



# CHAPTER 1

## Getting Started with Cisco ADS

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Cisco Application-Oriented Networking (AON) technology is the foundation for a class of network-embedded products and solutions that help converge intelligent networks with application infrastructure.

AON technology works at the application-message level by inspecting a full message, including all headers and content. It therefore understands the context of the message and can operate on those messages while they are in transit and according to business policies. AON enables you to embed intelligence capabilities into the network and significantly improve application communication.

To enable AON technology in your network, you use the following tools:

- Cisco AON Development Studio (ADS)—Windows-based tool for configuring how application messages are handled at runtime.
- Cisco AON Management Console (AMC)—Linux- and web-based server for managing an AON network. AMC synchronizes and processes input from all ADS systems on your network to ensure consistent, up-to-date configurations across all AON-enabled switches and routers.

This chapter describes how to get started using ADS.



### Note

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For more information on implementing an AON network, see the following:

- Other chapters in this guide:
    - [Setting Bladelet Properties, Variables, and Rules](#)
    - [ADS Bladelets Reference](#)
    - [ADS PEP Attributes Reference](#)
    - [ADS Message Types Reference](#)
    - [E-Mail to Cisco ADS Support](#)
  - Other guides in the AON library:
    - *AON Installation and Administration Guide* (for information on the AMC server and nodes)
    - *AON Programming Guide* (for information on custom Bladelets, custom adapters, and application program interfaces)
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## Prerequisites for Cisco ADS Installation and Operation

- Ensure that you have a Microsoft Windows 2000 or Windows XP operating system.
- Ensure that you have minimum 1 GB RAM; 2 GB RAM is recommended.
- Ensure that you have minimum 500 MB hard disk space; 1 GB free disk space is recommended.
- Contact your Cisco representative to learn how to access the Cisco ADS application. Download Cisco ADS 2.1 and make a note of where the download package resides on your system.
- Ensure that your system can connect to an AMC 2.1 server.

**Note**

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ADS 2.1 must connect to AMC 2.1 for AON 2.1 software to work properly.

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## Information About Cisco ADS

AON technology operates on your network switches and routers by means of Bladelets, Policy Execution Plans (PEPs), and message types that specify how to process particular traffic streams.

- A *Bladelet* is an operation that is performed on a message. It is a user defined software component that implements certain interfaces and provides a useful unit of functions. For example, Authentication bladelet provides authentication against various authentication schemes such as, LDAP, Kerberos, and Netegrity; it will not do anything else.

ADS provides a repository of predefined Bladelets that are organized by category—for example, general, logic, message handling, routing, security, transformation, and so on.

- A *PEP* is an assembly of Bladelets in a particular sequence.
- A *message type* is a filter that determines what type of message a PEP is to process.

You use ADS to assemble and interconnect multiple Bladelets into a PEP and assign to the PEP one or more message types. You then synchronize your ADS with your network's AMC server to deploy the PEP across your network switches and routers. AON-enabled switches and routers constitute a logical network of nodes that operate at Layer 5 and Layer 6 of the Open System Interconnection (OSI) model.

## How to Use Cisco ADS

This section provides the following information:

- [Installing Cisco ADS, page 1-3](#)
- [Starting Cisco ADS, page 1-3](#)

- [Exploring Cisco ADS, page 1-4](#)
- [Set E-mail and SMTP Server Information, page 1-10](#)
- [Creating PEPs, page 1-11](#)
- [, page 1-17](#)

## Installing Cisco ADS

To install ADS, perform the following steps.

- 
- Step 1** Locate the ADSInstallerWin32.exe executable file.
  - Step 2** Double-click the file icon. The InstallShield Wizard starts up.
  - Step 3** In the Welcome window, click **Next**.
  - Step 4** In the License Agreement window, click **Accept**.
  - Step 5** Provide the requested information (name, organization, and e-mail address) and click **Next**.
  - Step 6** Specify where to install ADS as follows:
    - To use the displayed location, click **Next**.
    - To specify another location, click **Browse**, select a new location, and click **Next**.
  - Step 7** Specify a database port as follows:
    - To use the displayed port, click **Next**.
    - To specify another port, type another port number and click **Check Port Availability**. Repeat as needed until a message confirms that the port is available. Then click **Next**.
  - Step 8** Review the displayed summary information and do one of the following:
    - If all settings are correct, click **Install**.
    - If any setting is incorrect, click **Back**, correct the setting, return to this window, and click **Install**.
  - Step 9** Click **Finish**.
  - Step 10** Reboot your system.
- 



**Note** To uninstall ADS, in Microsoft Windows choose **Start > Programs > AON Development Studio > Uninstall AON Development Studio** and follow instructions.

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## Starting Cisco ADS

To start ADS, perform the following steps.



**Note** For help at any time, from the toolbar click **Help** and then either **Help, Context Sensitive Help, or Support > FAQs**.

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- Step 1 In Microsoft Windows, choose **Start > Programs > AON Development Studio > AON Development Studio** (or click the **AON Development Studio** icon on your desktop).

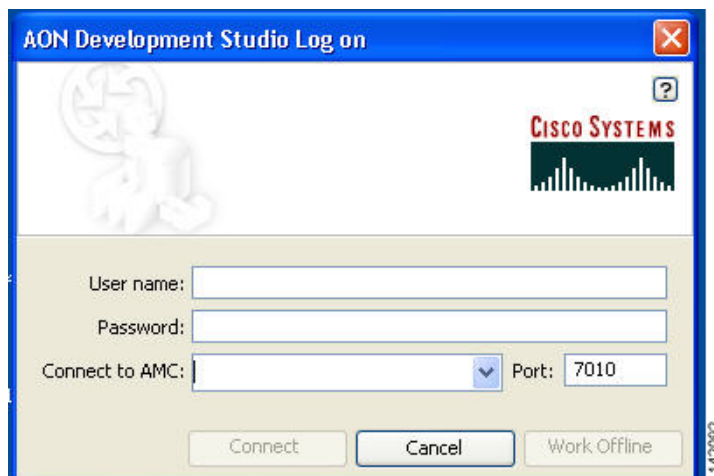


**Note** Startup time depends on your system hardware: more RAM and faster bus and processor speeds mean shorter startup time.

## Login Window

- Step 2 At the ADS Login window [Figure 1-1](#), do the following:
- a. Provide the following requested information:
    - Username
    - Password
    - Connect to AMC (click the dropdown arrow to display AMC choices; choose or provide the hostname or IP address for your AMC server)
    - Port (port on which the AMC server listens for traffic; default is 7010)

*Figure 1-1 ADS Login Window*



- b. Click **Connect**. ADS connects to and synchronizes with the AMC server.



**Note** On first login, you must connect to your AMC server so that your ADS can display existing nodes. On future logins, you can either connect or work offline.

## Exploring Cisco ADS

To explore and familiarize yourself with Cisco ADS, examine the following:

- [Initial ADS Window, page 1-5](#)

- [ADS Toolbar and Icon Bar, page 1-6](#)
- [Project Explorer Pane, page 1-6](#)
- [Navigator Pane, page 1-7](#)
- [PEP Developer Pane, page 1-7](#)
- [Problems Pane, page 1-8](#)
- [Task Pane, page 1-9](#)

## Initial ADS Window

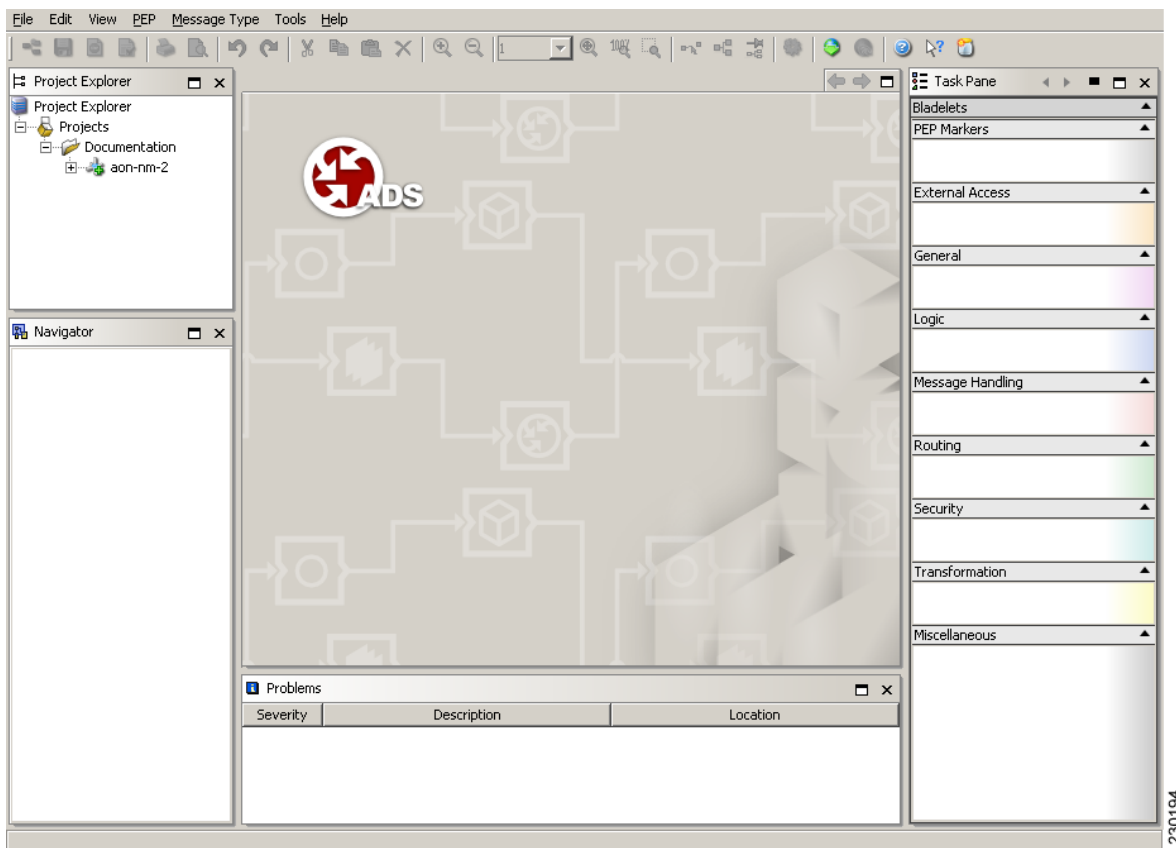
You must familiarize yourself with the initial ADS window ([Figure 1-2](#)) and all the panes.



**Note**

All the panes other than the Task pane are empty when you start up for the first time.

**Figure 1-2** Initial ADS Window

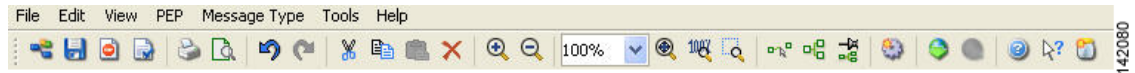


## ADS Toolbar and Icon Bar

The toolbar and an icon bar (icons are dimmed until operable) appear across the top.

Icons (Figure 1-3) provide shortcuts to various ADS functions, most of which you can also access both from the toolbar and by means of a mouse right-click. You can determine what an operable (that is, undimmed) icon does by holding your mouse over it.

*Figure 1-3 ADS Toolbar and Icon Bar*



### Note

All the panes other than the Task pane are empty when you start up for the first time. However, the panes are shown below as they would look if you were in the midst of PEP design.

## Project Explorer Pane

The Project Explorer pane (Figure 1-4) in the upper left portion of the window displays the hierarchy of available system nodes and associated PEPs and message types that reside in your ADS.

A project contains all of the resources, such as PEPs, message types, and property sets, created by a team. A team working in a project is isolated from all other projects. The team can create and deploy resources to the AON network without regard for what other teams are doing.

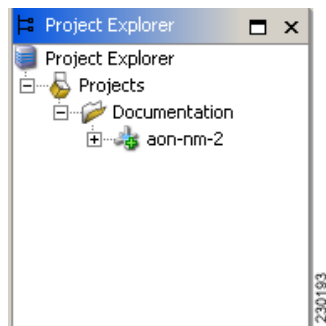


### Note

You must explicitly open a project in the project explorer in order to access any resources in that project. When a project is opened for the first time, ADS synchronizes the project with AMC automatically. ADS does not synchronize with AMC when the project is opened on subsequent occasions.

The PEPs and message types are of your own creation or were created by others and downloaded to your ADS during synchronization with the AMC server. You can turn the display on or off by clicking **View** and checking or unchecking **Project Explorer**.

*Figure 1-4 ADS Window: Project Explorer Pane*



For you to be able to create a PEP and message type, at least one node must have been created on the AMC server and displayed on your ADS. You can create any number of PEPs and message types beneath a node.

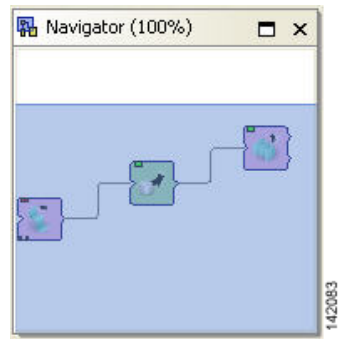
After you synchronize your ADS with the AMC server, the Project Explorer pane refreshes to display any additional PEPs that other users may have posted to the AMC server.

You can update the list of projects displayed in the pane, including those that have been created while ADS has been open, by selecting **File > Get Project List**.

## Navigator Pane

The Navigator pane (Figure 1-5) in the lower left portion of the window displays a map of the entire PEP that you are configuring and, in blue, the portion of that map that is displayed in the PEP Developer pane (described below). It enables you to navigate to different parts of the PEP quickly and easily, which is particularly useful if the PEP is large and complex. You can turn the display on or off by clicking **View** and checking or unchecking **Navigator**.

*Figure 1-5 ADS Window: Navigator Pane*

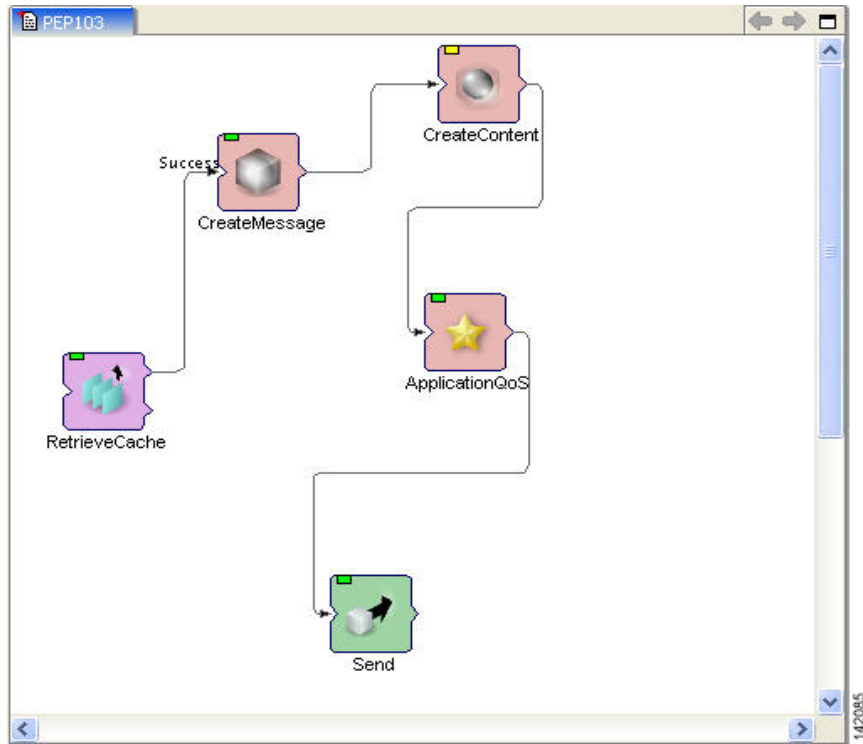


## PEP Developer Pane

The PEP Developer pane (Figure 1-6) in the middle of the window is your workspace for designing a PEP. You drag and drop various Bladelets to that pane and interconnect them to create a PEP. This pane is always displayed.

You can display multiple PEPs at one time, each within its own tabbed view in the pane. PEP names are displayed in the tabs and also in the Project Explorer pane hierarchy.

Figure 1-6 ADS Window: PEP Developer Pane



Note

To create PEPs, see [Creating PEPs, page 1-11](#).

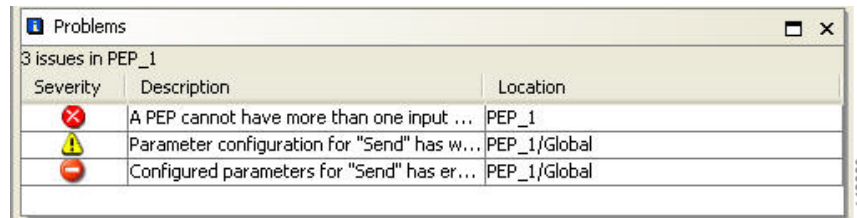
## Problems Pane

The Problems pane ([Figure 1-7](#)) beneath the PEP Developer window displays a list of critical problems, errors, and alerts, as follows:

- Critical problems (denoted by red circles with one X in them) prevent the PEP from performing a valid action. You must resolve all critical problems before you can synchronize your ADS with the AMC server or save the PEP as a template for future PEP development.
- Errors (denoted by red circles with one horizontal line across them) prevent the PEP from operating properly.
- Alerts (denoted by yellow triangles) prevent the PEP from operating properly.



Figure 1-7 ADS Window: Problems Pane



You can rearrange the display by clicking any of the column headings (Severity, Description, and Location). By default, problems are displayed by severity type (critical problem or alert) and, within a severity type, in alphabetical order. You can toggle between ascending and descending order by clicking a heading. You can turn the display on or off by clicking **View** and checking or unchecking **Problems**. Double-clicking any individual problem selects the offending Bladelet in the PEP Developer pane.

## Task Pane

The Task pane (Figure 1-8) on the right side of the window is the source from which you drag and drop Bladelets into the PEP Developer pane. You can turn the pane display on or off by clicking **View** and checking or unchecking **Task**.

ADS provides a predefined list of Bladelets for you to use. Different Bladelet categories have different functions.



### Note

- Two Bladelet types of particular importance are the Break and Exception markers, at the top of the Task pane.
  - The Break marker can be placed only inside loops and you cannot place any other bladelets after the Break marker. The Break marker is used to exit out of the loops.
  - The Exception marker tracks and records exceptions in the PEP.

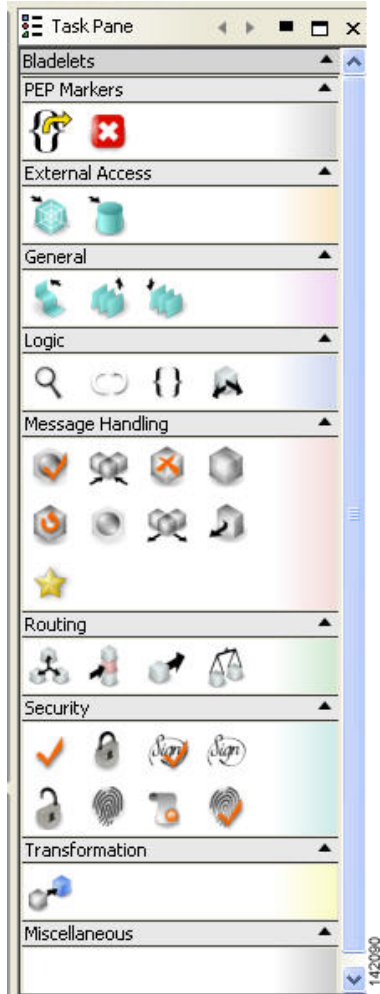
For information on these and other predefined Bladelets, see “[ADS Bladelets Reference](#)” chapter.

- Although doing so should rarely be necessary, you can create custom Bladelets. Custom Bladelets are best created by programmers. The programmer develops the Bladelet, uses the ADS Packaging Wizard to package the resulting files into a single file, and uploads the file to the AMC server. The new Bladelet becomes available to ADS users after synchronization.

When a PEP is selected, the custom Bladelets visible are only those that are applicable to the project containing the PEP. The applicable bladelets are the custom bladelets added under the project and the bladelets added under the system project.

For information on custom Bladelets, see the *AON Programming Guide*.

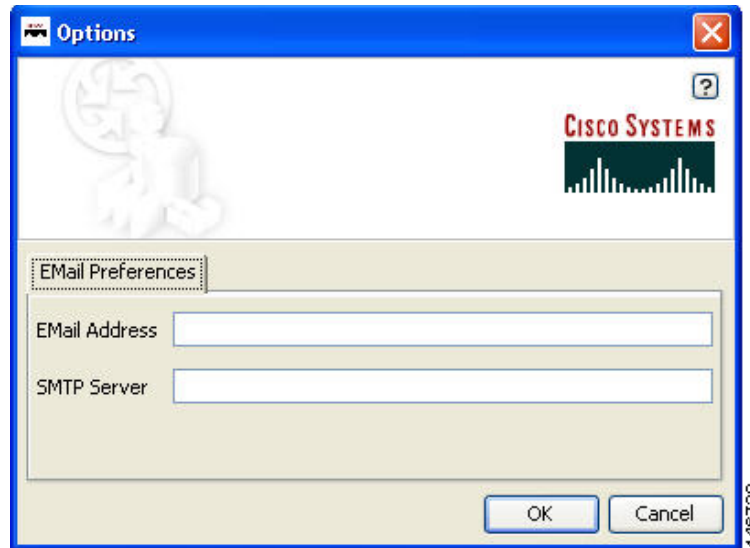
Figure 1-8 ADS Window: Task Pane



## Set E-mail and SMTP Server Information

- Step 1** Set your E-mail Preferences and SMTP Server:
- From the toolbar, click **Tools > Options > Email Preferences**.
  - In the Email Preferences window (Figure 1-9), enter your E-mail address and SMTP Server information.

Figure 1-9 Options to set Email Preferences



c. Click **OK**.

**Step 2** When you are done with your work session, you can close ADS by choosing **File > Quit**.



**Note**

For more information about using the ADS e-mail feature, see [E-mail Support, page 6-1](#).

## Creating PEPs

To create a PEP, perform the following steps.



**Timesaver**

Most steps instruct you to click an icon or, alternatively, choose a command sequence. Instructions to choose a command sequence (example: choose **PEP > New**) refer to commands on the ADS toolbar. In many cases you can access the same command sequence by right-clicking the relevant entry in the Project Explorer pane or the relevant Bladelet in the PEP Developer pane.

**Step 1** Start ADS and log in.

**Step 2** In the Project Explorer pane, click the AON node where the PEP is to reside.

**Step 3** Start a new PEP by clicking the **New** icon (or choosing **PEP > New**).



**Note**

On subsequent use, if you have saved a PEP template, select **PEPs** and right-click on **New > New PEP from Template**. Preview your saved templates, select one, and click **OK**.

**Step 4** In the PEP Attributes window ([Figure 1-10](#)), provide the required information (name, package, description, and interaction style) to the new PEP and click **OK**.

- PEP Name—Maximum characters 128.

The PEP name must start with an alphabet and should consist of underscores and alpha numeric characters. The PEP name cannot start with either a number or an underscore.

- Package Name—Maximum characters 383.

The Package name consists of a project prefix and a user defined package name. The project prefix is from AMC and cannot be changed in ADS and must start with an alphabet and should consist of underscores and alpha numeric characters. The Package name cannot start with either a number or an underscore.

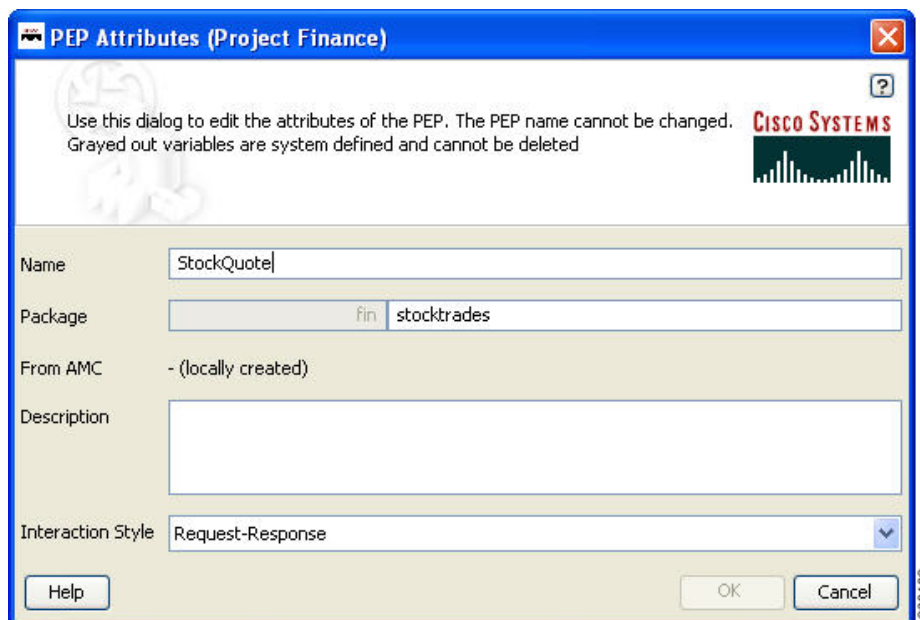

**Caution**

You cannot rename a PEP after you synchronize your PEP with AMC.


**Note**

You will set Variables when you assign the Bladelet Properties. For information on Bladelet Properties and Variables, see the “[Setting Bladelet Properties, Variables, and Rules](#)” chapter.

*Figure 1-10 PEP Attributes Window*


**Note**

We recommend that you define most PEP attributes when you start to create a PEP; however, you can define or modify them later.

Use the default name (PEP *N*) or assign a new name. If a PEP with the same name exists, the OK button in this window is dimmed, enforcing the rule that every PEP name must be unique.

The package is an optional mechanism for organizing your PEPs in one area of a node. You can

assign one or more PEPs to a package. The default is to leave the user-defined portion of the package field blank. (Only the user-defined portions of the package name can be left blank.) We recommend that you either leave it blank or define it later, just before you deploy the PEP. If you define it now, make sure it is defined correctly; you cannot change it later.

For information on PEP attributes, see [“ADS PEP Attributes Reference”](#) chapter.

- d. Drag and drop Bladelets from the Task pane to the PEP Developer pane.



**Note** Alternatively, copy and paste Bladelets from another PEP or from different areas of the same PEP.

- e. Reposition Bladelets by dragging and dropping as needed:
- To select a single Bladelet for dragging, click it.
  - To select multiple Bladelets for dragging as a unit, hold the left mouse button down, draw a box around the Bladelets, and release the button.
- f. (Optional) Add portions of this or another PEP as needed by clicking a corner of its PEP Development screen, dragging the cursor to draw a rectangle around the relevant area, dropping the cursor, copying the selected area, and pasting it into the new PEP.
- g. Add paths between Bladelets by either of the following methods:
- Drag and drop: Drag a Bladelet until it touches or overlaps another Bladelet and a plus sign appears, then drop it.
  - Edge creation: Click the Edge Creation icon. Then click a Bladelet, drag the cursor to another Bladelet, and release.

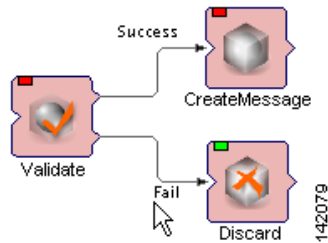
The line and arrow connecting the two Bladelets show the path over which and direction in which information passes through the PEP.



**Note** You can turn edge creation on or off by clicking the Toggle Edge Creation icon. When it is on, the background of the PEP Developer pane changes from white to blue.

- h. (Optional) Change paths between Bladelets as follows:
- To remove a path altogether, click the path in the middle, then either press **Delete** on your keyboard or drag it away and drop it.
  - To connect a path to another Bladelet, click the end of the path that you want to redirect, then drag it elsewhere—to another bladelet or to an exception marker—or leave it open-ended for now.
- i. As needed, create paths for branching Bladelets ([Figure 1-11](#)) as follows:
- To create a success path, drag the path starting from the top half of the branching Bladelet or drop the target Bladelet over the top half of the branching Bladelet.
  - To create a failure path, drag the path starting from the bottom half of the branching Bladelet or drop the target Bladelet over the bottom half of the branching Bladelet.

**Figure 1-11** Branching Bladelet with Success and Failure Paths



- j. Configure each Bladelet as follows:
1. Right-click a Bladelet and click **Bladelet Properties**.
  2. Adjust import and export parameters and other settings as needed. Parameters and settings differ for different Bladelet categories.



**Note** For information on Bladelet properties, see “[Setting Bladelet Properties, Variables, and Rules](#)” chapter.

3. Click **OK**.
  4. Repeat for all Bladelets.
- k. Edit your work by selecting one or more Bladelets and clicking an icon (or clicking **Edit** and an option).
- Typical GUI edit options are available, including those listed in [Table 1](#) (listed in their order of appearance on the icon bar).

**Table 1** *ADS Edit Operations*

Operation	Notes
Undo, Redo	<ul style="list-style-type: none"> <li>• Permits you to undo and redo a virtually unlimited series of changes. However, if you perform one or more undo operations and then make new changes, the original chain of operations is broken and a new chain is started. The default is to use the most recent chain.</li> </ul>
Cut, Copy, Paste	<ul style="list-style-type: none"> <li>• Retains one cut or copied item on the clipboard. The item can come from ADS or any other application and can be used by ADS or any other application.</li> <li>• Deletes that item from the clipboard if a second item is added.</li> <li>• If you paste an item, positions it in the center of the window, rather than at the cursor position.</li> </ul>
Delete	<ul style="list-style-type: none"> <li>• Completely removes the item from the PEP.</li> </ul>
Select All	<ul style="list-style-type: none"> <li>• Is useful when the scope of the PEP falls beyond the viewable pane.</li> <li>• Operates on a single PEP only. If you are working on multiple PEPs, it operates only on the active PEP.</li> <li>• Is available only from the toolbar and not from the icon bar.</li> </ul>

Typical GUI view options are available, including those listed in [Table 2](#) (listed in their order of appearance on the icon bar).

**Table 2** *ADS View Operations*

Operation	Notes
Zoom	<ul style="list-style-type: none"> <li>+10%, -10% zooms the current PEP by plus or minus 10% per click.</li> <li>1:1 returns any zoom level to the default setting.</li> </ul>
Fit to Screen	<ul style="list-style-type: none"> <li>Provides a high-level view of your PEP, which is useful for very large PEPs. If Bladelet images and text become too small to read, view your PEP in the Navigator pane instead.</li> </ul>
Zoom Rectangle	<ul style="list-style-type: none"> <li>Permits you to create a “rubber band” rectangle around a portion of the PEP Developer pane and zoom it in any number of times.</li> </ul>

Typical GUI layout options are available, including those listed in [Table 3](#) (listed in their order of appearance on the icon bar).

**Table 3** *ADS Layout Operations*

Operation	Notes
Toggle Edge Creation	<ul style="list-style-type: none"> <li>When toggled on, permits you to create paths between Bladelets by connecting them with arrows, without having to move Bladelets around the screen.</li> <li>When toggled off (default state), permits you to create paths between Bladelets only by dragging one Bladelet over another until a plus sign indicates that a path is created.</li> </ul>
Layout	<ul style="list-style-type: none"> <li>Rearranges your PEP in a hierarchal manner with the top layer on the left and the bottom layer on the right.</li> </ul>
Toggle Automatic Layout	<ul style="list-style-type: none"> <li>When toggled on, adjusts the spacing between Bladelets and paths to achieve minimal line intersections, text runover, and graphical overlaps. Any Bladelet that you drag and drop on the PEP Developer window is automatically placed on the left side of the window.</li> <li>When toggled off (the default setting), displays Bladelets in the window where you drop them.</li> </ul>

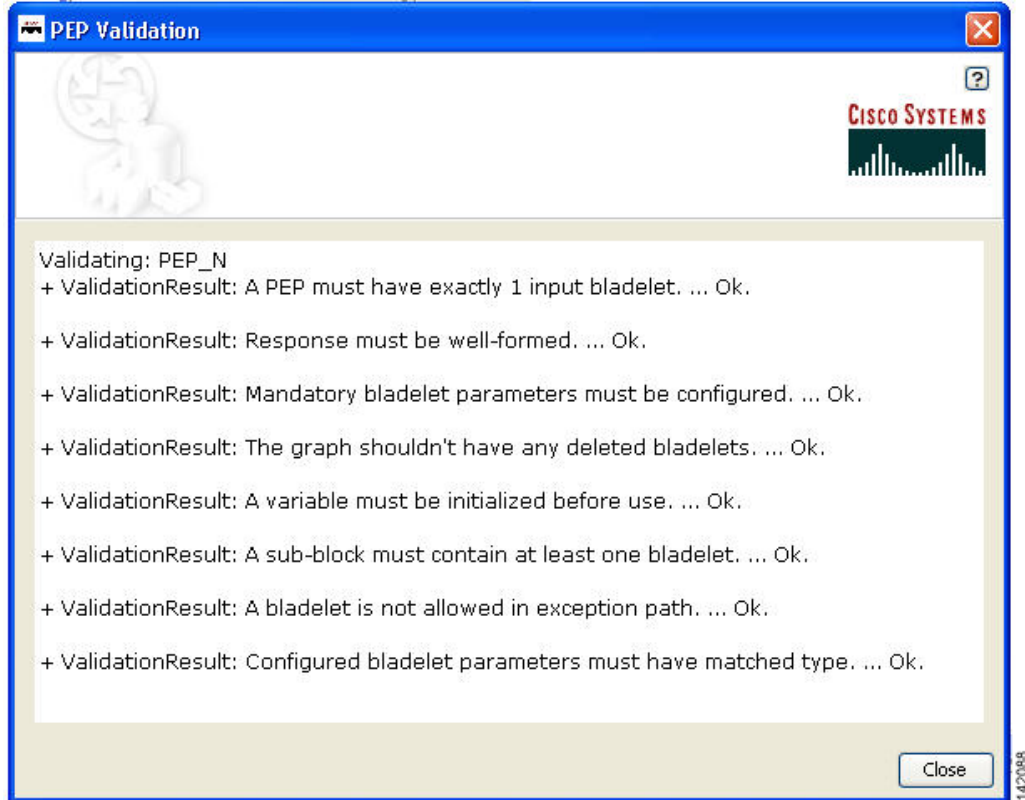
I. Validate your PEP often as follows:

1. Address problems that are displayed in the Problems pane. Double-click a problem to select the offending Bladelet in the PEP Developer pane.
2. Address problems that are displayed in the PEP Validation Report ([Figure 1-12](#)). Generate the report by clicking **PEP > Validate PEP**.



**Note** We recommend that you address problems as they arise. Validation ensures adherence to all rules and parameters that govern individual Bladelets, paths among Bladelets, and the routing of messages through a PEP. A PEP must be valid before you can deploy it during synchronization of your ADS with the AMC server.

Figure 1-12 PEP Validation Report



m. Save your PEP often:

- To save the PEP with its current name, click the **Save** icon (or choose **PEP > Save**).
- To save the PEP with a new name, choose **PEP > Save As**.

n. Optionally, save the PEP as a template for future use by choosing **PEP > Save PEP as Template**.

o. Optionally, close the PEP by clicking the **Close** icon (or choosing **PEP > Close**.)

**Step 5** As needed, create additional PEPs.



**Note** Navigate among multiple open PEPs by clicking the appropriate tab in the PEP Developer pane (or clicking **Window** and the desired PEP).

**Step 6** As needed, modify or finish defining attributes for each PEP as follows:

- Click the appropriate tab in the PEP Developer pane.
- Click the **Attributes** icon.
- In the PEP Attributes window (similar to that for creating a new PEP except that the name and package, if already defined, are uneditable), provided the requested information and click **OK**.



**Note** For information on PEP attributes, see [“ADS PEP Attributes Reference”](#) chapter.

**Step 7** Close each open PEP by clicking its tab and then clicking the **Close** icon (or choosing **PEP > Close**).



- Step 8** Optionally, print your PEP as follows:
- Set up the page by clicking the **Print Preview** icon (or choosing **PEP > Page Setup**).
  - Preview the page by clicking the **Print Preview** icon (or choosing **PEP > Print Preview**).
  - Print the page by clicking the **Print** icon (or choosing **PEP > Print**).
- Step 9** Optionally, exit ADS by choosing **File > Quit**.
- 

## Save a PEP with a New Name

To save an existing PEP with a new PEP name, perform the following steps.

- Step 1** In the ADS toolbar, click **PEP > Save PEP as**.
- Step 2** Enter a new name and package name (Figure 1-14). You must follow the following recommendation.
- PEP Name—Maximum characters 128.  
The PEP name must start with an alphabet and should consist of underscores and alpha numeric characters. The PEP name cannot start with either a number or an underscore.
  - Package Name—Maximum characters 383.  
The Package name must start with an alphabet and should consist of underscores and alpha numeric characters. The Package name cannot start with either a number or an underscore.

*Figure 1-13 Save PEP with a New PEP Name*



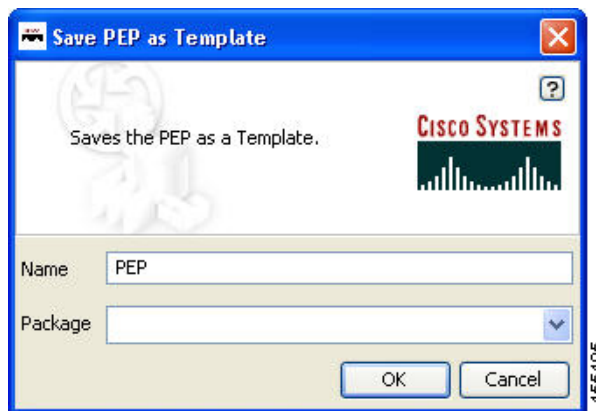
- Step 3** Click **OK**.
-

## Save a PEP as a Template

To save an existing PEP as a template, perform the following steps.

- 
- Step 1** In the ADS toolbar, click **PEP > Save PEP as Template**.
- Step 2** Enter a name and package name (Figure 1-14). You must follow the following recommendation.
- **PEP Name**—Maximum characters 128.  
The PEP name must start with an alphabet and should consist of underscores and alpha numeric characters. The PEP name cannot start with either a number or an underscore.
  - **Package Name**—Maximum characters 383.  
The Package name must start with an alphabet and should consist of underscores and alpha numeric characters. The Package name cannot start with either a number or an underscore.

*Figure 1-14 Save PEP as a Template*



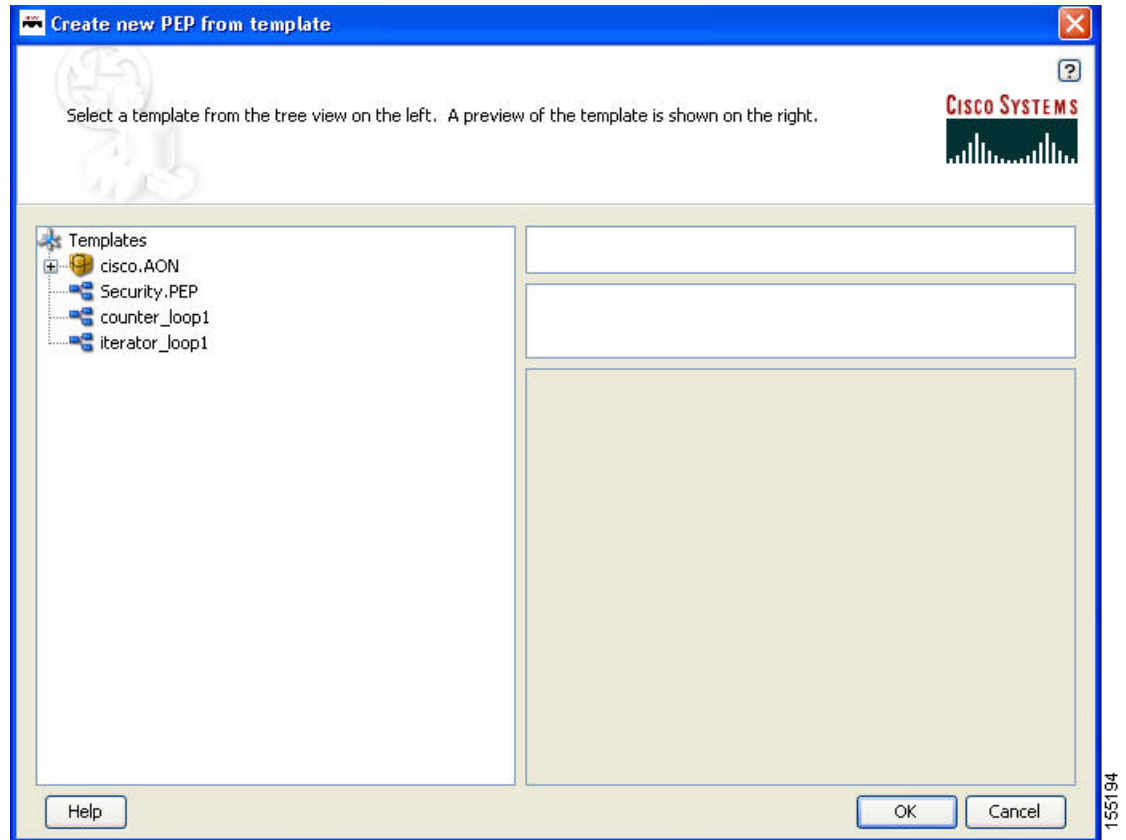
- Step 3** Click **OK**.
- 

## Create a New PEP from a Template

To create a new PEP from an existing template, perform the following steps.

- 
- Step 1** In the Project Explorer pane, select **PEPs** and right-click on **New > New PEP from Template**.
- Step 2** Select a template from the tree view (Figure 1-15).

Figure 1-15 Create New PEP from a Template



Step 3 Click **OK**.

## Deploying PEPs and Message Types

Deploying PEPs involves synchronizing your ADS with the AMC server. ADS posts your valid PEPs and message types to the server. The server posts new nodes, PEPs, Bladelets, message types, and other information to your ADS for your use.

To deploy one or more PEPs (and associated message types) under a project, perform the following steps.



### Timesaver

Most steps instruct you to click an icon or, alternatively, choose a command sequence. Instructions to choose a command sequence (example: choose **PEP > New**) refer to commands on the ADS toolbar. In many cases you can access the same command sequence by right-clicking the relevant entry in the Project Explorer pane or the relevant Bladelet in the PEP Developer pane.

Step 1 Start ADS and log in.

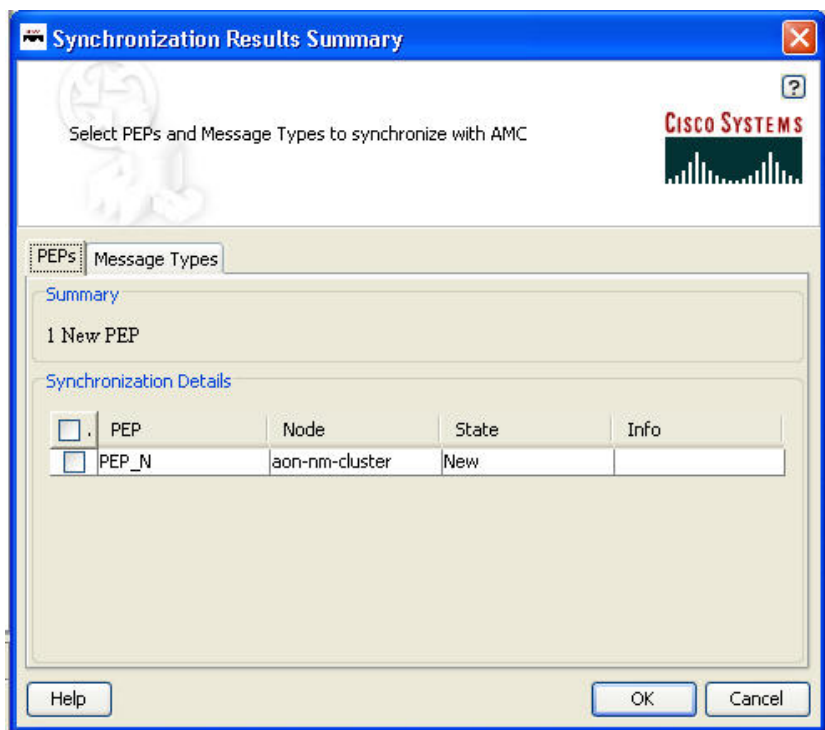
**Caution**

You cannot rename a PEP after you synchronize your PEP with AMC.

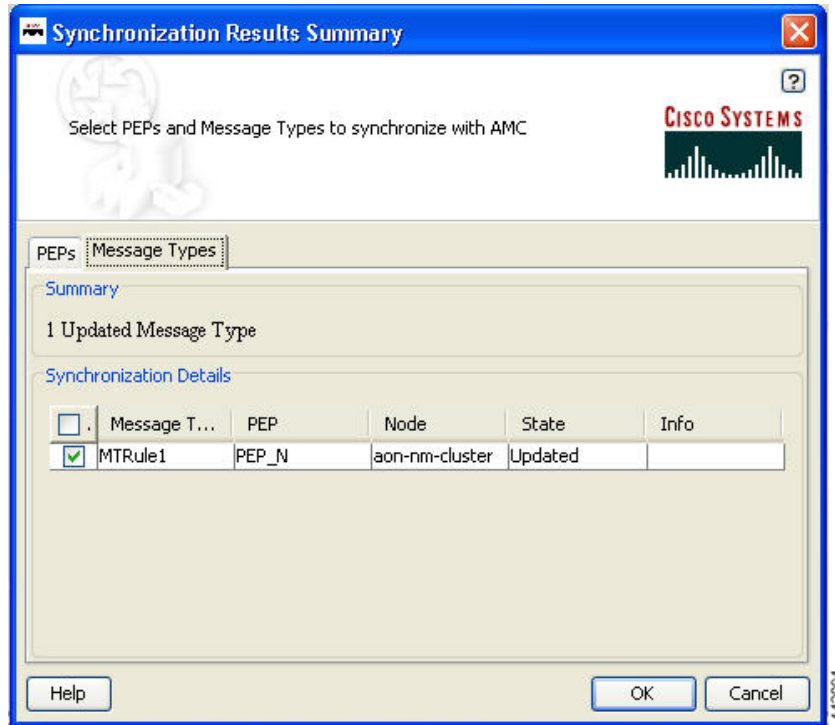
- Step 2** Synchronize your ADS with the AMC server as follows:
- Ensure that you are connected to an AMC server. If you are working offline, click the **Connect** icon (or choose **File > Connect**) and connect now.
  - Click the **Synchronize** icon (or choose **File > Synchronize**).
  - In the Synchronization window, select valid PEPs (Figure 1-16) and message types (Figure 1-17) as needed, and click **OK**.

During synchronization, your selections post to the AMC server, and any updates on the server post to your ADS.

*Figure 1-16 Synchronization Window: PEPs*

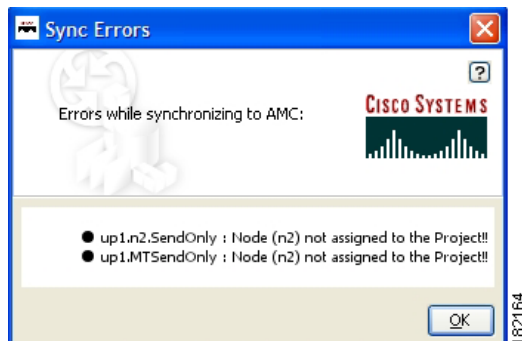


**Figure 1-17** Synchronization Window: Message Types



If AMC fails to update the resource (PEPs and MessageTypes), a synchronization error (Figure 1-18) may appear:

**Figure 1-18** Synchronization Error

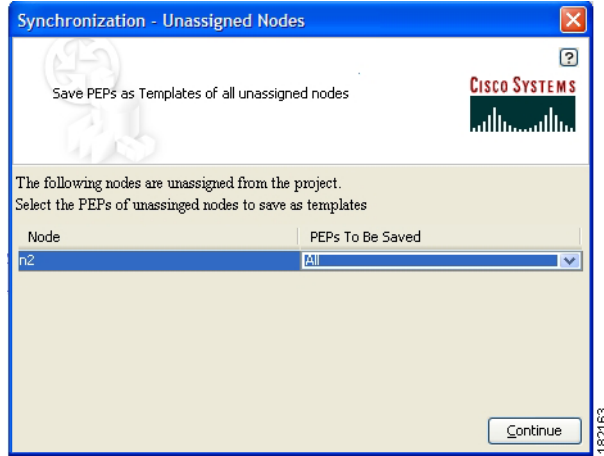


A synchronization error can occur due to any of the following conditions:

- synchronization of the project has created, updated, or deleted resources of unassigned nodes
- resource creation, updating, or deletion failed in AMC
- an attempt to synchronize the project using a user which is unassigned from the project

If any network nodes are unassigned from the project, an unassigned nodes dialog (Figure 1-19) appears:

Figure 1-19 Unassigned Nodes Dialog



You may choose any of the following options against each unassigned nodes to save a PEP as a Template:

- **None:** No PEPs will be saved as Template
- **Updated:** All Updated PEPs will be saved as Template
- **All:** All PEPs will be saved as Template

Saved PEP templates are saved in a separate folder of name:

```
<<currentdate>>_<<userproject prefix>>_syncbackup_unassignednodes_<<nodename>>
```

in the `ads templates` directory.

## Create Message Types

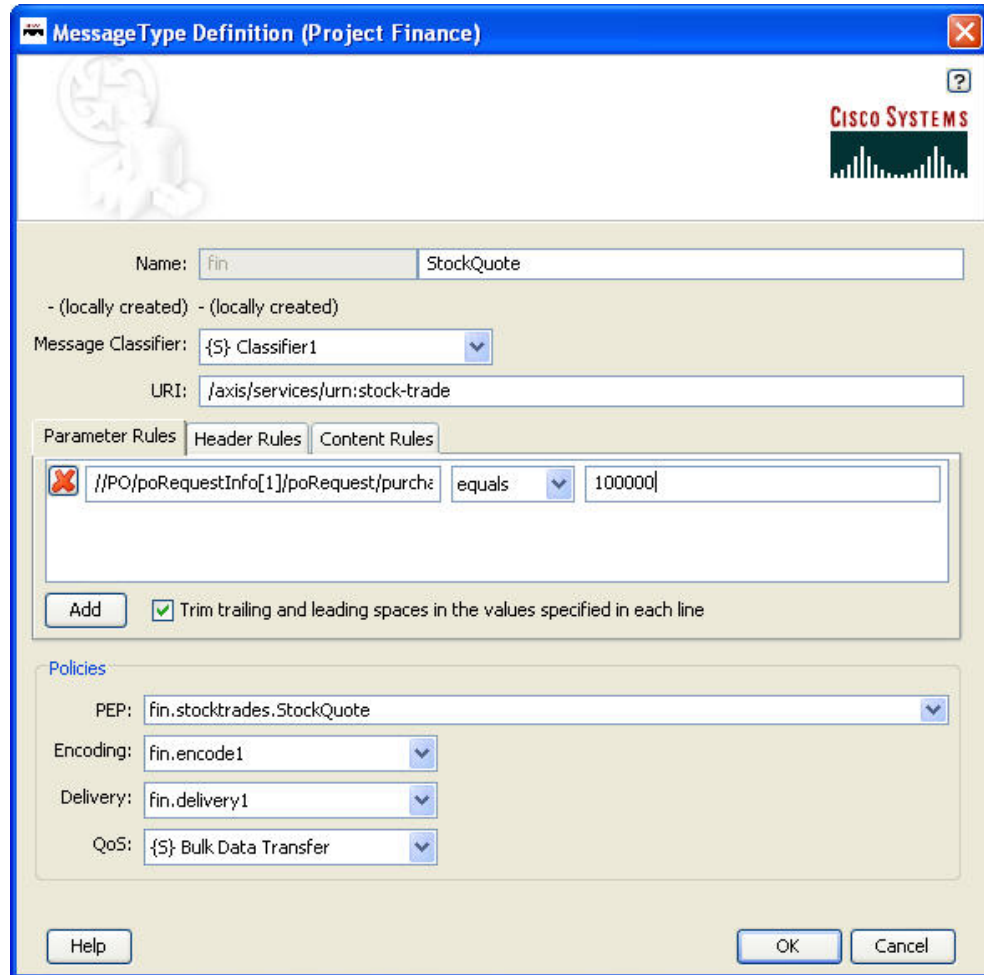
Once you create a new PEP, you can apply one or more message types to it. A message type acts as the determining factor for what messages will be drawn through the particular PEP. For this reason, the order of the message types is critical as each level of message type filters what goes through it. If you do not order the message types properly, you may make one or more of them ineffective.

- 
- Step 1** To create your first message type, proceed to the node and select **Message Type** label in the Project Explorer pane.
- Step 2** Create and assign message types for a PEP as follows:
- a. In the Project Explorer pane, under the appropriate node, select **Message Types**. Then choose **Message Type > Message Type**.
  - b. In the Message Type Definition window (Figure 1-20), provide the requested information and click **OK**.



**Note** For information on message types, see “[ADS Message Types Reference](#)” chapter.

Figure 1-20 Message Type Definition Window



The new message type now appears in the Project Explorer pane.

- c. As needed, create additional message types for the PEP.

**Step 3** Click **OK**.



**Note**

Until you reorder the message types, the message types are displayed in the Project Explorer pane in the order in which you create them. Because message types contain conditions that govern whether or not a message proceeds to the PEP for processing, their order is important. You can reorder them later, after you synchronize your ADS with the AMC server.

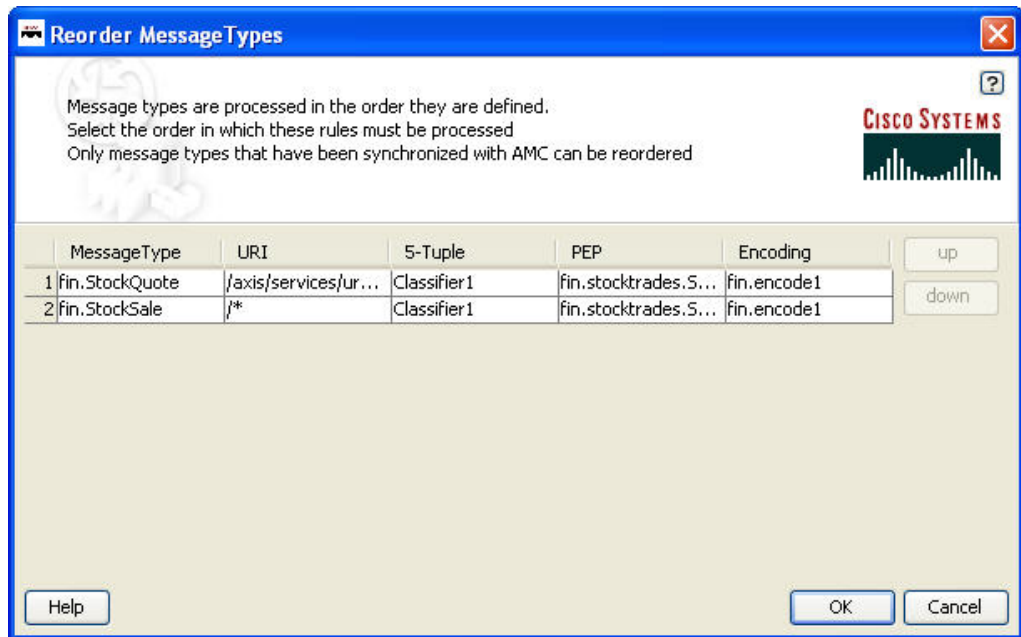
**Step 1** Reorder Message Types As needed, reorder your message types as follows:



**Note** Because message types contain conditions that govern whether or not a message proceeds to the PEP, the order in which you list multiple message types is important.

- a. Save and close all open PEPs.
- b. In the Project Explorer pane under the relevant node, select **Message Types (#N)** and choose **Message Type > Reorder Message Types**.
- c. In the Reorder Message Types window (Figure 1-21), select a message type, click up or down as needed, and click **OK**.

*Figure 1-21 Reorder Message Types Window*



**Step 2** Synchronize with AMC again to preserve the new order.

**Step 3** Exit ADS by choosing **File > Quit**.

#### Where To Go Next

- For information on predefined Bladelets and rules, see [ADS Bladelets Reference](#) chapter.
- For information on PEP attributes, see [ADS PEP Attributes Reference](#) chapter.
- For information on message types, see [ADS Message Types Reference](#) chapter.
- For information on contacting Cisco technical support for ADS, see [E-Mail to Cisco ADS Support](#) chapter.
- For information on the AMC server and nodes, see the [Cisco AON Installation and Administration Guide](#).
- For information on custom Bladelets, custom adapters, and application program interfaces, see the [Cisco AON Programming Guide](#).