Cisco Workload Automation Remote Job Adapter Guide

Version 6.3

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Contents

Preface

This guide describes the installation, configuration, and usage of the Remote Job Adapter with Cisco Workload Automation (CWA).

Audience

This guide is for administrators who install and configure the Remote Job Adapter for use with CWA, and who troubleshoot CWA installation and requirements issues.

Related Documentation

See the *Cisco Workload Automation Documentation Overview* for your release on cisco.com at:

http://www.cisco.com/c/en/us/support/cloud-systems-management/tidal-enterprise-scheduler/products-documentation-roadmaps-list.html

...for a list of all CWA guides.

Note: We sometimes update the documentation after original publication. Therefore, you should also review the documentation on Cisco.com for any updates.

Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, submitting a service request, and gathering additional information, see What's New in Cisco Product Documentation at:

http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html.

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Document Change History

The table below provides the revision history for the *Cisco Workload Automation Remote Job Adapter Guide*.

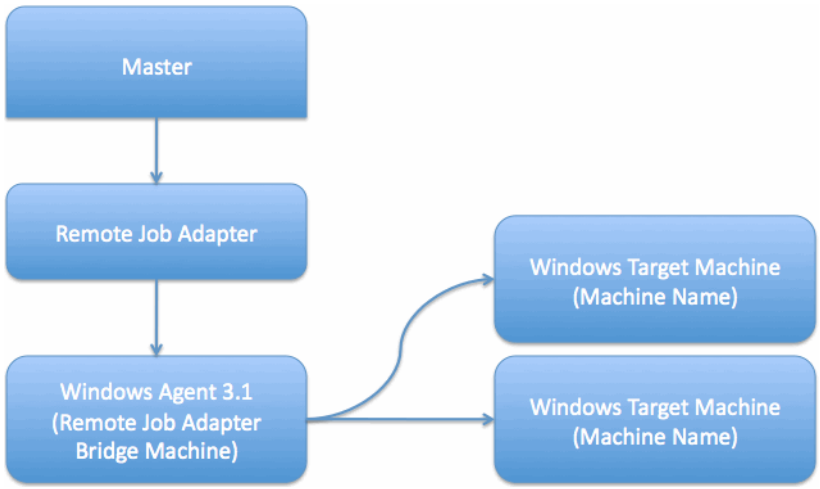
Version Number	Issue Date	Reason for Change
6.1.0	October 2012	New Cisco version.
6.2.1	June 2014	Available in online Help only.
6.2.1 SP2	June 2015	Configuration provided in the *TES Installation Guide*; usage provided in online Help only.
6.2.1 SP3	May 2016	Consolidated all Remote Job Adapter documentation into one document.
6.3	August 2016	Rebranded “Cisco Tidal Enterprise Scheduler (TES)” to “Cisco Workload Automation (CWA)”. Miscellaneous edits for the 6.3 release.

1

Introducing the Remote Job Adapter

Overview

The Cisco Workload Automation Adapter for Remote Job allows you to launch jobs in a Windows environment where access to a machine is restricted or limited and the job load is light.



Prerequisites

Prior to configuring the Remote Job Adapter, you must ensure that the following prerequisites have been met.

- Cisco Workload Automation 6.0 or above

  See the *Cisco Workload Automation Compatibility Guide* for a complete list of software and hardward requirements.

- Task Manager is available.
- User defined as the Connection user has specific privileges on the Target machine. See Assigning Privileges on the Target Machine, page 13.
- Windows Agent machine is configured as a Remote Job Adapter proxy. See Configuring a Windows Agent to be a Remote Job Adapter Proxy, page 14.

2

Configuring the Remote Job Adapter

Overview

The Remote Job Adapter software is installed as part of a standard installation of CWA.

However, you must perform the following steps to license and configure the adapter before you can schedule and run Remote jobs:

- Licensing an Adapter – License the Remote Job adapter. You cannot define a Remote connection until you have applied the Remote Job license from Cisco.
- Securing the Remote Job Adapter – Define a Remote Job Authentication user to authorize a connection to be established to the Remote Job agent and permit requests to be made on behalf of the authenticated account.
- Assigning Privileges on the Target Machine – Assign specific privileges for the user defined as the Connection user on the Target machine.
- Configuring a Windows Agent to be a Remote Job Adapter Proxy – Configure the Windows Agent machine to be a Remote Job adapter proxy.
- Defining a Remote Job Adapter Connection – Define a Remote Job connection so the master can communicate with the Remote Job server.

See Configuring service.props, page 27 for information about general and adapter-specific properties that can be set to control things like logging and connection properties.

Licensing an Adapter

Each CWA Adapter must be separately licensed. You cannot use an Adapter until you apply the license file. If you purchase the Adapter after the original installation of CWA, you will receive a new license file authorizing the use of the Adapter.

You might have a Demo license which is good for 30 days, or you might have a Permanent license. The procedures to install these license files are described below.

To license an Adapter:

1. Stop the master:

   Windows:

   a. Click on **Start** and select **All Programs>Cisco Workload Automation>Scheduler>Service Control Manager**.

   b. Verify that the master is displayed in the **Service** list and click on the **Stop** button to stop the master.

UNIX:

Enter **tesm stop**

2. Create the license file:
   - For a Permanent license, rename your Permanent license file to *master.lic*.
   - For a Demo license, create a file called *demo.lic*, then type the demo code into the *demo.lic* file.
3. Place the file in the **C:\Program Files\TIDAL\Scheduler\Master\config** directory.
4. Restart the master:

   Windows:

   Click **Start** in the Service Control Manager.

   UNIX:

   Enter **tesm start**

   The master will read and apply the license when it starts.
5. To validate that the license was applied, select **Registered License** from **Activities** main menu.

Securing the Remote Job Adapter

There are two types of users associated with the Remote Job Adapter, Runtime Users and Schedulers. You maintain definitions for both types of users from the **Users** pane.

- Runtime Users

  Runtime users in the context of Remote jobs represent those users and passwords required for Remote Job Authentication. If the Remote Job server requires authentication based on user and password credentials, these users will need to be defined as runtime users.

- Schedulers

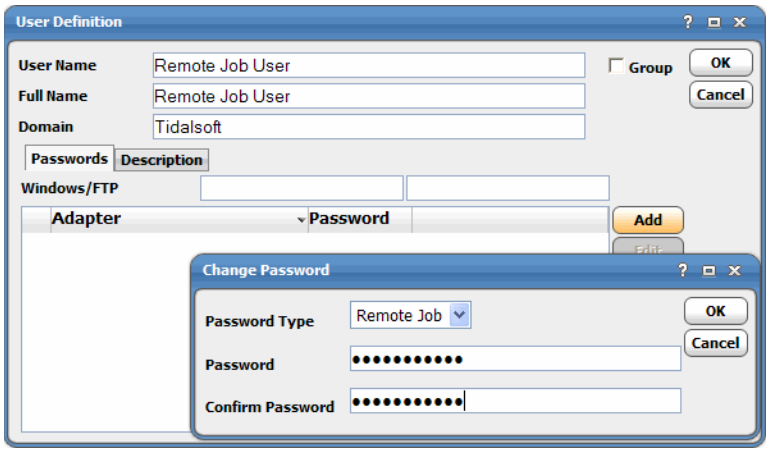
  Schedulers are those users who will define and/or manage Remote jobs. There are three aspects of a user profile that grant and/or limit access to scheduling jobs that affect Remote Job:
  - Security policy that grants or denies add, edit, delete and view capabilities for Remote jobs.
  - Authorized runtime user list that grants or denies access to specific Remote job authentication accounts for use with Remote jobs.
  - Authorized agent list that grants or denies access to specific Remote Job Adapter connections for use when defining Remote jobs.

Defining Runtime Users

To define a runtime user:

1. From the **Navigator** pane, expand the **Administration** node and select **Runtime Users** to display the defined users.
2. Right-click **Runtime Users** and select **Add Runtime User** from the context menu (*Insert* mode). You can also right-click a user in the **Runtime Users** pane and select **Edit Runtime User** from the shortcut menu (*Edit* mode).

The **User Definition** dialog displays.



3. If this is a new user definition, enter the new user name in the **User/Group Name** field.
4. For documentation, enter the **Full Name** or description associated with this user.
5. In the **Domain** field, select a Windows domain associated with the user account required for authentication, if necessary.
6. On the **Passwords** tab, click the **Add** button to view the **Change Password** dialog.
7. Select **Remote Job** from the **Password Type** list.
8. Enter a password (along with confirmation) in the **Password** field.

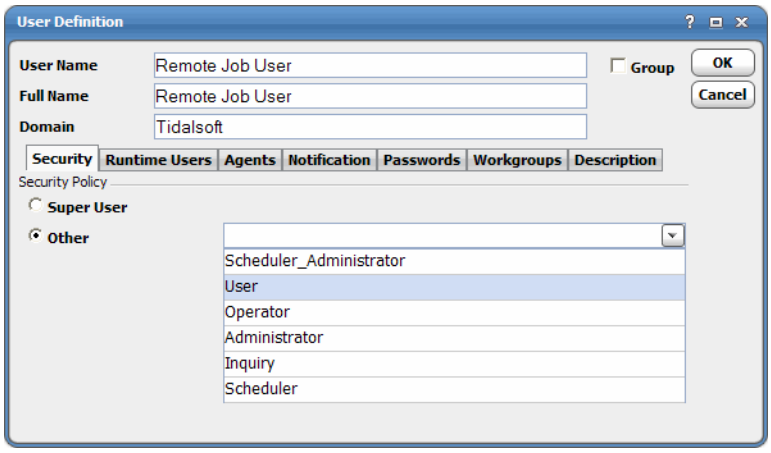
   Only those users with a password specified for Remote Job will be available for use with Remote jobs. The password might be the same as the one specified for Windows/FTP jobs.
9. Click **OK** to add or save the user record in the CWA database.

Authorizing Schedulers to Work With Remote Jobs

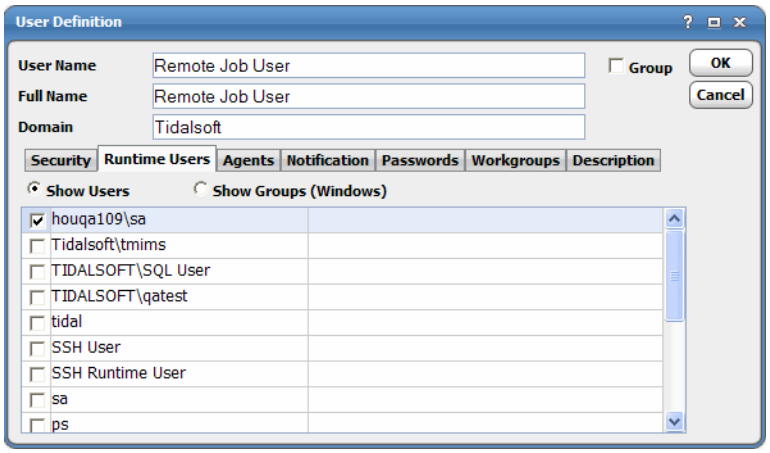
To define a CWA user to work with Remote jobs:

1. From the **Navigator** pane, expand the **Administration** node and select **Interactive Users** to display the defined users.
2. Right-click **Interactive Users** and select **Add Interactive User** from the context menu (*Insert* mode). You can also right-click a user in the **Interactive Users** pane and select **Edit Interactive User** from the shortcut menu (*Edit* mode).

The **User Definition** dialog displays.

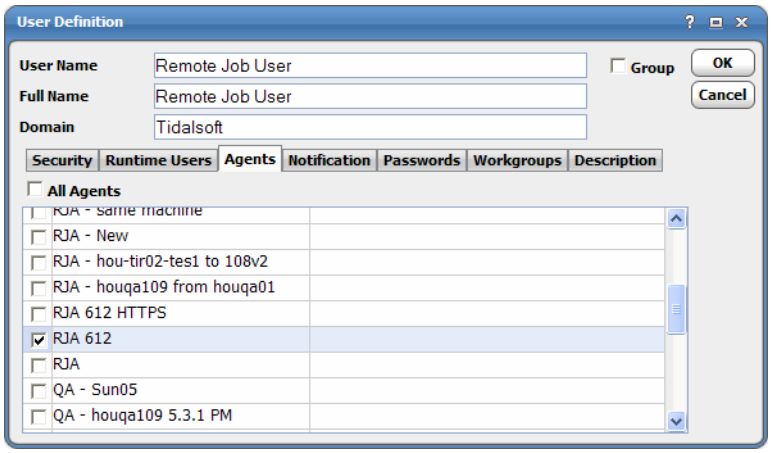


3. If this is a new user definition, enter the new user name in the **User/Group Name** field.
4. For documentation, enter the **Full Name** or description associated with this user.
5. In the **Domain** field, select a Windows domain associated with the user account required for authentication, if necessary.
6. On the **Security** page, select the **Other** option and then select the security policy that includes authorization for Remote jobs.
7. Click the **Runtime Users** tab.



8. Select the Remote Job users that this scheduling user may use for Remote Job authentication in Remote jobs.

9. Click the **Agents** tab.



10. Select the check boxes for the Remote Job connections that this scheduling user can access when scheduling jobs.

11. Click **OK** to save the user definition.

Assigning Privileges on the Target Machine

The user defined as the Connection user on the Remote Job adapter needs to have specific privileges on the Target machine. The Remote Job adapter performs several operations with respect to the remote machine that require certain privileges in order to be successful.

Permissions

- The Remote Job adapter must be able to connect to the remote machine's scheduled tasks folder. The process involves connecting to the **\\server\IPC$** administrative share, so the user associated with the connection must have access to this share in order to for this operation to succeed.

  Note: To test if the share is accessible you can try the command net use \\server\IPC$ /user:connection_user connection_password. The net use command can also be used to see what connections are currently established.

  If you have problems when everything seems configured properly ensure that you do not have an already established connection to the **IPC$** administrative share that may be masking the one you are trying to create.

  For a Windows Server 2003, Windows XP or Windows 2000 computer to connect to the scheduled tasks folder on a Windows Vista machine the following operations should be completed on the Windows Vista computer:

  – Enable the Share File and Printers exception in Windows Firewall

  – Enable the Remote Registry service

  Also, ensure the user associated with the connection is a member of the Administrators group on the remote Windows Vista computer. See http://msdn.microsoft.com/en-us/library/aa381831(VS.85).aspx for more information

- The Remote Job adapter must be able to connect and read from the remote machine's registry. This requires the following:

  – Both machines must be running the remote registry service and have remote administration enabled.

  - The user associated with the connection must have read permission on the **HKEY_LOCAL_MACHINE** registry hive and the **HKLM/CurrentControlSet/Control/TimeZoneInformation** registry key.

- In order to report "load" data for the remote machine the Remote Job adapter must be able to retrieve the performance counter data associated with CPU utilization. By default, all users should have access to the necessary resources for this to be successful. If not, see the following knowledge base article for a discussion on the security settings http://support.microsoft.com/kb/164018.

Configuring a Windows Agent to be a Remote Job Adapter Proxy

Designating the port to use for HTTPS

To designate the port:

1. Use Service Manager to edit the command line of the Agent and add the following parameter to the Command Line:

   RJAPort=xxxxx

   Where **xxxxx** is the port number you want to use for the HTTPS connection from the Adapter.

2. Allow Service Manager to restart the agent when you save the change.

   Note: The proxy support is not available in this Agent if the RJAPort is not specified in the command line. The Agent will not be usable by the Adapter until the RJAPort parameter is specified.

   After adding the RJAPort parameter, you must add another dependency to the Agent service definition - HTTP SSL. You can do this by going into Service Manager and clicking the ellipses (...) for the specific agent and selecting the Dependencies tab and selecting 'HTTP SSL' as a new dependency. The Agent will not start automatically at system start-up without adding this (May not be available in Windows 2008 and beyond).

Assigning a Certificate to port for HTTPS

To create a self-signed host certificate and configure it to a port:

Note: If you machine already has a valid server certificate, you should only have to do step 3 below.

1. Open a DOS prompt (Command Shell) and create a self-signed certificate:

   ```
   makecert -r -pe -n "CN=localhost" -eku 1.3.6.1.5.5.7.3.1 -ss my -sr localMachine
   -sky exchange
   ```

   This will create the certificate and install it (named "**localhost**") in the certificate store.

   Note: makecert is available in the SDK if you have Visual Studio 2005 installed (Microsoft Visual Studio 8\SDK\v2.0\Bin). There are other ways to get a certificate. An internet search will give you several options.

2. Start Microsoft Management Console (mmc) and copy the certifcate "local" located in **Personal\Certificates** into **Trusted Root Certification Authorities\Certificates**.

3. In the DOS prompt (Command shell) run:

   For pre-2008 systems:

   ```
   httpcfg.exe set ssl -i 0.0.0.0:50001 -c "Root" -h XXXXX
   ```

   where:

   0.0.0.0:50001 is the IP and port (this is for **https://localhost:50001**)

XXXXX is the Thumbprint value of the local certificate.

To obtain the thrumbprint of a certificate:

a. Open the certificate and then click on the **Details** tab.

b. Copy the thumbprint and delete all blanks (spaces) between numbers in 'Thumbprint'.

Note: The Windows XP Service Pack 2 Support Tools download contains httpcfg.exe. However, this is an optional install element and you have to select the Optional Tools item to have it install httpcfg.exe.

It is critical that the name after '-c' in the httpcfg set matches the Store that the certificate is in, Root is recommended (see Store Names, page 15).

Store Names

- **AddressBook** – The X.509 certificate store for other users.
- **AuthRoot** – The X.509 certificate store for third-party certificate authorities (CAs).
- **CertificateAuthority** – The X.509 certificate store for intermediate certificate authorities (CAs).
- **Disallowed** – The X.509 certificate store for revoked certificates.
- **My** – The X.509 certificate store for personal certificates.
- **Root** – The X.509 certificate store for trusted root certificate authorities (CAs).
- **TrustedPeople** – The X.509 certificate store for directly trusted people and resources.
- **TrustedPublisher** – The X.509 certificate store for directly trusted publishers.

For post-2008 systems

```
netsh http add sslcert ipport=0.0.0.0:50001 certhash=XXXX  appid={YYYYYY}
```

where:

ipport=0.0.0.0:50001 is the IP and port. This is for **https://localhost:50001**.

certhash= XXXX is the Thumbprint value of the local certificate.

Defining a Remote Job Adapter Connection

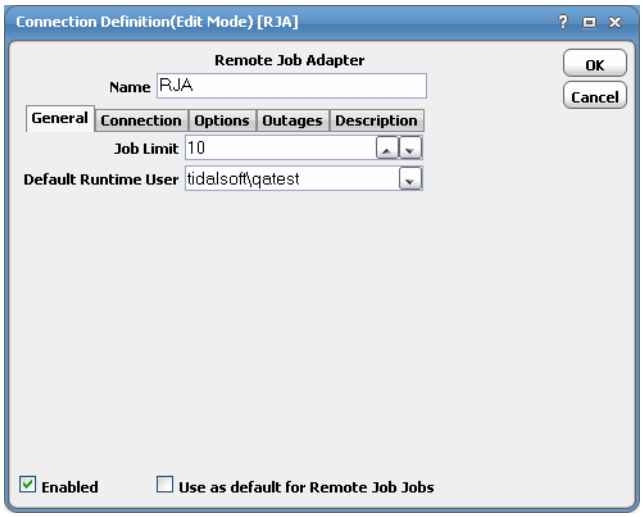
You must create a connection to a Remote Job server before CWA can run your Remote jobs. These connections also must be licensed before CWA can use them. A connection is created using the **Connection Definition** dialog.

Adding a Remote Job Adapter Connection

To add a connection:

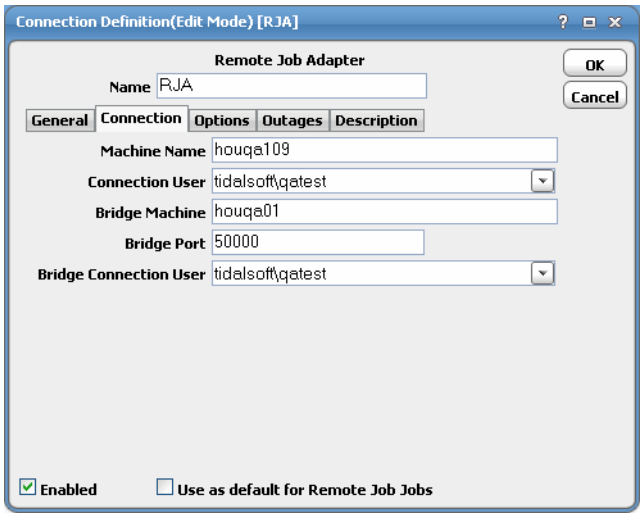
1. From the **Navigator** pane, navigate to **Administration>Connections** to display the **Connections** pane.
2. Right-click **Connections** and select **Add Connection>Remote Job Adapter** from the context menu.

The **Remote Job Adapter Connection Definition** dialog displays.



3. On the **General** page, enter a name for the new connection in the **Name** field.
4. In the **Job Limit** field, select the maximum number of concurrent active processes that CWA should submit to the Remote Job server at one time.
5. (Optional) From the **Default Runtime User** drop-down list, select the name of the default user for Remote jobs. The runtime user is used for Remote Job authentication and Remote Job uses this to authorize scheduled operations.

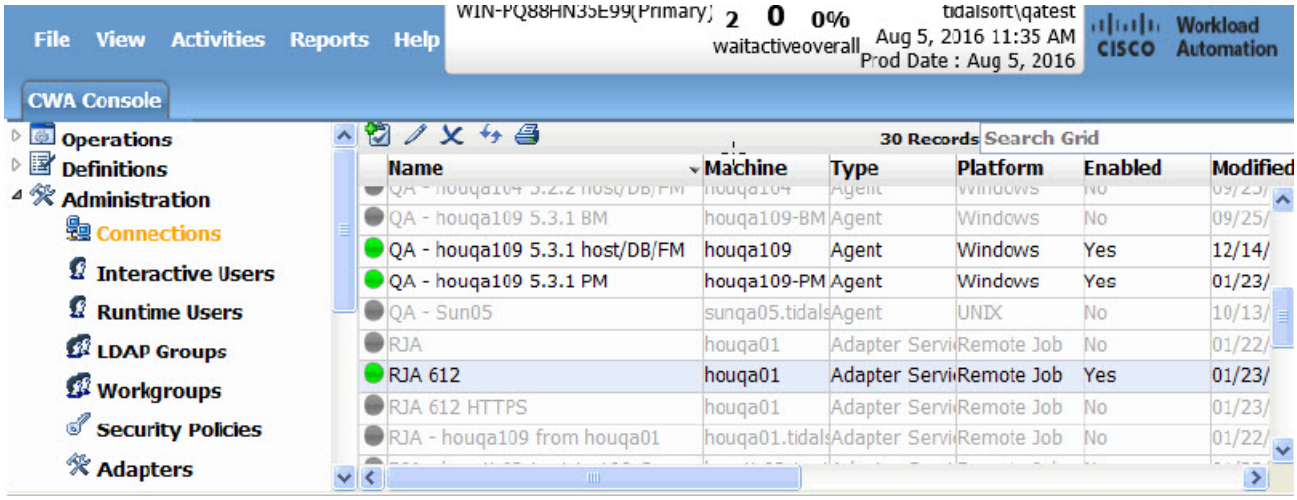
   Only authorized users that have been defined with Remote Job passwords display in this list. The selected user is automatically supplied as the runtime user in CWA Remote job definitions.
6. Click the **Remote Job Connection** tab.



7. In the **Machine Name** field, enter the name of the target machine on which you want to run jobs.
8. In the **Connection User** field, select a user from the drop-down list who is authorized to connect and monitor attributes and invoke connection level operations. The user name is preceded with the domain name.
9. In the **Bridge Machine** name field, enter the name for machine where Windows 3.0 Agent with the RWS option is installed.

10. In the **Bridge Port** field, enter the appropriate port number for the Remote Job listener. The default port is 22.
11. From the **Bridge Connection User** list, select a CWA runtime user with a password for Remote Job adapter.

    The user name is preceded with a fully qualified domain name.
12. Click **OK**. The configured connection displays in the **Connections** pane.



The status light next to the connection indicates whether the CWA Master is connected to the Remote Job instance. If the light is green, the Remote Job instance is connected.

A red light indicates that the master cannot connect to the Remote Job instance. However, the jobs will not run without a connection to the Remote Job instance.

Note: If there is an attribute associated with Health, this also determines whether the light is green or red.

If the light is red, check **Operations>Logs** for any associated error messages. You can also test the connection to determine the problem. Right-click the connection and select **Test** from the shortcut menu. A message displays on the **Test Remote Job Connection** dialog describing the problem.

3

Using the Remote Job Adapter

Overview

This chapter guides you through using the features of the Remote Job Adapter in CWA, including:

- Defining Remote Jobs
- Monitoring Remote Jobs
- Controlling Adapter and Agent Jobs

Defining Remote Jobs

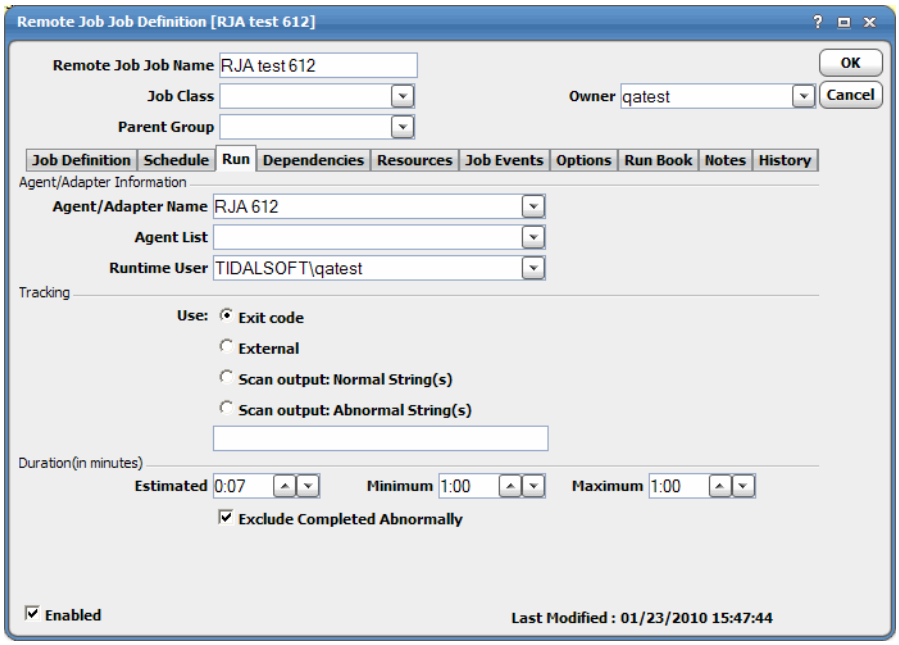
This section provides instructions for defining a Remote job in CWA.

Remote Job Definition

To define a Remote job:

1. In the **Navigator** pane, select **Definitions>Jobs** to display the **Jobs** pane.
2. Right-click **Jobs** and select **Add>Remote Job** from the context menus.

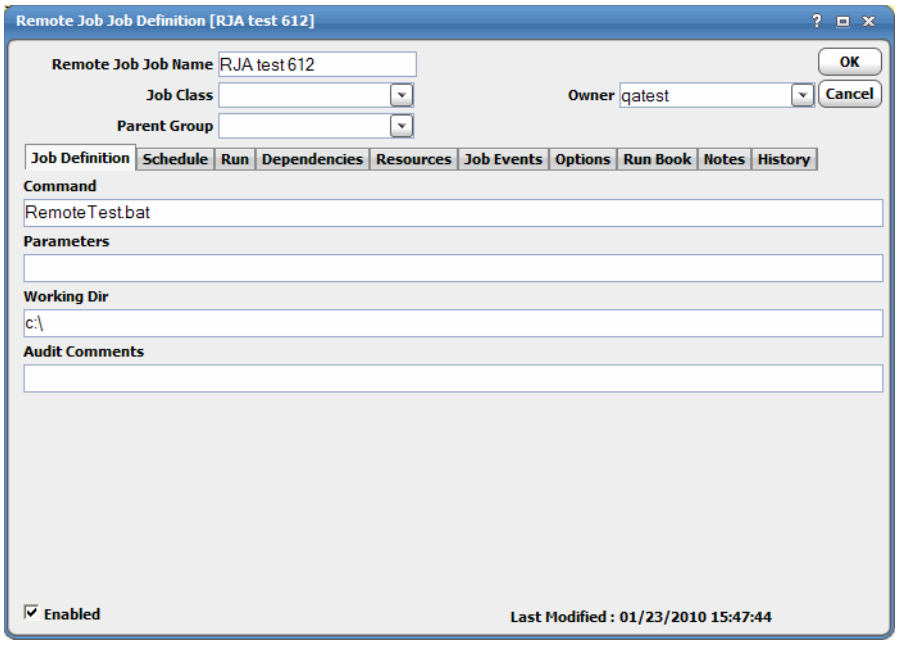
The **Remote Job Definition** dialog displays.



The **Run** tab is selected by default. You must first specify a name for the job, a valid runtime user who has the appropriate Remote Job authority for the operation, and the Remote Job adapter connection that will be used for the job.

3. In the upper portion of the dialog, specify the following information to describe the job:
   - **Job Name** – Enter a name that describes the job.
   - (Optional) **Job Class** – If you want to assign a defined job class to this job, select it from the drop-down list.
   - **Owner** – Select the user name from the drop-down list for the person who owns this job. The user must have the appropriate Remote Job authority for the operation.
   - **Parent Group** – If this job exists under a parent group, select the name of the parent group from the drop-down list. All properties in the Agent Information section are inherited from its parent job group.
4. Specify the following connection information in the **Agent/Adapter Information** section:
   - **Agent/Adapter Name** – Select the Remote Job adapter connection to be used for this job from the drop-down list.
   - (Optional) **Runtime User** – Select a valid runtime user with the appropriate Remote Job authority for the job from the drop-down list.
5. Specify the appropriate **Tracking** and **Duration** information for the job. Refer to the *Cisco Workload Automation User Guid*e for information on these options.

6. Click the **Remote Job** tab.



7. In the **Command** field, enter the absolute path and filename of the command, script, batch file or executable that you want the job to run.

   Note: You can use CWA variables from the Variable button to populate these fields.

8. In the **Parameters** field, enter either the hard-coded value for each parameter or type a parameter name.

9. In the **Working Dir** field, enter the path for the working directory of the program or script specified in the **Command** field.

10. (Optional) In the **Audit Comment** field, enter any comments. This is used to populate the **Task Comment** field on the task created by the Remote Job adapter to execute the job on the target machine.

11. Click **OK** to save the job.

Monitoring Remote Jobs

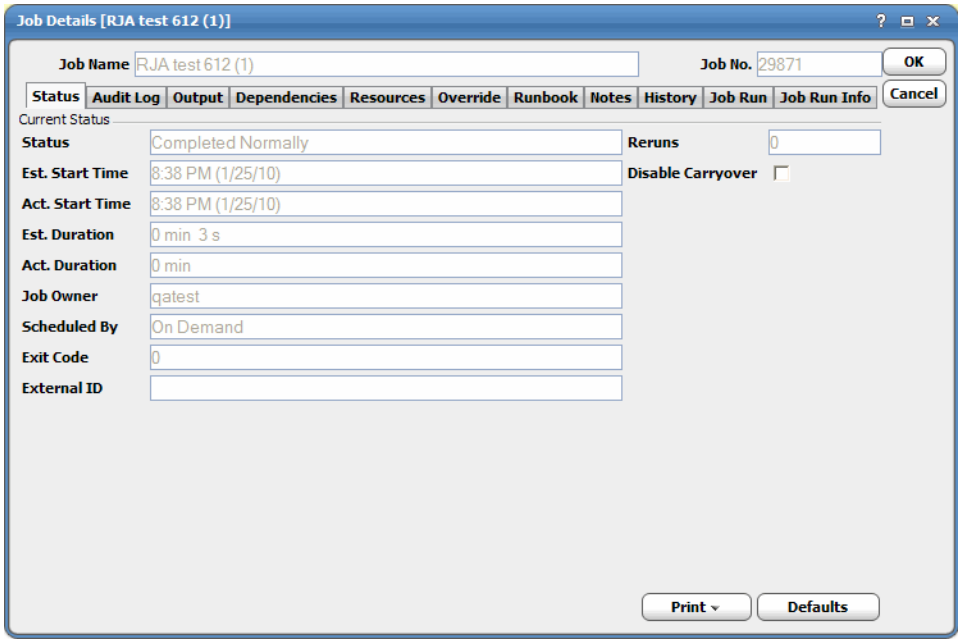
As Remote Job tasks run as pre-scheduled or event-based jobs, you can monitor the jobs as you would any other type of job in CWA using the **Job Details** dialog. You can also use the Business view to monitor job activity and view when the jobs are active (see the *Cisco Workload Automation User Guide* for instructions on using Business Views).

To monitor job activity:

1. In the **Navigator** pane, select **Operations>Job Activity** to display the **Job Activity** console.

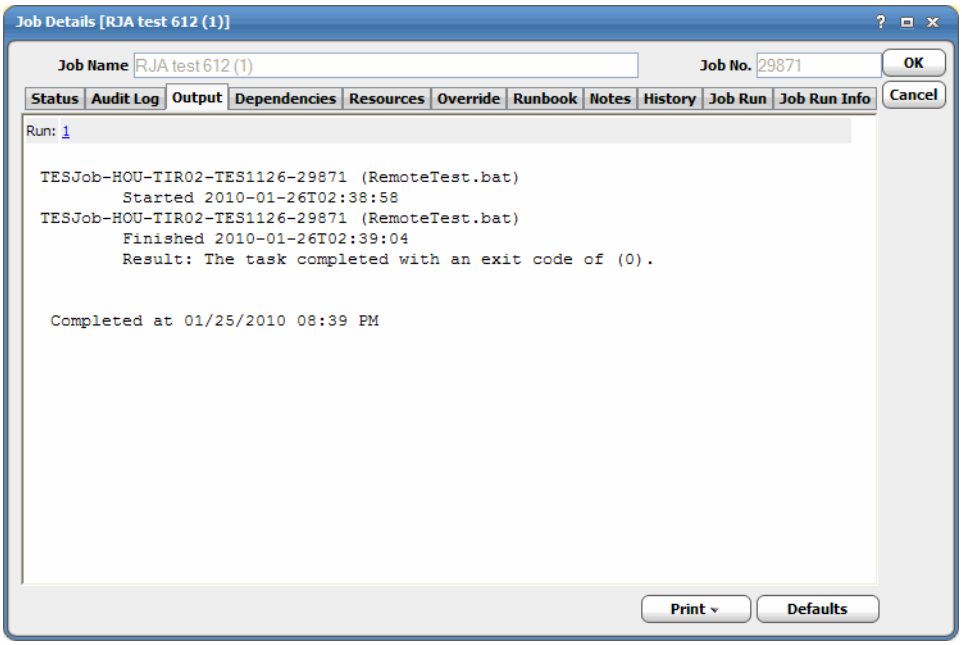
2. Right-click job and select **Details** from the context menu.

The **Job Details** dialog displays.

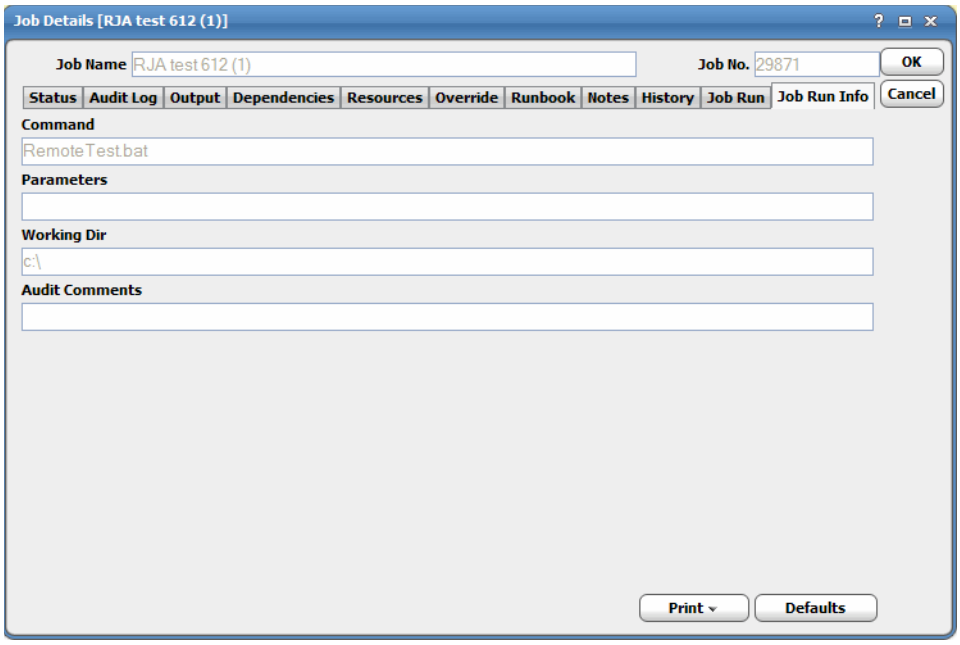


The **Status** page displays by default. You can view the status of the job, the start and end time, how long it ran, and how it was scheduled.

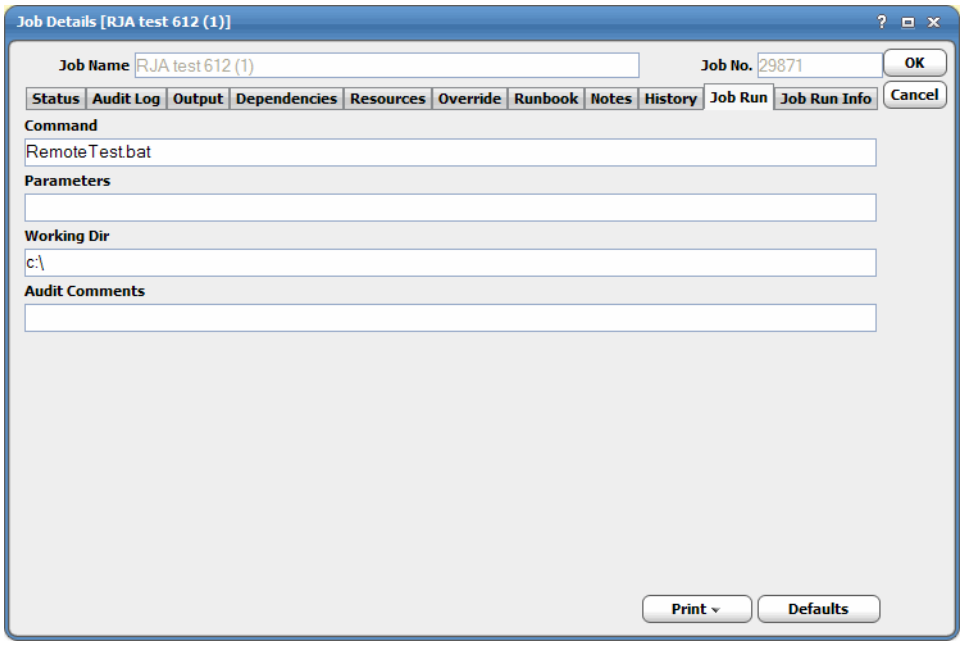
3. Click the **Output** tab to view a task summary.



4. Click the **Run Info** tab to view the request with the values used when this instance of the job was last run.



5. Click the **Remote Job** tab to view the job definition details and the variables that were used when the job was submitted. Changes only affect this instance of the job and can only be made before the job runs the first time or prior to a rerun (not while the job is running).



6. When you have completed viewing the job activity details, click **OK** to close the dialog.

Controlling Adapter and Agent Jobs

Scheduler provides the following job control capabilities for either the process currently running or the job as a whole:

- Holding a Job–Hold a job waiting to run.
- Aborting a Job–Abort an active job.
- Rerunning a Job–Rerun a job that completed.
- Making One Time Changes to an Adapter or Agent Job Instance–Make last minute changes to a job.
- Deleting a Job Instance before It Has Run–Delete a job instance before it has run.

Holding a Job

Adapter/agent jobs are held in the same way as any other Scheduler jobs.

Adapter/agent jobs can only be held before they are launched. Once a job reaches the Adapter/Agent system, it cannot be held or suspended.

To hold a job:

1. From the **Job Activity** pane, right-click on the job.
2. Select **Job Control>Hold/Stop**.

Aborting a Job

Adapter/agent jobs are aborted in the same way as any other Scheduler jobs.

To abort a job:

1. From the **Job Activity** pane, right-click on the job.
2. Select **Job Control>Cancel/Abort**.

Rerunning a Job

On occasion, you may need to rerun an Adapter/Agent job. You can override parameter values first, if necessary, from the Adapter/Agent tab.

To rerun a job:

1. From the **Job Activity** pane, right-click the Adapter/Agent job you need to rerun.
2. Select **Job Control>Rerun** option from the context menu.

Making One Time Changes to an Adapter or Agent Job Instance

Prior to a run or rerun, you can edit data on the specific **Adapter/Agent** tab. To ensure that there is an opportunity to edit the job prior to its run, you can set the **Require operator release** option on the **Options** tab in the Adapter **Job Definition** dialog. Use this function to make changes to an Adapter job after it enters Waiting on Operator status as described in the following procedure.

To make last minute changes:

1. From the **Job Activity** pane, double-click the Adapter/Agent job to display the **Job Details** dialog.
2. Click the Adapter tab.

3. Make the desired changes to the job and click **OK** to close the **Job Details** dialog.
4. If this job is Waiting on Operator, perform one of the following tasks:

- To release the job, select **Job Control->Release**.
- To rerun the job with changes, select **Job Control->Rerun**.

Deleting a Job Instance before It Has Run

Adapter/Agent job instances are deleted in the same way as any other Scheduler job.

Deleting a job from the **Job Activity** pane removes the job from the Scheduler job activity only. The original definition is left in tact.

To delete a job instance:

1. From the **Job Activity** pane, right-click the Adapter/Agent job to be deleted.
2. Select **Remove Job(s) From Schedule**.