settings to add output for WebSphere authentication and SPNEGO to WebSphere logs.

  Edit the `<logging>` element in the WebSphere Liberty Profile `server.xml` file.

  For example:

```
<logging
    consoleLogLevel="WARNING"
    traceSpecification="*=info:com.ibm.ws.security.spnego.
                        *=all:com.ibm.ws.security.wim.
                        *=all:com.ibm.websphere.security.wim.
                        *=all"
    logDirectory="${wlp.user.dir}/../../logs"
    messageFileName="tm1_messages.log"
    maxFiles="2"
    maxFileSize="20"
/>
```

  1. Stop the TM1 Application service.
  2. Empty the `/logs` folder.
  3. Start the TM1 Application server to reproduce the issue.
- Enable Kerberos logging for the JRE that is running WebSphere Liberty Profile.
  1. Stop the TM1 Application Service.
  2. In a text editor, open the *<PA>*`/wlp/usr/server/tm1/jvm.options` file.
  3. Append the following lines:

```
-Dcom.ibm.security.jgss.debug=all
-Dcom.ibm.security.krb5.Krb5Debug=all
```

  4. Save the file.
  5. Restart TM1 Application Service and reproduce the issue.
- Investigate errors with the `kinit` tool:
  - Ensure `krb5.conf` is copied to the specified location.
  - Run `ping -4` *<PA_APP_HOST>* to learn the IP address returned by DNS. Then, run `ping -4 -a` <IP> to ensure that the IP resolves to the same host name used in PA_SPN.
  - Ensure that the keytab file is showing the correct host name.
  - Ensure the account that PA_SPN is mapped to was not altered (encryption modes, user login name). If it was altered, re-create keytab and try again.

Enable web browsers for integrated login

You must enable web browsers to forward Microsoft Windows authentication information to Planning Analytics components that support integrated login.

Google Chrome, Microsoft Internet Explorer, and Edge

1. Click **Windows Start menu > Settings > Internet Options**.

2. Under the **Security** tab, go to **Trusted sites > Custom level**.
3. Enable **Automatic logon with current username and password** and the **Enable Integrated Windows Authentication** options.
4. Go back to **Trusted sites** and under **Sites**, add the TM1 Web URL as a trusted site.

For more information, see your Chrome or Microsoft documentation.

Firefox

1. Locate and edit the following preferences so they include a comma-separated list of URL prefixes or domains for the location of your TM1 Web server.

```
network.automatic-ntlm-auth.trusted-uris
```

```
network.negotiate-auth.delegation-uris
```

```
network.negotiate-auth.trusted-uris
```

2. Enter `localhost` if you are running TM1 Web locally or enter the server name if you are running TM1 Web on a dedicated web server.

For more information, see your Firefox documentation.

Configure access rights for Cognos TM1 users

For an IBM Cognos TM1 user to access any data, you might have to assign that user to other Cognos TM1 groups.

About this task

You can add a user to the Admin group. For example, for a user to publish public objects to the Web through Cognos TM1 Web, the user must be a member of the Cognos TM1 Admin group.

Procedure

1. Start Cognos TM1 Architect.
2. Click **File** > **Options**.
3. Clear the **Use Integrated Login** option.
4. Click **OK**.
5. In the Tree pane of Server Explorer, double-click **TM1** to open the list of servers.
6. Double-click a server name.
7. Log in using your administrator login ID and password.
   - **Administrator name (default)** - admin
   - **Administrator password (default)** - apple
8. Right-click the server name, and click **Security** > **Clients and Groups**.
9. Select a user to add to the admin group. Use the scroll bar to scroll to the left, where the list of groups displays.
10. To add the user to the Admin group, select the check box in the ADMIN column for that user.
11. Click **OK**.

LDAP Authentication

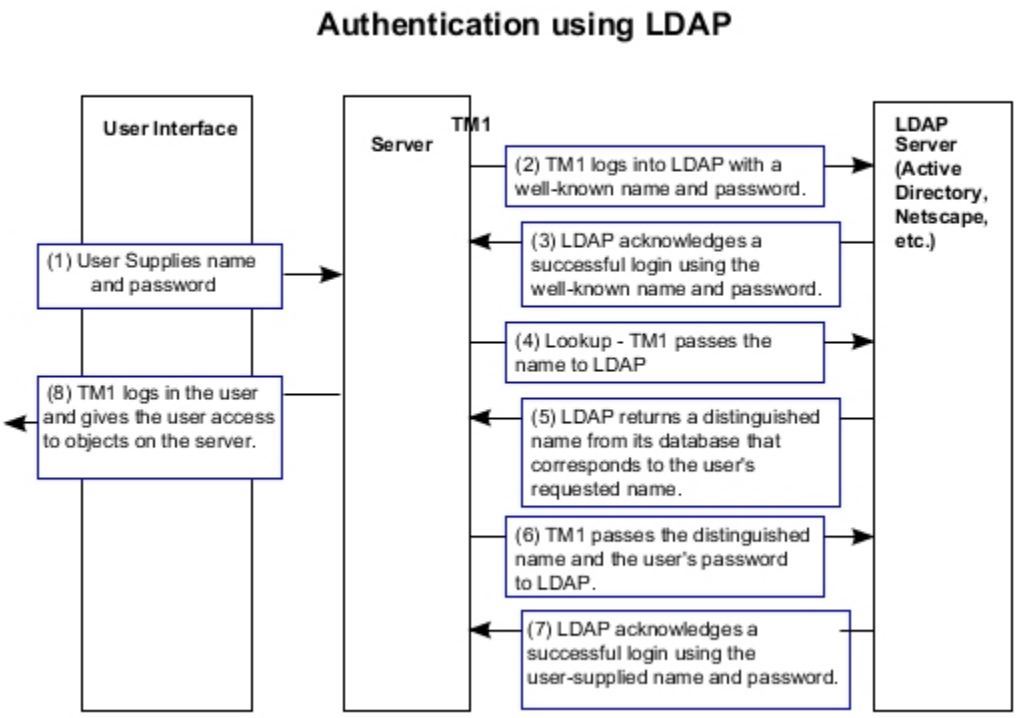
TM1 Server asks you for a user name and password, and validates the login information against an external LDAP server.

Planning Analytics supports LDAP authentication for TM1 Server on Microsoft Windows. LDAP authentication is **not** supported for TM1 Server on Linux or other platforms.

LDAP Authentication overview

With LDAP authentication, an LDAP security service that is external to IBM TM1 authenticates a login. You can add, modify, and delete user security information from one location - the LDAP server or Microsoft Windows Active Directory.

The following image illustrates the process of authenticating by using LDAP.



Validating users with an LDAP server

LDAP validation allows you to centralize all of your user passwords in an external LDAP server.

When your TM1 users log in, the user name and password they provide is validated against the information held in your LDAP server. You can specify a password and key to use before the server connects for LDAP authentication, or the server can directly connect without the use of a password.

As a prerequisite to setting up LDAP authentication, you must have significant knowledge of LDAP and its role in your network security structure. If you are not the LDAP administrator for your network, consult with your LDAP administrator to properly set up TM1 Server to use LDAP authentication.

Note: Your LDAP server must be configured to use SSL to successfully communicate with TM1 Server.

LDAP authentication parameters

Use the following parameters in the tm1s.cfg file to configure and support LDAP authentication.

- “PasswordSource” on page 281
- “LDAPHost” on page 263

- "LDAPPasswordFile" on page 263
- "LDAPPasswordKeyFile" on page 263
- "LDAPPort" on page 263
- "LDAPSearchBase" on page 264
- "LDAPSearchField" on page 264
- "LDAPSkipSSLCertVerification" on page 264
- "LDAPSkipSSLCRLVerification" on page 264
- "LDAPUseServerAccount" on page 265
- "LDAPVerifyCertServerName" on page 265
- "LDAPVerifyServerSSLCert" on page 266
- "LDAPWellKnownUserName" on page 266

Configuring LDAP validation

To configure LDAP validation, you will change the password in the TM1s.cfg file so that you can then import names from your LDAP directory and modify group assignments for new users. Then change the password back to the LDAP credentials.

Before you begin

To configure LDAP validation, you need the following information:

- A name that the TM1 Server can use to log in to LDAP. You can test the validity of this name using ETLDAP.
- The SSL port on which your LDAP server is running. The default is 636.
- The name or IP address of the LDAP server you want to use for validation.

Procedure

1. To use your TM1 credentials to log in, change the password parameter in TM1s.cfg by completing these actions:
   a) Edit TM1s.cfg in your TM1 Server data directory.
   b) Modify `PasswordSource=LDAP` to read `PasswordSource=TM1`
   c) Save and exit TM1s.cfg.
   d) Restart your TM1 Server.
2. To import names from your LDAP directory into TM1 Server, complete these actions:
   a) Use the procedure described in "ETLDAP utility" on page 199.
   b) Use the following TM1 login information:
      - **Admin user (default)** - Admin
      - **Admin password (default)** - apple

      Use the user that you specified during the installation to log in to LDAP.
3. To modify group assignments for new users, complete the following actions:
   a) Log in to TM1 Server as an administrator.
   b) Right-click the server name in Server Explorer and click **Security**, **Clients and Groups**.
   c) Modify the groups assignments for your new users as required.

      For each TM1 user ETLDAP added to your database, you must assign that user to the same group they belong to in the LDAP directory. For example, if NadiaC is a member of the group gymnasts in your LDAP directory, ETLDAP creates the user Nadiac, and creates the group gymnasts within TM1. Nadiac displays in the Clients/groups dialog box as a member of gymnasts.

4. To change the password back to the LDAP credentials, complete these actions:
   a) Edit TM1s.cfg in your TM1 Server data directory.
   b) Modify `PasswordSource=TM1` to read `PasswordSource=LDAP`
   c) Define the connection status:
      - To directly connect to the server, add the following line:

        ```
        LDAPUseServerAccount=T
        ```

      - To use a password before connecting to the server, add the following lines:

        `LDAPPasswordFile=` *file*

        `LDAPPasswordKey=` *key*
   d) Save and exit TM1s.cfg file.
   e) Restart your TM1 Server.

      You should now be able to log in to TM1 Server with a name that you added from your LDAP directory.

Troubleshooting LDAP authentication

This topic describes error log messages that can arise when LDAPVerifyServerSSLCert=T in the tm1s.cfg file.

The following message indicates that the certificate does not match any of the names that are listed in LDAPVerifyCertServerName. Verify the certificate name and ensure that it has a LDAPVerifyCertServerName entry in the tm1s.cfg file.

```
LDAP ERROR: 0x800b0109 - Error verifying server certificate chain validity
LDAP ERROR: Error verifying server certificate no match for <server>
LDAP ERROR: 0x51 - ldap_connect failed.
```

The following message indicates an issue with the trust of the LDAP server certificate by Microsoft Windows. Ensure that the certificate has been imported into the Microsoft Windows Certificate Store.

```
LDAP ERROR: 0x800b010f - Error verifying server certificate chain validity
LDAP ERROR: Error verifying server certificate no match for <server>
LDAP ERROR: 0x51  - ldap_connect failed.
```

The following message indicates that either the certificate is revoked or TM1 is looking for the CRL certificate but cannot find it in the Microsoft Windows Certificate Store. To correct the error, skip the CRL check (set LDAPSkipSSLCRLVerification=T) or import the CRL certificate from the CA into the Microsoft Windows Certificate Store.

```
LDAP ERROR: 0x80092012 - Error verifying server certificate chain validity
LDAP ERROR: Error verifying server certificate no match for <server>
LDAP ERROR: 0x51 - ldap_connect failed.
```

Cognos security

The IBM TM1 Server can authenticate users using IBM Cognos security.

Cognos security is a component of the IBM Cognos framework that manages user access to data. Cognos security manages authorization and authentication through third-party security providers, such as LDAP or Active Directory.

When a user is authenticated through Cognos security, they are provided with a Cognos security passport. This passport is used by TM1 applications to determine the user's permissions (role and group membership) and identity.

Important: Before configuring your Planning Analytics components to use Cognos Security, you must download two files and copy them over to your Cognos Analytics system. The files required are available

in the `bi_interop.zip` archive, which can be downloaded from Interoperability files required for TM1 Web to use Cognos security (https://www.ibm.com/support/pages/node/6484689).

The files required are:

`variables_TM1.xml`
After you extract the archive, this file is located in `<extraction_directory>\templates\ps\portal`.

`tm1web.html`
After you extract the archive, this file is located in `<extraction_directory>\webcontent\tm1\web`.

Overview to Cognos security

The IBM Cognos TM1 server can authenticate users using IBM Cognos security.

When you use Cognos security, a Cognos passport is required to connect to Cognos TM1. A user is presented with a logon screen requiring a namespace, a user name, and a password when first logging in to Cognos TM1 or any other Cognos security-enabled components. A passport is issued to the user when they are authenticated by Cognos security. This passport automatically provides the user's credentials when accessing any other Cognos security-enabled application (including Cognos TM1). When a user connects to the Cognos TM1 server using a specific Cognos server that is configured for common logon, no direct user input is required to access additional Cognos TM1 servers (or other Cognos applications) that are configured to reference the same Cognos server.

When a user attempts to access the Cognos TM1 server, the server validates the passport to authenticate the user. This is done by querying a Cognos server for the identity of the passport. If the passport is valid, the query returns a collection of security and authentication information for the user. This information contains the roles and groups that the user has membership to, and the account (user name) associated with the passport. If the user name exists in Cognos TM1, their existing membership is validated against the existing Cognos TM1 groups. If the user does not exist, they are added and assigned to the appropriate user groups on the Cognos TM1 server.

If a user runs the client program as an administrator (by right-clicking on the program file name and selecting **Run as administrator**), two new folders are created after the client connects to CAM:

- *`installation_location`*`\configuration`

  This folder contains the `C8ITK.ini` file.
- *`installation_location`*`\logs`

  This folder contains the file `C8ITK.log`, if applicable.

By default, the `C8ITK.ini` file specifies that no log files are created in the `logs` folder, unless an error occurs. You can edit the `C8ITK.ini` file if you want to have log files. You can also change the name of the log file by editing the `LogFilePath` section. Before your changes can take effect, you must restart your Cognos services.

Verifying the configuration of IIS for Cognos Analytics 11.0

To configure TM1 CAM authentication using Cognos Analytics 11.0, you must verify your configuration of Microsoft Internet Information Service (IIS).

You can use the `CA_IIS_config.bat` script found in the technical note *Automate the configuration of Microsoft Internet Information Service to support IBM Cognos Analytics* or manually complete the IIS configuration that is described in *Configuring IIS in Cognos Analytics 11.0.4 and later versions*.

Remember: Take note of the alias name set in the `CA_IIS_config.bat` file before the script is run.

You should also verify the following items:

- The URLs in Cognos Configuration for Cognos Analtyics 11 must use the fully qualified domain name (FQDN).

- The Gateway URL in Cognos Configuration for Cognos Analytics must be configured as follows:

```
http://gateway.domain.com:80/<alias name>/bi/v1/disp
```

  Where *gateway.domain.com* is the FQDN for the Cognos Analytics gateway server and *<alias name>* is the alias that was set in `CA_IIS_config.bat` before running the script.
- The `.\<cognos analytics 11>\webcontent\default.htm` and `.\<cognos analytics 11>\webcontent\index.html` files must be verified. If necessary, update the line that starts with `<meta http-equiv="refresh"` as follows:

```
<meta http-equiv="refresh" content="0; URL=/<alias name>/bi/">
```

  Where *<alias name>* is the alias used in the `CA_IIS_config.bat` script file.

Configuring the TM1 Server to use Cognos security

You can configure the IBM TM1 Server to use IBM Cognos security for authentication instead of the default standard TM1 authentication.

Before you begin

To successfully complete these procedures, your IBM TM1 Server **must not** be configured to allow anonymous access. If anonymous access is enabled on the TM1 Server, you cannot log on to a namespace from TM1 when you import Cognos groups into TM1.

About this task

To enable IBM Cognos security authentication on the IBM TM1 Server, you must add or modify several configuration parameters in the server's `tm1s.cfg` configuration file.

Note: If you want to reconfigure a TM1 Server that is already using Cognos security to use a different instance of Cognos, you must remove any existing Cognos users and groups that were imported from the first Cognos instance and then import users and groups from the new Cognos instance.

The Cognos Analytics gateway is optional. You can set up Cognos Analytics without the gateway for CAM authentication. Some configuration steps different when the Cognos Analytics gateway is used. See also step "3" on page 191.

Procedure

1. Open the `tm1s.cfg` configuration file in a text editor.

   The `tm1s.cfg` file is located in the TM1 Server data directory. For more information, see "The tm1s.cfg configuration file" on page 232.
2. Edit or add the following parameters in the `tm1s.cfg` configuration file.
   a) Configure the **`ServerCAMURI`** parameter.

      The URI for the internal dispatcher that the TM1 Server should use to connect to IBM Cognos security. The URI is specified in the form:

      `http[s]://`*`host IP address`*`:`*`port`*`/p2pd/servlet/dispatch`

      Note: To find the URI, ask your IBM Cognos administrator to perform the following steps:

      i) On the system hosting IBM Cognos, open IBM Cognos Configuration.

      ii) Click to expand the **Environment** node.

      iii) In the **Properties** pane, locate the **Dispatcher Settings** section and use the value from either the **External dispatcher URI** or the **Internal dispatcher URI** property.

      Note: In Planning Analytics version 2.0.9 or later, you can configure your TM1 Server CAM URI with a Server Name Indication (SNI). The SNI can be set using the existing ServerCAMURI parameter in the format of SNI;URI.

For example, without a Cognos Analytics gateway:

```
ServerCAMURI=http://cognos-analytics.ibm.com:9300/p2pd/servlet/dispatch
```

For example, with a Cognos Analytics gateway:

```
ServerCAMURI=http://cognos-analytics.ibm.com:9300/p2pd/servlet/dispatch
```

b) Configure the **ClientCAMURI** parameter.

The value for the IBM Cognos Analytics Gateway URI used to authenticate TM1 clients. The URI is specified in the form:

http[s]://*host*:port/*ibmcognos*/bi/v1/disp or http[s]://*host*:port/bi/v1/disp

Note: The values for *host* and *ibmcognos* are variables and depend on the exact settings that are used. Contact your IBM Cognos administrator for more information about these settings.

For example, without a Cognos Analytics gateway:

```
ClientCAMURI=http://cognos-analytics.ibm.com:9300/bi/v1/disp
```

For example, with a Cognos Analytics gateway:

```
ClientCAMURI=http://cognos-analytics.ibm.com:80/analytics/bi/v1/disp
```

For example, if your Cognos system is using Microsoft Internet Information Services (IIS):

```
ClientCAMURI=http://10.121.25.121/ibmcognos/bi/v1/disp
```

c) Configure the **ClientPingCAMPassport** parameter.

Indicates the interval, in seconds, that a client should ping the IBM TM1 Server to keep their passport alive.

If an error occurs or the passport expires, the user will be disconnected from the TM1 Server.

For example:

```
ClientPingCAMPassport=900
```

d) Configure the **CAMPortalVariableFile** parameter.

The path to the variables_TM1.xml file in your installation. In most cases, the path will be:

```
CAMPortalVariableFile = <portal>\variables_TM1.xml
```

The CAMPortalVariableFile parameter is required only when running TM1 Web.

```
CAMPortalVariableFile=templates\ps\portal\variables_TM1.xml
```

3. Take note of configuration differences with or without a Cognos Analytics gateway.

Without a Cognos Analytics gateway

The tm1s.cfg file would typically be configured as follows:

```
ServerCAMURI=http://cognos-analytics.ibm.com:9300/p2pd/servlet/dispatch
ClientCAMURI=http://cognos-analytics.ibm.com:9300/bi/v1/disp
```

In the Cognos Analytics **app tier** install, the planning.html and pmhub.html files are stored in the <Cognos Analytics>/webcontent directory. The tm1web.html file is stored in the <Cognos Analytics>/webcontent/tm1/web/ directory.

With a Cognos Analytics gateway

The tm1s.cfg file would typically be configured as follows:

```
ServerCAMURI=http://cognos-analytics.ibm.com:9300/p2pd/servlet/dispatch
ClientCAMURI=http://cognos-analytics.ibm.com:80/analytics/bi/v1/disp
```

In the Cognos Analytics **gateway** install, the `planning.html` and `pmhub.html` file are stored in the `<Cognos Analytics>/webcontent/bi/` directory. The `tm1web.html` file is stored in the `<Cognos Analytics>/webcontent/bi/tm1/web/` directory

4. Set the **IntegratedSecurityMode** parameter to the default mode of 1.

   Note: Setting the **IntegratedSecurityMode** parameter to 1 allows you to complete additional configuration steps in TM1 using standard TM1 security before switching to Cognos security. After you complete these additional steps, you can change this parameter to either 4 or 5 to use Cognos security.

   For example:

   ```
   IntegratedSecurityMode=1
   ```

5. Save and close the `tm1s.cfg` file.
6. Restart the TM1 Server.
7. Perform the required steps for your Cognos Analytics installation.
   a) Define a Cognos user to function as a Planning Analytics administrator.
   b) Import Cognos groups into Planning Analytics.

   For more information, see "Managing TM1 users, groups, and objects when using Cognos security" on page 195.
8. Configure the TM1 Server to start using Cognos authentication.
   a) Shut down the TM1 Server.
   b) Open the `tm1s.cfg` configuration file in a text editor.
   c) Set the **IntegratedSecurityMode** parameter to indicate that the server should use Cognos authentication.

      The exact parameter value depends on the specific TM1 components you are using:

      - If you are not using the TM1 Applications component, set the parameter to 4.

        ```
        IntegratedSecurityMode=4
        ```

      - If you are using TM1 Applications with Cognos security, set the parameter to 5 to support user groups from both Planning Analytics and Cognos.

        IntegratedSecurityMode=**5**

   d) Save and close the `tm1s.cfg` file.
   e) Restart the TM1 Server.

Configuring Planning Analytics Workspace to use Cognos security

Follow these steps to configure Planning Analytics Workspace to use IBM Cognos authentication security.

Before you begin

Note: If you applied a Cognos Analytics updater kit to your Analytics installation, you might need to make specific updates to the `pmhub.html` file.

The `pmhub.html` file supports IBM Cognos authentication security. However, it does not get updated when you apply a Cognos Analytics updater kit. Instead, an updated file that is called `pmhub.html.new` is placed in the same Cognos Analytics `...\webcontent` directory as the original file. Use the newer version of `pmhub.html` and update it with any changes you made in the original `pmhub.html` file.

About this task

This configuration task requires downloading two files and copying them over to your Cognos Analytics system. The required files are available in the `bi_interop.zip` archive, which can be downloaded from Interoperability files required for TM1 Web to use Cognos security.

The following are the required files:

`variables_plan.xml`
After you extract the archive, this file is located in `<extraction_directory>\templates\ps\portal`.

`pmhub.html`
After you extract the archive, this file is located in `<extraction_directory>\webcontent`.

Procedure

1. Download and extract `bi_interop.zip`.
2. Copy and paste `variables_plan.xml` to *<Cognos location>*`\templates\ps\portal` on every server where the Planning Analytics Tier is running on your IBM Cognos Analytics system.
3. Copy and paste `pmhub.html` to *<Cognos location>*`\webcontent` on every server where the Cognos Analytics Gateway is running on your IBM Cognos Analytics system.
4. Edit each instance of the `pmhub.html` file to point to where Planning Analytics Workspace is running.

   ```
   var pmhubServices = ["http://SystemName:PortNumber"];
   ```

   For example:

   ```
   var pmhubServices = ["http://mysystem:9510"];
   ```

Configuring IntegratedSecurityMode=5 with Planning Analytics Workspace

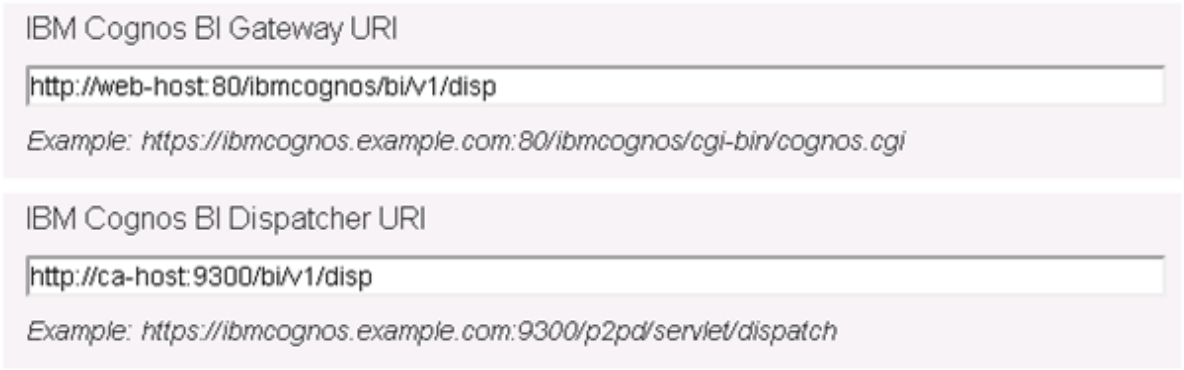
IBM Planning Analytics Workspace delivers a web-based configuration tool.

About this task

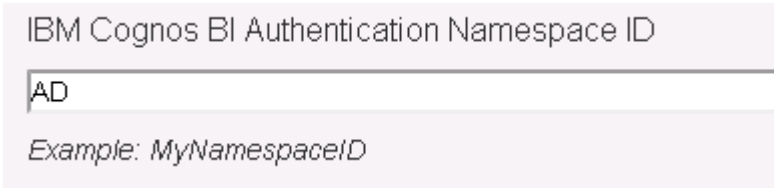
IBM Planning Analytics Workspace delivers a web-based configuration tool. If the Cognos Analytics Gateway is configured for SSO, it is required to temporarily disable the SSO while you are configuring settings in the Admin Tool, otherwise the verification fails. You can disable SSO so by temporarily disabling the SSO Login and Legacy SSO Rewrite Rule in your web server.

Procedure

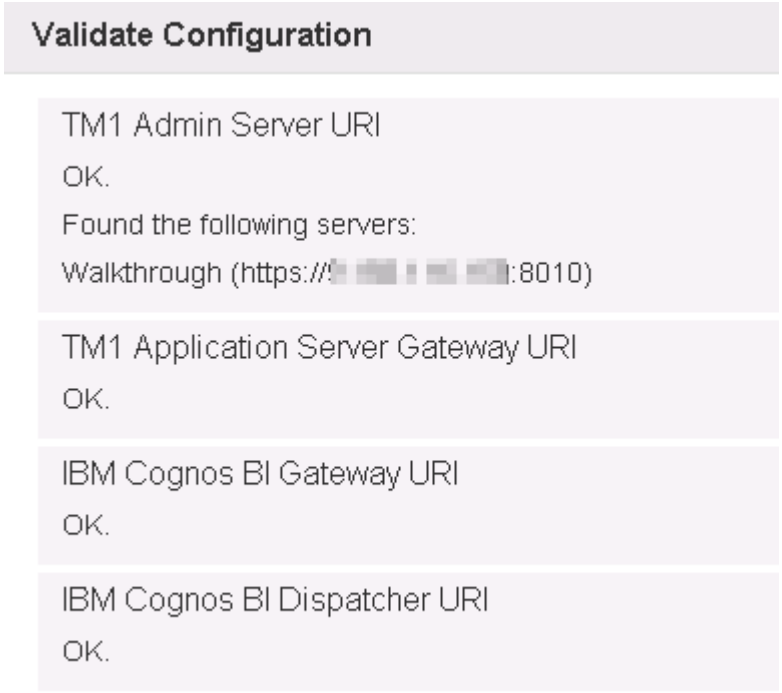
1. Configure the IBM Planning Analytics Workspace Administration Tool.
   a) Open http://paw-host:8888 in a browser. If not done before, read and agree to the Terms of Service.
   b) Enter the values of the **TM1 Admin** host and **TM1 Application** host. As the Docker container might not be able to resolve the hostname or DNS entries, use the IP address instead.
   c) Switch the **Authentication** to CAM.
   d) Enter the Cognos URLs into the **IBM Cognos BI Gateway URI** and **IBM Cognos BI Dispatcher URI** fields.



   e) For **IBM Cognos BI Authentication Namespace ID**, enter the namespace ID configured in Cognos Configuration of the Cognos Analytics environment.



f) Select Validate to verify the entries made.



g) Select **Update**, and wait for the Planning Analytics Workspace Services to be restarted.

h) If SSO was disabled on the web server, enable it again after the restart was successful.

2. Allowlist Planning Analytics Workspace URL.
   a) Open <cognos analytics gateway>\webcontent\bi\pmhub.html in an editor.
   b) Search for "var pmhubURLs".
   c) Expand the list of URLs from `["http://mypmhubserver1:9510","http://mypmhubserver1.domain.com:9510","http://pa-host:9510"];` to `var pmhubURLs= ["http://mypmhubserver1:9510","http://mypmhubserver1.domain.com:9510","http://pa-host:9510","http://paw-host:80"];`
   d) If you are using Cognos Analytics without a Gateway, repeat in <cognos analytics gateway>\webcontent\bi\pmhub.html.
3. Verify the login in Planning Analytics Workspace.
   a) In a browser, open http://paw-host.
   b) When the Cognos Analytics login Screen appears, enter username and password for the configured **Namespace ID** and Sign in.
   c) Logoff.

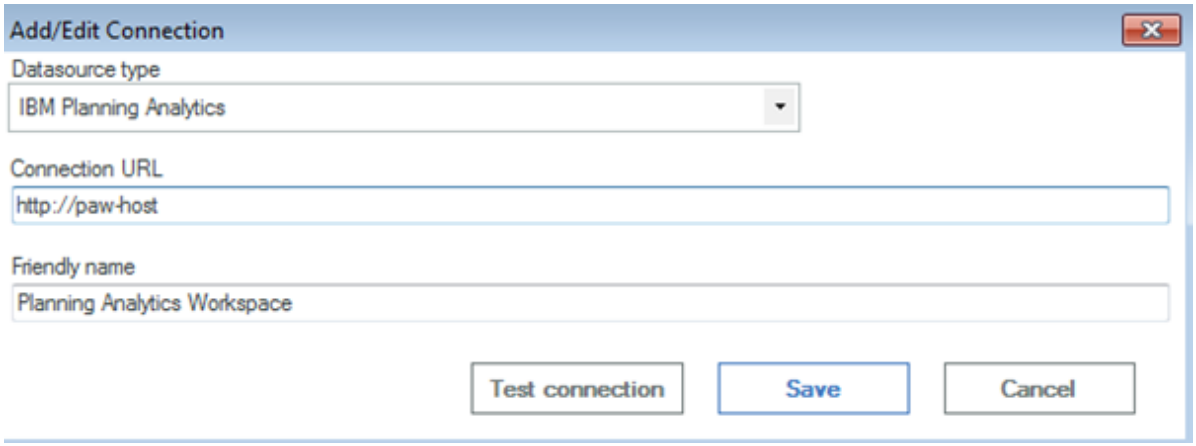
Configuring IntegratedSecurityMode=5 with Planning Analytics for Excel

Procedure

1. Configure server URL in Planning Analytics for Excel.

a) In Planning Analytics for Excel, select the **Connect > New Connection** menu.

b) Enter the details for the Planning Analytics Workspace environment.

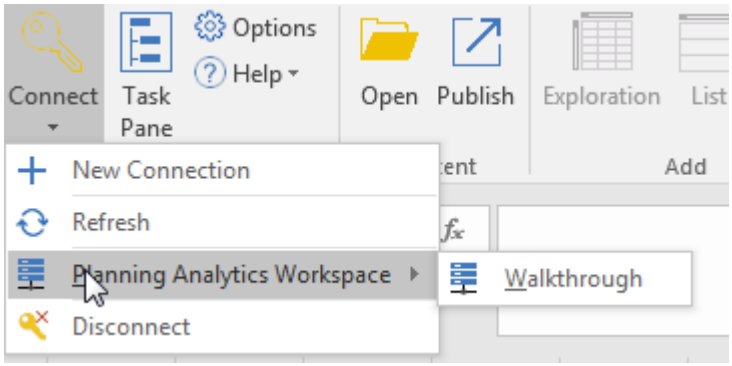


c) Test the connection.

2. Test the Connection in Planning Analytics Workspace.

a) Select **Connect**.

b) Select **Planning Analytics Workspace**, and then select the configured TM1 Server.



c) When the Cognos Analytics login screen appears, enter username and password for the configured **Namespace ID** and Sign In..

d) Open the **Task Pane** on the right and expand the TM1 Server.

e) Logoff.

Managing TM1 users, groups, and objects when using Cognos security

To successfully administer IBM Cognos TM1 while using IBM Cognos Analytics security for authentication, an existing Cognos user must be added to the Cognos TM1 ADMIN group.

Defining a Cognos user to function as a Cognos TM1 administrator

You must define a Cognos user as the Cognos TM1 administrator who will be used to import Cognos groups into Cognos TM1.

Important: The initial steps for this configuration must be done with the Cognos TM1 `IntegratedSecurityMode` parameter set to 1. You then change this parameter to use Cognos Analytics security at a later point in the steps.

Procedure

1. Log in to Cognos TM1 as an administrator.
2. From the Server Explorer, click **Server** > **Security** > **Clients/Groups**.
3. From the **Clients/Groups** dialog box, click **Clients** > **Add New Client**.

The **Cognos logon** dialog box appears.

4. Enter your Cognos user ID and password, then click **OK**.
5. In the **Name** box, click the namespace to which you are currently logged in.

   Note: Only users from the namespace to which you are logged in can be imported into Cognos TM1. Other namespaces may appear in the **Name** box, but you cannot import users from them.

   The contents of the **Name** box update to display the directories available on the selected namespace.
6. Enable the **Show users in the list** option.
7. Navigate to the directory containing the Cognos user you want to define as a Cognos TM1 administrator. In most circumstances, you will define your own Cognos user as a Cognos TM1 administrator, as you must know the Cognos user's ID and password to complete administrative tasks.
8. Select the user.
9. Click the green arrow icon  to move the selected user to the **Selected Entries** list.
10. Click **OK** to import the Cognos user into Cognos TM1.

    The user appears as a new client in the Client/Groups window, but is not assigned to any Cognos TM1 groups.
11. Assign the new user to the ADMIN group and click **OK**.
12. Shut down the Cognos TM1 server.
13. Open the Tm1s.cfg configuration file in a text editor.
14. Set the IntegratedSecurityMode parameter to indicate that the server should use IBM Cognos authentication. The exact parameter value depends on the specific Cognos TM1 components you are using:
    - If you are not using the Cognos TM1 Applications component, set the parameter to 4.

      ```
      IntegratedSecurityMode=4
      ```
    - If you are using Cognos TM1 Applications with Cognos security, set the parameter to 5 to support user groups from both Cognos TM1 and Cognos.

      ```
      IntegratedSecurityMode=5
      ```
15. Save and close Tm1s.cfg.
16. Restart the Cognos TM1 server.

Creating TM1 users when using Cognos security

When the IBM Cognos TM1 server is configured to use Cognos authentication, you cannot create new clients directly on the Cognos TM1 server.

Instead, all client administration is performed in Cognos security.

When a Cognos user accesses Cognos TM1, the user is validated and automatically assigned to the appropriate Cognos TM1 groups. There is no need to manually assign users to groups in Cognos TM1.

Administering Cognos TM1 object security when using Cognos authentication security

While IBM Cognos authentication automatically manages users on the IBM Cognos TM1 server, the Cognos TM1 administrator must still manage object security to allow Cognos users to view and use Cognos TM1 objects.

For details on administering Cognos TM1 object security, see Cognos security in the *TM1 Developer* documentation.

Configuring TM1 Web to use Cognos security

Follow these steps to configure TM1 Web to use IBM Cognos authentication security.

Before you begin

Note: If you applied a Cognos Analytics updater kit to your Analytics installation, you might need to make specific updates to the `tm1web.html` file.

The `tm1web.html` file supports Cognos TM1 Web to use IBM Cognos authentication security. However, it does not get updated when you apply a Cognos Analytics updater kit. Instead, an updated file that is called `tm1web.html.new` is placed in the same Cognos Analytics `...\webcontent\tm1\web` directory as the original file. Use the newer version of `tm1web.html` and update it with any changes you made in the original `tm1web.html` file.

About this task

This configuration task requires downloading two files and copying them over to your Cognos Analytics system. The files required are available in the `bi_interop.zip` archive, which can be downloaded from Interoperability files required for TM1 Web to use Cognos security (https://www.ibm.com/support/pages/node/6484689).

The files required are:

`variables_TM1.xml`
After you extract the archive, this file is located in `<extraction_directory>\templates\ps\portal`.

`tm1web.html`
After you extract the archive, this file is located in `<extraction_directory>\webcontent\tm1\web`.

Procedure

1. Download and extract `bi_interop.zip` from Interoperability files required for TM1 Web to use Cognos security.
2. Copy and paste `variables_TM1.xml` to *<Cognos location>*`\templates\ps\portal` on every server where the TM1 Web Tier is running on your IBM Cognos Analytics system.

   The `variables_TM1.xml` file acts as an AllowList; if after authenticating against Cognos Analytics, the system attempts to reroute back to a URL that contains a server name that is not listed in this file, the request will be blocked. In this case, the `variables_TM1.xml` file should be edited to list the Fully Qualified Domain Name and CNAME (alias) of the server hosting Planning Analytics Spreadsheet Services.

   Three lines should be added for each server name: one each for the three `.aspx` files. For example:

```
<CRNenv>
 <urls>
  <url is-regex="true">http://servername.domain:9510/TM1Web(/\([aAsS]\([A-Za-z0-9]+\)\))?/
TM1WebLogin.aspx</url>
  <url is-regex="true">http://servername.domain:9510/TM1Web(/\([aAsS]\([A-Za-z0-9]+\)\))?/
TM1WebLoginHandler.aspx</url>
  <url is-regex="true">http://servername.domain:9510/TM1Web(/\([aAsS]\([A-Za-z0-9]+\)\))?/
TM1WebMain.aspx</url>

  <url is-regex="true">http://servername:9510/TM1Web(/\([aAsS]\([A-Za-z0-9]+\)\))?/
TM1WebLogin.aspx</url>
  <url is-regex="true">http://servername:9510/TM1Web(/\([aAsS]\([A-Za-z0-9]+\)\))?/
TM1WebLoginHandler.aspx</url>
  <url is-regex="true">http://servername:9510/TM1Web(/\([aAsS]\([A-Za-z0-9]+\)\))?/
TM1WebMain.aspx</url>

  <url is-regex="true">http://aliasname.domain:9510/TM1Web(/\([aAsS]\([A-Za-z0-9]+\)\))?/
TM1WebLogin.aspx</url>
  <url is-regex="true">http://aliasname.domain:9510/TM1Web(/\([aAsS]\([A-Za-z0-9]+\)\))?/
TM1WebLoginHandler.aspx</url>
  <url is-regex="true">http://aliasname.domain:9510/TM1Web(/\([aAsS]\([A-Za-z0-9]+\)\))?/
```

```
TM1WebMain.aspx</url>

  <url is-regex="true">http://aliasname:9510/TM1Web(/\([aAsS]\([A-Za-z0-9]+\)\))?/
TM1WebLogin.aspx</url>
  <url is-regex="true">http://aliasname:9510/TM1Web(/\([aAsS]\([A-Za-z0-9]+\)\))?/
TM1WebLoginHandler.aspx</url>
  <url is-regex="true">http://aliasname:9510/TM1Web(/\([aAsS]\([A-Za-z0-9]+\)\))?/
TM1WebMain.aspx</url>

  <url>../tm1/web/tm1web.html</url>
 </urls>

 <cookies>
  <param name="cam_passport"/>
 </cookies>

</CRNenv>
```

3. Copy and paste `tm1web.html` to *<Cognos location>*`\webcontent\bi\tm1\web` on every server where the Cognos Analytics Gateway is running on your IBM Cognos Analytics system.
4. Edit each instance of the `tm1web.html` file to point to where TM1 Web is running.

   `var tm1webServices = ["http://`*SystemName*`:`*PortNumber*`"];`

   For example:

   `var tm1webServices = ["http://mysystem:9510"];`

Administrator considerations when using Cognos authentication

IBM Cognos TM1 administrators should be aware of the some issues when configuring the Cognos TM1 server to use IBM Cognos authentication.

The issues are as follows:

- Review the description of Cognos TM1 security modes 4 and 5 for the `IntegratedSecurityMode` parameter. You should understand how these different modes control whether or not Cognos users can belong to Cognos TM1 user groups. For details, see the description of the `IntegratedSecurityMode` parameter in *TM1 Operations*.
- You cannot use Cognos TM1 to permanently assign a Cognos user to another Cognos group. Any user assignment you make in Cognos TM1 to a Cognos group is not saved back to Cognos. When a Cognos user logs in to Cognos TM1, the group assignments in Cognos override any Cognos group assignments made in Cognos TM1.
- If you rename a Cognos user after importing that user to Cognos TM1, you must then delete the user in Cognos TM1 in order to update Cognos TM1 with the new user name. After deleting the user in Cognos TM1, the new name will appear the next time the user logs in.

User considerations when using Cognos authentication

IBM Cognos TM1 users should be aware of issues that may arise when accessing the Cognos TM1 server configured to use IBM Cognos authentication.

Authentication behavior

Rules govern authentication behavior when logging on to the IBM Cognos TM1 server that uses IBM Cognos authentication.

The rules are as follows:

- If common logon is enabled in IBM Cognos and you have previously logged in to an IBM Cognos application and maintain an active session, you are not prompted for credentials when logging on to the Cognos TM1 server.
- If common logon is enabled in IBM Cognos and you have not previously logged in to an IBM Cognos application, you are prompted for credentials when logging on to the Cognos TM1 server.
- If common logon is not enabled in IBM Cognos, you are prompted for credentials when logging on to the Cognos TM1 server, even if the server is configured to use IBM Cognos authentication.

Private Cognos Security sessions

When an IBM Cognos server is configured to use common logon, you will be challenged only once for credentials.

Any subsequent connections to other IBM Cognos security-enabled applications (including Cognos TM1) which are configured to reference the same IBM Cognos server will automatically occur, provided your Cognos security passport is valid.

For example, if you have three available Cognos TM1 servers, all configured to use the same IBM Cognos server, once you connect to the first server as user X in namespace Y, all connections to the other Cognos TM1 servers will automatically occur using the passport of user X from namespace Y.

In some circumstances, you might want to log on to the Cognos TM1 server as a user other than the one identified by your Cognos security passport. To accommodate this, the **Logon As** option lets you override the automatic authentication that usually occurs with a passport, while maintaining the validity of the passport for later use. When you log on to the Cognos TM1 server using the **Logon As** option, a private session is established. The credentials used to establish the private session are not stored in a passport and are not shared with any other application. Any existing passport remains valid and can be used to access other IBM Cognos security-enabled applications.

Procedure

1. From the Server Explorer, click **Server**, then **Logon As**.
2. In the Cognos Logon window, enter the **User ID** and **Password** you want to use to log on to the Cognos TM1 server.
3. Click **OK**.

ETLDAP utility

You can use the ETLDAP utility to add LDAP (Lightweight Directory Access Protocol) users to IBM TM1 Server when you use TM1 Server with Integrated Login and LDAP authentication.

Note: You can only use the ETLDAP utility to add new LDAP users to TM1 Server. ETLDAP does not modify, update or delete existing users in TM1 Server.

ETLDAP, an LDAP load tool, provides the following functionality:

- Extracts user information from an LDAP or Active Directory server.
- Creates the element UniqueID in the }ClientProperties dimension.
- Adds users to the }ClientProperties cube.
- Populates the UniqueID field in the }ClientProperties cube with the domain-qualified user name of the user you add to TM1 database. For example, ETLDAP writes the name robert@company.com to the }ClientProperties cube.

As the TM1 administrator, you can perform these tasks using ETLDAP:

- Add many user names from an LDAP server to the TM1 database quickly.
- Migrate information from a legacy LDAP database to TM1.
- Perform one or more queries to specify the users you want to create in TM1 Server, and then export the users into the TM1 security cubes.
- Update TM1 with new users that have been added to the LDAP server since the initial load of user data into TM1.

Note: The ETLDAP utility is not available when the IBM TM1 Server is configured to use one of the following Integrated Security Modes:

- Integrated Security Mode 3 - Integrated Login
- Integrated Security Mode 5 - IBM Cognos Analytics authentication

However, you *can* use ETLDAP to prepare your user and security data for Integrated Security Mode 3 server operation. In this case, you must configure your server to use Integrated Security Mode 1 or 2 while using the ETLDAP utility. Then, after all user and security data has been prepared, you must reconfigure your server to use Integrated Security Mode 3 during normal operation.

See "IntegratedSecurityMode" on page 258 for more information about Integrated Security Mode options.

Modifying LDAP attributes

The value of an attribute you retrieve from an LDAP directory may not precisely match what you want to enter in the TM1 security cube.

If so, you must modify certain LDAP attributes before you can run ETLDAP.

For example, you could combine all users from the R&D, Quality Assurance, and Documentation LDAP groups into a single TM1 group named Engineering. To support these requirements, you can extend a Java class with a single method you need to override.

The `stringFilter` class contains one method with the following signature:

```
String filterString(String attrName, String value)
```

At run time, this method is passed the name of each LDAP attribute that matches a mapping entry and its value. The String it returns is added to the TM1 database.

The following code demonstrates the implementation of the `stringFilter` class, combining all users from the R&D, Quality Assurance, and Documentation LDAP groups into a single TM1 group named Engineering.

The stringFilter class looks for instances of the LDAP **ou** attribute, which is the TM1 Group names field. If the value is **R&D**, **Quality Assurance**, or **Documentation**, it returns **Engineering**. The users from any of the 3 LDAP groups are added to a single TM1 **Engineering** group. Any other group value remains unchanged.

```
// The stringFilter class provides the ability to transform strings
// which are read from the LDAP database before they are inserted into
// TM1's datastore.
//
// To implement this feature, create a class which extends stringFilter
// and contains a method 'filterString' with the following signature:
//
// String filterString(String attrName, String value)
//
//
public class myStringFilter extends stringFilter
{
    public String filterString(String attrName, String value)
    {
    if (attrName.equals("ou"))
        {
        if ( (attrName.equals("R&D")) ||
           (attrName.equals("Quality Assurance")) ||
           (attrName.equals("Documentation")) )
            return "Engineering";
        else
            return value;
        }
    else
        return value;
    }
}
```

After you write and compile the Java code, put the class somewhere in your Classpath. Then click **Edit** > **Options** and enter its name in the **Class Name** field.

Running ETLDAP

You can run ETLDAP from the Microsoft Windows operating system or the DOS command window with command-line parameters.

Procedure

1. If you want to run ETLDAP from the Microsoft Windows operating system, complete the following actions:
   - Click **Start** > **Programs** > **IBM Cognos** > **TM1** > **Administration** > **ETLDAP**.
   - Set the elements that you require.

Table 29. Elements in the LDAP Load Tool dialog box.

Field or Button	Description
Search DN	Displays the LDAP node at which the search originates. ETLDAP does not search for entries above this level in the tree.
Filter	Displays the query string that filters the entries in the directory and generates the matching records.
Attributes	Displays the attribute values for LDAP entries that assist in validating the records returned by the search. When you export the LDAP information to TM1, ETLDAP retrieve the attributes required to create valid TM1 users. **Note**: The attributes are for display purposes only.
Search Scope	Specifies the starting point of the search, and the search level. Select **One level** to specify all entries one level below the base Search DN, but not the base DN itself. Select **Sub-tree level** to search all entries beneath the base DN, including the base DN.
Results Table	Displays the search results. Click the column headers to sort the data, or right-click in a row and click **View Entry** to examine all attributes for that entry.
Search Button	Performs the search using the parameters you select.
Export Button	Exports the displayed set of users to TM1 based on the settings in the **Options** dialog box.

2. If you want to run ETLDAP from the DOS command window, complete the following actions:
   - Click **Start** > **Programs** > **Accessories** >**Command Prompt**.
   - Enter the following command line:

     `java etldap` *`options`*
   - Add the parameters that you require.

Table 30. Supported command-line parameters	
Parameter	**Description**
-f *filename*	Passes the name of a saved session file to load all configuration settings from a previous session. When you run ETLDAP in unattended (batch) mode, you must include a name for the session save file. If this file does not contain the passwords necessary to connect to the LDAP and IBM TM1 Server, an error message is written to the log file and the session is terminated.
-batch	Runs ETLDAP in command-line mode with no user interface. Requires the -f option.
-secure	When you run ETLDAP in batch mode, passing this flag removes all passwords from the session file referenced by the -f flag after they have been read. This parameter reads the save file at the beginning of the session, and then re-writes the file with the passwords removed. While in use, you would run ETLDAP and specify the passwords with the user interface. Then you would exit ETLDAP and run the command line version specifying the '-secure' option. This would insure that the passwords were only available for the short period of time it takes for the utility to initialize.
-help	Displays online Help for these command-line parameters.

Configuring the LDAP login parameters

You can configure the LDAP login parameters.

Procedure

1. In the LDAP Load Tool dialog box, click **File** > **Connect**.
2. Enter the following host and user information.

Table 31. LDAP login parameters		
Panel	**Field**	**Description**
Host Info	**Host**	Enter the host name or IP address of the machine where the LDAP server is running.
	Port	The port on which the LDAP server is running. If a port is not specified, 636 is used. Cognos TM1 attempts to bind to an LDAP server on the specified secure port. If you do not enter an LDAPPort value, Cognos TM1 uses the default value of port 636.
	Version	ETLDAP will most likely ignore the version number. Most LDAP servers support version 2 or version 3 type connections, ETLDAP does not use any functionality specific to either version.

Table 31. LDAP login parameters (continued)		
Panel	**Field**	**Description**
	SSL option	Determines whether the communication between the LDAP server and ETLDAP happens over a secure encrypted channel. Unless you are viewing secure information over an insecure network, leave this option turned off.
	Anonymous option	Most LDAP servers have some layer of security configuration that requires you to authenticate as a known user. In some systems, anonymous users can browse the directory, but not retrieve the schema. In other systems, an anonymous user might have access to certain insecure areas of the directory, but not others.
User Info	**User DSN**	In many cases, your LDAP directory prevents Anonymous users from accessing or modifying data. In this case, you may need a Distinguished Name (DN) and password to complete the extraction of your LDAP security information. For example, the name Norm Lodin might refer to a person who works at Blodget, Inc. Inside LDAP, he has a Distinguished Name that uniquely distinguishes him from all other entities in the network. Norm might enter the following information in the User Info field. uid=nlodin, ou=People, o=Blodget.com
	Password	Enter a password that corresponds to the User DN.

3. To see if the connection is successful, click **Test**.
4. Click **OK**.

   You have established a connection to your LDAP server with the parameters you specified.

Building an LDAP query

Use an LDAP query to add LDAP users and groups to IBM Cognos TM1.

Before you begin

An LDAP query consists of the following major elements:

- **Search DN** - An LDAP directory is organized as a tree structure, with a root node and a number of branches off this root. The Search DN specifies at which node the search originates. Entries greater than this level in the tree are searched. You must specify the correct base DN to obtain the results you want.
- **Filter** - A query string that filters the entries in the LDAP directory and generates the matching records. You can create complex filters by using a combination of the following symbols:

  & (AND)

  | (OR)

  ! (NOT)

* wildcard character

( ) parentheses for nesting

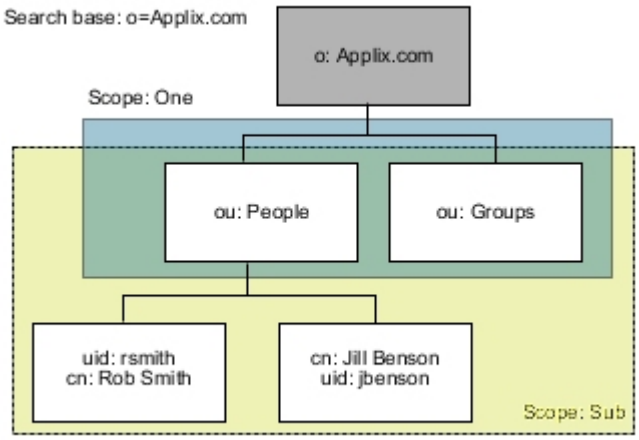
For instructions on building LDAP filter strings, refer to LDAP books and online resources, including the LDAP standard, RFC 2254, *The String Representation of LDAP Search Filters*.

- **Scope** - While the Search DN specifies the starting point of the search, the Scope attribute indicate the level of depth to which the search occurs. There are two Scope levels:

  One Level - Specifies that LDAP search all entries one level less than the base DN, but does not include the base DN itself.

  Sub-Tree Level - Indicates that LDAP search all records at all levels including the base DN.

  The following diagram illustrates the effect that the Scope setting has on a search.



- **Attributes** - Describe every LDAP entry and their values. Includes a comma-separated list of values to return for the records that match the filter string. There are two LDAP attributes:

  User attribute - You add this attribute to the LDAP directory. For example, cn or mail.

  Operational attribute - The LDAP server creates and maintains this attribute. For example, numSubordinates.

  The attributes for an entry could include:

  Present with no value

  Present with one or more values

  Not present. If an attribute is optional, the attribute may not exist for an entry.

  Note: Be sure to request only the attributes you need. If you request all attributes, a large result set can significantly increase processing time on the LDAP server and memory requirements on both the server and the client.

Procedure

1. Specify the Search DN, Filter String, Attributes, and Scope for your query.
2. Click **Search**.

   You see a list of entries in the table, unless there are syntax errors or if the filter string does not match any records in the directory.
3. Examine the result set.
   - Does it include names that you do not want to see?
   - Are important entries missing?

- Do you need to build multiple queries to capture the list of records you are interested in?

4. Make your changes to the filter string.
5. Click **Search**.
6. Examine the result set.
7. Repeat steps 3 through 6 until you have a list of valuable records.
8. Click **File**, **Save As** to save your LDAP query as a text file.

   Note: You can use the saved LDAP query at a later time. To do so, click **File** > **Open** in the LDAP Load Tool dialog box. ETLDAP fills in the DN, Filter String, Attributes, and Scope for your LDAP query.

Connecting to the IBM TM1 Server

Follow these steps to connect to the IBM TM1 Server server.

Procedure

1. Click **Edit** > **Login** > **TM1**.
2. Enter the following server information:

Field	Description
Host	The machine name of the server on which your TM1 Admin Server is running.
SSL port	Enter the port number configure which the admin server will use. The default is 5498
Server	The name of the TM1 server to which you want to connect. Click **Server** and then the **Browse** button to select a server from the Server list.
Username	The name of a user with Admin privileges on the target TM1 server.
Password	The password of the admin user.

3. To see if the connection is successful, click **Test**.
4. Click **OK**.

Mapping LDAP attributes to Cognos TM1 fields

LDAP directories contain many attributes, some of which you standardize, and others which you add or customize for your environment. You must specify the relationship between the LDAP attributes and the required IBM Cognos TM1 fields manually.

Before you begin

You should be familiar with your LDAP schema.

Procedure

1. Click **Edit** > **Mapping** > **TM1**.
2. For each required (red) Cognos TM1 field, select an LDAP schema attribute.

   For each user, Cognos TM1 requires a unique name and group name. For example, you could map the name attribute in your LDAP schema to the Cognos TM1 user, and map the department attribute to the Cognos TM1 group.
3. Click **OK**.

Specifying the ETLDAP export options

You can specify the ETLDAP export options.

Procedure

1. Click **Edit** > **Options**.
2. Select **Enable Integrated Login**.
3. Enter the realm name that contains the users you want to transfer.
4. Clear **Save Passwords**.

   When you clear Save Passwords, ETLDAP removes all passwords necessary to connect to the servers before the session save file is written. The next time you run ETLDAP, you would have to enter the passwords again.
5. Set **Maximum Search Results** and **Search Time Limit** to 0.
6. Click **OK**.

Exporting LDAP information to Cognos TM1

You can export LDAP information to IBM Cognos TM1.

Procedure

1. Click **Export**.

   ETLDAP moves the records you retrieved from the LDAP directory into TM1, and logs the data export activity in a log file.

   Note: You can open the log before you export records to track the export progress.
2. Click **View**, **Log** to open the Session Log.

   The Session Log shows a summary of the LDAP users that ETLDAP exported and created in Cognos TM1. ETLDAP randomly generates the Cognos TM1 user passwords and adds them to the Cognos TM1 database.

   Note: If you use Integrated Login, Cognos TM1 users do not use the Cognos TM1 passwords, and you do not have to coordinate passwords between Cognos TM1 and Microsoft Windows. If you do not use Integrated Login, Cognos TM1 users must change their password during their first login session. For details, see “Integrated login” on page 175.

Running ETLDAP in Update mode to add new LDAP users

You can run ETLDAP in Update mode to update TM1 with new LDAP users that do not already exist in TM1. To do this, you specify a date in the Filter section of your LDAP query.

About this task

When you run ETLDAP the first time, you must retrieve all records from the LDAP server that meet your organizational requirements. You define these requirements using the Filter parameter. After you retrieve all user and group records, you load them into the IBM TM1 database.

After using ETLDAP to initially load LDAP users into TM1, you can then only use the tool to retrieve and add new LDAP users that do not already exist in TM1. You cannot use the ETLDAP utility to update or delete existing users in TM1 based on changes in the LDAP directory.

As new users are added to your LDAP server, you can add them to TM1 by specifying a date in the Filter section of your LDAP query. Using a date in the Filter section runs ETLDAP in Update mode. You can edit your LDAP Filter to select only new user records that meet your original search requirements since the last time you ran ETLDAP.

Note: Running ETLDAP in Update mode only adds new LDAP users that do not already exist in TM1. ETLDAP does not update user attributes or delete existing TM1 users.

Procedure

1. Determine the last modified record attribute to specify a date in the Filter section of your LDAP query.

   All LDAP servers support a last modified record attribute, which includes these timestamp attributes:

   - **Standard LDAP** - modifytimestamp
   - **Microsoft Active Directory** - whenChanged

   During an export session, ETLDAP examines all records as it processes them and stores the date of the most recently changed record in the Session Log file, as shown in the following sample:

   ```
   newest record modified: Thu Jan 23 07:00:42 EST 2003(20030123070042.0Z)
   ```

2. Locate the newest record line in the LDAP Session Log.
3. Copy the timestamp portion of the string in parentheses from the LDAP Session Log into the Filter section of your LDAP query.

   Note: Be sure to adhere to the syntax supported by LDAP Filters. For more information, see the Internet standards protocol document, RFC 2254, "The String Representation of LDAP Search Filters".

   The following table shows a sample Filter string without any changes, and after modification for both LDAP and Active Directory servers.

   - A standard LDAP server uses the `modifytimestamp` attribute.
   - An LDAP server with Microsoft Active Directory uses the `whenChanged` attribute.

Table 32. Filter string modifications

Sample Filter String	Filter String After Modification
Initial string	`(&(objectclass=person)(|(department=R&D)(department=Documentation)))`
Modified for standard LDAP	`(&(objectclass=person)(modifytimestamp>=20030515162433Z)(|(department=R&D*)(department=QA)))`
Modified for Active Directory	`(&(objectclass=person)(whenChanged>=20030515162433.0Z)(|(department=R&D*)(department=QA)))`

4. After you make the necessary changes to the Filter line, save the session data with a name that clearly identifies it as an incremental update query.
5. Run ETLDAP using the new session data.

Data transmission security

You can configure IBM Planning Analytics Local to use secure data transmission between clients and servers with the Transport Layer Security (TLS) protocol.

Planning Analytics provides a default configuration that services use to create a 2048-bit RSA key pair and issue a certificate to the configured subject, which is signed using SHA-256 by a built-in certificate authority (CA).

The server key and certificates are stored in a PKCS12 keystore named `CAMKeystore` in the configured keystore location (`<PA_install_directory>/configuration/certs/`) of the Planning Analytics data tier installation.

Overview

All IBM Planning Analytics Local components can communicate with the Cognos TM1 Admin Server by using Transport Layer Security (TLS).

Note: Though a standard Planning Analytics Local installation is configured to use TLS by relying on the certificates that are installed in the `<PA_install_directory>\bin64\ssl` directory, you should use your own certificates to maximize security.

1. The IBM TM1 Server is configured to use Transport Layer Security (TLS) by default. When the TM1 Server registers with the Admin Server, the TM1 Server specifies whether it is using TLS or not. To replace the provided TLS certificates, see "Configure the TM1 Server to use custom TLS" on page 209.
2. The TM1 Admin Server is configured to use TLS by default. To replace the provided TLS certificates, see "Configure the Cognos TM1 Admin Server to use custom TLS" on page 212.
3. . For TM1RunTI configuration to TM1 Server, see Using TM1RunTI in *TM1 TurboIntegrator*.
4. This configuration depends on the REST API client. Assuming the REST API client is using a web browser, there is no configuration required unless the default TLS certificates from the TM1 Server are used. For more information, see Authentication and session security.
5. "Configure the TM1 Server and a Cognos Analytics dispatcher with SSL enabled" on page 214.
6. "Configure TLS for Planning Analytics Workspace Local" on page 109.
7. If you are using custom TLS certificates, see "Configure TLS between Planning Analytics Workspace Local and other servers" on page 110.
8. For information about IBM Planning Analytics for Microsoft Excel connections, see "Set up connections for TM1 REST APIs" on page 137.

Default configuration

When you install IBM Planning Analytics Local, all certificates and other files required to configure TLS are placed in the `<PA_install_directory>\bin64\ssl` directory.

When you install Planning Analytics Local, the Admin Server, TM1 Server, and TM1 clients are all configured to use TLS, relying on the certificates installed in the `<PA_install_directory>\bin64\ssl` directory. Although these certificates allow you to configure a TLS implementation, you should replace these certificates with your own certificates (as well as a certificate revocation list) if you want to maximize security.

For TM1 Web, all root certificates must be installed in the certificate store on the machine that the servers are using to run TM1 Web.

The `<PA_install_directory>\bin64\ssl` directory contains the following certificates and files. Files with a .pem extension are Privacy Enhanced Mail format. Files with a .der extension are Distinguished Encoding Rules.

applixca.der
The original default certificate in DER format used for Java certificate stores.

applixca.pem
The original root authority certificate.

ibmtm1.arm
The default certificate file.

ibmtm1.crl
The certificate revocation list.

ibmtm1.kdb
The key database file, which contains the server certificate and trusted certificate authorities.

ibmtm1.rdb
The requested key pair and the certificate request data.

ibmtm1.sth
The key store, which contains passwords to the key database file.

tm1ca_v2.der
The updated default certificate.

tm1ca_v2.pem
The updated default root authority certificate.

tm1store
The Java certificate store containing the public root authority certificate.

Configure the Data Tier to use custom TLS

These steps provide an overview of the process to configure encrypted communication using Transport Layer Security (TLS) for TM1 Admin Server and TM1 Server in IBM Planning Analytics Local.

Configure the TM1 Server to use custom TLS

To configure an IBM TM1 Server to use Transport Layer Security (TLS), you must set several parameters in the `Tm1s.cfg` file and configure the Data tier to use custom certificates.

Generate the custom SSL keystore and certificate

IBM Planning Analytics includes the **gsk8capicmd_64.exe** program in the <*PA_install_directory*>\bin64\ directory. This tool can be used to create and populate a keystore database that is used by the TM1 Admin Server and TM1 Server.

1. Create a keystore database file by using the following command.

```
gsk8capicmd_64 -keydb -create -populate
-db PA_install_directory\bin64\ssl\custom.kdb
-type cms -pw changeit -stash
```

2. Request a certificate from the keystore database that was created in step “1” on page 209.

```
gsk8capicmd_64 -certreq -create -db PA_install_directory\bin64\ssl\custom.kdb
-stashed -label tm1server -dn "CN=tm1server.canlab.ibm.com,O=IBM"
-file PA_install_directory\bin64\ssl\cert_request.arm –size 2048
```

Note: The `cn` value must match the fully qualified domain name of the system that is running the Planning Analytics Data tier.

3. Provide the certificate request (`cert_request.arm` file) to the Certificate Authority for signing.

   The certificate authority provides both an issued certificate (`tm1server.cer` in this example) and a CA certificate (`ca.cer` in this example). Multiple CA certificates are usually stored in a single file. It is common for a certificate authority to provide both the issued certificate and CA certificates in a single file.

4. Add the CA certificates into the keystore.

```
gsk8capicmd_64 -cert -add -db PA_install_directory\bin64\ssl\custom.kdb
-stashed -label tm1serverca -file PA_install_directory\bin64\ssl\ca.cer
-format ascii -trust enable
```

5. Receive the issued certificate into the keystore.

```
gsk8capicmd_64 -cert -receive -db PA_install_directory\bin64\ssl\custom.kdb
-stashed -file .\ssl\tm1server.cer -default_cert yes
```

Complete the following steps for UNIX and Linux environments.

1. Add the <*PA_install_directory*>\bin64\ directory to the library path environment variable (LD_LIBRARY_PATH) before you run **gsk8capicmd_64**.

```
export LD_LIBRARY_PATH=$LD_LIBRARY_PATH:/opt/ibm/cognos/bin64
```

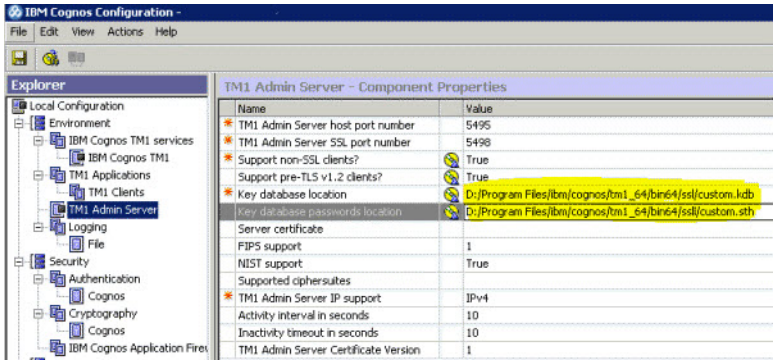
   Note: The **gsk8capicmd_64** program fails with a missing library error if the library path variable is not set correctly.

2. The **gsk8capicmd_64** file in the <*PA_install_directory*>\bin64\ is missing the execute permission by default. Add the missing execute permissions by running the following command from the bin64 directory.

```
chmod +x gsk8capicmd_64
```

Configure the TM1 Admin Server to use the custom TLS certificate

1. Point the following TM1 Admin Server settings to the `custom.kdb` and `custom.sth` files in Cognos Configuration.



2. Restart the TM1 Admin Server service.

The **Server certificate** parameter in the settings might be incorrectly referenced in the <*PA_install_directory*>\configuration\cogstartup.xml file. To correct this problem, manually edit the cogstartup.xml file to change this line:

```
<crn:parameter name="tm1AdminKeyLabel">
    <crn:value xsi:type="xsd:filePath">tm1server</crn:value>
</crn:parameter>
```

To the following line:

```
<crn:parameter name="tm1AdminKeyLabel">
    <crn:value xsi:type="xsd:string">tm1server</crn:value>
</crn:parameter>
```

Note: Saving your changes in Cognos Configuration resets the above line to the incorrect value. You must ensure that the certificate being used is the default certificate in the key database and leave the **Server certificate** parameter empty in Cognos Configuration.

Configure the TM1 Server to use the custom TLS certificate

1. Edit the `tm1s.cfg` file to include the following lines.

```
keyfile=PA_install_directory\bin64\ssl\custom.kdb
keystashfile=PA_install_directory\bin64\ssl\custom.sth
```

2. Restart the TM1 Server service.

Configure TM1 Architect and TM1 Perspectives to use the custom TLS certificate

1. Create a file named `tm1api.config` in the <TM1 Client>\bin\ or <TM1 Client>\bin64\ directory of the TM1 client installation depending on your client installation.
2. Update the contents of the `tm1api.config` file with the following lines:

```
[tm1api]
keystorefile=PA_install_directory\bin64\ssl\custom.kdb
keystashfile=PA_install_directory\bin64\ssl\custom.sth
```

You don't need to make any changes in the options for Cognos TM1 Architect or TM1 Perspectives.

Configure TM1Web to use the Custom TLS certificate

1. The CA certificates must be imported into the <*PA_install_directory*>\bin64\ssl\ttm1store certificate store file in the TM1Web installation.

   To import the CA certificates, use the Java **keytool** command found in the <*PA_install_directory*>\jre\bin\ directory as follows.

```
keytool.exe -import -trustcacerts file "PA_install_directory\bin64\ssl\ca.cer"
-keystore "PA_install_directory\bin64\ssl\tm1store" -alias tm1cacert
-storepass applix
```

   Note: This command assumes that all CA certificates are in a file named `ca.cer` that is already copied into the <*PA_install_directory*>\bin64\ssl\ directory.
2. Restart the IBM Cognos TM1 service from the Windows services list or Cognos Configuration.

Configure TM1 Applications (pmpsvc) to use the custom TLS certificate

1. Make sure the `custom.kdb` and `custom.sth` file are copied into the <*PA_install_directory*>\bin64\ssl\ directory of the TM1 Server install that includes the pmpsvc web application.
2. Create a file named `tm1api.config` in the <*PA_install_directory*>\bin64\ directory of the TM1 Server install containing the `pmpsvc` web applications.
3. Update the contents of the `tm1api.config` file:

```
[tm1api]
keystorefile=PA_install_directory\bin64\ssl\custom.kdb
keystashfile=PA_install_directory\bin64\ssl\custom.sth
```

4. Update the <*PA_install_directory*>\wlp\usr\servers\tm1\jvm.options file to include the following line:

```
-Dcom.ibm.cognos.tm1.certificate.dir=PA_install_directory\bin64
```

5. Restart the IBM Cognos TM1 service (WebSphere Liberty Profile).

Configuration parameters

The following table describes parameters that are related to secure connections, which can be set in the `Tm1s.cfg` configuration file. All `Tm1s.cfg` parameters are described in “Planning Analytics databaseTM1 Database 12 configuration parameters” on page 239.

Table 33. Secure connection configuration parameters	
Parameter	**Description**
UseSSL	Enables or disables secure connections on the TM1 Server. This parameter is enabled by default. Set `UseSSL=F` to disable secure connections. With this setting, clients can connect to the server in insecure mode.
SSLCertAuthority	The name of the TM1 Server's certificate authority file. This file must be on the computer where the TM1 Server is installed.
SSLCertificate	The full path of the certificate file that contains the public/private key pair.
SSLCertificateID	The name of the principal to whom the TM1 Server's certificate is issued.
SvrSSLExportKeyID	The identity key that is used to export the TM1 Server's certificate from the Microsoft Windows certificate store. This parameter is required only if you choose to use the certificate store by setting `ExportSvrSSLCert=T`.
ClientExportSSLSvrCert	Specifies whether the TM1 client must retrieve the certificate authority certificate, which was originally used to issue the TM1 Server's certificate, from the Microsoft Windows certificate store. If `ClientExportSSLSvrCert=T`, the certificate authority certificate is exported from the certificate store on the client computer when requested by the TM1 client.
ClientExportSSLSvrKeyID	The identity key that is used by the TM1 client to export the certificate authority certificate, which was originally used to issue the TM1 Server's certificate, from the Windows certificate store.

Configure the Cognos TM1 Admin Server to use custom TLS

To configure the IBM TM1 Admin Server to use Transport Layer Security (TLS), use IBM Cognos Configuration.

The following table describes properties that are related to secure connections, which can be set in IBM Cognos Configuration.

Table 34. Secure connection properties	
Property	**Description**
Support non-SSL clients?	This property determines if the Admin Server supports non-SSL TM1 clients. Set this property to `True` to configure the Admin Server to support non-SSL clients and to listen for client connections on both secured and unsecured ports. Set this property to `False` to configure the Admin Server to support only secure client connections on a single secured port.
Support pre-TLS v1.2 clients?	As of TM1 10.2.2 Fix Pack 6 (10.2.2.6), all secured communication between clients and servers in TM1 uses Transport Layer Security (TLS) 1.2. This property determines whether TM1 clients and TM1 servers prior to 10.2.2 Fix Pack 6 can connect to the 10.2.2.6 or later Admin Server. Set this property to `True` to allow TM1 clients and TM1 servers prior to 10.2.2.6 to connect to the Admin Server. When such a connection is established, TLS 1.0 is used instead of TLS 1.2. Set this property to `False` to prevent TM1 clients and TM1 servers prior to 10.2.2.6 from connecting to the Admin Server.
TM1 Admin Server certificate authority file location	The full path and name of the Cognos TM1 Admin Server's certificate authority file.
Certificate file location	The full path of the Cognos TM1 Admin Server's certificate file, which contains the public/private key pair.
TM1 Admin Server private key password file location	The full path of the file that contains the encrypted password for the Cognos TM1 Admin Server's private key.
TM1 Admin Server password key file location	The full path of the file that contains the key used to encrypt and decrypt the password for the private key.
Certificate revocation file location	The full path of the Cognos TM1 Admin Server's certificate revocation file. A certificate revocation file will only exist in the event that a certificate has been revoked.

Table 34. Secure connection properties (continued)	
Property	**Description**
TM1 Admin Server Certificate Version	Specifies which version of the TM1 generated certificates to use. By default, the 1024-bit encryption version of the TM1 generated certificates is used. Change this property only if you want to use the new 2048-bit encryption version of the default certificates. You can use the new version with old and new TM1 clients, but you must configure the clients to use the new certificate authority file. **Note:** This property does not apply if you are using your own certificates. Valid values include: • 1 - Enables certificate authority for 1024-bit encryption with sha-1 (default value) • 2 - Enables certificate authority for 2048-bit encryption with sha-256

Configure the TM1 Server and a Cognos Analytics dispatcher with SSL enabled

You can configure TM1 Server for CAM Authentication when using a Cognos Analytics dispatcher with SSL enabled.

Procedure

1. Add the following parameter to the `tm1s.cfg` file.
   `CAMUseSSL=T`
2. Find the root and any intermediate CA (signing) certificates for the Cognos Analytics dispatcher.
   By default this key database file is <*PA_install_directory*>`\bin64\ssl\ibmtm1.kdb`.
   a) Browse to the Cognos Analytics dispatcher URL.
   For example, `https://cognosbi.ibm.com:9300/p2pd/servlet/dispatch`.
   b) Using Internet Explorer, click the lock icon to the right of the URL.
   c) Click **View certificates**.
3. Export the certificates to a Base-64 encoded `cer` file.
4. Import the certificates into the key database used by the TM1 Server by running the following command from the <*PA_install_directory*>`\bin64\` directory.

   ```
   gsk8capicmd_64 -cert -add -db .\ssl\ibmtm1.kdb -stashed -label cognosbi
   -file .\ssl\cognosbica.cer -format ascii -trust enable
   ```

   This command assumes that the certificates are in a file named `cognosbica.cer` that has already been copied into the <*PA_install_directory*>`\bin64\ssl\` directory.
5. Restart the TM1 Server.

Edit parameters in the tm1s.cfg file to use independent certificates

After adding your certificate to the Microsoft Windows Certificate Store, add the required parameters to the `tm1s.cfg` file.

Table 35. Parameters for the Tm1s.cfg file	
Parameter	**Value**
AdminSvrSSLCertID	Specifies the name of the principal to whom the IBM Cognos TM1 Admin Server's certificate is issued.
AdminSvrSSLExportKeyID	Specifies the identity key used to export the Admin Server's certificate from the Microsoft Windows Certificate Store.
ClientExportSSLSvrCert	Specifies whether the TM1 client should retrieve the certificate authority certificate, which was originally used to issue the TM1 Server's certificate, from the Microsoft Windows Certificate Store. If `ClientExportSSLSvrCert=T`, the certificate authority certificate is exported from the certificate store when requested by the TM1 client.
ClientExportSSLSvrKeyID	The identity key used by the TM1 client to export the certificate authority certificate, which was originally used to issue the TM1 Server's certificate, from the Microsoft Windows Certificate Store.
ExportAdminSvrSSLCert	Specifies whether the Cognos TM1 Admin Server's certificate should be exported from the Microsoft Windows Certificate Store. If `ExportAdminSvrSSLCert=T`, the Admin Server's certificate is exported from the Microsoft Windows Certificate Store when the certificate is requested by the TM1 Server.
ExportSvrSSLCert	This parameter must be set to T to enable the TM1 Server to retrieve the certificate from the Microsoft Windows Certificate Store. `ExportSvrSSLCert=T`
SSLCertAuthority	The name of the authority that issued your certificate. You can determine this value by referring to the Microsoft Management Console and clicking **Certificates** > **Personal** > **Certificates**. The authority name is displayed in the **Issued By** column of the Properties pane.
SSLCertificateID	The name of the principal to whom the TM1 Server's certificate is issued. You can determine this value by referring to the Microsoft Management Console and clicking **Certificates** > **Personal** > **Certificates**. The principal name is displayed in the **Issued To** column of the Properties pane.

Table 35. Parameters for the Tm1s.cfg file (continued)	
Parameter	**Value**
SSLPrivateKeyPwdFile	The full path to the .dat file that contains the encrypted password for the private key. **Note:** The name of this file is specified by the `-outfile` parameter when you run the TM1Crypt utility. For example, if you run the TM1Crypt utility from the following command: `tm1crypt.exe -pwd abc123 -keyfile btkey.dat -outfile btprk.dat -validate` the correct parameter value is `SSLPrivateKeyPwdFile=C:\Program Files\Cognos\TM1\bin\btprk.dat`
SSLPwdKeyFile	The full path to the .dat file that contains the key used to encrypt and decrypt the password for the private key. **Note:** The name of this file is specified by the `-keyfile` parameter when you run the TM1Crypt utility. For example, if you run the TM1Crypt utility from the following command: `tm1crypt.exe -pwd abc123 -keyfile btkey.dat -outfile btprk.dat -validate` the correct parameter value is `SSLPwdKeyFile=C:\Program Files\Cognos\TM1\bin\btkey.dat`
SvrSSLExportKeyID	Specifies the identity key used to export the TM1 Server's certificate from the Microsoft Windows certificate store. In most cases, the value for SvrSSLExportKeyID will be identical to the value for SSLCertificateID.

ThirdPartyCertificateTool command-line reference

Not supported in v2.0.6 Some of the tasks to use a certificate from another certificate authority use a command-line tool named `ThirdPartyCertificateTool`.

Note: The ThirdPartyCertificateTool requires Java 7 and is not supported in Planning Analytics version 2.0.6 or later.

This tool is located in the following <*PA_install_directory*>`\bin` location.

On UNIX or Linux operating systems, use the following format:

`ThirdPartyCertificateTool.sh` *parameters*

On Microsoft Windows operating systems, use the following format:

`ThirdPartyCertificateTool.bat` *parameters*

The following tables list the options for this command-line tool.

Table 36. Main operation modes	
Command	**Description**
`-c`	Create a certificate signing request.

Table 36. Main operation modes (continued)	
Command	**Description**
`-i`	Import a certificate.
`-E`	Export a certificate.

Table 37. Operation modifiers	
Command	**Description**
`-s`	Work with the signing identity.
`-e`	Work with the encryption identity.
`-T`	Work with the trust store (only with -i and -E operation modes).

Table 38. Information flags	
Command	**Description**
`-d`	DN to use for certificate.
`-r`	CSR or certificate file location (depends on mode).
`-t`	Certificate authority chain file (PEM or binary PKCS#7 certificate authority chain or single DER-format certificate authority)
`-p`	Key Store password. If missing, use the default password.
`-a`	Key pair algorithm: Either RSA or DSA. RSA is the default value.
`-P`	Create a certificate authority keystore including the certificate authorities trusted by the current JRE.
`-N`	Set the certificate authority trust store to NIST SP800-131a standard.
`-R`	Restore non-Nist SP800-131a certificates back to trust store.

These parameters create a signing key pair and PKCS#10 CSR:

```
-c -s -d cn=Me,o=MyCompany,c=CA -r sign.csr -a DSA -p password
```

These parameters import the third-party CA generated encryption certificate and PKCS#7 CA certificate chain:

```
-i -e -r encr.cer -p password -t cacert.p7b
```

These parameters import the third-party CA generated signing certificate and PEM CA certificate chain:

```
-i -s -r sign.cer -p password -t cacert.pem
```

These parameters add `ca.cer` as a trusted certificate:

```
-i -T -r ca.cer -p password -t cacert.cer
```

These parameters export the signing certificate to `sign.cer`:

```
-E -s -r sign.cer -p password
```

These parameters export the IBM Cognos CA certificate to `ca.cer` (when you are not using a third-party certificate authority):

```
-E -T -r ca.cer -p password
```

These parameters remove all non-NIST SP800-131a CA certificates and set the CA trust store to NIST SP800-131a standard:

```
-N -D ../configuration -p password
```

These parameters restore JRE non-NIST SP800-131a certificates back to the CA trust store:

```
-R -D ../configuration -p password
```

TM1 Server data encryption

You can configure the IBM TM1 Server to encrypt data when it is written to disk.

Note:

TM1 Server data encryption is only available for Planning Analytics Local users.Planning Analytics on Cloud and distributed TM1 Servers do not support TM1 Server data encryption.

Although TM1 Server data encryption is not supported in Planning Analytics on Cloud, the Planning Analytics on Cloud offering does provide Encryption at Rest.

TM1 Server uses a two-tier key management system to encrypt/decrypt server data. The first tier includes a data encryption key (DEK) to encrypt data. The DEK is stored on-disk in a directory (within the model) called `}key`. The second tier uses a primary key (PK) to encrypt the DEK. The primary key is stored in an IBM Global Security Kit (GSKit) store and can be rotated regularly for added security.

CAUTION: You must back up your primary key as part of your regular TM1 backup and restore procedure. If you lose your primary key, you cannot restore the primary key. You will be unable to access data on your TM1 server.

When a primary key is rotated, the DEK is decrypted by using the previous primary key and then encrypted with the new primary key. During a rotation, the DEK is backed up in a `}key_backup` subdirectory; located in the `}key` directory. Older primary keys are persisted in the keystore in case a model restoration is required later.

Note: Encryption is not supported on a TM1 Server that is using replication and sync.

Key generation and rotation are performed by the TM1 server. Using the TM1 API, a TM1 Admin user can enable and disable server encryption. An API method can also be used to perform an PK rotation.

Users have limited control over the keys that are generated by the TM1 Server. However, the user will still have control over the GSKit store by using the command line utility that is provided by the GSKit. A user must use care when they manage the keys in the GSKit store.

When the TM1 Server generates an PK and a DEK, the keys use the following format for identification and allow the server to associate primary keys to their appropriate DEKs.

- `ibm_tm1_mk_version_model_name_time_stamp` (For example, ibm_tm1_mk_v1_planning_sample_2016031510211514)
- `ibm_tm1_dek_version_model_name_time_stamp` (For example, ibm_tm1_dek_v1_planning_sample_2016031510211514)

The TM1 Server includes a command line utility, which provides a (**-K**) option to perform a primary key rotation. The order of operation is as follows:

1. New names (time stamps) are generated for the data encryption and primary keys.
2. A new primary key is generated in the GSKit store.
3. The existing DEK is encrypted with the new primary key and saved to disk with the new DEK name.

4. The existing DEK is moved to the }key_backup folder.
5. The TM1 Server is shut down.

Note: You cannot perform a key rotation on a model that is not configured for encryption.

If another instance of the TM1 Server is running when a key rotation is performed, an error indicates that the TM1 server log is locked by another server instance.

During startup, the server performs a model conversion based on the existence or absence of a DEK in the model directory. The following table outlines the server actions based on these conditions.

Table 39. TM1 server data encryption behavior

DEK Presence	TM1 Server Behavior
No	TM1 Server operates without data encryption.
Yes	TM1 Server uses the existing DEK to encrypt or decrypt the model files. When the server decrypts a model, the DEK is moved to the backup folder and the server completes the process of loading the model.

TM1 model conversion

The server converts only files that were generated by TM1 processes. The following table lists the files that are converted.

Table 40. TM1 object file extensions

Extension	Description
.dim	Dimension
.hie	Hierarchy
.sub	Subsets can be located in a user's private folder
.cub	Cubes
.tab	Old cube format
.set	Sets can be located in a user's private folder
.vue	Views can be located in a user's private folder
.xbv	Expression-based views can be located in a user's private folder
.pro	Processes
.rux	Rules
.cho	Chores
.namemap	Sandbox
.dr	Data reservation
tm1s*.log	Server transaction logs
tm1s*.rej	Rejected server transaction logs
tm1rawstore.*	Pending audit event entries
tm1auditstore*.log	Process audit event entries
.cube	located under the }Applications folder
.chore	located under the }Applications folder
.dimension	located under the }Applications folder

Table 40. TM1 object file extensions (continued)	
Extension	**Description**
.process	located under the }Applications folder
.extr	located under the }Applications folder
.view	located under the }Applications folder
.subset	located under the }Applications folder

Note: Binary large objects (BLOBs) used with data import, or Websheets stored as BLOBs under the }Applications folder of any file with a .blb extension, are not encrypted when the TM1 Server is enabled with encryption at rest. These files are out of the control of the TM1 Server, which makes it difficult to track their location and content accurately. For data safety, binary large objects (BLOBs) are not encrypted.

TM1 APIs

You can use TM1 APIs to enable and disable encryption, and rotate the server key. You must be a member of the TM1 Admin group. You can also move data objects manually between two servers.

For example, a user might create a process that they would like to move into their production server. The file can be decrypted by the development server, and encrypted by the production server. The file is then ready to be loaded into the production server.

The following methods perform a server shutdown and then convert the model.

```
TM1V TM1API TM1EncryptDataModel( TM1P hPool, TM1V hServer, TM1V iMinutesBeforeShutDown );
```

```
TM1V TM1API TM1DecryptDataModel( TM1P hPool, TM1V hServer, TM1V iMinutesBeforeShutDown );
```

The following method performs a key PK rotation.

```
TM1V TM1API TM1RotateDataModelKey( TM1P hPool, TM1V hServer );
```

The following methods encrypt and then decrypt a file.

```
TM1V TM1API TM1EncryptDataFile( TM1P hPool,
    TM1V hServer, TM1V sFileSrc, TM1V sDestPath, TM1V fileType );
```

```
TM1V TM1API TM1DecryptDataFile( TM1P hPool,
    TM1V hServer, TM1V sFileSrc, TM1V sDestPath, TM1V fileType );
```

These methods convert a file. Optionally, you can provide a destination path. If omitted, the source file is overwritten. The files must be accessible by the TM1 server and paths must be specified as relative to the TM1 server.

The following file types are valid:

- TYPE_OBJECT_FILE (1)
- TYPE_TRANSACTION_LOG_FILE (2)
- TYPE_AUDIT_LOG_FILE (3)

TM1Crypt utility

The TM1Crypt utility allows users to manage the server for data encryption. The utility can also be used to convert files.

This command demonstrates a key rotation example:

```
tm1crypt -i tm1crypt.config -action rotate
```

This command demonstrates a decryption example:

```
tm1crypt -i tm1crypt.config -action decrypt
-filesrc C:\DataModel\tm1s20160330182631.log
-filetype 2 -filedest C:\Temp\LogDir
```

Details:

```
tm1crypt -?
or tm1crypt -help
or tm1crypt [<cmd_parm>...]
     where <cmd_parm> is one of:
          -i <filespec>
          -logpath <string>
          -connect <string>
          -action <string>
          -keyfile <string>
          -outfile <string>
          -filesrc <string>
          -filedest <string>
          -filetype <string>
          -minsbeforeshutdown <string>
          -validate
          -<connect_parm>...

     where <connect_parm> is one of:
          -adminhost <string>
          -server <string>
          -user <string>
          -securitymode
          -retryattempts
          -retryinterval
          <password_parm>
          -keystorefile <filespec>
          -keystashfile <filespec>
          -FIPSOperationMode <1|2|3>
          -CAMNamespace <string>

     where <password_parm> is one of:
          -pwd <string>
          -passwordfile <filespec>
          -passwordkeyfile <filespec>
```

For more information, see “Run the TM1Crypt utility” on page 221.

Run the TM1Crypt utility

The TM1Crypt utility (`tm1crypt.exe`) is a command prompt that encrypts the password that the IBM TM1 Server needs to access the private key. The utility can be used to convert a model or a file.

The password is encrypted with Advanced Encryption Standard, 256 bit, Cipher Block Chaining (AES-256-CBC).

Location

The TM1Crypt utility, `tm1crypt.exe`, is installed in the directory:

PA_install_directory\bin64

Syntax

Run the TM1Crypt utility from a command prompt with the following syntax:

`tm1crypt.exe [<cmd_parm> <connect_parm> <password_parm>]`

You can provide parameters with constant values in a configuration file when you run tm1crypt.

Command parameters

Table 41. TM1Crypt command parameters

Parameter	Value	Description
`i`	*filespec*	Name of the file that contains default configuration parameters. Parameters specified in this file are used, unless overridden by parameters provided on the command prompt. If no path is specified, the TM1 Server directory is assumed. If `-i` is not specified, then other parameters must be specified to provide the process name, TM1 Server, and so on.
`connect`	*string*	This parameter can be used to specify a section in the configuration file that contains parameters used to make server connections, such as user, pwd, or CAMnamespace.
`logpath`	*string*	Enables logging and specifies location of log.
`action`	*string*	1 [default] - Generate encrypted password and key file 2 - Encrypt server model 3 - Decrypt server model 4 - Encrypt file using server key 5 - Decrypt file using server key 6 - Rotate server key
`keyfile`	*string*	Name of the file generated containing key. If no `keyfile` is specified the default is tm1key.dat.
`outfile`	*string*	Name of file generated encrypted password. If no `outfile` is specified the default is tm1cipher.dat.
`filesrc`	*string*	Source file to perform conversion. Source is replaced with converted data unless file destination is provided.
`filedest`	*string*	Source file to perform conversion. Source is replaced with converted data unless file destination is provided.
`filetype`	*string*	1 [default] - TM1 object file 2 - Transaction log 3 - Audit log
`minsbeforeshutdown`		Time before performing a shutdown when encrypting or decrypting a server model.
`validate`		Validate key file.
`help`		Display help documentation including parameters and descriptions.
`?`		Display a synopsis of command line parameters.

Connect Parameters

Connect parameters are common across TM1 components and can be defined in their own section of a configuration file to reuse them.

Table 42. TM1Crypt connect parameters

Parameter	Value	Description
`-adminhost`	*string*	TM1 admin host
`-server`	*string*	TM1 Server name
`-user`	*string*	TM1 or Cognos Access Manager (CAM) username, depending on the type of authentication that is used by the TM1 Server.
`-securitymode`		Security mode used to connect to the TM1 Server. The mode must match the value in the TM1 Server configuration file.
`-retryattempts`		Number of attempts to connect to the TM1 Server.
`-retryinterval`		Time in seconds to retry connection to the TM1 Server.
`-keystorefile`	*filespec*	The full path of the key database file that contains the trusted certificate authorities.
`-keystashfile`	*filespec*	The full path of the file that contains the password that is used to access the key database file.
`-FIPSOperationMode`	*1*|*2*|*3*	Indicates FIPS mode of operation. FIPS_MODE = 1 (default) FIPS_APPROVED = 2 FIPS_NONE = 3
`CAMNamespace`	*id*	The ID of the Cognos Access Manager (CAM) namespace. This parameter is the namespace ID, not the namespace name.

Password Parameters

Passwords are either prompted for on the command line or supplied by using an encrypted file provided by the `passwordfile` parameter.

Table 43. TM1Crypt password parameters

Parameter	Value	Description
pwd	*string*	Password for the `username` given in the `-user` parameter, in clear text. For greater security, the password can be specified in an encrypted file using the `-passwordfile` parameter. This parameter is ignored on the command line. You are prompted for the password.

Table 43. TM1Crypt password parameters (continued)		
Parameter	**Value**	**Description**
`passwordfile`	*filespec*	Filename of the file containing the encrypted password for the user specified by `-user`. If no path is specified, the TM1 Server directory will be assumed. When this option is used, you cannot use `-pwd`.
`-passwordkeyfile`	*filespec*	If the `passwordfile` parameter is given, a key file is also required to decrypt the password. The password file and key file can be created using the TM1Crypt tool.

Example

For example, the command

```
tm1crypt.exe -keyfile btkey.dat -outfile btprk.dat -validate
```

Generates two files:

- `btkey.dat` contains the key that is used to encrypt/decrypt the password for the private key.
- `btprk.dat` contains the encrypted password for the private key.

The generated files are written to the *PA_install_directory*`\bin` directory.

Note: The use of the pwd parameter on the command line does not display an error but the pwd parameter is ignored. You are prompted for the password and must verify it.

TM1Crypt configuration file

```
[tm1crypt]
#connect=ConnectParams
#retryattempts=3
#retryinterval=3

### Actions ###
##1 – OPERATION_CRYPT_PWD
##2 - OPERATION_ENCRYPT_MODEL
##3 - OPERATION_DECRYPT_MODEL
##4 - OPERATION_ENCRYPT_FILE
##5 - OPERATION_DECRYPT_FILE
##6 - OPERATION_ROTATE_KEY
###
#action=

### File Types
##1 - Object File //default
##2 - Transaction Log
##3 - Audit Log
###
#filetype=

### Valid path for logs files
#logpath=

### Path to file source and destination
#filesrc=
#filedest=

#adminhost=
#server=
#user=
#pwd=
#camnamespace=

[Connect - ConnectParams]
#adminhost=
```

```
#server=
#user=
#pwd=
#camnamespace=
#passwordfile=
#passwordkeyfile=
```

Chapter 16. Configuring and maintaining Planning Analytics Local

The following topics describe advanced topics in setup, maintenance, and configuration.

Setting up unattended installations and configurations

You can set up an unattended installation and configuration to install an identical configuration across several computers on your network. You can automate the installation and configuration process by specifying options and settings for users.

Before you set up an unattended installation and configuration, ensure that all the system requirements and prerequisites are met and that all third-party products are installed and configured.

Procedure

1. Configure a transfer specification file (`.ats`) to specify installation options.
2. Run the installation tool in silent mode.
3. Use a pre-configured configuration file from another computer.
4. Run the configuration tool in silent mode.

Set up an unattended installation for IBM Cognos components

Use a transfer specification file (`.ats`) to copy IBM Cognos components to your computer without being prompted for information. Use the following TM1 product codes for an unattended installation.

By default, each time you install IBM Cognos components with the installation wizard, the options you select are recorded in a transfer specification file. Therefore, if you already installed IBM Cognos components on a sample computer, you can use the generated transfer specification file as a template for unattended installations on different computers.

If you do not use the installation wizard to install components, you can use the default transfer specification file named `response.ats` that is available on the disk. You must modify the `response.ats` file for your environment before you can use it for an unattended installation.

You can check whether the unattended installation was successful by checking the return status. A value of 0 indicates success and all other values indicate that an error occurred.

Procedure

1. Use the installation wizard to install IBM Planning Analytics components on one computer.
2. After the installation is complete, go to *tm1_location*`/instlog` to locate the transfer specification file (`.ats`) that was generated during the installation. The file name format is ts-product_code-version-yyyymmdd_hhmm.ats.

   Where *product_code* is as listed in the following table:

Table 44. TM1 product codes for an unattended installation

Product Code	Product
TM1APPTIER_APP=1	TM1 Data Tier
TM1SERVER_APP=1	TM1 Server
TM1ADMINSERVER_APP=1	TM1 Admin Server
TM1TOOLS_APP=1	TM1 Tools

Table 44. TM1 product codes for an unattended installation (continued)	
Product Code	**Product**
TM1SAMPLETIER_APP=1	TM1 Samples

3. Copy the generated transfer specification file to the computer where you plan to install IBM Planning Analytics.
4. On the computer where you plan to install the software, do one of the following:
   - Insert the appropriate product installation disk, and copy the contents of the disk to your computer.
   - Copy the product installation files you downloaded to your computer.
5. Open the transfer specification file in a text editor.
6. In the License Agreement dialogs, change the `I Agree` property to `y`. This action means that you are accepting the license agreement. To read the terms of the license agreement, see the LA_language_code and notices files in either of these locations:
   - On the product disk in the root installation directory for the operating system
   - On the computer from which you copied the transfer specification file in the *`tm1_location`*`/instlog` directory
7. Save the transfer specification file in the directory where you copied the installation files.
8. In a command or terminal window, go to the operating system directory where you copied the installation files.
9. Enter the following command:
   - On Windows, type the following, where location is the directory where you copied the filename.ats file:

     ```
     issetup -s location\filename.ats
     ```
   - On UNIX or Linux, type:

     ```
     ./issetup -s location/filename.ats
     ```
   - On UNIX or Linux where you do not have XWindows, type:

     ```
     ./issetupnx -s location/filename.ats
     ```

Results

If a return status other than 0 is returned, check the log files for error messages. Errors are recorded in the *`tm1_location`*`/instlog` in a summary error log file. The file name format is tl-product_code-version-yyyymmdd-hhmm_summary-error.txt.

If errors occur before sufficient initialization occurs, log messages are sent to a log file in the Temp directory. The file name format is tl-product_code-version-yyyymmdd-hhmm.txt.

After all errors are resolved, you can set up an unattended configuration.

Set up an unattended configuration for IBM Cognos components

Before you set up an unattended configuration, you must export a configuration from another computer that has the same IBM Cognos TM1 components installed. You can then run IBM Cognos Configuration in silent mode.

The exported configuration contains the properties of the Cognos TM1 components that you installed on the source computer. If you made changes to the global configuration, you must also copy the global configuration file from the source computer to the computer where you plan to run an unattended configuration.

Before you begin

Ensure that the configuration settings on the local computer are appropriate to use to configure another computer with the same installed components.

Procedure

1. In IBM Cognos Configuration, from the **File** menu, click **Export as**.
2. If you want to export the current configuration to a different folder, in the **Look in** box, locate and open the folder.
3. In the **File name** box, type a name for the configuration file.
4. Click **Save**.
5. Copy the exported configuration file from the source computer or network location to the *install_location*/configuration directory on the computer where you plan to do an unattended configuration.
6. Rename the file to cogstartup.xml.
7. If you changed the global configuration on the source computer, copy the coglocale.xml file from the source computer to the *install_location*/configuration directory on the computer where you plan to do an unattended configuration.
8. Go to *install_location*/bin64 directory.
9. Type the configuration command:

   ```
   cogconfig.bat -s
   ```

   To view log messages that were generated during an unattended configuration, see the cogconfig_response.csv file in the *install_location*/logs directory.

Results

You can check if the unattended configuration was successful by checking the return status. A value of zero (0) indicates success and all other values indicate that an error occurred.

Cognos Configuration applies the configuration settings specified in the local copy of cogstartup.xml, encrypts credentials, generates digital certificates, and if applicable, starts the IBM Cognos service or process.

Set up an unattended uninstallation for IBM Cognos components

You can set up an unattended uninstallation to automate the removal of components on several computers that have the same components or to remove components on a UNIX or Linux environment that does not have Microsoft Windows.

Procedure

1. Go to *tm1_locaton*/instlog.
2. Open the transfer specification .ats file for the product in a text editor.

   The filename format of the transfer specification .ats file is ts-*product_code-version-yyyymmdd_hhmm*.ats

   See “Set up an unattended installation for IBM Cognos components” on page 227 for a list of the TM1 product codes.

   You need to edit only one .ats file per product.
3. In the section named [Component List], specify the components to remove.
   - To remove the component, type 1
   - To leave the component installed, type 0

By default, all installed components are set to be removed.

4. Save and close the file.
5. Repeat steps 2 to 4 for each installed product.
6. From the operating system command line, change to the *tm1_location*/uninstall directory.
7. At the command prompt, type the following command:
   - On Windows,

     ```
     uninst -u -s
     ```
   - On UNIX or Linux,

     ```
     ./uninst -u -s
     ```
   - On UNIX or Linux without XWindows,

     ```
     ./uninstnx -u -s
     ```

Maintaining your IBM Planning Analytics Local installation

After successfully installing IBM Planning Analytics Local, you can perform maintenance tasks such as installing additional components, backing up and restoring your data and configuration files, and uninstalling the current version.

Installing additional components
You can return to the Planning Analytics Wizard to install additional components that are not installed.

Backing up data and configuration files
You should regularly back up your data and configuration files, especially before you upgrade to a new version of Planning Analytics.

Uninstalling the current version
Depending on which Planning Analytics components you installed, you might have to perform separate steps to remove them. For example, IBM Cognos Insight and IBM Cognos TM1 Performance Modeler are uninstalled differently than the other Planning Analytics components.

Backing up data and configuration files for IBM Planning Analytics Local

This topic describes how to back up your data and configuration files for IBM Planning Analytics Local.

About this task

Each Planning Analytics component has its own set of related data and configuration files. Review and follow the these steps to backup the data and configuration information for the components you are using.

For example:

- For each IBM TM1 Server you are running, backup your TM1 data directory and configuration files.
- If you are using Cognos TM1 Web, you should back up the related data and configuration files for that component.
- If you are using Cognos TM1 Applications, you should export your applications and backup any other related files.

Procedure

1. Export configuration settings from IBM Cognos Configuration:

   If you used the Cognos Configuration utility to run and manage your TM1 components, such as the TM1 Admin Server, TM1 servers, or the TM1 Application Server, you can save an XML file of your configuration information.

   a) Open Cognos Configuration.

b) Click **File > Export As**.

c) Select a location and enter a file name for the XML file.

d) Click **Save**.

2. Back up TM1 Server databases:

   Save a copy of the contents of your IBM TM1 database data directories and subdirectories to a secure location. These directories contain both data and configuration files. For example, the TM1 sample database directories and subdirectories are located here:

   `<TM1_Install>\samples\tm1`

Modifying Cognos TM1 installed components

You can modify your current installation by reinstalling components or adding components that are not already installed.

About this task

You can only install components using the install wizard, you cannot remove components using this method.

Note: Program maintenance does not include changing the location of the Cognos TM1 installation directory. To change the location of the installation directory, remove all Cognos TM1 files and reinstall Cognos TM1 in another location.

Procedure

1. To start the installation:
   - Go to the download location for the Cognos TM1 installation program.
   - Or, insert the IBM Cognos TM1 product disk.

     If the installation wizard does not open automatically, go to the operating system directory to locate the `issetup.exe` file.
2. Right-click the `issetup.exe` command and click **Run as Administrator**.
3. Click **Next** to advance to the **Component Selection** screen.

   If prompted, respond to the following questions:
   - Confirm that you want to install to the same location as a previous installation.
   - Confirm whether or not you want to create a backup of all files from the existing installation.
4. On the **Component Selection** screen, select the Cognos TM1 components you want to install and click **Next**.

   The Component Selection screen shows the current state of your Cognos TM1 installation.
   - Items that are currently installed display with a red X icon next to the component name.
   - Items that are *not* currently installed display with a green check mark next to the name. These items are automatically selected for installation.
5. Click **Next** to start the modifications.
6. Click **Finish** when the modifications are completed.

Uninstalling IBM Planning Analytics

To remove and uninstall all components of IBM Planning Analytics, follow these steps.

Before you begin

Before you start to uninstall Planning Analytics, you must have completed the backup of all Planning Analytics data.

For details, see:

- "Backing up data and configuration files for IBM Planning Analytics Local" on page 230.

Procedure

Uninstall core TM1 components:

These steps uninstall all of the following components in a single procedure:

- IBM TM1 Server

a) From the Microsoft Windows Start menu, click **Programs** > **IBM Planning Analytics** > **Uninstall IBM Planning Analytics** > **Uninstall IBM Planning Analytics**.

b) Select the language for the uninstall wizard and click **Next**.

c) On the **Select the packages you wish to uninstall** screen, click the check box for the **IBM Cognos TM1** option, then select **Next**.

The uninstall program removes the components and may take some time. When completed, you will be prompted to restart your computer.

d) Choose to restart now or later, then click **Finish**.

e) Check the TM1 installation directory to see if any files or sub-directories remain. If so delete them manually.

For example, check `C:\Program Files\IBM\cognos\tm1`.

The `tm1s.cfg` configuration file

The `tm1s.cfg` file is an ASCII file that specifies environment information for an IBM TM1 Server.

A default `tm1s.cfg` file is created in the TM1 Server data directory when you install a copy of the TM1 Server. Most of the available parameters are documented in the configuration file. If a parameter is not installed by default, the parameter is commented out in the configuration file. You can edit the `tm1s.cfg` file to reflect the environment of the associated remote server by uncommenting the parameter that you want to use and setting the correct value.

For an alphabetical listing of all the parameters in the server configuration file, see Parameters in the TM1s.cfg file.

Location of the tm1s.cfg file

The location of the tm1s.cfg file depends on the type of server you are using.

- If you are using the IBM Cognos Configuration tool to start and stop your IBM TM1 Server, you can view the configuration path for a TM1 Server by clicking the server name in the Explorer tree of Cognos Configuration.
- If you are running the TM1 Server remotely as a Microsoft Windows service (Tm1sd.exe), and you used the TM1 installation program to install the server, the system uses the tm1s.cfg file that is located in the server data directory you specified during installation.
- If you are running the TM1 Server remotely as a Windows application (Tm1s.exe), you specify the location of the tm1s.cfg file by using the -z parameter in the command line when you start the server, either from a shortcut or from a command prompt.

For example, this command specifies that TM1 uses the tm1s.cfg file located in the c:\salesdata directory:

```
c:\Program
Files\Cognos\TM1\bin\tm1s.exe
-z c:\salesdata
```

If the -z parameter points to a directory containing spaces, you must enclose the directory in double quotation marks. For example, -z "c:\sales data".

- If you are running a TM1 Server on UNIX, and you used the TM1 installation program to install the server, the system uses the tm1s.cfg file that is located in the server data directory you specified during installation.

Sample tm1s.cfg file

This is a sample tm1s.cfg file.

Your tm1s.cfg file might also include comments that describe the parameters.

```
## Licensed Materials - Property of IBM
##
## IBM Cognos Products: TM1
##
## (C) Copyright IBM Corp. 2007, 2017
##
## US Government Users Restricted Rights - Use, duplication or
## disclosure restricted by GSA ADP Schedule Contract with IBM Corp.


[TM1S]
# ServerLogging
# Generates a log with the security activity details on the TM1 server that are associated with
Integrated Login. The log file, named Tm1server.log, is saved to the TM1 server data directory.
The ServerLogging parameter is useful only if your TM1 server is configured to use Integrated
Login.
# Type: Optional, Static
#
# Set ServerLogging to T in Tm1s.cfg. Note also that if ServerLogging=T is set, you must rename
the TM1 server message logfile tm1server.log by editing the corresponding parameter in the
logger configuration file tm1s-log.properties file.
ServerLogging=F


# Security package name
# If you configure the TM1 server to use Integrated Login, the SecurityPackageName parameter
defines the security package that authenticates your user name and password in Windows.
# Type: Optional, Static
#
# Valid values are:
#  * Kerberos (default) - Windows 2000 or later.
#  * NTLM - Older Windows installations, such as Windows NT.
SecurityPackageName=Kerberos


# Security mode
# Type: optional, static
#
#
# If IntegratedSecurityMode is set to 1. All clients must provide a database
# username and password. This is traditionally done through a login screen.
#
# If IntegratedSecurityMode is set to 2. The clients will have the choice
# to connect provide a database username and password or use the single-login
# mechanism for authentication.
#
# If IntegratedSecurityMode is set to 3. All clients must use the single-login
# mechanism for authentication.
#
# If IntegratedSecurityMode is set to 4. The server uses IBM Cognos 8 security authentication.
#
# If IntegratedSecurityMode is set to 5. The server uses IBM Cognos 8 security authentication
and supports user groups from both TM1 and Cognos 8.
#
# If this is not set the parameter will be set to 1 by default.
IntegratedSecurityMode=1
```

```
# UseSSL
# Enables or disables SSL on the TM1 server.
# Type: Optional/Required to use SSL, Static
# Set UseSSL=T to enable SSL. With this setting, only TM1 9.1 and later clients will be able to
securely connect to the server.
# Set UseSSL=F to disable SSL. With this setting, all TM1 clients, including older clients that
do not support SSL, will be able to connect to the server in insecure mode.
# When UseSSL=T, you must set several other Tm1s.cfg parameters that manage SSL implementation.
For details on these parameters, see Running TM1 in Secure Mode Using SSL.
# Default is UseSSL=T
UseSSL=T


# Server name to register with the Admin Server. If you do not supply this parameter, TM1 names
the server Local and treats it as a local server.
# Type: Optional, Static
ServerName=SData


# Location of TM1 database
# Type: Required, static
# Specifies the data directory from which the server loads cubes, dimensions, and other
objects. You can list multiple data directories by separating them with semicolons.
#
# Example:
# DataBaseDirectory=C:\Program Files\Cognos\TM1\Custom\TM1Data\PlanSamp\
DataBaseDirectory=.


# AdminHost
# Specifies the computer name or IP address of the Admin Host on which an Admin Server is
running
# Type: Required, Static
# You can specify multiple Admin Hosts by separating each host name with a semicolon on a
Windows TM1 server, or a colon on a UNIX TM1 server. For example:
#  * Use the format AdminHost=hostname1;hostname2 on a Windows TM1 server.
#  * Use the format AdminHost=hostname1:hostname2 on a UNIX TM1 server.
#
# Some examples include:
#  * AdminHost=boston;newyork
#  * AdminHost=192.168.1.17;192.168.1.22
#  * AdminHost=boston;192.168.1.17;192.168.1.22;myserver;192.168.1.40
#
#Note: The string specifying the admin host(s) is limited to 1020 characters or bytes.
# If set to empty than use localhost
AdminHost=


# TM1 Server Port
# Sets the server port number used to distinguish between multiple servers running on the same
computer. When multiple TM1 servers are installed on a single computer, each server must use a
unique port number.
# Type: Optional, Static
# When you install a TM1 server, the default port number is 12345. Valid port values are
between 5000 and 65535
#
# If the Tm1s.cfg file does not contain the PortNumber parameter, the TM1 server uses port
5000. Local TM1 servers use port 5000. The port used for Client Messages must also be a unique
port number and is set to 5001 by default when the ClientMessagePortNumberparameter is used.
PortNumber=12346


# ClientMessagePortNumber
# Identifies a secondary port used to accept client messages concerning the progress and
ultimate cancellation of a lengthy operation without tying up thread reserves.
# Type: optional, dynamically set/Sstatic for changes
# This additional port ensures that other server requests can continue to process while waiting
for a cancellation from the user.
#
# By default, this port number is automatically and dynamically assigned when the TM1 server
starts. You do not have to set ClientMessagePortNumber to a specific number unless firewalls or
other network issues require the listener port to be a well-known number.
#
# Note: Be sure to assign unique port numbers for the server and client message ports. If you
have two servers running on the same machine with the same port number, the message activity
may cause a system failure.
ClientMessagePortNumber=


# Language
```

```
# Sets the language used in the TM1 interface for the IBM Cognos TM1 server.You can use this to
override the current locale settings
# This parameter applies to messages generated by the server and is also used in the user
interface
# of the server dialog box when you run the server as an application instead of a Windows
service.
# Type: Optional, Static
#
# Valid values are:
# eng   English
# bra   Brazilian Portuguese
# hrv   Croatian
# csy   Czech
# sch   Chinese (Simplified)
# tch   Chinese (Traditional)
# dan   Danish
# nld   Dutch
# deu   German
# fin   Finnish
# fra   French
# hun   Hungarian
# ita   Italian
# jpn   Japanese
# kaz   Kazakh
# kor   Korean
# nor   Norwegian
# pol   Polish
# rom   Romanian
# rus   Russian
# esp   Spanish
# sky   Slovak
# slv   Slovenian
# sve   Swedish
# tha   Thai
# trk   Turkish
#Language=eng


# Savetime
# Sets the time of day to execute an automatic save of server data; saves the cubes every
succeeding day at the same time. As with a regular shutdown, SaveTime renames the log file,
opens a new log file, and continues to run after the save.
# The Savetime parameter is not available when running the TM1 server as a Windows service.
# The format of the SaveTime parameter is dd:hh:mm where:
#  * dd is the number of days from today that the system will start automatically saving data.
For example, 00 is today, 01 is tomorrow.
#  * hh:mm is the time of day in 24-hour format.
# Type: optional, dynamic
Savetime=


# Downtime
# Specifies a time when the server will come down automatically.
# The Downtime parameter is not available when running the TM1 server as a Windows service.
# The format of the Downtime parameter is dd:hh:mm where:
#  * dd is the number of days from today that the system will start automatically saving data.
For example, 00 is today, 01 is tomorrow.
#  * hh:mm is the time of day in 24-hour format.
# When you use the DownTime parameter on the UNIX TM1 server, you must set the
RunningInBackground parameter to T. If RunningInBackground=F, the server prompts for
confirmation before shutting down and cannot shut down without manual confirmation from an
administrator.
# Type: optional, dynamic
Downtime=


# LicenseMetricTime
# Sets the time of day the TM1 server will generate a License Metric Tag file.
# A License Metric Tag file is an XML file which contains information about license metrics
consumed by software product instances.
# In the case of TM1 server, the reported authorized user metrics are the number of Modelers,
Contributors and Explorers.
# The License Metric Tag files produced by various instances of TM1 servers are collected by
the IBM License Metric Tool (ILMT) agent and aggregated to produce final metrics based on the
TM1 product version.
#
# The format of the LicenseMetricTime parameter is dd:hh:mm where:
#  * dd is the number of days from today that the system will start automatically producing
License Metric tag files. For example, 00 is today, 01 is tomorrow.
#  * hh:mm is the time of day in 24-hour format.
# Type: optional, dynamic
LicenseMetricTime=
```

```
# ProgressMessage
# This parameter determines whether users have the option to cancel lengthy view calculations.
When a user opens a view that takes a significant amount of time to calculate (usually a view
with high levels of consolidation or complex rules), TM1 monitors the progress of the process.
When ProgressMessage=T a dialog box opens that allows the user to Stop Building View.
# Type: Optional, Static
#
# If the user clicks Stop Building View, the view is discarded on the client, but view
calculation continues on the server. In some instances, this can tie up the server.
# If ProgressMessage=F, the Stop Building View option is not offered and the user cannot cancel
lengthy operations. This setting helps avoid potential server tie ups in versions 9.1 SP3
through 9.4.
# When ProgressMessage=T or is not present in the Tm1s.cfg file, the Stop Building View option
opens during lengthy view calculations so the user can cancel the process if necessary. For
versions 9.4 or later, the user can assign a unique Port Number using ClientMessagePortNumber.
This additional port allows these progress messages to travel via a secondary port so that
server processing can continue without tying up thread reserves.
# Note: To avoid potentially tying up servers, TM1 9.1 SP3 through 9.4 have ProgressMessage=F
inserted into the Tm1s.cfg file during server installation. As of TM1 9.4, progress messages
can travel via the secondary port assigned by ClientMessagePortNumber so TM1 9.4 and later have
ProgressMessage=T set by default. This parameter has been tested with Citrix when this feature
was redesigned.
ProgressMessage=True


# AuditLogOn
# Turns audit logging on (T) or off (F).
# Type: Optional, Static
AuditLogOn=F


# AuditLogMaxFileSize
# Indicates the maximum file size that an audit log file can grow to before it is closed and a
new file is created.
# Type: Optional, Dynamic
# This value must include units of KB (kilobytes), MB (megabytes), or GB (gigabytes).
# Default value: 100 MB
# Minimum value: 1 KB
# Maximum value: 2 GB
AuditLogMaxFileSize= 100 MB


# AuditLogUpdateInterval
# Indicates the maximum amount of time, in minutes, that TM1 waits before moving the events
from the temporary audit file into the final audit log.
# Type: Optional, Dynamic
# This value must include units of KB (kilobytes), MB (megabytes), or GB (gigabytes).
# Default value: 60 (sixty minutes)
# Minimum value: 1  (one minute)
AuditLogUpdateInterval=60


#PersistentFeeders
# Turn on Persistent Feeders to make TM1 models load faster
# Type: Optional, Static
PersistentFeeders=F


# ServerCAMURI
# Specifies the URI for the internal dispatcher that the TM1 server should use to connect to
CAM. The URI is specified in the form http[s]://host IP address:port/p2pd/servlet/dispatch.
# Type: Optional, Dynamic
# No default
# For example,
#
# http://10.121.25.121:9300/p2pd/servlet/dispatch
# or
# https://10.121.25.121:9300/p2pd/servlet/dispatch
#ServerCAMURI=http://localhost:9300/p2pd/servlet/dispatch


# ClientCAMURI
# The URI for the IBM Cognos Server IBM Cognos Connection used to authenticate TM1 clients. The
URI is specified in the form http[s]://host/cognos8/cgi-bin/cognos.cgi.
# Type: Optional, Dynamic
# No default
# Example: http://10.121.25.121/cognos8/cgi-bin/cognos.cgi
#ClientCAMURI=http://localhost/ibmcognos/cgi-bin/cognos.cgi
```

```
# ClientPingCAMPassport
# Indicates the interval, in seconds, that a client should ping the CAM server to keep their
passport alive.
# Type: Optional, Static
# If an error occurs or the passport expires the user will be disconnected from the TM1 server.
#ClientPingCAMPassport=900


## Optional CAM parameters

# CAMSSLCertificate
# Type: Optional/Required only when CAM server is configured with SSL, Static
# The full path and name of the SSL certificate to be used when connecting to the internal
dispatcher. For example, C:\AxTM1\Install_Dir\ssl\CognosCert.cer.
#CAMSSLCertificate=


# CAMSSLCertRevList
# CAM SSL Certificate Rev List
#CAMSSLCertRevList=


# Skip SSL CAM Host Check
# Indicates whether the SSL certificate ID confirmation process can be skipped. The default is
FALSE.
# Type: Optional, Static
# Important: This parameter should be set to TRUE only if using a generic certificate for
demonstration purposes.
#SkipSSLCAMHostCheck=TRUE


## Optional LDAP Settings

# PasswordSource
# Determines the source of authentication
# Type: Optional, Static
# Two options:
#   * TM1 (default) - Compares the user-entered password to the password in the TM1 database.
#   * LDAP - Compares the user-entered password to the password stored in on the LDAP server.
#PasswordSource=LDAP


# LDAPPort
# TM1 attempts to bind to an LDAP server on the specified secure port. If you do not enter an
LDAPPort value, TM1 uses the default value, port 636
# Type: Optional, Static
# This must be a secure (SSL) port.
#LDAPPort=636


# LDAPHost
# Uses the domain name or dotted string representation of the IP address of the LDAP server
host. If you do enter a value for LDAPHost, TM1 uses the default value, localhost.
# Type: Optional, Static
#LDAPHost=localhost


# LDAPUseServerAccount
# Determines if a password is required to connect to the server when using LDAP authentication.
# Type: Optional
# To connect directly to the LDAP server using integrated authentication, set this parameter to
T. Set this parameter to T whenever the IBM Cognos TM1 server and LDAP server exist on the same
domain.
# To use a password before connecting, set this parameter to F. When LDAPUseServerAccount is
set to F, you must also set the LDAPPasswordFile and LDAPPasswordKeyFile to successfully
connect to the LDAP server using SSL.
#LDAPUseServerAccount=T


# LDAPSearchBase
# A base distinguished name (DN) in the LDAP directory. For example:
# ou=people,o=company.com
# Specifies the node in the LDAP tree at which the search for the TM1 user being validated
begins. For example, if the distinguished names are of the form:
# uid-bjensen, ou-people, o=company.com
#
# then the search base would be:
# ou-people, o=company.com
# This is a required field if using LDAP Authentication.
#LDAPSearchBase=cn=users,dc=company,dc=com
```

```
# LDAPSearchField
# cn
# The name of the LDAP attribute that is expected to contain the name of the TM1 user being
validated. If you do not enter an LDAPSearchField value, the default value is cn, which is also
the default value for Microsoft Active Directory.
#LDAPSearchField=cn=user


# IPVersion
# Select IPv4 or IPv6
# Sets IP protocol.
# Type: Optional, Static
#
# Three options:
#   * ipv4 - use ipv4 (default)
#   * ipv6 - use ipv6
#   * dual - use ipv6 with support for ipv4
IPVersion=ipv4


# ServerCAMIPVersion
# Server CAM Internet Protocol Version
# Select IPv4 or IPv6
# Sets IP protocol.
# Type: Optional, Static
#
# Two options:
#   * ipv4 - use ipv4 (default)
#   * ipv6 - use ipv6
ServerCAMIPVersion=ipv4


# AllowSeparateNandCRules
# Specifies expressions for N: and C: levels on separate lines using identical AREA
definitions, maintaining the rules conventions of TM1.
# Type: Optional, Static
#
# For example,
#
# ['Budget','Argentina']=N:Expression;
#
# ['Budget','Argentina']=C:Expression;
#
# are both valid rules statements when you include the AllowSeparateNandCRules parameter in the
Tm1s.cfg file and set to T.
#
# This parameter also effects how numeric and string rules are applied to cells. Without this
parameter, the first rule statement that is encountered for a given AREA definition is applied
to the cells within the scope of that definition. If any cell within the AREA definition is
numeric and the rule is a string rule, then the cell is considered not rule-derived because
there was a match that did not apply to the cell.
#
# For example, consider the statements:
#
# ['1 Quarter']=s:'str_value';Not following.
#
# ['1 Quarter']=n:77;
#
# If the AllowSeparateNandCRules parameter is not set (or is set to F), then the first rule
statement will match any cell that uses '1 Quarter' as one of its elements. If the cell is a
string cell, the value of the cell will be set to “str_value”. If the cell is a numeric cell,
the cell will not be considered rule derived, since a match was found (the first rule) but the
rule itself did not apply.
#
# If the AllowSeparateNandCRules parameter is set to T, then string cells which use '1 Quarter'
will be set to "str_value" and numeric cells which use '1 Quarter' will be set to 77.
AllowSeparateNandCRules=T


# DistributedPlanningOutputDir
# Type: Optional, Static
# Cognos Insight distributed clients need information called "tunits".
# This data is created when an application is deployed and is updated as the TM1 server runs.
# The location of the directory used for this purpose is set using this parameter.
# In order to deploy Cognos Insight distributed client applications using this database,
uncomment or add this parameter as DistributedPlanningOutputDir=<location of the tunit
directory>.
# The pathname specified can be absolute, or relative to the TM1 server data directory.
#
# Examples:
#
DistributedPlanningOutputDir=tunit
```

```
    creates a directory "tunit" under the TM1 server data directory
#
DistributedPlanningOutputDir=..\tunit
   creates a directory "tunit" as a sibling to the TM1 server data directory
# DistributedPlanningOutputDir=C:\Program
Files\IBM\cognos\tm1\samples\tm1\GO_New_Stores\tunit      creates a directory "tunit"  at the
specified location.
#DistributedPlanningOutputDir=.\tunit


# ForceReevaluationOfFeedersForFedCellsOnDataChange
# Type: Optional, Static
# When this parameter is set, a feeder statement is forced to be re-evaluated when data changes.
# When the IBM Cognos TM1 server computes feeders, the process can be a "chain" of feeders,
where cell A feeds cell B, and there is a feeder rule for cell B, so that rule runs and feeds
cell C, etc. Feeders for numeric cells are only evaluated when a cell goes from empty to some
non-zero value since any non-zero value in the cell would already have set any feeders.
# There is no need to re-evaluate the feeders when a cell changes from one non-zero value to
another.
# Normally, when evaluating feeders, if a feeder rule is evaluated and the target cell is
already fed, the feeding process stops.
# Feeder rules are not processed any further since the presence of the feeder in the target
cell indicates that the feeder rules for the target cell have already been run, and there is no
need to run them again.
# Consider the following feeder rules:
# ['A']=>['B'];
# The feeder rule for cell B depends on some cube data value:
# [B]=>DB(cube-name,!dim1,DB(cube2-name, ...),!dim2);['C']=>['D'];['X']=>['B'];
# When the feeder rule for B is initially evaluated, the DB(cube2-name, ...) is evaluated to
produce an element name, such as C. Therefore B feeds C and then C feeds D. When that cell X
goes from zero to non-zero. This change also feeds B. But B is already fed, so the feeding
process stops, and the feeder rule for B never evaluates, so any "change" in the output of the
rule, which may come about because of an underlying data change targeted by the DB(…) statement
will not be evaluated. If the config parameter
ForceReevaluationOfFeedersForFedCellsOnDataChange is set, then the presence of a feeder in cell
B will not terminate feeder processing. Rather, the feeder rule for B will run. Because the
feeder rule for B is data dependent, the target for the feeder may be the former C, or may be
some other cell, and that cell will be fed. Note that setting this parameter will force more
feeder evaluations, which may have a performance impact.
# To turn on this parameter set ForceReevaluationOfFeedersForFedCellsOnDataChange=T.
ForceReevaluationOfFeedersForFedCellsOnDataChange=T

#Specifies whether multiple hierarchy creation is enabled or disabled.
#Parameter type: optional (required for multiple hierarchies)
#By default, the EnableNewHierarchyCreation parameter is set to F (false). If you are working
with multiple hierarchies, change the parameter setting to T (true). TM1 Reference lists the
TurboIntegrator functions to manage dimensions and equivalent functions to manage specific
hierarchies within dimensions.
EnableNewHierarchyCreation=T

# TM1 Server HTTP Port
# Sets the server port number for HTTP access. Like PortNumber, it is used to distinguish
between multiple servers running on the same computer. When multiple TM1 servers are installed
on a single computer, each server must use unique values for port number and HTTP port number.
# Type: Optional, Static
# When you install a TM1 server, the default HTTP port number is 12354. Valid port values are
between 5000 and 49151
#
# If the Tm1s.cfg file does not contain the HTTPPortNumber parameter, then you can not use the
OData v4 Compliant REST API.
HTTPPortNumber=8010

#Specifies whether TurboIntegrator debugging capabilities are enabled or disabled.
#Parameter type: optional, dynamic
#By default, the EnableTIDebugging parameter is set to F (false).
#Setting the parameter to T (true) allows you to use any of the TurboIntegrator process
debugging capabilities of the TM1 REST API.
EnableTIDebugging=T
```

Planning Analytics databaseTM1 Database 12 configuration parameters

Planning Analytics database configuration parameters are described here.TM1 Database 12 configuration parameters are described here.

Dynamic parameter

Dynamic parameter values can be edited while the database is running.

The database continuously polls at 60 second intervals to determine if any dynamic parameter values have changed. If the database detects a parameter value change, the new value is applied immediately. Dynamic parameters are identified with a statement describing them as dynamic in this list.

Static parameter

Static parameter values are read only when the database starts. If you want to change a static parameter value, you must shut down the database, edit the parameter value, and then restart the server.

Spaces in values

If a parameter value contains spaces, enclose the parameter values within double quotes.

AdminHost

Specifies the computer name or IP address of the Admin Host on which an Admin Server is running.

Parameter type: required, static

To specify multiple Admin Hosts, separate each host name with a semicolon when running on Microsoft Windows or with a colon when running on a UNIX. For example:

- Use the format AdminHost=*hostname1;hostname2* on a Windows IBM TM1 Server.
- Use the format AdminHost=*hostname1:hostname2* on a UNIX IBM TM1 Server.

Some other examples include:

- `AdminHost=boston;newyork`
- `AdminHost=192.168.1.17;192.168.1.22`
- `AdminHost=boston;192.168.1.17;192.168.1.22;myserver;192.168.1.40`

Note: The string specifying the admin host or hosts is limited to 1020 characters or bytes.

AllowReadOnlyChoreReschedule

Provides users with READ access to a chore, and the ability to activate, deactivate, and reschedule chores.

Parameter type: optional, static

When the line AllowReadOnlyChoreReschedule is set to TRUE for a TM1 database, users with READ access to chores can modify the schedule of a chore. Users that have only read access cannot modify the processes that are assigned to the chore.

AllowSeparateNandCRules

When enabled, this parameter lets you specify rule expressions for N: and C: levels on separate lines using identical AREA definitions.

Parameter type: optional, static

For example,

```
['Budget','Argentina']=N:Expression;
```

```
['Budget','Argentina']=C:Expression;
```

are both valid rules statements when you include the AllowSeparateNandCRules=T parameter in your Planning Analytics database configuration.

This parameter also effects how numeric and string rules are applied to cells. Without this parameter, the first rule statement that is encountered for a given AREA definition is applied to the cells within the scope of that definition. If any cell within the AREA definition is numeric and the rule is a string rule, then the cell is considered not rule-derived because there was a match that did not apply to the cell.

For example, consider the statements:

```
['1 Quarter']=s:'str_value';Not following.
```

```
['1 Quarter']=n:77;
```

If the AllowSeparateNandCRules parameter is not set (or is set to F), then the first rule statement will match any cell that uses '1 Quarter' as one of its elements. If the cell is a string cell, the value of the cell will be set to 'str_value'. If the cell is a numeric cell, the cell will not be considered rule derived, since a match was found (the first rule) but the rule itself did not apply.

If the AllowSeparateNandCRules parameter is set to T, then string cells which use '1 Quarter' will be set to 'str_value' and numeric cells which use '1 Quarter' will be set to 77.

To set the parameter to T, add the following line to Tm1s.cfg:

```
AllowSeparateNandCRules=T
```

AllRuleCalcStargateOptimization

The AllRuleCalcStargateOptimization parameter can improve performance in calculating views that contain only rule-calculated values. In some unique cases, enabling this parameter can result in performance degradation, so you should test the effect of the parameter in a development environment before deploying to your production environment.

Parameter type: optional, static

Important: AllRuleCalcStargateOptimization is applicable only to models that do not use alternate hierarchies. Enabling this parameter for models that **do** use alternate hierarchies will cause null suppression and other undesirable effects.

Typically, Planning Analytics performs calculations for standard consolidations and then calculates values for rule-based consolidations, which may end up overriding values in the standard consolidations. The AllRuleCalcStargateOptimization parameter provides optimization that first checks if every value in the view is rule-calculated and then proceeds as follows:

- If every value in the view is rule-calculated, then Planning Analytics skips the unnecessary calculations for standard consolidations and just performs the rule-calculated consolidations.
- If the view contains even a single value which is not rule-calculated, then this optimization parameter will have no effect.
- If the view includes alternate hierarchies, then this optimization parameter will have no effect.

When this parameter is set to True, some additional processing will take place for every view that is requested to first check if the view contains only rule-calculated values. For most views, this additional processing is minimal since the optimization is stopped after the first value in the view is found to be not rule-calculated.

To enable this parameter, set the parameter's value to T in the Planning Analytics database configuration, as follows:

```
AllRuleCalcStargateOptimization=T
```

The default setting is disabled (F).

ApplyMaximumViewSizeToEntireTransaction

Applies MaximumViewSize to the entire transaction instead of to individual calculations.

Parameter type: optional, dynamic

By default MaximumViewSize checks individual view processing. For example, if 10 views are processed in a single transaction, the threshold is crossed only if the processing of any single view crosses the threshold. See "MaximumViewSize " on page 273.

With this parameter set to True, the cumulative memory usage of all views processed in a single transaction is compared against the threshold value. This allows the memory size threshold to catch more transactions that consume large amounts of memory.

Note: TurboIntegrator process execution counts as a single transaction, including all child processes.

```
ApplyMaximumViewSizeToEntireTransaction=T
```

Default value is F.

AuditLogMaxFileSize

Indicates the maximum file size that an audit log file can grow to before it is closed and a new file is created.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, dynamic

This value must include units of KB (kilobytes), MB (megabytes), or GB (gigabytes). For example, to limit the log file size to 100 MB, enter the following:

`AuditLogMaxFileSize=100 MB`

The range of values include:

- Default value: 100 MB
- Minimum value: 1 KB
- Maximum value: 2 GB

AuditLogMaxQueryMemory

Indicates the maximum amount of memory that the Planning Analytics database can use when running an audit log query and retrieving the set of results.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, dynamic

This value must include units of KB (kilobytes), MB (megabytes), or GB (gigabytes). For example:

`AuditLogMaxQueryMemory=100 MB`

The range of values include:

- Default value: 100 MB
- Minimum value: 1 KB
- Maximum value: 2 GB

AuditLogOn

This parameter turns audit logging on (T) or off (F).

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, dynamic

To enable audit logging, set `AuditLogOn=T`.

To disable audit logging, set `AuditLogOn=F`.

The default setting is F.

AuditLogUpdateInterval

Indicates the maximum amount of time, in minutes, that the Planning Analytics database waits before moving the events from the temporary audit file into the final audit log.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, dynamic

For example:

`AuditLogUpdateInterval=60`

The default value is 60 (sixty minutes).

The minimum value is 1 (one minute).

Note: You can manually update the audit log with the latest events anytime you want by using the Process Audit Log Events command in Server Explorer. For details, see "Updating the Audit Log with the Latest Events" in *TM1 Operations*.

AutomaticallyAddCubeDependencies

Determines if cube dependencies are set automatically or if you must manually identify the cube dependencies for each cube.

Parameter type: optional, static

The Planning Analytics database establishes dependencies so it can properly invalidate cube calculation caches when data in cubes is changed. For more details, see *Understanding Cube Dependency* in *TM1 Operations*.

When set to true (the default), rule-based inter-cube DB(...) dependencies are detected and set automatically at server startup time. Further, after a rule edit, save, or recompile, the dependencies expressed in that rule, whether from DB(), ATTRS(), or ATTRN() functions, are automatically re-established.

When set to false, rule based inter-cube DB(...) dependencies are not detected and are set at server startup time. Dependencies are established when a query is run. This can cause a query to block others because of a new dependency.

```
AutomaticallyAddCubeDependencies=F
```

Default value: T

CacheFriendlyMalloc

Allows for memory alignment that is specific to the IBM Power Platform.

Parameter type: optional, static

Testing has shown that enabling this parameter provides the most benefit for high user count usage scenarios. Single or low user count usage scenarios may see little to no benefit. By default, CacheFriendlyMalloc=F.

To enable the option, add the following line to your tm1s.cfg file:

```
CacheFriendlyMalloc=T
```

CalculationThresholdForStorage

Defines a minimum number of rule calculations required for a single cell or Stargate view, beyond which the Planning Analytics database stores the calculations for use during the current server session.

Parameter type: optional, dynamic

For example, when a user requests rule-derived values from the Planning Analytics database, either from a single cell or a Stargate view, the server usually has to perform multiple rule calculations to arrive at the requested rule-derived values.

CalculationThresholdForStorage has a direct effect on memory consumption and performance. A high parameter value results in decreased memory consumption and slower performance. A low parameter value results in increased memory consumption and faster performance.

If you do not include CalculationThresholdForStorage in the Planning Analytics database configuration, the default calculation threshold is 50.

CAMPortalVariableFile

The path to the `variables_TM1.xml` file in your IBM Cognos installation.

This parameter is not applicable to TM1 Database 12.

Parameter type: Required for IBM Cognos interoperability, static.

The CAMPortalVariableField parameter is required only when using IBM Cognos Analytics with Planning Analytics TM1 Web and the Planning Analytics database.

Set this parameter with a relative path as follows:

`CAMPortalVariableFile=`**`portal\variables_TM1.xml`**

Note: The exact file location on the IBM Cognos Analytics server is: *`Cognos_location`*`\templates\ps\portal\variables_TM1.xml`.

CAMUseSSL

Specifies that all communications between Planning Analytics and the IBM Cognos Analytics server must use SSL.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, static

Default value: False

CheckCAMClientAlias

When audit logging is enabled with the **AuditLogOn** parameter, the **CheckCAMClientAlias** parameter determines whether user modifications within Cognos Authentication Manager (CAM) groups are written to the audit log.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, dynamic

When `CheckCAMClientAlias=T`, user modifications within Cognos Authentication Manager (CAM) groups are written to the audit log. This is the default behavior.

When `CheckCAMClientAlias=F`, user modifications within Cognos Authentication Manager (CAM) groups are not written to the audit log.

CheckFeedersMaximumCells

Limits the number of cells checked by the Check Feeders option in the Cube Viewer.

The CheckFeedersMaximumCells is an optional Planning Analytics database configuration parameter. If you do not include this parameter in your configuration, Check Feeders checks 3,000,000 cells, by default.

Parameter type: optional, dynamic

When Planning Analytics database checks feeders from a highly consolidated cell, it must check all intersections that apply to the cell. In large applications, the Planning Analytics database will be unavailable for a significant amount of time while Planning Analytics database is checking all intersections.

To limit the number of cells checked when using Check Feeders (which in turn limits the amount of time the Planning Analytics database is unavailable), add CheckFeedersMaximumCells to Tm1s.cfg and set the parameter to the number of cells you want to check.

For example, to limit Check Feeders to 1,000,000 cells, enter the following line:

```
CheckFeedersMaximumCells=1,000,000
```

ClientCAMURI

The URI for the IBM Cognos Server IBM Cognos Connection uses to authenticate Planning Analytics clients.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, dynamic

The URI is specified in the form `http[s]://<host>/<cognos_location>/cgi-bin/cognos.cgi`.

For example, `http://10.121.25.121/ibmcognos/cgi-bin/cognos.cgi`

ClientExportSSLSvrCert

Specifies whether a Planning Analytics client should retrieve the certificate authority certificate, which was originally used to issue the Planning Analytics database certificate, from the Microsoft Windows certificate store.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional (required for SSL), static

If `ClientExportSSLSvrCert=T`, the certificate authority certificate is exported from the certificate store on the client computer when requested by the Planning Analytics client.

Default value: F

ClientExportSSLSvrKeyID

Specifies the identity key used by a Planning Analytics client to export the certificate authority certificate, which was originally used to issue the Planning Analytics database certificate, from the Microsoft Windows certificate store.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional (required for SSL), static

ClientMessagePortNumber

Identifies a secondary port used to accept client messages concerning the progress and ultimate cancellation of a lengthy operation without tying up thread reserves.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, static for changes, dynamically set

If no port number is specified in the configuration file, the port number is dynamically chosen and set at server startup. However, it cannot be changed while the server is running.

This additional port ensures that other server requests can continue to process while waiting for a cancellation from the user.

By default, this port number is automatically and dynamically assigned when the Planning Analytics database starts. You do not have to set ClientMessagePortNumber to a specific number unless firewalls or other network issues require the listener port to be a well-known number.

CAUTION: If you choose to set a specific value for the ClientMessagePortNumber parameter, instead of having it dynamically assigned, be sure to assign unique port numbers for all the Planning Analytics databases and client message ports you are using. If you have two servers running on the same machine using the same port number, the message activity may cause a system conflict or hang.

See also, "PortNumber" on page 282 and "ProgressMessage" on page 283.

ClientPingCAMPassport

Indicates the interval, in seconds, that a client should ping the Cognos Authentication Management server to keep their passport alive.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, dynamic

If an error occurs or the passport expires the user will be disconnected from the Planning Analytics database.

Default value: 900

ClientPropertiesSyncInterval

Specifies the frequency (in seconds) at which client properties are updated in the `}ClientProperties` control cube. Set to 1800 seconds to update cube every 30 minutes.

This parameter is not applicable to TM1 Database 12.

Frequent updating can cause unnecessary consumption of CPU time and may cause users from connecting/disconnecting until operation completes.

Parameter type: optional, dynamic

ClientVersionMaximum

Specifies the maximum client version that can connect to the Planning Analytics database.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, dynamic

The ClientVersionMaximum parameter value is expressed as a version string using the following format:

m.n.ttttt.iiiii

Where:

m = major release number

n = minor release number

ttttt = maintenance release number

iiiii = interim fix number

Using this format, setting `ClientVersionMaximum = 11.8.02000.7` specifies that the maximum client version that can connect to the database is 11.8.0. Any digits after the maintenance release number are ignored.

If your Planning Analytics database configuration does not include a ClientVersionPrecision parameter value, only the major release number, minor release number, and maintenance release number are used to enforce compatibility between client and server.

If ClientVersionMaximum is not explicitly set, the default value is equal to the currently installed database version.

Valid parameter values fall within the range *x*`00` up to the currently installed server version, where *x* is the major release number of the currently installed Planning Analytics database. For example, valid parameter values for Planning Analytics database 9.0 SP3 fall within the range 900 - 903.

You cannot set ClientVersionMaximum to a value greater than the currently installed database version. You cannot connect newer client versions to older database versions.

Finding the Planning Analytics build number

To find the build number for the Planning Analytics version that you are using:

1. Go to `\tm1_64\bin64\`.
2. Open the `tm1appapi-winx64h-app-##.#.######.#` file.

The numbers in the file name refer to the build number. For example, in `tm1appapi-winx64h-app-11.8.02000.7`, the build number is 11.8.02000.7.

ClientVersionMinimum

Specifies the minimum client version that can connect to the Planning Analytics database.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, dynamic

The ClientVersionMinimum parameter value is expressed as a version string using the following format:

m.n.ttttt.iiiii

Where:

m = major release number

n = minor release number

ttttt = maintenance release number

iiiii = interim fix number

Using this format, setting `ClientVersionMinimum = 11.8.02000.7` specifies that the minimum client version that can connect to the database is 11.8.0. Any digits after the maintenance release are ignored.

If your Planning Analytics database configuration does not include a ClientVersionPrecision parameter value, only the major release number, minor release number, and maintenance release number are used to enforce compatibility between client and database.

If the ClientVersionMinimum parameter is not explicitly set, the default value is 8.4.00000, which corresponds to version 8.4.

You should not set ClientVersionMinimum to a value lower than the major release number of the currently installed Planning Analytics database. There is no upper limit for ClientVersionMinimum. However, if ClientVersionMinimum is larger than ClientVersionMaximum, only clients with a version number equal to ClientVersionMaximum can connect to the database.

Finding the Planning Analytics build number

To find the build number for the Planning Analytics version that you are using:

1. Go to `\tm1_64\bin64\`.

2. Open the `tm1appapi-winx64h-app-##.#.#####.#` file.

The numbers in the file name refer to the build number. For example, in `tm1appapi-winx64h-app-11.8.02000.7`, the build number is 11.8.02000.7.

ClientVersionPrecision

This parameter lets you more precisely identify the minimum and maximum versions of clients that can connect to the Planning Analytics database.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, dynamic

The ClientVersionMinimum and ClientVersionMaximum parameter values are expressed as a version string using the following format:

m.n.ttttt.iiiii

Where:

m = major release number

n = minor release number

ttttt = maintenance release number

iiiii = interim fix number

Using this format, the version string 11.8.02000.7 indicates major release 11, minor release 8, and maintenance release 0.

If ClientVersionPrecision is not set in the Planning Analytics database configuration or if it is set to 0, only the major release number, minor release number, and maintenance release number are used to enforce compatibility between client and database. In this case, any client from major release 11, minor release 8, maintenance release 0 and more recent can connect to the database.

You can enforce more precise database and client version compatibility by adding ClientVersionPrecision to the Planning Analytics database configuration and setting the parameter to one of the following values.

- 1 - Indicates that the maintenance number will be enforced, but not the interim fix number.
- 2 - Indicates that both the maintenance number and interim fix number will be enforced.

Examples

If ClientVersionMinumum = 11.8.02000.7 and ClientVersionPrecision = 1, only clients from major release 11, minor release 8, maintenance pack 0 or later can connect to the database.

If ClientVersionMinumum = 11.8.02000.7 and ClientVersionPrecision = 2, only clients from major release 11, minor release 8, maintenance pack 0, and interim fix 7 or later can connect to the database. In this case, the interim fix numbers are enforced when determining database/client compatability.

Finding the Planning Analytics build number

To find the build number for the Planning Analytics version that you are using:

1. Go to `\tm1_64\bin64\`.
2. Open the `tm1appapi-winx64h-app-##.#.#####.#` file.

The numbers in the file name refer to the build number. For example, in `tm1appapi-winx64h-app-11.8.02000.7`, the build number is 11.8.02000.7.

CognosMDX.AggregateByAncestorRef

When possible, replaces aggregation over a member set with a reference to an ancestor, if the aggregated member set comprises a complete set of descendants and all members have the weight 1.

This parameter is not applicable to TM1 Database 12.

For example, the aggregation `aggregate(children(<Member>))` might be replaced with a reference to `<Member>`.

Parameter type: optional, static

This parameter is applicable only when using TM1 with IBM Cognos Analytics.

To enable **CognosMDX.AggregateByAncestorRef**, add the following line to the `tm1s.cfg` file:

```
CognosMDX.AggregateByAncestorRef=true
```

Default value: false

CognosMDX.CellCacheEnable

Allows the IBM Cognos MDX engine to modify Planning Analytics database consolidation and calculation cell cache strategies.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, static

This parameter is applicable only when using TM1 with Cognos Analytics.

Default value: true

CognosMDX.PrefilterWithPXJ

Expands the data source provider cross join approach to nested filtered sets.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, static

This parameter is applicable only when using TM1 with IBM Cognos Analytics.

This parameter is active only in the following cases: ·

- CognosMDX.UseProviderCrossJoinThreshold has a value greater than 0 in the Planning Analytics database configuration
- **UseProviderCrossJoinThreshold** has a value greater than 0 in the Cognos Analytics `qfs_config.xml` configuration file.

To enable **CognosMDX.PrefilterWithPXJ**, add the following line to your Planning Analytics database configuration:

```
CognosMDX.PrefilterWithPXJ=true
```

Default value: false

CognosMDX.SimpleCellsUseOPTSDK

Applies IBM Cognos MDX engine consolidation and calculation cell cache strategies to all cells in query results.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, static

This parameter is applicable only when using Planning Analytics database with Cognos Analytics.

When CognosMDX.SimpleCellsUseOPTSDK is not enabled, consolidation and calculation cell cache strategies are applied only to query result cells associated with calculated members.

Default value: true

CognosMDX.UseProviderCrossJoinThreshold

Applies the data source provider cross join strategy, even if it is not explicitly enabled in IBM Cognos Analytics.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, static

This parameter is applicable only when using Planning Analytics database with Cognos Analytics.

When you enable **CognosMDX.UseProviderCrossJoinThreshold**, this has the same effect as enabling the **UseProviderCrossJoinThreshold** parameter in the `qfs_config.xml` file of Cognos Analytics.

UseProviderCrossJoinThreshold controls whether combinations of members on an edge, which have no measure values, are retrieved from the Planning Analytics database. **UseProviderCrossJoinThreshold** is enabled when it has a value greater than 0.

Note: If **UseProviderCrossJoinThreshold** is enabled in the Cognos Analytics `qfs_config.xml`, it takes precedence over the **CognosMDX.UseProviderCrossJoinThreshold** parameter in Planning Analytics database configuration.

To enable **CognosMDX.UseProviderCrossJoinThreshold**, add it to the Planning Analytics database configuration and specify a value greater than 0, for example:

```
CognosMDX.UseProviderCrossJoinThreshold=1000
```

Default value: 0

CreateNewCAMClients

The CreateNewCAMClients server configuration parameter determines how the Planning Analytics database configuration handles an attempt to log on to the server with CAM credentials in the absence of a corresponding Planning Analytics client.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, dynamic

When `CreateNewCAMClients=T` and a logon is attempted with a valid set of CAM credentials, but a corresponding TM1 client does not exist, the TM1 client is created during the logon. This is the default behavior when CreateNewCAMClients is not set in the Planning Analytics database configuration.

When `CreateNewCAMClients=F` and a logon is attempted with a valid set of CAM credentials, but a corresponding Planning Analytics client does not exist, the Planning Analytics client is *not* created and the logon is rejected.

Through the C API, the error code is SystemServerClientNotFound. Through the HTTP endpoint, a 401 Unauthorized error is returned, with authentication information dependent on server configuration settings. Additionally, when the logon is rejected a log message is printed to the CAMSecurity.ClientCreation logger at the WARN level, if this level of logging is enabled. The log message includes the text "CAM Client not found, and not created due to CreateNewCAMClients config setting."

DataBaseDirectory

Specifies the data directory from which the database loads cubes, dimensions, and other objects.

This parameter is not applicable to TM1 Database 12.

You can list multiple data directories by separating them with semicolons.

Important: The Planning Analytics database supports multiple data directories, but Planning Analytics Administration in Planning Analytics Workspace Local does not. If you are configuring your database for Planning Analytics Workspace Local, you must specify a single database.

Parameter type: required, static

DefaultMeasuresDimension

Identifies if a measures dimension is created. Planning Analytics database does not require that a measures dimension be defined for a cube. You can optionally define a measures dimension by modifying the cube properties.

For more information, see the topic, "}CubeProperties", in *TM1 Operations*.

Parameter type: optional but some OLAP applications may require this parameter,static

Some OLAP applications do require that a measures dimension be present in all cubes, and may fail if such a dimension is not present. To accommodate these applications, set `DefaultMeasureDimension=T` to instruct the Planning Analytics database to automatically define the last dimension in a cube as the measures dimension when a new cube is created on the Planning Analytics database.

If DefaultMeasureDimension is set to F or is omitted from Planning Analytics database configuration, a measures dimension is not defined for when a cube is created.

DisableMemoryCache

Disables the memory cache used by the Planning Analytics database memory manager.

Parameter type: optional, static

Enable this parameter only to debug memory leaks. When you enable this parameter, there might be a decrease in database performance.

For example, when `DisableMemoryCache=T` is set it disables the memory cache used by Planning Analytics memory manager. The default setting is `DisableMemoryCache=F`.

DownTime

Specifies a time when the database will come down automatically.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, dynamic

The format of the DownTime parameter is *dd:hh:mm* where:

- *dd* is the number of days from today. (For example, 00 is today, and 01 is tomorrow.)
- *hhmm* is the time of day in 24-hour format.

For example, `DownTime = 01:03:30` specifies that you want to bring the database down on the following day at 3:30 in the morning.

The DownTime parameter is not available when you run the Planning Analytics database as a Windows service.

When you use the DownTime parameter on a Planning Analytics database on UNIX, you must set the RunningInBackground parameter to T. If `RunningInBackground=F`, the database prompts for confirmation before shutting down and cannot shut down without manual confirmation from an administrator.

EnableNewHierarchyCreation

Specifies whether multiple hierarchy creation is enabled or disabled.

Parameter type: optional (required for multiple hierarchies), static

By default, the **EnableNewHierarchyCreation** parameter is set to F (false). If you are working with multiple hierarchies, change the parameter setting to T (true). *TM1 Reference* lists the TurboIntegrator functions to manage dimensions and equivalent functions to manage specific hierarchies within dimensions.

EnableSandboxDimension

Specifies whether the virtual sandbox dimension feature is enabled.

Parameter type: optional, dynamic

By default, the **EnableSandboxDimension** parameter is set to `False`.

A sandbox property (**IncludeInSandboxDimension**) was introduced to specify whether a sandbox is included in the virtual sandbox dimension. For older sandboxes, the value of the **IncludeInSandboxDimension** property is false. Including sandboxes in the virtual sandbox dimension allows users to compare multiple sandbox scenarios in a single view. For more information, see **IncludeInSandboxDimension** in the Sandbox entity in the *TM1 REST API* documentation on IBM Knowledge Center.

EnableTIDebugging

Specifies whether TurboIntegrator debugging capabilities are enabled or disabled.

Parameter type: optional, dynamic

By default, the **EnableTIDebugging** parameter is set to F (false).

If you want to use any of the TurboIntegrator process debugging capabilities of the TM1 REST API, you must change the parameter setting to T (true). Similarly, you must set the parameter to T if you want to use the TurboIntegrator Debugger utility.

Important: Debugging TurboIntegrator processes can consume significant system resources. It is recommended that you set **EnableTIDebugging=T** only while debugging processes in a development environment and that the parameter not be enabled in a production environment.

EventLogging

Indicates whether the event logger is turned on.

Critical events are logged in the event log file. The file is expected to be consumed by third-party tools.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, dynamic

Default: T

If the `EventLogging` parameter is set to F, then the event log file is not written to.

To set the parameter to T, add the following setting in Planning Analytics database configuration:

```
EventLogging=T
```

EventScanFrequency

Specifies the period to check the collection of threads, where 1 is the minimum number and 0 disables the scan.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, dynamic

Default: 1(s)

To disable event scanning, add the following setting to Planning Analytics database configuration:

```
EventScanFrequency=0
```

EventThreshold.PooledMemoryInMB

Specifies the threshold for which a message is printed for the event that the database's pooled memory exceeds a certain value.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, dynamic

The memory footprint of every model is different. This parameter is set to 0 (disabled) by default and must be adjusted by the administrator of the Planning Analytics database.

Default: 0

To enable the threshold, add the following setting to Planning Analytics database configuration:

```
EventThreshold.PooledMemoryInMB=0
```

EventThreshold.ThreadBlockingNumber

Indicates that a warning is printed when a thread blocks at least the specified number of threads.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, dynamic

Default: 5

To enable the threshold, add the following setting to Planning Analytics database configuration:

```
EventThreshold.ThreadBlockingNumber=5
```

EventThreshold.ThreadRunningTime

Indicates that a warning is printed when a thread has been running for the specified length of time.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, dynamic

Default: 600 (s)

To set the number of threads, add the following setting to Planning Analytics database configuration:

:

```
EventThreshold.ThreadRunningTime=600
```

EventThreshold.ThreadWaitingTime

Indicates that a warning is printed when a thread has been blocked by another thread for the specified length of time.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, dynamic

Default: 20 (s)

To set the waiting time, add the following setting to Planning Analytics database configuration:

```
EventThreshold.ThreadWaitingTime=20
```

FileRetry.Count

Specifies the number of retry attempts.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, dynamic

By default, the Planning Analytics database will shutdown when transaction log updates fail. Specifying **FileRetry.FileSpec** defers the database shutdown while the database attempts to reestablish a connection. **FileRetry.Count** defines the number of retry attempts as an integer value. If the network failure persists after the specified number of retries, Planning Analytics database will self-terminate.

Default value: 5

FileRetry.Delay

Specifies the time delay between retry attempts.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, dynamic

By default, the Planning Analytics database will shutdown when transaction log updates fail. Specifying **FileRetry.FileSpec** defers the server shutdown while the server attempts to reestablish a connection. **FileRetry.Delay** defines the delay (in milliseconds) between retry attempts. If the network failure persists after the specified number of retries, Planning Analytics database will self-terminate.

Default value: 2000

FileRetry.FileSpec

Network issues can cause transaction log updates to fail, which might force a Planning Analytics database shutdown. This configuration parameter specifies the directory paths of the affected log files.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, dynamic

By default, the Planning Analytics database shuts down when transaction log updates fail. Specifying **FileRetry.FileSpec** defers the database shutdown while the database attempts to reestablish a connection.

The number of retry attempts and delay between attempts is determined by **FileRetry.Count** and **FileRetry.Delay**, respectively. If the network failure persists after the specified number of retries, Planning Analytics database will self-terminate.

As of IBM Planning Analytics Local version 2.0.3, if this setting is not specified in Planning Analytics database configuration, the retry logic is applied to all files in the logs directory only.

To turn off the retry logic, specify one of the following options in the Planning Analytics database configuration:

- `FileRetry.FileSpec=""` (explicitly setting the value to the empty value)
- `FileRetry.Count=0`

Use a semi-colon delimiter to specify multiple paths. For example,

1. FileRetry.FileSpec=c:\production\model\Logs

   On a write failure, the retry logic is applied to all files in the "c:\production\model\Logs" directory and any sub-directories.
2. FileRetry.FileSpec=c:\production\model\Logs;\\network.ibm.com\production\Logs

   On a write failure, the retry logic is applied to all files in the "c:\production\model\Logs" directory and the network share of \\network.ibm.com\production\Logs and any sub-directories.

Note: Messages are written to the server log at the WARN level when this logic is enabled.

- "Error writing to <FILENAME>, retry in progress." is written when a write operation fails and a retry attempt is in progress.
- "Error writing to <FILENAME>, retry attempt failed." is written when the retry attempt fails.

FIPSOperationMode

Controls the level of support for Federal Information Processing Standards (FIPS).

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, static

Allowed values:

- 1: FIPS 140-2 level 1 approved ciphers and operation
- 2: FIPS 140-2 level 1 approved ciphers
- 3: Disabled

Default value: 2

To change the level of support for FIPS to level 1 approved ciphers and operations, for example, add the following line to Planning Analytics database configuration:

```
FIPSOperationMode=1
```

Important: Due to a security update included in Planning Analytics 2.0.19, customers who have the non-default `FIPSOperationMode=1` set in their `Tm1s.cfg` should remove or deprioritize the TLS RSA CipherSuites for a successful handshake to occur. This includes all CipherSuites that are prefixed with TLS_RSA_. This also means that TLS V1.2 or later must be enabled, as TLS 1.1 and prior do not support alternatives. In the case of TLS V1.2, the ECDHE CipherSuites must also be enabled.

GSK_ALLOW_NONCRITICALBASICCONSTRAINT

Use this parameter to enable support for custom SSL certificates with non-critical constraints.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, dynamic

Default: F

If your custom SSL certificates contain non-critical constraints, stricter certificate acceptance criteria introduced in Planning Analytics 2.0.9.17 can result in certificate rejection. This configuration parameter lets you successfully use your custom SSL certificates containing non-critical constraints.

Add **`GSK_ALLOW_NONCRITICALBASICCONSTRAINT=T`** to your `Tm1s.cfg` file to allow certificates with non-critical constraints.

If **`GSK_ALLOW_NONCRITICALBASICCONSTRAINT`** is not explicitly set in the `Tm1s.cfg` file, the default value is F, which results in the rejection of SSL certificates containing non-critical constraints.

ForceReevaluationOfFeedersForFedCellsOnDataChange

When this parameter is set, a feeder statement is forced to be re-evaluated when data changes.

Parameter type: optional, static

When the Planning Analytics database computes feeders, the process can be a "chain" of feeders, where cell A feeds cell B, and there is a feeder rule for cell B, so that rule runs and feeds cell C, etc. Feeders for numeric cells are evaluated only when a cell goes from empty to some non-zero value since any non-zero value in the cell would already have set any feeders.

There is no need to re-evaluate the feeders when a cell changes from one non-zero value to another.

Normally, when evaluating feeders, if a feeder rule is evaluated and the target cell is already fed, the feeding process stops.

Feeder rules are not processed any further since the presence of the feeder in the target cell indicates that the feeder rules for the target cell have already been run, and there is no need to run them again.

Consider the following feeder rules:

```
['A']=>['B'];
```

The feeder rule for cell B depends on some cube data value:

```
[B]=>DB(cube-name,!dim1,DB(cube2-name,…),!dim2);['C']=>['D'];['X']=>['B'];
```

When the feeder rule for B is initially evaluated, the `DB(cube2-name,…)` is evaluated to produce an element name, such as C. Therefore B feeds C and then C feeds D. When that cell X goes from zero to non-zero, this change also feeds B. But B is already fed, so the feeding process stops, and the feeder rule for B never evaluates, so any "change" in the output of the rule, which may come about because of an underlying data change targeted by the `DB(…)` statement will not be evaluated. If the parameter `ForceReevaluationOfFeedersForFedCellsOnDataChange` is set, then the presence of a feeder in cell B will not terminate feeder processing. Rather, the feeder rule for B will run. Because the feeder rule for B is data dependent, the target for the feeder may be the former C, or may be some other cell, and that cell will be fed. Note that setting this parameter will force more feeder evaluations, which may have a performance impact.

To turn on this parameter set `ForceReevaluationOfFeedersForFedCellsOnDataChange=T` in Planning Analytics database configuration.

HTTPOriginAllowList

This parameter sets a comma-delimited list of external origins (URLs) that are trusted and can access the Planning Analytics database.

Parameter type: optional, dynamic

If the `HTTPOriginAllowList` parameter is not included in Planning Analytics database configuration, requests from all origins are trusted and granted access to the Planning Analytics database, subject to authentication.

However, when this parameter is set in Planning Analytics database configuration, any incoming request with an Origin header is validated against the URLs specified in `HTTPOriginAllowList`. An exact match between the Origin header in the incoming request and a URL in `HTTPOriginAllowList` must be validated before the incoming request is granted access to the Planning Analytics database.

The syntax for an Origin header includes the scheme, hostname, and (optionally) the port that caused the request.

`Origin: <scheme>://<hostname>:<port>`

scheme

The protocol that is used. Usually, it is the HTTP or HTTPS protocol, but `ftp`, `ws`, `wss`, or `gopher` are also valid.

hostname

The domain name or the IP address of the origin server.

port

The port number on which the server is listening.

Port is optional in an Origin header, but if it is present in the header it must also be included in the URL set in `HTTPOriginAllowList` for the request to succeed.

Accordingly, the URLs specified in `HTTPOriginAllowList` use the same syntax of `<scheme>://<hostname>:<port>`. For example:

```
HTTPOriginAllowList=https://www.ibm.com, http://www.example.com:80, https://192.0.2.10
```

HTTPPortNumber

Sets the port number on which the Planning Analytics database listens for incoming HTTP(S) requests.

This parameter is not applicable to TM1 Database 12.

Parameter type: required, static

The Planning Analytics database configuration services the REST API using this HTTP(S) channel. The database accepts either standard HTTP or SSL secured HTTPS connections depending on the **UseSSL** parameter (see "UseSSL" on page 297). If **UseSSL** is set to T, switching the use of SSL on, then the server will accept only HTTPS connections. If **UseSSL** is set to F, the server will accept unsecured, HTTP connections.

Valid port numbers are between 1 and 65535.

If **HTTPPortNumber** is not defined in your Planning Analytics database configuration, then port number "5001" will be assigned automatically.

Note: Port numbers must be unique across *all* services running on a computer, not just across Planning Analytics databases and not just across the HTTP ports of Planning Analytics databases.

HTTPRequestEntityMaxSizeInKB

This Planning Analytics database configuration parameter sets the maximum size for an HTTP request entity that can be handled by Planning Analytics.

Parameter type: optional, dynamic

By default, Planning Analytics can handle a request entity (URI + headers) of up to 32 KB. In some circumstances, particularity in the case of large authentication headers, a request entity can exceed the 32 KB limit. When this happens, you receive a `413 Request Entity Too Large` error.

To successfully handle larger HTTP request entities, set `HTTPRequestEntityMaxSizeInKB = max_entity_size` in the Planning Analytics database configuration.

max_entity_size is a value, expressed in KB, sufficient to handle the largest request entity you anticipate receiving. The maximum parameter value is 1024.

As a general rule, increase the size in increments of 32 KB to suit your application needs. While the limit is 1024, setting to the maximum value when a smaller size would suffice is an inefficient use of resources and is not recommended.

HTTPSessionTimeoutMinutes

Sets the timeout value for authentication sessions for the Planning Analytics REST API.

Parameter type: optional, dynamic

When you use the TM1 REST API, your application needs to authenticate with the Planning Analytics database. This parameter sets the timeout, in minutes, for this authentication. If a session times out, requests made with the old session ID return `401 Unauthorized`.

The default value is 20.

IdleConnectionTimeOutSeconds

Specifies a timeout limit for idle client connections, in seconds.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, dynamic

For example, if you include the following line in your Planning Analytics database configuration, the database disconnects idle client connections after 900 seconds.

```
IdleConnectionTimeOutSeconds=900
```

IndexStoreDirectory

Designates a folder to store index files, including bookmark files.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, static

By default, this parameter is undefined and bookmark (*.bm) files will appear in the same folder as the corresponding main file.

IntegratedSecurityMode

This parameter sets the user authentication mode to be used by the Planning Analytics database.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, dynamic

Although the parameter name focuses on Integrated Security Mode, the security modes are used to set other kinds of security.

Note: If you change the security mode without restarting the Planning Analytics database., the change applies only to new client connections. If you want to ensure that all clients are authenticated with the new security mode, all clients must be logged off by the administrator.

Use the following format to set this parameter:

`IntegratedSecurityMode=`*x*

where *x* can be a value for one of the following security modes.

Note: Security mode 5 is the only mode supported for Planning Analytics Workspace on Cloud.

Table 45. Security modes

Security Mode	Description
1	The server uses secure mode (standard Planning Analytics security). With this authentication, the Planning Analytics database. checks the user name and password against the user names and passwords in the Planning Analytics database.
2	This mode allows you to switch back and forth between integrated login and native Planning Analytics security.
3	The database uses Integrated Login. Integrated Login uses Microsoft Windows network authentication to control access to Planning Analytics data. If you use this security mode, you must also set the “SecurityPackageName” on page 287 parameter.

Table 45. Security modes (continued)

Security Mode	Description
4	The database uses IBM Cognos Analytics security authentication. Considerations when using this mode: In Planning Analytics database, Cognos Analytics users can belong only to Cognos Analytics groups and any of these predefined Planning Analytics administrator groups (ADMIN, DataAdmin, SecurityAdmin, and OperationsAdmin). Membership in Planning Analytics user (non-administrator) groups is not supported for Cognos Analytics users when they log in to TM1 Server. You can not use Planning Analytics database to permanently assign a Cognos Analytics user to another Cognos Analytics group. Any user assignment you make in Planning Analytics database to a Cognos Analytics group is not saved back to Cognos Analytics. When a Cognos Analytics user logs in to Planning Analytics database, the group assignments in Cognos Analytics override any Cognos Analytics group assignments made in Planning Analytics database.
5	The database uses Cognos Analytics security authentication and supports user groups from both Planning Analytics database and Cognos Analytics. Security mode 5 is the only mode supported for Planning Analytics Workspace on Cloud. Use security mode 5 when you are running IBM Cognos TM1 Applications with Cognos Analytics security. Considerations when using this mode: • In Planning Analytics database, Cognos Analytics users can belong to both Cognos Analytics and Planning Analytics groups. • You can not use Planning Analytics database to permanently assign a Cognos Analytics user to another Cognos Analytics group. Any user assignment you make in Planning Analytics database to a Cognos Analytics group is not saved back to Cognos Analytics. When a Cognos Analytics user logs in to Planning Analytics database, the group assignments in Cognos Analytics override any Cognos Analytics group assignments made in Planning Analytics database. • If IntegratedSecurityMode=5 is used for the Planning Analytics database and IBM Cognos TM1 Applications, it is not possible to assign rights to native Planning Analytics groups within the Manage rights dialog. Only Cognos Groups, imported into the Planning Analytics database, are available.

IPAddressV4

This parameter lets you specify the IPv4 address for an individual Planning Analytics database.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, static

A physical server/host can have one internal IP address for clients within a firewall and a different external IP address for clients outside the firewall. By default, all Planning Analytics database configuration client requests are routed through the external (public) adapter, which would require updates to firewall profiles. By assigning the internal IP address of the Planning Analytics database to the **IPAddressV4** parameter, traffic is routed through the private adapter and firewall profiles do not require updates.

For example:

```
IPAddressV4="10.109.241.121"
```

Note: This parameter replaces the old **IPAddress** parameters, which is now obsolete.

IPAddressV6

This parameter lets you specify the IPv6 address for an individual Planning Analytics database.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, static

A physical server/host can have one internal IP address for clients within a firewall and a different external IP address for clients outside the firewall. By default, all TM1 client requests are routed through the external (public) adapter, which would require updates to firewall profiles. By assigning the internal IP address of the Planning Analytics database to the **IPAddressV6** parameter, traffic is routed through the private adapter and firewall profiles do not require updates.

For example:

```
IPAddressV6="0ff1:aa00:4125:2:a05:f7b1:61c2:a341"
```

Note: This parameter replaces the old **IPAddress** parameters, which is now obsolete.

IPVersion

This parameter indicates the Internet protocol used by the Planning Analytics database to identify IP addresses on the network.

This parameter is not applicable to TM1 Database 12.

For example, to specify that your network uses the IPV6 protocol, add the parameter `IPVersion=ipv6` to the Planning Analytics database configuration.

Parameter type: optional, static

Valid settings are:

- `ipv4`

  Default setting. Used for IPv4 networks.
- `dual`

  Used to transition from IPv4 to IPv6. Both protocols are supported.
- `ipv6`

  Used for IPv6 networks.

Configuration notes

If you set this parameter to `ipv6` or `dual`, update your Admin Server configuration to use the same value.

To allow clients to recognize this change, add and set the **TM1_IPVersion** environment variable in the operating system to `ipv6` or `dual`.

Setting this parameter to dual or IPV6 without having the appropriate network running can result in performance degradation.

Note: In some cases, depending on your network environment and DNS configuration, you may need to also add the IPv6 address to the `/etc/hosts` operating system file on UNIX and Microsoft Windows to successfully run the Planning Analytics Admin Server and Planning Analytics database in IPv6 mode.

JavaClassPath

Use this parameter to make third-party Java libraries available to the Planning Analytics database.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, static

For example, to allow a Java extension to use classes inside a file called db2cc4.jar file (a Db2 JDBC driver), use the following:

```
JavaClassPath=C:\Development\Java\DB2JDBC\db2jcc4.jar
```

You can specify multiple references by separating them with semicolons.

JavaJVMArgs

Specifies a list of arguments to pass to the Java Virtual Machine (JVM). Arguments are separated by a space and the dash character. For example, `JavaJVMArgs=-argument1=xxx -argument2=yyy`.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, static

If you want to debug a process, you might specify these arguments:

```
JavaJVMArgs=-Xrunjdwp:transport=dt_socket -server=y -suspend=n -address=1044
```

The arguments you can use depend on the specific JVM you are using.

JavaJVMPath

This parameter sets the path to the Java Virtual Machine .dll file (jvm.dll), which is required to run Java from Planning Analytics TurboIntegrator.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, static

By default, this parameter is not present in the tm1s.cfg file.

To enable Java integration with TurboIntegrator, add the following line to your tm1s.cfg file:

`JavaJVMPath=<full_path_to_jvm.dll>`

keyfile

Specifies the file path to the key database file. The key database file contains the server certificate and trusted certificate authorities. The server certificate is used by the Planning Analytics database and the Admin server.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, static

The key database file that is provided with TM1 is `[installation_location]/ssl/ibmtm1.kdb`

To specify a different key database file, add the keyfile parameter to the Planning Analytics database configuration and specify the relative or absolute path to the `.kdb` file.

For example:

```
keyfile=./ssl/filename.kdb
```

keylabel

Specifies the label of the server certificate in the key database file.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, static

For example:

```
keylabel=TM1_Certificate
```

keystashfile

Specifies the file path to the key database password file. The key database password file is the key store that contains the password to the key database file.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, static

The key database password file that is provided with Planning Analytics is `[installation_location]/ssl/ibmtm1.sth`

To specify a different key database password file, add the keystashfile parameter to your Planning Analytics database configuration and specify the relative or absolute path to the `.sth` file.

For example:

```
keystashfile=./ssl/filename.sth
```

Language

Sets the language used for the Planning Analytics database. This parameter applies to messages generated by the server and is also used in the user interface of the server dialog box when you run the server as an application instead of a Windows service.

Parameter type: optional, static

Valid values currently are:

Table 46. Language codes

Language	**Code**
Brazilian Portuguese	bra
Croatian	hrv
Czech	csy
Chinese (Simplified)	sch
Chinese (Traditional)	tch
Danish	dan
Dutch	nld
German	deu
Finnish	fin
French	fra
Hungarian	hun

Table 46. Language codes (continued)	
Language	**Code**
Italian	ita
Japanese	jpn
Kazakh	kaz
Korean	kor
Norwegian	nor
Polish	pol
Romanian	rom
Russian	rus
Spanish	esp
Slovenian	slv
Swedish	sve
Thai	tha
Turkish	trk

LDAPHost

Specifies the domain name or dotted string representation of the IP address of the LDAP server host.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, static

If you do not enter a value for LDAPHost, Planning Analytics database uses the default value, localhost.

LDAPPasswordFile

Defines the password file used when LDAPUseServerAccount is not used. This is the full path of the .dat file that contains the encrypted password for the Admin Server's private key.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional unless “LDAPUseServerAccount” on page 265=F, static

This parameter uses the full path to a .dat file.

LDAPPasswordKeyFile

Defines the password key used when LDAPUseServerAccount is not used.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional unless “LDAPUseServerAccount” on page 265=F, static

This parameter uses the full path of the .dat file that contains the key used to encrypt and decrypt the password for the private key.

LDAPPort

Specifies the port Planning Analytics database uses to bind to an LDAP server.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, static

Specify a secure (SSL) port, for example, 636.

Default value: 389 (an unsecured port)

LDAPSearchBase

Specifies the node in the LDAP tree where Planning Analytics database begins searching for valid users.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, static

A base distinguished name (DN) in the LDAP directory. For example:

```
ou=people,o=company.com
```

For example, if the distinguished names are of the form:

```
uid-bjensen, ou-people, o=company.com
```

Then the search base would be:

```
ou-people, o=company.com
```

LDAPSearchField

The name of the LDAP attribute that is expected to contain the name of the Planning Analytics user being validated.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, static

If you do not enter an LDAPSearchField value, the default value is cn, which is also the default value for Microsoft Active Directory.

LDAPSkipSSLCertVerification

Skips the certificate trust verification step for the SSL certificate used to authenticate to an LDAP server. This parameter is applicable only when LDAPVerifyServerSSLCert=T.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, static

If trust verification does not work, you can skip the trust verification step by specifying `LDAPSkipSSLCertVerification=T`. In this case, Planning Analytics does not verify the server certificate at all but simply accepts it.

Note: Before working with this parameter, you should be familiar with SSL and LDAP.

Default value: F

LDAPSkipSSLCRLVerification

Skips CRL checking for the SSL certificate used to authenticate to an LDAP server. This parameter is applicable only when LDAPVerifyServerSSLCert=T.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, static

This parameter is not required if LDAPVerifyServerSSLCert=F. The Microsoft Windows API can tolerate an empty or non-existent CRL certificate.

Note: Before working with this parameter, you should be familiar with SSL and LDAP.

Default value: F

LDAPTimeout

Defines the number of seconds that the Planning Analytics database waits to complete a bind to an LDAP server. If the **LDAPTimeout** value is exceeded, the Planning Analytics database immediately aborts the connection attempt.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, dynamic

Specify the number of seconds you want the Planning Analytics database to wait when attempting to complete a bind to an LDAP server, expressed as a whole number greater than or equal to 1. For example, `LDAPTimeout=60`.

Default value: 0 (off). If `LDAPTimeout` is not set in your Planning Analytics database configuration, the database does not enforce any connection timeout.

LDAPUseServerAccount

Determines if a password is required to connect to the Planning Analytics database when using LDAP authentication.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, static

- To connect directly to the LDAP server using integrated authentication, set this parameter to T. Set this parameter to T whenever the Planning Analytics database and LDAP server exist on the same domain.
- To use a password before connecting, set this parameter to F. When LDAPUseServerAccount is set to F, you must also set the "LDAPPasswordFile" on page 263 and "LDAPPasswordKeyFile" on page 263 to successfully connect to the LDAP server using SSL.

LDAPVerifyCertServerName

Specifies a server to use during the SSL certificate verification process for LDAP server authentication. This parameter is applicable only when LDAPVerifyServerSSLCert=T.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, static

Note: Before working with this parameter, you should be familiar with SSL and LDAP.

Use this parameter to specify the servers that Planning Analytics database should use to verify the received SSL certificate.

All of the server names you want to use for certificate verification must be listed in separate LDAPVerifyCertServerName entries. The entries must exactly match the name (subject) of the certificate presented to Planning Analytics database in the SSL handshake by the server on the other end.

Specify LDAPVerifyCertServerName in the tm1s.cfg file of each TM1 server that is using LDAP.

```
LDAPVerifyCertServerName=<server_cert_subject>
```

Replace `server_cert_subject` with a server name or IP addresses. Create an entry for each server you want to use For example:

```
LDAPVerifyCertServerName=abc99.mydomain.com
LDAPVerifyCertServerName=xyz99.mydomain.com
```

Default value: F

LDAPVerifyServerSSLCert

Delegates the verification of the SSL certificate to Planning Analytics. This parameter is useful, for example, when you are using LDAP with a proxy server.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, static

Note: Before working with this parameter, you should be familiar with SSL and LDAP.

Typically, Planning Analytics leverages the Microsoft Windows API to verify SSL certificates. For this process to succeed, the certificate name and the LDAP server host name must match. If you are using a proxy, however, these names may not match, causing the verification to fail. In this case, you can set `LDAPVerifyServerSSLCert=T` to havePlanning Analytics perform the certificate verification.

When `LDAPVerifyServerSSLCert=T`, Planning Analytics performs the two steps of verification (verifying the trust relationship to the certificate and checking the CRL) like the Windows API would have done, but with a slightly different approach.

1. Instead of verifying the received certificate against the configured host name,Planning Analytics looks at the list of server names specified by LDAPVerifyCertServerName.
2. If the certificate name matches one of the servers specified by LDAPVerifyCertServerName, Planning Analytics calls the Microsoft Windows API and requests it to verify this single certificate only.

   Note: The correct trusted root certificate authority (CA) must already have been imported to the Microsoft Windows Certificate Store.

   You can skip the trust verification step by specifying LDAPSkipSSLCertVerification=T. In this case, Planning Analytics does not verify the server certificate at all but simply accepts it.
3. Once the trust verification is confirmed (or skipped), Planning Analytics calls the Microsoft Windows API to check the CRL.

   Note: The CRL certificate for the trusted root must already have been imported to the Microsoft Windows Certificate Store.

   If the CRL certificate does not exist in the Microsoft Windows Certificate Store, the process will fail. You can skip the CRL step by specifying LDAPSkipSSLCRLVerification=T.
4. If all the previous steps finish successfully, the SSL handshake is complete. Planning Analytics now attempts to authenticate to the LDAP server.

LDAPWellKnownUserName

Specifies the user name used by the Planning Analytics database to log in to LDAP and look up the name submitted by the user.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional unless “LDAPUseServerAccount” on page 265=F,, static

The value of this parameter can be any LDAP distinguished name.

For example:

```
uid=bjensen,ou=people,o=company.com
```

LegacyTransactionLog

Limits the number of cells checked by the Check Feeders option in the Cube Viewer.

Specifies the transaction log retention period for which database transactions are retained.

Parameter type: optional, dynamic

The transaction logs are retained until the end of the specified retention period, and are used for querying by using the v1 REST API **TransactionLogEntries** collection.

The parameter value is in the **Temporal.Duration** format. Setting the parameter to `null` disables transaction log retention.

For example, to enable transaction log retention with a retention period of one day, enter the following line:

`LegayTransactionLog="P1DT00H00M00S"`

LoadPrivateSubsetsOnStartup

This configuration parameter determines if private subsets are loaded when the Planning Analytics database starts.

Parameter type: optional, static

Lock contention issues can occur when private subsets are loaded on-demand (when a user requests the subset). You can avoid lock contention by loading all private subsets from all users into memory upon server startup, by adding

```
LoadPrivateSubsetsOnStartup=T
```

to the Planning Analytics database configuration.

If `LoadPrivateSubsetsOnStartup=F`, or is not present in the Planning Analytics database configuration, private subsets are loaded on-demand.

LoadPublicViewsAndSubsetsAtStartup

Added in v2.0.8 This configuration parameter enables whether public subsets and views are loaded when the the Planning Analytics database starts and keeps them loaded to avoid lock contention during the first use.

Parameter type: optional, static

Default: `LoadPublicViewsAndSubsetsAtStartup=T`

If `LoadPublicViewsAndSubsetsAtStartup=F`, public views subsets are loaded on-demand for your Planning Analytics database.

Lock contention issues can occur when public views and subsets are loaded on-demand (when a user requests the subset). You can avoid lock contention on server startup by loading all public views and subsets from all users into memory and keeping them loaded to avoid lock contention during the first use. Add the following setting to yourPlanning Analytics database configuration.

```
LoadPublicViewsAndSubsetsAtStartup=T
```

LockPagesInMemory

Deprecated as of IBM Planning Analytics version 2.0.9.7 When this parameter is enabled, memory pages used by the Planning Analytics database process are held in memory (locked) and do not page out to disk under any circumstances. This retains the pages in memory over an idle period, making access to Planning Analytics data faster after the idle period.

This parameter is not applicable to TM1 Database 12.

This parameter is applicable only to Planning Analytics database running on a Microsoft® Windows 64-bit operating system.

Parameter type: optional, static

If a Planning Analytics database running on a Windows 64-bit operating system is idle for a long period of time, physical memory taken up by the Planning Analytics database will page out to disk. This is a

function of the Windows 64-bit operating system and not Planning Analytics database. This can cause performance degradation in large Planning Analytics databases when trying to access data after an idle period.

To maximize performance when running a largePlanning Analytics database on 64-bit Windows, set `LockPagesInMemory=T` in the Planning Analytics database configuration. If you change this parameter value, restart the Planning Analytics database to apply the new value.

Note: This parameter has no effect on performance for an actively running Planning Analytics system, in which Planning Analytics data is regularly accessed.

When this parameter is enabled, Windows still trims pages from the Planning Analytics database process space, but does not page them to disk. This benefits Planning Analytics database performance because objects are no longer placed in virtual memory, but instead remain in physical RAM.

When LockPagesInMemory is not present in Planning Analytics database configuration, or if the parameter is set to F, the following behavior is expected:

When a Planning Analytics database running on a Windows 64-bit operating system is idle for a period of time, physical memory taken up by the Planning Analytics database is paged out to disk. This paging to disk happens even if there are no other processes contending for the memory pages. Essentially, Windows leaves the memory pages vacant and available. This is a function of the Windows 64-bit operating system and not Planning Analytics database.

This background paging by the Windows operating system can cause initial performance degradation in large Planning Analytics databases when trying to access Planning Analytics data after an idle period. For example, when the Planning Analytics system has been inactive overnight the first access in the morning will take longer, as the required memory pages containing Planning Analytics data are read from disk back into memory. Also, if the Planning Analytics model is such that there are large cube data areas that are accessed infrequently, the memory holding that cube information may page out to disk. When a request is made for that cube data the request will take longer, as these infrequently used pages must be read back into memory.

When `LockPagesInMemory=T` in Planning Analytics database configuration, the memory pages containing Planning Analytics data are locked into memory and are not available for use at any time by any other process. This can make the system overall perform poorly if there are other tasks that need to run on the Planning Analytics machine. For example, if the machine has 48 GB of physical memory, and the Planning Analytics database takes 38 GB to fully load, then there are only 10 GB of physical memory to run any and all other processes, including system processes. These other processes may perform poorly because they may force extensive paging activity as the system tries to run them all in what would then essentially be a 10 GB machine. If a second Planning Analytics database is started with the same `LockPagesInMemory=T` configuration setting, and that second Planning Analytics database instance would normally take 12 GB to load, the load will fail since that database can not lock 12 GB of memory, as there is only 10 GB available.

LoggingDirectory

Specifies the directory to which the Planning Analytics database saves its log files.

This parameter is not applicable to TM1 Database 12.

If you do not supply this parameter, the log files are saved to the first data directory specified by the **DataBaseDirectory** parameter.

Parameter type: optional,static.

Note: The value of parameter **LoggingDirectory** must be encapsulated by quotes if it uses spaces, for example `LoggingDirectory="C:/Data Files/Logfiles"`. The Planning Analytics database startup will fail if quotes are not used in that case. Note also that other parameters, such as **DataBaseDirectory**, do not necessarily require quotes when a value contains spaces.

LogReleaseLineCount

Sets the number of lines that a search of the Transaction Log will accumulate in a locked state before releasing temporarily so that other Transaction Log activity can proceed.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, dynamic

Default value: 5000 lines

MagnitudeDifferenceToBeZero

Sets the order of magnitude of the numerator relative to the denominator, above which the denominator equals zero when using a safe division operator.

Parameter type: optional, static

In rules and TurboIntegrator, there is a safe division operator (the backslash). With this, if you try to divide by zero, the result is zero, not undefined. If the denominator to the division is a calculated quantity, the result can be very close to zero, but not exactly zero, for example, .0000000000000004. By setting the **MagnitudeDifferenceToBeZero** parameter, you can specify how close a number can be to zero, relative to the magnitude of the numerator, to be considered as zero for the safe division operator.

Consider this example:

- In the Planning Analytics database configuration, set MagnitudeDifferenceToBeZero=14
- The operation is A \ B

  Note: Backslash (\) is the safe division operator in TurboIntegrator.
- A = 1000 B = 1.5e-15
- B is 18 orders of magnitude less than A
- 18 > 14, therefore the save division operator returns B=0

MaskUserNameInServerTools

Determines whether usernames in server administration tools are masked until a user is explicitly verified as having administrator access.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, static

When MaskUserNameInServerTools is set to TRUE, usernames are masked in server administration tools until the user who is working in the administration tool is explicitly verified as an administrator. For example, when MaskUserNameInServerTools is set to TRUE, usernames are masked in TM1Top.

When MaskUserNameInServerTools is set to FALSE, usernames are displayed in server administration tools to all users regardless of administrator status.

Default value: true

MaximumCubeLoadThreads

Specifies whether the cube load and feeder calculation phases of server loading are multi-threaded, so multiple processor cores can be used in parallel.

This results in decreased server load times.

Parameter type: optional, static

To run in multi-threaded mode, you must set MaximumCubeLoadThreads to the number of processor cores on the Planning Analytics database that you want to dedicate to cube loading and feeder processing.

Generally, the best performance is achieved when the parameter is set to a value equal to (*number of available processor cores*) - 1. For example, if the Planning Analytics database is running on a computer with four processor cores, MaximumCubeLoadThreads must be set to 3. This ensures that one processor core is available to run other applications while the Planning Analytics database is loading.

Note:

The maximum value for MaximumCubeLoadThreads is 32.

When MaximumCubeLoadThreads is set to 0, cube loading and feeder processing are not multi-threaded. This is the default behavior when MaximumCubeLoadThreads is not explicitly set in the Planning Analytics database configuration.

Conditional feeders

When **`MaximumCubeLoadThreads`** is enabled, the Planning Analytics database cannot manage the order in which feeders are calculated. There might be cases where processing order has an adverse effect on your application due to some order-of-evaluation dependencies in the multi-threaded environment.

If your Planning Analytics database uses conditional feeders where the condition clause contains a fed value, you **must** disable the use of multiple threads at load time. Set `MaximumCubeLoadThreads=0` or exclude the parameter from the Planning Analytics database configuration.

MaximumGlobalQueryMemorySizeMB

Specifies the maximum amount of memory (in MB) that all running queries can consume collectively. If this threshold is exceeded, the query is terminated.

By default, the value of the threshold is 0 (disabled).

Parameter type: optional, dynamic

This parameter configures memory usage monitoring across the following areas:

- MDX engine allocations
- Intermediate stargates and views for intermediate calculations
- Final stargate and view as the result of query execution.

```
MaximumGlobalQueryMemorySizeMB=n
```

where n represents the global query memory threshold, in MB.

If the combined memory allocation of all running queries exceeds this threshold, the system stops one or more queries (starting with the latest query) while allowing the rest of the queries to run. The system generates a WARN-level log message.

Tip: You can enable additional logging for troubleshooting purposes by enabling the **`TM1.Mdx`** logger at the DEBUG level. DEBUG level logging initiates extra counters and enables more detailed logging about the status of memory measures when running queries, but degrades the performance of queries. Do not enable DEBUG level logging unless you are troubleshooting the system.

See also "MaximumSingleQueryMemorySizeMB" on page 271.

MaximumLoginAttempts

Sets the maximum number of failed user login attempts permissible on the Planning Analytics database.

This parameter is not applicable to TM1 Database 12.

If you do not include MaximumLoginAttempts in Planning Analytics database configuration, by default, the database allows three login attempts.

Parameter type: optional, dynamic

For example, if you add the line MaximumLoginAttempts=5 to Planning Analytics database configuration, the database enforces a limit of five failed login attempts per user. If a user does not successfully log in to the Planning Analytics database within the specified number of attempts, the server issues an error.

After a user has exceeded the specified maximum number of failed login attempts, the Planning Analytics database rejects any subsequent login attempts by the user.

The MaximumLoginAttempts parameter is enforced per server session. If a user exceeds the maximum number of attempts, he cannot log in to the current Planning Analytics database session, unless the administrator changes his password. However, after the Planning Analytics database recycles, the user can log in with his existing password.

MaximumMemoryForSubsetUndo

Sets the maximum amount of memory, in kilobytes, to be dedicated to storing the Undo/Redo stack for the Subset Editor.

For example, adding the line MaximumMemoryForSubsetUndo=20480 to the Planning Analytics database configuration instructs the server to allot 20480 kilobytes (20 MB) of memory for the Undo/Redo stack.

Parameter type: optional, dynamic

Generally, larger subsets require greater amounts of memory to store a usable Undo/Redo stack. If you find that the TM1 Server is not storing a sufficient number of Undo/Redo steps for your subsets, increase the value of MaximumMemoryForSubsetUndo.

If this parameter is not explicitly set in the Planning Analytics database configuration, the maximum amount of memory dedicated to the Undo/Redo feature of the Subset Editor is 10240 kilobytes (10 MB).

MaximumSingleQueryMemorySizeMB

Specifies the maximum amount of memory (in MB) that a single MDX query can consume. If this threshold is exceeded, the query is terminated.

By default, the value of the threshold is 0 (disabled).

Parameter type: optional, dynamic

This parameter configures memory usage monitoring across the following areas:

- MDX engine allocations
- Intermediate stargates and views for intermediate calculations
- Final stargate and view as the result of query execution.

If a query's allocated memory exceeds this threshold, the system stops that query and generates a WARN-level log message.

```
MaximumSingleQueryMemorySizeMB=n
```

where n represents the single query memory threshold, in MB.

Tip: You can enable additional logging for troubleshooting purposes by enabling the **TM1.Mdx** logger at the DEBUG level. DEBUG level logging initiates extra counters and enables more detailed logging about the status of memory measures when running queries, but degrades the performance of queries. Do not enable DEBUG level logging unless you are troubleshooting the system.

See also "MaximumGlobalQueryMemorySizeMB" on page 270.

MaximumSynchAttempts

Sets the maximum number of times a synchronization process on a planet database will attempt to reconnect to a network before the process fails.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, static

You can use the MaximumSynchAttempts parameter to improve the stability of a synchronization process that is running over an unstable network connection such as a long distance wide area network (WAN) with high latency, poor bandwidth and poor transmission quality.

To specify the maximum number of times a synchronization process should attempt to make a network connection, add the following line to Planning Analytics database configuration for the planet server:

`MaximumSynchAttempts=`*n*

where n represents the number of network connection attempts that the synchronization process should make a before the process fails.

The default value is 1 which means the synchronization process will only attempt to connect once and will not attempt to reconnect if the connection is lost.

A value of 0 means unlimited network connection attempts.

You can configure this parameter to work with the SyncUnitSize parameter. For more information, see "SyncUnitSize" on page 293.

The following example shows how to use the MaximumSynchAttempts parameter with the SyncUnitSize parameter:

```
SyncUnitSize=2000
```

```
MaximumSynchAttempts=100
```

MaximumTILockObjects

This configuration parameter sets the maximum lock objects for a TurboIntegrator process. Used by the synchronized() TurboIntegrator function.

The Planning Analytics database maintains a list of created TurboIntegrator lock objects. Every time the user calls the synchronized() function on a lock object, the database first checks to see if the lock object is already in the list. If not, the database creates a new lock object and inserts it into the list.

For more details, see the topic "Serializing TurboIntegrator processes using synchronized()" in the *TM1 TurboIntegrator* guide.

Even after all the TurboIntegrator processes that have referenced a lock object have exited, the lock object may not be removed from the list to free the memory immediately. This is because it is likely that sometime later, either the same process or some other process may call the synchronized() function on that same lock object.

The Planning Analytics database configuration parameter `MaximumTILockObjects` controls the growth of the list of created TurboIntegrator lock objects. When the number of lock objects in the list has reached MaximumTILockObjects, the server starts a cleanup operation. It removes some lock objects from the list if they are not used by any TurboIntegrator process at that moment.

If the MaximumTILockObjects parameter is not explicitly set in tm1s.cfg, a default value of 2000 is assumed.

Parameter type: optional, static

MaximumUserSandboxSize

Sets the maximum amount of RAM memory (in MB) to be allocated per user for personal workspaces or sandboxes.

If you do not set the MaximumUserSandboxSize parameter, the default maximum size is 500 MB on a 64-bit system.

Parameter type: optional, dynamic

To specify a maximum amount of memory allocation for personal workspaces or sandboxes, add the following line to Planning Analytics database configuration:

```
MaximumUserSandboxSize=n
```

where n represents the amount of memory in MB to be allocated.

MaximumViewSize

Sets the maximum amount of memory (in MB) to be allocated when a user accesses a view.

If you do not set the MaximumViewSize parameter, the default maximum view size is 500 MB on a 64-bit system.

Parameter type: optional, dynamic

To specify a maximum amount of memory allocation for views, add the following line to Planning Analytics database configuration:

```
MaximumViewSize=n
```

where n represents the amount of memory in MB to be allocated.

See also "ApplyMaximumViewSizeToEntireTransaction" on page 242.

MDXSelectCalculatedMemberInputs

Changes the way in which calculated members in MDX expressions are handled when zero suppression is enabled.

Parameter type: required, dynamic

MDXSelectCalculatedMemberInputs addresses an issue with calculated members in an MDX expression when zero suppression is enabled. When zero suppression is enabled on a query axis, calculated members might be dropped from the query or might cause zero suppression to be turned off.

The issue arises because zero suppression is based on the actual data in a cube. Calculated members do not have an actual member in the cube—calculated members are derived from other members.

For example, suppose a cube has a calculated member, C, that is a sum of the members A and B.

```
      C (A+B)
A                B
```

The members A and B are actual members in the cube, while C is derived. When you run a query with A, B, and C in the columns, {A,B,C}, you see A, B, and C in the columns and you see that C is the sum of A and B. When you turn on zero suppression, only non-null rows of data are displayed for A, B, and C, as expected.

Now, suppose you restrict the columns to C only, {C}. When zero suppression is turned off, C is displayed in the columns. But if you turn on zero suppression, C might be dropped from the columns because C does not reference any actual member in the cube.

MDXSelectCalculatedMemberInputs addresses this issue. When MDXSelectCalculatedMemberInputs is enabled, TM1 assumes that if the inputs to the calculated member have data (the A and B in the example), then the calculated member (C) also has data and must be retained when zero suppression is turned on.

The processing occurs as follows:

1. Do a fast check of the calculated member to detect what specific actual members it references.
2. Consider these actual members as inputs to the calculated member.
3. Make sure that these inputs are included in the stargate data underlying the view.

With the inputs included in the Stargate data, the suppression algorithm sees Stargate data at A and B, notices that A and B are inputs to C, and keeps C when zero suppression is enabled.

MDXSelectCalculatedMemberInputs works well for simple formulas, like C=A+B. If you use complex formulas, such as data-dependent formulas that contain conditional expression like IIF, enabling MDXSelectCalculatedMemberInputs might not resolve issues with zero suppression.

Note: Enabling MDXSelectCalculatedMemberInputs can increase the size of Stargate views. This can provide faster access times for cube data but can consume more system resources.

To enable MDXSelectCalculatedMemberInputs, add the following to the Planning Analytics database configuration:

```
MDXSelectCalculatedMemberInputs=True
```

To disable MDXSelectCalculatedMemberInputs, add the following to the Planning Analytics database configuration:

```
MDXSelectCalculatedMemberInputs=False
```

Default value: True

It is recommended to set the MaximumViewSize to be higher than the default 500MB.

MemoryCache.LockFree

Switches global garbage collection to use lock free structures.

Parameter type: optional, dynamic

Default value: False

MessageCompression

Enables message compression for large messages that significantly reduces network traffic.

This parameter is not applicable to TM1 Database 12.

The parameter is enabled by default.

Parameter type: optional, static

To disable message compression, add the following line to the Planning Analytics database configuration:

```
MessageCompression=F
```

MTCubeLoad

Enables multi-threaded loading of individual cubes.

Note: To enable multi-threaded loading of individual cubes, you must have IBM Planning Analytics version 2.0.5 or later installed.

Parameter type: optional, dynamic

Default value: F (disabled)

MTCubeLoad uses the MTQ multi-threaded framework to achieve improved speeds when compared to the previous approach using **MaximumCubeLoadThreads**. Configuration settings **MTCubeLoad.MinFileSize**, **MTCubeLoad.Weight**, and **MTCubeLoad.UseBookmarkFiles** are used to optimize performance.

MTCubeLoad also eliminates the risk of changing feeder generation sequences. When **MTCubeLoad** is enabled, the **MaximumCubeLoadThreads** configuration option is ignored. Since **MTCubeLoad** leverages the MTQ framework, it still relies on the **MTQ** configuration to set the number of concurrent threads.

Note: Setting **MTCubeLoad=T** does not work in all cases. When issues are detected, you **must** disable the multi-threaded loading of individual cubes.

TM1 server administrators can use the **PreallocatedMemory.Size**, **PreallocatedMemory.ThreadNumber**, and **PreallocatedMemory.BeforeLoad** settings to configure preallocation memory and optimize scale-up and performance results. Allocating memory for a TM1 server can help avoid contention effects related to varying operating system memory allocation. For best results, consider the amount of RAM consumed by TM1 server to configure the preallocation memory settings.

CAUTION: Setting **MTCubeLoad=T** significantly increases memory usage.

Example

The following Planning Analytics database configuration illustrates the configuration of multi-threaded cube loading:

```
MTCubeLoad=T
MTQ=All
MTCubeLoad.UseBookmarkFiles=T
IndexStoreDirectory=c:\Cubes\CubeFolder\indexStore

# 30GB of RAM to preallocate
PreallocatedMemory.Size=30000
# Run preallocation in parallel to cube cell/feeder loading
PreallocatedMemory.BeforeLoad=F
# Window 2012 patches as of Dec 2016 worked most efficiently with a single thread
PreallocatedMemory.ThreadNumber=1

# Disable TM1 performance counters to speed up MTQ.
PerfMonIsActive=F
```

Logging

To enable logging for multi-threaded loading of individual cubes, enter the following lines in the `tm1s-log.properties` file:

log4j.logger.TM1.Server.Loading=DEBUG
: Captures individual timing of TM1 Server loading stages: DeSerializeDimensions, DeSerializeAttributeCubes, DeSerializeRegularCubes, GenerateServerSecurity.

log4j.logger.TM1.Cube.Loading=DEBUG
: Captures cube loading time, separately for `.cub` and `.feeder` files.

MTCubeLoad.MinFileSize

Sets the minimum size for cube files to be loaded on multiple threads.

Parameter type: optional, dynamic

The value must be specified in units of KB (kilobytes). Specifying a value of "0" will apply MTCubeLoad to files of any size.

Default value: 10KB

MTCubeLoad.UseBookmarkFiles

Enables the persisting of bookmarks on disk.

Parameter type: optional, dynamic

Bookmarks store information that allow cube loading to start reading cells/feeders from the middle of `.cub` and `.feeder` files. Bookmarks can be read from the files where they persist. If a bookmark file is not present, or is out-of-sync with the main file it corresponds to, bookmarks are generated on-the-fly

in parallel for the rest of the cube loading logic. Bookmark files are stored in the folder specified by the **IndexStoreDirectory** configuration option. For example:

```
<IndexStoreDirectory>\<path-to-main-file-relative-to-data-folder>\<main-filename>.bm
```

Bookmark files incorporate the timestamp of their corresponding main file. When it does not match the actual timestamp of the main file, bookmark files are ignored and bookmarks are regenerated on-the-fly. When bookmark synchronization is in doubt, the bookmark folder contents should be cleaned. The content is regenerated after restarting the server. Bookmark files are also updated during SaveDataAll and CubeSaveData calls when the main files that the bookmarks are associated with are updated.

Default value: F (disabled)

MTCubeLoad.Weight

Defines the number of atomic operations needed to load a single cell.

Parameter type: optional, dynamic

The "atomic operation" is the unit used in the **MTQ.OperationProgressCheckSkipLoopSize** configuration option. **MTCubeLoad.Weight** provides a relative heuristics of how much slower cell loading is when compared to visiting a cell during a read operation.

Default value: 10

MTFeeders

Applies multi-threaded query parallelization techniques to the following processes: the `CubeProcessFeeders` TurboIntegrator function, cube rule updates, and construction of multi-threaded (MT) feeders at start-up.

Parameter type: optional, dynamic

The default setting is disabled (F). Enable this parameter to improve the processing of feeders. Set **MTFeeders=T** to obtain the following benefits:

- Process optimization when you use the `CubeProcessFeeders( <cube_name>)` TurboIntegrator function.
- When a rule update involves updating feeder cubes, the process is optimized by running in parallel. Rules are updated manually or by using the `RuleLoadFromFile (Cube, TextFile)` TurboIntegrator function.
- When used `MTFeeders=T` **and** `MTFeeders.AtStartup=T` in Planning Analytics database configuration, multi-threaded (MT) feeders are constructed at start-up. See "MTFeeders.AtStartup" on page 276 for details on using the `MTFeeders.AtStartup` configuration parameter.

CAUTION: Setting MTFeeders=T increases memory usage significantly.

Conditional feeders

When `MTFeeders` is enabled, Planning Analytics cannot manage the order in which feeders are calculated. There might be cases where processing order has an adverse effect on your application due to some order-of-evaluation dependencies in the multi-threaded environment.

Enabling `MTFeeders` to apply feeder construction during server startup is not supported when your Planning Analytics model uses conditional feeders. Set `MTFeeders=F` or exclude the parameter from the Planning Analytics database configuration.

MTFeeders.AtStartup

If the MTFEEDERS configuration option is enabled, enabling `MTFeeders.AtStartup` applies multi-threaded (MT) feeder construction during server start-up.

Parameter type: optional dynamic

The default setting is disabled (F).

When this configuration option is enabled, it prevents the load threads (set with the `MaximumCubeLoadThreads` configuration parameter) from taking over parallel feeder construction. However, `MTFeeders.AtStartup` will not disable `MaximumCubeLoadThreads` impact on other model load phases.

Conditional feeders

When `MTFeeders.AtStartup` is enabled, Planning Analytics cannot manage the order in which feeders are calculated. There might be cases where processing order has an adverse effect on your application due to some order-of-evaluation dependencies in the multi-threaded environment.

Enabling `MTFeeders.AtStartup` to apply multi-threaded feeder construction during database startup is not supported when your model uses conditional feeders. Set `MTFeeders.AtStartup=F` or exclude the parameter from the Planning Analytics database configuration.

MTFeeders.AtomicWeight

Defines the number of required atomic operations to process feeders of a single cell.

Parameter type: optional, dynamic

The "atomic operation" is the unit used in the **MTQ.OperationProgressCheckSkipLoopSize** configuration option. Essentially, **MTFeeders.AtomicWeight** provides a relative heuristics of how much slower a feeder construction is when compared to visiting a cell during a read operation. The ratio **MTQ.OperationProgressCheckSkipLoopSize**/ **MTFeeders.AtomicWeight** approximates the number of cells triggering parallel execution when processing feeder updates.

The default value is 10.

MTQ

Sets the maximum number of threads per single-user connection, when multi-threaded optimization is applied. Used when processing queries, and in batch feeder and cube load operations.

Parameter type: optional, dynamic

Default value: -1

To specify a maximum number of threads for the multi-threaded optimization, add the following line to the Planning Analytics database configuration:

```
MTQ=n
```

where *n* represents the number of threads to be used for a single operation.

If you set MTQ equal to a negative number, that is, `MTQ=-N`, the number of threads that will be used is defined by the following equation: `T=M-N+1`, where T= the number of threads to be used by the system and M= the number of threads on the server.

For example, if your database has 64 cores and you set MTQ=-10, the system will use 55 threads.

```
T=64-(10)+1
```

By default, `MTQ=-1`, which sets the value to the maximum number of threads available to a database. The result is a dynamic system setting that consumes all threads.

If you set `MTQ=1` or `MTQ=0`, multi-threaded optimization is turned off.

For more information, see *Improving processing performance with Multi-threaded Queries* in *TM1 Operations*.

Note: Multi-threaded optimizations can improve performance on numeric cubes, where consolidation is optimized. Since TM1 does not consolidate string values, the MTQ parameter has no impact on the performance of string cubes.

MTQ.ImmediateCheckForSplit

Use this parameter to fine-tune multi-threaded query processing for cubes that do not contain rules.

Parameter type: optional, dynamic

Default value: FALSE

Set `MTQ.ImmediateCheckForSplit=T` to force the use of multi-threaded queries without waiting for confirmation that an operation is large. This can speed up the parallelization of cubes that do not contain rules.

For cubes that contain complex rules, the default value of FALSE is more efficient.

MTQ.OperationProgressCheckSkipLoopSize

Use this parameter to fine-tune multi-threaded query processing.

Parameter type: optional, dynamic

This parameter specifies the number of cells to be processed before checking whether multi-threaded splits are needed.

Default value is 10000.

MTQ.SingleCellConsolidation

Use this parameter to fine-tune multi-threaded query processing.

Parameter type: optional, dynamic

Set this parameter to False to disallow multi-threaded query processing for single cell consolidations. This is applicable, for example, if your model contains complex rules (rules that have cross-cube references with a recursive depth greater than two).

Single cell consolidation is often invoked for the computation of rules that reference consolidated values as arguments. Single cell consolidation is also used to compute title only views.

Default value is True.

MTQQuery

Use this parameter to enable multi-threaded query processing when calculating a view to be used as a TurboIntegrator process datasource.

Parameter type: optional, dynamic

If the value of the `MTQ` parameter is 1 (or OFF), this functionality is turned off entirely and cannot be overridden.

The value of `MTQQuery` can be overridden on a per-TI basis by calling the `EnableMTQViewConstruct` and `DisableMTQViewConstruct` TI functions.

If `MTQQuery=F`, `EnableMTQViewConstruct()` can be called to override this value on a per-TI basis.

If `MTQQuery=T` (the default), `DisableMTQViewConstruct()` can be called to disable the functionality for individual TIs.

Default value is True.

NetRecvBlockingWaitLimitSeconds

Use this parameter to have the database perform the wait period for a client to send the next request as a series of shorter wait periods. This parameter changes the wait from one long wait period to shorter wait periods, so that a thread can be canceled if needed.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, static

The parameter is enabled by default.

By default the server can wait for a long time for input, which can result in long-held threads and other problems.

This parameter instructs the Planning Analytics database to perform the wait as a series of repeated shorter waits and gives the database the opportunity to cancel or pause the thread. When set to zero (the default) the legacy behavior of one long wait is used.

Default value: 0

NetRecvMaxClientIOWaitWithinAPIsSeconds

Specifies the maximum time for a client to do I/O within the time interval between the arrival of the first packet of data for a set of APIs through processing until a response has been sent.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, static

This parameter requires the client to handle I/O in a reasonably timely fashion after initiating API requests. This parameter is designed to protect against connections that go dead but do not raise a socket error or create other possibilities such as a hung client.

Default value is 0, which means no time limit.

NIST_SP800_131A_MODE

Indicates that the database must operate in compliance with the SP800-131A encryption standard.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, static

When SP800-131 encryption is enforced, the signed certificate must comply with the standard as defined by the National Institute of Standards and Technology (NIST) Special Publication SP800-131. This standard requires a minimum key size of 2048 bits and a signature algorithm of RSA with SHA-224 or higher.

To turn off SP800-131 compliance, add the following line to the `tm1s.cfg` file:

```
NIST_SP800_131A_MODE=False
```

Default value: True

ODBCLibraryPath

Specifies the name and location of the ODBC interface library (.so file) on UNIX.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional (required to support ODBC on UNIX), static

This parameter is applicable only to Planning Analytics on UNIX or Linux.

In the Planning Analytics database configuration, add the following line:

```
ODBCLibraryPath= location/file
```

Replace location/file with the absolute path and filename of the library.

For example:

```
ODBCLibraryPath=/usr/local/lib/unixODBC/lib/libodbc.so
```

ODBCTimeoutInSeconds

Specifies the timeout value that is sent to the ODBC driver using the SQL_ATTR_QUERY_TIMEOUT and SQL_ATTR_CONNECTION_TIMEOUT connection attributes.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, dynamic

Note: The ODBC driver must respect the request and implement the timeout.

This parameter defaults to zero. A zero value indicates legacy behavior of no timeout.

For example, in the Planning Analytics database configuration, add the following line:

```
ODBCTimeoutInSeconds= 10
```

OptimizeClient

Added in v2.0.7 This parameter determines whether private objects are loaded when the user authenticates during Planning Analytics database startup.

Parameter type: optional, dynamic

Note: A new user that was dynamically added, who logs in with CAM authentication, is still subject to lock contention because a new element must be added to the `}clients` dimension.

Organizations with many users can set this parameter to improve startup times for particular users. Users with many private objects can set this parameter to improve startup times. Currently, private objects include a user's private directory, private sandboxes, private subsets, and private views. Loading these private objects affects the database load and potentially the amount of memory that is consumed at startup. Depending on the number of users, the private objects, and the memory that each consumes, setting this parameter can improve database startup times.

`OptimizeClient` can be set as follows:

- None = 0
- OperationsAdmin = 1
- Admin = 2
- All = 3

For example, to load all private objects for all users when Planning Analytics database starts up, you can set `OptimizeClient` to All:

```
OptimizeClient=3
```

The default setting is 0 (None).

PasswordMinimumLength

Specifies a minimum password length for clients accessing the Planning Analytics database.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, dynamic

For example, set `PasswordMinimumLength=8` to enforce a minimum password length of 8 characters.

Note: This parameter only affects passwords set or changed after the parameter had been set. It has no effect on old, unchanged passwords having less characters as enforced by PasswordMinimumLength

PasswordSource

Compares user-entered password to the stored password. This parameter is applicable only to Planning Analytics databases on cloud or local. It is not applicable to TM1 Database 12 in Cloud Pak for Data or Planning Analytics as a Service.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, static

TM1 (Default): Compares the user-entered password to the password in the Planning Analytics database.

LDAP: Compares the user-entered password to the password stored in on the LDAP server.

PerfMonIsActive

Use this parameter to turn updates to Planning Analytics performance counters on or off.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, dynamic

You can view performance counters using the PerfMon utility or the Microsoft Windows Performance Monitor. For more details, see Using TM1 Performance Counters in *TM1 Operations*.

Capturing performance counters in Planning Analytics can impact performance under a heavy multi-user workload (with 100 or more active users). Use this parameter to turn off updates to performance counters if performance is an issue.

```
PerfMonIsActive=F
```

Default value is T.

PerformanceMonitorOn

Automatically starts populating the `}Stats` control cubes when a Planning Analytics database starts.

This parameter is not applicable to TM1 Database 12.

The control cubes contain statistics that you can review to monitor the system performance. For details on control cubes, see "Control Cubes" in *IBM Cognos TM1 Operations*.

Parameter type: optional, dynamic

For example, to enable Performance Monitor set `PerformanceMonitorOn=T`. To disable the Performance Monitor set `PerformanceMonitorOn=F`

PersistentFeeders

To improve reload time of cubes with feeders, set the PersistentFeeders configuration parameter to true (T) to store the calculated feeders to a .feeders file.

Any installation with server load times of over 5 minutes can probably improve their performance using this parameter.

Parameter type: optional, static

When this parameter is set to T and the server encounters a persistent feeder file, it loads the saved feeders which reduces the time normally taken to recalculate those feeders. Feeders are saved when the data is saved or rules are edited. You do not explicitly save the feeders

For installations with many complex feeder calculations persisting feeders and then re-loading them at server startup will improve performance. For simple feeders, the time taken to read feeders from disk may exceed the time to re-calculate the feeders but most installations will benefit.

Using the Persistent Feeders feature will increase your system size on disk only. Memory size is not affected by the use of this parameter.

```
PersistentFeeders=T
```

For more information, see "Using Persistent Feeders" in *IBM Cognos TM1 Operations*.

PortNumber

Sets the server port number used to distinguish between multiple Planning Analytics databases running on the same computer.

This parameter is not applicable to TM1 Database 12.

When multiple Planning Analytics databases are installed on a single computer, each server must use a unique port number.

Parameter type: optional, static

When you install a Planning Analytics database, the default port number is 12345. Valid port numbers are between 5001 and 65535.

PreallocatedMemory.BeforeLoad

Added in v2.0.5 Specifies whether the preallocation of memory occurs before Planning Analytics database loading or in parallel.

Parameter type: optional, dynamic

Default value: F (disabled)

When **`PreallocatedMemory.BeforeLoad=T`** (enabled), preallocation of memory is performed before database loading. With this setting is disabled, preallocation occurs in parallel to a database loading process. Overall database load time improvements vary by operating system allocation speeds and the memory consumption speeds of the database loading logic. Planning Analytics database administrators can modify the preallocation memory settings to obtain optimal results for their environment.

PreallocatedMemory.Size

Added in v2.0.5 Triggers the preallocation of pooled Planning Analytics database memory.

Parameter type: optional, dynamic

Default value: 0

Allocated memory is specified in units of MB (megabytes).

PreallocatedMemory.ThreadNumber

Added in v2.0.5 Specifies the number of threads used for preallocation memory in multi-threaded cube loading.

Parameter type: optional, dynamic

Default value: 4

PrivilegeGenerationOptimization

When the Planning Analytics database generates security privileges from a security control cube, it reads every cell from that cube.

If the security control cube is sparsely populated, this results in unnecessary processing and a longer loading time. An example of a sparsely populated security cube would be one that has a greater ratio of default security settings compared to defined security settings.

Parameter type: optional, static

To address this issue, the PrivilegeGenerationOptimization parameter can be added to the Planning Analytics database configuration:

```
PrivilegeGenerationOptimization=T
```

When this parameter is set to T, the Planning Analytics database will read only the populated cells in security cubes. In the case of a sparsely populated security cube, this will dramatically shorten the load time of the Planning Analytics database.

Note: If you populate the security settings via rules and want to use this parameter, you must write feeders for the rules that populate your security cubes. Because security settings are stored as strings, the rules that populate your security cubes must include the FeedStrings function.

ProgressMessage

This parameter determines whether users have the option to cancel lengthy view calculations.

This parameter is not applicable to TM1 Database 12.

When a user opens a view that takes a significant amount of time to calculate (usually a view with high levels of consolidation or complex rules), IBM TM1 Server monitors the progress of the process. When ProgressMessage=T a dialog box opens that allows the user to Stop Building View.

Parameter type: optional, static

If the user clicks Stop Building View, the view is discarded on the client, but view calculation continues on the server. In some instances, this can tie up the server.

- If ProgressMessage=F, the Stop Building View option is not offered and the user cannot cancel lengthy operations.
- When ProgressMessage=T or is not present in the Tm1s.cfg file, the Stop Building View option opens during lengthy view calculations so the user can cancel the process if necessary. You can assign a unique Port Number using ClientMessagePortNumber. This additional port allows these progress messages to travel via a secondary port so that server processing can continue without tying up thread reserves.

Note: As of Planning Analytics 10.1, progress messages can travel via the secondary port assigned by ClientMessagePortNumber so Planning Analytics database 10.1 and later have `ProgressMessage=T` set by default.

ProportionSpreadToZeroCells

Allows you to perform a proportional spread from a consolidation without generating an error when all the leaf cells contain zero values.

In this case, Planning Analytics applies an equal spread to the empty cells when the ProportionSpreadToZeroCells parameter is enabled. This functionality is enabled by default.

Parameter type: optional, static

Behavior when ProportionSpreadToZeroCells is enabled

This parameter and functionality are enabled by default, allowing you to complete a spread operation without an error when you perform a proportional spread on a consolidation where all the leaf cells are zero. In this scenario, Planning Analytics converts the typed entry of "P###" to "LS*###" and applies the spread as an equal spread.

When this parameter is enabled *and* data *exists* in any of the leaf cells, the behavior is the same as previous versions of Planning Analytics when performing a proportional spread.

This parameter is on by default and it is not necessary to enable it. However, if you want to explicitly configure it, set the ProportionSpreadToZeroCells parameter to T (True) in the Planning Analytics database configuration:

```
ProportionSpreadToZeroCells=T
```

Behavior when ProportionSpreadToZeroCells is disabled

Setting this parameter to F (False) disables this feature. An error displays when you try to perform one of the following proportional spreading operations:

- In TM1 Contributor - Enter a number in a consolidated cell where all of the leaf cells for that consolidation contain zeros.
- In TM1 Contributor and other Planning Analytics clients - Perform a proportional spread operation by either entering a spreading code and number such as "P###" in a cell, or access a proportional spread from the right-click menu when the leaf cells for that consolidation all contain zeros.

These operations make the Planning Analytics database perform a proportional spread, but the operation fails because all of the leaf cells contain zeros.

To disable this functionality, set the ProportionSpreadToZeroCells parameter to F (False) in the Planning Analytics database configuration:

```
ProportionSpreadToZeroCells=F
```

PullInvalidationSubsets

Reduces metadata locking by not requiring an R-lock (read lock) on the dimension during subset creation, deletion, or loading from disk.

Parameter type: optional, dynamic

Default value: T (enabled)

When a user logs in, the system loads the user's unregistered subsets from disk. At the same time, a TurboIntegrator process that edits a dimension will hold an IX (intent-to-write) lock on the dimension for the process duration. In previous releases, or when this parameter is set to F (disabled), logging in could be blocked for the entire duration of a long-running TurboIntegrator process. Planning Analytics lock types are incompatible with each other.

RawStoreDirectory

Indicates the location of the temporary, unprocessed log file for audit logging if logging takes place in a directory other than the data directory.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, dynamic

If this parameter is not entered, by default the unprocessed audit log file is saved in the directory listed in the DataBaseDirectory parameter.

For details on other audit logging parameters, see “AuditLogMaxFileSize” on page 242, “AuditLogMaxQueryMemory ” on page 242, “AuditLogOn” on page 242, and “AuditLogUpdateInterval” on page 243.

ReceiveProgressResponseTimeoutSecs

The ReceiveProgressResponseTimeoutSecs parameter configures the Planning Analytics database to sever the client connection and release resources during a long wait for a Cancel action.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, dynamic

When the Planning Analytics database is performing lengthy operations for a client, periodic "progress" messages are sent to the client application. The client responds to these messages with an indication of whether the user has pressed the Cancel button, in which case the lengthy operation is terminated. These responses are generated automatically by the network code in the client application; there is no user interaction involved. After sending the progress message the server waits for a response from the client application. As the database is waiting, the client's thread will continue to hold resource locks on the Planning Analytics database, preventing other users from making other server requests which require the same resource locks.

In some particular situations, most notably running Planning Analytics clients under a Citrix environment, the response from the client application never arrives back at thePlanning Analytics database, causing the database to wait for an infinite amount of time. This results in a system lockup, because the client's thread holds resource locks that are never released.

The ReceiveProgressResponseTimeoutSecs parameter lets you configure your database to detect this situation and to sever the client connection, releasing the resources. When the parameter is set to a valid interval (in seconds), the database process will terminate the client connection, releasing any resource locks, if the database does not detect the client application's response within the specified interval.

For example, if ReceiveProgressResponseTimeoutSecs=20 and the client application does not respond to the progress message sent from the database within 20 seconds, the client connection is terminated. Again, no user action is required to generate this response. The response is automatically generated by the client application, so that if the response does not arrive within 20 seconds, it is an indication that there is something seriously wrong with the client or the underlying network.

ReceiveProgressResponseTimeoutSecs is an optional configuration parameter. If the parameter is not present in the Planning Analytics database configuration, processes are not terminated when a client does not respond to a progress message from the TM1 Server.

For some Planning Analytics database installations, the ClientMessagePortNumber defines a separate thread to use for cancellation messages without tying up reserves. When ClientMessagePortNumber is available, ReceiveProgressResponseTimeoutSecs is not used.

ReduceCubeLockingOnDimensionUpdate

Reduces the occurrence of cube locking during dimension updates.

Parameter type: optional, static

Default value: F (disabled)

You can use this parameter to reduce cube locking during dimension updates.

Previously, whenever a dimension was updated, all cubes that used this dimension had to be locked IX so that their rules could be recompiled and checked. This approach meant that if two dimensions used the same cube, they could not be modified simultaneously. Often, updating a dimension does not change the existing rules. For example, adding an element that is not yet referenced by the rules.

Now, you can use this parameter to maintain dimension to cube consistency and coherency. When `ReduceCubeLockingOnDimensionUpdate=T`, the same coherency is maintained by using only a RO lock, which is less prone to causing contention.

Instead of IX locking the cube, the server first makes a copy of the rule to recompile it to the side to see whether an IX lock is necessary; often it is not.

To enable this functionality, add the following line to the Planning Analytics database configuration:

```
ReduceCubeLockingOnDimensionUpdate=T
```

RulesOverwriteCellsOnLoad

Prevents cells from being overwritten on Planning Analytics database load in rule-derived data.

Parameter type: optional, static

During the processing of feeders for a cube, a cube's value can be wiped out if there is a rule for that cell. When the cube that had a cell wiped out is saved, the value is gone so the action has no effect on the cube. However, if the rule is edited but the cube is not modified later, the cube is not saved to disk. In that case, real cell values might be wiped out when the rules run.

The RulesOverwriteCellsOnLoad parameter can be used to prevent the zeroing out action after a rule is edited.

If you are changing rules and the rules might cause some cells that have data to become rule-derived because of edits, set RulesOverwriteCellsOnLoad=F in the Planning Analytics database configuration.

If this parameter is set to T, rule-derived cells are wiped to zero whenever the server loads. The data value in those cells is lost even if the rule is changed later so that the cell is no longer rule-derived.

```
RulesOverwriteCellsOnLoad=F
```

Important:

In IBM Planning Analytics version 2.0.7 or later, if this parameter is not present in the Planning Analytics database configuration, then it is assumed to be False by default.

In IBM Planning Analytics version 2.0.6 or earlier, if this parameter is not present in the Planning Analytics database configuration, then it is assumed to be True by default.

RunningInBackground

When you add the line `RunningInBackground=T` to Planning Analytics database configuration, the Planning Analytics database on UNIX runs in background mode.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, static

If you use the `startup_tm1s.sh` and `shutdown_tm1s.sh` scripts to start and stop your Planning Analytics database, set `RunningInBackground=T`.

SaveFeedersOnRuleAttach

When set to False, postpones writing to feeder files until SaveDataAll and CubeDataSave are called, instead of updating the files immediately after rules are changed and feeders are generated at the Planning Analytics database start time.

Parameter type: optional, dynamic

Default value: True

SaveTime

Sets the time of day to execute an automatic save of Planning Analytics data; saves the cubes every succeeding day at the same time. As with a regular shutdown, SaveTime renames the log file, opens a new log file, and continues to run after the save.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, dynamic

The SaveTime parameter is not available when running the Planning Analytics database as a Windows service.

The format of the SaveTime parameter is *dd:hh:mm* where:

- dd is the number of days from today that the system will start automatically saving data. For example, 00 is today, 01 is tomorrow.
- hh:mm is the time of day in 24-hour format.

SecurityPackageName

If you configure the Planning Analytics database to use Integrated Login, the SecurityPackageName parameter defines the security package that authenticates your user name and password in Microsoft Windows.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, static

Valid values are:

- Negotiate
- Kerberos
- NTLM

When runningPlanning Analytics locally, set `SecurityPackageName=Negotiate` in Planning Analytics database configuration. `Negotiate` selects Kerberos unless it cannot be used by one of the systems involved in the authentication. If `Negotiate` is set and Kerberos is not available, NTLM is used, and if NTLM is not configured TM1 will error out.

The behavior of `SecurityPackageName` when using Integrated Login to authenticate via the TM1 REST API is slightly different.

- When `SecurityPackageName=Negotiate`, the TM1 REST API supports both Kerberos and NTLM.
- When `SecurityPackageName=NTLM`, but your environment also supports Kerberos, the TM1 REST API will allow access to users with Kerberos or NTLM. The reason is that NTLM has been superseded by Kerberos, so the TM1 REST API will behave as if `SecurityPackageName` was set to `Negotiate`.
- When `SecurityPackageName=Kerberos`, but your environment also supports NTLM, the TM1 REST API will reject NTLM users and allow access only to Kerberos users.

ServerCAMURI

Specifies the URI for the internal dispatcher that the Planning Analytics database should use to connect to Cognos Authentication Manager (CAM).

This parameter is not applicable to TM1 Database 12.

The URI is specified in the form

```
http[s]://fully-qualified host IP address:port/p2pd/servlet/dispatch
```

Note: In Planning Analytics version 2.0.9 or later, you can configure your TM1 Server CAM URI with a Server Name Indication (SNI). The SNI can be set using the existing ServerCAMURI parameter in the format of SNI;URI.

Parameter type: optional, dynamic

For example,

```
https://vottbies005.ent.ad.cognos.com:9443/p2pd/servlet/dispatch
```

For CAM authentication this setting must include the fully-qualified name for the server that the Cognos Analytics certificate was created for.

To determine the server that the certificate was issued for:

1. Enter the SSL URI to the Cognos Analytics dispatcher in a browser.
2. Update the `ServerCAMURI` setting in the tm1s.cfg with the fully-qualified name of that server.

For example:

```
ServerCAMURI=https://vottbies005.ent.ad.cognos.com:9443/p2pd/servlet/dispatch.
```

To configure the Cognos TM1 Applications Server to work with CAM SSL,

1. Ensure the following settings are made in Cognos Configuration:
   - **Force Qualified Paths** set to **False**.
   - **Use Mutual Authentication** set to **True**
2. Accept the certificate when saving.

ServerCAMURIRetryAttempts

Specifies the number of attempts made before moving on to the next ServerCAMURI entry in the Planning Analytics database configuration.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, static

This parameter is applicable if you are using Planning Analytics database with Cognos Analytics security and you have defined multiple dispatchers in the Planning Analytics database configuration. Dispatchers are defined using the ServerCAMURI parameter.

For example, suppose you have three **`ServerCAMURI`** parameters specified in the Planning Analytics database configuration and `ServerCAMURIRetryAttempts=7`.

```
ServerCAMURI=http://server1:9300/p2pd/servlet/dispatch
ServerCAMURI=http://server2:9300/p2pd/servlet/dispatch
ServerCAMURI=http://server3:9300/p2pd/servlet/dispatch
ServerCAMURIRetryAttempts=7
```

The first dispatcher (http://server1:9300/p2pd/servlet/dispatch) is used and tried seven times. If it does not respond, the second one is then used and tried seven times. If it does not respond, the third dispatcher is then tried seven times. If the third one does not respond, the login fails.

Default value: 3

ServerLogging

Generates a log with the security activity details on the Planning Analytics database that are associated with Integrated Login.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, dynamic

The log file, named Tm1server.log, is saved to the TM1 Server data directory. The ServerLogging parameter is useful only if your Planning Analytics database is configured to use Integrated Login.

Set ServerLogging to T in Planning Analytics database configuration. Note also that if `ServerLogging=T` is set, you must rename the Planning Analytics database message logfile tm1server.log by editing the corresponding parameter in the logger configuration file tm1s-log.properties.

Note: If you change this parameter dynamically (without restarting the Planning Analytics database), logging occurs only for new client sessions.

ServerName

Sets the name of the Planning Analytics database. If you do not supply this parameter, Planning Analytics database names the server Local and treats it as a local server.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, static

ServicePrincipalName

Specifies the service principal name (SPN) when using Integrated Login with TM1 Web and constrained delegation.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, static

Use the following format to add the parameter to the Planning Analytics database configuration:

`ServicePrincipalName=SPN`

The value you set here must match the service name that has also been mapped to a domain account on the Active Directory domain controller using the Microsoft command-line tool, setspn.exe.

For example, if you use setspn.exe to add an SPN as follows:

`setspn -a FPM/TM1 WbSvr_Account`

then you need to set the ServicePrincipalName parameter like this:

`ServicePrincipalName=FPM/TM1`

For more information about constrained delegation and SPN configuration, search the Microsoft website for the topic "Kerberos Technical Supplement for Windows".

SpreadErrorInTIDiscardsAllChanges

If SpreadErrorInTIDiscardsAllChanges is enabled and a spreading error occurs as part of a running TurboIntegrator script, all changes that were made by that TurboIntegrator script are discarded.

Parameter type: optional, static

To enable SpreadErrorInTIDiscardsAllChanges, add the following line to the Planning Analytics database configuration:

```
SpreadErrorInTIDiscardsAllChanges=T
```

Default value: F

SpreadingPrecision

Use the SpreadingPrecision parameter to increase or decrease the margin of error for spreading calculations. The SpreadingPrecision parameter value is specified with scientific (exponential) notation.

Parameter type: optional, dynamic

Floating point arithmetic on computers is not 100% precise. When a computer calculates very small numbers, a margin of error is applied to the calculation. If the computer adds a set of numbers, and the resulting sum is close to the target value within the margin of error, the sum is considered accurate.

The margin of error for certain Planning Analytics database calculations is controlled through the SpreadingPrecision parameter. The default value is SpreadingPrecision=1e-8. This value is used in the following spreading scenarios:

- Spreading from a consolidated cell.
- Spreading in leaf cells whose consolidated value has a hold applied.

Spreading from a Consolidation

When you execute a proportional data spread from a consolidated cell, Planning Analytics database writes the numbers to each cell in the range, and rolls up the total to recalculate the consolidation. The total of all cells in the consolidation is then compared to the original value you provided for the spread function. The total might be different from the target value because of the rules applied to the n-level elements or the consolidated cell itself.

If the rules are such that the resultant value does not match the spread desired value, an error will be generated and the spread operation will not be done.

If SpreadingPrecision=1e-8, the total calculated by Planning Analytics database for the consolidation must be within 0.000001% of the target value (99.999999% accurate), or Planning Analytics database displays an error. An error of more than US$0.01 on a consolidated spread of US$1,000,000 results in an error.

You can increase or decrease the margin of error for these types of calculations using the SpreadingPrecision parameter.

The following examples include valid values for the SpreadingPrecision parameter:

- `SpreadingPrecision=1e-4`
- `SpreadingPrecision=1e-8`
- `SpreadingPrecision=1e-99`

The exponent value in the notation must be two digits or less. For example, `SpreadingPrecision=1e-123` is not a valid parameter value, as the exponent contains three digits.

Spreading and Consolidation Holds

The SpreadingPrecision parameter also has an effect under these conditions:

- When you spread values to some leaf cells that roll up into a consolidation
- A consolidation with a hold applied to it

For example, suppose you have the consolidation Q1 with values Jan, Feb, and Mar.

If Q1- has a consolidated hold applied, and you spread values to Jan and Feb, Planning Analytics database does the following:

- Applies the spreading to Jan and Feb.
- Adjusts Mar.
- Adds the three n-level elements together.
- Compares the sum of the n-level elements to the value of Q1.

If the sum is accurate to within the margin of error specified by the SpreadingPrecision parameter, the spread succeeds. If the sum falls outside the margin of error specified by the SpreadingPrecision parameter,Planning Analytics database generates an error.

SQLRowsetSize

Added in v2.0.3 Specifies the maximum number of rows to retrieve per ODBC request.

This parameter can be used to improve execution time for long-running processes that are caused by slow Microsoft SQL queries. It can benefit any users that use an ODBC driver that does not have a fetch setting, such as MS SQL and Db2. It does not affect Oracle database users.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, dynamic

Note: This parameter applies to all data sources even if you are pulling data from multiple different data sources.

To set this parameter, add the following line to the Planning Analytics database configuration:

```
SQLRowsetSize=nn
```

Where nn is any positive integer that represents the maximum number of ODBC requests to make.

The minimum value is 50 (default).

For cloud only customers, the default value is 500. The entry `SQLRowsetSize=500` is added to the Planning Analytics database configuration for any new provision in IBM Planning Analytics on Cloud. If the setting exists in the Planning Analytics database configuration, it is not changed.

The recommended value depends on the long-running process that you are trying to improve processing for. You can double the values (100, 200, and so on) to test for the best results. Increasing the value of `SQLRowsetSize` fetches more results per ODBC request and incurs network latency fewer times.

A larger value means that more memory is used per fetch. You need to look at memory consumption to see whether the increase in memory usage is acceptable (it might be noticeable if you have lots of data per row).

SSLCertAuthority

Specifies the name of the Planning Analytics database's certificate authority file. This file must reside on the computer where the Planning Analytics database is installed.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional (required for SSL), static

If you are using your own SSL certificates with Planning Analytics, you can determine this value by referring to the Microsoft Management Console. Click **Certificates** > **Personal** > **Certificates**. The principal name is displayed in the Issued By column of the Properties pane.

SSLCertificate

Specifies the full path of the Planning Analytics database's certificate file, which contains the public/private key pair.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional (required for SSL), static

SSLCertificateID

Specifies the name of the principal to whom the Planning Analytics database's certificate is issued.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional (required for SSL), static

If you are using your own SSL certificates with Planning Analytics database, you can determine this value by referring to the Microsoft Management Console. Click **Certificates** > **Personal** > **Certificates**. The principal name is displayed in the Issued To column of the Properties pane.

StartupChores

StartupChores is a configuration parameter that identifies a list of chores that run at database startup.

Parameter type: optional, static

To run a chore at startup before users login or other scheduled chores run, add this parameter with the names of the chores to run separated by a colon, for example:

```
StartupChores=ChoreName1:ChoreName2:ChoreName3:ChoreNameN
```

If this parameter is not specified, then no chores are executed at database startup. If the chore name specified does not match an existing chore then an error is written to the database log and execution continues to the next specified chore.

The value of the configuration parameter can be retrieved by a client application as a database property called StartupChores using the existing TM1ObjectPropertyGet call.

This is a read-only property and set operations are rejected. The value of the property can be changed only by editing the configuration file and restarting the database.

SubsetElementBreatherCount

This parameter manages the wayPlanning Analytics database handles locking behavior for subsets.

Parameter type: optional, dynamic

When

```
SubsetElementBreatherCount=-1
```

The Planning Analytics database never releases the lock on subsets when other requests for the subset are pending. This setting is the default. It can optimize view performance for a single user, but at the cost of multi-user concurreny.

When `SubsetElementBreatherCount` is set to any value greater than zero (0), the Planning Analytics database releases the lock on subsets when other requests for the subset are pending, then reacquires the lock after pending requests are processed. This setting improves performance when multiple users attempt to access the same subset, particularly when the subset contain more than 100 elements.

SupportOpenConnect

This parameter indicates that Planning Analytics database supports OpenID Connect (OIDC) as a authentication method.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, dynamic

Default=`False`

SupportPreTLSv12Clients

As of TM1 10.2.2 Fix Pack 6 (10.2.2.6), all SSL-secured communication between clients and databases in Planning Analytics uses Transport Layer Security (TLS) 1.2. This parameter determines whether clients prior to 10.2.2.6 can connect to the 10.2.2.6 or later TM1 server.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, static

Default is F (False).

To allow clients prior to 10.2.2.6 to connect to the 10.2.2.6 (or later) TM1 server, add the following line to Planning Analytics database configuration:

```
SupportPreTLSv12Clients=T
```

When the Planning Analytics database is configured to allow connections from pre-TLS v1.2 clients, the connection with such clients is established using TLS 1.0.

If `SupportPreTLSv12Clients` is not present in the Planning Analytics database configuration, or if `SupportPreTLSv12Clients=F`, clients prior to 10.2.2.6 **cannot** connect to a 10.2.2.6 or later Planning Analytics databases.

SvrSSLExportKeyID

Specifies the identity key used to export the Planning Analytics database's certificate from the Microsoft Windows certificate store.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, static

In most cases, the value for **`SvrSSLExportKeyID`** will be identical to the value for SSLCertificate.

SyncUnitSize

Sets the frequency of saving a check point during a synchronization process in case there is a network connection failure.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, static

Note: When you use SyncUnitSize, you must also configure the MaximumSynchAttempts parameter. For more information, see "MaximumSynchAttempts" on page 271.

If you configure both the SyncUnitSize and MaximumSynchAttempts parameters and a synchronization process is interrupted by a network connection failure, the process will attempt to reconnect and complete the synchronization starting from the last check point.

To set this parameter, add the following line to the Planning Analytics database configuration for the planet server:

```
SyncUnitSize=n
```

where n represents the number of synchronization records written to the transaction log file, Tm1s.log, after which a check point will be saved.

The default value is 1000.

The minimum recommended value is 500.

tlsCipherList

Specifies a comma-separated list of supported cipher suites in priority sequence.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, static

Use tlsCipherList to specify what cipher suites are acceptable for your Planning Analytics system. The listed cipher suites are presented to the SSL negotiation in the order in which they are listed, for both the client and server sides of the negotiation. At least one of the listed cipher suites for the client and database must match.

The following cipher suites are supported:

- RFC 2246: The TLS Protocol Version 1.0 (http://www.ietf.org/rfc/rfc2246.txt)
- RFC 4346: The Transport Layer Security (TLS) Protocol Version 1.1 (http://www.ietf.org/rfc/rfc4346.txt)
- RFC 5246: The Transport Layer Security (TLS) Protocol Version 1.2 (http://www.ietf.org/rfc/rfc5246.txt)
- RFC 4492: Elliptic Curve Cryptography (ECC) Cipher Suites for Transport Layer Security (TLS) (http://www.ietf.org/rfc/rfc4492.txt)
- RFC 5289, TLS Elliptic Curve Cipher Suites with SHA-256/384 and AES Galois Counter Mode (GCM) (http://www.ietf.org/rfc/rfc5289.txt)

For example:

```
tlsCipherList=TLS_RSA_WITH_AES_128_CBC_SHA,
TLS_RSA_WITH_RC4_128_MD5, TLS_RSA_WITH_AES_128_CBC_SHA256
```

TopLogging

Added in v2.0.7 Enables dynamic logging of the threads that are running in an instance of the Planning Analytics database.

This parameter is not applicable to TM1 Database 12.

Parameter type: Boolean, optional, dynamic

By default, the **TopLogging** parameter is set to `False`.

Note: You must add `TopLogging=T` to the Planning Analytics database configuration before you start your Planning Analytics database to enable logging.

TopScanFrequency

Added in v2.0.7 Specifies the logging frequency (interval) in seconds for the **TopLogging** logger, which enables dynamic logging of the threads that are running in an instance of the Planning Analytics database.

This parameter is not applicable to TM1 Database 12.

Parameter type: Integer, optional, dynamic

By default, the **TopScanFrequency** parameter is set to 5 seconds. Setting this parameter to 0 disables the logger.

See also **TopLogging**.

TopScanMode.Sandboxes

Added in v2.0.7 Enables logging of the active sandboxes for the current Planning Analytics database, the total memory that is consumed for all sandboxes by a user, and the number of sandboxes for this user.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, dynamic

By default, the **TopScanMode.Sandboxes** parameter is set to F (False).

See also **TopLogging**.

TopScanMode.SandboxQueueMetrics

Added in v2.0.7 Enables logging of sandbox queue metrics. The name of the node for the sandbox, the status of the sandbox in the queue, and the length of time the sandbox was in the queue before it was processed is logged for each sandbox in the queue.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, dynamic

By default, the **TopScanMode.SandboxQueueMetrics** parameter is set to F (False).

See also **TopLogging**.

TopScanMode.Threads

Added in v2.0.7 Enables logging of the current processing state of each thread. This information includes the name of the user or process that started the thread, the API function that the thread is executing, the lock status of the last object that was locked, the number of objects that are used by the thread, and the total time, in seconds, that the current API function or chore process has been processing.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, dynamic

By default, the **TopScanMode.Threads** parameter is set to T (True).

See also **TopLogging**.

UnicodeUpperLowerCase

This configuration parameter instructs the Planning Analytics database to identify and handle Unicode object names, preventing the creation of identical Unicode object names that vary only in case.

Parameter type:

- Optional
- Static

  If you change this parameter value, restart the Planning Analytics database to apply the new value.

TM1 treats ASCII object names as case-insensitive; the element name SALES is equivalent to sales. A reference to either SALES, sales, or even SaLeS is considered to be a reference to a single element. Similarly, the cube name Projections is equivalent to PROJECTIONS.

However, Unicode object names are **not** treated as case-insensitive. Consequently, a server can contain two identically named objects that varied only in case. For example, the elements NEMÈIJA and nemèija can exist in a single dimension, and each is considered a unique element.

Include the parameter `UnicodeUpperLowerCase=T` in your Planning Analytics database configuration if you have developed applications that rely on Unicode object names that vary only in case, and want to maintain such functionality.

Include the parameter `UnicodeUpperLowerCase=F` in your Planning Analytics database configuration to prevent the creation of identically named Unicode object names that vary only in case. When `UnicodeUpperLowerCase=F`, Unicode object names are handled just as ASCII object names, and are case-insensitive.

If this parameter is not present in Planning Analytics database configuration, it is set to T by default and Planning Analytics treats Unicode object names as case-sensitive

UseExcelSerialDate

Enables the use of Microsoft Excel serial dates instead of Planning Analytics serial dates.

Parameter type: optional, static

When UseExcelSerialDate is enabled, Planning Analytics rules functions and TurboIntegrator functions use Jan 1, 1900 as a base date for serial dates instead of Jan 1, 1960.

In the past, Planning Analytics rules functions used serial dates that represent the number of days elapsed since Jan 1, 1960. This conflicts with Microsoft Excel serial dates, which represent the number of days elapsed since Jan 1, 1900. The number formatting features in Planning Analytics expect cube data to use Microsoft Excel serial dates rather than Planning Analytics serial dates.

To avoid the need to convert dates, enable UseExcelSerialDate to have rule functions use Microsoft Excel dates rather than legacy Planning Analytics dates.

```
UseExcelSerialDate=T
```

Default value: F

Example

You can see the serial date issue in this example.

The following rule returns May 26, 2015 as a serial date.

```
[]= N:(DAYNO('2015-05-26'));
```

The unformatted result is 20234, which indicates that 20234 days have elapsed since Jan 1, 1960. The rule function is using legacy Planning Analytics serial dates.

When you set the display format in TM1 to a date format, such as `mmmm dd, yyyy`, the result is May 25, 1955, because May 25, 1955 is 20234 days away from Jan 1, 1900. The value is being interpreted as a Microsoft Excel serial date.

After you add `UseExcelSerialDate=T` to the Planning Analytics database configuration and restart the database, you see the expected result, May 26, 2015, in Planning Analytics. The rule function is now using Jan 1, 1900 as the base date for serial dates.

UseLocalCopiesforPublicDynamicSubsets

Allows public dynamic subsets to improve performance and reduce locking by using local copies of the subset when possible.

Parameter type: optional, dynamic

By default, or if the parameter is not present in the Planning Analytics database configuration, **UseLocalCopiesforPublicDynamicSubsets** is enabled. To restore the earlier method of saving dynamic subsets, set this parameter to F.

UserDefinedCalculations

Enables the **Rollup** and **Insert Subset** options to create user-defined consolidations in the Subset Editor in Planning Analytics, and enables the **Create Custom Consolidation** button in TM1(r)Web clients.

Important: UserDefinedCalculations is a historical name for this setting and refers to user defined consolidation for user interface features only.

Parameter type: optional, dynamic

By default, UserDefinedCalculations is enabled.

To disable user-defined consolidations, add the following line to Planning Analytics database configuration:

```
UserDefinedCalculations=F
```

UseSQLFetch UseSQLFetchScroll UseSQLExtendedFetch

These parameters instruct Planning Analytics database to use a particular fetch call.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional, dynamic

When you run TurboIntegrator process that extracts information from an ODBC data source, Planning Analytics database tries to use the most efficient SQL fetch call possible.Planning Analytics database queries the ODBC driver to determine which of the following SQL Fetch calls to use to extract the data:

SQLFetch(), an ODBC 1 function

SQLExtendedFetch(), an ODBC 2function

SQLFetchScroll(), an ODBC 3 function

These parameters are all dynamic.

If Planning Analytics database receives no response when it queries the ODBC driver, your Planning Analytics database process will result in an error unless one of the following parameters is set to T in your Planning Analytics database configuration:

UseSQLFetch

UseSQLFetchScroll

UseSQLExtendedFetch

These parameters instruct Planning Analytics database to use a particular fetch call. You must ensure that the call specified in Tm1s.cfg is appropriate for the ODBC driver being accessed, and you can specify only one of these parameters in Planning Analytics database configuration.

For example, to instruct the Planning Analytics database to use the SQLExtendedFetch() call to extract data from an ODBC source, add the following line to Planning Analytics database configuration:

```
UseSQLExtendedFetch=T
```

UseSSL

Enables or disables SSL on the Planning Analytics database.

This parameter is not applicable to TM1 Database 12.

Parameter type: optional (required for SSL), static

This parameter is enabled by default.

To disable SSL, set UseSSL=F.

Default value: T

When UseSSL=T, you must set several other Planning Analytics database configuration parameters that manage SSL implementation.

UseStargateForRules

Indicates if a rule uses the Stargate view.

Parameter type: optional, static

By default, any time a rule references a calculated value, the value is retrieved from a Stargate view stored in memory (if available). Using the Stargate view for rules, in most cases, results in a significant improvement in performance. It is more efficient to retrieve a calculated value from memory than to request and retrieve a calculation from the server.

In some unique instances that are difficult, if not impossible, to determine in advance and can only be determined through trial and error, retrieving a calculated value from a Stargate view is actually slower than requesting and retrieving the value from the server. In these instances, add the following line to Planning Analytics database configuration to instruct the Planning Analytics database rules to always retrieve the calculated values from the server and improve performance.

```
UseStargateForRules=F
```

Contact customer support before adding the UseStargateForRules parameter.

VersionedListControlDimensions

Removes contention on control dimensions such as }Cubes, }Dimensions, }Groups, }Clients. Allows creation of new objects without IX locking the dimension.

Parameter type: optional, static

Default value: T (enabled)

Set to F (False) to disable versioned list control dimensions.

ViewConsolidationOptimization

Enables or disables view consolidation optimization on the Planning Analytics database.

Parameter type: optional, static

Using this parameter improves the performance of calculating consolidated elements. By default, ViewConsolidationOptimization is enabled on the Planning Analytics database.

View consolidation optimization stores the consolidated values that use leaf element components on either the row or column axis. For example, consider the dimension structure Year, 1Quarter with values Jan, Feb, and Mar.

When either a row or column subset uses the Jan element, both the 1 Quarter and Year consolidations are calculated and stored for future reference. This improves performance but increases the amount of memory required for a given view.

To disable view consolidation optimization, add the following line to Planning Analytics database configuration:

```
ViewConsolidationOptimization=F
```

ViewConsolidationOptimizationMethod

This parameter defines the method used to achieve view consolidation optimization when the ViewConsolidationOptimization parameter is enabled on the Planning Analytics database.

Parameter type: optional, static

There are two methods that ViewConsolidationOptimization can use to calculate and store consolidations: ARRAY or TREE. The ARRAY method stores consolidations in a temporary array. The TREE method stores consolidations in a tree.

ViewConsolidationOptimizationMethod should be set to TREE in most circumstances. This setting provides the best performance in normal operations.

In rare instances, using the TREE method can result in a degradation of performance. In such an instance, try setting the parameter to ARRAY. For example, in the uncommon circumstance when dimensions have just a few leaf elements rolling up to many consolidations, ViewConsolidationOptimizationMethod should be set to ARRAY.

To set this parameter, add the appropriate line to your Planning Analytics database configuration:

```
ViewConsolidationOptimizationMethod=TREE
```

or

```
ViewConsolidationOptimizationMethod=ARRAY
```

If ViewConsolidationOptimizationMethod is not explicitly set in the Planning Analytics database configuration, the TREE method is used by default.

ZeroWeightOptimization

Determines whether consolidated members with a weight of 0 are factored into the computation of consolidated cell values or consolidation functions. Consolidation functions include ConsolidatedCount, ConsolidatedMax, ConsolidatedMin, ConsolidatedAvg, ConsolidatedCount, and ConsolidatedCountUnique.

Parameter type: optional, static

When set to `true`, members for which the weighting is zero are eliminated from the consolidation list, and are therefore not processed when calculating values for consolidated cells or consolidation functions. This is the default behavior.

When set to `false`, members for which the weighting is zero are included in the consolidation list, and are therefore factored into the calculations.

Default value: true

Chapter 17. Troubleshooting Planning Analytics Local

Troubleshooting is a systematic approach to solving a problem. The goal of troubleshooting is to determine why something does not work as expected and how to resolve the problem.

Gathering information

Before contacting IBM Support, collect diagnostic data, such as system information, symptoms, log files, and traces, that are required to resolve a problem. Gathering this information saves time.

IBM Support

You can access IBM support resources from the IBM Support community. Sign in to get help or to open a case.

Fix Central

Fix Central provides fixes and updates for your software, hardware, and operating system.

IBM Planning Analytics community

Visit the IBM Planning Analytics community to share ideas and solutions with your peers.

How do I fix my Planning Analytics Workspace Local installation?

This section lists the most common errors that you might encounter when you install IBM Planning Analytics Workspace Local.

Why can't I open Planning Analytics Workspace in a browser?

If you can't access Planning Analytics Workspace in a browser or your Planning Analytics Workspace services aren't starting up, check your browser for one of the following messages.

Symptoms

One of the following messages appears in your web browser:

- `"Planning Analytics Workspace is unavailable. Try again in a few minutes"`
- `"This site can't be reached"`

What to do

Note: All PowerShell commands must be run from an elevated PowerShell session.

1. Make sure that Docker is up and running. Type the following command in a PowerShell window:

   ```
   - start-service docker
   ```

2. Check your Windows Services to make sure "Docker Engine" is running.
3. In a PowerShell window, navigate to the Planning Analytics Workspace installation directory, and type in the following command.

   ```
   ./scripts/paw.ps1
   ```

What to do next

If the issue persists or if the script returns an error, see "How do I handle errors when I run the start script?" on page 300.

Why doesn't the Planning Analytics Workspace administration tool start?

If you can't launch the Planning Analytics Workspace administration tool or the administration tool exits unexpectedly, check the `/log/admintool/up.log` for one of the following messages.

Symptoms

One of the following messages appears when the `./scripts/paw.ps1` script runs.

- `"Something went wrong at step 'Starting IBM Planning Analytics Administration Tool' Execution failed with exit code 1"`
- `"Cannot start service admintool: failed to create endpoint admintool on network nat: HNS failed with error : Element not found. Encountered errors while bringing up the project."`

What to do

Note: All PowerShell commands must be run from an elevated PowerShell session.

1. Navigate to the Planning Analytics Workspace installation directory, and open the `/log/admintool/up.log` file.
2. If the error message mentions HNS, see "How do I handle errors with the Host Network Service (HNS)?" on page 301.
3. If the error message doesn't mention HNS, run the following command from a PowerShell window:

```
./scripts/paw.ps1
```

What to do next

If the issue persists, see "How do I handle errors when I run the start script?" on page 300.

How do I handle errors when I run the start script?

If running the `./scripts/paw.ps1` script doesn't restart services or returns Host Network Service (HNS) errors, Windows filter errors, or pa-gateway errors, you can try the following solutions.

Symptoms

One of the following messages appears when the `./scripts/paw.ps1` script runs.

- `C:\Program Files\Docker\docker.exe: failed to register layer: re-exec error: exit status 1: output: ProcessUtilityVMImage C:\ProgramData\docker\windowsfilter\<id>\UtilityVM: The process cannot access the file because it is being used by another process.`
- `Recreating 32bf8925a845_32bf8925a845_32bf8925a845_admintool Error: for <service-Name> Cannot start <service-Name>: hcsshim: PrepareLayer failed in Win32: The handle is invalid. (0x6) layerId=<ID> flavour=1"`
- `For pa-gateway Cannot start service pa-gateway: failed to create endpoint pa-gateway on network nat: HNS failed.`
- `HNS failed with error: The file cannot be opened because it is in the process of being deleted..`

- `Cannot start service <service-Name>: failed to create endpoint <service-name> on network nat: HNS failed with error: The object already exists.`
- `Cannot Start service <service-name>: Container is marked for removal and cannot be started.`

What to do

Note: All PowerShell commands must be run from an elevated PowerShell session.

1. If you see a `windowsfilter` error, it is possible that anti-virus software is preventing your Windows containers from starting. For more information, see Docker for Windows Server fails to pull image or start container. It is also recommended that you get confirmation from your anti-virus vendor that the anti-virus software does support Windows containers. If you need to add exclusions to your anti-virus scanning protocols, the following locations are recommended:
   - `C:\ProgramData\docker` (Or the docker-root location in the daemon.json file)
   - `C:\ProgramData\Microsoft\Windows\HNS`
   - *<Planning Analytics Workspace install location>*
2. If the pa-gateway is not starting, make sure that nothing is running on port 80. If port 80 is free and the issue persists or other containers don't start, try the following commands in a PowerShell window:
   - ```
     docker container rm <container-name>
     ```
   - ```
     ./scripts/paw.ps1
     ```
3. If you see HNS errors, see "How do I handle errors with the Host Network Service (HNS)?" on page 301.

How do I handle errors with the Host Network Service (HNS)?

Sometimes the Docker network gets corrupted and the Host Network Service is affected. You must use the Microsoft Network cleanup script to resolve your issues.

What to do

Note: All PowerShell commands must be run from an elevated PowerShell session.

1. Get the Microsoft Network Cleanup Script from the MicrosoftDocs Virtualization documentation.
2. Run the cleanup script with the following syntax:

   ```
   .\WindowsContainerNetworking-LoggingAndCleanupAide.ps1 -Cleanup -ForceDeleteAllSwitches
   ```
3. If the cleanup script runs successfully, restart your computer and then run the `./scripts/paw.ps1` script.
4. If the cleanup script fails, run the following commands from PowerShell window:
   - ```
     docker container run hello-world:nanoserver
     ```
   - ```
     docker run -p 80:80 hello-world:nanoserver
     ```
5. If neither of the previous steps resolve the issue, review the resources and instructions available at https://learn.microsoft.com/en-us/virtualization/windowscontainers.

What to do next

In some cases, you might need to re-image the server because of a Docker network corruption at the registry level. Contact IBM Support to discuss available options or any further troubleshooting.

What do I do if Docker for Planning Analytics Workspace hangs?

The virus protection software that you use must fully support Windows Server 2016 and Docker.

Apply the latest updates to your virus protection software. For more information, see Antivirus software and Docker (https://docs.docker.com/engine/security/antivirus/)

How do I change default port numbers for Planning Analytics Workspace on Windows Server 2016?

You can change default HTTP (80) and HTTPS (443) ports that Planning Analytics Workspace uses on Windows Server 2016 if you're using them for other services.

Procedure

1. Open the `config/paw.ps1` file in a text editor.
2. Add the following lines, substituting your preferred ports:

```
$env:PAGatewayHTTPPort="80"
$env:PAGatewayHTTPSPort="443"
```

3. Restart Planning Analytics Workspace.

For more information, see “Configure parameters” on page 102.

How do I change the IP configuration of Planning Analytics Workspace Local?

If you can't access Planning Analytics Workspace Local over a VPN connection, it might be because they are using the same IP address. You can change the Planning Analytics Workspace Local IP address for the paw_net network to avoid conflicts.

What to do

To change the subnet for the paw_net network, run the following docker commands:

On Windows 2016

1. `stop-service docker`
2. `get-containernetwork | remove-containernetwork`
3. Create the file: `C:\ProgramData\docker\config\daemon.json` with the following contents:

```
{
    "fixed-cidr": "192.168.80.0/24"
}
```

   Where you substitute the desired subnet for paw_net.
4. `start-service docker`

For more information, see Customize the docker0 bridge.

On Linux

1. `docker network rm paw_net`
2. `docker network create -d bridge --subnet 10.12.0.0/16 paw_net`

   Where you substitute the desired subnet for paw_net.

   The script `scripts/create_network.sh` creates the initial paw_net network.

For more information, see Use bridge networks.

What are some common errors when installing Planning Analytics for Microsoft Excel?

This section lists the most common errors that you might encounter.

Configuration Issues

These issues are related to configuration and setup.

Convert to Formulas does not show value

You can create an Exploration View without experiencing an error, but when you convert that exploration sheet to formulas, cells no longer display values properly. In one of the cells that has no value, you click the cell and it shows the COGVAL formula, such as =COGVAL(C1, C2, $B10, C$8, B8). Attempting to do this on another workstation you find that values are displayed correctly. If a user with administrative rights to the workstation attempts to convert to formulas, the values are displayed correctly in the cells of the worksheet.

The user did not use Microsoft Excel before IBM Planning Analytics for Microsoft Excel was installed and did not get registered properly. There are two ways to resolve this problem. You can give the affected user local administration rights to the workstation or you can run the file **Register Cognos XLL.vbs**, which will add the proper registry entries for the new user.

For the **Register Cognos XLL.vbs** file process to work (both during the installation of the software or when run separately to add a new user) the Microsoft Excel registry entries must have been created by Microsoft Excel itself. You must ensure that the user run Microsoft Excel first, before attempting to add registry entries for IBM Planning Analytics for Microsoft Excel. You can examine the ntuser.dat that the script writes to check whether the user has been properly added.

Update server and package designations to make a server available

After changing the gateway alias or switching from a test to a production environment you receive the following error message advising you that the server is not available and that the Cognos gateway is unable to connect to the IBM Cognos Analytics server.

SERVER_NOT_AVAILABLE: The Cognos gateway is unable to connect to the Cognos Analytics server. The server may be unavailable or the gateway may not be correctly configured.

This is probably caused by a change in the gateway URI.

Update the server and package designation in a workbook to switch from a test to a production environment or to access information from a different set of financial data, such as a submission.

Procedure

1. Optionally, you can update information in cell references.
   - From the worksheet you want to update, open the new server and package.
   - From the Information folder, drag the updated server and package metadata to the server or package cell.
2. Optionally, you can update information in embedded text.
   - Use the Microsoft Excel search and replace function to update embedded references in the text of cell formulas.

The Cognos Office interface fails to initialize in Microsoft Office

IBM Cognos Office may not initialize when the Microsoft .NET Framework is not installed or the version is not correct. The required Microsoft .NET Framework version is 4.6.1 or later. Another possible reason for this condition is that the add-in is either not installed or not registered.

If you are running the wrong version of Microsoft .NET Framework, uninstall it and then reinstall Microsoft .NET Framework.

To install the IBM Cognos add-in, run the installation program.

Before you attempt to install Microsoft .NET Programmability Support, you must have installed Microsoft .NET Framework.

Cognos for Microsoft Office Fails to Initialize

If you use Internet Explorer to browse IBM Cognos Analytics and open a workbook, document, or presentation published by IBM Cognos for Microsoft Office, the document launches in Microsoft Office, but without full functionality.

To configure Internet Explorer to open Microsoft Office files in Microsoft Office instead of in Internet Explorer, you must use the Folder Options tool to update browse options. It is also possible to do this in Windows Registry.

Procedure

1. Open **My Computer**.
2. From the **Tools** menu, click **Folder Options**.
3. On the **File Types** tab, under **Registered file types**, click **Microsoft Excel Worksheet**, and then click **Advanced**.

   The **Edit File Type** dialog box appears.
4. Clear the **Browse in same window** check box and click **OK**.
5. Complete the same steps for Microsoft Office PowerPoint presentations and Microsoft Office Word documents.

Microsoft Office does not open a Microsoft Office document published from Cognos Office

If you observe Microsoft Office trying to open a published document twice when you double-click the workbook, document, or presentation from Microsoft Windows Explorer, the file association is either corrupted or not installed properly.

There are two options to resolve this issue. You can start the Microsoft Office application first, and then open the document using the **Open** command from the **File** menu, or you can reregister the file type.

Re-register file types with a Microsoft Office program

When you are not able to open a Microsoft Office document even though it is associated with the correct file type, you must re-register the file type with the appropriate Microsoft Office program, such as Excel, Word, or PowerPoint.

About this task

In these steps, program.exe is a placeholder for the executable file for the Microsoft Office program that you want to re-register. If you installed Microsoft Office to another location, use the path that is correct for that location.

Note: If you are using the command line on version 7 of Microsoft Windows operating system, you must elevate the rights of the command line to perform certain tasks, such as re-registering file types. To open an elevated command prompt, or a command prompt in Administrator mode, right-click the command prompt shortcut, and select **Run as Administrator**.

Procedure

1. From the **Start** menu, click **Run**.
2. To disassociate the program version, in the **Open** box, type the following command, and then click **OK**:

```
program.exe/regserver
```

3. To specify the default version, from the **Start** menu, click **Run**.
4. In the **Open** box, type the following command, and then click **OK**:

```
program.exe/regserver
```

Unable to Open Published Microsoft Office Documents from Cognos Connection

If the browser does not prompt you to open or save the workbook, document, or presentation, it may mean that the option to prompt before opening was cleared. Reset this option.

You must enable the **File Download** and **Automatic prompting for file downloads** in Internet Explorer.

Confirm opening of documents

The procedure to confirm opening of documents is as follows.

Procedure

1. Start the **Windows Control Panel**.
2. Double-click **Folder Options**.
3. From the **File Types** tab, in the **Registered file types** list, click **Microsoft Excel Worksheet**, and then click **Advanced**.
4. Ensure that the **Confirm open after download** check box is selected and click **OK**.
5. Repeat steps 3 and 4 for other Microsoft Office documents that are supported in IBM Cognos Office, such as **Microsoft Office Excel Template**, **Microsoft PowerPoint Presentation**, **Microsoft Office PowerPoint Template**, **Microsoft Word Document**, and **Microsoft Office Word Template**.
6. Click **Close**.

Reset internet security options

The procedure to reset internet security options is as follows.

Procedure

1. Start **Internet Explorer**.
2. From the **Tools** menu, click **Internet Options**.
3. From the **Security** tab, click the Web content zone for which you are updating these options, and then click **Custom Level**.
4. Scroll down to the **Downloads** section and click **Enable** for the **File download** and **Automatic prompting for file downloads** options.
5. Click **OK** twice.

.NET Messages are not in the installed .NET Framework language

When you install a non-English version of .NET Framework in a non-English operating system, you will notice that the error messages, .NET shortcut, and .NET Console are in English.

To solve this issue, you must apply the .NET Framework Language Pack for your language.

The subkey numbers relate to the language. For example, English, French, German, and Japanese are listed here: 1033=en-en, 1036=fr-fr, 1031=de-de, and 1041=ja. Refer to the Microsoft Support Site to obtain subkey numbers for other languages.

If you are missing the language pack subkeys, you must install the .NET language pack, which is available from the Microsoft support Web site.

Workbook closes unexpectedly

If you install the COM add-in and your Microsoft Excel workbook name contains brackets, [], Excel stops responding or closes unexpectedly after opening.

To resolve this problem, rename the workbook so that it does not contain brackets.

Reports unavailable in Cognos Connection jobs after using Save As command in Cognos Report Studio

After opening a report in IBM Cognos Report Studio and saving a copy using the **Save As** command, you may find that if the report is included in a job, it is not available in the IBM Cognos Connection portal.

Do not use the **Save As** command in IBM Cognos Report Studio to save changes when a report is included in a job. Instead, make a copy of the report, make changes to the copy, and then copy the updated report to the IBM Cognos Connection portal. Use this method to overwrite the report in the job without breaking the report links.

The content of the Custom Report shows #NAME?

When building a Custom Report, the content of the cells shows #NAME?

When you drag items from the source tree directly to a cell of a worksheet, you are creating a COGNAME or COGVAL formula that references the item in the database. This functionality is available only when the CognosOfficeUDF.Connect automation add-in is loaded.

If #NAME? appears in the contents of the cell, it means that the add-in was not loaded and the **CognosOfficeUDF.Connect** check box in the **Add-in** dialog box (**Tools**, **Add-Ins**) is not selected.

To resolve this issue and ensure that the add-in is always properly loaded, you must verify that the value of the OPEN registry key is set to `/A "CognosOfficeUDF.Connect"`. If you use version 7 of Microsoft Windows operating system, you must use Run in XP from the command prompt to reregister file types.

Procedure

1. From the Windows **Start** menu, click **Run**.
2. In the **Open** box, type `Regedit`, and then click **OK**.
3. In the **Registry Editor**, go to the Registry branch:

   HKEY_CURRENT_USER\SOFTWARE\Microsoft\Office*version*\Excel\Options
4. In the topic area, right-click the **OPEN** entry, and then click **Modify**.
5. In the **Value Data** box, type

   ```
   /A "CognosOfficeUDF.Connect"
   ```
6. Click **OK**, and then close the **Registry Editor**.

Processing issues

The following issues are related to processing and rendering reports.

Improve performance for TM1 data

If you experience unacceptable performance when you work with TM1 data, the administrator of the TM1 system might be able to change cube or system settings to improve performance. To help the TM1 administrator evaluate the performance issue, provide the administrator with the details of the data you are using and a description of actions that result in unacceptable performance.

The following are examples of TM1 settings that affect performance.

VMM (}CubeProperties)
For each cube, this property determines the amount of RAM reserved on the server for the storage of stargate views. The more memory made available for stargate views, the better performance will be. Sufficient memory must be available for the TM1 server to load all cubes.

VMT (}CubeProperties)
If the time required to calculate a cube view surpasses the specified threshold, TM1 attempts to store a stargate view. If there is not enough memory available to store the stargate view, TM1 purges the oldest stargate view that is not currently in use, and continues to purge views in this manner until sufficient memory is made available.

The *IBM Cognos TM1 Operation* documentation includes more information about the CubeProperties and other tuning options.

DPR-ERR-2079 Firewall Security Rejection

If you run a report after your session has expired and then try to navigate away from the first page of the report, you encounter an error.

DPR-ERR-2079 Firewall Security Rejection. Your request was rejected by the security firewall. CAF rejection details are available in the log. Please contact your administrator.

When the DPR-ERR-2079 error occurs after an expired session, you must log on again to resolve the problem.

Procedure

1. In the report list, right-click the node item, which appears before other items.
2. Click **Log On**.
3. Provide your authentication credentials as prompted and click **OK**.

Item cannot be expanded

Microsoft Excel has reached the maximum number of rows or columns for this worksheet. The number of rows and columns is limited in Microsoft Excel. Expanding the current item is not possible because it would shift rows or columns beyond this worksheet limit. Microsoft Excel cannot shift nonblank cells off the worksheet.

Manually move items so that the row or column item can expand without reaching the limit, or move your Exploration View, list, or report to another worksheet. Or, you can move the data to a new location and try again.

Results have exceeded the Excel row or column limit

Microsoft Excel has reached the maximum number of rows or columns for this worksheet. The number of rows and columns is limited in Microsoft Excel. Items are truncated.

Filter items so that the row or column items can be displayed without reaching the limit. Consider creating additional Exploration Views, lists, or reports to spread the data over more than one worksheet. Consider using a new version of Microsoft Excel that has larger limits for rows and columns.

Error: Exception from HRESULT:<location>

If you import a data item where the path to the data item exceeds 256 characters it results in the error: Exception from HRESULT.

You must create names and unique data identifiers that keep to the 256-character limit inside Microsoft Excel.

Error refreshing exploration saved in earlier version of Microsoft Excel

This workbook may have been created with an older version of Microsoft Excel that has a set maximum number of rows or columns. Rows or columns that go beyond the maximum limits are truncated.

Although you are no longer using that version, the application is working within the limits of the older version of Excel. You might encounter this situation when you are expanding items or when you are refreshing items that have grown in size since the workbook was created.

To correct the problem, you must save the workbook with the .xlsx extension. Opening the workbook that contains the exploration in a more recent version of Excel does not convert it to the new format. Saving the workbook with the .xlsx extension converts the workbook to the new format.

Microsoft Excel limits

There are specifications and limits in Microsoft Excel 2013-2016 that may affect the performance of Planning Analytics for Microsoft Excel.

The following tables group the specifications and limits into categories:

- Worksheet and workbook
- Calculation

Table 47. Specifications and limits that apply to worksheets and workbooks

Specification	Maximum limit / restrictions	Notes
Column width	255 characters	If the data that you enter or receive exceeds the column limits of Microsoft Excel, the result is truncated.
Row height	409 points	If the data that you enter or receive exceeds the row limits of Microsoft Excel, the result is truncated.
Total number of characters that a cell can contain	32,767 characters	If the data that you enter or receive exceeds the cell character limits of Microsoft Excel, the result is truncated.
Maximum limits of memory storage and file size for Data Model workbooks	32-bit environment is subject to 2 gigabytes (GB) of virtual address space, shared by Excel, the workbook, and add-ins that run in the same process. A data model's share of the address space might run up to 500 – 700 megabytes (MB), but could be less if other data models and add-ins are loaded. 64-bit environment imposes no hard limits on file size. Workbook size is limited only by available memory and system resources.	Due to the limitations with add-ins, users can only copy and paste once on top of a DBRW formula. Adding tables to the Data Model increases the file size. If you don't plan to create complex Data Model relationships using many data sources and data types in your workbook, uncheck the Add this data to the Data Model box when you import or create tables, pivot tables, or data connections.

Table 48. Specifications and limits that apply to calculations		
Specification	**Maximum limit / restrictions**	**Notes**
Length of formula contents	8,192 characters	If the formula that you enter exceeds the formula content limit of Microsoft Excel, the result is truncated.
Internal length of formula	16,384 bytes	If the formula that you enter exceeds the internal length of formula limit of Microsoft Excel, the result is truncated.

Security Issues

The following issues are related to security setup.

Cognos Office Unable to Create Trust Relationship

If you are using HTTPS to Report Data Service and you receive an error in IBM Cognos Office about being unable to trust the relationship, the Certificate Authority (CA) certificate that was issued by the Web server is not trusted on the client workstation.

To resolve this problem, you must ensure that the Certificate Authority (CA) that issued the Web server certificate is also trusted on the client workstation. If the certificate is not from an authority that is already trusted on the client, such as Verisign, you must install the CA certificate in the trust store on the client.

Procedure

1. Retrieve the CA certificate from the issuing authority.

   The file has a .cer extension. This is not the same certificate as the one used by the Web server. It is the certificate for the issuing authority itself.
2. Double-click the .cer file, click **Install Certificate**, and then click **Next**.
3. Click **Place all certificates in the following store**.
4. Click **Browse**, click **Trusted Root Certification Authorities**, and then click **Next**.
5. Click **Finish**.

Unable to View Reports After Clicking View Report

IBM Cognos for Microsoft Office is functioning normally, but you cannot use the View Report option to view reports. The client machine, running IBM Cognos for Microsoft Office, cannot connect to the gateway URL as configured in IBM Cognos Analytics. This may be because it is behind a firewall, the hostname/DNS is not known to this client machine, or the client machine has proxy issues.

To resolve the connectivity issues, work with your system administrator.

Cognos Office Numbered Error Messages

The following error messages may appear in a dialog box and are recorded in the IBM Cognos Office log.

COI-ERR-2002 Block type is not valid

An internal processing error occurred. The block object was not able to be processed.

Contact IBM Cognos Resource Center. Be ready to supply all relevant logs and details related to this error.

COI-ERR-2003 Unexpected type: *stacked block*

An internal processing error occurred. The data object was not of the expected type and could not be processed.

Contact IBM Cognos Resource Center. Be ready to supply all relevant logs and details related to this error.

COI-ERR-2005 This version of Microsoft Office is not supported

IBM Cognos Office supports only specific versions of Microsoft Office applications.

Load the report content into one of the supported applications and environments.

To review an up-to-date list of environments supported by IBM Cognos Office products, including operating systems, patches, browsers, web servers, directory servers, database servers, and application servers, go to the IBM Support Portal for IBM Cognos Analysis for Microsoft Excel or the IBM Support Portal for IBM Cognos for Microsoft Office.

COI-ERR-2006 This Microsoft Office product is not supported

IBM Cognos Office supports only specific Microsoft Office applications, such as Microsoft Excel, Microsoft Word, and Microsoft PowerPoint. You cannot load IBM Cognos Office content to another Microsoft Office application, such as Microsoft Access even when there is an add-in that enables these applications to interoperate.

Load the report content into one of the supported applications and environments.

To review an up-to-date list of environments supported by IBM Cognos Office products, including operating systems, patches, browsers, web servers, directory servers, database servers, and application servers, go to the IBM Support Portal for IBM Cognos Analysis for Microsoft Excel or the IBM Support Portal for IBM Cognos for Microsoft Office.

COI-ERR-2008 Unable to Retrieve from Resources. Tried '{0}'

An internal processing error occurred.

Contact IBM Cognos Resource Center. Be ready to supply all relevant logs and details related to this error.

COI-ERR-2009 Unable to Perform This Operation Because Microsoft Excel is in Edit Mode

Report content cannot be refreshed while one of the cells of the workbook is being edited.

Click outside the active cell to return it to a non-edit mode and try again.

COI-ERR-2010 The name {0} is not valid. A name must not contain both a quote (") character and an apostrophe (') character

When you create a folder, rename a folder, or publish a document, the name can contain an apostrophe or a quote, but not both.

To resolve this problem, rename the folder or document. Exclude the apostrophe or quote character from the name.

COI-ERR-2011 The server did not return the expected response. Check that the gateway is valid.

This error message is displayed if the value entered in the System Gateway URI box of the Options dialog box is not a valid IBM Cognos Analytics server.

To resolve this problem, reenter the **System Gateway URI** with the gateway address for a valid IBM Cognos Analytics server.

COI-ERR-2013 Unable to load metadata

You may be unable to load metadata because you do not have security rights to all of the items in the worksheet or because the items were removed or changed on the server.

Ensure that you have security rights to all of the items that you are trying to view. If this does not fix the problem, ensure that the server and package information are correct and that any items that have been removed from the source database are also removed from the worksheet.

COI-ERR-2015 There was a problem parsing the MIME encoded server response. Tried to find the boundary [{0}] but found the boundary [{1}] instead

While using GZip compression, an option for compressing data that is retrieved from the server, an error occurred. The codes to decompress the data are missing or unrecognized by IBM Cognos Office.

Turn compression off. Although compression is turned on by default, it can be turned off by setting the UseGzipCompression property to false in the CommManagerSettings.xml file, which, by default, is located in the Office Connection directory, such as C:\Documents and Settings*user name*\Local Settings\Application Data\Cognos\Office Connection or C:\Users*user name*\AppData\Local\Cognos\Office Connection.

Turn compression off if you need to run tests or perform troubleshooting.

To turn gzip compression off set the following attribute:

<setting name="UseGzipCompression">False</setting>

COI-ERR-2016 Worksheet protected, IBM Cognos styles cannot be populated

If the worksheet is protected, the IBM Cognos styles cannot be applied.

You must unprotect the worksheet for the styles to be applied during a refresh of the data.

COI-ERR-2019 Connection failed

In Planning Analytics for Microsoft Excel, when you try to connect to a IBM Planning Analytics server, the following error message appears:

COI-ERR-2019 Connection failed. Connection returned an error. Verify that the connection string, including the server name and port number, is correct.

To resolve this issue, you must configure your antivirus software to allow connections from both Microsoft .NET Runtime and Microsoft Excel.

COI-ERR-2305 Unable to perform this operation because Microsoft Excel is in edit mode

Report content cannot be refreshed while one of the cells of the workbook is being edited.

Click outside the active cell to return it to a non-edit mode and try again.

COI-ERR-2307 Login failed

Your user name and password are not correct.

Ensure that you typed a valid user name and password.

IBM Planning Analytics for Microsoft Excel numbered error messages

The following error messages may appear in a dialog box and are recorded in the IBM Cognos Office log.

COR-ERR-2004 Axis specification is not valid

The workbook specification is not capable of being generated because of an anomaly.

To fix the problem, you may attempt to do any of the following:

- Click **Undo**.
- Click **Clear All Data**.
- Close the workbook and open it again.

The workbook should now accept data from the source tree.

COR-ERR-2007 Error retrieving from resources. Tried '{0}'

The exploration sheet experienced a bad state.

Contact IBM Cognos Resource Center.

COR-ERR-2009 Name formula is not valid

The COGNAME formula did not parse correctly. It may have been altered manually and may have a missing argument.

Check the COGNAME formula in the active cell and ensure that it is in the correct format, or optionally, insert the member from the source tree.

COR-ERR-2010 Formula is not valid

If an argument to a COGNAME or COGVAL formula references a cell and that cell does not contain the expected string formula you receive this error.

Check the cell and its dependents. Look for #REF or #VALUE in the cell. The contents of the cell may have accidentally been deleted.

COR-ERR-2011 Invalid range: Please enter a valid range for crosstab or list

The range is not valid or is outside of the range of the data type.

To avoid this limitation, limit your data selections.

COR-ERR-2013 Exploration cannot be converted to formula based because at least one context item contains a selection

With more than one item in the Context drop zone there is no way for the multiple items to be rendered into the cells of the worksheet.

Remove one dimension from the Context drop zone. You must have one item per dimension to convert to a formula-based analysis.

COR-ERR-2014 Due to Excel worksheet limitations the results may be truncated

If the data that you receive back exceeds the row or column limits of Microsoft Excel, the result is truncated. You receive this message to make you aware of the truncation.

To avoid this limitation, limit your data selections.

COR-ERR-2021 Worksheet protected, IBM Planning Analytics Styles cannot be populated

This error occurs when Microsoft Excel styles are applied on a protected sheet and IBM Planning Analytics styles cannot be populated

To resolve this error, follow the procedure described in Open a workbook containing Planning Analytics for Microsoft Excel styles.

COR-ERR-2015 The current exploration cannot be rendered at this location on the worksheet

The exploration cannot write data outside the limits of the current worksheet. Either the exploration is too large for Microsoft Excel or you have designated a starting location too close to the limit.

Try to move your start location. If that fails to fix the problem, try creating an Exploration View with fewer rows or columns.

COR-ERR-2016 Unable to retrieve package <Name>

After you selected a package using the **Open Package** dialog box, an error occurred when trying to download the package from the server.

This is an internal error.

Contact IBM Cognos Resource Center.

ValueNotInPickList (243)

The value you are trying to commit is not an available option in the picklist.

When entering a value into a report cell, ensure that the value is an available option in the picklist.

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