

Deploying IBM Rational DOORS for HP Quality Center Interface

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1 Introduction

The goal of integration between a Requirements Management tool and a Test Management tool is to enable creation of the right test cases which can then be verified against the requirements. Thus a need to maintain links between the original requirement and the test case derived from it is very essential.

This whitepaper describes one such integration. IBM Rational DOORS and HP Quality Center (formerly known as 'Test Director') integration provides integration between **IBM Rational DOORS** which is a Requirements Management Tool designed to help enterprises effectively manage projects from the concepts phase right through to completion and **HP Quality Center**, which is a Test Management Tool developed by Mercury Interactive and currently owned by HP. For detailed information on capability of the Integration, refer to the "Using Rational DOORS for HP Quality Center Interface" document.

This whitepaper addresses user needs at three different levels

- a. About to start with the integration
- b. Integration is setup but there are some problems which does not allow smooth running
- c. Integration is running smoothly and looking for ways to use the integration efficiently

In Summary, if you understand the need to use HP Quality Center Interface with Rational DOORS together, this whitepaper covers the rest of the aspects of the integration.

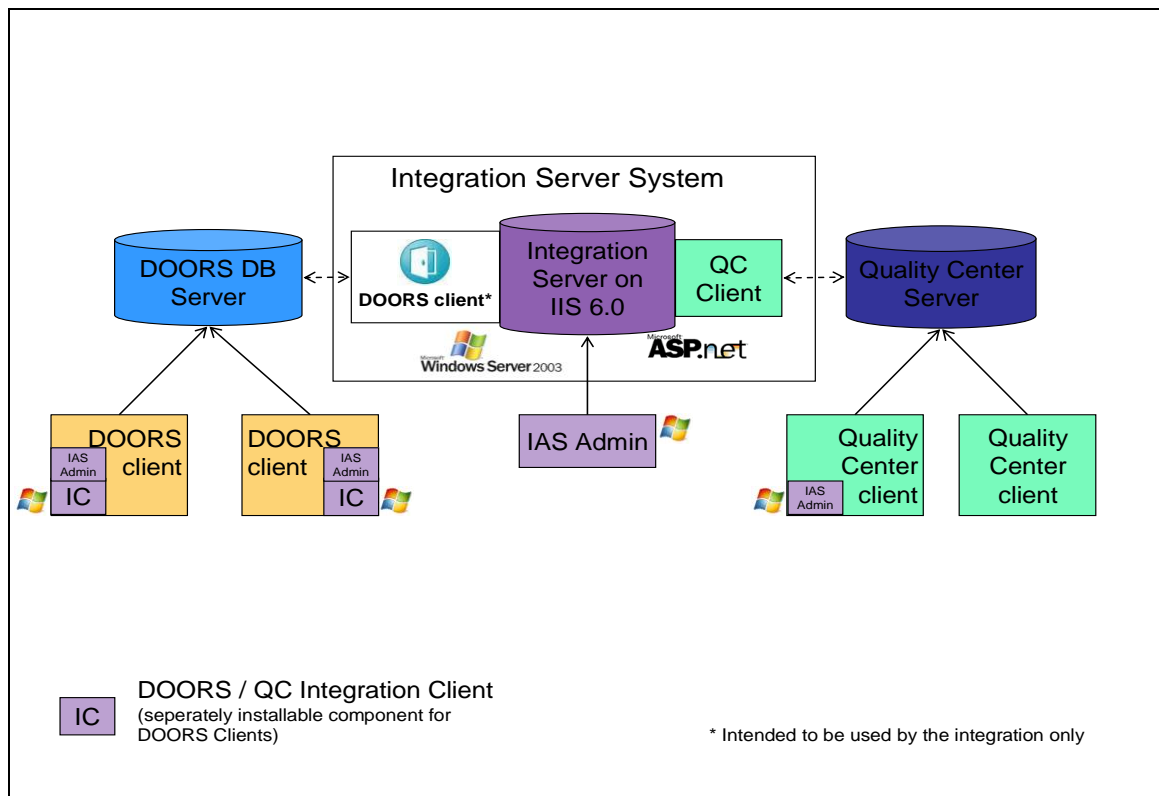
Starting with the architectural view showing how various components of the integration are related to each other, this whitepaper describes the functionality of each of these components with respect to the integration. It proceeds with detailing of various phases involved in the setup and recommendations along with prerequisites to ensure a smooth setup. The whitepaper also has insights based on Support day-to-day interactions with customers to ensure effective usage of the integrations.

This is not a replacement for the Installation Guide or the Manual and is an attempt to complement the information available there.

2 Architecture of the IBM Rational DOORS for HP Quality Center Interface

IBM Rational DOORS for HP Quality Center Interface primarily comprises of 3 components as depicted in the diagram below:

- Integration Server
- IAS Admin
- Integration client



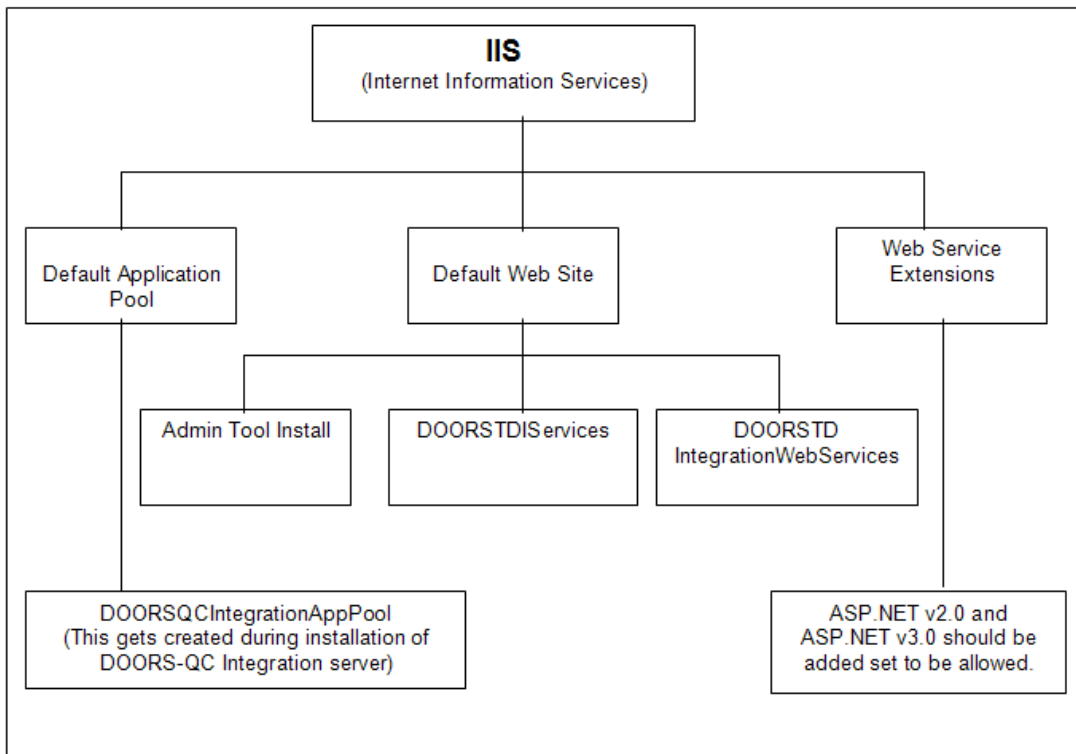
Points to remember:

- ✓ DOORS DB Server should **not** be enabled to 'Use System Usernames'
- ✓ DOORS Client installed on IBM Rational DOORS- HP QC Integration Server should only be used by integration and should **not** be used for normal day-to-day Database activities.

2.1 Integration Server

This is the main component which is responsible for the transfer/synchronization of data between the two applications. This is a web service based component, which is deployed over Microsoft IIS. As specified in the Release notes, the Integration Server component should be installed on Microsoft Windows 2003 Server with IIS v6.0.

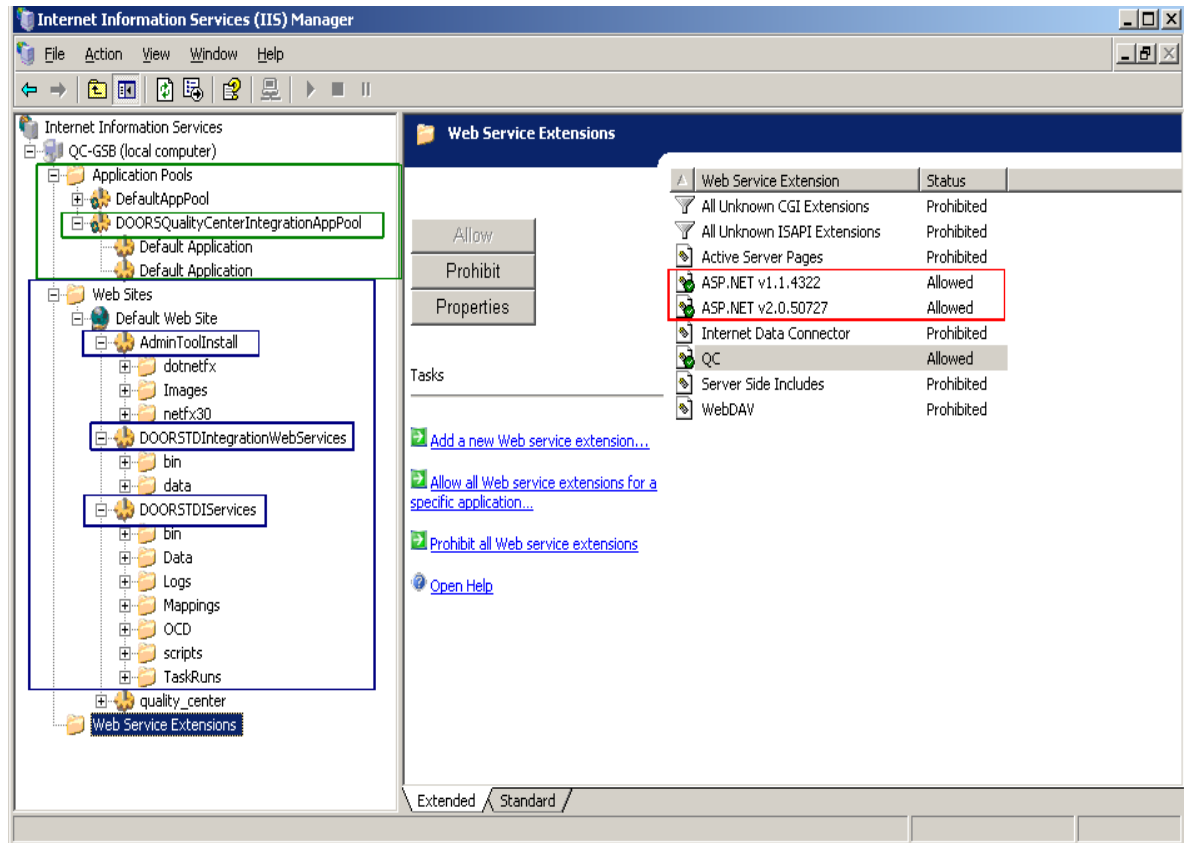
Integration Server is deployed over IIS with the following directory structure:



IIS has following components:

- While installing Rational DOORS for HP Quality Center Interface, an application pool, **DOORSQCIntegrationApplicationPool**, is created in IIS under Default Application Pool. This Application Pool serves the Integration Server application. A separate Windows user account (IWSUSER), created during the installation is used as the identity of this Application Pool.
- Two directories `DOORSTDIServices` and `DOORSTDIntegrationWebservices` are created in IIS under Default WebSite during Configuration Wizard for Integration. From version 3.3, another directory named `AdminToolInstall` is also created. This directory contains installer for IAS Admin Console, for installation on other systems.
- ASP.NET v2.0 and ASP.NET v3.0 should be added in Web Service Extension and set to 'Allowed'

The following screenshot is from the IIS after Integration is installed and configured:



2.2 Integration Administration Service (IAS) Console

IAS Console is an interface to the Integration Server. This console helps to specify which database and what data needs to be synchronized between IBM Rational DOORS and HP Quality Center. (For detailed information about IAS console, refer to Page 12 and 13 – IAS Admin)

2.3 Integration Client

The Integration Client is a client component which enables IBM Rational DOORS users to:

- Initiate synchronization
- Run reports on the test cases and
- Analyze the results of testing in Quality Center, from within DOORS.

After installation it is available with IBM Rational DOORS client.

3 Preparing system for Installation of Integration

Installation of the integration is comprised of 2 phases:

- Installation by running setup.exe.
- Setting required access rights for various directories, registries, DCOM by running **Set Access Permissions Wizard**, a utility installed during installation in phase 1.

Before you begin with running Setup.exe, following are a few recommendations to ensure the installation is smooth.

3.1 System Readiness

- Create a separate group (For example: QCI_Admin_Console_Users) with Administrative Privileges for DOORS-QC Integration. It is recommended not to use the Windows 'Administrators' group. This group will be used by the Integration Server to validate if a user can access Integration Administration Console.
- It is recommended to have a dedicated user (For example: IWSUSER) for the Integration. As explained earlier in Integration Server section, this user account will be used as the identity of the DOORSQCIntegrationApplicationPool. You can either create a user manually with Admin privileges or choose to create the user when you run the Set Access Permissions Wizard post installation.
- If you choose to create IWSUSER manually, ensure that Password is in compliance with Windows security policy for the network. Set the Password never to expire and that the user does not have to change the password during first login.
- IWSUSER should be a part of Administrators group, QCI_Admin_Console_Users group and IIS_WPG group.
- Ensure that the following are installed on the system:
 - ASP.Net v2.0
 - ASP.Net v3.0 (For IBM Rational DOORS for HP Quality Center Interface v3.2 onwards)
 - IIS 6.0 or above
 - Microsoft Internet Explorer to connect to HP Quality Center
- While performing the installation of the Integration, ensure that you are logged into the machine as Local Administrator and not as a user with Admin privileges
- It is required that user should browse the HP Quality Center website and download ActiveX Controls before running the installation. If not, user will have to do this, while performing the second phase of the Installation (running Set Access Permissions wizard).

3.2 Application Readiness

Integration Server uses Rational DOORS and HP Quality Center APIs to communicate with the applications. Hence, it is important to have both the clients installed on the system where you would install the Integration Server.

You might also want to create separate User Accounts in both Rational DOORS and HP Quality Center, for exclusive use by the Integration. These User Accounts can then be specified while defining the connection parameters for the use of Integration (explained later in Section 5, Integration Administration Console). Having a separate User Accounts will help in having separate Audit Trail in the applications, for any changes to data performed by the Integration. When you create such a user account, ensure that for Rational DOORS, it is of type Database Manager; and for HP Quality Center the user is a part of TAdmin group and has access to the required projects in Quality Center.

Rational DOORS for HP Quality Center Interface synchronizes data using Synchronization Tasks. A Synchronization task is defined by the data end points it uses; attribute mapping for the data end points and the controlling application for that particular synchronization task.

Before you use, Rational DOORS for HP Quality Center Interface, you must spend sometime analyzing what information needs to be visible in IBM Rational DOORS and HP Quality Center.

As mentioned above, every synchronization task would need two endpoints – One from IBM Rational DOORS and other from HP Quality Center.

IBM Rational DOORS end point must be a view in a formal module with minimum RMCD access for the user whereas HP Quality Center end point can be a favorite in Quality Center or Entity in Quality Center Project (Requirement, Test or Defect).

Before setting up Rational DOORS for HP Quality Center Interface, it is recommended that you analyze your DOORS modules and create views based on what information you would like to be visible in HP Quality Center.

HP Quality Center end point must be an entity (REQ, Test or Defect) in a project or a favorite in Quality Center.

3.3 Installation by running setup.exe

For detailed instruction on how to install IBM Rational DOORS for HP Quality Center Interface you can refer to the Installation guide for IBM Rational DOORS.

Install guide for IBM Rational DOORS v9.2 is available at http://publib.boulder.ibm.com/infocenter/rsdp/v1r0m0/topic/com.ibm.help.download.doors.doc/pdf92/doors_install_guide.pdf

(Refer to the section 'Installing Rational DOORS for HP Quality Center Interface')

3.4 Running Set Access Permissions Wizard

Before you use the integration, you need to configure the Integration Server. Integration Server can be configured by running the configuration tool, '**Set Access Permission Wizard**'.

Set Access Permission Wizard can be run by **Start > All Programs > IBM Rational Tools > IBM Rational DOORS for HP Quality Center Interface Tools > Set Access Permission Wizard**.

Configuration Tool completes the configuration in four phases described below:

Phase 1 – User Creation

Configuration Tool creates a user which will be used to run the services for the Integration.

When you launch Set Access Permission Wizard, you will be prompted to provide the credentials for the account. You need to provide the Username (for example: IWSUSER) and password for the user and ensure that you check the box to create the account if it has not already created as explained in the "3.1 System Readiness" section. If you choose to create the user in this phase, ensure that the password you specify for the user account is in compliance with the password restrictions enforced in your network.

Phase 2- Directory Creation and setting permissions

IBM Rational DOORS for HP Quality Center Interface uses IIS so that the integration server can be used as Web Server. Integration allows configuring the integration only with Default Website .By default the HOME Directory for the Default Website is set to `C:\inetpub\wwwroot`

(If you wish to change the location where Virtual Directories would get created for the Integration, ensure that you change the HOME directory path for Default Website.

To change the HOME Directory path for Default website, follow the steps below:

Start > All Programs > Administrative Tools > Internet Information Services (IIS) > WebSite > Right click on Default Website > Properties > Go to 'Home Directory Path'

Now, specify the location where you want the Virtual Directories to get created.

Default Location for DOORSTDIServices (which is created for running TDIServices) is `C:\inetpub\wwwroot\DOORSTDIServices`

TDIServices is responsible for creation of synch tasks, execution of the synch task and more. The default location for DOORSTDIntegrationWebServices (which is created for running SoQ services) is

`C:\inetpub\wwwroot\DOORSTDIntegrationWebServices`. SoQ Services are responsible for creation and execution of SoQ Attributes.

➤ **Contents of DOORSTDIServices Directory:**

DOORSTDIServices folder contains XML files which are important files for proper functioning of the Integration and it is strongly recommended that these files should not be modified or edited.

The Logs directory in DOORSTDIServices contains all the logs related synchronizations. These logs are useful in identifying the reason for failures for the tasks, if any. This directory can be backed up and deleted periodically.

The Data directory in DOORSTDIServices contains metadata relating to synchronizations, which are essential for proper functioning of the integration.

➤ **Contents of DOORSTDIntegrationWebservices Directory:**

DOORSTDIntegrationWebservices folder contains **Bin** directory which has .dll files required to run webservice correctly and **IWSLogs** folder which contains Integration Web Service logs

Once the virtual directories DOORSTDIServices and DOORSTDIntegrationWebservices are created integration server is configured by following operations:

- Configuring the account (IWSUSER)
- Setting registry permissions
- Configure DCOM permissions
- Configure NTFS Permissions
- Configure the services
- Configure IIS/ASP.Net

Phase 3 – Run tests

In this phase, configuration wizard tests the availability of the services by using 'Run Tests'.

Set Access Permission Wizard would check if the TDIServices and SOQ Services are available (If Virtual Directories for these services are created and are available at the specified path) and IWSUSER has access to them such as IWSUSER has full access to

```
C:\Inetpub\wwwroot\DOORSTDIServices and  
C:\Inetpub\wwwroot\DOORSTDIntegrationWebservices
```

Phase 4 – Application Availability Test

Set Access Permission wizard also tests the connectivity between Integration Server and IBM Rational DOORS DB Server and between integration service and HP Quality Center Server to ensure that data can be transferred between IBM Rational DOORS and HP Quality Center.

You can test the connectivity between Integration Server and IBM Rational DOORS, by providing DOORS DB Server details and credentials of a DOORS user (as explained in Application Readiness section).

Similarly, to test the connectivity between integration server and HP Quality Center, provide HP Quality Center URL and credential for a Quality Center user (as explained in Application Readiness Section).

HP Quality Center User which would be configured to use the integration must have access to the Quality Center project and should be a member of TAdmin group in HP Quality Center.

It is important that you can run IBM Rational DOORS as 'IWSUSER' (To test this, right click on icon for 'IBM Rational DOORS client' > Run As > Select 'The following user' > Provide username as 'IWSUSER' and corresponding password)

Also, it is necessary that user can run HP Quality Center as 'IWSUSER' (To test this, right click on Microsoft Internet Explorer > Run as > Select 'The following user' > Provide username as 'IWSUSER' and corresponding password. This would launch MS IE session, now try and access HP Quality Center URL)

Successful test connections for HP Quality Center and DOORS brings user to the completion of Configuration of Integration Server.

4 Configuring the integration for HP Quality Center with SSL

The Rational DOORS and HP Quality Center Integration with HP Quality Center server on SSL has is not officially available; however, if you choose to configure such a setup, the following tips can help.

If your HP Quality Center Server is configured to use SSL, you may face issues while testing connection for Quality Center during configuration or while adding data connection in IAS Admin.

A possible workaround would be to expose a new port on the Web Server used by HP Quality Center to http for the localhost, IWSUSER user account (and possible the Quality Center user).

For example, if you are using Weblogic:

Expose a new port on the Weblogic server to http for the localhost, IWSUSER and Quality Center user.

You should be able to achieve this by setting up a Connection Filter on the Weblogic server.

With this set up you can then try and create the IAS configuration specifying:

```
HTTP://QUALITYCENTERSERVER:xxxx/QCBIN/
```

where "xxxx" is the new port number specified.

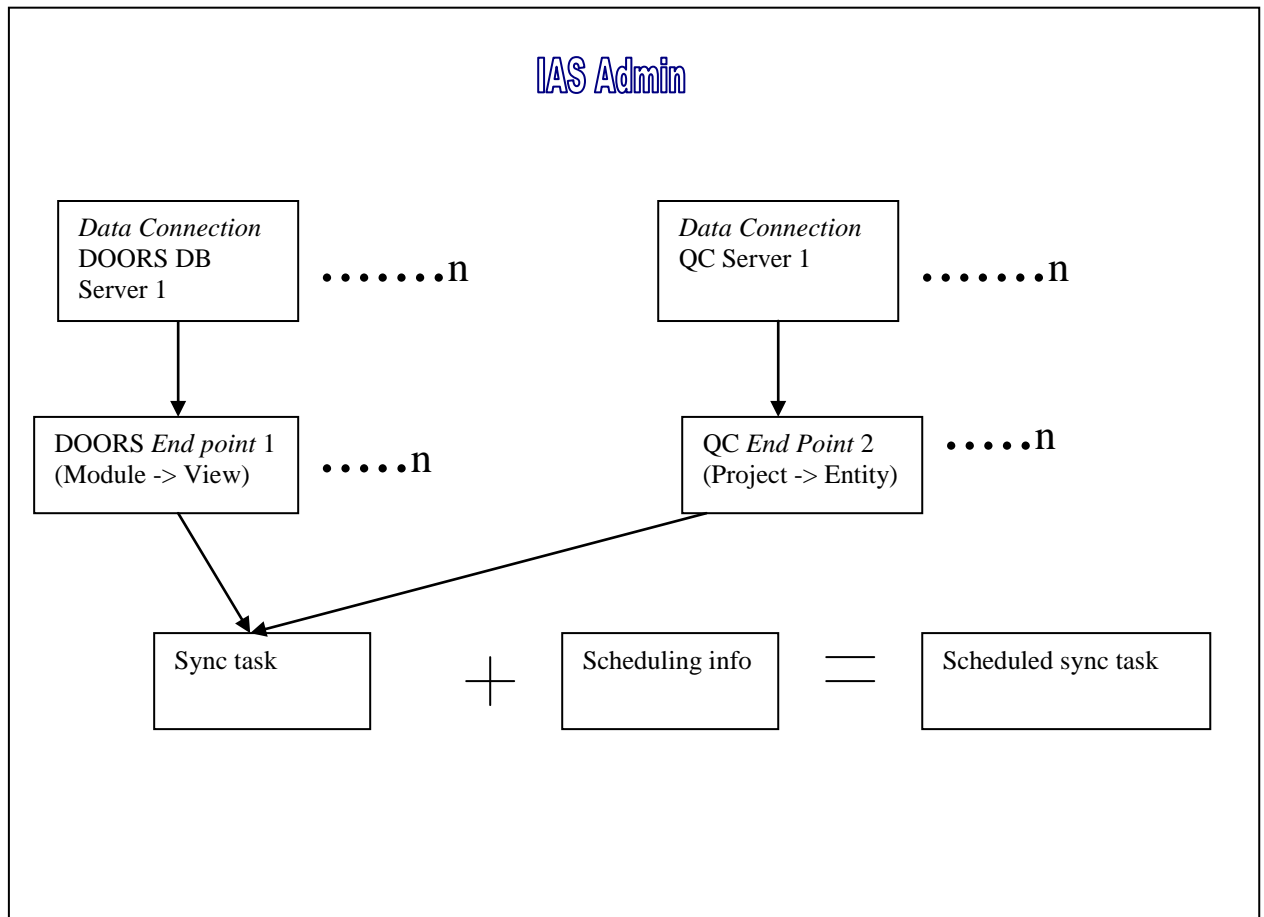
This will mean opening up an unsecure port on the Web Server, so that the Integration can access the application as usual.

5 IAS Admin (Integration Administration Console):

IAS Admin or Administration console provides interface for creation, execution, modification of Synchronization Tasks.

Synchronization Task is the specification of what data needs to be synchronized. Details of each component of a Synchronization Task are explained later in this section.

Following is a pictorial representation of how a Task can be created:



Next page has a detailed description of all the components shown in the above diagram – Data Connection, End Point and Sync Task.

5.1 Data Connections

Data connections refer to the connection parameters for IBM Rational DOORS Database Server instance and HP Quality Center Server instance. For IBM Rational DOORS Database, user should provide `port@serverName` for the database server and a User Account of DOORS, which will be used by the integration when performing synchronization. Similarly, for HP Quality Center, user should provide the URL for HP Quality Center along with a User Account of HP Quality Center, which will be used by the integration when performing synchronization.

IBM Rational DOORS for HP Quality Center Interface v3.2 onwards, you can specify more than one connection for IBM Rational DOORS and HP Quality Center. For example, you can add more than one instance for DOORS as well as Quality Center Servers.

5.2 End Points

Endpoints refers to the subset of data that you want to transfer which is defined either by a module filter and saved as a part of view (in IBM Rational DOORS) or as a HP Quality Center Favorite or can be an entity in HP Quality Center Project (for example: REQ, TEST or Defect).

These views and favorites can be selected when you create the synchronization tasks and this is how you define the data that is to be transferred.

5.3 SyncTasks

For each view in IBM Rational DOORS /favorite or entity in HP Quality Center, you must create a synchronization task.

A synchronization task comprises of mappings between the attributes in a IBM Rational DOORS module and fields (user fields as well as system fields) in HP Quality Center entity.

Synchronization task binds IBM Rational DOORS to a HP Quality Center Entity and defines the rule that will govern the transfer of data between the databases.

6 General Recommendations

- Take regular backups of directories `DOORSTDIServices` and `DOORSTDIntegrationWebServices`.
- IBM Rational DOORS for HP Quality Center Interface is a single threaded application and hence can process only one synchronization at any given time, hence while scheduling the synchronization tasks, ensure that there is minimum overlapping of synchronization tasks to ensure optimum performance.
- While scheduling synch tasks, ensure that the synch tasks finishes execution before 00:00 (12 midnight) or it is scheduled to run after 12 midnight.

If there is any synchronization task that continues execution at 00:00, you will get a warning in synch logs stating `'Task run has been cancelled as the newer related task was added'`.

This is because, if a synch task doesn't finish the synchronization before midnight (12:00 /00:00), scheduler sees that this task will not complete before the new day begins and the scheduler sees that the task is due to run again in the new day.

- If you intend to have large number of synchronization tasks (for example: 600 – 700 tasks), it is recommended to split the tasks across two integration servers for optimum performance.
- Moving IBM Rational DOORS Database server from one server machine to another or moving HP Quality Center server from one server machine to another is not supported.
- A Scheduled synchronization task can be run only once in a span of 24 hours. For example, if you a synchronization task scheduled to run at 7 pm and you run the synchronization task manually at 5 pm (before the scheduled time), synchronization task will not run at scheduled time.

7. References

For the most common issues faced during installation and integration, refer to the technotes referenced in the Information Center available at:

<http://www-01.ibm.com/support/docview.wss?uid=swg21428370>

For step-by-step information on Set access permission wizard, refer to the following technote:

<http://www-01.ibm.com/support/docview.wss?uid=swg21432210>