IBM Workload Automation

Mobile Applications User's Guide

Version 9 Release 4

IBM Workload Automation

Mobile Applications User's Guide

Version 9 Release 4

Note
Before using this information and the product it supports, read the information in "Notices" on page 65.

This edition applies to version 9, release 4, modification level 0 of IBM Workload Scheduler (program number 5698-WSH) and to all subsequent releases and modifications until otherwise indicated in new editions.

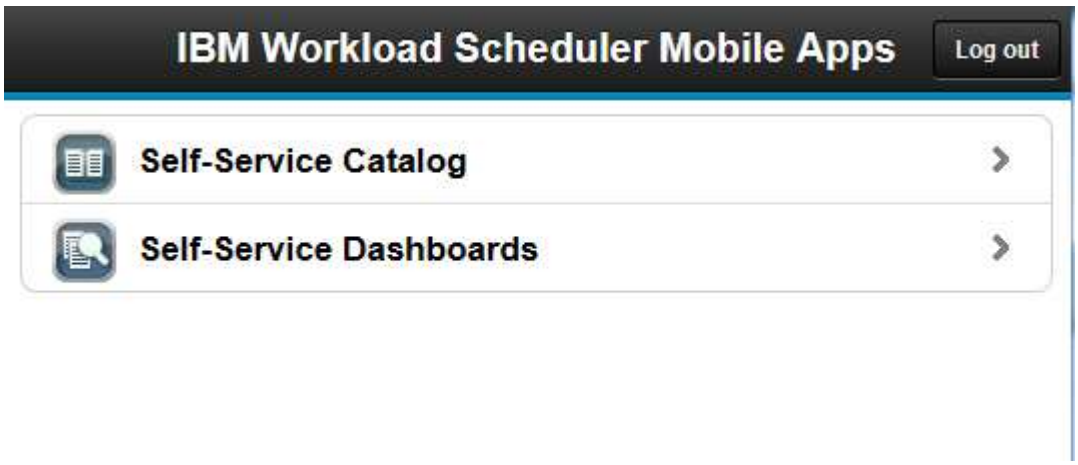
Contents

Running IBM Workload Scheduler from a mobile device

Use your mobile device to easily and quickly interact with your IBM Workload Scheduler environment.

The IT market is moving towards mobile devices, which help you perform a large number of tasks, such as manage your sales workforce, read your email, check your accounting system, or attend a web conference. Applications designed for mobile devices must be intuitive and user-friendly while remaining robust and reliable, and providing instant access to business and client data wherever they are.

You can interact with IBM Workload Scheduler by using the Self-Service Catalog and Self-Service Dashboards applications.



To open this home page on your mobile device, access the following URL:
`https://host_name:port_number/dwc/mobile.jsp`

where *host_name* and *port_number* are the host name and port number of the Dynamic Workload Console you are connecting to.

You can open the applications also from the Single Entry Point page.

For details refer to the section about product user interfaces in *IBM Workload Automation: Overview*.

To use an engine connection from a mobile device, ensure the engine credentials are shared or the Dynamic Workload Console is configured to use Single-Sign On. For more information, see the section about configuring the Dynamic Workload Console to use Single Sign-On in the IBM® Workload Scheduler Administration Guide.

Self-Service Catalog
: Define services that correspond to IBM Workload Scheduler job streams and submit them from your mobile, even if you do not have any experience with IBM Workload Scheduler. Services are organized into catalogs.

Launch the Self-Service Catalog from your mobile device by connecting to the following URL:

`https://host_name:port_number/dwc/sscatalog.jsp`

where *host_name* and *port_number* are the host name and port number of the Dynamic Workload Console you are connecting to.

To launch and use this application, you must have one of the following roles:

dwcAnalyst
This is the minimum role required to access Self-Service Catalog. Users with this role can view catalogs and services to which they are authorized and submit service requests. They cannot modify services or catalogs.

dwcAdministrator
Users with this role can create, edit, and delete catalogs and services. They can also associate roles to services and catalogs to authorize other users to work with them.

Self-Service Dashboards
By defining filter criteria to be applied to your jobs and workstations, you can view dashboards and drill down to more detailed information about the jobs and workstations that match the criteria. You can also perform recovery actions on the jobs and workstations.

Launch the Self-Service Dashboards app from your mobile device by connecting to the following URL:

`https://host_name:port_number/dwc/ssmanagement.jsp`

where *host_name* and *port_number* are the host name and port number of the Dynamic Workload Console you are connecting to.

To launch and use this application, you must have one of the following roles:

dwcAnalyst
This is the minimum role required to access Self-Service Dashboards. Users with this role can view dashboards for which they are authorized but they cannot modify dashboards.

dwcAdministrator
Users with this role can create, edit, and delete dashboards. They can also associate roles to dashboards to authorize other users to work with them.

Part 1. Self-Service Catalog

Self-Service Catalog is a solution to automate routine business tasks and run them from mobile devices without having to install and learn about the whole IBM Workload Scheduler product.

Chapter 1. Self-Service Catalog Overview

Self-Service Catalog is a solution to automate routine business tasks and run them from mobile devices without having to install and learn about the whole IBM Workload Scheduler product.

By using the Self-Service Catalog you can use your mobile device to submit service requests to IBM Workload Scheduler without knowing anything about engines, jobs, or job streams.

By launching Self-Service Catalog application from your iPhone, for example, you can see the available services, which basically are IBM Workload Scheduler job streams. You can open a catalog, view the services that it contains, and submit a service request very simply and easily from your mobile device.

Even though the Self-Service Catalog has been primarily envisioned to be used from a mobile device, you can efficiently use it also from your computer connected to a web browser.

To submit a job stream from your mobile device, an administrator must have previously created a service by associating it to an IBM Workload Scheduler job stream and engine. The service is linked to a job stream that runs on an IBM Workload Scheduler engine. By simply launching the service, you can submit the job stream.

You define jobs and job streams using the Dynamic Workload Console to automate tasks that users perform routinely. You use the Self-Service Catalog interface from your mobile device to start the job streams when needed.

To use the Self-Service Catalog, you must launch it specifying a URL that contains the host name and port number of the Dynamic Workload Console instance to which you are connecting.

If the Dynamic Workload Console instance to which you are connecting is configured for single sign-on, then a user can log in once on the Dynamic Workload Console and then gain access to the Self-Service Catalog app without being prompted to log in again. Single sign-on is supported starting from version 9.2

For more information about configuring the Dynamic Workload Console to use Single Sign-On, see the *Administration Guide*.

You can also use Self-Service Catalog taking advantage of High Availability configuration so as to have multiple console instances working at the same time without reducing performance. For more information about this configuration, see “Self-Service Catalog with DB2 in High Availability” on page 21.

Before you begin

Prerequisites

You can access the Self-Service Catalog from the standard browsers on the following devices:

- IOS-based devices versions 9.x and 10.x
  - iPhone
  - iPad
  - iPod Touch
- Android-based devices versions 5.x and 6

Self-Service Catalog supports only IBM Workload Scheduler version 8.6 or later. If you connect to a Dynamic Workload Console that uses an older IBM Workload Scheduler version, you receive an error message when trying to use the Self-Service Catalog.

The following browser versions are supported:

- Apache Safari 10.0
- Google Chrome 53
- Microsoft Internet Explorer 11
- Microsoft Edge 38
- Mozilla Firefox ESR 38 and ESR 45

Refer to the System Requirements document for the most up-to-date information about supported versions for devices and operating systems.

Chapter 2. Business scenario

A Business scenario showing how to take advantage of the Self-Service Catalog to meet your requirements.

The scenario

A large company working in the stock exchange sector plans to use Self-Service Catalog to provide its employees with an easy-to-use application to run routine tasks from their mobile devices, regardless of their location.

From the Dynamic Workload Console, the administrator defines some jobs and job streams to perform operations on the stock exchange market; he defines some job streams to run on distributed engines, and other job streams to run in a z/OS environment. The administrator associates the company employees who are going to use the service to different Dashboard Application Services Hub roles, corresponding to the job streams they will run.

From the Self-Service Catalog application, the administrator associates IBM Workload Scheduler job streams to services and creates catalogs that contain similar services.

Now, all the employees can easily use their mobile devices to perform routine operations by submitting service requests to IBM Workload Scheduler , even without knowing anything about engines, jobs, or job streams.

To perform operations in the stock market, the stock exchange dealers open the catalog of available services on their mobile devices and browse to the Stock Exchange catalog. The Stock Exchange catalog contains a list of operations that they can perform. For example, if a stock dealer wants to sell all the shares that have risen by more than 1.5% in the last week, he simply starts the "Sell_rising_shares" service.

Employees can see only those services for which they are authorized, based on their Dashboard Application Services Hub role.

After some time, the stock exchange company has grown and is now planning to hire new financial operators, thus increasing the number of its employees. Therefore the company management must understand whether current infrastructure can support the increased workload. To find out the exact amount of workload processed by the operators through the Self-Service Catalog application, the administrator checks the Self-Service Catalog Request History to collect all the required reporting information regarding the service requests submitted by all the operators and the relevant details.

Moreover, the administrator suggests that performance can be highly improved by migrating the Dynamic Workload Console accessed by the Self-Service Catalog to High Availability Configuration, so as to have multiple console instances working at the same time without reducing performance.

For more information about this configuration, see the section about configuring High Availability for Dynamic Workload Console in the IBM Workload Scheduler Administration.

Chapter 3. Accessing and exiting the Self-Service Catalog

You can use your mobile device to submit service requests and monitor their outcome and details.

About this task

Required role

TWSWEBUIAdministrator, TWSWEBUIBusinessDeveloper

- To launch the Self-Service Catalog from your mobile device or desktop browser, specify the following URL:

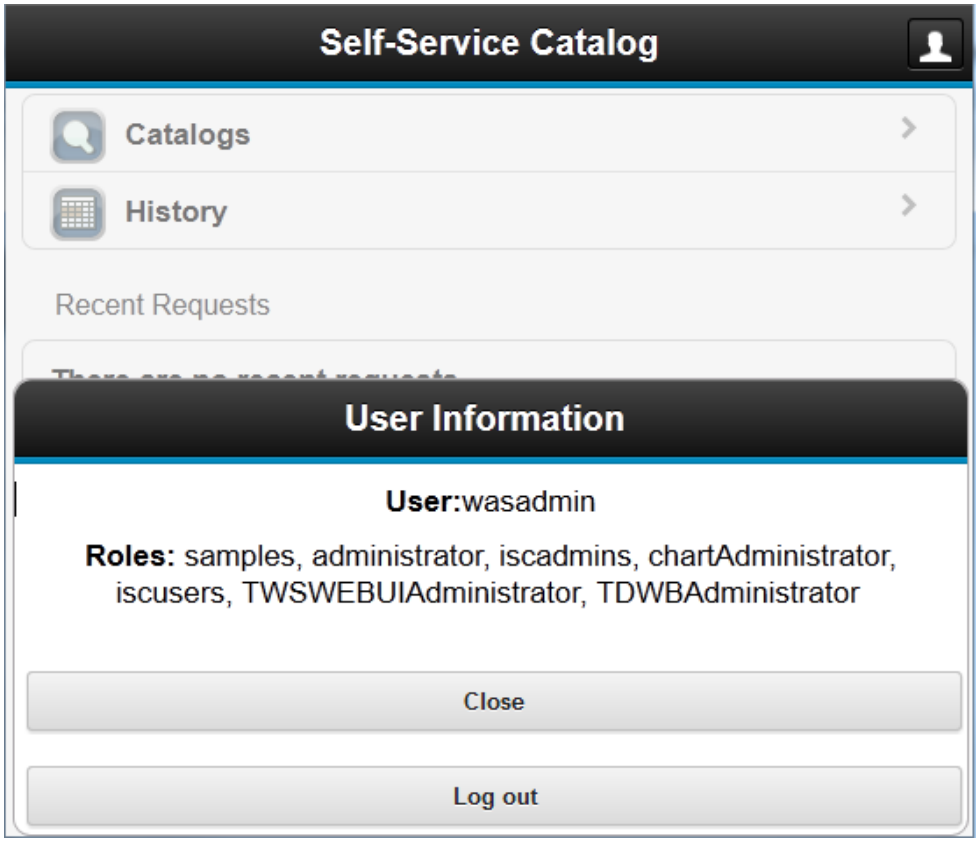
  `https://host_name:port_number/dwc/addOns/devices/sscatalog/sscatalog.jsp`

  where *host_name* and *port_number* are the host name and port number of the Dynamic Workload Console you are connecting to. Enter the credentials to access the Dynamic Workload Console you are connecting to.

  You can launch the Self-Service Catalog also from the Single Entry Point page.

  For details see the topic about the product user interfaces in the *User's Guide and Reference*.

- To log out of the Self-Service Catalog, from the home page, tap **User** > **Logout**, as shown in the following figure, and close the browser:



Note: With Android devices, after exiting the Self-Service Catalog, you must also clear the ram memory using the task manager application, otherwise the browser is not actually closed and current Self-Service Catalog session remains active.

As you can see, when you tap **User** you can also see your roles and, as a consequence, actions and objects for which you are authorized. For more information about roles, see: "Authorizing users to access catalogs and services" on page 17.

Chapter 4. Administrative tasks

Administrative tasks required to work with the Self-Service Catalog app.

Administrative tasks are those activities required to enable users to create and work with Self-Service Catalog. Access to the Self-Service Catalog catalogs and services is based on roles. Administrators create catalogs and services for mobile users and associate roles to the catalogs and services. Users can create, view, and work with the catalogs and services based on the role assigned to them.

In addition to assigning roles to users, administrators might also choose to implement a high availability configuration. A high availability configuration enables multiple instances to work at the same time without affecting performance. See “High Availability using Self-Service Dashboards with DB2” on page 46 for more information.

Administrators can also configure the Dynamic Workload Console to use single-sign on. This configuration implies that a user can log in once on the Dynamic Workload Console and then gain access to the Self-Service Catalog app without being prompted to log in again.

To access audit logging information about the operations performed from the Self-Service Catalog application, Administrators can configure logging information in the Dynamic Workload Console global settings file.

For more information about enabling audit logs, see Section 11 in the global settings described in the Reference section of the *Dynamic Workload Console User's Guide*.

For more information about customizing user interface labels on the Self-Service Catalog, see "Personalizing UI labels" in the *Administration Guide*.

Managing catalogs and services

Creating, editing and deleting catalogs and services.

Before you begin

To manage catalogs and services, you must have the following role:

Required role
TWSWEBUIAdministrator, TWSWEBUIBusinessDeveloper

About this task

To start working with the Self-Service Catalog you must create some services that are associated to IBM Workload Scheduler job streams. You can then collect similar services into a catalog. Catalogs and services are associated to Dashboard Application Services Hub roles, so that only users having those roles can see and use them. Tap **User**, in the top right corner, to display details about your user name and roles. Complete the following steps to create and manage catalogs and services:

Procedure

1. Create a new catalog, which is a collection of similar services, as described in "Creating a new catalog."
2. Create one or more services, which are associated to IBM Workload Scheduler job streams that are run when the service is submitted, as described in "Creating a new service" on page 11. If you are creating a service that runs on a distributed engine, then the Variable Validation section displays a list of variables if the job stream selected has a variable table associated to it. You can specify variable validation criteria for each variable to standardize the input value.
3. Gather similar services into the same catalog to make them easier to find, as described in "Adding services to a catalog" on page 16.
4. Optionally, at any time, you can modify the created objects. For more information about how to do it, see: "Editing catalogs" on page 28 and "Editing services" on page 29. For example, when editing a service, you can change the engine and job stream associated to it or make the service temporarily inactive to prevent users from submitting it.
5. From the Dynamic Workload Console, associate the users who are going to use the Self-Service Catalog to Dashboard Application Services Hub roles to allow them to access the application.
6. From the Dynamic Workload Console, share the engines used to run the services, with the Dashboard Application Services Hub roles associated to those services, to allow these users to actually submit the services.
7. Associate catalogs and services to Dashboard Application Services Hub roles to allow only the required users to see and use them, as described in "Defining users and roles" on page 17.

Creating a new catalog

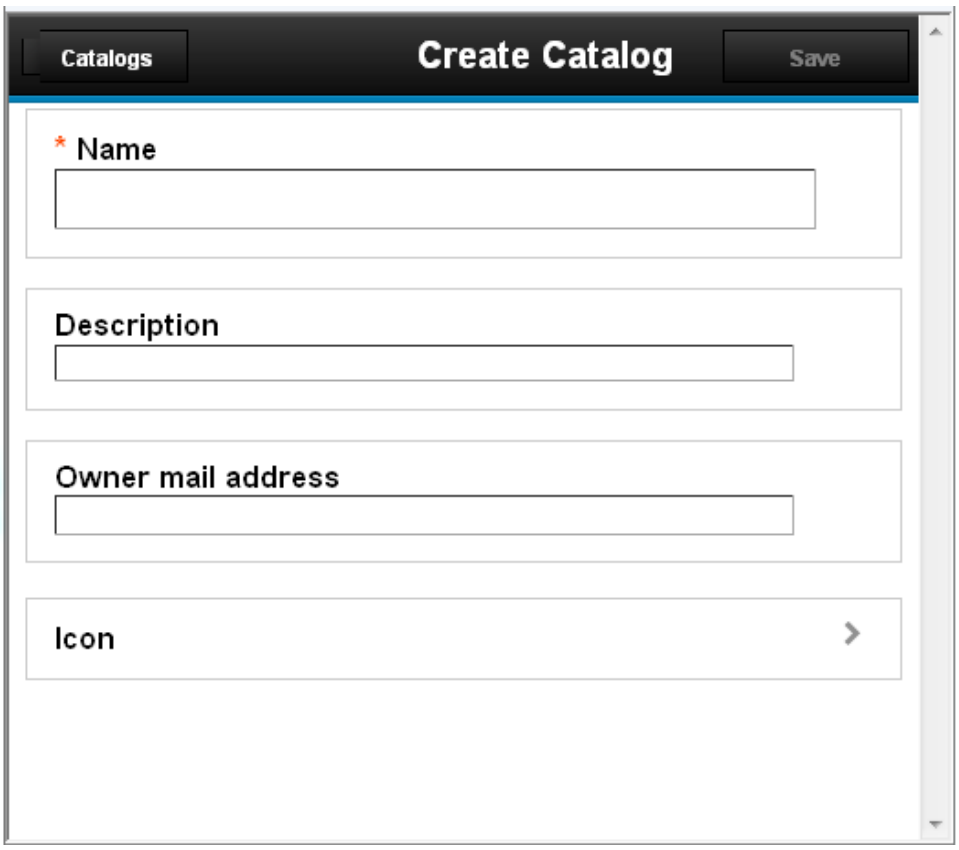
Creating new catalogs, which are containers of services.

About this task

To create a new catalog and include some services in it, perform the following steps:

Procedure

1. Tap the Self-Service Catalog section  to launch the application.
2. Tap the **Catalogs** section to display a list of available catalogs. A catalog is a container of services.
3. Tap **Toolbar** to display the editing toolbar, if it is not already shown on the screen. The editing toolbar displays at the bottom of the page.
4. Tap **Create** to display the following page:



5. Specify the new catalog information, optionally associating a description and an icon to better identify it. Mandatory fields are marked with an asterisk. Tap **Icon** to view a list of all the available icons that can characterize the catalog. If you want the catalog owner to be notified by email about the outcome of a submitted request, enter an email address in the **Owner mail address** field.
6. Save the newly-created catalog.
7. In the Catalogs page, tap **Roles** and a catalog section to open the list of Dashboard Application Services Hub roles that can be associated to this catalog. Select only the roles that you want to authorize to see and use this catalog.

Results

The catalog you have is now displayed in the **Catalogs** list, but is an empty container. You can now include some services in it. For more information about how to do this, see "Adding services to a catalog" on page 16. If you want to modify some settings of the new catalog, see: "Editing catalogs" on page 28.

Creating a new service

Creating a service means associating a job stream to a service that can then be submitted from a mobile device.

Before you begin

To create new services, you must launch the Self-Service Catalog using a web browser.

Required role

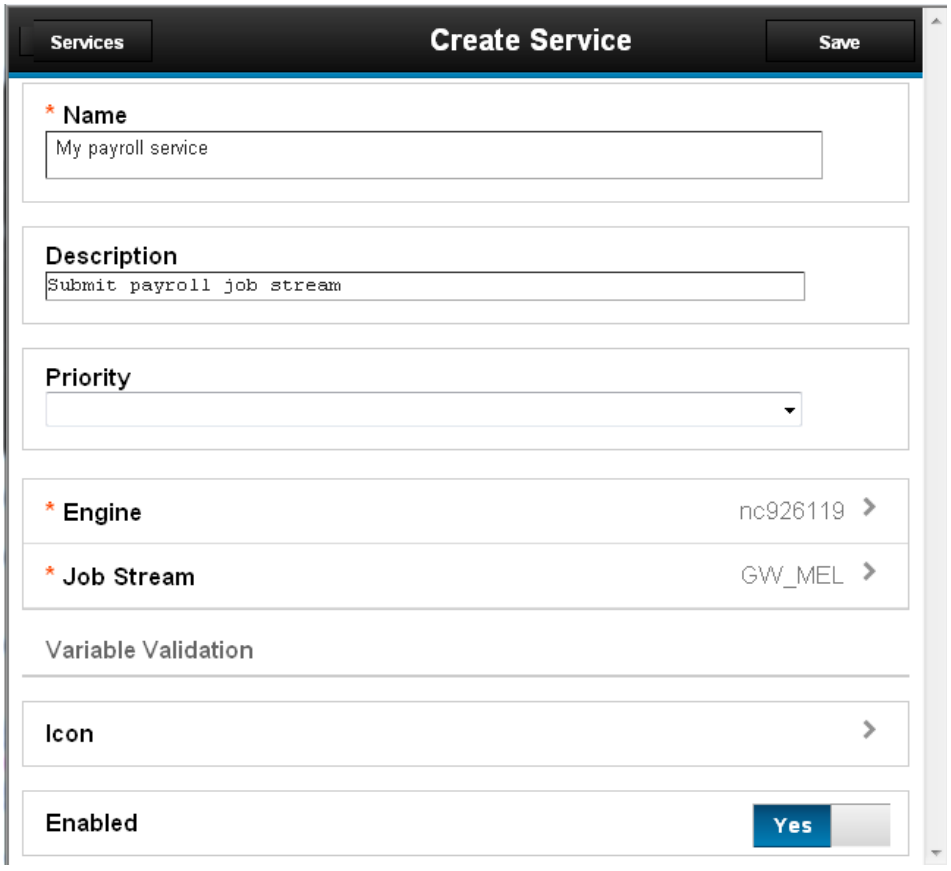
TWSWEBUIAdministrator, TWSWEBUIBusinessDeveloper

About this task

To create a new service, perform the following steps:

Procedure

1. Tap the Self-Service Catalog section  to launch the application.
2. Tap the **Catalogs** section to display a list of available catalogs. A catalog is a container of services.
3. Tap a catalog name to open it. The **Services** page opens.
4. Tap **Toolbar** to display the editing toolbar, if it is not already shown on the screen. The editing toolbar displays at the bottom of the page.
5. Click **Create** to create a new service.
6. Specify the new service information, optionally associating a description to better identify it. Mandatory fields are marked by an asterisk. Optionally, specify a priority to assign this service more or less preeminence over the others. If assigned during the service creation, priority cannot be changed by TWSWEBUIAnalyst users who submit the service.



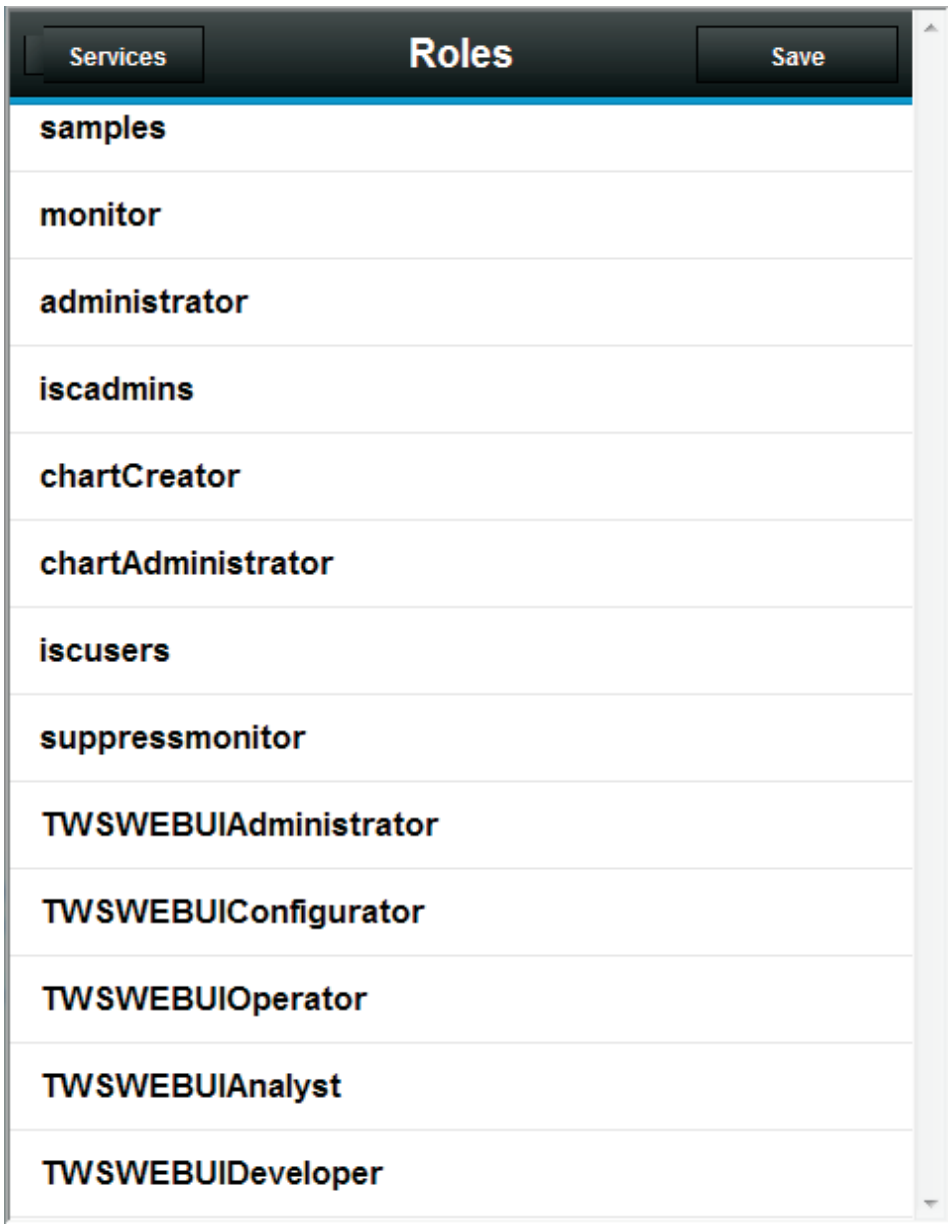
7. Optionally, tap **Icon** to view a list of all the available icons that can characterize the service. Set **Enabled** to **No** if you want to make this service inactive so that users cannot submit it until it is enabled again.

   Note: Users with TWSWEBUIAdministrator role can see and submit disabled services. Whereas, users with TWSWEBUIAnalyst role cannot see a disabled service, even if the service was associated to their role.

8. Tap **Engine** to open a list of available engines and choose the one on which the job stream that you want to associate to the new service is scheduled to run. The engine connection that you select must satisfy the following requirements:
   - On the Dynamic Workload Console, the engine must be shared with the Dashboard Application Services Hub groups to which all the users who create and submit the service belong.
   - The engine credentials must be shared on the Dynamic Workload Console, selecting the **Share credentials** check box in the Engine Connection Properties panel of the Dynamic Workload Console.
9. To search for a specific engine, pull down the page to open the **Search** text box and enter a string contained by the engine name you are searching for
10. Tap **Job stream** to open a list of job streams defined on the selected engine and choose the job stream that you want to associate to the service. To search for a specific job stream, pull down the page to open the **Search** text box and enter a string contained by the job stream name you are searching for.
11. Define variable validation criteria. If you are creating a service that runs on a z/OS engine, you can select a variable table by tapping **Variable Table**. You can then define variable validation criteria for only the promptable variables defined in the table in the **Variable Validation** section, and associate different series of key-value variables to the same service, making it more flexible and reusable.

    If you are creating a service that runs on a distributed engine, and the job stream selected has a variable table associated to it, then the variables defined in the table are listed in the **Variable Validation** section.

    See “Defining variable validation criteria” on page 14 for more information about the criteria you can specify.
12. Save the service.
13. In the Services page, tap **Roles** and the service name to open the list of Dashboard Application Services Hub roles that can be associated to this service. Select only the roles that you want to authorize to see and use this service:



If the new service is not associated to any role, by default it is only available to TWSWEBUIAdministrator.

Results

The service you created is displayed in the **Services** page that shows all the services in the current catalog.

Defining variable validation criteria

Administrators can tailor services by defining variable validation criteria to be applied to the job streams associated to a service.

About this task

By defining variable validation criteria, Administrators can ensure that input entered by the mobile user is checked against the criteria and only input that satisfies the criteria is accepted. An error message is issued when invalid input is

entered by the user. When defining variable validation criteria, Administrators can specify, for example, whether the input value is numeric or alphabetic, or whether the entry must be within a range of values or a certain length.

The Variable Validation section lists all of the variables defined in the variable table. To define variable validation criteria:

Procedure

1. In the **Variable Validation** section, determine for which variables you want to set validation criteria, and select the data type for the value of the variable: **Text**, **Date**, **Number**, **Time**, **Boolean**, **Custom**, or **Hidden**.
2. Define the criteria for the data type selected:

   Text Specifies that the value must be a text string.

   Not null
   Specifies that an input value must be specified and cannot be left blank.

   Allow space
   Specifies that space characters are allowed in the input value.

   Length
   Specifies a minimum and a maximum value for the length of the text string.

   Min Specifies that the text string cannot contain less than this number of alphabetic characters.

   Max Specifies that the text string cannot contain more than this number of alphabetic characters.

   Date Specifies that the input value must correspond to a date in the format DD/MM/YYYY.

   Not null
   Specifies that a date value must be specified and cannot be left blank.

   Number

   Not null
   Specifies that a numeric input value must be specified and cannot be left blank.

   Min The number specified cannot be less than this minimum range value.

   Max The number specified cannot be more than this maximum range value.

   Time Specifies that the input must correspond to a time in the format HH:MM:ss.

   Not Null
   Specifies that a time must be specified and cannot be left blank.

   Boolean
   Specifies the input data must be of boolean type.

   Custom

Not null
Specifies that an input value must be specified and cannot be left blank.

Regular Expression
Allows you to enter your own custom validation criteria expressed as a regular expression. The regular expression is used to validate the variable value specified. The syntax supported is the JavaScript standard for regular expressions.

Hidden
Select this option to hide one or more variables defined in the variable table from the service. Mobile users who submit the service to run are not prompted to enter values for variables flagged as hidden. If a default value is defined in the variable table, then that is value used by the variable, otherwise, you can specify a different value in the **Value** field.

Value Overwrite the value defined in the variable table by assigning a different value in this field.

3. Save the changes.

Results

When the service is submitted by the mobile user, if the values entered by the user for the variables do not satisfy the validation criteria set by the Administrator, an error message is displayed

Adding services to a catalog

Adding services to catalogs means associating a job stream to a service and including the service in a catalog.

Before you begin

To add services, you must launch the Self-Service Catalog using a web browser:

Required role
TWSWEBUIAdministrator, TWSWEBUIBusinessDeveloper

Required role
TWSWEBUIAdministrator, TWSWEBUIBusinessDeveloper

About this task

A catalog is an empty container. To use it, you must include services in it. To do this, perform the following steps:

Procedure

1. Tap the Self-Service Catalog section  to launch the application.
2. Tap the **Catalogs** section to display a list of available catalogs. A catalog is a container of services.
3. Tap a catalog name to open it. The **Services** page opens.
4. Tap **Toolbar** to display the editing toolbar, if it is not already shown on the screen. The editing toolbar displays at the bottom of the page.

5. Depending on whether you want to add an existing or a new service, choose one of the following options:
   - To add an existing service, tap **Add** and select the service you want to add. All the existing services, not belonging to the current catalog, are displayed with information about the engine, job stream, and variable table (only for z/OS) associated to each service.
   - To add a new service, tap **Create** and follow the procedure described in the service creation, in step 5 on page 12.
6. Save to exit.

Results

The service you added is displayed in the **Services** page that shows all the services in the current catalog.

Defining users and roles

Define and manage users and associate them to security roles.

About this task

Access to Self-Service Catalog is based on roles. Users having a specific role can access the catalogs and services assigned to that role.

To create and assign roles, log in to Dashboard Application Services Hub and run the following steps:

1. From the navigation toolbar, click the search glass icon, on top of the toolbar. In the search field, enter WebSphere Administrative Console to open the administrative console.
2. Click **Launch WebSphere administrative console**.
3. From the administrative console navigation tree, click **Users and Groups** > **Manage users** to create a new user on the file registry (do not create it on the operative system).

For more information about creating and assigning roles, see the Dashboard Application Services Hub online help by clicking the "**?**" (question mark) in top-right corner of the panels.

Procedure

1. From the Dynamic Workload Console, define the roles that can access the catalogs.
2. Include these roles in the groups to which the engines on which you plan to create catalogs and services are shared. Only catalogs and services defined on shared engines are available for Self-Service Catalog users.
3. Ensure that the credentials of these engines are shared.
4. From the Self-Service Catalog application on your mobile, associate the required roles to catalogs and services, as described in “Authorizing users to access catalogs and services.”

Authorizing users to access catalogs and services

Working with roles to authorize users to view or edit catalogs and services, and submit service requests.

Before you begin

Associate roles to catalogs and services to make them available to users. Users with the roles corresponding to those assigned to the catalog or service are able to work with the catalogs and services as defined by each individual role. Launch the Self-Service Catalog using a web browser:

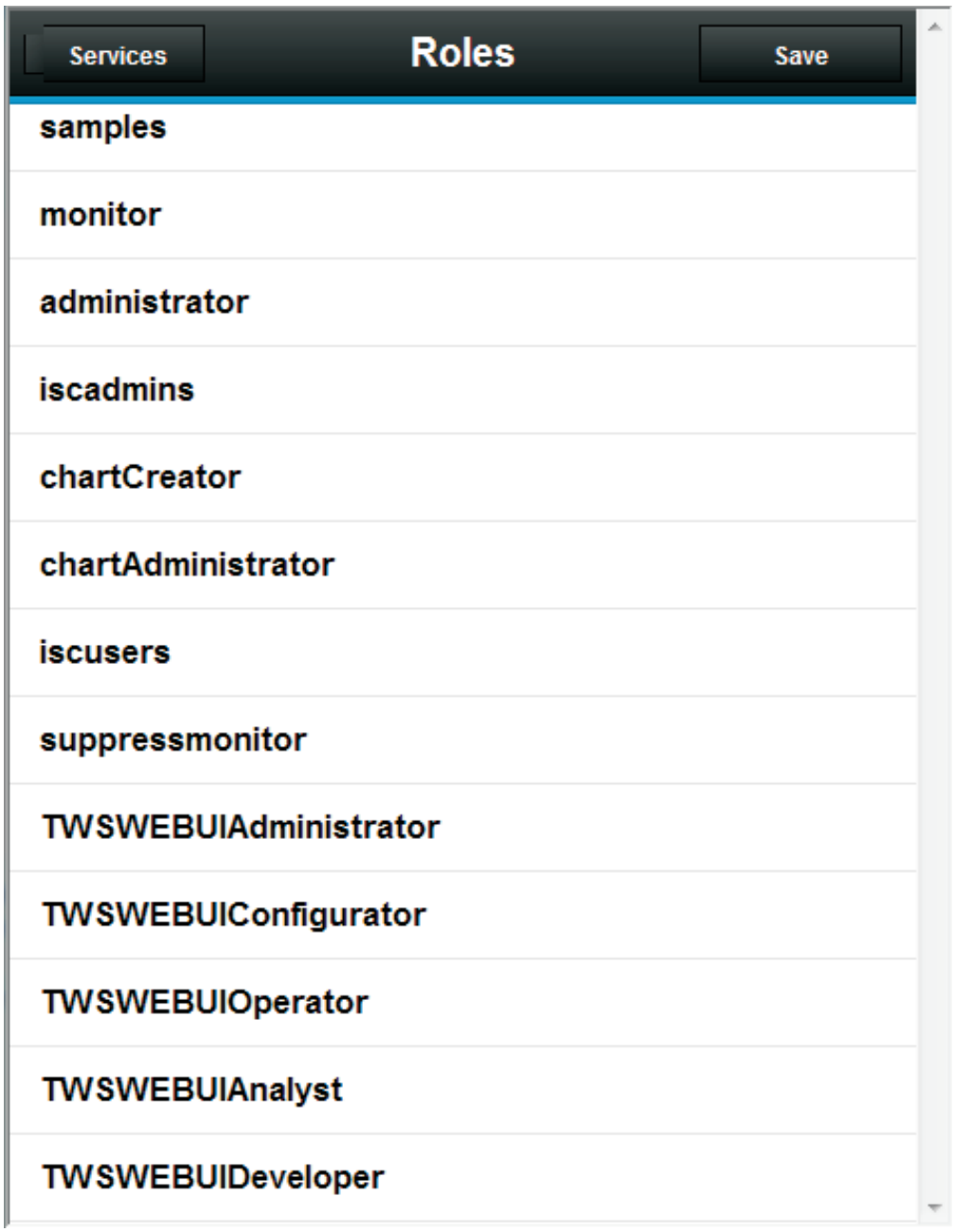
Required role
TWSWEBUIAdministrator, TWSWEBUIBusinessDeveloper

Required role
TWSWEBUIAdministrator, TWSWEBUIBusinessDeveloper

About this task

You can associate different roles to users to authorize them to perform different tasks. View and edit rights are based on Dashboard Application Services Hub role definition.

The following list shows the available roles, based on which you can authorize users to different actions and objects:



To know which are your roles, from the home page, tap **User**.

Using the following roles you can differentiate users who can only view and run service requests from users who can also create and edit them.

dwcAnalyst
This is the minimum role required to access Self-Service Catalog. Users with this role can view catalogs and services to which they are authorized and submit service requests. They cannot modify services or catalogs.

dwcAdministrator
Users with this role can create, edit, and delete catalogs and services. They can also associate roles to services and catalogs to authorize other users to work with them.

TWSWEBUIBusinessDeveloper

Users in this group can access and use the Self-Service Catalog and the Self-Service Dashboards mobile applications. From the Self-Service Catalog mobile application, these users can create and edit catalogs, create and edit services, add services to catalogs, delete services and catalogs, and submit services associated to job streams. From the Self-Service Dashboards mobile application, these users can create and edit dashboards to filter for jobs and workstations, display and view a dashboard of results, delete dashboards, and perform recovery actions on a single result. To share catalogs, services, and dashboards with other users, the TWSWEBUIBusinessDeveloper can assign them to the custom roles that the TWSWEBUIBusinessDeveloper possesses but not to predefined roles. Users with these same custom roles can work with the catalogs, services, and dashboards. Users with all of the custom roles can submit services; view, edit, and delete services, catalogs, and dashboards; but users with only one or some of the custom roles can only submit services, and view services, catalogs, and dashboards.

If a user with the Administrator role, creates catalogs, services, and dashboards and does not assign any roles to them, then users with the TWSWEBUIBusinessDeveloper role cannot see or work with them.

Note: If a custom role is removed from a catalog, service, or dashboards, in addition to the TWSWEBUIBusinessDeveloper user, users with this same custom role can no longer see and work with them, even if they possess other custom roles that are currently assigned to the catalog or service. The Administrator must reassign the custom role to the catalog, service, or dashboard to make it accessible again to the TWSWEBUIBusinessDeveloper user and other users with the same custom role.

You can use all the other available roles to fine tune the authorization mechanism. By associating catalogs and services to required roles, you can authorize only users with at least one of those roles to see and use them. To associate users to specific roles, use the Dynamic Workload Console, as described in "Defining users and roles" on page 17.

To associate a catalog or a service to a role, perform the following steps

Procedure

1. Tap the Self-Service Catalog section  to launch the application.
2. Tap the **Catalogs** section to display a list of available catalogs. A catalog is a container of services.
3. Depending on the object to which you want to associate a role, take either one of the following choices
   - **To associate a role to a catalog**:
     a. Tap **Roles**. The role icon  displays next to each object until you exit the edit role mode by tapping the **Roles** button again.
     b. Tap the catalog that you want to associate to a role.
     c. From the displayed list of roles, select the ones you want to associate to the selected catalog.
     d. Save to exit and tap **Roles** again to exit the edit role mode.

- **To associate a role to a service**,
  a. Tap the catalog name and the Services page opens.
  b. Tap **Roles**. The role icon  displays next to each object until you exit the edit role mode by tapping the **Roles** button again.
  c. From the displayed list of roles, select the ones you want to associate to the selected service.
  d. Save to exit and tap **Roles** again to exit the edit role mode.

Results

Only users who have at least one of the roles associated to a catalog or service can view, edit or use it.

Self-Service Catalog with DB2 in High Availability

Using DB2 instead of a local file as your settings repository allows you to use Self-Service Catalog in High Availability Configuration.

Performance can be highly improved by migrating the Dynamic Workload Console accessed by the Self-Service Catalog to High Availability Configuration, so as to have multiple console instances working at the same time as one console.

If the Self-Service Catalog app you are using is connected to a Dynamic Workload Console in High Availability configuration, all the user settings, including the Self-Service Catalog data, are stored in a DB2 repository. If you are connected to a Dynamic Workload Console in High Availability configuration using a load balancer, when you launch the Self-Service Catalog app, you are not connecting to a specific Dynamic Workload Console, but to a node in the High Availability configuration. Therefore, for example, if a node fails, new user sessions are directed to other active nodes in the configuration and this change is completely transparent to users.

If the Dynamic Workload Console repository was switched to DB2 before creating Self-Service Catalog objects, then from the Dynamic Workload Console navigation tree, click **IBM Workload Scheduler > System Configuration > Manage Settings > Configure settings repository > Create SSC Tables** to create Self-Service Catalog tables on DB2. If this is not done, an error message displays informing you that the system cannot connect to the Self-Service Catalog database, and you must ensure that the database connection data is correct in the Dynamic Workload Console.

For more information about how to configure the Dynamic Workload Console to use DB2 as setting repository, see: Configuring High Availability, in the Mobile Applications User's Guide.

For more information about High Availability configuration, see Configuring High Availability in Dynamic Workload Console in IBM Workload Scheduler Administration.

Chapter 5. Managing catalogs and services

Creating, editing and deleting catalogs and services.

Before you begin

To manage catalogs and services, you must have the following role:

Required role
TWSWEBUIAdministrator, TWSWEBUIBusinessDeveloper

About this task

To start working with the Self-Service Catalog you must create some services that are associated to IBM Workload Scheduler job streams. You can then collect similar services into a catalog. Catalogs and services are associated to Dashboard Application Services Hub roles, so that only users having those roles can see and use them. Tap **User**, in the top right corner, to display details about your user name and roles. Complete the following steps to create and manage catalogs and services:

Procedure

1. Create a new catalog, which is a collection of similar services, as described in "Creating a new catalog" on page 10.
2. Create one or more services, which are associated to IBM Workload Scheduler job streams that are run when the service is submitted, as described in "Creating a new service" on page 11. If you are creating a service that runs on a distributed engine, then the Variable Validation section displays a list of variables if the job stream selected has a variable table associated to it. You can specify variable validation criteria for each variable to standardize the input value.
3. Gather similar services into the same catalog to make them easier to find, as described in "Adding services to a catalog" on page 16.
4. Optionally, at any time, you can modify the created objects. For more information about how to do it, see: "Editing catalogs" on page 28 and "Editing services" on page 29. For example, when editing a service, you can change the engine and job stream associated to it or make the service temporarily inactive to prevent users from submitting it.
5. From the Dynamic Workload Console, associate the users who are going to use the Self-Service Catalog to Dashboard Application Services Hub roles to allow them to access the application.
6. From the Dynamic Workload Console, share the engines used to run the services, with the Dashboard Application Services Hub roles associated to those services, to allow these users to actually submit the services.
7. Associate catalogs and services to Dashboard Application Services Hub roles to allow only the required users to see and use them, as described in "Defining users and roles" on page 17.

Creating a new catalog

Creating new catalogs, which are containers of services.

About this task

To create a new catalog and include some services in it, perform the following steps:

Procedure

1. Tap the Self-Service Catalog section  to launch the application.
2. Tap the **Catalogs** section to display a list of available catalogs. A catalog is a container of services.
3. Tap **Toolbar** to display the editing toolbar, if it is not already shown on the screen. The editing toolbar displays at the bottom of the page.
4. Tap **Create** to display the following page:

5. Specify the new catalog information, optionally associating a description and an icon to better identify it. Mandatory fields are marked with an asterisk. Tap **Icon** to view a list of all the available icons that can characterize the catalog. If you want the catalog owner to be notified by email about the outcome of a submitted request, enter an email address in the **Owner mail address** field.
6. Save the newly-created catalog.
7. In the Catalogs page, tap **Roles** and a catalog section to open the list of Dashboard Application Services Hub roles that can be associated to this catalog. Select only the roles that you want to authorize to see and use this catalog.

Results

The catalog you have is now displayed in the **Catalogs** list, but is an empty container. You can now include some services in it. For more information about how to do this, see “Adding services to a catalog” on page 16. If you want to modify some settings of the new catalog, see: “Editing catalogs” on page 28.

Creating a new service

Creating a service means associating a job stream to a service that can then be submitted from a mobile device.

Before you begin

To create new services, you must launch the Self-Service Catalog using a web browser.

Required role

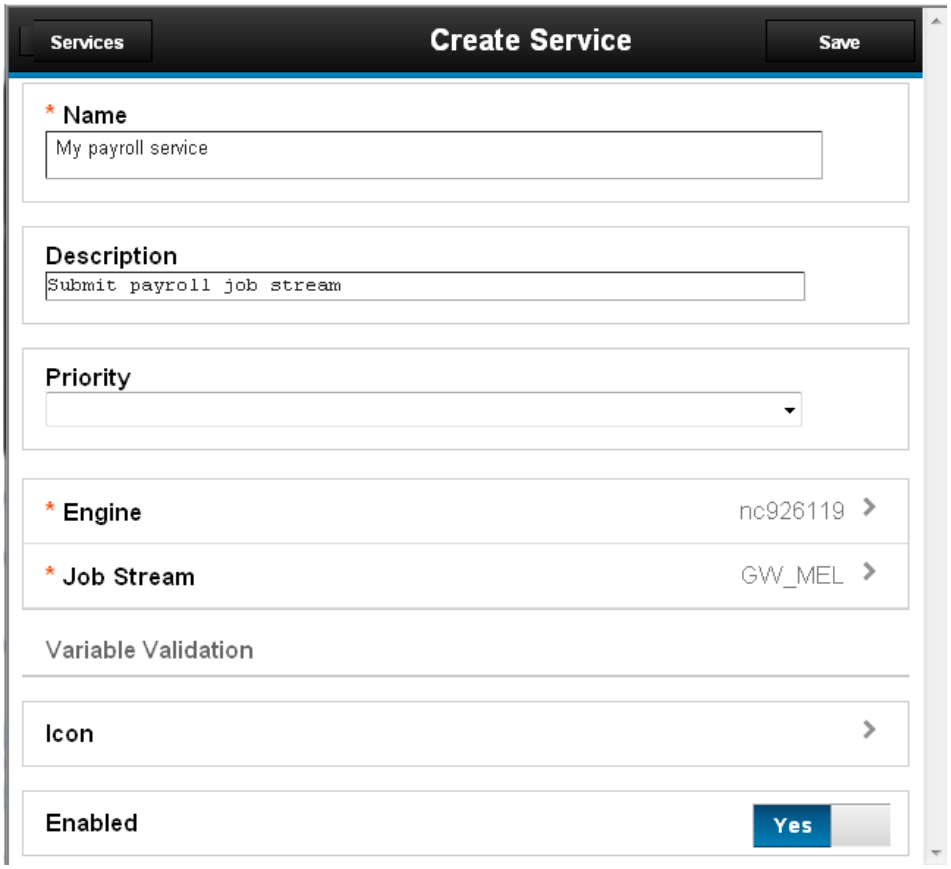
TWSWEBUIAdministrator, TWSWEBUIBusinessDeveloper

About this task

To create a new service, perform the following steps:

Procedure

1. Tap the Self-Service Catalog section  to launch the application.
2. Tap the **Catalogs** section to display a list of available catalogs. A catalog is a container of services.
3. Tap a catalog name to open it. The **Services** page opens.
4. Tap **Toolbar** to display the editing toolbar, if it is not already shown on the screen. The editing toolbar displays at the bottom of the page.
5. Click **Create** to create a new service.
6. Specify the new service information, optionally associating a description to better identify it. Mandatory fields are marked by an asterisk. Optionally, specify a priority to assign this service more or less preeminence over the others. If assigned during the service creation, priority cannot be changed by TWSWEBUIAnalyst users who submit the service.



7. Optionally, tap **Icon** to view a list of all the available icons that can characterize the service. Set **Enabled** to **No** if you want to make this service inactive so that users cannot submit it until it is enabled again.

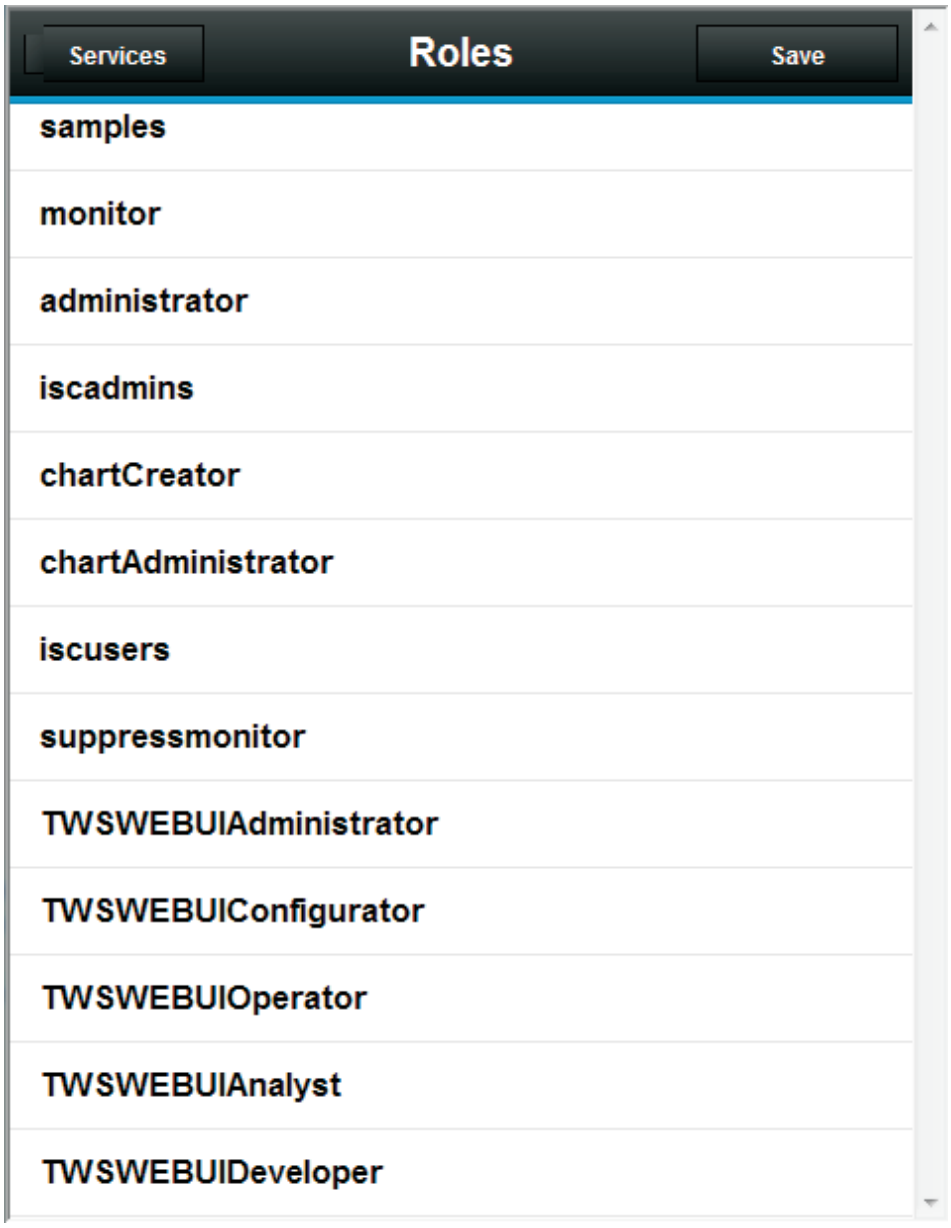
   Note: Users with TWSWEBUIAdministrator role can see and submit disabled services. Whereas, users with TWSWEBUIAnalyst role cannot see a disabled service, even if the service was associated to their role.
8. Tap **Engine** to open a list of available engines and choose the one on which the job stream that you want to associate to the new service is scheduled to run. The engine connection that you select must satisfy the following requirements:
   - On the Dynamic Workload Console, the engine must be shared with the Dashboard Application Services Hub groups to which all the users who create and submit the service belong.
   - The engine credentials must be shared on the Dynamic Workload Console, selecting the **Share credentials** check box in the Engine Connection Properties panel of the Dynamic Workload Console.
9. To search for a specific engine, pull down the page to open the **Search** text box and enter a string contained by the engine name you are searching for
10. Tap **Job stream** to open a list of job streams defined on the selected engine and choose the job stream that you want to associate to the service. To search for a specific job stream, pull down the page to open the **Search** text box and enter a string contained by the job stream name you are searching for.
11. Define variable validation criteria. If you are creating a service that runs on a z/OS engine, you can select a variable table by tapping **Variable Table**. You can then define variable validation criteria for only the promptable variables

defined in the table in the **Variable Validation** section, and associate different series of key-value variables to the same service, making it more flexible and reusable.

If you are creating a service that runs on a distributed engine, and the job stream selected has a variable table associated to it, then the variables defined in the table are listed in the **Variable Validation** section.

See "Defining variable validation criteria" on page 14 for more information about the criteria you can specify.

12. Save the service.
13. In the Services page, tap **Roles** and the service name to open the list of Dashboard Application Services Hub roles that can be associated to this service. Select only the roles that you want to authorize to see and use this service:



If the new service is not associated to any role, by default it is only available to TWSWEBUIAdministrator.

Results

The service you created is displayed in the **Services** page that shows all the services in the current catalog.

Adding services to a catalog

Adding services to catalogs means associating a job stream to a service and including the service in a catalog.

Before you begin

To add services, you must launch the Self-Service Catalog using a web browser:

Required role
TWSWEBUIAdministrator, TWSWEBUIBusinessDeveloper

Required role
TWSWEBUIAdministrator, TWSWEBUIBusinessDeveloper

About this task

A catalog is an empty container. To use it, you must include services in it. To do this, perform the following steps:

Procedure

1. Tap the Self-Service Catalog section  to launch the application.
2. Tap the **Catalogs** section to display a list of available catalogs. A catalog is a container of services.
3. Tap a catalog name to open it. The **Services** page opens.
4. Tap **Toolbar** to display the editing toolbar, if it is not already shown on the screen. The editing toolbar displays at the bottom of the page.
5. Depending on whether you want to add an existing or a new service, choose one of the following options:
   - To add an existing service, tap **Add** and select the service you want to add. All the existing services, not belonging to the current catalog, are displayed with information about the engine, job stream, and variable table (only for z/OS) associated to each service.
   - To add a new service, tap **Create** and follow the procedure described in the service creation, in step 5 on page 12.
6. Save to exit.

Results

The service you added is displayed in the **Services** page that shows all the services in the current catalog.

Editing catalogs

Editing the settings of existing catalogs.

Before you begin

To edit an existing catalog, you must launch the Self-Service Catalog using a web browser:

Required role
TWSWEBUIAdministrator, TWSWEBUIBusinessDeveloper

About this task

To edit the settings of an existing catalog, perform the following steps:

Procedure

1. Tap the Self-Service Catalog section  to launch the application.
2. Tap the **Catalogs** section to display a list of available catalogs. A catalog is a container of services.
3. Tap **Toolbar** to display the editing toolbar, if it is not already shown on the screen. The editing toolbar displays at the bottom of the page.
4. Tap **Edit** in the toolbar at the bottom of the page to enter the edit mode. Edit icons  display next to the objects in the page to identify that you are in edit mode.
5. Tap the catalog that you want to modify and implement your changes.
6. Save it to exit.

Results

The catalog you modified is displayed in the **Catalogs** list.

Editing services

Editing the settings of existing services.

Before you begin

To edit an existing service, you must launch the Self-Service Catalog using a web browser:

Required role
TWSWEBUIAdministrator, TWSWEBUIBusinessDeveloper

Required role
TWSWEBUIAdministrator, TWSWEBUIBusinessDeveloper

About this task

To edit the settings of an existing service, perform the following steps:

Procedure

1. Tap the Self-Service Catalog section  to launch the application.

2. Tap the **Catalogs** section to display a list of available catalogs. A catalog is a container of services.
3. Tap the catalog that contains the service you want to edit and the list of services displays.
4. Tap **Toolbar** to display the editing toolbar, if it is not already shown on the screen. The editing toolbar displays at the bottom of the page.
5. Tap **Edit** in the toolbar at the bottom of the page to enter the edit mode. Edit icons  display next to the objects in the page to identify that you are in edit mode.
6. Tap the service you want to modify and make your changes.
7. Save it to exit.

Results

The service you modified is displayed in the **Services** list.

Submitting service requests

You can use your mobile to submit service requests and monitor the outcome and details. Service requests correspond to job streams in your IBM Workload Scheduler environment.

Before you begin

To submit a request you must launch the Self-Service Catalog using a web browser:

Required role
TWSWEBUIAdministrator, TWSWEBUIBusinessDeveloper

Required role
To submit a service to an engine, you must have at least one role that is associated to the group to which the engine is shared on the Dynamic Workload Console. For example: *user1* with *role1* can submit a service on *engine1* which, on the Dynamic Workload Console, is shared to *group1*, to which *role1* is associated.

For more information, see "Defining users and roles" on page 17.

About this task

To submit service requests using the Self-Service Catalog, perform the following steps:

Procedure

1. Tap the Self-Service Catalog section  to launch the application.
2. Tap the **Catalogs** section to display a list of available catalogs. A catalog is a container of services.
3. Tap a catalog to view the services it contains, and choose the service you want to submit.

4. Provide values for additional parameters for the service from the **Service Parameters** page before you submit the service. If no parameters were defined for the service when it was created, then you see only the priority parameter which is an optional parameter.
   a. Provide a value for each of the parameters listed on the **Service Parameters** page. An icon to the left of the input field indicates the format of the value. Possible formats are: a text string, a date, a number, a time, a boolean type value, and a custom defined regular expression.
   b. If a priority was not assigned when the service was created, you can optionally assign a priority to your request by tapping **Priority** and selecting a value from the list, where **Premium** is the highest priority and **Bronze** is the lowest priority. These values match IBM Workload Scheduler priority values; for example, service requests with a Premium priority are launched as soon as their dependencies are satisfied, in the same way as IBM Workload Scheduler jobs with **GO** priority.
5. Tap **Submit** to launch the service request.

Results

The service starts according to its priority settings and a progress bar is displayed on the home page. The job stream defined in the service is submitted to be run.

What to do next

You can track the progress of the service submission and the view the details of the request from the Request History section on the home page. See "Viewing the Request History."

Viewing the Request History

Searching for past service requests and viewing their details.

Before you begin

To access the history of submitted service requests, you must launch the Self-Service Catalog using a web browser:

Required role
TWSWEBUIAdministrator, TWSWEBUIBusinessDeveloper

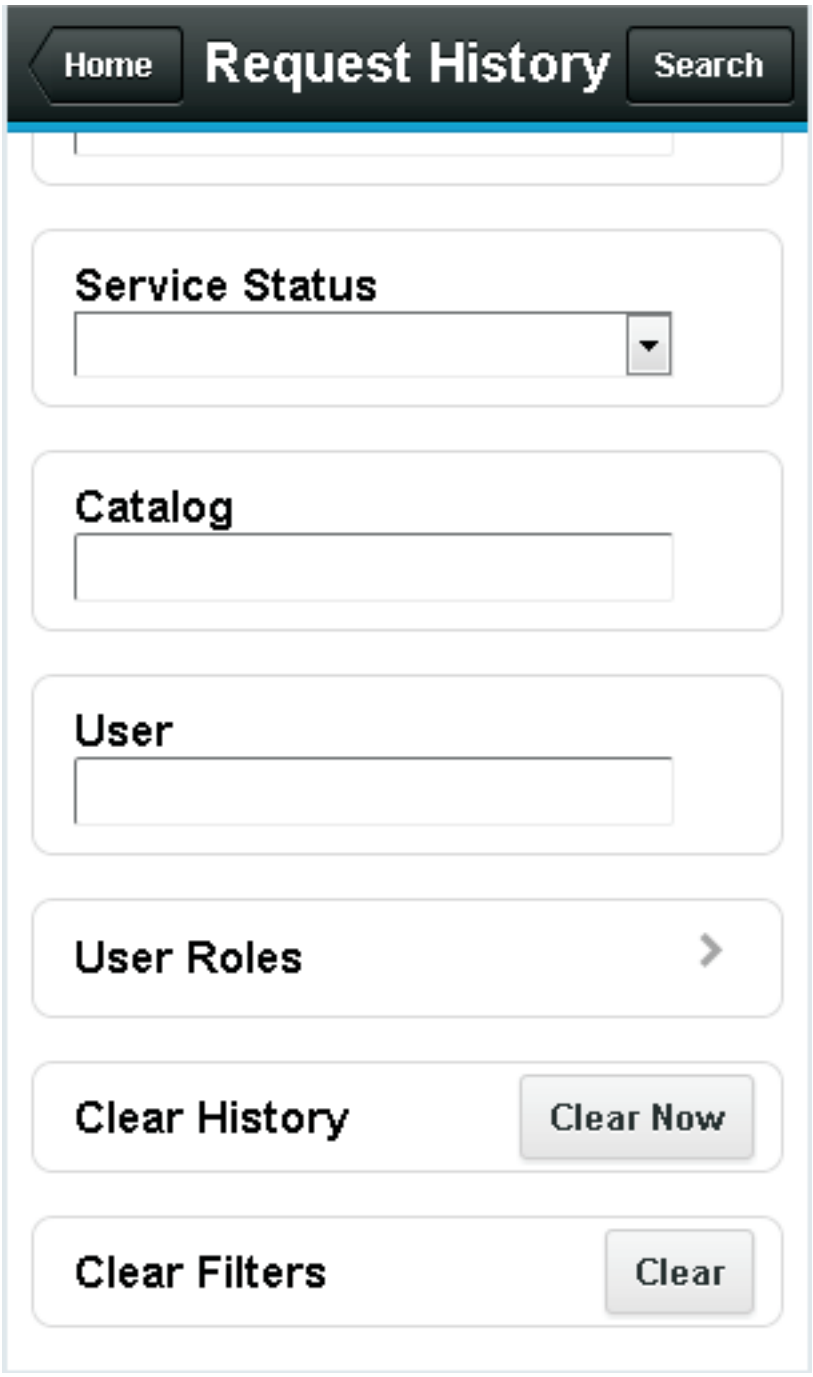
Role required
TWSWEBUIAdministrator, TWSWEBUIAnalyst.

About this task

Use the request history to view the service requests that have been submitted and their details, regardless of their outcome. This can be useful, for example, for troubleshooting or reporting reasons. Unless you have administrator rights, you can only view the requests you submitted. Administrators can view the history of all service requests. To view the request history, perform the following steps:

Procedure

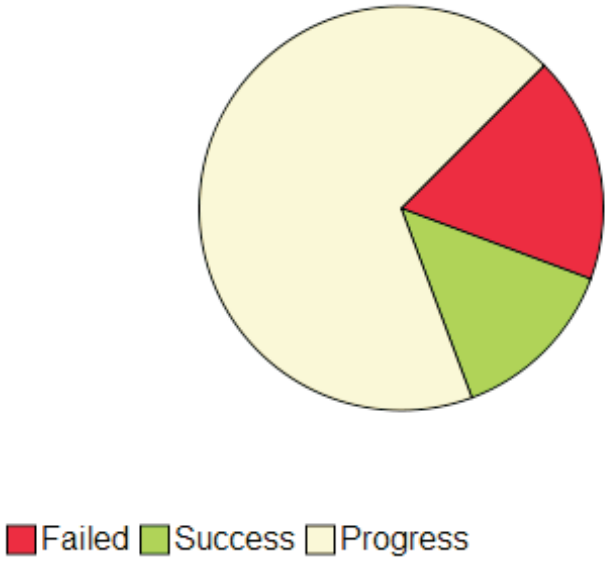
1. Tap the Self-Service Catalog section  to launch the application.
2. Tap **History** to open the request search page.
3. Optionally, specify additional filter parameters to fine tune your search. All fields are optional. If you have administrator rights, you can filter by any or all of the following values, otherwise, you can filter by all except for user and user roles:



To start filtering, enter a string in a field or tap it to display the list of possible values, where available. For example, by tapping **User Roles**, you display the

page listing all the available roles (multiple selection is allowed). Swipe the page if you want to clear it removing the entered values. To clear any existing filter settings, tap **Clear**.

4. Tap **Search** to start the search. The Search Result page displays the list of all the service requests satisfying your search filtering criteria.
5. Optionally, tap **Graph** to display a pie chart view of the search results, such as:



6. For more information about the details of a specific service request, tap one of the results. Priority and date information is displayed by default. Optionally, slide the 

switch to display further details, such as the engine, job stream, and scheduling ID associated to the service.

Part 2. Self-Service Dashboards

Chapter 6. Self-Service Dashboards Overview

With the Self-Service Dashboards app, you can use your mobile device to define one or more dashboards to monitor subsets of jobs and workstations.

Self-Service Dashboards is a solution to monitor business tasks right from the mobile user's device, without having to install the full product or when you do not have access to the full product. It also enables some mobile users to perform simple business tasks without the necessity of learning about the complexity of the full product.

The dashboards give an overall picture of your jobs and workstations and allow you to drill down and view more detailed information about jobs, such as critical jobs, risk levels, late jobs, job logs, and other job details, and workstations and their availability. You can also perform some recovery actions on jobs and workstations.

Although the Self-Service Dashboards app is to be used primarily from a mobile device, you can also use it from your computer connected to a web browser.

To use the Self-Service Dashboards app, you launch it by specifying a URL that contains the host name and port number of the Dynamic Workload Console instance to which you are connecting.

If the Dynamic Workload Console instance to which you are connecting is configured for single sign-on, then a user can log in once on the Dynamic Workload Console and then gain access to the Self-Service Dashboards app without being prompted to log in again. Single sign-on is supported starting with IBM Workload Scheduler version 9.2. For more information about configuring the Dynamic Workload Console to use Single Sign-On, see the *Administration Guide*

For more information about configuring the Dynamic Workload Console to use Single Sign-On, see the *Administration Guide*

You can also use Self-Service Dashboards taking advantage of High Availability configuration so as to have multiple console instances working at the same time without reducing performance. For more information about this configuration, see "High Availability using Self-Service Dashboards with DB2" on page 46.

Prerequisites

You can access the Self-Service Dashboards app from standard browsers on the following devices:

- IOS-based devices versions 9.x and 10.x
  - iPhone
  - iPad
  - iPod Touch
- Android-based devices versions 5.x and 6

Note: If Self-Service Dashboards does not display correctly, try to access it with a different browser.

Self-Service Dashboards supports only IBM Workload Scheduler version: 9.2 or later. If you connect to a Dynamic Workload Console that uses an earlier IBM Workload Scheduler version, you receive an error message when trying to use the Self-Service Dashboards app.

Supported Browsers

The following browser versions are supported:

- Apache Safari 10.0
- Google Chrome 53
- Microsoft Internet Explorer 11
- Microsoft Edge 38
- Mozilla Firefox ESR 38 and ESR 45

Refer to the System Requirements document for the most up-to-date information about supported versions for devices and operating systems.

Chapter 7. Accessing and exiting Self-Service Dashboards

You can use your mobile device to define and monitor dashboards containing the results of queries on jobs and workstations in your IBM Workload Scheduler environment.

About this task

You can use your mobile device to open the dashboard and monitor jobs and workstations. Click them to view their details, and send this information using email. For jobs, a link to download the job log is also included in the email.

- To launch the Self-Service Dashboards app from your mobile device or desktop browser, specify the following URL:

  Self-Service Dashboards web address

  `https://host_name:port_number/dwc/mobile`

  where, *host_name* and *port_number* are the host name and port number of the Dynamic Workload Console to which you are connecting.

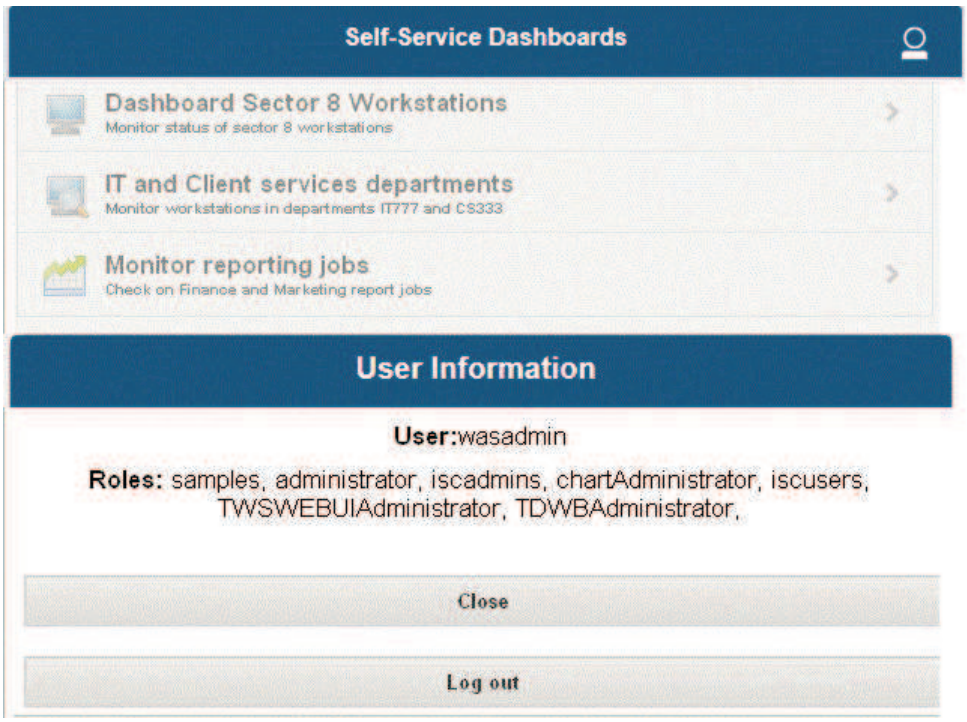
  Enter the credentials to access the Dynamic Workload Console to which you are connecting.

  You can launch the Self-Service Dashboards also from the Single Entry Point page. For details refer to the topic about the product user interfaces in the *User's Guide and Reference*.

- The first time you log into the Self-Service Dashboards you will see the **Monitor all** screen.

  Note: In the **Monitor all** screen you cannot edit the dashboard name or the description but you can perform all the other actions.

- To log out of the Self-Service Dashboards app, from the home page, tap **User** > **Logout**, as shown in the following figure, and close the browser:



Note: With Android devices, after exiting the Self-Service Dashboards, you must also clear the ram memory using the task manager application, otherwise the browser is not actually closed and current Self-Service Dashboards session remains active.

As you can see, when you tap **User** you can also see your roles and, as a consequence, actions and objects for which you are authorized. For more information about roles, see: "Authorizing users to access dashboards" on page 42.

Chapter 8. Administrative tasks

Administrative tasks required to work with the Self-Service Dashboards app.

Administrative tasks are those activities required to enable users to create and work with Self-Service Dashboards. Access to the Self-Service Dashboards app is based on roles. Administrators create dashboards for mobile users and associate roles to the dashboards. Users can create, view, and work with the dashboards based on the role assigned to them.

In addition to assigning roles to users, administrators might also choose to implement a high availability configuration. A high availability configuration enables multiple instances to work at the same time without affecting performance. See “High Availability using Self-Service Dashboards with DB2” on page 46 for more information.

Administrators can also configure the Dynamic Workload Console to use single-sign on. This configuration implies that a user can log in once on the Dynamic Workload Console and then gain access to the Self-Service Dashboards app without being prompted to log in again.

To access audit logging information about the operations performed from the Self-Service Dashboards application, Administrators can configure logging information in the Dynamic Workload Console global settings file.

See the information about auditing mobile app activity in the section about customizing your global settings in the *Dynamic Workload Console User's Guide*.

For more information about customizing user interface labels on the Self-Service Dashboards, see "Personalizing UI labels" in the *Administration Guide*.

Defining users and roles

Define and manage users and associate them to security roles.

About this task

Access to Self-Service Dashboards is based on roles. Users having a specific role can access the services assigned to that role.

To create and assign roles, log in to Dashboard Application Services Hub and run the following steps:

1. From the navigation toolbar, click the search glass icon, on top of the toolbar. In the search field, enter WebSphere Administrative Console to open the administrative console.
2. Click **Launch WebSphere administrative console**.
3. From the administrative console navigation tree, click **Users and Groups** > **Manage users** to create a new user on the file registry (do not create it on the operative system).

For more information about creating and assigning roles, see the Dashboard Application Services Hub online help by clicking the "**?**" (question mark) in top-right corner of the panels.

Procedure

1. From the Dynamic Workload Console, define the roles that can access the services.
2. Include these roles in the groups to which the engines on which you plan to create services are shared. Only services defined on shared engines are available for Self-Service Dashboards users.
3. Ensure that the credentials of these engines are shared.
4. From the Self-Service Dashboards application on your mobile, associate the required roles to services, as described in "Authorizing users to access dashboards."

Authorizing users to access dashboards

Work with roles to authorize users to view or edit dashboards.

Before you begin

Associate roles to dashboards to make them available to users. Users with the roles corresponding to those assigned to the dashboard are able to work with the dashboard as defined by the individual role. Launch the Self-Service Dashboards app using a web browser:

Self-Service Dashboards web address

`https://host_name:port_number/dwc/mobile`

where, *host_name* and *port_number* are the host name and port number of the Dynamic Workload Console to which you are connecting.

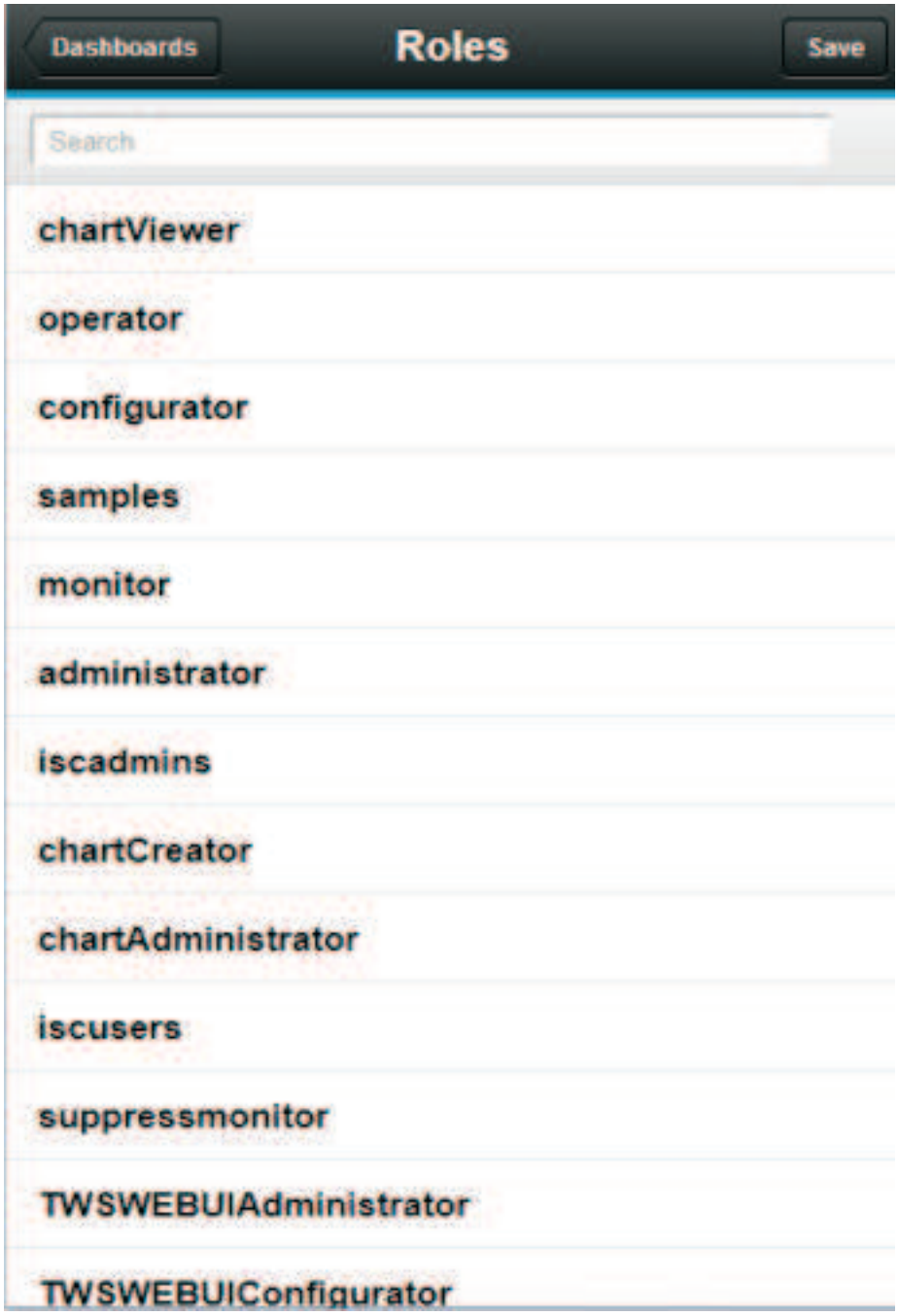
Required role

TWSWEBUIAdministrator, TWSWEBUIBusinessDeveloper

About this task

You can associate different roles to users to authorize them to perform different tasks. View and edit rights are based on Dashboard Application Services Hub role definition.

The following list shows the available roles, based on which you can authorize users to different actions and objects:



To know what your roles are, from the home page, tap **User**.

Using the following roles you can differentiate between users who can only view dashboards and users who can also create and edit them.

Self-Service Dashboards

By defining filter criteria to be applied to your jobs and workstations, you can view dashboards and drill down to more detailed information about the jobs and workstations that match the criteria. You can also perform recovery actions on the jobs and workstations.

Launch the Self-Service Dashboards app from your mobile device by connecting to the following URL:

`https://host_name:port_number/dwc/ssmanagement.jsp`

where *host_name* and *port_number* are the host name and port number of the Dynamic Workload Console you are connecting to.

To launch and use this application, you must have one of the following roles:

dwcAnalyst
This is the minimum role required to access Self-Service Dashboards. Users with this role can view dashboards for which they are authorized but they cannot modify dashboards.

dwcAdministrator
Users with this role can create, edit, and delete dashboards. They can also associate roles to dashboards to authorize other users to work with them.

TWSWEBUIBusinessDeveloper
Users in this group can access and use the Self-Service Catalog and the Self-Service Dashboards mobile applications. From the Self-Service Catalog mobile application, these users can create and edit catalogs, create and edit services, add services to catalogs, delete services and catalogs, and submit services associated to job streams. From the Self-Service Dashboards mobile application, these users can create and edit dashboards to filter for jobs and workstations, display and view a dashboard of results, delete dashboards, and perform recovery actions on a single result. To share catalogs, services, and dashboards with other users, the TWSWEBUIBusinessDeveloper can assign them to the custom roles that the TWSWEBUIBusinessDeveloper possesses but not to predefined roles. Users with these same custom roles can work with the catalogs, services, and dashboards. Users with all of the custom roles can submit services; view, edit, and delete services, catalogs, and dashboards; but users with only one or some of the custom roles can only submit services, and view services, catalogs, and dashboards.

If a user with the Administrator role, creates catalogs, services, and dashboards and does not assign any roles to them, then users with the TWSWEBUIBusinessDeveloper role cannot see or work with them.

Note: If a custom role is removed from a catalog, service, or dashboards, in addition to the TWSWEBUIBusinessDeveloper user, users with this same custom role can no longer see and work with them, even if they possess other custom roles that are currently assigned to the catalog or service. The Administrator must reassign the custom role to the catalog, service, or dashboard to make it accessible again to the TWSWEBUIBusinessDeveloper user and other users with the same custom role.

You can use all the other available roles to fine tune the authorization mechanism. By associating catalogs and services to required roles, you can authorize only users with at least one of those roles to see and use them. To associate users to specific roles, use the Dynamic Workload Console, as described in "Defining users and roles" on page 41.

Roles can be associated to dashboards in read-only mode. Users that are assigned roles in the read-only mode will have access to share a dashboard with other users in the read-only mode. These users can view the dashboard, drill down to subsets of the jobs and workstations but cannot perform recovery actions on these jobs or workstations.

To associate a dashboard to a role, perform the following steps:

Procedure

1. Tap the Self-Service Dashboards section  to launch the application.
2. Tap **Roles**. The role icon  displays next to each object until you exit the edit role mode by tapping the **Roles** button again.
3. Tap the dashboard for which you want to associate a role.
4. From the displayed list of roles, select the ones you want to associate to the selected service. Double tab the role icon if you want to assign in read-only mode.
5. Save to exit and tap **Roles** again to exit the edit role mode.

Results

Only users who have at least one of the roles associated to a dashboard can view, edit, or use it.

Managing dashboards

Creating, editing and deleting dashboards.

Before you begin

To manage dashboards, you must have the following role:

Required role
TWSWEBUIAdministrator, TWSWEBUIBusinessDeveloper

About this task

To start working with Self-Service Dashboards, you can define dashboards that are associated to IBM Workload Scheduler jobs or workstations, or use dashboards created by other users to which you have been given access. Dashboards, in the context of the Self-Service Dashboards app, correspond to filters that query on jobs and workstations that you want to monitor, to produce a list of results in a dashboard that can be further filtered to display more details.

Dashboards are associated to Dashboard Application Services Hub roles, so that only users having those roles can see and use them. Tap **User**, in the top right corner, to display details about your user name and roles. Complete the following steps to create and manage dashboards:

Procedure

1. Create dashboards, which are associated to the IBM Workload Scheduler jobs or workstations, as described in “Defining a new dashboard” on page 47.
2. Optionally, at any time, you can modify the created dashboards. For example, when editing a dashboards, you can change the engine and job or workstation associated to it.
3. From the Dynamic Workload Console, associate the users who are going to use Self-Service Dashboards to Dashboard Application Services Hub roles to allow them to access the application.

4. To access and display information about the current plan associated with an engine in Self-Service Dashboards UI, ensure you have selected the **Show in dashboard** check box in the Engine Connection Properties in the Manage Engines portlet on the Dynamic Workload Console.
5. From the Manage Engines page on the Dynamic Workload Console, share the engines used to run the dashboards, with the Dashboard Application Services Hub roles associated to those dashboards, to allow these users to actually view the dashboards.
6. Associate dashboards to Dashboard Application Services Hub roles to allow only the required users to see and use them, as described in "Defining users and roles" on page 41.

High Availability using Self-Service Dashboards with DB2

Using DB2 instead of a local file as your settings repository allows you to use Self-Service Dashboards in High Availability Configuration.

Performance can be highly improved by migrating the Dynamic Workload Console accessed by the Self-Service Dashboards to High Availability Configuration, so as to have multiple console instances working at the same time.

If the Self-Service Dashboards app you are using is connected to a Dynamic Workload Console in High Availability configuration, then all of the user settings, including the Self-Service Dashboards data, are stored in a DB2 repository. If you are connected to a Dynamic Workload Console in High Availability configuration using a load balancer, when you launch the Self-Service Dashboards app, you are not connecting to a specific Dynamic Workload Console, but to a node in the High Availability configuration. Therefore, for example, if a node fails, new user sessions are directed to other active nodes in the configuration and this change is completely transparent to users.

If the Dynamic Workload Console repository was switched to DB2 before creating Self-Service Dashboards objects, then from the Dynamic Workload Console navigation tree, click **IBM Workload Scheduler > System Configuration > Manage Settings > Configure settings repository > Create SSC Tables** to create Self-Service Dashboards tables on DB2. If this is not done, an error message displays informing you that the system cannot connect to the Self-Service Dashboards database, and you must ensure that the database connection data is correct in the Dynamic Workload Console.

For more information about how to configure the Dynamic Workload Console to use DB2 as setting repository, see the section about configuring high availability in the Mobile Applications User's Guide

For more information about high availability configuration, see the section about configuring high availability in Dynamic Workload Console in *IBM Workload Scheduler: Administration Guide*.

Chapter 9. Mobile user tasks

Mobile users can use their mobile devices to connect to the Self-Service Dashboards app and monitor jobs and workstations in an IBM Workload Scheduler environment.Mobile users can use their mobile devices to connect to the Self-Service Dashboards app and monitor jobs and workstations in a Workload Automation on Cloud environment.

The Self-Service Dashboards app, enables you to use your mobile device to perform one or more of the following tasks:

- Define one or more dashboards filtering on subsets of jobs and workstations.
- From the dashboard, drill down and view more detailed information about jobs and workstations.
- View details and the job log for individual jobs.
- View the availability of workstations and other details about the workstation.
- Perform some recovery actions on jobs and workstations.

Defining a new dashboard

Defining a new dashboard means defining filter criteria for a subset of jobs, workstations, or both, in your environment, that you want to monitor from a mobile device or computer connected to a web browser. The filtered results are displayed in a dashboard from which you can drill down and continue to filter to retrieve more targeted results.

Before you begin

To define new dashboards, launch the Self-Service Dashboards app using a web browser:

Self-Service Dashboards web address

`https://host_name:port_number/dwc/mobile`

where, *host_name* and *port_number* are the host name and port number of the Dynamic Workload Console to which you are connecting.

Required role

TWSWEBUIAdministrator, TWSWEBUIBusinessDeveloper

Note: If you define a dashboard to monitor jobs, workstations, or both on z/OS engines, you cannot define filter criteria. You can create a single dashboard that monitors all workstations and all jobs for the specified engines.

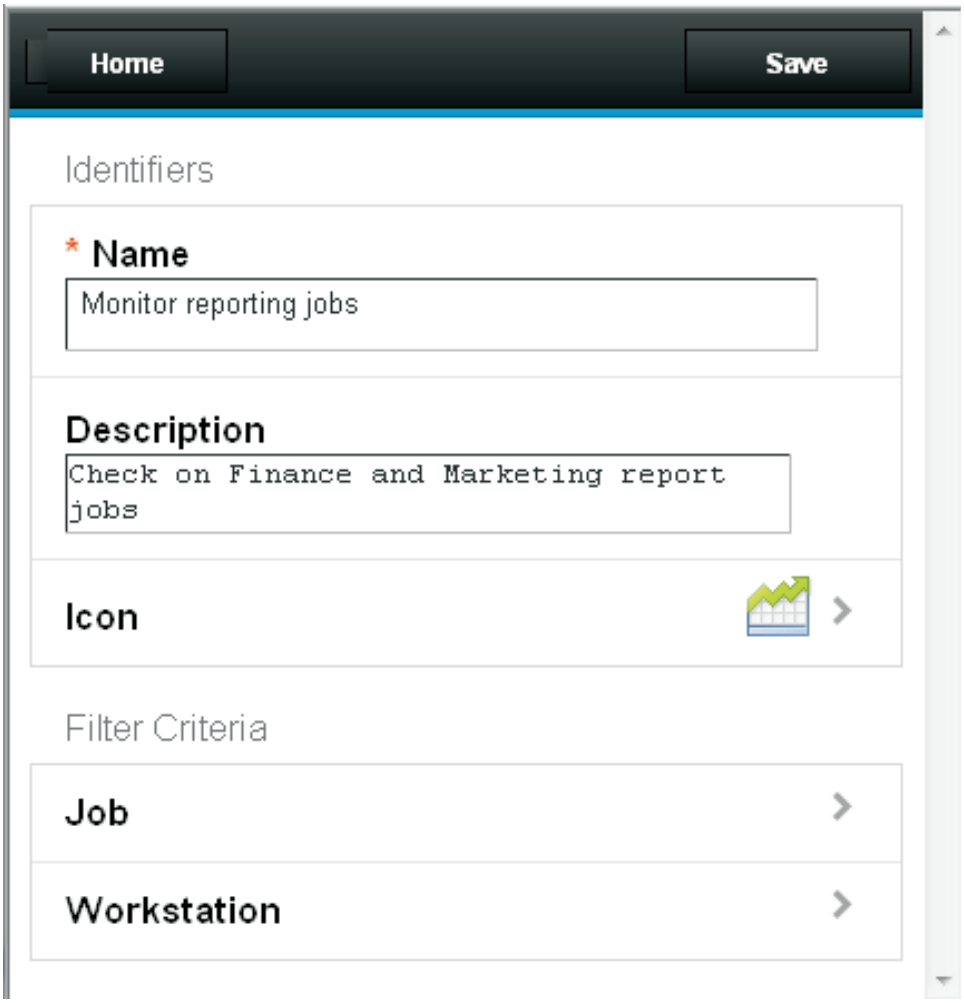
About this task

To define a new dashboard, perform the following steps:

Procedure

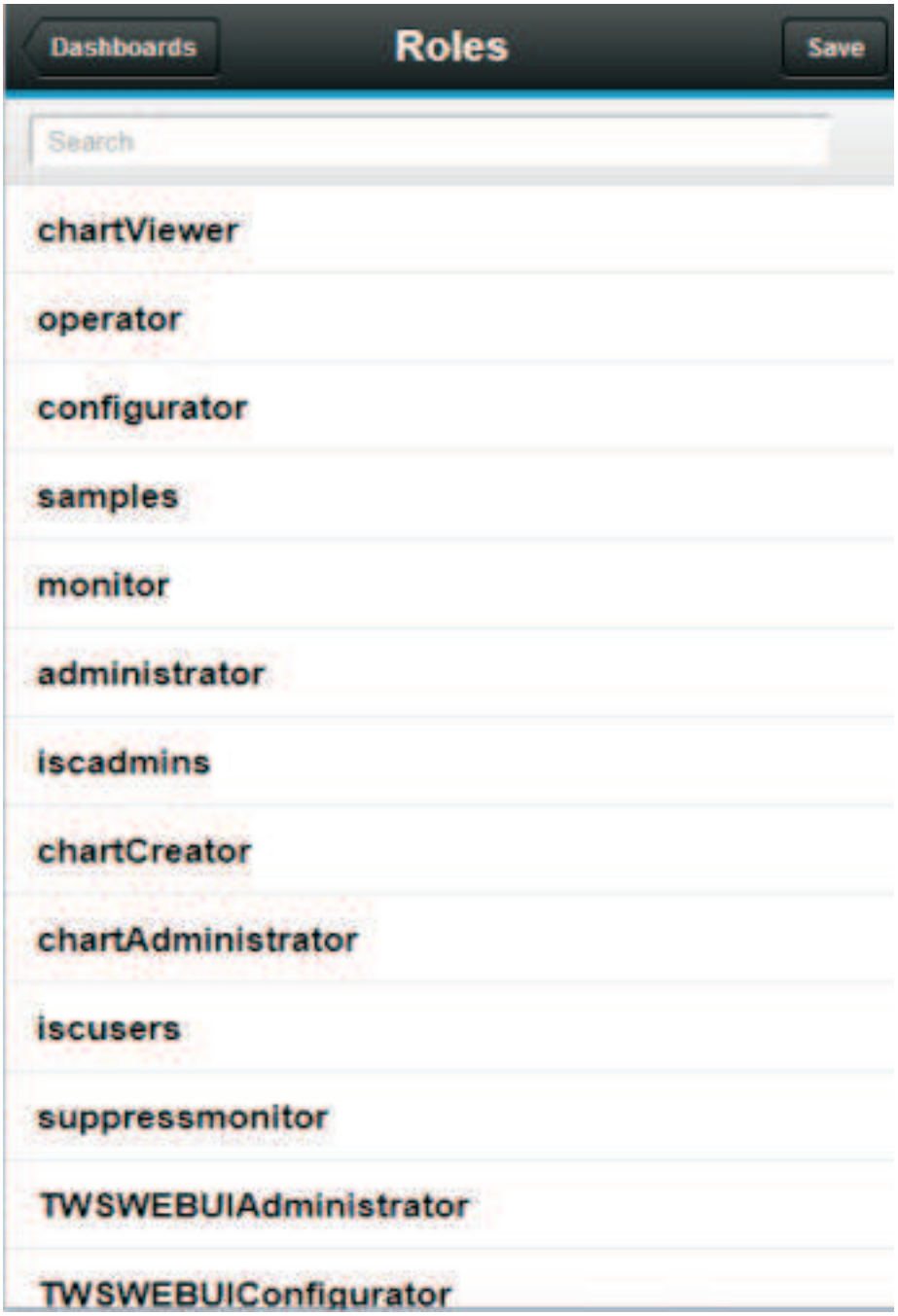
1. Tap the Self-Service Dashboards section  to launch the application.
2. Tap **Create** to begin defining the new dashboard.

3. Specify information about the dashboard, optionally associating a description to better identify it. Mandatory fields are marked by an asterisk.
4. Optionally, tap **Icon** and select an icon that you can associate to the dashboard from the list of available icons.



5. In **Filter Criteria**, define the criteria to be applied to jobs and workstations.
   a. Tap **Job** to specify filter criteria that determines the subsets of jobs in your environment to be displayed in your dashboard. The filter criteria includes one or more of the following: engine (if more than one engine is available), job stream name, workstation name where the job stream runs, job name, and workstation where the job runs. Add additional criteria such as, multiple engines, by clicking **Add Filter**. When you are finished specifying the filter criteria, tap **Back**.
   b. Tap **Workstation** to specify filter criteria that determines the subsets of workstations in your environment to be displayed in your dashboard. The filter criteria includes one or more of the following: engine (if more than one engine is available), and workstation name. Add additional criteria such as, multiple engines, by clicking **Add Filter**. The dashboard results are an aggregation of all filter criteria. When you are finished specifying the filter criteria, tap **Back**.
6. Save the dashboard.
7. On the Self-Service Dashboards page, tap **Roles** and the dashboard name to open the list of Dashboard Application Services Hub roles that can be

associated to this dashboard. Select only the roles that you want to authorize to see and use this dashboard:



If the new dashboard is not associated to any role, by default it is only available to users with the TWSWEBUIAdministrator role.

Results

The dashboard you created is displayed in the Self-Service Dashboards page that shows all the dashboards to which you have access.

What to do next

You can now tap the dashboard to display the results that correspond to the filter criteria defined in the dashboard for the engine connections you specified.

Create a dashboard to monitor jobs

Self-Service Dashboards are queries that you can create to display subsets of your jobs and workstations that you want to monitor.

Before you begin

To define new dashboards, launch the Self-Service Dashboards app using a web browser:

Self-Service Dashboards web address
`https://host_name:port_number/dwc/mobile`

where, *host_name* and *port_number* are the host name and port number of the Dynamic Workload Console to which you are connecting.

Required role
TWSWEBUIAdministrator, TWSWEBUIBusinessDeveloper

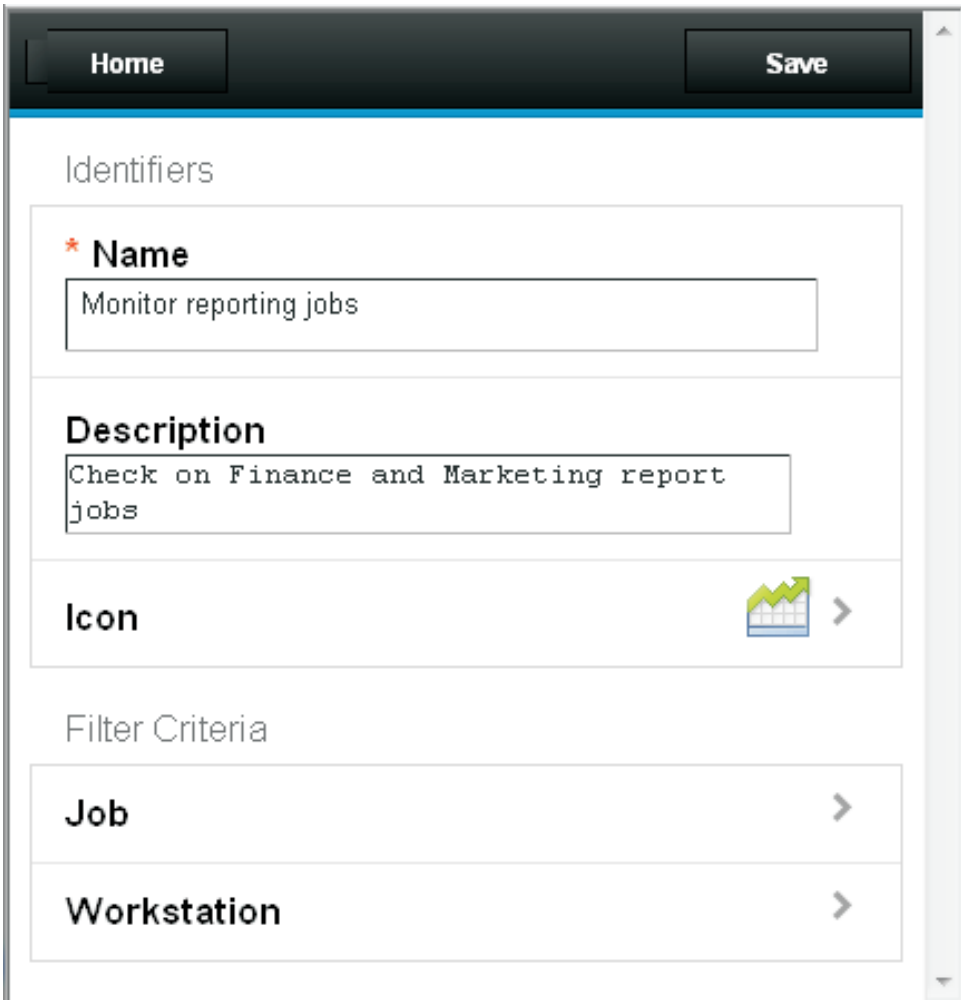
Note: If you define a dashboard to monitor jobs, workstations, or both on z/OS engines, you cannot define filter criteria. You can create a single dashboard that monitors all workstations and all jobs for the specified engines.

About this task

The following dashboard is used to monitor all jobs that are responsible for running reports with a job name that contains the word "Report", which runs on workstations belonging to both the Finance and Marketing departments, where the workstation names begin with either "Fin" or "Mktg".

Procedure

1. Tap the Self-Service Dashboards section  to launch the application.
2. Tap **Create** to begin defining your dashboard.
3. Specify a name, and optionally, specify a description to better identify it.
4. Optionally, tap **Icon** and select an icon that you can associate to the dashboard from the list of available icons.



5. In **Filter Criteria**, tap **Job** to specify filter criteria that determines the subsets of jobs in your environment to be displayed in your dashboard.
   a. In **Engine**, select the engine connection associated to the jobs you want to monitor. You can select a single engine or all engines. The all engines option works for only distributed engines and not for z/OS engines.
   b. In **Job**, type `Report*` to specify a filter to include all jobs beginning with "Rep" to be included in your dashboard.
   c. In **Workstation (Job)**, type `Fin*` to specify a filter to include all workstations where the job runs, beginning with "Fin" to be included in your dashboard.
   d. Click **Add Filter** to add an additional filter on the workstation name. In **Workstation (Job)**, type `Mktg*` to specify a filter to include all workstations beginning with "Mktg" to be included in your dashboard.
6. Click **Back** and save the dashboard.
7. On the Self-Service Dashboards page, tap **Roles** and then the dashboard to open the list of Dashboard Application Services Hub roles that can be associated to this dashboard. Select only the roles that you want to authorize to see and use this dashboard. If the new dashboard is not associated to any role, by default it is only available to users with the TWSWEBUIAdministrator role.

Results

The dashboard you created is displayed in the Self-Service Dashboards page that shows all the dashboards to which you have access.

What to do next

You can now tap the dashboard for which you want to display a dashboard of results that correspond to the filter criteria defined in the dashboard for the engine connection you specified. See "Viewing dashboard results" on page 54 for information about displaying the dashboard of results. See "Monitoring job status and details" on page 55 for information about how use the list of results in the dashboard to view more detailed information.

Create a dashboard to monitor workstations

Self-Service Dashboards are queries that you can create to display subsets of your jobs and workstations that you want to monitor in a graphical dashboard view.

Before you begin

To define new dashboards, launch the Self-Service Dashboards app using a web browser:

Self-Service Dashboards web address

`https://host_name:port_number/dwc/mobile`

where, *host_name* and *port_number* are the host name and port number of the Dynamic Workload Console to which you are connecting.

Required role

TWSWEBUIAdministrator, TWSWEBUIBusinessDeveloper

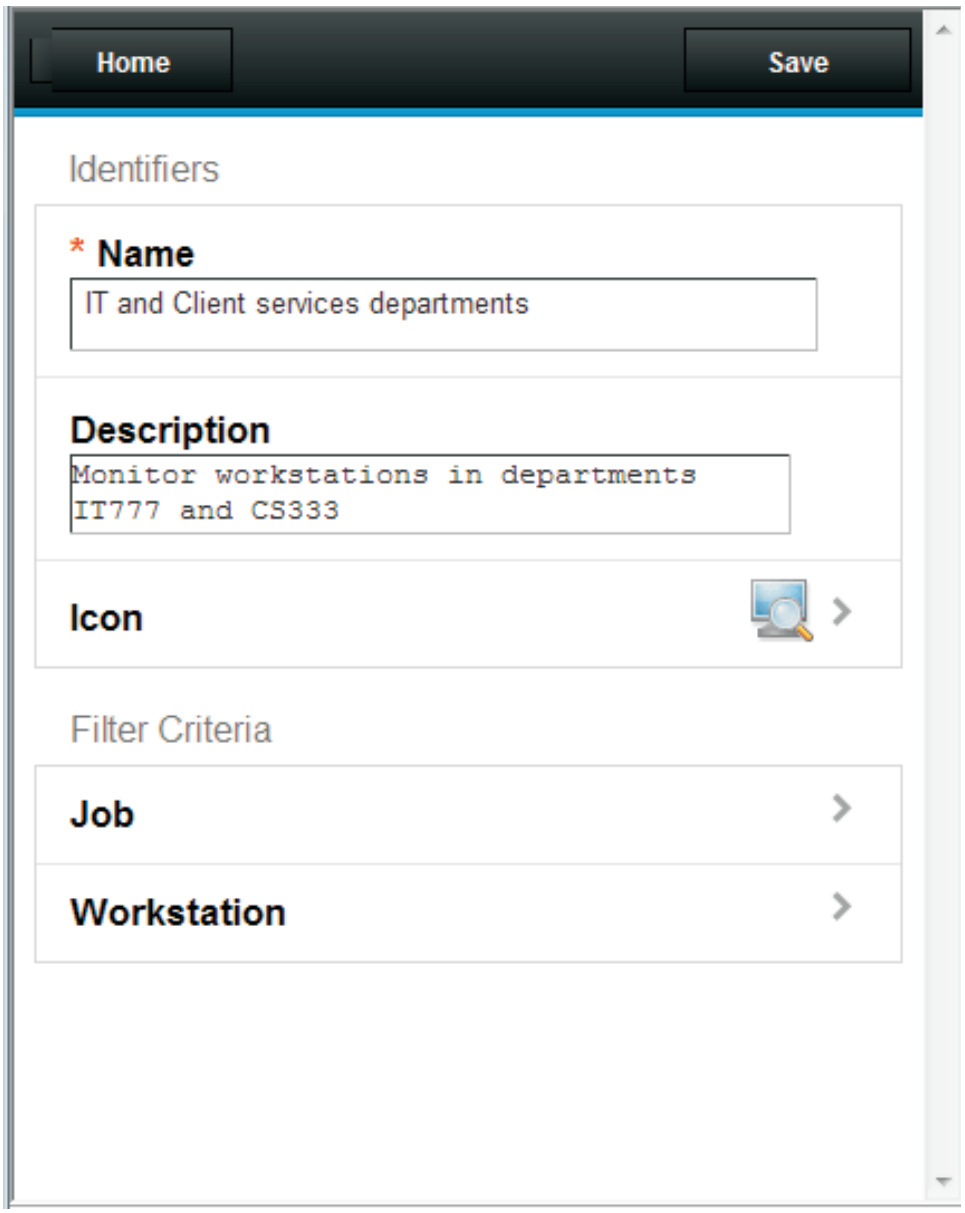
Note: If you define a dashboard to monitor jobs, workstations, or both on z/OS engines, you cannot define filter criteria. You can create a single dashboard that monitors all workstations and all jobs for the specified engines.

About this task

The following dashboard is used to monitor all workstations that belong to both the IT and Client Services departments that are identified by departmental codes, IT777 and CS333, at the beginning of the workstation name.

Procedure

1. Tap the Self-Service Dashboards section  to launch the application.
2. Tap **Create** to begin defining the dashboard.
3. Specify a name, and optionally, specify a description to better identify it.
4. Optionally, tap **Icon** and select an icon that you want to associate to the dashboard from the list of available icons.



5. In **Filter Criteria**, tap **Workstation** to specify filter criteria that determines the subsets of workstations in your environment to be displayed in your dashboard.
   a. In **Engine**, select the engine connection associated to the workstations you want to monitor.
   b. In **Workstation**, type `IT777*` to specify a filter to include all workstations belonging to the IT department to be included in your dashboard.

      Note: For z/OS engines, you cannot define filter criteria for the workstation name. All workstations for the specified engine are considered.
   c. Click **Add Filter** to add an additional filter on the workstation name. In **Workstation**, type `CS333*` to specify a filter to include all workstations in the Client Services department to be included in your dashboard.
6. Click **Back** and save the dashboard.
7. On the Self-Service Dashboards page, tap **Roles** and then the dashboard name to open the list of Dashboard Application Services Hub roles that can be

associated to this dashboard. Select only the roles that you want to authorize to see and use this dashboard. If the new dashboard is not associated to any role, by default it is only available to users with the TWSWEBUIAdministrator role.

Results

The dashboard that you created is displayed in theSelf-Service Dashboards page that shows all the dashboards to which you have access.

What to do next

You can now tap the dashboard for which you want to display a graphical dashboard of results corresponding to the filter criteria defined in the dashboard for the engine connection you specified. For information about displaying the dashboard of results, see "Viewing dashboard results." For information about how to use the list of results in the dashboard to view more detailed information, see "Monitoring job status and details" on page 55.

Viewing dashboard results

You can use your mobile device to display a dashboard of results. The results can be filtered further to monitor more targeted results, view details about the results, and perform recovery actions.

Before you begin

To run the query defined for a dashboard and display the results in a graphical dashboard view, you must launch the Self-Service Dashboards app using a web browser:

Self-Service Dashboards web address

`https://host_name:port_number/dwc/mobile`

where, *host_name* and *port_number* are the host name and port number of the Dynamic Workload Console to which you are connecting.

Required role

To run the query defined for a dashboard on the engine specified, you must have at least one role that is associated to the group to which the engine is shared on the Dynamic Workload Console. For example: *user1* with *role1* can view dashboard results for *engine1* which, on the Dynamic Workload Console, is shared to *group1*, to which *role1* is associated.

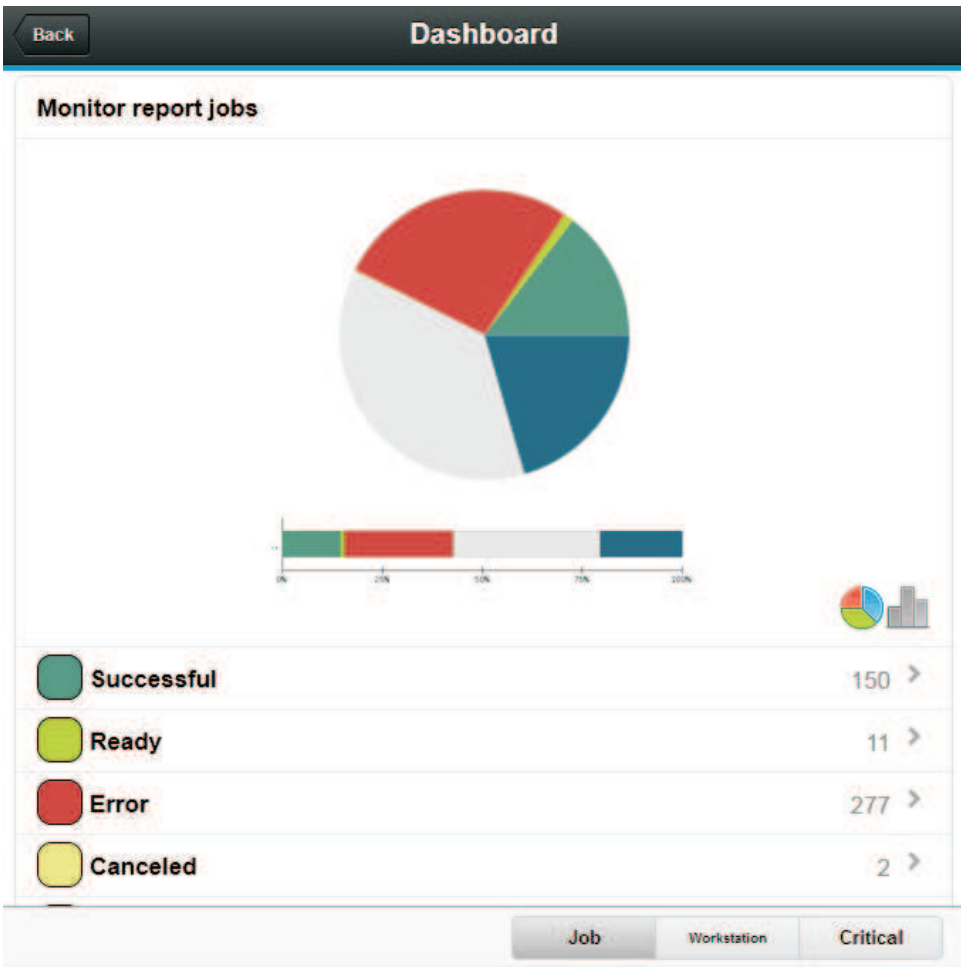
For more information, see "Defining users and roles" on page 41.

About this task

To run the query defined for a dashboard and display the results in a graphical dashboard view, perform the following steps:

Procedure

1. Tap the Self-Service Dashboards section  to launch the application.
2. Tap the dashboard you want to view.
3. The results corresponding to the filter criteria defined in the dashboard are displayed in graphical form.



Results

The dashboard displays the results that correspond to the filter criteria defined in the dashboard categorized by their state. Optionally you can transform the pie chart view to a bar chart view by tapping the related icon.

What to do next

You can zoom in on the results by tapping any one of the categories displayed below the dashboard. If the dashboard contains filter criteria for both jobs and workstations, then you can toggle between the results for jobs and workstations by tapping either **Jobs** or **Workstations**. To see only critical jobs that correspond to the job filter criteria, tap **Critical**. See "Monitoring job status and details" for information about how use the list of results in the dashboard to view more detailed information.

Monitoring job status and details

You can use the results displayed in the dashboard to drill down to more detailed information about the results and perform some recovery actions. You can also send the details of a job or workstation to an email recipient. For jobs, the email includes a link to download the job log if available.

Before you begin

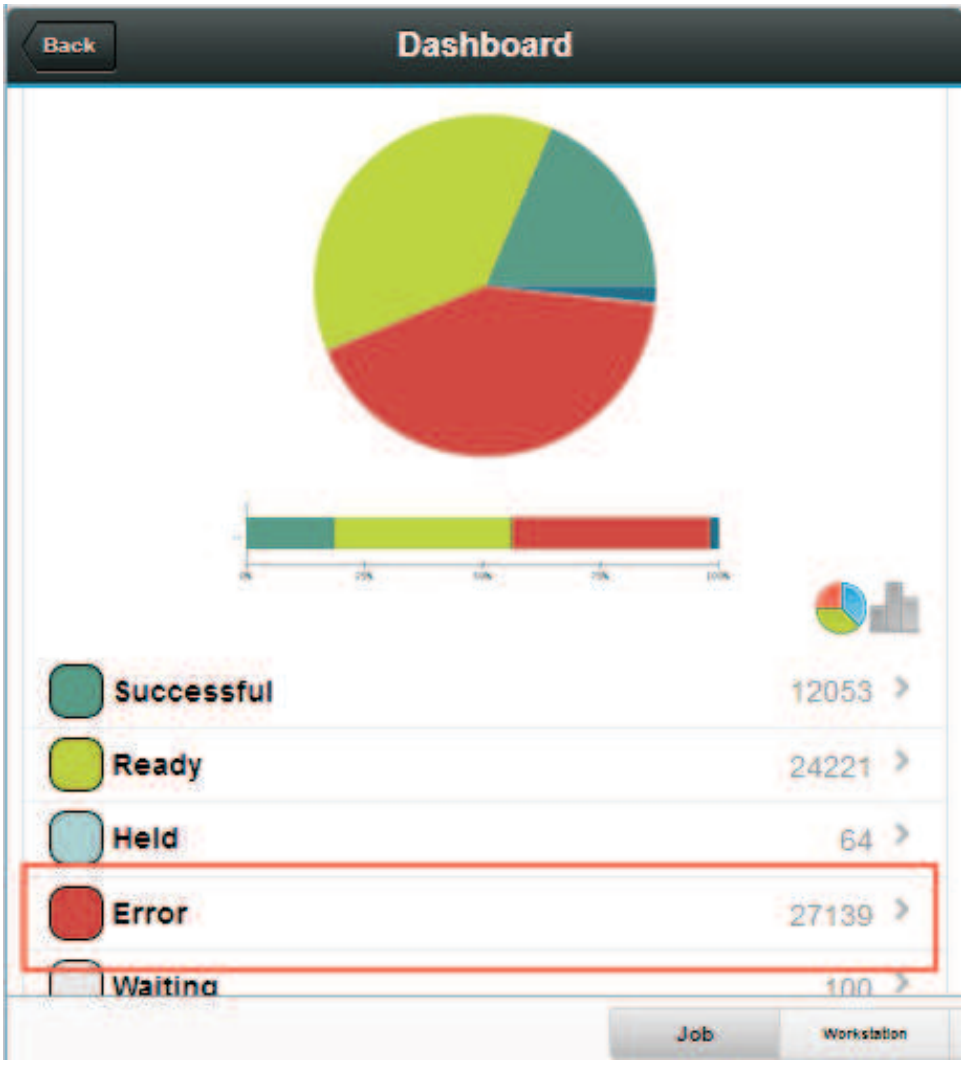
In general, the dashboard displays the jobs that match the filter criteria and the engines defined in the dashboard query, categorized by their current status. From the dashboard you can filter further by drilling down on jobs in a particular status, on particular workstations, or jobs defined as critical in the network. For each job, you can view details such as the job name, the job number, the internal status, the associated job stream name, the risk level for critical jobs, the workstation name of the workstation where the job runs, and the workstation name of the workstation where the job stream runs, to name a few. You can also view the job log for each job and trigger a number of actions on the job depending on its status and whether it is a job in a distributed or z/OS environment.

About this task

To view details about a job in the "Error" state, including the job log:

Procedure

1. From the dashboard containing the results of the monitoring service, scroll down to view the breakdown of jobs by status and tap the jobs in **Error** state.



2. A list of jobs, each containing some minimal information about the job such as the workstation name, job type, job stream name, scheduled time, and job number is listed. You can search for a specific job by entering a keyword in the **Search** field, or scroll to locate a job.

   Note: On z/OS engines, specify up to a maximum of 6 characters in your keyword search.
3. Tap a job in the list to display details about the job.

Results

You are able to view the job log for each job in the **Error** state to help you determine the problem encountered by the job. Optionally, you can email the details of the job and the job log by clicking the **Share** icon  .

What to do next

You can select to perform actions on the job for which you displayed the details. You can also download and browse the job log if available. See "Performing recovery actions on jobs" on page 58.

Monitoring workstation status

You can use the results displayed in the dashboard to drill down to more detailed information and perform some recovery actions.

Before you begin

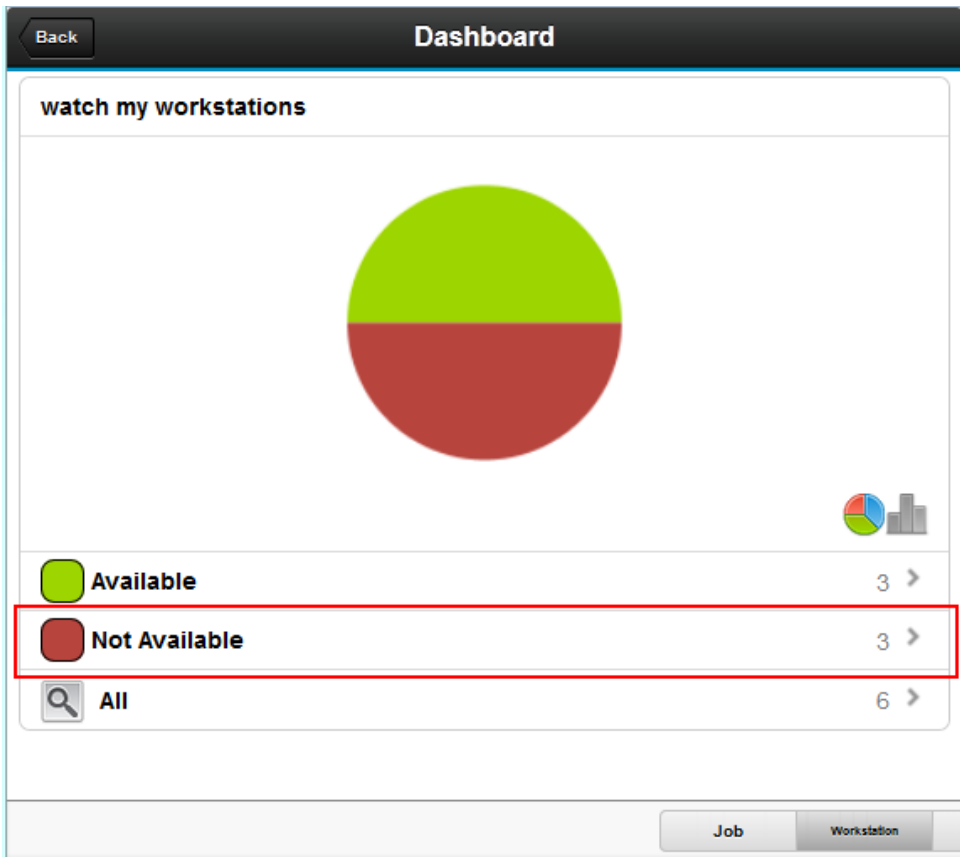
From the dashboard view displaying the results of the query defined for the dashboard, you can drill down to display more detailed information. In general, the dashboard results display the number of available and unavailable workstations for the engines defined for the dashboard. For these workstations, you can view details about each individual workstation such as: the workstation name, internal status, the type of agent workstation, and the link status, to name a few.

About this task

To view the workstation details for an unavailable workstation:

Procedure

1. From the dashboard containing the results of the monitoring service, scroll down to view the breakdown of workstations by status and tap the workstations in the **Unavailable** state.



2. A list of workstations in the unavailable state are displayed. You can search for a specific workstation name by entering a keyword in the **Search** field, or scroll to locate a workstation.
3. Tap the workstation for which you want to display further details.

Results

Details about the workstation are displayed and a set of actions you can perform on the workstation are available at the end of the list.

What to do next

You can select to perform an action on the workstation, as well as send the details about the workstation to a recipient by email. See "Performing recovery actions on workstations" on page 60.

Performing recovery actions on jobs

Monitor the status of your jobs using the Self-Service Dashboards app and perform recovery actions from your mobile device.

About this task

You can access jobs in an IBM Workload Scheduler environment and monitor their status and perform recovery actions on them. You can choose to perform any of the following actions. The actions available depend on the current status of the job, if the job is a critical job, and whether the job runs on a workstation in a distributed or z/OS environment:

Kill To kill a job, the job must either in Started or Running state.

Confirm SUCC
Confirms that the job ended successfully and changes the status accordingly.

Confirm ABEND
Confirms that the job failed.

Hot List (critical job)
Displays a list of predecessors of the job that are in late, fence, suppresssed, long running, or error state. This list can contain jobs that are outside the critical path of the job but that, if they do not complete successfully on time, can prevent the critical job from completing successfully.

Critial Path (critical job)
Displays a list of predecessors included in the critical path of the job.

All not completed predecessors (critical job)
Displays a list of the predecessors that are not in the Complete state.

Rerun Rerun the job.

Cancel
Cancels the job.

Cancel Pending
Cancels a job that has not yet been launched after all the dependencies are resolved. Any jobs or job streams that are dependent on the cancelled job are released from the dependency. For jobs already launched, the job is cancelled when it completes and is moved to the final status.

Job Log
Download and browse the job log.

Hold Puts a job in hold status so it cannot run until it is released.

Release
Release a job that is in Hold status so that it can run according to its regular schedule.

Delete Deletes a job so it does not run.

Execute
Runs the job immediately, if it is ready to run, ignoring scheduling rules except dependencies.

Set Status
Change the status of the job. Depending on the current state of the job, you can change the status one of the following: **Started**, **Ready**, **Interrupted**, **Error**, **Complete**.

Optionally, you can email details about the job by clicking the **Share** icon  . The email contains also a link to the job log if available.

To perform a recovery action on a job:

Procedure

1. From the list of dashboards, tap a dashboard name to produce a dashboard of results in a pie chart graphical view.

2. Select the category of jobs in a specific state below the dashboard.
3. Tap a specific job or search for and then tap a job.
4. Details are displayed for the selected job. Select one of the actions by clicking the **Action** icon  .

Results

A message displays either prompting you for more information or communicating the result of the action selected.

Performing recovery actions on workstations

Monitor the status of your workstations using the Self-Service Dashboards app and perform recovery actions from your mobile device.

About this task

You can access workstations in an IBM Workload Scheduler environment and monitor their status and perform recovery actions on them. You can choose to perform any of the following actions depending on the current status of the workstation and whether the workstation is in a distributed or z/OS environment:

Link Connects the workstation to the IBM Workload Scheduler network.

Unlink
Disconnects the workstation from the IBM Workload Scheduler network.

Set Status
Change the status of the workstation. You can set the status to one of the following depending on the current state of the workstation: **Active**, **Offline**, **Failed**.

Note: If you use the default browser of Samsung Tab tablet, this action might not work properly. Use a different browser to set the status of the workstation.

Start Starts all scheduling processing on the workstation.

Stop Stops all scheduling processing on the workstation.

Set Limit
The maximum number of jobs that can run simultaneously on a workstation.

Set Fence
The fence setting for a workstation defines whether or not a job is launched on a workstation based on the priority setting. If the priority setting is less than or equal to the fence setting, then jobs are not launched on the workstation.

To perform a recovery action on a workstation:

Procedure

1. From the list of dashboards, tap a dashboard name to produce a dashboard of results in a pie chart graphical view.
2. Tap a category of workstations in either the Available or Unavailable state.

3. Tap a specific workstation or search for and then tap a workstation.
4. Details are displayed for the selected workstation. Select one of the actions by clicking the **Action** icon  .

Results

A message displays communicating the result of the action selected.

Part 3. Appendixes

Notices

This information was developed for products and services offered in the US. This material might be available from IBM in other languages. However, you may be required to own a copy of the product or product version in that language in order to access it.

IBM may not offer the products, services, or features discussed in this document in other countries. Consult your local IBM representative for information on the products and services currently available in your area. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any IBM intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any non-IBM product, program, or service.

IBM may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not grant you any license to these patents. You can send license inquiries, in writing, to:

IBM Director of Licensing
IBM Corporation
North Castle Drive, MD-NC119
Armonk, NY 10504-1785
US

For license inquiries regarding double-byte character set (DBCS) information, contact the IBM Intellectual Property Department in your country or send inquiries, in writing, to:

Intellectual Property Licensing
Legal and Intellectual Property Law
IBM Japan Ltd.
19-21, Nihonbashi-Hakozakicho, Chuo-ku
Tokyo 103-8510, Japan

INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some jurisdictions do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. IBM may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

Any references in this information to non-IBM websites are provided for convenience only and do not in any manner serve as an endorsement of those

websites. The materials at those websites are not part of the materials for this IBM product and use of those websites is at your own risk.

IBM may use or distribute any of the information you provide in any way it believes appropriate without incurring any obligation to you.

Licensees of this program who wish to have information about it for the purpose of enabling: (i) the exchange of information between independently created programs and other programs (including this one) and (ii) the mutual use of the information which has been exchanged, should contact:

IBM Director of Licensing
IBM Corporation
North Castle Drive, MD-NC119
Armonk, NY 10504-1785
US

Such information may be available, subject to appropriate terms and conditions, including in some cases, payment of a fee.

The licensed program described in this document and all licensed material available for it are provided by IBM under terms of the IBM Customer Agreement, IBM International Program License Agreement or any equivalent agreement between us.

The performance data discussed herein is presented as derived under specific operating conditions. Actual results may vary.

Information concerning non-IBM products was obtained from the suppliers of those products, their published announcements or other publicly available sources. IBM has not tested those products and cannot confirm the accuracy of performance, compatibility or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products.

This information is for planning purposes only. The information herein is subject to change before the products described become available.

This information contains examples of data and reports used in daily business operations. To illustrate them as completely as possible, the examples include the names of individuals, companies, brands, and products. All of these names are fictitious and any similarity to actual people or business enterprises is entirely coincidental.

COPYRIGHT LICENSE:

This information contains sample application programs in source language, which illustrate programming techniques on various operating platforms. You may copy, modify, and distribute these sample programs in any form without payment to IBM, for the purposes of developing, using, marketing or distributing application programs conforming to the application programming interface for the operating platform for which the sample programs are written. These examples have not been thoroughly tested under all conditions. IBM, therefore, cannot guarantee or imply reliability, serviceability, or function of these programs. The sample programs are provided "AS IS", without warranty of any kind. IBM shall not be liable for any damages arising out of your use of the sample programs.

© (your company name) (year).
Portions of this code are derived from IBM Corp. Sample Programs.
© Copyright IBM Corp. _enter the year or years_.

Trademarks

IBM, the IBM logo, and ibm.com are trademarks or registered trademarks of International Business Machines Corp., registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of IBM trademarks is available on the web at "Copyright and trademark information" at www.ibm.com/legal/copytrade.shtml.

Adobe, the Adobe logo, PostScript, and the PostScript logo are either registered trademarks or trademarks of Adobe Systems Incorporated in the United States, and/or other countries.

IT Infrastructure Library is a Registered Trade Mark of AXELOS Limited.

Linear Tape-Open, LTO, the LTO Logo, Ultrium, and the Ultrium logo are trademarks of HP, IBM Corp. and Quantum in the U.S. and other countries.

Intel, Intel logo, Intel Inside, Intel Inside logo, Intel Centrino, Intel Centrino logo, Celeron, Intel Xeon, Intel SpeedStep, Itanium, and Pentium are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries.

Linux is a registered trademark of Linus Torvalds in the United States, other countries, or both.

Microsoft, Windows, Windows NT, and the Windows logo are trademarks of Microsoft Corporation in the United States, other countries, or both.

Java™ and all Java-based trademarks and logos are trademarks or registered trademarks of Oracle and/or its affiliates.

Cell Broadband Engine is a trademark of Sony Computer Entertainment, Inc. in the United States, other countries, or both and is used under license therefrom.

ITIL is a Registered Trade Mark of AXELOS Limited.

UNIX is a registered trademark of The Open Group in the United States and other countries.

Terms and conditions for product documentation

Permissions for the use of these publications are granted subject to the following terms and conditions.

Applicability

These terms and conditions are in addition to any terms of use for the IBM website.

Personal use

You may reproduce these publications for your personal, noncommercial use provided that all proprietary notices are preserved. You may not distribute, display or make derivative work of these publications, or any portion thereof, without the express consent of IBM.

Commercial use

You may reproduce, distribute and display these publications solely within your enterprise provided that all proprietary notices are preserved. You may not make derivative works of these publications, or reproduce, distribute or display these publications or any portion thereof outside your enterprise, without the express consent of IBM.

Rights

Except as expressly granted in this permission, no other permissions, licenses or rights are granted, either express or implied, to the publications or any information, data, software or other intellectual property contained therein.

IBM reserves the right to withdraw the permissions granted herein whenever, in its discretion, the use of the publications is detrimental to its interest or, as determined by IBM, the above instructions are not being properly followed.

You may not download, export or re-export this information except in full compliance with all applicable laws and regulations, including all United States export laws and regulations.

IBM MAKES NO GUARANTEE ABOUT THE CONTENT OF THESE PUBLICATIONS. THE PUBLICATIONS ARE PROVIDED "AS-IS" AND WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY, NON-INFRINGEMENT, AND FITNESS FOR A PARTICULAR PURPOSE.

Index

U

V

W

Product Number: 5698-WSH, 5698-T08

Printed in USA