



## **Cisco Tidal Enterprise Scheduler SAP Adapter Guide**

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## Preface

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This guide describes the installation, configuration, and usage of the SAP Adapter with Cisco Tidal Enterprise Scheduler (TES).

## Audience

This guide is for administrators who install and configure the SAP Adapter for use with TES, and who troubleshoot TES installation and requirements issues.

## Related Documentation

See the *Cisco Tidal Enterprise Scheduler 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 TES guides.



### Note

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

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## 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 Tidal Enterprise Scheduler SAP Adapter Guide*.

Version Number	Issue Date	Reason for Change
6.1.0	October 2012	<ul style="list-style-type: none"><li>• New Cisco version.</li></ul>
6.2.1	June 2014	<ul style="list-style-type: none"><li>• Available in online Help only.</li></ul>
6.2.1 SP2	June 2015	<ul style="list-style-type: none"><li>• Configuration provided in the <i>TES Installation Guide</i>; usage provided in online Help only.</li></ul>
6.2.1 SP3	May 2016	<ul style="list-style-type: none"><li>• Consolidated all SAP Adapter documentation into one document.</li></ul>





# Introducing the SAP Adapter

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This chapter provides an overview of the SAP Adapter and its requirements:

- [Overview](#)
- [Terms to Know](#)
- [Minimum Software Requirements for TES Master](#)

## Overview

The integration of Cisco Tidal Enterprise Scheduler (TES) with SAP allows you to schedule jobs in the SAP environment via TES. The TES SAP interface connects with the SAP system via a network connection managed by the SAP RFC (Remote Function Call) interface.

To facilitate job creation and control in the SAP environment TES uses provided by SAP BAPI functions called the XBP (eXternal Background Processing) API.

Java connector software provided by SAP, called the JCO 3.0 component, must be installed on the TES master machine. SAP JCO 3.0 is necessary for a Java application (like TES ) to work with SAP.

The SAP adapter is part of the regular TES installation; however, it can only be used if the appropriate license is applied to TES. Though no additional installation is required, you must perform some configuration procedures.

## Terms to Know

- **Application Server** – A machine that runs an SAP task.
- **SAP Instance** – A consolidation of many SAP objects and processes on one machine, used to process SAP transactions on one or more SAP application servers.
- **SAP Client** – An independent participant in an SAP system.
- **SAP Object** – An element of the SAP development environment, such as ABAP programs or transaction definitions.

# Minimum Software Requirements for TES Master

The minimum software releases for the TES SAP R/3 adapter implementation are:

- SAP R/3 versions 4.5, 4.6C, 4.7x
- SAP ERP 2004, 2005
- SAP Basis 7.01, 7.02, 7.30, 7.1 PI, 7.4
- TES v6.0
- SAP JCO 3.0
- Business Warehouse (BW) 3.1 and 3.5
- BI 7.0
- For Windows installations, Microsoft Visual C++ runtime components 2005 or above are required.
- Java 7

Refer to the *Cisco Tidal Enterprise Scheduler Compatibility Guide* specific version support and a complete list of TES hardware and software requirements.

**Note**

For Windows installations: The SAP JCO library require Microsoft Visual C++ runtime components, 2005 or above. If your system does not include these components and there is an error starting the SAP Adapter, you may need to install the runtime components from Microsoft. You can check for the existence of file: mfc71u.dll (a component of the C++ runtime components), on your system to verify this prerequisite. The file needs to be in the system library path accessible to the adapter (e.g. either in the windows system path or accessible via the PATH environment).

These downloads can be found from Microsoft's site given an internet search from your browser.



# Configuring the SAP Adapter

## Overview

Creating an SAP job within TES is similar to creating any other TES job. The differences are in the configuration prior to creating SAP jobs, and in the additional information required for a complete SAP job definition (such as job steps).

The SAP Adapter software is installed as part of a standard installation of Enterprise Scheduler. However, before the SAP adapter can be used, the following installation and configuration procedures must be completed:

- [Prerequisites](#)
- [SAP Configuration](#)
  - [Installing SAP JCO](#)
  - [Defining a Security Policy](#)
  - [Defining SAP Users](#)
  - [Authorizing TES Users to Run SAP Jobs](#)
  - [Licensing an Adapter](#)
  - [Defining SAP Connections](#)
  - [Configuring Default System Settings for SAP](#)
  - [Configuring Logging in SAP Process Chain Jobs](#)

See [Configuring service.props](#) for information about general and adapter-specific properties that can be set to control things like logging and connection properties.

## Prerequisites

The following prerequisites must be completed before TES can successfully work with SAP jobs:

- The name(s) and password(s) of at least one SAP user must be defined in the SAP instance(s) that TES uses.
- The SAP profile you use for TES's SAP account must have the objects and authorizations exactly as specified.

The name(s) and password(s) of at least one SAP user must be defined in the SAP instance(s) that you will be using to run Enterprise Scheduler jobs. The SAP account(s) designated for use by Enterprise Scheduler must have the following objects assigned:

Object	Capability	Authorized Required
S_BTCH_ADM	Authorizes administrative privileges for batch job processing.	S_BTCH_ALL
S_RZL_ADM	Authorizes the release of ad-hoc jobs intercepted at the SAP job queue.	S_RZL_ALL
S_BTCH_JOB	Authorizes all batch job operations.	S_BTCH_ALL
S_BTCH_NAM	Authorizes batch processing by user name.	S_BTCH_ALL
S_RFC	Authorizes access to all remote function calls.	S_RFC_ALL
S_XMI_PROD	Authorizes access to external management interfaces.	S_XMI_ADMIN

Users with the following profiles have the necessary authorizations by default:

- S\_A.ADMIN
- S\_BTCH\_ADM
- S\_XMI\_ALL

Additional prerequisites include:

- The Java connector software provided by SAP, called the JCO 3.0 component, must be installed on the TES master machine. SAP JCO 3.0 is necessary for a Java application (like the TES) to work with SAP. This installation is described in [Installing SAP JCO](#).
- If using logon groups for your connection, the proper SAP entries must be in the services file of each machine (client and master) that connects to the logon group.
- There is SAP specific security category for creating and editing SAP jobs. Only a **Superuser** has default access to all security functions in TES. If needed, different security policies with varying authorized functions can be created to provide different levels of access for a variety of users.

## SAP Configuration

Creating an SAP job within the Scheduler is similar to creating any other Scheduler job. The differences are in the configuration prior to creating SAP jobs, and in the additional information required for a complete SAP job definition (such as job steps).

Scheduler can launch CCMS jobs including ABAP programs, external programs and external commands. For SAP Business Warehouse (BW), you can also schedule infopackages and process chains as Scheduler jobs. You can define and maintain the details of a job definition for each step through Scheduler. Scheduler can also launch, monitor and manage jobs that already exist in SAP.

Before creating SAP jobs within Scheduler, certain parameters must be configured so that Scheduler can communicate with the SAP instance.

The SAP adapter software is already installed as part of a normal installation of TES. However, you must perform the following steps to license and configure the adapter before you can run SAP jobs. Each of these steps is described in this section.

**To license and configure the adapter:**

- 
- Step 1** Download and install the Java connector software provided by SAP, called the JCO 3.0 component. SAP JCO 3.0 is necessary for a Java application (like the TES) to work with SAP. Refer to [“Installing SAP JCO”](#).
- Step 2** Create or modify security policies to assign to user definitions that allow users to create and edit SAP jobs. Refer to [“Defining a Security Policy”](#).
- Step 3** Create one or more user definitions in TES with access to the SAP instance using SAP user names and passwords provided by the SAP administrator. See [“Defining SAP Users”](#) section on page 2-13.
- Step 4** Authorize TES users to run SAP jobs on behalf of these SAP runtime users. Refer to [“Authorizing TES Users to Run SAP Jobs”](#).
- Step 5** License the connection(s) to the SAP instance. You cannot define an SAP connection until you have applied the SAP license from Tidal Software. Business Warehouse functions require an additional license. Refer to [“Licensing an Adapter”](#).
- Step 6** Define an SAP connection so the master can communicate with the SAP instance. Refer to [“Defining SAP Connections”](#).
- Step 7** Configure the defaults for handling SAP jobs. Individual jobs can override the default system settings as necessary. Refer to [“Configuring Default System Settings for SAP”](#).
- Step 8** Configure logging for the SAP process chain jobs. See [Configuring Logging in SAP Process Chain Jobs](#), page 2-23.

## Installing SAP JCO

The master requires Java connector (JCO) software from SAP. SAP’s JCO middleware allows a Java application to communicate with an SAP system. Each operating system requires its own version of the JCO that can be downloaded from SAP.

**To download SAP JCO:**

- 
- Step 1** In your web browser, go to the following URL: <http://service.sap.com/patches>.  
A **Client Authentication** dialog displays to request an authentication certificate.
- Step 2** If you have such a certificate, select it and click **OK**.  
OR  
If you do not have a certificate, click **OK** to display the **Enter Network Password** dialog.
- Step 3** Enter the user name and password supplied by SAP into the respective text fields and click **OK**.  
The **SAP Support Packages and Patches** Web page displays.
- Step 4** Navigate to 3.x SAP Java Connector Download Page.
- Step 5** Various operating systems are listed. Click on the appropriate operating system to access its archive file for downloading. Follow the instructions for installing the JCO that are included in the archive file.
- Step 6** In the initial setup of SAP JCO 3.0, two files from the *SAP JCO.zip* file are necessary:
- *sapjco3.jar* (Windows and Linux)
  - *sapjco3.dll* (Linux: *libsapjco3.so*)

- Step 7** After installing the JCO, add the `{sapjco-install-path}/sapjco3.jar` to your CLASSPATH environment variable, and then specify the path to the location when you have JCO 3.x libraries installed. You may need to reboot your system.

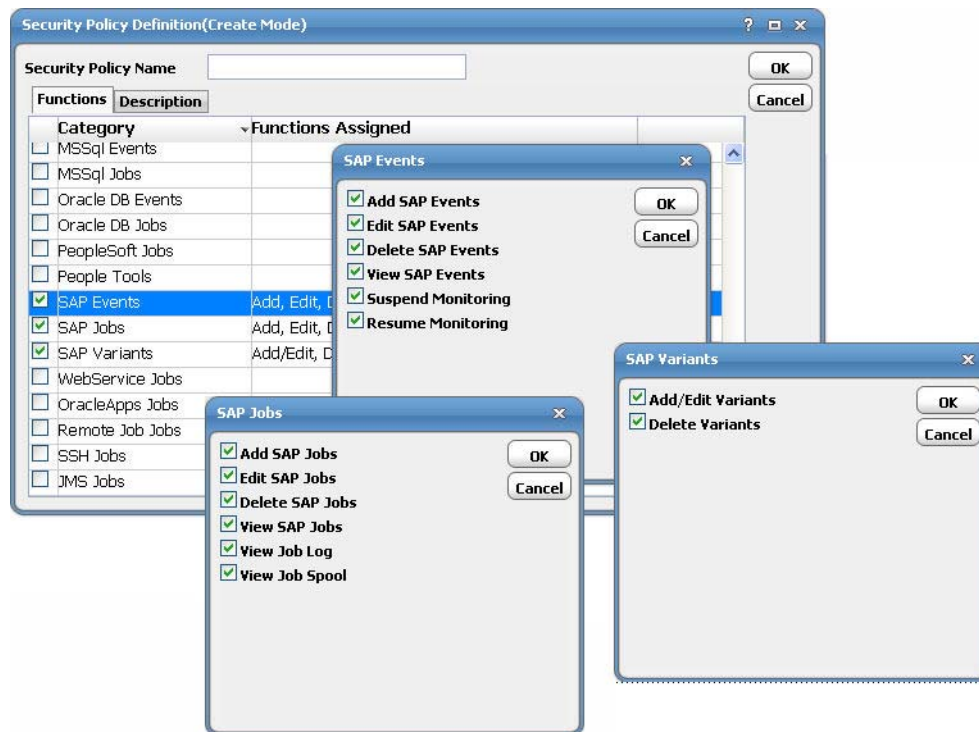
## Defining a Security Policy

Access to the SAP environment is controlled by assigning an SAP security policy with specified privileges to designated user accounts. The scheduling administrator should create a new security policy in TES as described in the “Users” chapter of the *TES User Guide*, that in addition to the normal user privileges includes the capability to create and/or edit SAP jobs and events. A user whose assigned security policy does not include SAP privileges cannot create events and/or run SAP jobs.

You can create a new security policy or modify an existing security policy in TES that includes the authority to add, edit, view and delete SAP jobs, variants and events.

**To grant access privileges:**

- Step 1** In the **Navigator** pane, select **Security Policies** to display the **Security Policies** pane.
- Step 2** Select a security policy for the SAP privileges and double-click on it to display its **Security Policy Definition** dialog.



- Step 3** Scroll down the list of function categories and double-click on the **SAP Jobs**, **SAP Events** or **SAP Variants** category to display the available functions.
- Step 4** Select the desired job privileges, then click **OK**.

A check mark appears next to the **SAP** function category indicating that one or more functions are selected within the category.

If needed, different security policies with varying authorized functions can be created to provide different levels of access for a variety of users.

For more information about the **Security Policy Definition** dialog, refer to the “Users” chapter in the *TES User Guide*.


## Defining SAP Users

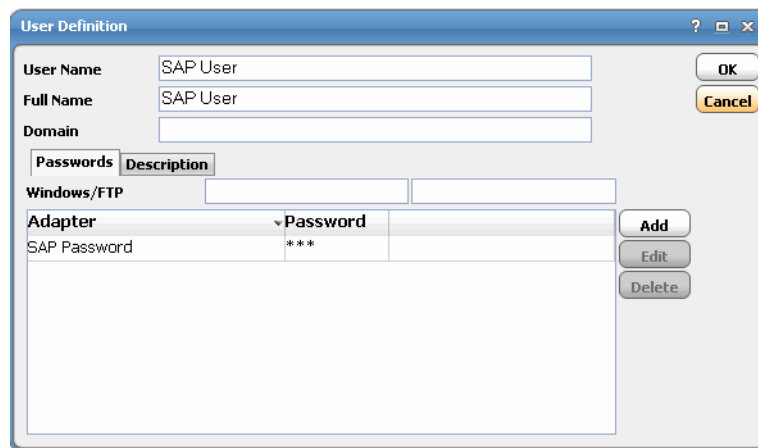
Before you can create SAP jobs, a user with access to the SAP instance must be defined to TES.

TES cannot run any SAP job unless it knows the user name(s) and password(s) defined in the SAP instance. TES then interacts with SAP as that defined user, exchanging information to monitor and control the execution of the SAP jobs through TES. Other users in TES are authorized to run SAP jobs on behalf of SAP runtime users.

## Adding an SAP User to TES

To add an SAP user:

- Step 1** From the **Navigator** pane, select **Administration>Runtime Users** to display the **Users** pane.
- Step 2** Click the **Add** button  or right-click and select **Add Runtime User** from the context menu to display the **User Definition** dialog.



The **User Definition** dialog box is shown. It contains the following fields and controls:

- User Name**: Text field with "SAP User" entered.
- Full Name**: Text field with "SAP User" entered.
- Domain**: Text field.
- Windows/FTP**: Text field.
- Adapter**: Dropdown menu showing "SAP Password".
- Password**: Text field with "\*\*\*" entered.
- Buttons**: **OK**, **Cancel**, **Add**, **Edit**, and **Delete**.

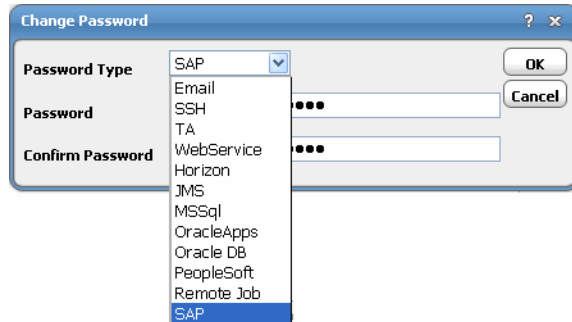
- Step 3** In the **User Name** field, enter the user name for the account provided by your SAP Administrator for use by TES. The **Full Name** field is optional. Use the **Domain** field for additional documentation, such as to distinguish users with the same name that use different passwords in different instances.



### Note

Be sure that the User Profile in SAP for the user you define to TES is configured to use formats that are supported by TES. SAP recognizes numerous date formats but TES only supports the DD.MM.YYYY and the MM/DD/YYYY date formats. An unsupported date format within the SAP user profile will cause jobs in TES to error. You must also configure SAP's User Profile to use decimal points instead of commas as a numeric separator. Comma separators are not supported by TES.

**Step 4** On the **Passwords** tab, click **Add** to display the **Change Password** dialog.



**Step 5** From the **Password** type list, select **SAP**.

**Step 6** In the **Password/Confirm Password** fields, enter and confirm the password.

**Step 7** Click **OK**. The SAP record displays on the **Passwords** tab.

**Step 8** Click **OK** to save the user record.




**Note** For more information about the **Users** pane, see the [Users](#) chapter in your *TES User Guide*.

## Authorizing TES Users to Run SAP Jobs

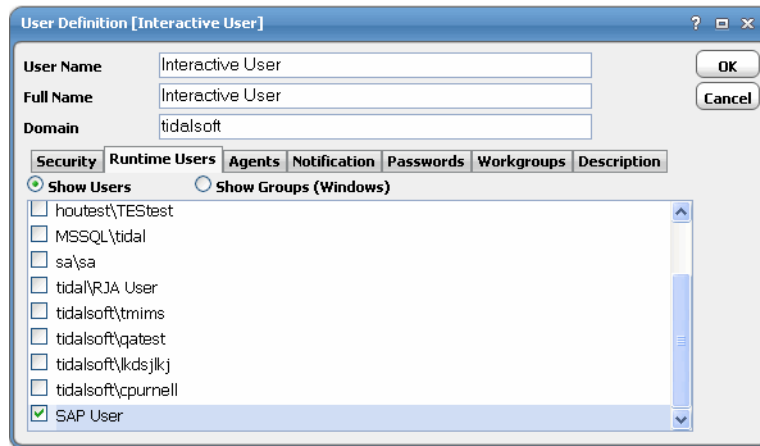
If a TES user is to work with SAP jobs, they must have a defined SAP user in their authorized runtime user list. If an SAP user is not added to a TES user's authorized runtime users list, the user has no access to the SAP instance and cannot run SAP jobs. Similarly, you grant or deny access to specific SAP instances in the user's authorized agents list.

## Adding an SAP User To a User's Authorized Runtime User List

**To add a runtime user:**

- Step 1** From the **Navigator** pane, select **Administration>Interactive Users** to display the **Users** pane.  
If the TES users do not display, you do not have the appropriate rights to view users.
- Step 2** Click the **Add** button  or right-click and select **Add Interactive User** from the context menu to display the **User Definition** dialog.
- Step 3** Double-click the name of a TES user account to display the **User Definition** dialog.
- Step 4** Click the **Runtime Users** tab.





**Step 5** On the **Runtime Users** tab, select the check box(es) beside the name(s) of the SAP user(s) you want to include in this TES user's authorized user list.

**Step 6** If you wish to restrict this user's access to specific instances, click on the **Agents** tab.

## Licensing an Adapter

Each TES 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 TES, 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:

**Step 1** Stop the master:

#### Windows:

- a. Click **Start** and select **Programs>TIDAL Software>Scheduler>Master>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**

**Step 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.

**Step 3** Place the file in the **C:\Program File\TIDAL\Scheduler\Master\config** directory.

**Step 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.

- Step 5** To validate that the license was applied, select **Registered License** from **Activities** main menu.

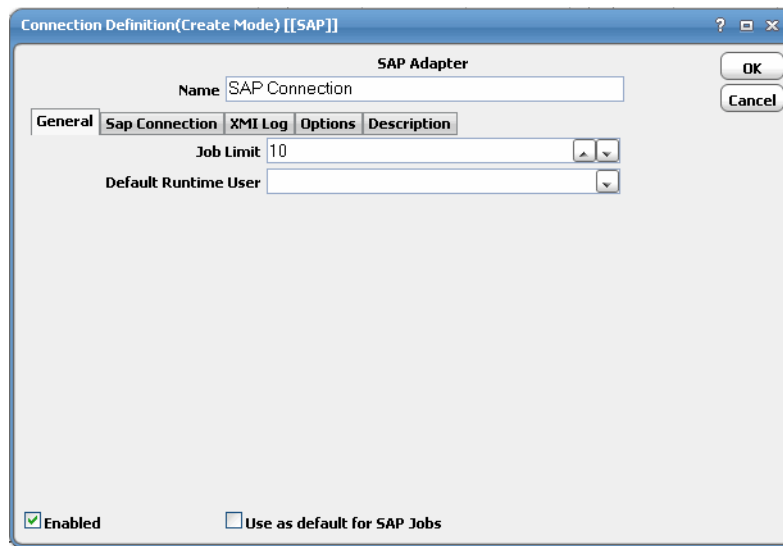
## Defining SAP Connections


You must create a connection to the SAP instance(s) before TES can run your SAP jobs. These connections also must be licensed before TES can use them.

### Adding an SAP Connection to TES

To add a connection:

- Step 1** From the Navigator pane, select **Administration>Connections** to display the Connections pane.



- Step 2** Click the **Add**  button and select the **SAP Adapter** option from the list of connection types, or right-click and select **Add Connection>SAP Adapter** from the context menu to display the **Connection Definition** dialog.
- Step 3** In the **Name** field, enter a name for your SAP connection. This is the name that will be used by TES to identify your SAP connection. It does not have to correspond to the actual SAP hostname.
- Step 4** In the **Job Limit** field, enter a number to limit how many jobs can run at once.
- Step 5** In the **Default Runtime User** list, select a runtime user from the list of users with SAP passwords. This is optional and is used to designate a default runtime user when defining a new job for this SAP instance.

- Step 6** If you are defining multiple connections to SAP instances, designate a default connection to an SAP instance by selecting the **Use as default for SAP jobs** option for one of the SAP connections. If there is only one SAP connection then you do not need to select this option.
- Step 7** Click the **SAP Connection** tab.

- Step 8** In the **SAP Instance** field, type the name of the SAP instance being connected to.
- Step 9** In the **SAP Connect User** field, select the user from the drop-down list that the Scheduler master uses to create the RFC connection to SAP. (This is different from the runtime user that is used for job authorization.)
- Step 10** In the **SAP Version** field, select the basis version of SAP being used by the designated SAP instance.
- Step 11** Select the **SAP BW** option to use the Business Warehouse functionality in TES.  
This option is displayed only if you are licensed to use the SAP BW functions.
- Step 12** In the **Connection Method** section, select a way to connect to the SAP instance.
- **Application Host** – This option displays the following options when selected:
    - **SAP Client** – The name of a specific client. This information is provided by the SAP administrator. There may be multiple clients using the specified SAP instance.
    - **System Number** – The two-digit number supplied by the SAP administrator that is similar to an instance number.
    - **Application Host** – The remote address of the application server host where the application resides. An example entry would be  
/H/10.10.10.030/H/194.017.166.139/S/3297/H/cpcb401.wdf.sap.corp.  
This information is available from your SAP administrator.

The **Application Host** option creates a connection to the SAP application host server that you specify. All fields within this section are required.
  - **Logon Group** – This option displays the following options when selected:
    - **Message Server** – The name of the SAP message server that is responsible for this load balancing.
    - **System ID** – The name of the SAP system (or instance).
    - **Group Name** – The name given in SAP to the logon group that you are specifying.

Selecting the **Logon Group** option will create a connection to one of the servers listed in the logon group. Logon groups are similar in function to workgroups of SAP instances. Connections that are assigned from a logon group will function like a balanced type of agent list. The connection will be assigned to the application server in the server group with the lightest load.

The services file in the directory of the master host must contain corresponding to group sapms entry.

For example:

```
sapmsr3e 3600/tcp #R3E
```

**Step 13** In the **Execution Server** section, select how the SAP job will be processed by selecting one of the following options:

- **Default** – This option is the default method of executing SAP jobs. Selecting this option displays an asterisk (\*) in the **Application Server** list to designate that load balancing among all SAP application servers will be used to ensure that a job will run on the server with the lightest load (or fewest jobs).
- **Application Server** – This option specifies that only the designated application server selected from the list in the **Application Server** field should process jobs from this connection.



**Note** When specifying an application server in the Application Server list, never use an alias name. The application server must be referenced by its hostname, as it is known by DNS. Your SAP Administrator can provide the application server hostname.

- **Server Group** – This option limits this connection to assigning an SAP job to the application server with the lightest load among the servers within the server group that is selected from the **Server Group** list.
- **Application Server/Server Group** – Select either an application server or server group(s) depending upon which execution server option was selected. If you selected the **Default** option, an asterisk is displayed here to denote load balancing among all of the application servers.

**Step 14** Click the **Options** tab to configure the interaction between SAP and TES.

Connection Definition (Edit Mode) [Sap Adapter[SAP]]

SAP Adapter

Name: Sap Adapter

General | Sap Connection | XML Log | **Options** | Outages | Description

General | Parameters | Profile

Audit Level: 1

Polling Interval (in seconds): 5

When SAP jobs are ready to run: Launch ASAP

For "Copy Existing SAP Job" list, show: Runtime User's Jobs Only

ABAP Program/Variant Validation Level: Error

Maximum Job Log size (in Kbytes):

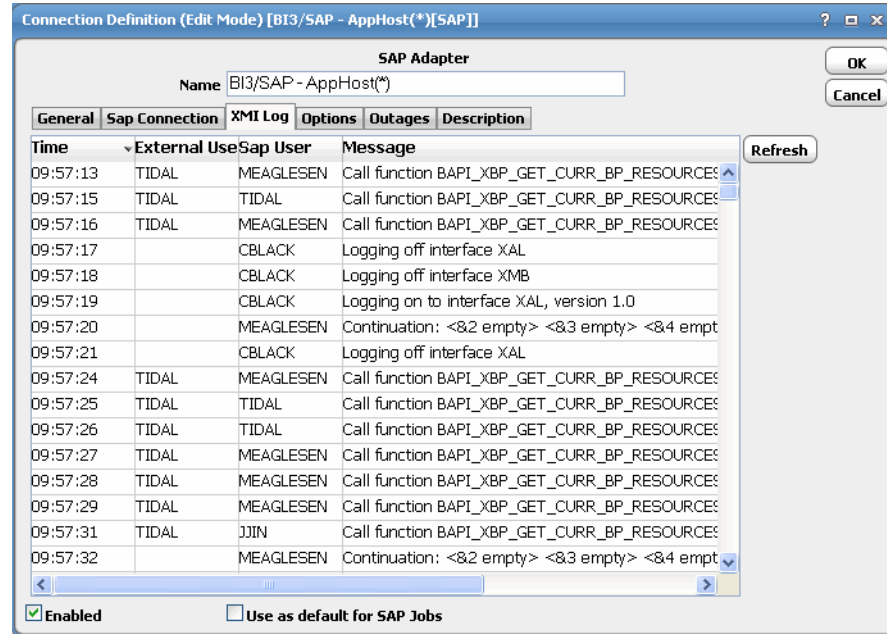
Maximum Job Spool size (in Kbytes):

☒ Use Runtime User for Authorization Only

☒ Enabled ☐ Use as default for SAP Jobs

**Step 15** Select level 1, 2 or 3 from the **Audit Level** list.

This setting controls the level of detail recorded in the External Management Interface (XMI) log about the remote function calls coming from TES over this connection. Selecting **1** provides the lowest level of detail about the function calls to SAP and **3** provides the most detail. Note that the audit level does not affect job output.



**Step 16** (Optional) In the **Poll Interval** field, adjust the default value of five seconds between polls about job status.

Be aware that polling too frequently can affect performance by consuming too many system resources.

**Step 17** From the **When SAP jobs are ready to run** list, select either **Launch ASAP** or **Launch Immediately**.

This setting affects how SAP treats a job launch when a work process is unavailable.

- **Launch ASAP** – Holds the job in launched status if SAP cannot run the job. Once the resources are available, the job starts running.
- **Launch Immediately** – Sets the job's status to **Error Occurred** if the job is unable to run. This option limits the job to only one launch attempt even if the value in the **SAPLAUNCHTRIES** service parameter is more than one (the default is three attempts). You may try to rerun this job at a later time.

**Step 18** If not already selected, select the **Use Runtime User for Authorization Only** option.

It is highly recommended that this option remain selected. When this option is checked, a single persistent connection is created to the SAP instance that will be used for all TES jobs that run in this instance. The connection will be created under the authorization of the SAP Connect user (specified on the **SAP Connection** tab) so this runtime user must have the rights to run an SAP job. This also means that all SAP jobs will be defined by the same user.

Using this option provides three benefits:

- SAP administrators only have to define one user with RFC and BATCH authority who can run jobs as other users.
- TES administrators only have to use one connection to the SAP instance.

- System load is reduced by eliminating network traffic generated by multiple connections/sessions.

If this option is not enabled (unchecked), a temporary connection will be created each time an SAP job is launched and that connection will be closed as soon as the job launches. The temporary connection is created under the authorization of the runtime user specified on the job definition's **Run** tab so the runtime user must have the rights to create and run an SAP job. Not using this option means multiple users may be needed to create and run jobs and that more network traffic will result as new connections are opened and closed as each SAP job launches.

**Step 19** In the **For “Copy Existing SAP Job” list, show** list, select one of the three security filtering options for importing or linking to existing SAP jobs:

- **Runtime User’s Jobs Only** – TES compares the runtime user for the defined job to the SAP job owner/creator and the “changed by” logon ID within SAP.
- **Authorized Runtime User’s Jobs** – TES compares all authorized runtime users available to the TES user to the SAP job owner/creator and “changed by” logon user ID within SAP.
- **All Existing SAP Jobs** – TES displays all the jobs defined within the SAP instance, regardless of the owner.

**Step 20** In the **ABAP Program/Variant Validation Level** list, configure an automatic response to a user’s attempt to create and save jobs with an invalid ABAP program or variant within its definition. There are three options:

- **Error** – An error message displays that the job cannot be saved because it references an invalid program or variant.
- **Warning** – A warning message displays, but the user can save or correct the job.
- **No Validation** – No message displays and the user can save a job even though the ABAP program or variant may not exist yet.

**Step 21** In the **Maximum Job Log size (in kbytes)** field, enter the limit in kbytes to limit collection of large job logs.

This option is used to determine whether or not SAP job logs should be retrieved during output collection. Prior to TES saving job log output, it will read the job’s Log attribute and avoid log collection if the limit is exceeded.

**Step 22** In the **Maximum Job Spool size (in kbytes)** field, enter the limit in kbytes to limit collection of large job spool.

This option is used to determine whether or not SAP job spool should be retrieved during output collection. Prior to TES saving job spool output, it will read the job’s Spool attribute and avoid spool collection if the limit is exceeded.

**Step 23** Click the **Parameters** tab to enter any service values in the text field.

Connection Definition (Edit Mode) [Sap Adapter[SAP]]

SAP Adapter

Name: Sap Adapter

General | Sap Connection | XMI Log | Options | Outages | Description

General | Parameters | Profile

SAPLAUNCHTRIES=10

☒ Enabled ☐ Use as default for SAP Jobs

When entering multiple parameter values, separate each value with a space, e.g., **name1=value1 name2=value2**.

**Step 24** Click the **Profile** tab to set the criteria hierarchy.

Connection Definition (Edit Mode) [SAP Adapter[SAP]]

SAP Adapter

Name: SAP Adapter

General | Sap Connection | XMI Log | Options | Outages | Description

General | Parameters | Profile

XBP3 Only

☒ Create/Manage Event Profile  
☒ Use Existing Event Profile  
 Event Profile Name:

☒ Create/Manage Interception Profile  
☒ Use Existing Interception Profile  
 Interception Profile Name:

Event/Interception Profile Name Prefix: Master alias(Max 18 chars) plus connection Unique ID(Max 6 chars)

Unique ID for Connection:

Master ID:

Guidelines

Note:

- To avoid conflict, with Use Existing Event or Interception Profile option selected, multiple SAP connections or TES Implementations that point to the same SAP System must use the same Profile across all!
- Profile specified will be activated when deactivated externally. Consider disabling of such Connection(s) prior to any external profile modification(s).
- To add interception criteria to the existing profile, criteria hierarchy format must be followed (see user guide for details)!

☒ Enabled ☐ Use as default for SAP Jobs

This tab contains the following elements:

- **Create/Manage Event Profile** – Check to create and activate a new event profile.
- **Use Existing Event Profile** – Use an existing event profile..

- **Event Profile Name** – New event profile name or existing event profile name
- **Create/Manage Interception Profile** – Check to create and activate a new interception profile.
- **Use Existing Interception Profile** – Use an existing interception profile.
- **Interception Profile Name** – New interception profile name or existing interception profile name.
- **Unique ID for connection** (max 6 chars) – Unique ID for each connection, part of the criteria profile name in SAP.
- **Master ID** (18 chars Max) – Also part of the criteria profile name in SAP.

This tab allows you to:

- **Define/Manage profile for the event history** – Conditions and criteria for the raised events can be combine into complex dependencies. You can create and combine criteria in a criteria hierarchy via the SAP Event feature of TES. The criteria hierarchy is the set of all the criteria the raised events need to fulfill so they are logged in the event history. The criteria in the hierarchy can be grouped in nodes that are governed by a logical AND or OR relation.
- **Define/Manage profile for job interception** – Conditions and criteria for intercepted jobs can be combine into complex dependencies. You can create and combine criteria in a criteria hierarchy via the Queue Filter, **SAP Jobs (Intercepted)** feature of TES. The criteria hierarchy is the set of all the criteria the intercepted jobs need to fulfill. The criteria in the hierarchy may be grouped in nodes that are governed by a logical AND or OR relation.

A criteria hierarchy is stored in a criteria profile which can be active and inactive. For the criteria in a profile to take effect, the profile has to be active. You can have many profiles, but only one can be active.

If you want to use an existing Event/Interception Profile, both the **Use Existing Event/Interception Profile** and the **Create/Manage Event/Interception Profile** options must be selected.

**Step 25** In SAP, the System profile is presented as follows:

<Master ID>- <Unique ID>-<Event Profile Name>

Include the following condition:

<Master ID>-<Unique ID>\_<Internal ID>\_<Event Definition Name>

Exclude the following condition:

<Master ID>-<Unique ID>X<Internal ID>\_<Event Definition Name>

**Step 26** Click **OK**.

## SAP Agent Lists

Once multiple connections to SAP instances are created you can create agent lists specific to SAP. With agent lists an SAP job is not limited to a specific instance and can use alternate SAP instances if the primary instance is unavailable.

The **Agent Lists** option of the **Navigator** pane displays an SAP type of agent list. The procedure to create SAP agent lists is the same as creating any other agent list. Refer to the *TES User Guide* for more information on creating an agent list.



## SAP Connection Status Light

If the TES master cannot connect or loses its connection to an SAP instance, you will see a red status light next to your SAP connection in the **Connections** pane. Connection to SAP must be established by the Master in order to define SAP jobs and extract information on job steps from your SAP instance.

To test your connection to the SAP instance from the Tidal Web client, select the SAP connection and right-click and select the **Test** option. The resulting dialog will tell you if you have an active connection. For more information on the **SAP Job Definition** dialog, see [“Creating an SAP Job”](#).

## Configuring Default System Settings for SAP

Configure the SAP job output default or even turn it off from the **Defaults** tab of the **System Configuration** dialog.

To configure the default system settings:

- 
- Step 1** From the **Activities** main menu, select **System Configuration** to display the **System Configuration** dialog.
- The **System Configuration** dialog sets universal parameters for TES though you can still override a parameter for individual jobs.
- Step 2** Click the **Defaults** tab.
- Step 3** In the **Save Output Option** section, if you wish to see job output, select either **Append** or **Replace**. The default is to discard output.
- Since SAP job output can be quite extensive, the **Summary Only for ERP Jobs** option is selected by default. This provides job log information only. Unchecking this option will provide the full spooled output (if available). You can override this setting for individual jobs on the **Options** tab of the **Job Definition** dialog if desired.

## Configuring Logging in SAP Process Chain Jobs

The READPCHAINLOG parameter in the service.props file is used to control the log gathering in SAP Process Chain jobs. The default value for this property is Y.

This property depends on the “Summary Only” check box of the Options tab in job definition as follows:

Summary Only	READPCHAINLOG	Gather PChain Log
N	Y	Y
Y	Y	Y
Y	N	N (Only Summary)





## Defining SAP Jobs

---

### Overview

Once you have completed the configuration of the SAP adapter, you can create, run and monitor SAP jobs from TES.

TES can launch CCMS jobs including ABAP programs, external programs and external commands. For SAP Business Warehouse (BW), you can also schedule infopackages and process chains as TES jobs. You can define and maintain the details of a job definition for each step through TES. TES can also launch, monitor and manage jobs that already exist in SAP.

Every SAP job that is created is assigned a unique ID number by TES. This number is called the Job Number and is assigned as soon as TES includes an SAP job in the schedule. This identification number differs from the SAP ID number that SAP assigns to each job. The SAP ID number is called the External ID in TES and is displayed in the **Ext ID** column of the **Job Activity** pane.

The SAP Job Definition dialog has several tabs used to define the parameters of the job. Many of these tabs have the same options as any other job definition but some differ.

### Creating an SAP Job

An SAP job consists of one or more job steps executed in sequence. You can change the sequence of the job steps, edit a job step or add and delete various job steps according to your needs.

There are different types of job steps that SAP jobs can include. Most SAP jobs are based on:

- **ABAP programs** – Programs in the native SAP programming language.
- **External programs** – Any other programs that are not native to SAP.
- **External commands** – A predefined R/3 operating system command.

However, if you are using the Business Warehouse (BW) module of SAP and are licensed with TES for the BW functions, two other types of job steps are also available:

- **Infopackage** – Predefined data loads (or extracts of data) identified with an Infopackage ID. When the infopackage launches in TES, it generates a job in SAP's Computing Center Management System (CCMS) to create and process the data request.
- **Process Chain** – A series of tasks designed and managed as a flow chart. The process chain consists of ABAP programs, infopackages and other tasks.

You can create new job steps for the SAP job or you can import pre-defined job steps from existing SAP jobs. TES provides a way to load the job steps with their defined variants from another SAP job. This streamlines the process of defining SAP jobs by reusing existing job components.

#### To create an SAP job:

- Step 1** From the **Navigator** pane, select **Definitions>Jobs** to display the **Jobs** pane.
- Step 2** Right-click in either the **Navigator** or **Jobs** pane and select **Add Job>SAP Job** from the context menu to display the **SAP Job Definition** dialog.

Note that the **Add Job** option is only available after having configured TES for SAP, as described in “[SAP Configuration](#)”.

The screenshot shows the 'SAP Job Definition' dialog box with the 'Run' tab selected. The 'SAP Job Name' field contains 'MIKE\_NW8\_DEFINE\_VARIANT\_J1'. The 'Job Class' and 'Parent Group' fields are empty. The 'Owner' dropdown is set to 'Schedulers'. Under 'Agent/Adapter Information', 'Agent/Adapter Name' is 'NW8/SAP - XBP3[SAP]', 'Agent List' is empty, and 'Runtime User' is 'SAP\MEAGLE'. In the 'Tracking' section, 'Exit code' is selected. The 'Duration' section shows 'Estimated', 'Minimum', and 'Maximum' all set to '1:00'. The 'Exclude Completed Abnormally' checkbox is checked. The dialog is titled 'SAP Job Definition [MIKE\_NW8\_DEFINE\_VARIANT\_J...]' and has 'OK' and 'Cancel' buttons.

- Step 3** In the **SAP Job Name** field, enter a name for your job of up to 32 characters. All characters are converted to uppercase with no spaces allowed so that the job in SAP can be created with the same name.
- Step 4** To assign a TES job class to this job, select from the **Job Class** list. (This is TES’s job class, not the SAP job class used to prioritize a job.)
- Step 5** To change the owner of the job, select a new owner from the **Owner** list. Note that the owner of an SAP job must have the SAP user as an authorized runtime user.
- Step 6** To put the job in an existing group or change the group the job is in currently, select a group from the **Parent Group** list. Note that unless the parent group selected has an SAP agent connection assigned, you must clear the **Inherited** option.

**Step 7** The **Agent Name** and **Runtime User** lists are automatically filled with defaults if you configured them in the system configuration. If you defined an agent list of connections to multiple SAP instances, this is available from the **Agent List** list.

Only SAP agent lists that were defined in the **Agent List** pane are displayed in this list. When the job runs, TES attempts to connect with the first agent of the list and if unable to connect, proceeds to the next listed agent until a successful connection is established. You should ensure that the job can run on any of the connections in the agent list. If the job is assigned to a connection that it cannot run on, the job will fail with an **Error Occurred** status.

Note that if you select an agent list, the **Agent Name** list is reset.

**Step 8** The default options for job output are set on the **Defaults** tab of the **System Configuration** dialog. If you wish to override the default setting for job output of an individual job instance, click on the **Options** tab and select the desired **Save Output Option** setting. The **Summary Only for ERP Jobs** setting can also be modified from here.

The screenshot shows the 'SAP Job Definition' dialog box with the 'Options' tab selected. The dialog has a title bar 'SAP Job Definition [MIKE\_DB2\_RSBPTP03\_F0[\\SAP...]]'. The 'SAP Job Name' field contains 'MIKE\_DB2\_RSBPTP03\_F0'. The 'Job Class' and 'Parent Group' fields are empty. The 'Owner' field contains 'qatest'. The 'Options' tab is active, showing various settings for job execution. The 'Save Output Option' section has radio buttons for 'Discard', 'Append', and 'Replace', with 'Replace' selected. There is also a checkbox for 'Summary Only'. The 'If job is currently running' dropdown is set to 'Run Anyway'. The 'Base time needed to run job on' dropdown is set to 'Estimated Duration'. The 'If not enough time before outage' dropdown is set to 'Defer'. There are checkboxes for 'Allow unscheduled', 'Require operator release', 'Allow operator rerun', and 'Disable carryover'. The 'History Retention (in days)' field is set to 30. The 'Enabled' checkbox is checked. The 'Last Modified' timestamp is '09/06/2010 13:47:27'.

**Step 9** Click the **SAP Steps** tab.

Use buttons on the **SAP Steps** tab of the **SAP Job Definition** dialog to add, edit, delete and move various types of job steps.

- Clicking the **Add Step** button displays a list of the types of steps available:
- Selecting the **ABAP Program** option displays an **SAP Job Step Details** dialog with an **ABAP Program** tab. Define a new ABAP job step by entering the appropriate information.
- Selecting the **External Program** option displays the **SAP Job Step Details** dialog with an **External Program** tab. Define a new external program job step by entering the appropriate information.
- Selecting the **External Command** option displays the **SAP Job Step Details** dialog with an **External Command** tab. Define a new external command job step by entering the appropriate information.
- If the connection is to a BW instance, two additional job step options are available. Selecting the **Infopackage (BW)** option displays the **SAP Job Step Details** dialog with an **Infopackage** tab. Define an infopackage job step by entering the appropriate information.
- Selecting the **Process Chain (BW)** option displays the **SAP Job Step Details** dialog with a **Process Chain** tab. Define a process chain job step by entering the appropriate information.



**Note** No other job steps can be added to a job if an infopackage or a process chain job step is selected.

- Clicking **Edit Step** after selecting a job step displays the **SAP Job Step Details** dialog showing the characteristics of the job step.
- Clicking **Delete Step** deletes a selected job step.
- Clicking the **Move Up** or **Move Down** button changes the sequence in which the selected job step is executed.
- Clicking the **Clear** button, deletes the job steps displayed in the **SAP Job Steps** pane.

- **If job creates children, evaluate status of both parent and children** – Selected by default, this option ensures that the status of the parent job cannot be evaluated until all of the child jobs it generates have completed. This means that the success of the parent job is determined by the success of its children. A child job that completes abnormally will ensure that the parent job completes abnormally also. If this option is cleared, the status of the parent job is determined as soon as it completes regardless of the status of its children. This means that the success of the parent job is independent of the successful completion of its children.
- **Include application log in the job output** – Deselected by default. When selected and if a program creates an application return code that writes entries to the applicaiton log, the applicaiton returns code and the content of the log is displayed. The **Save Output** option on the **Job Definition** dialog must be set to **Append** or **Replace with Summary Only** option deselected.

**Step 10** Click **OK**.

## Copying Job Steps from an Existing SAP Job

You can create a new SAP job in TES based on a CCMS job that has already run or has been scheduled with a unique SAP job ID. The new job will either be linked to the original job or it will be a copy of the original.

**To copy job steps from an existing job:**

- 
- Step 1** Click **Import** to load the job steps from the SAP job entered in the **Copy Existing SAP Job** list to the TES database.
- Step 2** Click **Link** to display data in the **SAP Job Steps** pane from the SAP job in the **Copy Existing SAP Job** list. This creates a link to the job's definition in the SAP database.

## Linked Jobs vs. Imported Jobs

If your new job is linked to the original job, it refers back to the original definition when it runs. If you make changes to the job steps of a linked job, the changes are made directly to the SAP database.

If your new job is imported from an existing job, the data is copied to the TES database and any changes apply to the copy, not the original SAP job. Importing a previously run (or scheduled) job is equivalent to using the original job as a template, so the new job has no further connection to the original job.

- On the **SAP Steps** tab of the **SAP Job Definition** dialog, you can enter a job mask to create a pick list in the **Copy existing SAP job** list.

You can click the down arrow button to display a list of the existing jobs in the SAP instance matching the job mask entered.

If you do not use a mask, the following warning message is displayed:

“You have requested retrieval of all SAP jobs. This can take several minutes. Due to the large number of results only the first 200 records will be retrieved. You may also want to use a job mask to limit the number of results. Do you still want to proceed?”

Clicking OK will retrieve the first 200 records. TES provides a couple of ways to filter through the SAP jobs. If you have some idea of the job name, you can enter a few letters and use wildcard characters to filter the number of jobs displayed in the list. Note that only uppercase letters without any spaces are accepted.

**Note**

The jobs that are available are restricted by the system configuration setting for the Copy Existing SAP Job list. See [Adding an SAP Connection to TES, page 2-16](#).

For example, enter **C\*** to limit your search to jobs with names starting with **C**.

**Note**

In the Copy Existing SAP Job list, the number in brackets to the right of each job is the unique SAP ID (Job Count) number assigned by SAP to each job instance.

If you do not know the job name or there are numerous jobs with similar names, you can click on the **Browse** button to display the **SAP Job Selection** dialog and use additional criteria to filter the existing SAP jobs.

Job Name	Job Count	User	Status	Start Date	Start Time
MIKE_AFTER_EVENT1	12364000	MEAGLESEN	F	2012.3.23	12:37:33
MIKE_AFTER_EVENT1	14235500	MEAGLESEN	F	2012.3.22	14:25:14
MIKE_AFTER_EVENT1	14335700	MEAGLESEN	F	2012.3.22	14:34:20
MIKE_AFTER_EVENT1	14365200	MEAGLESEN	F	2012.3.22	14:37:19
MIKE_AFTER_EVENT_JOB1	16271500	MEAGLESEN	F	2012.10.12	16:28:25
MIKE_AFTER_EVENT_JOB1	17070300	MEAGLESEN	F	2012.10.12	17:22:19
MIKE_AFTER_EVENT_JOB1	21022100	MEAGLESEN	F	2012.10.8	21:6:8
MIKE_AFTER_EVENT_JOB1	21025700	MEAGLESEN	F	2012.10.8	21:6:8
MIKE_AFTER_EVENT_JOB2	22500200	MEAGLESEN	F	2012.10.1	22:56:7
MIKE_AFTER_EVENT_MIKE1	20051000	MEAGLESEN	F	2012.3.16	23:38:11

From the **SAP Job Selection** dialog, you can search for an SAP job by any combination of the following criteria: job name, user name, a date and time range or by the SAP job status.

Enter the criteria and click the **Refresh** button to display a list of jobs that meet the specified criteria (Transaction SM37). Modify the criteria and again click **Refresh** to refine the list of selected jobs.

For added convenience, you can also use this screen to selectively delete an SAP job rather than load a copy of it. Select it from the list of displayed jobs and click the **Delete** button.

To quickly remove your job selection criteria, click the **Defaults** button to restore the default selection criteria.

- To select an SAP job to copy, select a job in the list of displayed jobs and click **OK**.
- a. To clear the job and all its related steps, click **Clear**. This removes *all* the information on the **SAP Steps** tab of the **SAP Job Definition** dialog, but leaves the **SAP Job Name**, **Job Class**, **Owner** and **Parent Group** fields intact. Any information entered on other tabs also remains intact.



- b. To copy the job steps of the selected job to the current job definition, click the **Import** button. This allows you to use the original job as a template and makes this a completely new job with no connection to the original job. The name of the copied job is cleared from the **Copy Existing SAP Job** pane to indicate that the jobs are no longer linked.
- c. To link the current job definition to the selected job, click the **Link** button. The job steps from the job are shown.



**Note** You cannot modify the individual job steps that comprise the linked job. You can only view these steps.

**SAP Job Definition**

SAP Job Name: SAP\_LINKED1

Job Class:

Parent Group:

Owner: qatest

OK Cancel

SAP Steps Schedule Run Dependencies Resources Job Events Options Run Book Notes Images

SAP Job Steps

Step	Name	Variant/Parms	Type
1	RSEOUT00	MIKE2	ABAP/4

Add Step View Step Delete Step Move Up Move Down Clear

Copy Existing SAP Job

MIKE\_DEV13\_RSEOUT00\_RT\_VAR[17075800] Import Link

☒ If job creates children, evaluate status of both parent and children

☐ Include application log in the job output

☒ Enabled

Spool List Recipient

To remove the link between the jobs, click the **Import** button.

Check the **Include application log in the job output** checkbox to include application log content and application return code in the job output tab.

Click the **Spool List Recipient** button to pass an email address as recipient for the spool list of a job via the **Recipient Determination** screen.



**Note** In order to use corrections for SAP, Note 1171295 must be in the SAP System.

**SAP Job Definition [TES\_TEST]**

SAP Job Name: TES\_TEST

Job Class: [ ]

Parent Group: [ ]

Owner: jjin

Buttons: OK, Cancel

Tabs: SAP Steps, Schedule, Run, Dependencies, Resources, Job Events, Options, Run Book, Notes, History, Images, Reports

**Recipient Determination**

Email Recipient: qatest@tidalsoft.com

General attributes:

- ☒ Copy
- ☐ Blind copy
- ☐ Express
- ☐ No forwarding

Confirmation:

Send Message: Always report send status

Email Status: Send status email only in case of an error

☐ No Print

Buttons: OK, Cancel

Buttons: Add Step, Edit Step, Delete Step, Move Up, Move Down, Clear

Copy Existing SAP Job: [ ]

Buttons: Import, Link

☒ If job creates children, evaluate status of both parent and children

☒ Include application log in the job output

☒ Enabled

Spool List Recipient

Last Modified : 08/06/2012 10:15:18

Step	Type
1	AP/4
2	AP/4
3	AP/4
4	AP/4
5	AP/4

This dialog contains the following elements:

- **Email Recipient** – enter the email address for the recipient
- General attributes
  - **Copy** – select this option if you want the email copied to you
  - **Blind copy** – select this option if you want the recipient Blind copied.
  - **Express** – select this option to express the email.
  - **No forwarding** – select this option if you do not want the email forwarded.
- Confirmation
  - **Send Message** – select the settings for sending the message
  - **Email Status** – select the settings for the email status
  - **No Print** – do not print the email

## Defining New Job Steps

As an alternative to importing or linking to an existing SAP job, you can manually add various types of steps to a job as described in these sections:

- [Adding an ABAP Job Step](#)
- [Adding an External Program Job Step](#)
- [Adding an External Command Job Step](#)
- [Adding an Infopackage Job Step](#)
- [Adding a Process Chain Step](#)

## Adding an ABAP Job Step

To add an ABAP job step:

- Step 1** On the **SAP Steps** tab of the **SAP Job Definition** dialog, click **Add Step** and select the **ABAP Program** option to display the **SAP Job Step Details** dialog.

The screenshot shows the 'Sap Job Step Details' dialog box. At the top, it displays 'Job Name: SAP', 'Sap Job Step: 1', and 'Step Type: ABAP Program'. There are 'OK' and 'Cancel' buttons. Below this are three tabs: 'ABAP Program' (selected), 'Print Parameters', and 'Archive Parameters'. In the 'ABAP Program' tab, there is a text field for 'ABAP Program' containing 'BTCTEST' and a 'Define Variant' button. Below it is a 'Variant Name' field containing 'ABC' with 'View', 'Override', and 'Delete' buttons. A 'Language' field is empty. There is a checkbox for 'Enable Temporary Variant'. Below this is a table titled 'Variant Values' with columns: 'Parameter', 'Value(Low)', 'Value(High)', and 'Override(Lo Ov)'. The table has one row: 'TESTNAME[TESTNAME]', an empty cell, an empty cell, and 'TESTNAME'. At the bottom, there is a 'Runtime Variant' field and a 'Variables' button.

The following are completed by default:

- **Job Name** – The name given the job during its initial definition.
- **SAP Job Step** – This number corresponds to the current step sequence number.
- **Step Type** – The option selected (for this example, **ABAP Program**.)

- Step 2** On the **ABAP Program** tab, select or enter the name of an existing program in the SAP instance you are connected to.



**Note**

After clicking on the list button, a dialog warns that you must narrow your search using the \* wildcard along with a prefix and/or suffix. If nothing is typed in the ABAP program field and the search list control, the ABAP program field would be filled with "\*" asterisk (\*) in the pane. Enter the first few letters of the desired ABAP program in front of the \*, to display a shortened list of ABAP programs that match the criteria.

- Step 3** In the **Language** field, enter the 2-digit language code. You can also configure default ABAP job step language from the **Connection Definition** dialog, **Options** tab, **Parameters** subtab. For example, use **LANGUAGE=CH** under the **Connection Definition** dialog, **Options** tab, **Parameters** subtab. If nothing is specified for LANGUAGE parameter in the ABAP job step language field, default language will be system default. In order to have **Job Log, Summary Only** option of Job Definition in TES, displayed in configured within SAP desired language, LANGUAGE parameter must be set for connection used by the job.
- Step 4** If variants are defined for this program in the SAP instance, they are available from the **Variant Name** list. Select the variant by clicking on the variant name search list control.

You can create an ABAP job with a temporary variant by checking the **Enable Temporary Variant** checkbox. In order to utilize temporary variant feature, corrections of SAP, Note 1171295 has to be applied to the SAP system..

You can modify an existing variant or define a new variant. Enter a name for the variant and click the **Define Variant** button to display the **Define Variant** dialog.



**Note** The Delete Variant is only supported with SAP Systems of XBP, version 3.0. Corrections of SAP Note 1171295 must be applied to the SAP system.



**Note** The Delete Variant is only supported with SAP Systems of XBP, version 3.0.

You can narrow your search using the \* wildcard along with a prefix and/or suffix.

**Step 5** The **Variant Values** section displays a list of parameters and their current values for the selected variant. A range of values from **Low** to **High**, can be provided for any parameter. You can replace any of the existing values by selecting the desired row on the **Variable Values** pane and clicking the **Override** button. The **Override Variant Value** dialog displays.

If only a single value is provided then it is considered a low value and there is no high value to override. Each value can be replaced with a variable, accessible from the **Variables** button at the bottom of the tab. Using a variable, assigns a value for the variant parameter at runtime.

In order to display parameters and their current values in the **Variant Values** list, a variant has to be selected from the **Variant Name** list then the **View** button clicked. The displayed values are always listed in SAP internal format. For example, a date value will always be displayed in `yyyymmdd` (internal format), even though the user profile for the user may list a different date format. The same is also true of numeric formats. What this means is that if a date/numeric value is overridden, the new value should conform to the displayed internal format. This is especially true when runtime variable replacement is used in place of a hard-coded value (i.e., **Variables** button). In this case, the value associated with the system or user variable must conform to this internal format.

You can right-click within the **Variant Values** pane to access a menu of options. The options are:

- **Restore overrides** – Restores the original override values from the TES database.
- **Restore original** – Restores the original values from the SAP database.

Parameter	Value(Low)	Value(High)	Override(Low/Override(High)
TESTNAME[TESTNAME]	123456	123456	

If any of the original values are replaced with new values the original values are overridden when the job runs and the variant is updated with the new values.

The **Runtime Variant** pane is used to clone the variant. If you want to substitute different values for an existing variant and yet maintain the original values of the variant, you should clone it. Enter a name in the **Runtime Variant** pane and modify the values as needed. When the job runs, a clone of the variant is created with the name specified and using the overridden values.

To clone an exact copy of the variant, enter a name in the **Runtime Variant** pane and make no changes to the current variant. If needed, a variable can be used in this pane to dynamically assign the new variant a name at runtime. The new variant is created at runtime and will be available in the **Variant Name** list.

**Step 6** Click the **Print Parameters** tab.

**Sap Job Step Details**

Job Name: MIKE\_NW8\_DEFINE\_VARIANT\_J1  
Sap Job Step: 1  
Step Type: ABAP Program

**Print Parameters** (Selected Tab)

☒ **Print**

Output Device: EMAI(PDF1) | Copies: 1

Spool Request/Options: ☒ **New Spool Request**

Name: | Authorization: |

Title: |

Print Priority: 5 Medium | Spool Retention: Delete after 8 days

Print Settings: Report Page: 0 | Rows: | Report Width: 0 | Columns: | Format: |

☐ Delete after printing  
☐ Print immediately

Cover Sheets: Sap Cover Page: D | OperSys Cover Page: D | Selection Cover Page: ☐

Recipient: MEAGLE | Department: |

OK Cancel

This tab contains various options to configure the output from a ABAP program that creates spooled output. You can choose to discard, print and/or archive the output from an ABAP step. If you do not want to print or archive the job output, then leave the **Print** option on the **Print Parameters** tab unselected.

The options include:

- **Print** – Specifies that the output from the SAP job should be printed.
- **Output Device** – Displays a list of output devices (like a printer or fax machine) defined in SAP.
- **Copies** – The number of copies of the output to generate.
- **New Spool Request** – Specifies that the output from this job will generate a new spool request. If this option is not selected, the output will be appended to an existing spool request with similar print parameters that has not yet completed. If no spool request currently exists with the same values as specified in the **Name**, **Output Device**, **Number of Copies** and **Format** fields, then a new spool request is created.
- **Name** – The name of the print spool request. The default name is the report name, and the first three letters of the user name separated by an underscore character (\_). You can change this name if desired.
- **Authorization** – The authorization code that enables a user to access the contents of the spool request.
- **Title** – A description of the spool request, used to help identify this spool request among numerous other spool requests.

- **Print Priority** – The level of priority assigned to the job that determines its ranking in the spool request queue. One is the highest priority.
- **Spool Retention** – The number of days to store the spool request before deleting it. The options range from storing the spool request from one to eight days before deleting. A **Do not delete** option is also available.
- **Report Page** – The number of rows (or lines) used to configure the length of output on each page. The selected format determines the maximum number of lines on a page. Rather than change this setting, it is recommended to change formats.
- **Report Width** – The number of single-space columns that determines the width of the output on the page. The maximum width is 255 characters through the maximum number of columns on a page is determined by the format that is selected. Rather than change this setting, it is recommended to change formats.
- **Format** – Select a defined format for the selected output device from the list. Formats specify paper sizes and options available for an output device.
- **Delete after Printing** – Deletes the spool request after it is sent to the output device. If this option is not selected, then the spool request is saved until its specified retention period expires. This option is usually used to conserve disk space by not saving unnecessary spool requests.
- **Print Immediately** – The job's spool request bypasses the normal spool request queue and is sent directly to the output device. This is often used for small jobs.
- **SAP Cover Page** – Specifies a cover sheet with the output sent to the printer. Includes information detailing the recipient name, department name, format, etc.
  - Leaving this option blank means no cover sheet will be printed.
  - **D** is the default setting. Whether or not a cover sheet is printed is determined by the setting for the output device.
  - **X** will print a cover sheet.
- **OperSys Cover Page** – A host spool cover page that is defined in the operating system. “D” is the default setting where the cover page is determined by the default setting for the output device. Leaving the space blank results in no cover sheet.
- **Selection Cover Page** – Selecting this option prints a cover sheet listing the selection criteria of a program.
- **Recipient** – The user name of the recipient for the spool request printed on the SAP cover page. The default recipient is the current user.
- **Department** – The department where the spool request originated printed on the SAP cover page.

**Step 7** Click the **Archive Parameters** tab.

**Step 8** Select the **Archive** option and enter valid values for the text fields.

- **Object Type** – Specifies the type of data object in ABAP. The type of data object determines how ABAP processes it.
- **Doc Type** – A category assignment to organize documents based on the document's characteristics and its purpose.
- **Info** – A master record containing descriptive and control information used to manage the file.

**Step 9** For more information about SAP archiving, see your SAP documentation or consult your SAP Administrator.

**Step 10** Click **OK**. The selected ABAP program now appears as a step on the **SAP Steps** tab of the SAP job definition.

## Adding an External Program Job Step

To add an External Program job step:

**Step 1** On the **SAP Steps** tab of the **SAP Job Definition** dialog, click **Add Step** and select the **External Program** option to display the **SAP Job Step Details** dialog.



The following text fields are completed by default:

- **Job Name** – The name given the job during its initial definition.
- **SAP Job Step** – The number corresponds to the current step sequence number.
- **Step Type** – The option selected (in this example, **External Program**.)

**Step 2** In the **External Program** field, enter the name of the executable to run, including the path.

**Step 3** On the **Program Parameters** section, enter any arguments to the command.



**Note** To add TES variables to a text pane, click Variables and choose from the displayed list.

**Step 4** In the **Target Host** field, enter the host name of the machine that will run the program. This is required for the program to run successfully.

**Step 5** Click **OK**.

The external program selected now appears as a step on the **SAP Steps** tab of your SAP job definition

## Adding an External Command Job Step

To add an External Command job step:

**Step 1** On the **SAP Steps** tab of the **SAP Job Definition** dialog, click **Add Step** and select the **External Command** option to display the **SAP Job Step Details** dialog.

**Sap Job Step Details**

Job Name: MIKE\_R47\_EXTCMD\_VAR

Sap Job Step: 1

Step Type: External Command

External Command

Z\_PING[Windows NT]

Parameters

-n <Number - 11.3> 127.0.0.1

Variables

Target Server

sapr47

Operating System

Windows NT

The following text fields are completed by default:

- **Job Name** – The name given the job during its initial definition.
- **SAP Job Step** – The number corresponds to the current step sequence number.
- **Step Type** – The option selected (for this example, **External Command**.)

- Step 2** Before selecting an external command, you should go to the **Operating System** list and select the operating system that the external command will run on. This narrows down a potentially long list of commands by restricting the external commands to only those commands relevant to the selected operating system.
- Step 3** From the **External Command** list, select an external command. The operating system that the command requires is displayed in parentheses after the command. If you have already made a selection in the **Operating System** list, only those commands for that operating system are shown.
- Step 4** In the **Parameters** field, enter any required parameters for the external command. From the **Variables** button below the text pane, you can select TES variables to use as parameters.
- Step 5** In the **Target Server** field, specify the machine (application server) where the external command will run.
- Step 6** Click **OK**.

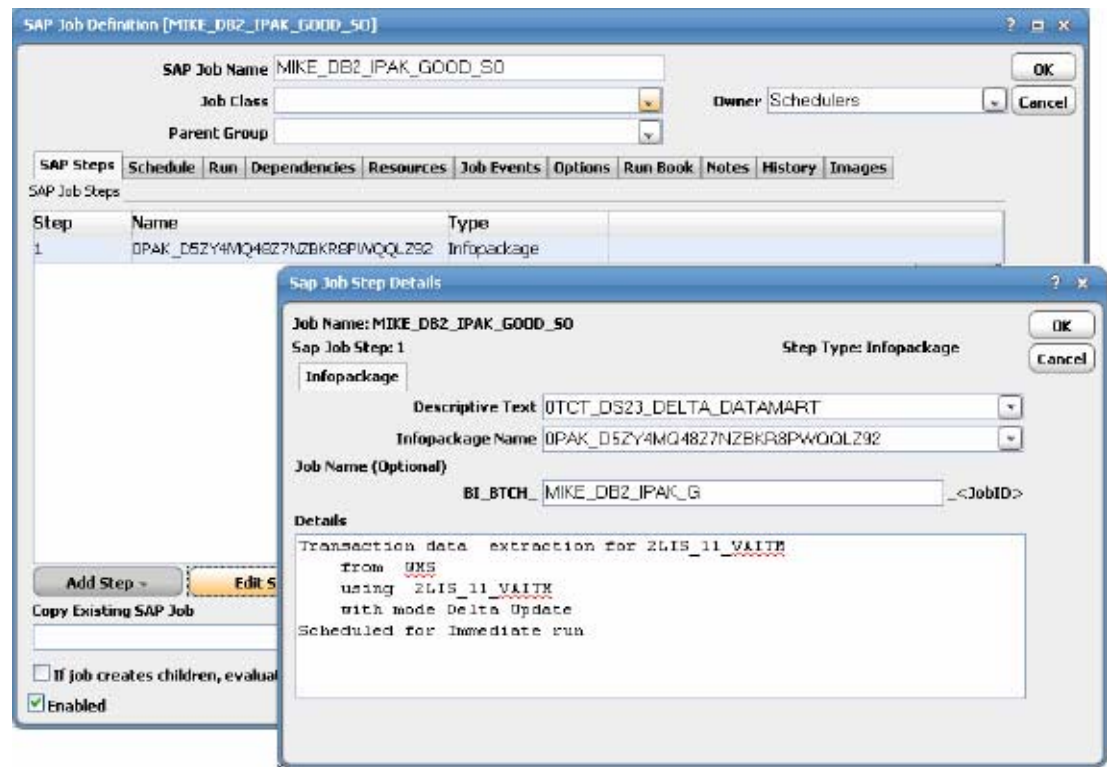
The external command selected now appears as a step on the **SAP Steps** tab of your SAP job definition.

## Adding an Infopackage Job Step

If you are creating an SAP job with a BW infopackage, the job can only consist of a single job step. The job that runs an infopackage generates a CCMS job and a request that is processed. The job can only complete successfully if both of these complete successfully.

### To add an infopackage job step:

- Step 1** On the **SAP Steps** tab of the **SAP Job Definition** dialog, click **Add Step** and select the **Infopackage (BW)** option to display the **SAP Job Step Details** dialog.



The following text fields are completed by default:

- **Job Name** – The name given the job during its initial definition.
- **Sap Job Step** – This number corresponds to the current step sequence number.
- **Step Type** – The option selected (Infopackage.)

- Step 2** Select an infopackage by either its name or descriptive text. Since there may be thousands of defined infopackages, it is recommended to use the wildcard \* to create a mask to filter down to a more manageable number of possibilities. Whether you are searching in the **Infopackage Name** list or the **Descriptive Text** list, a number denoting the quantity of matches to the search is displayed in parentheses ( ) to the right of the **Descriptive Text** pane. Selecting an infopackage displays it in the Details pane.

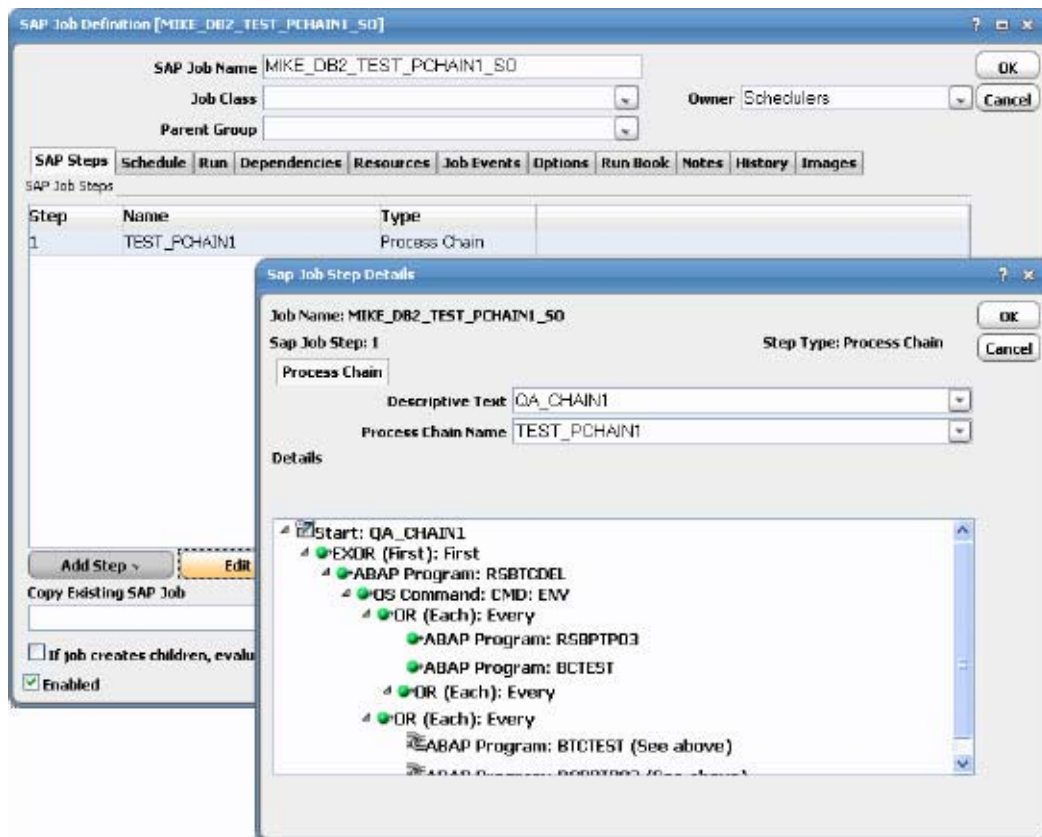
- Step 3** By default, TES assigns a job name to the selected infopackage that is the same as the TES job name (plus the required BI\_BTCH prefix and a <JobID> suffix that is filled in at runtime). Though the prefix and suffix cannot be altered, the part of the name referring to the TES job can either be changed, left blank or unchanged. If unchanged or left blank, it will be defaulted to first 16 characters of a job name when definition is saved.

## Adding a Process Chain Step

It is recommended, whenever possible, that process chains be converted into job groups in TES so that each process in the chain is a separate job. This provides better external management of the tasks within the chain and allows dependencies and alerts to be assigned in TES to individual tasks. However, TES can process existing process chains.

To add a Process Chain step:

- Step 1** On the **SAP Steps** tab of the **SAP Job Definition** dialog, click **Add Step** and select the **Process Chain (BW)** option to display the **SAP Job Step Details** dialog.



The following text fields are completed by default:

- **Job Name** – The name given the job during its initial definition.
- **SAP Job Step** – This number corresponds to the current step sequence number.
- **Step Type** – The option selected (Process Chain.)



**Note** TES can only start a process chain that has the attributes to either Start Immediately or to start via Meta Chain.

**Step 2** Select a process chain by either its name or descriptive text. Since there may be many defined process chains, it is recommended to use the wildcard \* to create a mask to filter down to a more manageable number of possibilities. Whether you are searching in the **Process Chain Name** list or the **Descriptive Text** list, a number denoting the quantity of matches to the search is displayed in parentheses ( ) to the right of the **Descriptive Text** list. Selecting a process chain displays it in the **Details** pane as a process tree.

The icons in front of each process are color-coded to show the required status of its predecessor. A green color requires that the predecessor process complete successfully while a red color means the predecessor process does not complete successfully.





# Working with SAP Jobs

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## Overview

When working with SAP jobs in TES, users need to contend with several unique issues that do not apply in normal TES operations:

- Tracking the various job steps within parent-child job relationships.
- Controlling unauthorized jobs submitted ad-hoc from within SAP that may divert system resources from the planned production schedule.
- Assigning a job class priority for SAP jobs defined in TES.

This chapter covers these topics:

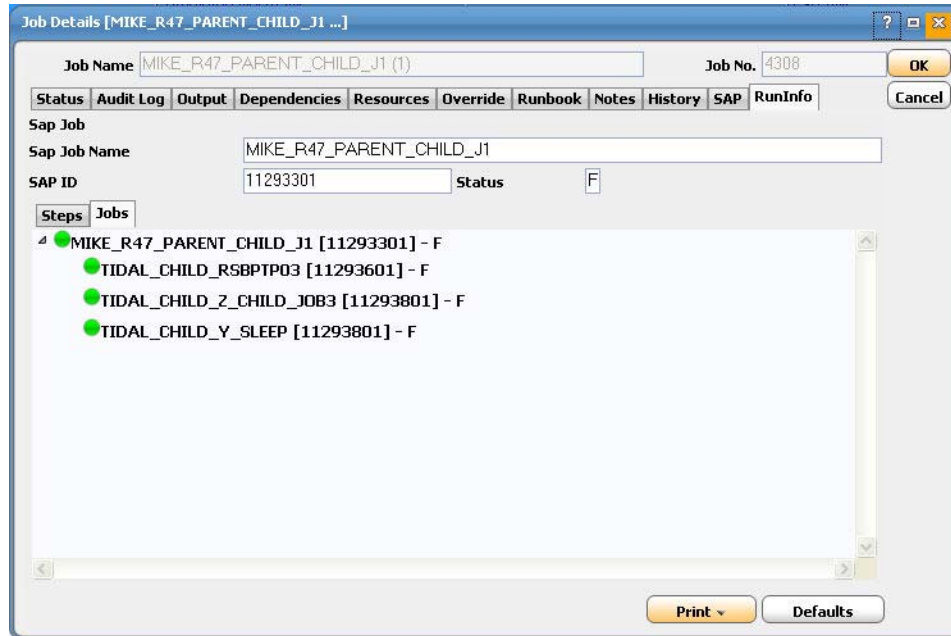
- [Parent-Child Jobs in SAP](#)
- [Managing User-Submitted SAP Jobs](#)
- [SAP Job Class](#)
- [SAP Job Procedures](#)
- [Defining SAP Events](#)
- [Best Practices for Using the SAP Adapter](#)
- [Troubleshooting the SAP Adapter](#)
- [Controlling Adapter and Agent Jobs](#)

## Parent-Child Jobs in SAP

Some SAP jobs produce child jobs that need to be tracked as a family of jobs. The parent job is considered active until it and all of its children jobs and other descendents complete, even if the parent job itself has completed. Only the parent job created in TES is displayed in the TES console. You can drill down to the descendents of this parent, if any, by displaying the **Jobs** tab of the **RunInfo** tab of the parent job's **Job Details** dialog. These child jobs are displayed in a job tree to illustrate their relationships and are color-coded and assigned a letter to indicate each job's current status.

The following table displays the code statuses used when displaying parent-child relationships in a job tree.

Color	SAP Status	TES Status
Green	F	Completed Normally
Red	A	Completed Abnormally
Yellow	R	Active
Gray	S	Scheduled



The **RunInfo** tab of a job without child jobs displays only the steps that comprise the job but if the job is a parent job, it is divided into a **Jobs** tab and a **Steps** tab. Click on the **Jobs** tab to see the job tree of the parent-child-grandchild relationships.

As with any other TES job, you can view job output on the **Output** tab of the **Job Details** dialog. The job log and spooled output are consolidated for the parent job and its descendents.

Be aware that there may not be any visible output from an SAP job because either the job does not produce output, the job completed abnormally or the job was configured (on the **Options** tab) to discard job output.

## Managing User-Submitted SAP Jobs

A dynamic production environment requires a way to manage jobs that are submitted outside of the TES. While end users may run unscheduled jobs, high volumes of these jobs will impact the timely completion of the day's production schedule. On the other hand, the production manager must ensure enough flexibility exists in the system to accommodate the inevitable unscheduled jobs that occur during a production day. The need for balancing system resources between scheduled and unscheduled jobs is heightened by the limitations on the number of available background work processes in SAP.



To improve manageability, TES's queue management facility supports a queue filter that can be configured to monitor an SAP instance for jobs submitted by users or programs and assign them to a designated queue where they can be managed. By intercepting such jobs and directing them to designated queues, the launching of them can be regulated with priorities and limits of both jobs and queues, to manage resources better.

This queue filter, called *SAP Jobs (Intercepted)*, can be created to designate a queue or queues that will capture any submitted SAP jobs that do not belong to the day's production schedule.

With this interception filter monitoring for SAP jobs, you can separate jobs generated outside of TES from other scheduled jobs and direct those SAP jobs to different queues where the jobs are controlled by the Queue Manager using the same limits on jobs, priorities and hierarchies typically assigned to a queue. You can add as many SAP queue filters as needed to cover any combination of users, jobs and instances. By intercepting these SAP jobs before they are launched, TES can manage system resources by controlling when the jobs are launched based on queuing rules.

**Note**

Do not configure two different TES masters to intercept jobs from the same SAP system. Neither Tidal nor SAP are designed to accommodate simultaneous interception with multiple schedulers and will produce erratic results.

## How the SAP Job Interception Filter Works

A few scenarios will help illustrate how the **SAP Jobs (Intercepted)** queue filter works to manage the launching of SAP jobs.

For the scenarios, let us assume that an SAP parent queue contains two child queues—one for externally submitted jobs and one for production jobs created by TES. The externally scheduled jobs queue (called SAP Queue for External Jobs in this example) also has an SAP interception filter defined, with a limit of one, and the production queue (called SAP Queue for Tidal Jobs) has a Production SAP Connection filter and a queue limit of 3.

Release a scheduled job from TES. It will go to the SAP Queue for Tidal jobs, launch and go into an Active status since an execution slot is available.

From SAP GUI, release a job (using the same user defined in the SAP interception filter). Since there is a queue with a defined SAP job interception filter, the unscheduled job goes to the SAP Queue for External Jobs. There is an execution slot available so the job is launched and the SAP queue for externally scheduled jobs shows the job is active.

Again from the SAP GUI, release another job (again as the same user defined in the SAP interception filter). This job also is directed to the SAP Queue for External Jobs. However, there is no execution slot available since the queue has a queue limit of one. You can see that one job is active and the other is waiting. Instead of unexpectedly interfering with the production workload, the external SAP job is captured by a queue and held up based on the criteria defined for this queue.

Normally, the second job cannot run until the first external job completes because of the queue limit. However, an authorized operator can override the defined queue criteria and release an SAP job that is waiting.

You can view the active and waiting jobs for a queue by double-clicking on the queue and selecting the **Current Jobs** tab. The ID, job name, status, duration, user name, node ID, external ID and priority of a queue's active and/or waiting jobs can be viewed. If a large number of jobs are in the queue, you may only want to see either just the active or just the waiting jobs. In any case, you must select at least one of the options or no jobs will display on the tab. The numbers next to the check boxes indicate how many of that type of job are in the queue.

You can release jobs that are waiting (or cancel a job if it is active) from the **Current Jobs** tab of the queue's definition dialog.

Queue Definition (Edit Mode)

Queue Name: SAP Intercepted - BI3

Parent: System Queue

Limit: 1

Priority (1 Low/100 High): 50

Filters: Bumping: Current Jobs: Description:

☒ Active Jobs: 1

☒ Waiting Jobs: 2

ID	Job Name	Status	Duration	User Name	Priority	External ID
67108874	MIKE_INTERCEPTED_JOB1	Waiting On Resource	0 min	MEAGLESEN	50	00005800
67108875	MIKE_INTERCEPTED_JOB1	Waiting On Resource	0 min	MEAGLESEN	50	00011600
67108873	MIKE_INTERCEPTED_JOB1	Active	0 min	MEAGLESEN	50	23570800

Release  
Cancel  
Refresh

☒ Enabled

Hours: From: To: ☒ (Always)

Select one of the jobs on the **Current Jobs** tab and right-click to display a context menu of options. Select the **Release** option to launch a waiting job immediately. (The user must be authorized with the appropriate security functions to be able to use the job control menu options.)



#### Warning

**The job that is in Waiting on Resource status can be released even if this would cause a queue to exceed its limit.**

The context menu also allows you to manually refresh the queue status.

Releasing a job that is waiting results in the following queue situation where the active jobs in a queue exceeds its defined limit.

The listing of current jobs in the queue has the following columns of information about the jobs:

- **ID** – The identification number assigned to the job by TES.
- **Job Name** – The name of the job.
- **Status** – The current status of the job in TES.
- **Duration** – The time in minutes that a job has remained in its present status within the queue.
- **User Name** – The name of the user that created the job.
- **Priority** – The priority number assigned to the job.
- **External ID** – The identification number assigned by jobs created in applications other than TES. For SAP, this is the SAP Job Count (ID).
- **Node ID** – The identification number for the node assigned.



#### Note

When upgrading to TES 6.1 with SAP Event(s) or/and Queue(s) containing SAP Jobs (Intercepted) filters defined, post upgrade following steps must be performed:

#### SAP Event

1. Ensure an Event Profile with matching criteria exists and is active within the SAP System (SAP Transaction: SE38 / Program: CRITERIA\_MANAGER).
2. If an Event Profile does not exist, edit the monitoring SAP Event(s) connection in TES by selecting the Create/Manage Event Profile option on the Options>Profile tab and specifying the Event Profile Name.
3. After saving the changes, the disable, then re-enable the connection. This deactivates the existing active SAP Event Profile (if any) within SAP, and then creates and activates new Profile.

Event Criteria is added to it based on the SAP Event defined in TES. The SAP Event must be enabled for the criteria to be added to the Profile. Disabling the event clears corresponding criteria from the Profile.

### SAP Interception

1. Select the Create/Manage Interception Profile option on the Options>Profile tab and specify the Interception Profile Name for every intercepting connection in TES.

The Interception will not work post upgrade unless the Create/Manage Interception Profile option is selected.

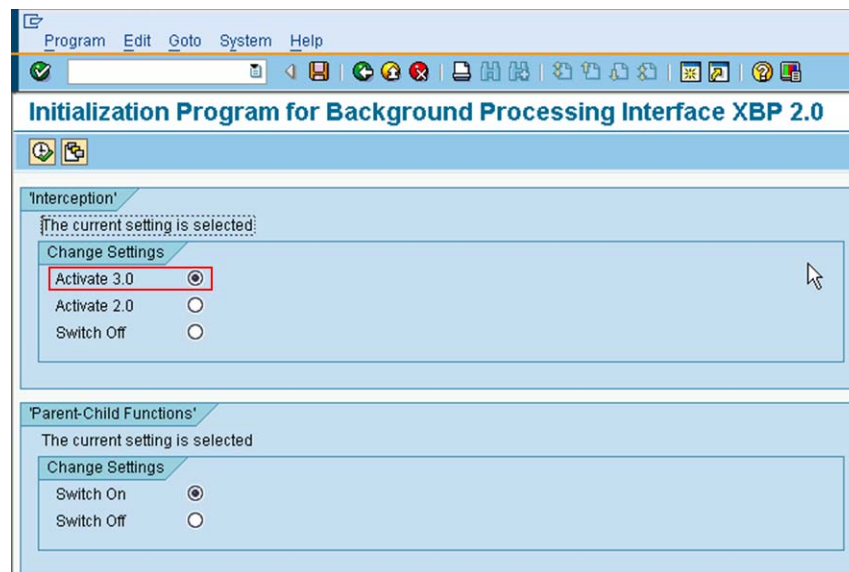
## Interception Profile



### Note

This feature is only be available for SAP Systems with the XBP 3.0 Interface.

For the interception to be successful, the current setting within SAP for the interception should be set to **Active 3.0**. To verify, run TR, SE38, and then execute the /(F8) INITXBP2 program.



Criteria Hierarchy of the Interception Profiles

A criteria hierarchy is stored in a criteria profile and can be active or inactive.  
For the criteria in a profile to take effect, the profile has to be active. You can have many profiles, but only one can be active.



Note

While criteria in the profile can be managed by different Masters, Interception will only work for one at a time!



Warning

To be able to add interception criteria to an existing profile, the criteria hierarchy format must be followed! "OR" Node must be created under root "AND" Node. Each "AND" Node to follow would represent one SAP Jobs (Intercepted) queue filter.

AND OR Criterion

Criteria Hierarchy of the Profile INT\_PROFILE\_TES

AND

OR

AND

OR

TES-8BA2ECX35\_

TES-8BA2ECX35\_

TES-8BA2EC\_35\_

AND

OR

TES-28B823X28\_

TES-28B823X28\_

TES-28B823\_28\_

Change

Description	Field	Option	Lower Limit	Upper Lim
TES-28B823_28_	AUTHCKMAN	001		
	JOBCLASS	*		
	JOBNAME	TES_INTERCEPTED_*		
	SDLUNAME	TESUSER		
TES-28B823X28_	JOBCLASS	B		
	JOBNAME	TES_INTERCEPTED_!!		
TES-8BA2EC_35_	AUTHCKMAN	001		
	JOBCLASS	*		
	JOBNAME	TES_JOB*		
	SDLUNAME	TIDAL		
TES-8BA2ECX35_	JOBCLASS	A		



Caution

If you do not follow this criteria hierarchy format, adding TES queue filter criteria to the existing criteria profile will result in failure.

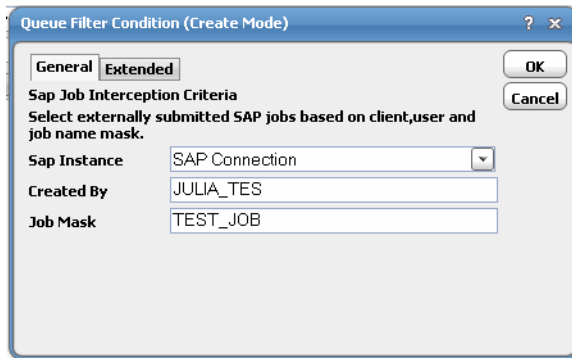
In a hierarchy:

- The Include condition must go under the “AND” node.
- The Exclude condition must go under the “OR” node.

The easiest way to verify the criteria hierarchy format is to have TES create an Interception Profile and its criteria. You can do so by selecting the **Create/Manage Interception Profile** option of the Connection Definition and then adding a Queue Filter, SAP Jobs (Intercepted) with Include and Exclude options defined.

For the criteria to be updated, the corresponding queue has to be disabled then re-enabled with every queue filter add or modify.

The filter to intercept SAP jobs can be created by clicking the **Add** button on the **Filters** tab of the **Queue Definition** dialog and selecting the **SAP Jobs (Intercepted)** option.

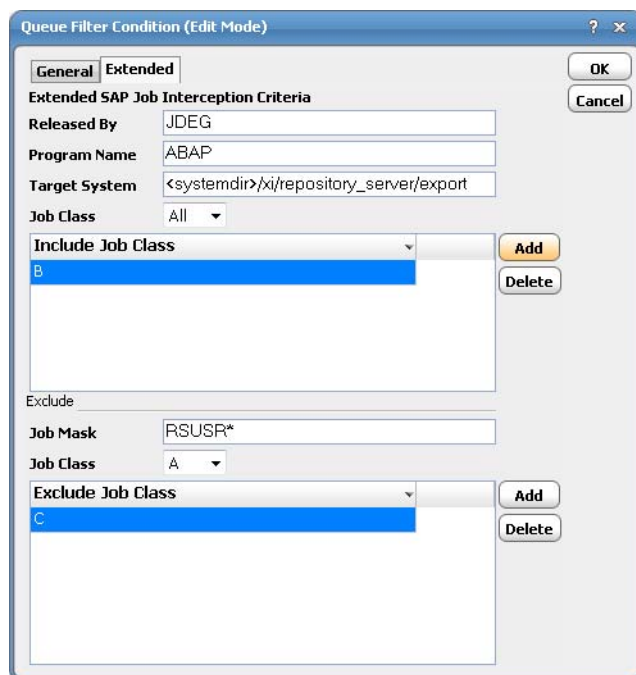


The dialog box is titled "Queue Filter Condition (Create Mode)". It has two tabs: "General" and "Extended". The "General" tab is selected. Below the tabs, the text "Sap Job Interception Criteria" is followed by "Select externally submitted SAP jobs based on client,user and job name mask." There are three input fields: "Sap Instance" with a dropdown menu showing "SAP Connection", "Created By" with a text box containing "JULIA\_TES", and "Job Mask" with a text box containing "TEST\_JOB". At the top right are "OK" and "Cancel" buttons.

The **General** tab contains the following elements:

- **SAP Instance** – Specifies the SAP instance that should be monitored for jobs scheduled outside of Enterprise Scheduler.
- **Created By** – Designates that the queue filter monitor for jobs submitted by the specified user (or creator) of the SAP jobs. A mask using the asterisk (\*) wildcard character can be used here.
- **Job Mask** – Creates a job mask with the asterisk (\*) wildcard character to intercept particular SAP jobs (though wildcards do not need to be used).

While the **General** tab of this dialog box contains the basic criteria most commonly used when filtering for SAP jobs, the **Extended** tab provides additional interception criteria.



The dialog box is titled "Queue Filter Condition (Edit Mode)". It has two tabs: "General" and "Extended". The "Extended" tab is selected. Below the tabs, the text "Extended SAP Job Interception Criteria" is followed by four input fields: "Released By" with a text box containing "JDEG", "Program Name" with a text box containing "ABAP", "Target System" with a text box containing "<systemdir>xi/repository\_server/export", and "Job Class" with a dropdown menu showing "All". Below these fields are two sections: "Include" and "Exclude". The "Include" section has a dropdown menu showing "B" and a list box containing "B". To the right of the list box are "Add" and "Delete" buttons. The "Exclude" section has a text box containing "RSUSR\*", a dropdown menu showing "A", and a list box containing "C". To the right of the list box are "Add" and "Delete" buttons. At the top right are "OK" and "Cancel" buttons.

This filter intercepts only SAP jobs that match all of the specified criteria.

The **Extended** tab contains the following elements:

- **Released By** – The user who released the job.

- **Program Name** – The name of the ABAP program specified to run in the SAP job definition.
- **Target System** – The name of the application server where the job will run.
- **Job Class** – Select the job class assigned to the job in SAP to include and then click Add. The priority of a job is determined by the job class it is assigned.
- **Job Mask** – Enter the job name or pattern that is used to match job(s) you want to exclude.

The following wildcards are supported in masks:

\* to match any string, for example BI\_PROCESS\_\* would match BI\_PROCESS\_ABAP and BI\_PROCESS\_OR.

? to match a single character, for example RSUSR?00 would match RSUSR200 and RSUSR400.

- **Job Class** – Select the job class assigned to the job in SAP to exclude and then click Add. Priority of a job is determined by the job class it is assigned.

Description	Field	Option	Lower Limit	Upper Limit
sjc-q10-cos62-B8966C_8_	AUTHCKMAN	=	001	
	JOBCLASS	[X]	*	
	JOBNAME	[X]	MIKE_INTERCEPTED_JOB*	
	SDLUNAME	=	MEAGLESEN	
sjc-q10-cos62-B8966CX8_	JOBCLASS	=	A	
	JOBNAME	=	MIKE_INTERCEPTED_JOB1	

The following job was defined to match all the criteria except Job Class. As a result, it ends up intercepted.

Job	Job Count	Job Created	Status	Start date	Start time	Duration (sec.)	Delay (sec.)
MIKE_INTERCEPTED_JOB1	16053600	MEAGLESEN	Intercepted			0	0
*Summary						0	0

The **Current Jobs** tab of the **Queue Definition** dialog for the queue defined to accept the intercepted SAP jobs displays all jobs that are active or waiting to run.

ID	Job Name	Status	Duration	User Name	Priority
67108865	MIKE_INTERCEPTED_JOB1	Waiting On Resource	0 min	MEAGLESEN	51

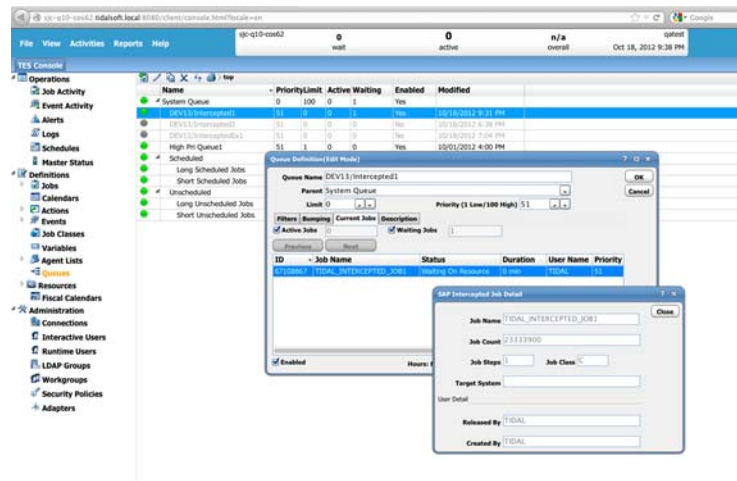


**Note**

Corresponding to Queue Filter, SAP Jobs (Intercepted) criteria will be removed from the Profile when the queue is disabled and added back when it is re-enabled.

You can double-click on any of the jobs listed on the **Current Jobs** tab to display the SAP Intercepted **Job Detail** dialog providing basic information about the SAP job.





The SAP Intercepted Job Detail dialog box contains the following elements:

- **Job Name** – The name of the SAP job.
- **Job Count** – The SAP Job Count ID number assigned to the job by SAP. In Enterprise Scheduler, this number is called the External ID number
- **Job Steps** – The number of job steps that comprise the job.
- **Job Class** – The job class assigned to the job in SAP. The priority of a job is determined by the job class it is assigned.
- **Target System** – The name of the application server that the SAP job will run on.
- **Release By** – The runtime user that released the job.
- **Created By** – The original user that created the job.

## SAP Job Class

SAP ranks job priority by assigning jobs to one of three job classes, A, B or C. (The “A” job class has the highest priority and the “C” class, the lowest priority.) SAP job class is different from the job class used in TES. Job classes in TES are used to organize and group jobs into categories. Job classes can be used in a queue’s filter to ensure that only jobs belonging to that class will run in that queue. This lets you control how jobs of a certain class run. You can also associate job events to a designated job class so that those job events will apply to all members of the job class.

You can assign a designated job class to all SAP jobs *created by TES* that are launched from a particular queue. (Jobs created within SAP maintain their original job class designation.)

The SAP job class is configured from the **Bumping** tab of the **Queue Definition** dialog.

Queue Definition (Edit Mode)

Queue Name: SAP INTRECEPTION4 - DEV13 (INT\_PROFILE\_MIKE1)

Parent: System Queue

Limit: 0

Priority (1 Low/100 High): 51

Filters | Bumping | Current Jobs | Description

☒ No priority bumping

☐ Launch immediately

☐ Increase job priority: 0 points every 0 minutes, then bump to queue

Native Priority

Nice Value (UNIX only): 21

Job Class (SAP only): C

☒ Enabled

Hours: From To (Always)

When released, SAP jobs will be assigned Job Class Depending on the queue association. Default Job Class value for all predefined Queues is C.

The **Edit Native Priority** function in the **Queues** category of a user's security policy must be enabled before the user can configure the SAP job class setting.

## SAP Job Procedures

SAP job procedures include:

- [Viewing Job Steps](#)
- [Rearranging the Job Step Order](#)
- [Deleting a Job Step](#)
- [Restarting a Job at a Particular Step](#)
- [Monitoring the Progress of an SAP BW Job](#)

## Viewing Job Steps

From the **SAP** tab of the **Job Details** dialog, you can view the steps of your SAP job. This tab is read-only.

Job Details [TES\_EXTPR\_Z\_PING (1)]

Job Name: TES\_EXTPR\_Z\_PING (1) Job No.: 52385

Status Audit Log Output Dependencies Resources Override Runbook Notes History SAP RunInfo

SAP Job Steps

Step	Name	Variant/Parms	Type
1	Z_PING	-n <number - 9.41> 127.0.0.1	External Program

Add Step View Step Delete Step Move Up Move Down Clear

Copy Existing SAP Job

Import Link

☒ If job creates children, evaluate status of both parent and children  
☐ Include application log in the job output

Spool List Recipient

Print Defaults

## Viewing a Job Linked to the SAP Database (Linked Job)

If the job exists in the SAP database and you have linked a job to the SAP database. (The job name should still be displayed in the **Copy Existing SAP Job** field).

SAP Job Definition [TES\_DEV13\_LINK(\GROUP1 - HPDEV13 / SAPBW)]

SAP Job Name: TES\_DEV13\_LINK

Job Class: Job Class

Parent Group: \GROUP1 - HPDEV13 / SAPBW

Owner: qatest

SAP Steps Schedule Run Dependencies Resources Job Events Options Run Book Notes History Images

SAP Job Steps

Step	Name	Variant/Parms	Type
1	Z_SPAWN_CHILD_JOBS	MIKE2	ABAP/4

Add Step View Step Delete Step Move Up Move Down Clear

Copy Existing SAP Job

MIKE\_DEV13\_Z\_SPAWN\_CHILD\_JOBS1[18453000] Import Link

☒ If job creates children, evaluate status of both parent and children  
☐ Include application log in the job output

Spool List Recipient

☒ Enabled

Last Modified : 10/23/2012 17:05:32

To view a job linked to the SAP database:

- Step 1** To view the details of an individual step, double-click the step, or highlight the step and click **View Step** on the **SAP Job Definition** dialog to display the **SAP Job Details** dialog for that type of step.

**Sap Job Step Details**

Job Name: TES\_DEV13\_LINK ID: 18453000  
 Sap Job Name: MIKE\_DEV13\_Z\_SPAWN\_CHILD\_JOBS1  
 Sap Job Step: 1 Step Type: ABAP Program

ABAP Program Print Parameters Archive Parameters

ABAP Program Z\_SPAWN\_CHILD\_JOBS Define Variant  
 Variant Name MIKE2 View Override Delete  
 Language  
☐ Enable Temporary Variant

Variant Values	Parameter	Value(Low)	Value(High)	Override(Low)	Override(High)
	Number of seconds to wait	M 0		0	
	Program name[PROG1]	RSPARAGEN		RSPARAGEN	
	Program name[PROG2]	RSBPTP03		RSBPTP03	
	Program name[PROG3]	Y_SLEEP		Y_SLEEP	
	Start job Immediately	IMMD1 X		X	

Runtime Variant  
 Variables

- Step 2** Click **Close** to close the **SAP Job Step Details** dialog.

## Modifying a Job in TES's Database (Imported/Created Job)

A job in the TES database was either created within TES or was an existing job in the SAP database that was imported into the TES database and is no longer linked to SAP.

To modify a job in TES's database:

- Step 1** To view or edit the details of an individual step, double-click the step, or highlight the step and click **Edit Step** from the **SAP Job Definition** dialog to display the **SAP Job Step Details** dialog for that type of step.
- Step 2** Make the changes to the job step.
- Step 3** Click **OK** to save the changes and to close the **SAP Job Step Details** dialog. To exit without saving your changes, click **Close**.

## Rearranging the Job Step Order

Highlight the job step that you would like to move, and click **Move Up** or **Move Down**.

## Deleting a Job Step

Highlight the job step that you want to delete and click **Delete Step**.

## Restarting a Job at a Particular Step

On occasion, you may need to rerun an SAP job without starting from the beginning. From the **Job Detail** dialog within the Tidal Web client, you can restart an SAP job starting from any of its steps.


**Note**

Once a job is rerun from one of its steps, the next time the job is rerun, the steps before the starting step are unavailable. The job will only show the job steps that comprised the job the last time it ran. All of the original job steps are still available if you elect to run the entire job.

**To restart a job at a particular step:**

- Step 1** From the **Job Activity** pane, double-click the desired job to open the **Job Details** dialog.
- Step 2** Click the **Run Info** tab to display the steps comprising the job instance.

Job Details [TES\_DEV13\_MULTISTEP\_JOB1 (5)]

Job Name: TES\_DEV13\_MULTISTEP\_JOB1 (5) Job No.: 52392

Status Audit Log Output Dependencies Resources Override Runbook Notes History SAP RunInfo

Sap Job

Sap Job Name: TES\_DEV13\_MULTISTEP\_JOB1

SAP ID: 19505400 Status: F

Steps

Step	Name	Variant/Parms	Type
1	CAT[UNIX]	/etc/hosts	External Command
2	BTCTEST	MIKE1	ABAP/4
3	RSPARAGEN	BOB1	ABAP/4

Delete Job View Step Restart From Job Log Job Spool

Print Defaults

This tab reflects the runtime job info. It includes the SAP external ID for the job, job status and job step pane. From this tab, you can view steps, pull job logs, pull job spool and restart the job from a specific step.

- Step 3** Select a step to restart and click the **Restart From** button.

The job reruns beginning at the selected step.


**Note**

If you want to see the log from a previous run in the job's output, you must select the Append Output option in the Save Output Option section of the Job Definition's Options tab.

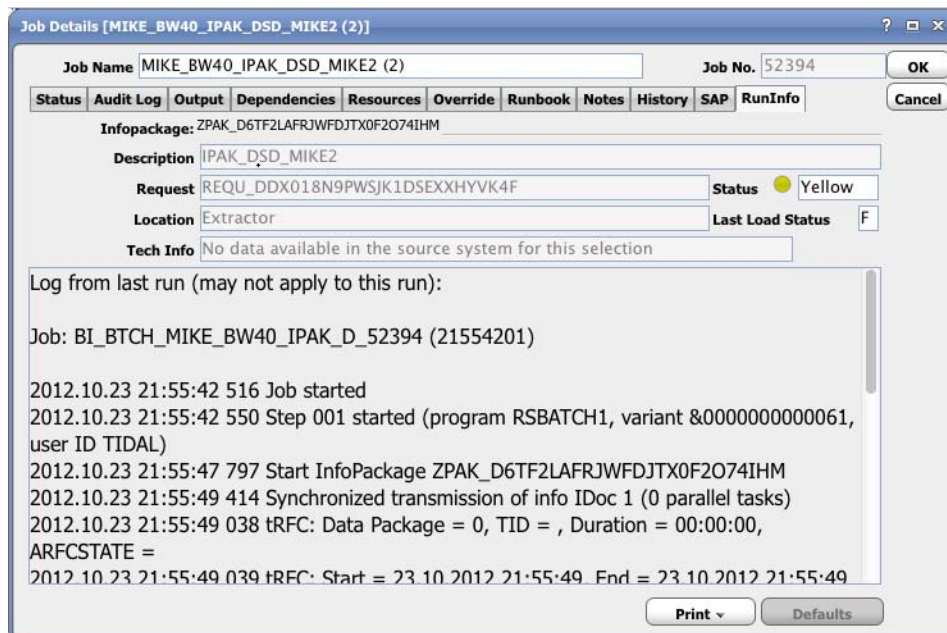
## Monitoring the Progress of an SAP BW Job

You can follow the progress of an SAP BW job from the RunInfo tab of its Job Detail dialog.

### Infopackage Jobs

The **RunInfo** tab for an infopackage job has the following text fields:

- **Infopackage** – The name of the infopackage that the job is running.
- **Request** – The name of the request created for this run.
- **Status** (or **Qual** status) – The current status of the infopackage request.
- **Location** – The current stage of infopackage processing.
- **Load Status** – The current status of the CCMS job created for the request. The load status may indicate it is finished while the request itself is still running.
- **Tech Info** (or **Qual Info**) – Information about the infopackage request status. If an override was done to the job, this text field is called Qual Info and the Status field reflects the override value.



Infopackage jobs have most of the normal job control options (e.g., abort) except that once the job is released, it cannot be held (and consequently, cannot be resumed).

### SAP Statuses vs. TES Statuses

SAP and TES use different terms to denote the same status of a job's life cycle. TES monitors the **Tech** status, the **Qual** status and the **Load (CCMS)** status in SAP to determine which status to assign to the SAP job.

The **Tech** and **Qual** statuses used in SAP are based on the following three colors:

- **Yellow** = **Active** status in TES

- **Green = Completed Normally** status in TES
- **Red = Completed Abnormally** status in TES

The **Qual** status always overrides the **Tech** status. For example, if the **Tech** status is Green but the **Qual** status is Red, then TES displays a **Red** status in the **Status** field for the infopackage.

SAP also has a CCMS load job status. TES translates CCMS statuses to the following:

- **R = Active** status in TES
- **F = Completed Normally** status in TES
- **A = Completed Abnormally** status in TES

Any infopackage jobs in a **Planned** or **Scheduled** status in SAP are shown in a **Launched** status in TES.

## Process Chain Jobs

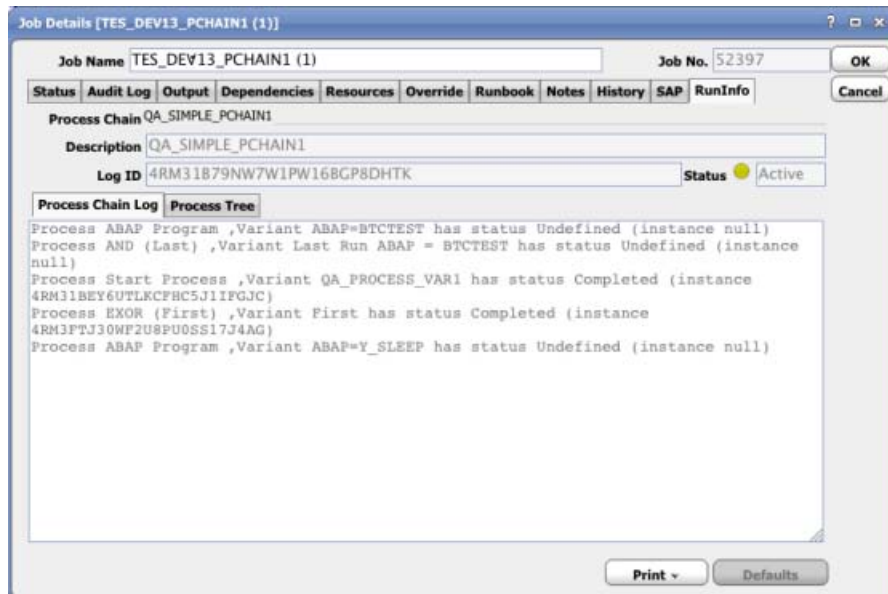
The **RunInfo** tab for a process chain job has two tabs to display the more complicated details of a process chain. The following text fields are common to both tabs:

- **Description** – Text used to describe or label the process chain.
- **Log ID** – A unique identifier for this run of the process chain.
- **Status** – Displays the current status of the entire process chain. This status is not final until the last process in the chain has completed. The following SAP statuses and their equivalent status in Scheduler are used in this field:

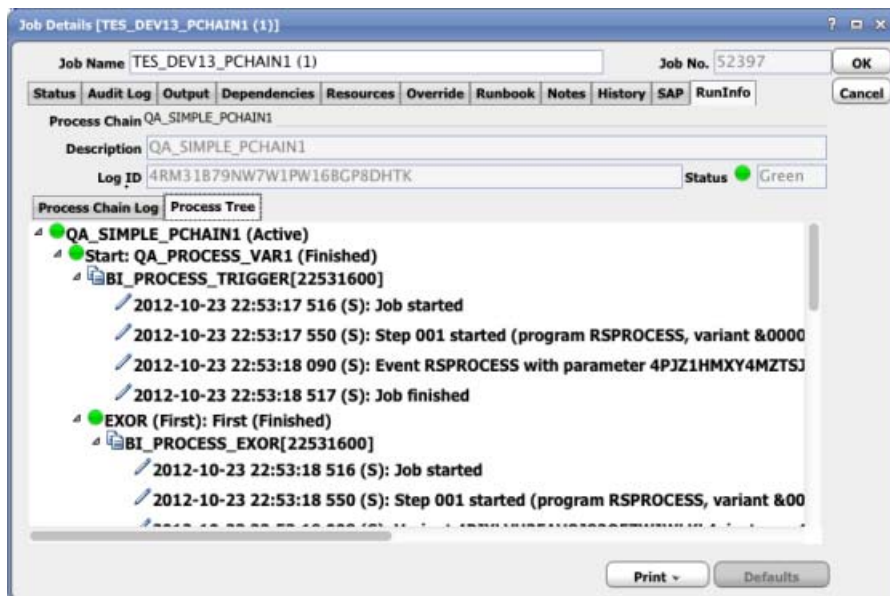
SAP Status	Scheduler Status
A	Active
X (Aborted or Suspended)	Aborted (or Stopped, if using Hold/Suspend job control)
Finished or Green (Finished successfully)	If any terminal processes (without successors) finish with a <b>Red</b> status in SAP, the process chain has a <b>Completed Abnormally</b> status. If all terminal processes have a <b>Green</b> status, the process chain has a <b>Completed Normally</b> status.
Red (Failed)	Completed Abnormally

The **Process Chain Log** tab displays a cumulative log of the process chain so that the result of each individual process can be studied.



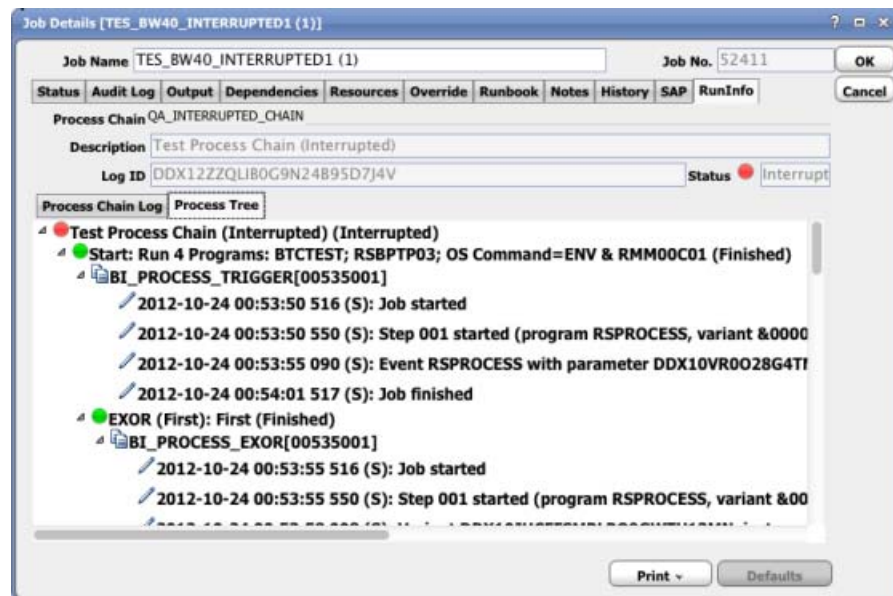


The **Process Tree** tab breaks down the various processes comprising the process chain as a tree to display the relationship structure between the processes. The root of the tree starts with a start node (trigger), description of the process and the flow of processes. The tree displays the job name and count and the status and logs for each process listed.



Stopping and resuming the process chain is not supported but the **Cancel/Abort job** control option will interrupt a process chain.





Although the current process will run to completion, the subsequent processes in the chain will not run. While the process chain will show as aborted in the **Job Activity** pane, it will continue to show as *Active* on the **Run Info** tab of the **Job Details** dialog and in the Process Chain Log from the transaction RSPC. It is recommended that users abort/cancel an active process chain only as a last resort. A process chain that fails or is interrupted can always be rerun.

## Viewing Output from an SAP BW Job

As with any other Scheduler job, you can view job output on the Output tab of the Job Details dialog. Be aware that there may not be any visible output from a SAP job because the job does not produce output or the job was configured (on the Options tab) to discard job output.



### Note

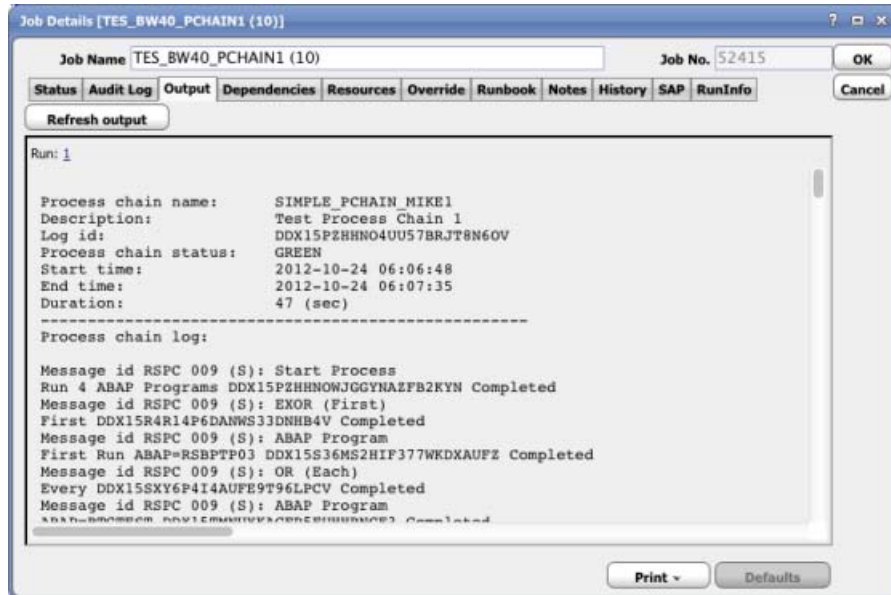
Job output configuration can be modified for individual job instances. Select the Options tab of the Job Definition dialog and change the default settings if desired.

The job output for the following job instance will revert to the default settings in the **System Configuration** dialog.

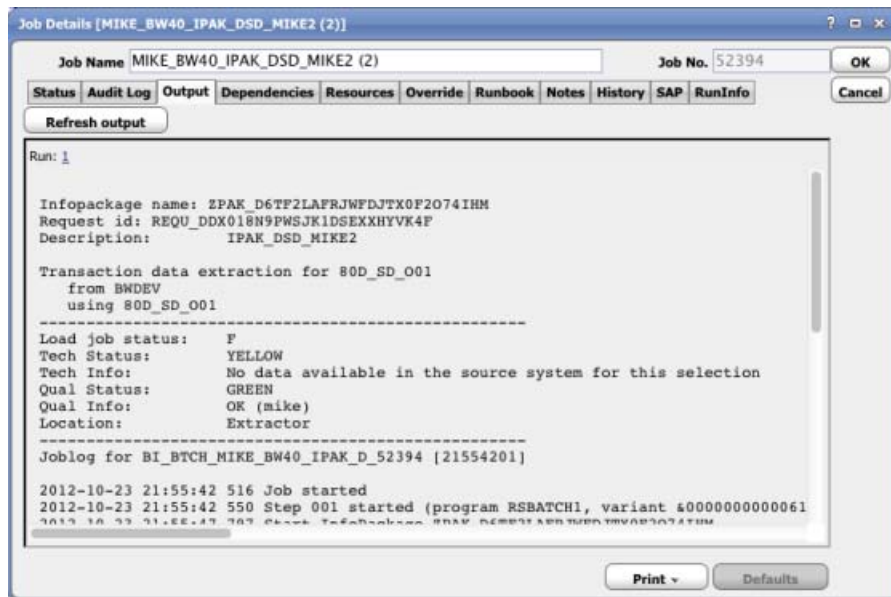
### To view output from an SAP BW job:

- Step 1** From the **Job Activity** pane, double-click the SAP job whose output you want to view.
- Step 2** Click the **Output** tab to view SAP logs generated by an SAP job.

Here is an example of the process chain output for the job:



Here is an example of the infopackage output for the job:




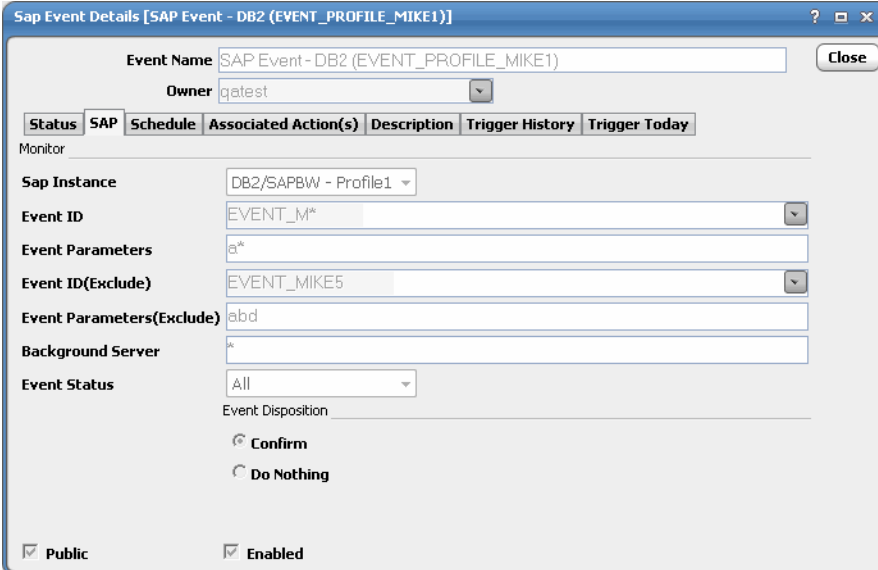
# Defining SAP Events

The **SAP Event Definition** dialog is displayed whenever you add or edit an SAP event. TES can be configured to monitor SAP Events and then to take some action given this event trigger. You must configure a calendar for the event from the Schedule tab to schedule when the event is enabled. If needed, you can configure the monitor to operate only during certain time periods or leave the monitor in operation at all times.

An SAP monitor is defined from the **SAP Event Definition** dialog. This dialog displays whenever you add or edit an SAP event.

## To define an event:

- Step 1** In the **Navigator** pane, select **Definitions>Events>SAP** to display the **SAP Events** pane.
- Step 2** Right-click in the **SAP Events** pane and select **Add SAP Event** from the context menu or click the **Add**  button to display the **SAP Event Definition** dialog.
- Step 3** From the **SAP Instance** list, select the SAP instance to monitor events on.  
This includes only XBP 3.0 connections. If an XBP 3.0 connection has been defined as a default connection, then this field will automatically be filled in with that connection. This is a required field.
- Step 4** In the **Event ID** field, specify the SAP Event ID. Wild cards (\*) are allowed. Maximum length of 32.
- Step 5** In the **Event Parameters** field, specify any event parameters. Maximum length of 64.
- Step 6** In the **Event ID Exclude** field, specify the SAP Event ID you want excluded. Wild cards (\*) are allowed. Maximum length of 32.
- Step 7** In the **Event Parameter Exclude** field, specify the SAP parameter you want excluded. Wild cards (\*) are allowed. Maximum length of 32.



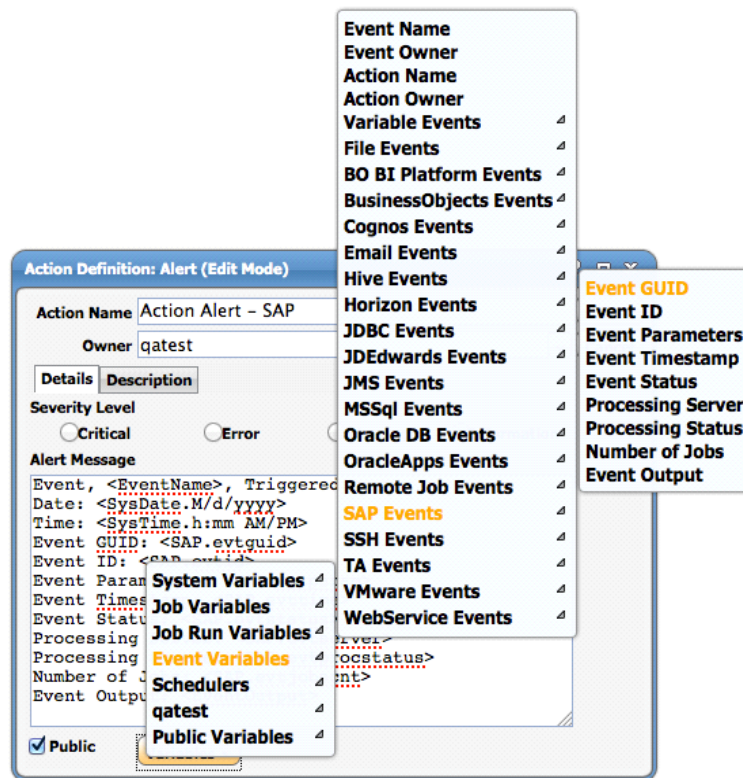
For example, the above event definition indicates a trigger event with event ID **EVENT\_TES\*** and Event parameter **a\*** excludes **EVENT\_TES2** and parameter **abd**.

- Step 8** In the **Background Server** field, specify the event server. Maximum length of 40.
- Step 9** From the **Event Status** list, select one of the following event statuses:
- **All** – Displays all events.
  - **New** – Displays new events only.
  - **Confirmed** – Displays confirmed events only.
- Step 10** In the **Event Disposition** section, specify one of the following actions to be taken on the event:
- **Confirm** – Select this option to confirm the event.
  - **Do Nothing** – Select this option to do nothing. This is the default.
- Step 11** Click **OK**.

## SAP Event Variables

Name	Tag	Definition
Event GUID	<SAP.evtguid>	SAP assigned ID to uniquely identify the raised event.
Event ID	<SAP.evtid>	Event ID
Event Parameters	<SAP.evtparam>	Event Parameters
Event Timestamp	<SAP.evttime>	Time event was raised.
Event Status	<SAP.evtstatus>	Status
Processing Server	<SAP.evtserver>	Background Processing Server
Number of Jobs	<SAP.evtjobsct>	Jobs whose start is contingent on the event.
Event Output	<EventOutput>	Tidal customized output generated which defines the event.

Once SAP Event is defined, SAP Event Variables become available. They can be used in association with Actions.



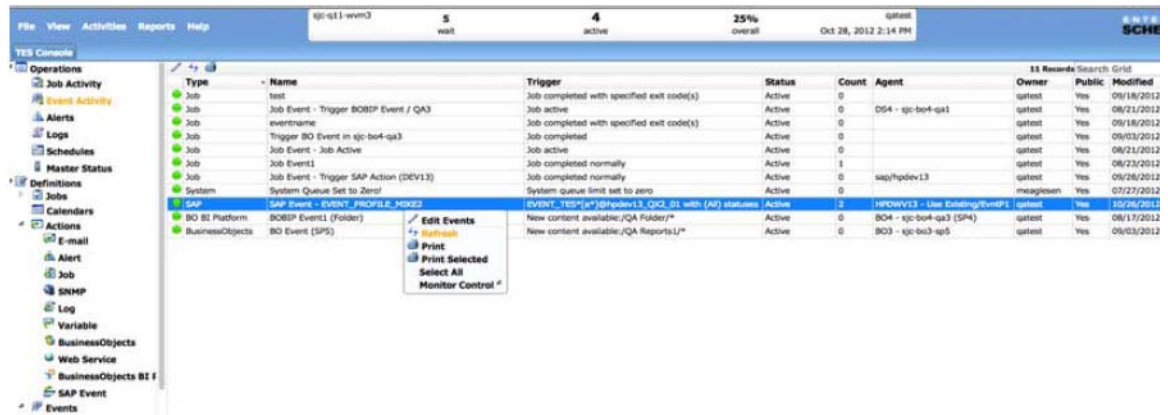
## Monitoring SAP Events

You can monitor SAP Events under Event Activity just like any other TES Events.

The Event Activity pane displays information about the status and activity of each event that has been defined. You can drill down through each event record for more details about the circumstances of each event.

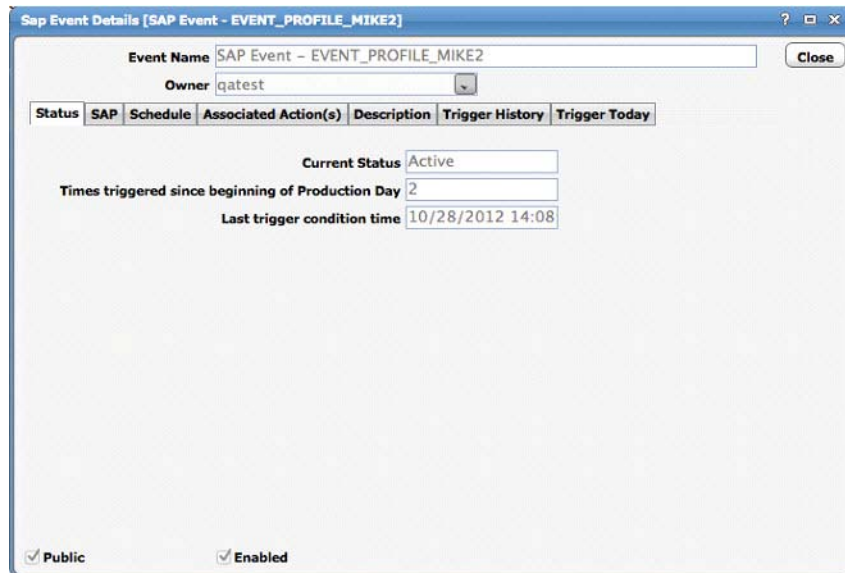
## SAP Event Details Dialog

The details for an SAP event can be displayed by either double-clicking it or by right-clicking it and selecting **Edit Events** from the context menu.



Type	Name	Trigger	Status	Count	Agent	Owner	Public	Modified
Job	test	Job completed with specified exit code(s)	Active	0		qatest	Yes	09/18/2012
Job	Job Event - Trigger BOBP Event / QA3	Job active	Active	0	D54 - sjc-bo4-qa1	qatest	Yes	08/21/2012
Job	eventname	Job completed with specified exit code(s)	Active	0		qatest	Yes	09/18/2012
Job	Trigger BO Event in sjc-bo4-qa3	Job completed	Active	0		qatest	Yes	09/03/2012
Job	Job Event - Job Active	Job active	Active	0		qatest	Yes	08/21/2012
Job	Job Event1	Job completed normally	Active	1		qatest	Yes	08/23/2012
Job	Job Event - Trigger SAP Action (DEV13)	Job completed normally	Active	0	sqj/hpdev13	qatest	Yes	09/28/2012
System	System Queue Set to Zero!	System queue limit set to zero	Active	0		mcagleson	Yes	07/27/2012
SAP	SAP Event - EVENT_PROFILE_MIKE2	EVENT - TEST*(*/*/*/*hpdev13_QK2_01 with (A) statuses	Active	0	hpdev13 - Use Edding/EventP	qatest	Yes	10/26/2012
BO BI Platform	BOBP Event1 (Folder)	New content available/QA Folder/*	Active	0	B04 - sjc-bo4-qa3 (SP4)	qatest	Yes	08/17/2012
BusinessObjects	BO Event (SP5)	New content available/QA Reports/*	Active	0	B03 - sjc-bo3-sp5	qatest	Yes	09/03/2012

The fields on the tabs of the **SAP Event Details** dialog are read-only though a user can update the information in the fields at any time by selecting the **Refresh** option from the context menu.



SAP Event Details [SAP Event - EVENT\_PROFILE\_MIKE2]

Event Name: SAP Event - EVENT\_PROFILE\_MIKE2

Owner: qatest

Status: SAP | Schedule | Associated Action(s) | Description | Trigger History | Trigger Today

Current Status: Active

Times triggered since beginning of Production Day: 2

Last trigger condition time: 10/28/2012 14:08

☒ Public ☒ Enabled

## SAP Tab

The **SAP** tab of the **SAP Event Details** is read-only. This same tab is displayed in the **SAP Event Definition** dialog for the defined event except the text fields are read-only to provide information about the event that occurred.

The screenshot shows the 'Sap Event Details' dialog box for 'EVENT\_PROFILE\_MIKE2'. The 'Event Name' is 'SAP Event - EVENT\_PROFILE\_MIKE2' and the 'Owner' is 'qatest'. The 'Monitor' tab is active, showing fields for 'Sap Instance' (HPDWV13 - Use Existing/EventP1), 'Event ID' (EVENT\_TES\*), 'Event Parameters' (a\*), 'Event ID(Exclude)' (EVENT\_TES2), 'Event Parameters(Exclude)' (abd), 'Background Server' (hpdev13\_QX2\_01), and 'Event Status' (All). There are radio buttons for 'Confirm' and 'Do Nothing' under 'Event Disposition'. At the bottom, there are checkboxes for 'Public' and 'Enabled', both of which are checked.

For details on the other tabs in this dialog, see your *Cisco Tidal Enterprise Scheduler User Guide*.


## Defining SAP Event Actions

A special action is available only for those installations running TES with an SAP license. An SAP Event action option becomes available to send notification when a specified event occurred in TES to a designated SAP instance. This job or system event can be used to trigger an event-based job or process in SAP itself.

**To add an SAP Event action:**

- Step 1** From the **Navigator** pane, select **Definitions>Actions>SAP Event** to display the **Action Definition: SAP Event** dialog.

The screenshot shows the 'Action Definition: SAP Event (Edit Mode)' dialog box. The 'Action Name' is 'SAP\_TEST - QX2' and the 'Owner' is 'qatest'. The 'SAP' tab is active, showing fields for 'Sap Instance' (QX2 - hpdev13), 'Event ID' (SAP\_TEST), and 'Event Parameters' (<Event Parameter - abc.73>). There is a 'Variables' button at the bottom. At the bottom left, there is a checkbox for 'Public' which is checked.

- Step 2** Select the **SAP** folder.
- Step 3** Click the **Add** button  or right-click and select **Add SAP Action** from the context menu to display the **Action Definition: SAP Event** dialog.

- Step 4** In the **Action Name** field, enter a name for this action (up to 30 characters). The name must be unique.
- Step 5** If you wish to make the action public, select the **Public** option. When an action is public, the action will be available to all TES users, within the bounds of their security policy.
- Step 6** Select the desired owner from the **Owner** list.
- Step 7** On the **SAP** tab, in the **SAP Instance** list select the SAP instance to receive notification of the event.
- Step 8** In the **SAP Event ID** field, enter the event ID that SAP is expecting to trigger some action.
- Step 9** In the **Event Parameters** field, enter parameters for the event, if any. You can use variables available from the **Variables** button.

This action can be associated with any defined event in TES. Refer to the “Events” chapter in the *TES User Guide* for more information on configuring events.

## SAP Events (XBP 3.0 Interface Only)

### Event Profile



#### Note

This feature is only be available for SAP Systems with the XBP 3.0 Interface.

### Criteria Hierarchy of the Interception Profiles

A criteria hierarchy is stored in a criteria profile and can be active or inactive.

For the criteria in a profile to take effect, the profile has to be active. You can have many profiles, but only one can be active.



#### Warning

**With the Use Existing Profile option of the connection in effect, multiple SAP connections or TES implementations that point to the same SAP system must use the same Profile across all! The profile specified for connection(s) are activated when deactivated externally. Disabling these connections(s) in TES prior to any external profile modification is highly recommended.**

**Criteria overlapping must always be avoided!**



#### Note

Criteria in the profile can be managed by different Masters. Unlike Interception, for as long as it remains unique / no overlapping, it would work for every TES Master.

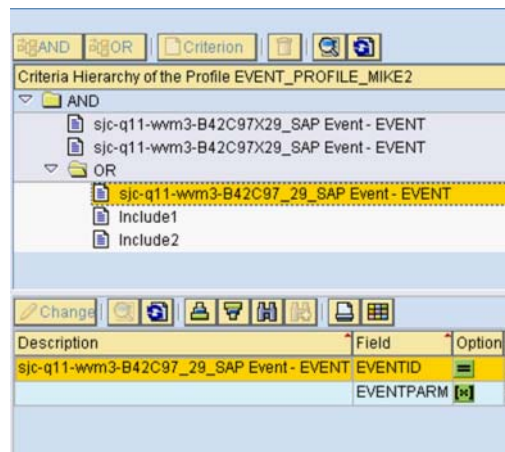


#### Note

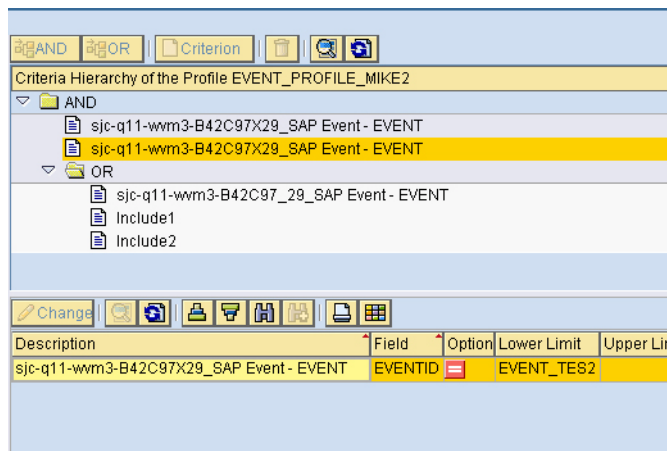
To get to the Criteria Manger within SAP System run Transaction: SE38 / Program: CRITERIA\_MANAGER

The Include condition goes under the root "OR" node.





The Exclude condition goes under the root "AND" node.



If the Event Profile does not exist in the SAP System, edit the connection responsible for monitoring SAP Event(s) in TES by selecting the "Create/Manage Event Profile" option on the **Options>Profile** tab and specifying **Event Profile Name**. After saving changes, the connection must be disabled then re-enabled. Doing so deactivates existing active SAP Event History Profile (if any) within SAP then creates and activates new Profile. Event Criteria is added to profile based on the SAP Event defined in TES. The SAP Event must be enabled for the criteria to be added to the Profile. Disabling the event clears corresponding criteria from the Profile.

## Best Practices for Using the SAP Adapter

- **Use SAP load balancing when defining the SAP connection** – While a specific SAP server can be assigned to a connection, it is more efficient to use the load balancing feature in SAP to assign jobs to the server with the lightest workload. Use an asterisk in the **Application Server** field of the **Connection Definition** dialog. Using the load balancing feature enables you to use the **Launch Immediately** option. If a specific server is assigned than SAP jobs can only be launched on a **Launch ASAP** (as soon as possible) basis.

- **Select the runtime user for authorization option** – On the **General** tab under **Options** of the Connection Definition dialog, select the **Use Runtime User for Authorization Only** option. This eases both the administrative task and the load on the network. Administrators on the SAP side only need to create one user account to be used with TES while administrators on TES's side only need to create a single connection to the SAP instance. A single connection reduces the system load created by multiple connections.
- **Limit SAP jobs to individual job steps** – It is recommended that SAP jobs be limited to a single job step. Convert SAP jobs with multiple job steps into job groups of single-step SAP jobs in TES. Breaking down multiple-step jobs into jobs of individual steps provides greater control over each job step. By using single job steps, you can set dependencies for each job step. Dependencies on a multiple-step SAP jobs apply to the entire job, not the job step.
- **Delete past SAP jobs** – Jobs that have already run in TES are normally cleared from the SAP database when that job instance is deleted in TES. However, it is recommended that the administrator should create an SAP job that runs the **RSBTCDEL ABAP** program with a variant that specifies the set of jobs that you want to delete and schedule this job to run at regular intervals to clean up any jobs that missed being deleted. For more information on SAP job deletion, consult your SAP documentation or your SAP Administrator.

You must delete job history (PSPCRSRQST records) in SAP as part of your regular database maintenance. You can run the SQR Report process, PRCSPURG, to purge old request records that accumulate in the SAP database. You can use Enterprise Scheduler to run the PRCSPURG utility on a regular basis.


**Note**

The default job history retention interval for jobs in TES is set on the Defaults tab of the System Configuration dialog. You can set job history retention for an individual job in the Options tab of the Job Definition dialog. TES will automatically delete job history from its own logs when the job history retention limit is met. The default is 30 days.

Deleting a job from the Jobs pane removes the job only from TES. You still must delete the job history from SAP.

## Troubleshooting the SAP Adapter

There are several things you can investigate to troubleshoot the SAP Adapter:

- [Studying the Logs](#)
- [Configuring Diagnostic Logging for the SAP Adapter](#)
- [Tracing for the SAP Service](#)
- [Cannot Connect to the SAP Instance](#)
- [Job Errors after Overriding a Variant](#)
- [Parameter Values for the SAP Adapter](#)

## Studying the Logs

There are logs that can be studied for diagnostic clues when issues arise when running SAP jobs. These logs are:

Log	Location
Master	C:\Program Files\TIDAL\Scheduler\Master\log
AdapterHost	C:\Program Files\TIDAL\Scheduler\Master\log
Client Manger	C:\Program Files\TIDAL\ClientManager\plugins\tes-6.0\log and C:\Program Files\TIDAL\ClientManager\log
SAPService	C:\Program Files\TIDAL\Scheduler\Master\services\{51C57049-3215-44b7- -ABE1-C012FF786010}\log

Each log collects information until it reaches one megabyte in size, when it is then saved and a new log file begun. The log file is named with the name of the log and a date and time stamp appended to the log name as in the following example:

```
SAPService-20050819123934.log
```

The above log file example is an SAP service log file created on August 19, 2005 (20050819) at 12:39:34.

See the next section, [Configuring Diagnostic Logging for the SAP Adapter](#), to learn how to configure logging for the SAP Adapter and SAP connections.

## Configuring Diagnostic Logging for the SAP Adapter

If your jobs are not completing normally, you need to gather information through diagnostic logging (or tracing in SAP terms) while reproducing the problem. Once you have gathered the diagnostic information into logging files, send the file to Technical Services to help them troubleshoot the problem. There are two methods to configure diagnostic logging for the SAP adapter.



### Note

Higher levels of diagnostic logging require carefully monitoring. Diagnostic logging can consume large amounts of disk space and can have an adverse effect on system performance.

Diagnostic information is collected from the various TES components in different ways.

## Setting up Logging for the SAP Adapter

You can increase diagnostic logging from the SAP adapter from the **Connection Definition** dialog for the master connection.

### To log for the SAP adapter:

- Step 1** In the **Connections** pane, open the connection for the master to display its **Connection Definition** dialog.

- Step 2** In the **Host Environment Log** list on the **Connection** tab, select a log setting. The lowest level of logging is **Severe** and the highest level is **High Debug**.

## Setting up Logging for SAP Connections

There is a field in the **Connection Definition** dialog for the SAP Adapter used to debug the interaction between TES and the SAP instance. You can adjust this parameter to collect information on the remote function calls that pass over the SAP connection.

**To set up logging for SAP connections:**

- 
- Step 1** In the **Connections** pane, open the SAP connection to display its **Connection Definition** dialog.
- Step 2** Click on the **Options** tab.
- Step 3** On the **General** tab is an **Audit Level** field that adjusts the level of logging detail that is recorded about the remote function calls relayed between the SAP system and the TES adapter over the SAP connection. There are three levels of detail available:
- 1=error only (default)
  - 2=errors and warnings only
  - 3=greatest level of detail

If you chose not to collect any information, set Audit Level to zero.

## Tracing for the SAP Service

Increasing the logging to diagnose issues with the SAP service is done in different ways depending upon whether you are using the connection parameter or the *saprfc.ini* file.

**To trace for the SAP service via connection parameter:**

- 
- Step 1** Double-click on the SAP connection definition and select the **Parameters** tab on the **Options** tab.
- Step 2** In the **Parameters** field, enter **TRACE=1** to enable the tracing function.
- Step 3** When done logging the information, turn off the function by changing the **1** to a **0** (**TRACE=0**).
- With the *saprfc.ini* file you can increase tracing for the SAP service by turning on a variable in the file.

**To trace for the SAP service via file:**



### Note

While tracing via file would still produce some level of logging, it will not be complete. Therefore, it is highly recommended you use Connection Parameter instead of file when setting up the trace.

- 
- Step 1** Locate the *saprfc.ini* file on the SAP adapter machine. Refer to the section, “Configuring Default System Settings for SAP” for more details on locating this file.
- Inside the *saprfc.ini* file is a variable called RFC\_TRACE. This variable controls the trace function for SAP.
- Step 2** Turn on the tracing function by changing the variable from RFC\_TRACE=0 to RFC\_TRACE=1.

Both options record diagnostic data to a single trace file called *rfcxxx.trc*. By default they are written to the SAP GUID directory under services.

For example (Windows):

```
C:\Program
Files\TIDAL\Scheduler\Master\services\{51C57049-3215-44b7-ABE1-C012FF786010}
```

It is highly recommended that you perform a search on the machines where the master and SAP adapter resides for the *rfcxxx.trc* files location.

The *rfcxxx.trc* files contain diagnostic information, a detailed description of the problem and the job(s) in question. These items should be provided to Technical Services and/or to SAP Support for troubleshooting purposes.

If the connection to the SAP does not work, verify that the JCO files have Read and Execute permissions for the system account. The SAP service cannot communicate with the SAP system if the system does not have the proper access.

## Cannot Connect to the SAP Instance

If you are unable to connect to the SAP instance from the master or a client:

- Search on that master or client machine for a file called *dev\_rfc.trc*. This file is a text file and can be read using the Notepad program. This file contains the error message and other information explaining why a network connection failed. For example, if you get an error message about security, the SAP administrator may have failed to grant access to a necessary SAP object to the user account. Run a SU53 security trace to search for missing objects.
- When using external scheduling tools with **SAP R/3, XML** log entries are written to a data table called **TXMILOGRAW**. A large number of log records may cause the table to fill up. Once the table becomes too large, TES cannot connect to the SAP instance and the agent connection light will stay red no matter what action is attempted until the table is cleared out. On a regular basis (we recommend weekly), the SAP administrator should schedule a job that clears out the **TXMILOGRAW** table.

A weekly scheduling of the job, consisting of an ABAP report containing the following function module call is recommended:

```
CALL FUNCTION 'SXMI_LOG_REORG_INT'
EXPORTING
  FROMTIMSTMP =<delete up to this time stamp>
  TOTIMSTMP  =<delete as of this time stamp>
  AUDITLEVEL  =<delete if >= audit level, e.g., 0 for all entries>
  INTERFACE  =<interface, e.g., 'XBP' or '*' for all>
IMPORTING
  NUMBER  =<number of deleted entries>
EXCEPTIONS
  INVALID_RANGE  =1
  CANT_REORG     =2
  PROBLEM_DETECTED =3
  CANT_LOG_ACTION =4
  OTHERS        =5.
```

[**FROMTIMSTMP...TOTIMSTEP**] describes a time interval, for which table entries are not to be deleted.

If you carry out the reorganization job once a week, all entries older than seven days should be deleted.

If the table is already large, you can truncate at the database level since there are no dependencies with other tables.

## Cannot Connect to a Logon Group

The services file of the client and master machines that connect to the SAP system must be configured for the SAP message server. You will not be able to use logon groups if the proper entry is not in the services file of each machine that connects to the logon group. The services file is usually located at the following directory path, `C:\WINDOWS\system32\drivers\etc\services`. A typical entry might look like one of the following:

sapmsR3E	3600/tcp	#R3E System Message Port
sapmsCE4	3603/tcp	#SAP CE4 System Message Port
sapmsCE6	3613/tcp	#SAP CE6 System Message Port

Your SAP administrator can help ensure that the proper entries are available in the services file.

## Performance Is Slow when Processing Jobs with Multiple Job Steps

Running SAP jobs that consist of a large number of job steps will impact job performance when jobs share a single connection. A job with a large number of job steps locks up the SAP connection and prevents status updates, job launches and other processes from occurring in a timely manner. The resulting system backlog of SAP processes can be reduced by configuring the parameters of the SAP adapter to temporarily open a dedicated connection for jobs that exceed a specified number of job steps. Opening a temporary connection allows the multi-step job to run on its own connection without affecting the other SAP processes that need to run concurrently.

The `LAUNCHCONNECTSTEP CNT` parameter can be used to manage the processing of jobs with many job steps. This parameter will override the **Use Runtime User for Authorization Only** option on the **General** tab of the **Options** tab of the SAP connection definition. Normally if the **Use Runtime User for Authorization Only** check box is selected (the default), temporary SAP connections are not created. However, if the `LAUNCHCONNECTSTEP CNT` parameter is used, a temporary connection is created to minimize performance impact whenever a job with more than the stipulated job steps runs.

**To configure the adapter to open a separate connection for any SAP job with a large number of job steps:**

- 
- Step 1** Display the SAP connection definition.
  - Step 2** Click on the **Options** tab.
  - Step 3** Click on the **Parameters** tab.
  - Step 4** On a new line, type `LAUNCHCONNECTSTEP CNT=<number of job steps>`. Whenever a job with more than the number of job steps specified here is run, a dedicated connection will be created just for that job and closed when the job completes.

The default value for this parameter is 20 job steps. Specifying a value of 0 means that the creation of temporary connections will follow the configuration of the **Use Runtime User for Authorization Only** option.

## Job Errors after Overriding a Variant

An SAP job sometimes fails as a result of overriding variant values. If a job errors when a variant is overridden, check the format being used in the date parameter. The error may be caused by using an unsupported date format or numeric format in the **User Profile** for the SAP user defined in TES.

When a variant is selected and View control chosen, its current values are displayed in the **Variant Values** list. The displayed values are always listed in SAP internal format. For example, a date value will always be displayed in `yyyymmdd` (internal format), even though the user profile for the user may list a different date format. The same is also true of numeric formats. What this means is that if a date/numeric value is overridden, the new value should conform to the displayed internal format. This is especially true when runtime variable replacement is used in place of a hard-coded value (i.e., **Variables** button). In this case, the value associated with the System or User variable must conform to this internal format.



### Note

If a date value is provided, that does not conform to the internal format, the SAP adapter will attempt to automatically convert the value to the internal format, however only the following formats are supported: `dd.mm.yyyy` and `mm/dd/yyyy`.

Currently, TES only supports decimal points as a separator for thousands. Commas are not supported. For example, the number 10,340,002 can only be displayed as 10.340.002. As with the date format, you must configure the **User Profile** in SAP to use the decimal point as a numeric separator.

## Parameter Values for the SAP Adapter

The **Parameters** tab on the **Options** tab of the **Connection Definition** dialog for the SAP adapter defines how to access the SAP instance. Each SAP instance can be individually configured with unique parameter values. This configuration is done by entering parameter values in the **Parameters** field.

Setting names and values are case sensitive. When adding entries to the **Parameters** field, be sure to capitalize as shown in the table. Do not allow any spaces between words or the equals sign when entering a parameter value, e.g., `SAPLAUNCHTRIES=3`.

Parameter Name	Default Value	Description
CONNECTINTERVAL	30	The maximum length of time (in seconds) that should be spent attempting to re-establish connection if the SAP connection is lost.
CONNINFOPOLL	10	Interval of seconds between polls to the SAP application server to determine the connection load (available job slots).
JOBINTERCEPTINT	10	Interval of seconds between checking the SAP intercepted jobs queue.
LAUNCHTHREADS	5	The number of concurrent launches with respect to a adapter connection
SAPBANNER	N	If <b>Y</b> is specified, the banner page will be send to the printer.
SAPLAUNCHTRIES	3	Number of attempts to try launching an SAP job before going to <b>Error</b> status.

Parameter Name	Default Value	Description
SAPOUTPUTTHREADS	5	Number of concurrent output threads per SAP connection. Due to the potential length of job output, output has its own thread and opens its own connection to retrieve the output and closes the connection as soon as the output completes. This parameter prevents the output requests from exceeding the connections licensed by SAP.
SAPOUTPUTTRIES	5	Number of attempts to connect to the output server for SAP job output.
SAPSERVERTIME	D	The default (D) is to regularly poll the SAP server for the time. If N is specified, the time check polling of the SAP server is disabled.
SAPTIMEOUT	120	Number of seconds before the Remote Function Call (RFC) times out.
SAPTIMEZONE	N	If Y is specified, TES will use the time zone where the SAP system resides when scheduling SAP jobs. This time difference is displayed in the Time Zone column of the Connections pane. To use this parameter, the <b>GET_SYSTEM_TIMEZONE</b> function in the SAP system must be enabled for remote access.
STATUSTHREADS	5	The number of concurrent status activity with respect to a adapter connection.
TRACE	0 (Off)	A value of 1 turns on the trace function in SAP to collect diagnostic data into a file with an extension of <i>.trc</i> .

## 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:**

- 
- Step 1** From the **Job Activity** pane, right-click on the job.
- Step 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:**

- 
- Step 1** From the **Job Activity** pane, right-click on the job.
- Step 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:**

- 
- Step 1** From the **Job Activity** pane, right-click the Adapter/Agent job you need to rerun.
- Step 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:**

- 
- Step 1** From the **Job Activity** pane, double-click the Adapter/Agent job to display the **Job Details** dialog.
- Step 2** Click the Adapter tab.
- Step 3** Make the desired changes to the job and click **OK** to close the **Job Details** dialog.
- Step 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:**

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



# Configuring service.props

## About Configuring service.props

The **service.props** file is used to configure adapter behavior. **service.props** is located in the \config directory located under the Adapter's GUID directory. You can create both the directory and file if it does not yet exist. Properties that can be specified in service.props control things like logging and connection configuration. Many of the properties are specific to certain adapters; others are common across all adapters.

## service.props Properties

The table below lists many of the parameters that can be specified in service.props. Some properties apply to all adapters (shaded in the table) and some properties are adapter-specific as indicated by the **Applicable Adapter(s)** column. The properties are listed in alphabetical order.

Property	Applicable Adapter(s)	Default	What It Controls
BYPASS_SEC_VALIDATION	Oracle Apps	N	If set to Y, the secondary user validation is bypassed. If not, secondary user validation is performed.
CLASSPATH	All	<none>	(Optional) – The path to the JDBC driver. If the default CLASSPATH used when the Adapter process is started does not include an appropriate JDBC driver jar required to connect to the PowerCenter Repository Database, you will need to specify this <i>service.props</i> configuration
CONN_SYNC	All	N	Setting this flag to Y allows synchronous connections without overloading the ROnly Thread. If set to N, the adapter might stop trying to reconnect after an outage or downtime.
DISCONN_ON_LOSTCONN	Informatica	N	Setting this flag to Y avoids an unnecessary logout call to the Informatica server when the connection is lost. This logout call usually hangs.

Property	Applicable Adapter(s)	Default	What It Controls
EnableDynamicPollingInterval	All	N	Use to avoid frequent polling on long-running jobs. When set to Y in service.props of a particular adapter, these properties are enabled:  MinDynamicPollInterval—Minimum value should be 5 seconds.  MaxDynamicPollIntervalInMin—Maximum value should be 5 minutes.  PercentOfEstDuration—Default value is 5.
IGNORE_CODES	Informatica	<none>	This parameter can be set in service.props, job configuration and connection configuration parameters. The order of precedence is service.props (applicable for all jobs running in all connections), job level (only for that particular job), and connection (applicable for all jobs in the connection). This parameter is used to specify Informatica-specific error codes, separated by commas (,), that you want to ignore while running a job.
IGNORESUBREQ	Oracle Apps	N	Y or N. Setting this flag to Y stops huge job xml file transfers back and forth between the adapter and the AdapterHost during polls when a single request set has multiple sub-requests of more than 100. The default value is N or empty.
jarlib	Hive and MapReduce	<none>	Specifies the specific Java library to use for the adapter: <ul style="list-style-type: none"> <li>For Apache 1.1.2, add: <b>jarlib=apache1.1.2</b></li> <li>For Cloudera 3, add: <b>jarlib=cloudera</b></li> <li>For Cloudera 4, add: <b>jarlib=cdh4</b></li> <li>For MapR add: <b>jarlib=apache1.1.2</b></li> </ul>
kerbrealm	MapReduce	<none>	If the Hadoop cluster is Kerberos secured, use this value to specify the Kerberos Realm.  For example, <b>kerbrealm=TIDALSOFT.LOCAL</b>
kerbkdc	MapReduce	<none>	If the Hadoop cluster is Kerberos secured, use this value to specify the KDC Server.  For example, <b>kerbkdc=172.25.6.112</b>

Property	Applicable Adapter(s)	Default	What It Controls
Keystore	BusinessObjects , BusinessObjects BI, BusinessObjects DS, Cognos, JD Edwards, Oracle Applications, UCS Manager, VMware, Web Service	<none>	Specify Keystore=c:\\<adapter_certificate_directory>\\<your_trusted_keystore>.keystore when importing certificates into a Java keystore.
LAUNCH_DELAY (in milliseconds)	Informatica	<none>	This parameter can be set in service.props, job configuration and connection configuration parameters. The order of precedence is service.props (applicable for all jobs running in all connections), job level (only for that particular job), and connection (applicable for all jobs in the connection). If a non-zero value is set for this parameter, then the jobs are delayed for the specified number of milliseconds before being submitted to Informatica.
LoginConfig	BusinessObjects BI Platform, BusinessObjects Data Services	<none>	Specifies the location of the login configuration if using WinAD or LDAP authentication. For example:  LoginConfig=c:\\windows\\bscLogin.conf  where "c:\\windows\\bscLogin.conf" is the location of the login configuration information. Note the use of \\ if this is a Windows location.
MaxLogFiles	Informatica, JDBC	50	(Optional) – Number of logs to retain. Defaults to 50 if not specified.
OUTPUT_ASYNC_LOGOUT	Informatica	N	Setting this flag to Y avoids jobs getting stuck in Gathering Output status.
OUTPUT_SYNC	All	Y	Enables concurrent output gathering on a connection. To enable this feature, set the value to N in service.props of this adapter.
POLL_SYNC	All	Y	Enables concurrent polling on connections of the same type. This is helpful when there is a heavily load on one connection of an adapter. The heavily loaded connection will not affect the other adapter connection. To enable this feature, set the value to N in the service.props of this adapter.
QUERY_TIMEOUT	Oracle Apps	N	Y or N. If set to Y, the timeout value defined using the parameter QUERY_TIMEOUT_VALUE is applied to the SQL queries. Default value is N or empty.

Property	Applicable Adapter(s)	Default	What It Controls
QUERY_TIMEOUT_VALUE	Oracle Apps	unset	The time period in seconds that SQL queries wait before timeout. If 0 or not set, there is no timeout.
READPCHAINLOG	SAP	Y	Used to control the log gathering in SAP Process Chain jobs. This property depends on the Summary Only check box of the job definition Options tab.
SCANFOR_SESSIONSTATS	Informatica	Y	Y or N - Set this parameter to N to turn off the default behavior of Informatica jobs collecting the session statistics during the job run.
SCANFOR_SESSIONSTATS_AFTER_WF_ENDS	Informatica	N	Y or N - Set this parameter to Y to turn off the gathering of session statistics during each poll for the status of Informatica jobs.
TDLINFA_LOCALE	Informatica	<none>	Points to the Load Manager Library locale directory. See “Configuring the Informatica Adapter” in the <i>Informatica Adapter Guide</i> for how to set this for Windows and Unix environments.
TDLJDBC_LIBPATH	JDBC (Windows only, optional)	<none>	An alternate path to the JDBC library files. The library file path should have been configured given system environment variables. This option is available in case you wish to use an alternate set of libraries and may be helpful for trouble-shooting purposes.
TDLJDBC_LOCALE	JDBC	<none>	The path to the JDBC locale files.
TDLINFA_REQUESTTIMEOUT	Informatica	<none>	(Optional) – The number of seconds before an API request times out. The default is 120 seconds, if not specified.
TRANSACTION_LOG_BATCH_SIZE	MS SQL	5000	Set this parameter if more than 5000 lines need to be read from the transaction table.
version_pre898	JD Edwards	N	If running on a JD Edwards server version that is less than 8.9.8, set version_pre898=Y.