



# ASR9K Craft Tool 1.0 (ACT) Supports XR 3.9 and 3.9.1



# Table of Contents

- Overview
- Installing and Launching
- Un-installing
- Datasheet and Feature Description



# Overview



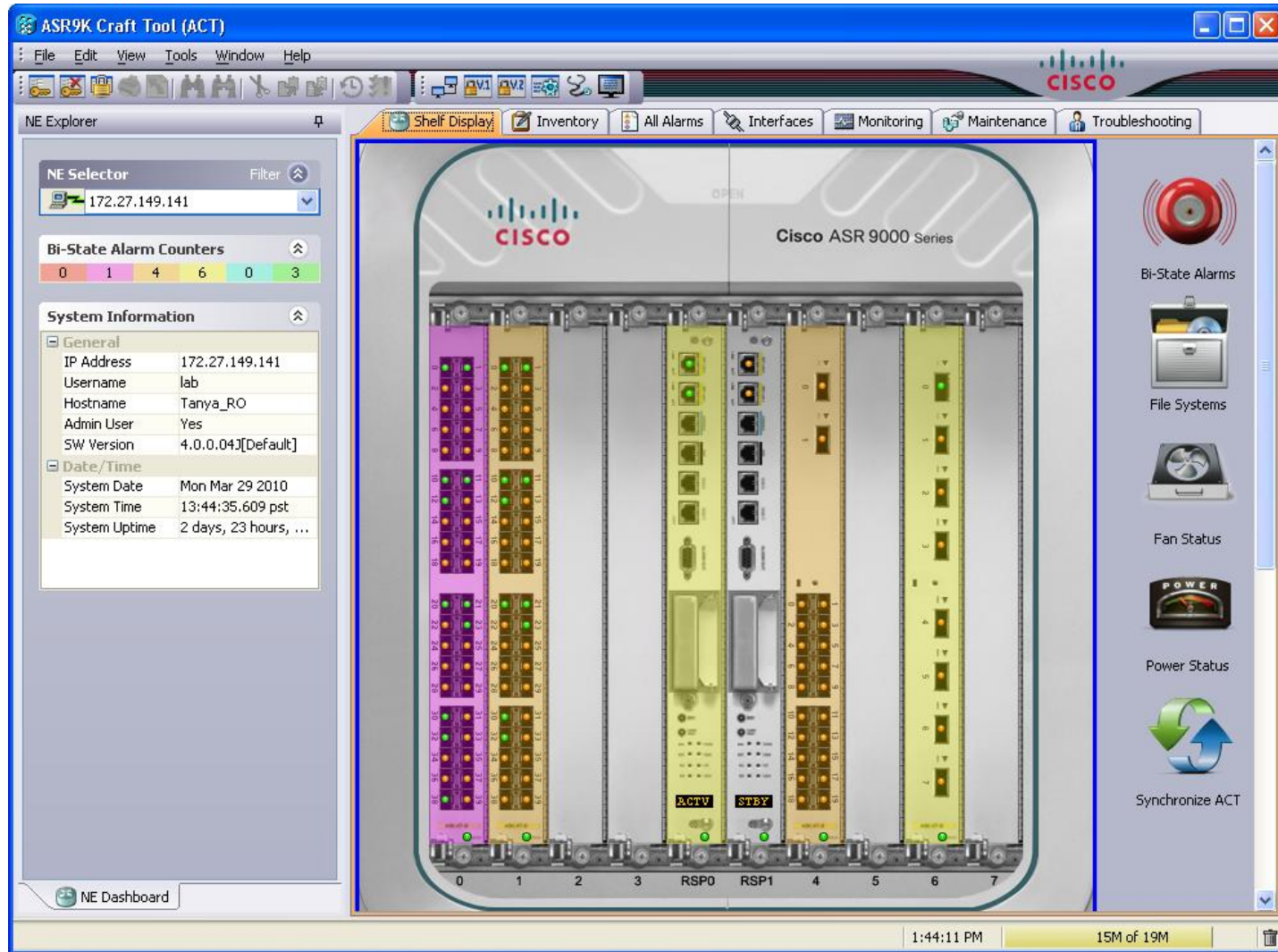
# What is ASR9K Craft Tool (ACT)?

- Quick Start ASR 9000 Operations/Management Tool
- Reduces node turn-up time and assists field troubleshooting
- Eases customer migration to IOS XR by providing a GUI for standard system operations verification.
- Reduces product training time
- ACT is not intended to replace networking management systems such as ANA
  - It is not a EMS platform
  - ACT is not intended to provide system configuration

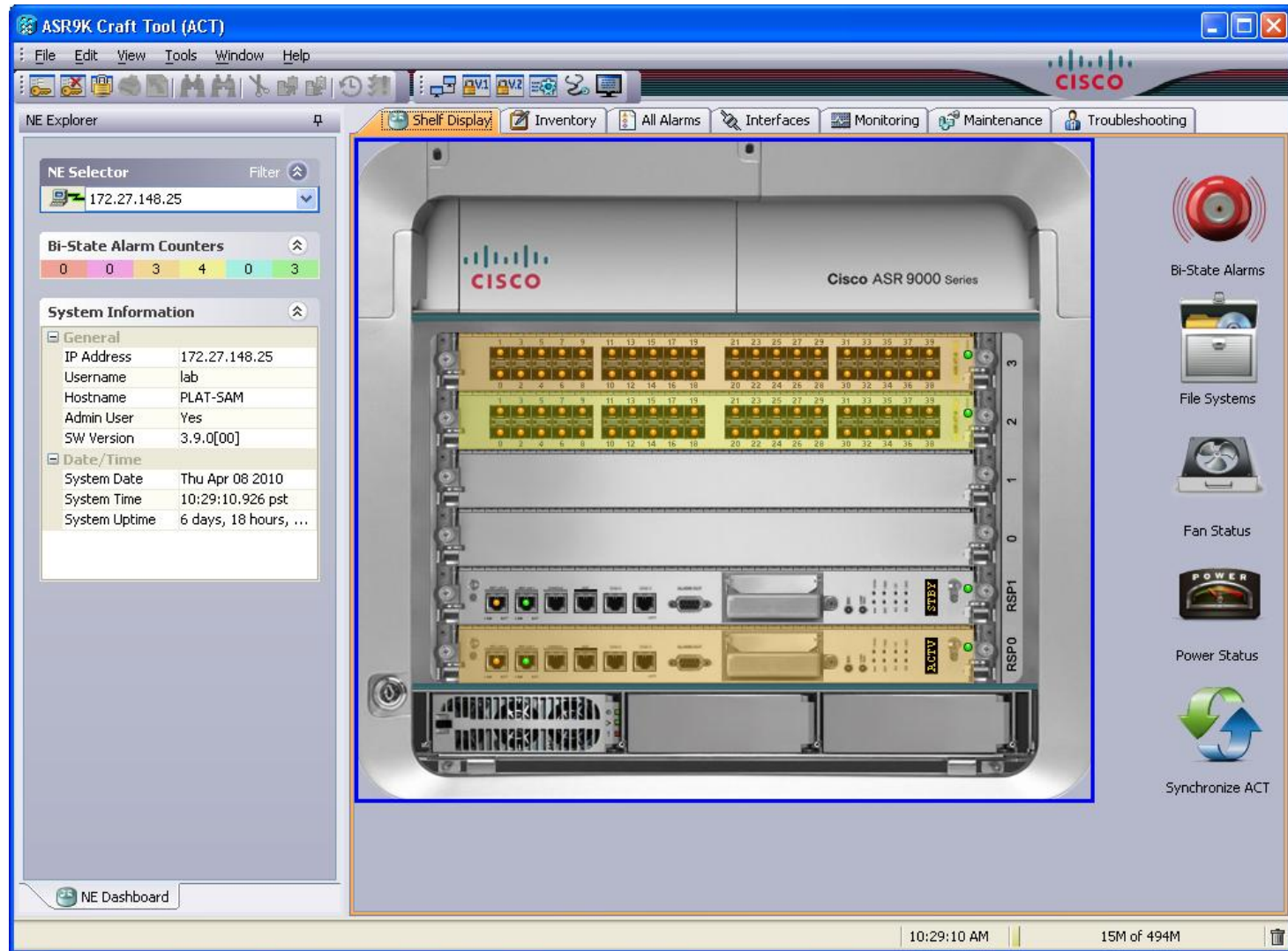
# ASR9K Craft Tool Overview

- Light weight tool for Simple device level management, discovery & configuration – No external Database/persistent storage.
- Java Client installed on local PC.
- Dynamic/Graphical Views of the Device.
- Real Time Alarm Monitoring – View, Filter, Sort, Search, Clear, Purge.
- Real Time Inventory Function -- View, filter, export, and search real-time inventory and interface object attribute information .
- Package management functionalities include install add, activate, commit, deactivate, and remove.
- Service Console for low level debugging and diagnostics.
- Config/Fault/Performance at Device level from FCAPS perspective.
- Connects to multiple routers.

# ACT with a 10-slot Chassis



# ACT with a 6-slot Chassis





# Installing and Launching





# Installing ACT

- Download the act.zip from CCO.
- Extract the contents into a newly created directory.
- Read **README.pdf**.
- From the newly created directory, run **SetupACT**.
- Click the desktop icon



to launch ACT.

# Java Runtime Environment (JRE)

- Requires JRE version 1.5 or higher.
- JRE 1.6 is recommended.
- Go to <http://java.sun.com/products/archive/>.
- Click the Go button next to JDK/JRE - 6 and install the latest JRE.

# Basic Router Requirements

- **asr9k-mgbl-p.pie** must be loaded
- **asr9k-k9sec-p.pie** must be loaded for SSHv1 & v2

## Configurations

- **xml agent tty** must be enabled
- **http server** only needed to support core file retrieval on ACT
- **vtty pp 10 20** for additional vty connections

# Connection Types & Required Configs

## XML over Telnet

- `telnet vrf default ipv4 server max-servers 20`

## XML over SSHv1

- `ssh server`
- `hostname <hostname>`
- `domain name <domain>`

## XML over SSHv2

- `ssh server v2`



# Uninstalling



# Uninstalling ACT

- To uninstall ACT, go to the ACT application directory. The default directory is called “act” under your user directory (e.g. c:\Documents and Settings\\act).
- Go to the uninstall directory.
- Select the act version you wanted to uninstall.
- For example, double click “ACT 1.0\_uninstall.cmd” to uninstall ACT 1.0.

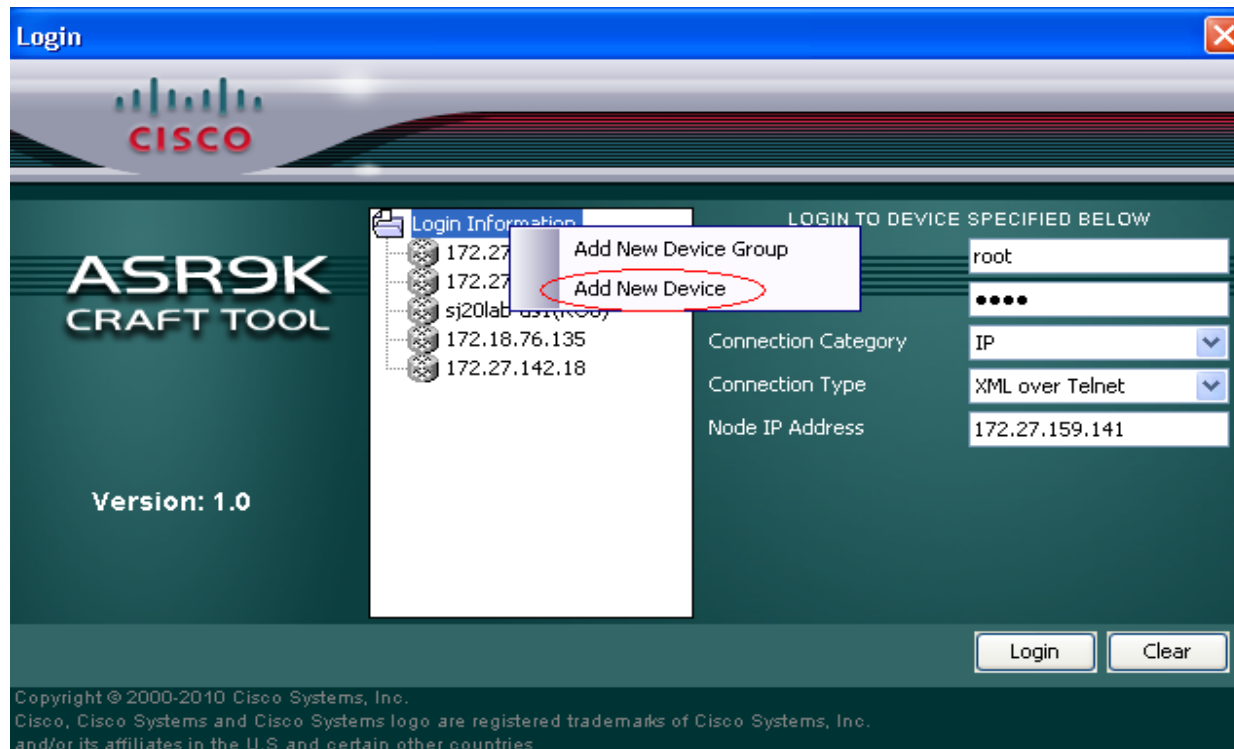


# Datasheet and Feature Description



# Login Dialog

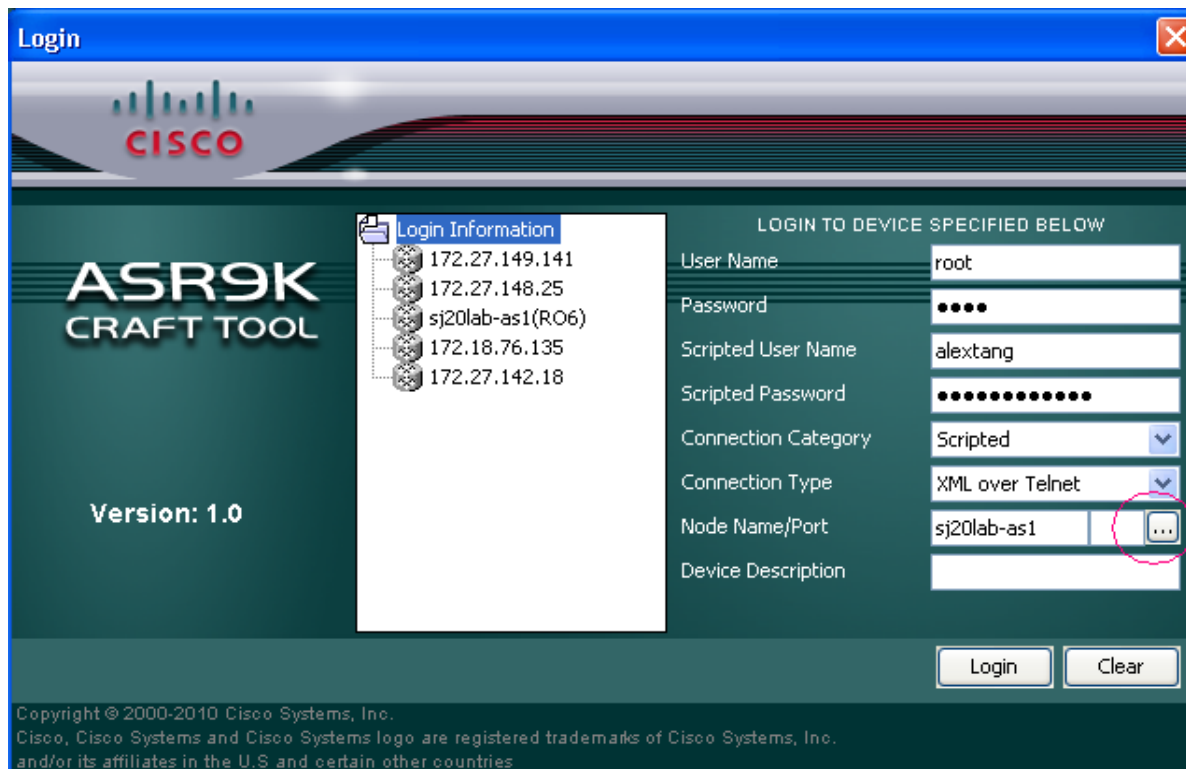
- To avoid entering login parameter every time, use “Add New Device” to create a login profile.
- You may also create Device Group and add devices to the group.





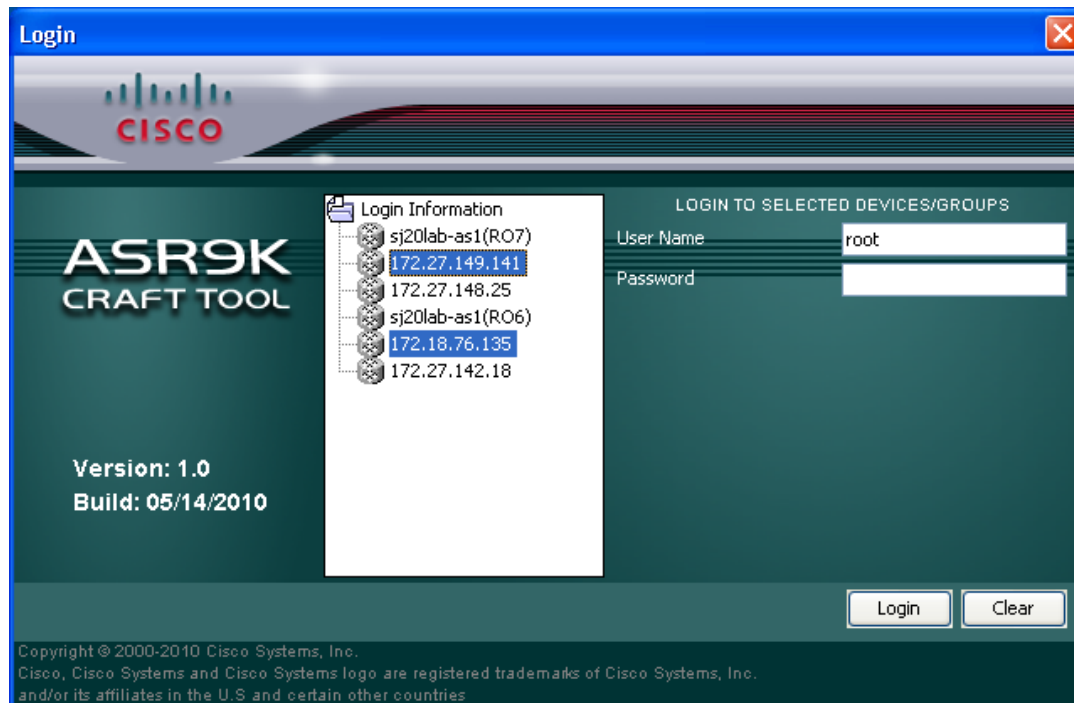
# Login Dialog (Scripted)

- If the router is behind a terminal server, select “**Scripted**” as the Connection Category.
- Click “...” to enter scripted parameters. Refer to **README.pdf** in **act.zip** for more information.



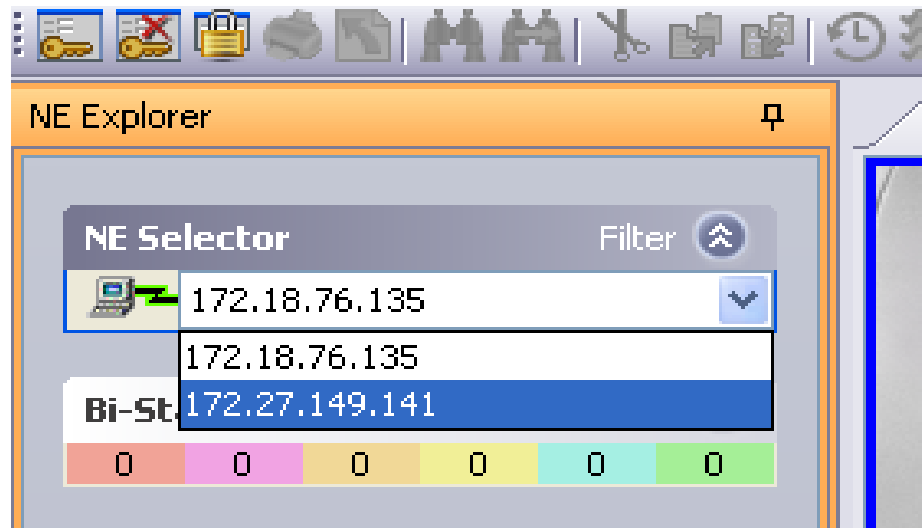
# Concurrent Login

- ACT can log into multiple devices simultaneously if they share the same username and password.
- To do so, select multiple devices by using the <Ctrl> / <Shift> key or select the entire device group.



# NE Selector

- To log into another device, click the Login toolbar icon. On successful login, the device IP will appear under the NE Selector.
- Use the NE Selector to switch between different devices.



# Dynamic Shelf Display

- Displays real-time inventory data in a graphical form with RSP and line card types.
- Displays RSP active/standby status.
- Displays hardware interface status on ports (green = up, amber = down).
- Overlays the highest severity bi-state alarm color on cards.
- Displays card Product Identification Number (PID) and bi-state alarm counters via card tooltip.
- Displays real-time card states via the card LED tooltip.
- Reacts to real-time card insertion and removal notifications.

# Widget Controls on the Dynamic Shelf Display



- Bi-State Alarm – Displays the system bi-state alarms.
- File Systems – Displays the utilization information of various file systems.
- Fan Status – Displays the RPM of each fan on a fan tray.
- Power Status – Displays the wattage readings of each power module.
- Synchronize ACT – Re-synchronizes the Bi-state Alarm Counters and Dynamic Shelf Display with the router.

## UI Table Related Toolbar Icons

- The following toolbar icons apply to the UI tab applications (i.e. Tabs on the right-hand side of the Main Screen)



Supports table printing



Supports table export



Supports table Find and Find Next



Supports table refresh



Supports table column preferences

# Inventory Tab

- Displays inventory data in a tabular form.
- Display information includes Type, Description, Vendor Type, Name, Hardware Revision, Software Revision, Firmware Revision, Serial Number, Manufacturer Name, Alias, Asset ID, and FRU.
- Supports filtering based on column criteria.
- Supports printing and exporting of tabular data.
- Supports column re-arrangement through the Preference dialog .
- Supports Find and Find Next operation.

# All Alarms Tab

- Displays alarm entries include bi-state and non bi-state alarms.
- Display information includes TimeStamp, Severity, State, Alarm ID, Source, Category, Correlated ID, Event Code, Group, and Additional Text.
- Supports filtering based on severity, time range, alarm state, and alarm ID range criteria.
- Supports printing and exporting of tabular data.
- Supports column re-arrangement through the Preference dialog.
- Supports Alarm Clear and Purge operations. Both operations alter the alarm entries on the router.
- Supports Find and Find Next operation.



# Alarm Severity Descriptions and Associated Color

Alarm Severity	Color	Description (Logged System Messages)
Emergency	Red	System unusable.
Alert	Purple	Critical system condition exists and requires immediate action.
Critical	Orange	Critical system condition exists.
Error	Yellow	Noncritical errors exist.
Warning	Blue	Warning conditions exist.
Notification	Green	Notifications of changes exist to system configuration.
Informational	Green	Information about changes to system state exists.

# InterfacesTab

- Displays all the interfaces on the router.
- Display information includes Name, Parent Interface, MTU, Encapsulation, Interface State, Line State, and Bundle Parent.
- Supports filtering based on column criteria.
- Supports printing and exporting of tabular data.
- Supports column re-arrangement through the Preference dialog.
- Supports Find and Find Next operation.

## Interfaces/System/Process Tabs (Under Monitoring)

- No information will be displayed unless Performance Monitoring configurations are enabled.
- Supports filtering based on column criteria.
- Supports printing and exporting of tabular data.
- Supports column re-arrangement through the Preference dialog.
- Supports Find and Find Next operation.

# Configurations for Interface Performance Monitoring

- Setting up a template for interface monitoring

```
performance-mgmt statistics interface generic-counters template interface_template  
sample-size 30  
sample-interval 1
```

- Assigning the template to monitored interfaces

```
performance-mgmt apply monitor interface generic-counters MgmtEth0/RSP0/CPU0/0  
interface_template  
  
performance-mgmt apply monitor interface generic-counters GigabitEthernet 0/4/0/0  
interface_template
```

# Configurations for System Performance Monitoring

- Setting up a template for system monitoring

```
performance-mgmt statistics node cpu template cpu_template
```

```
sample-size 30
```

```
sample-interval 1
```

```
performance-mgmt statistics node memory template memory_template
```

```
sample-size 30
```

```
sample-interval 1
```

- Assigning the template to monitored cards

```
performance-mgmt apply monitor node cpu location 0/RSP0/CPU0 cpu_template
```

```
performance-mgmt apply monitor node cpu location 0/2/CPU0 cpu_template
```

```
performance-mgmt apply monitor node cpu location 0/4/CPU0 cpu_template
```

```
performance-mgmt apply monitor node memory location 0/RSP0/CPU0 memory_template
```

```
performance-mgmt apply monitor node memory location 0/2/CPU0 memory_template
```

```
performance-mgmt apply monitor node memory location 0/4/CPU0 memory_template
```

# Configurations for Process Performance Monitoring

- Setting up a template for process monitoring

```
performance-mgmt statistics node process template process_template
```

```
sample-size 30
```

```
sample-interval 1
```

- Assigning the template to monitored processes

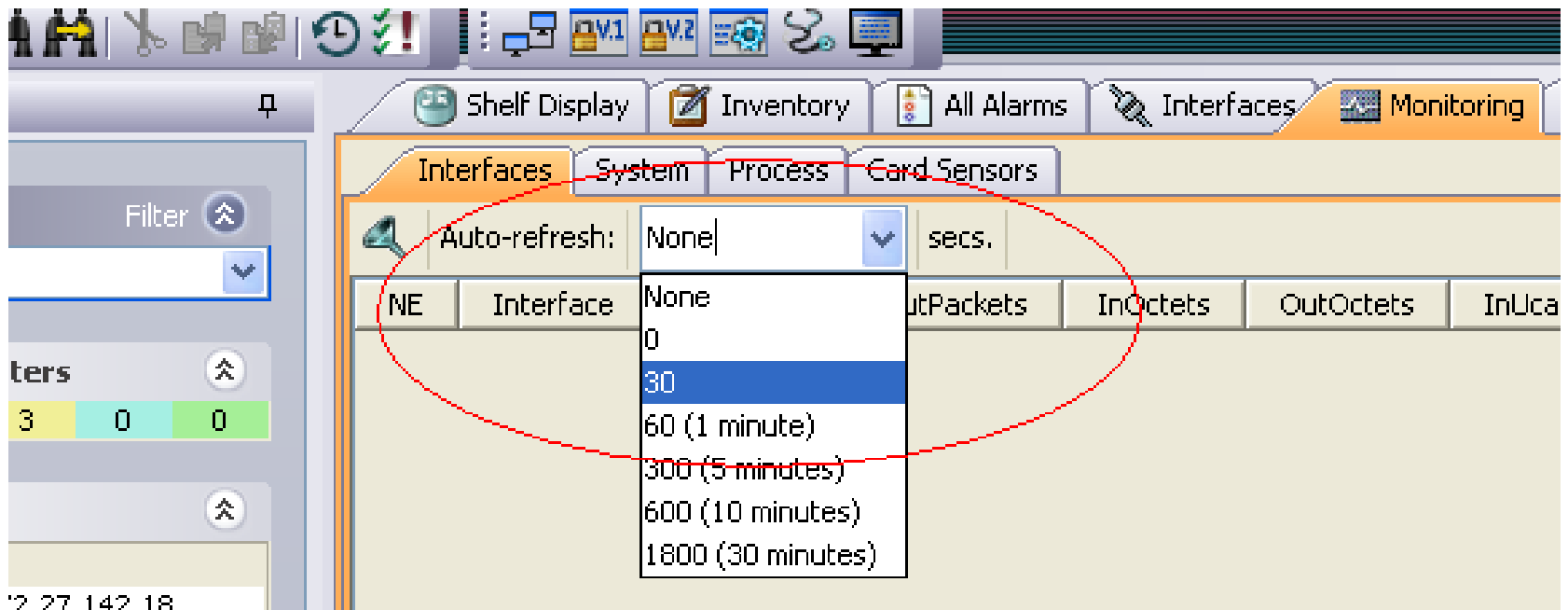
```
performance-mgmt apply monitor node process location 0/RSP0/CPU0 process 213092  
process_template
```

```
performance-mgmt apply monitor node process location 0/RSP0/CPU0 process 262401  
process_template
```

- \* 213092 is the process ID which can be attained by “sh process <process>”  
(eg. sh process snmpd)

# Select a Polling Interval

- Once the performance monitoring configurations are set, select a polling interval to retrieve the data.



## Card SensorsTab (Under Monitoring)

- Displays all card and port sensors on the router.
- Display information includes Name, Type, Value, and Alarm Status.
- Supports filtering based on column criteria.
- Supports printing and exporting of tabular data.
- Supports column re-arrangement through the Preference dialog.
- Supports Find and Find Next operation.



## Manage Packages Tab (under Maintenance)

- Displays all active (including un-committed) and in-active packages on the router. Un-committed packages are highlighted in orange.
- Supports FTPing packages from a local PC to a FTP server.
- Supports “Install Add” via a TFTP host accessible by a router.
- Supports “Install Activate”, “Remove”, “Install Commit”, and “Deactivate”.
- Displays package details on each RSP and line card.
- Displays installation log of the router.
- Supports software image upgrade and downgrade.

# Manage Packages Tab (Active/Inactive Packages)

The screenshot displays the NE Explorer interface with the 'Manage Packages' tab selected. The left sidebar contains the 'NE Selector' with the IP address 172.27.148.25, 'Bi-State Alarm Counters' showing various counts, and 'System Information' including IP Address, Username, Hostname, Admin User, SW Version, System Date, System Time, and System Uptime.

The main area is divided into two panels: 'Active Packages (Orange highlights = Uncommitted)' and 'Inactive Packages'.

**Active Packages (Orange highlights = Uncommitted)**

Active Packages	
disk0:	comp-asr9k-mini-3.9.0
disk0:	asr9k-mgbl-3.9.0

**Inactive Packages**

<input type="checkbox"/> disk0: asr9k-mpls-3.9.0
--------------------------------------------------

Buttons at the bottom include 'Commit...', 'Deactivate...', 'FTP...', 'Add...', 'Activate...', and 'Remove...'. The status bar at the bottom indicates 'Status (NE: 172.27.148.25)'.

# Manage Packages Tab (Install Add Operation)

The screenshot displays the 'Manage Packages' tab in a network management interface. The interface includes a top navigation bar with tabs like 'Shelf Display', 'Inventory', 'All Alarms', 'Interfaces', 'Monitoring', 'Maintenance', and 'Troubleshooting'. Below this, the 'Manage Packages' tab is active, showing a list of 'Active Packages' and an 'Inactive Packages' section. The 'Active Packages' list contains two entries: 'disk0: comp-asr9k-mini-3.9.0' and 'disk0: asr9k-mgbl-3.9.0'. A dialog box titled 'Add Package' is open, showing the 'TFTP File Path' as 'tftp://223.255.254.245/tftpboot/asr9k-mpls-p.pie-3.9.0'. The dialog box has an 'Add' button and a 'Cancel' button. A note above the dialog box states: '2) Specify the package name along with the absolute path. Note: source can be local Router Media device also; like hddisk: or disk1: or compactflash:'. A callout points to the 'Add...' button in the bottom right corner of the interface, with the text: '1) Click on 'Add' button, a dialog box will pop up'. The interface also includes a left sidebar with 'Alarm Counters' and 'Information' sections, and a bottom status bar with buttons for 'Package Details', 'Install Log', and 'Refresh'.

tor Filter

2.27.148.25

Alarm Counters

0 3 1 1 1

Information

al

ress 172.27.148.25

ime lab

ime Router

User Yes

rsion 3.9.0[00]

Time

1 Date Thu May 27 2010

1 Time 14:38:25.523 pst

1 Uptime 3 hours, 26 minutes

Active Packages (Orange highlights = Uncommitted)

Active Packages

disk0: comp-asr9k-mini-3.9.0

disk0: asr9k-mgbl-3.9.0

Inactive Packages

2) Specify the package name along with the absolute path  
Note: source can be local Router Media device also; like hddisk: or disk1: or compactflash:

Add Package

TFTP File Path: tftp://223.255.254.245/tftpboot/asr9k-mpls-p.pie-3.9.0

☐ Activate package after the Add operation

Add Cancel

1) Click on 'Add' button, a dialog box will pop up

Commit... Deactivate...

FTP... Add... Activate... Remove...

Status (NE: 172.27.148.25)

Package Details Install Log Refresh

# Manage Packages Tab (Install Add Operation)

The screenshot displays the NE Explorer interface with the 'Manage Packages' tab selected. The left sidebar contains the 'NE Selector' (172.27.148.25), 'Bi-State Alarm Counters', and 'System Information' (General and Date/Time sections). The main area shows 'Active Packages' (Orange highlights = Uncommitted) and 'Inactive Packages'. An 'Add Package' dialog box is open, prompting for a 'TFTP File Path' (compactflash:asr9k-mpls-p.pie-3.9.0) and an option to 'Activate package after the Add operation'. A callout points to the 'Add' button in the dialog with the text: **Install 'Add' operation, via compactflash:**. At the bottom, there are buttons for 'Commit...', 'Deactivate...', 'FTP...', 'Add...', 'Activate...', 'Remove...', 'Package Details', 'Install Log', and 'Refresh'.

NE Explorer

Shelf Display Inventory All Alarms Interfaces Monitoring Maintenance Troubleshooting

Manage Packages Licenses

NE Selector Filter

172.27.148.25

Bi-State Alarm Counters

0 0 3 1 1 1

System Information

General

IP Address 172.27.148.25

Username lab

Hostname Router

Admin User Yes

SW Version 3.9.0[00]

Date/Time

System Date Thu May 27 2010

System Time 14:38:25.523 pst

System Uptime 3 hours, 26 minutes

Active Packages (Orange highlights = Uncommitted)

Active Packages

disk0: comp-asr9k-mini-3.9.0

disk0: asr9k-mgbl-3.9.0

Inactive Packages

Install 'Add' operation, via compactflash:

Add Package

TFTP File Path: compactflash:asr9k-mpls-p.pie-3.9.0

☐ Activate package after the Add operation

Add Cancel

Commit... Deactivate... FTP... Add... Activate... Remove...

Status (NE: 172.27.148.25)

Package Details Install Log Refresh

# Manage Packages Tab (Install Activate Operation)

The screenshot displays the Cisco NE Explorer interface. On the left, the 'NE Selector' shows the IP address 172.27.148.25. Below it, 'Bi-State Alarm Counters' shows various status counts. The 'System Information' section includes details like IP Address, Username, Hostname, Admin User, SW Version, System Date, System Time, and System Uptime.

The main area is titled 'Manage Packages' and is divided into 'Active Packages (Orange highlights = Uncommitted)' and 'Inactive Packages'. In the 'Active Packages' list, the package 'disk0: asr9k-mgbl-3.9.0' is highlighted in orange. In the 'Inactive Packages' list, the package 'disk0: asr9k-mpls-3.9.0' is checked with a green box.

Annotations with arrows point to the checked package in the 'Inactive Packages' list, stating: **1) Checkmark the package to activate**. Another arrow points to the 'Activate...' button at the bottom right, stating: **2) Click on 'Activate' button**.

Buttons at the bottom include 'Commit...', 'Deactivate...', 'FTP...', 'Add...', 'Activate...', and 'Remove...'.

Status (NE: 172.27.148.25)

## Manage Packages Tab (Activate Operation).. Cont.

Shelf Display Inventory All Alarms Interfaces Monitoring Maintenance Troubleshooting

Manage Packages Licenses

Active Packages (Orange highlights = Uncommitted)

Inactive Packages

Active Packages	
disk0:	comp-asr9k-mini-3.9.0
disk0:	asr9k-mgbl-3.9.0
disk0:	asr9k-mpls-3.9.0

As activate operation completes, MPLS package is moved to 'Active Packages' view

Commit... Deactivate... FTP... Add... Activate... Remove...



# Manage Packages Tab (Install Deactivate Operation)

The screenshot displays the 'Manage Packages' tab in a network management application. The interface includes a top navigation bar with tabs: Shelf Display, Inventory, All Alarms, Interfaces, Monitoring, Maintenance, and Troubleshooting. Below this, the 'Manage Packages' and 'Licenses' sub-tabs are visible. The main area is divided into 'Active Packages (Orange highlights = Uncommitted)' and 'Inactive Packages' sections. The 'Active Packages' section contains a table with three entries:

Package Name	Version
disk0: comp-asr9k-mini	3.9.0
disk0: asr9k-mgbl	3.9.0
disk0: asr9k-mpls	3.9.0

The 'disk0: asr9k-mgbl-3.9.0' package is highlighted in orange, indicating it is uncommitted. The 'disk0: asr9k-mpls-3.9.0' package is highlighted in blue. A dialog box titled 'Select Packages' is open, showing a list of packages with checkboxes. The 'disk0: asr9k-mpls-3.9.0' package is selected with a green checkmark. The dialog box has 'Deactivate' and 'Cancel' buttons. Arrows point from the 'Deactivate...' button in the main window to the 'Deactivate' button in the dialog box, and from the 'disk0: asr9k-mpls-3.9.0' package in the table to the checkbox in the dialog box.

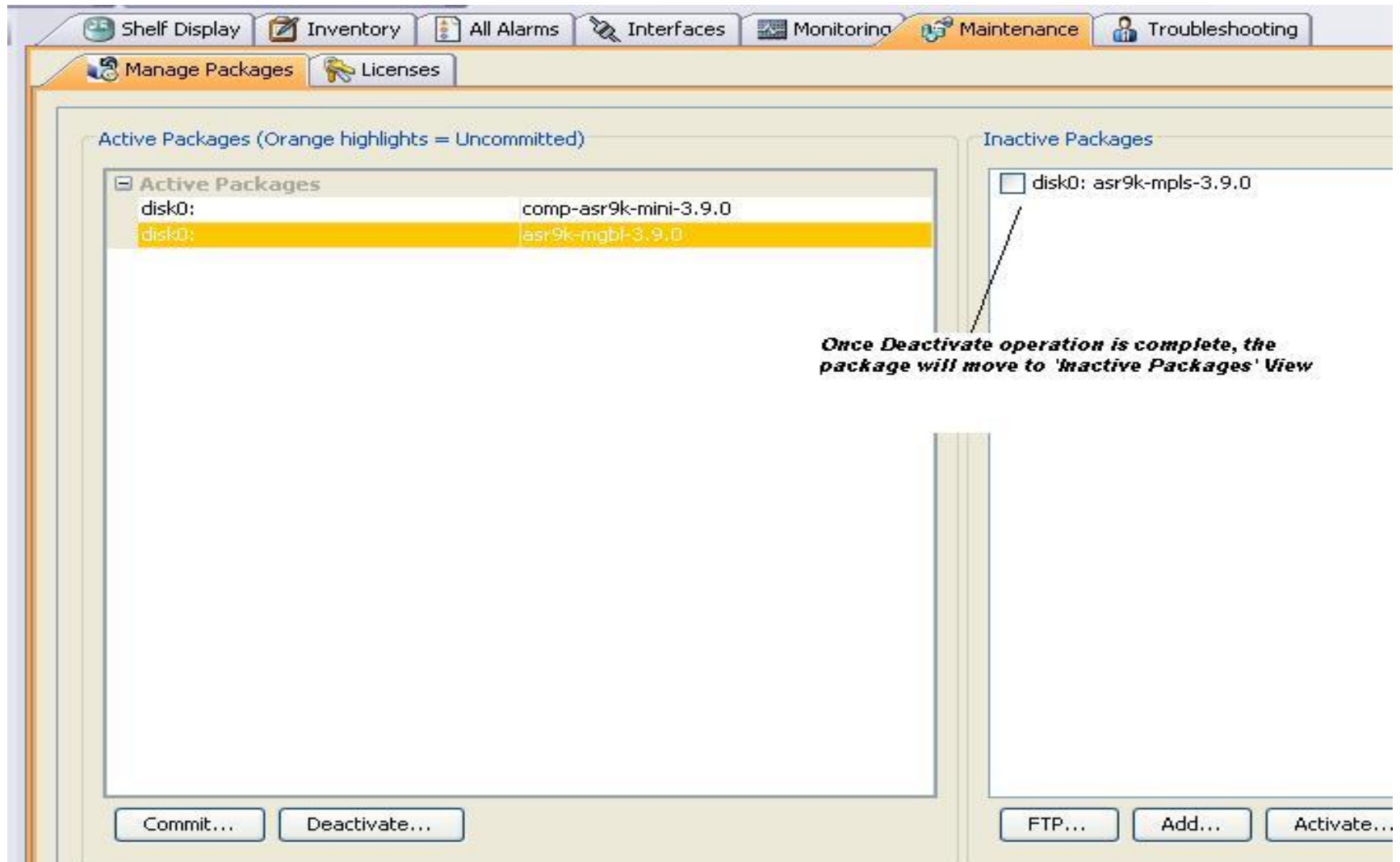
**1) Click on 'Deactivate' Button**

**2) Select the Package to Deactivate, using check box**

**3) Click on 'Deactivate' Button**

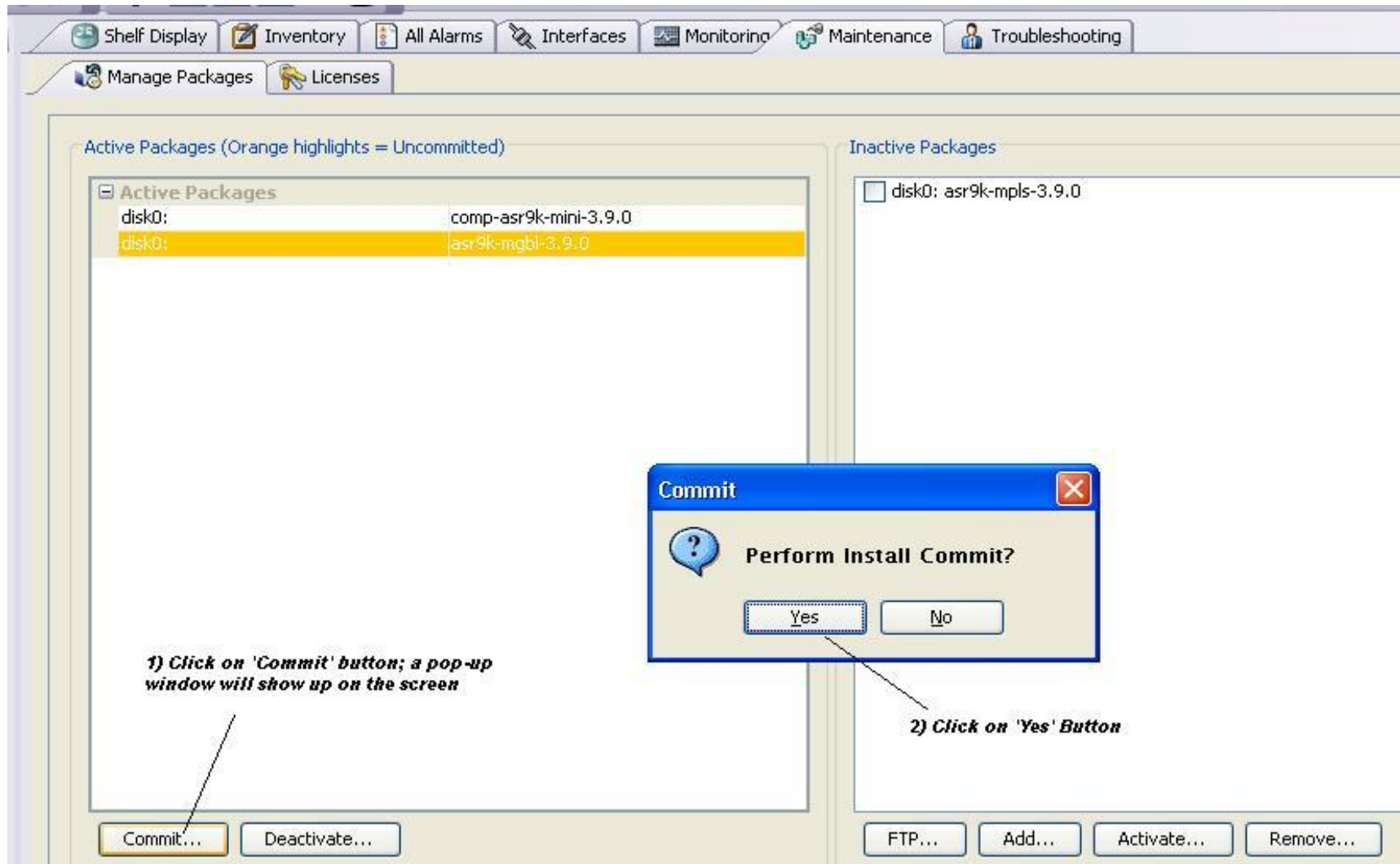
Buttons at the bottom of the main window include 'Commit...', 'Deactivate...', 'FTP...', 'Add...', and 'Activate'.

## Manage Packages Tab (Deactivate Operation)... Cont.





# Manage Packages Tab (Install Commit Operation)



# Manage Packages Tab (Install Logs)

The screenshot displays the Cisco Manage Packages interface. At the top, there is a navigation bar with tabs: Shelf Display, Inventory, All Alarms, Interfaces, Monitoring, Maintenance, and Troubleshooting. Below this, the 'Manage Packages' tab is active, and the 'Licenses' sub-tab is selected. The main content area shows 'Active Packages (Orange highlight)' with a list of packages, including 'disk0:'. A pop-up window titled 'Install Log' is open, displaying the following information:

**Install Log**

Summary:

- Sub-operation 1:
  - Install method: Parallel Process Restart
  - Summary of changes on nodes 0/RSP0/CPU0, 0/RSP1/CPU0:
    - Deactivated: asr9k-mpls-3.9.0
    - 6 asr9k-mpls processes affected (0 updated, 0 added, 6 removed, 0 impacted)
- Summary of changes on node 0/3/CPU0:
  - Deactivated: asr9k-mpls-3.9.0
  - 1 asr9k-mpls processes affected (0 updated, 0 added, 1 removed, 0 impacted)

-----

Install operation 8 started by user 'lab' via XML at 15:25:07 pst Thu May 27 2010.  
(admin) install commit  
Install operation 8 completed successfully at 15:25:09 pst Thu May 27 2010.

Install logs:  
Install operation 8 '(admin) install commit' started by user 'lab' via XML at 15:25:07 pst Thu May 27 2010.  
Install operation 8 completed successfully at 15:25:09 pst Thu May 27 2010.

-----

8 entries shown

At the bottom of the 'Install Log' window, there is an 'OK' button. In the background, the 'Manage Packages' interface shows buttons for 'Commit...', 'Deactivate...', 'Package Details', 'Install Log', and 'Refresh'. A status bar at the bottom indicates 'Status (NE: 172.27.148.25)'.

**Click on 'Install Log' button;  
a pop-up window will show  
all the install logs**

# Manage Packages Tab (Package Details)

The screenshot shows the 'Manage Packages' tab in a software interface. A 'Package Details' pop-up window is open, displaying a list of packages categorized by hardware type (CPU0, RSP0, RSP1) and their installation status (Active/Inactive). The pop-up window has a title bar with a close button and two tabs: 'Active Packages (Orange highlights = Uncommitted)' and 'Inactive Packages'. The 'Active Packages' tab is selected, showing a list of packages with their version, disk location, and name. The packages are grouped by hardware type: 0/3/CPU0, 0/RSP0/CPU0, and 0/RSP1/CPU0. Each group contains a list of packages with their version (3.9.0), disk location (disk0), and name (e.g., asr9k-admin, asr9k-base, asr9k-diags, asr9k-fwgd, asr9k-lc, asr9k-os-mpi, asr9k-scfclient). The pop-up window has an 'OK' button at the bottom. In the background, the 'Manage Packages' tab is visible, showing a list of packages and buttons for 'Commit...', 'Deactivate...', 'Activate...', and 'Remove...'. A status bar at the bottom shows 'Status (NE 172.27.148.25)' and buttons for 'Package Details', 'Install Log', and 'Refresh'.

**Package Details**

Active Packages (Orange highlights = Uncommitted) | Inactive Packages

**0/3/CPU0**

(3.9.0) disk0:	0/3/CPU0: asr9k-admin
(3.9.0) disk0:	0/3/CPU0: asr9k-base
(3.9.0) disk0:	0/3/CPU0: asr9k-diags
(3.9.0) disk0:	0/3/CPU0: asr9k-fwgd
(3.9.0) disk0:	0/3/CPU0: asr9k-lc
(3.9.0) disk0:	0/3/CPU0: asr9k-os-mpi
(3.9.0) disk0:	0/3/CPU0: asr9k-scfclient

**0/RSP0/CPU0**

(3.9.0) disk0:	0/RSP0/CPU0: asr9k-admin
(3.9.0) disk0:	0/RSP0/CPU0: asr9k-base
(3.9.0) disk0:	0/RSP0/CPU0: asr9k-diags
(3.9.0) disk0:	0/RSP0/CPU0: asr9k-fwgd
(3.9.0) disk0:	0/RSP0/CPU0: asr9k-lc
(3.9.0) disk0:	0/RSP0/CPU0: asr9k-mgbl
(3.9.0) disk0:	0/RSP0/CPU0: asr9k-os-mpi
(3.9.0) disk0:	0/RSP0/CPU0: asr9k-rout
(3.9.0) disk0:	0/RSP0/CPU0: asr9k-scfclient

**0/RSP1/CPU0**

(3.9.0) disk0:	0/RSP1/CPU0: asr9k-admin
(3.9.0) disk0:	0/RSP1/CPU0: asr9k-base
(3.9.0) disk0:	0/RSP1/CPU0: asr9k-diags
(3.9.0) disk0:	0/RSP1/CPU0: asr9k-fwgd
(3.9.0) disk0:	0/RSP1/CPU0: asr9k-lc
(3.9.0) disk0:	0/RSP1/CPU0: asr9k-mgbl
(3.9.0) disk0:	0/RSP1/CPU0: asr9k-os-mpi
(3.9.0) disk0:	0/RSP1/CPU0: asr9k-rout
(3.9.0) disk0:	0/RSP1/CPU0: asr9k-scfclient

Click on 'Package Details' Button; a pop-up window will show details

Commit... Deactivate... Activate... Remove...

Status (NE 172.27.148.25)

Package Details Install Log Refresh

OK

## Manage Packages Tab (Upgrade to new XR SW)

- Refer to The ASR9K Upgrade/Downgrade document and HW/SW Compatibility Matrix for detailed instructions, and any pre-requisites:
- [http://www.cisco.com/web/Cisco\\_IOS\\_XR\\_Software/index.html](http://www.cisco.com/web/Cisco_IOS_XR_Software/index.html)
- ACT can also be used to upgrade to new XR SW Packages
- Note 1: 'Install activate <packages> test' operation is not available from ACT, and it is recommended to perform the 'activate test' operation before upgrading to new SW Packages
- Note 2: New SW packages activate triggers a reload of Router; ACT will disconnect for some time till new packages are active and configs are applied

# Manage Packages Tab (Upgrade to new XR SW) – ‘Install Add’

The screenshot displays the Cisco Manage Packages interface. The top navigation bar includes tabs for Shelf Display, Inventory, All Alarms, Interfaces, Monitoring, Maintenance, and Troubleshooting. Below this, the 'Manage Packages' tab is active, showing a list of packages. The 'Active Packages' section (orange highlights = Uncommitted) lists two packages: 'comp-asr9k-mini-3.9.0' and 'asr9k-mgbl-3.9.0'. The 'Inactive Packages' section lists one package: 'disk0: asr9k-mpls-3.9.0'. A dialog box titled 'Add Package' is open, showing the 'TFTP File Path' as 'compactflash:comp-asr9k-mini.pie-3.9.1'. Below the path, there is a checkbox labeled 'Activate package after the Add operation'. The 'Add' button is highlighted. A note at the bottom right says '1) Install 'Add' the new XR Release Software Packages, one at a time'. A note in the middle says '2) Click on 'Add' button, to add the packages to router. Note: Source can be tftp:, ftp:, compactflash:, harddisk:, etc'. At the bottom, there are buttons for 'Commit...', 'Deactivate...', 'FTP...', 'Add...', 'Activate...', and 'Remove...'.

Active Packages (Orange highlights = Uncommitted)

**Active Packages**

disk0:	comp-asr9k-mini-3.9.0
disk0:	asr9k-mgbl-3.9.0

**Inactive Packages**

<input type="checkbox"/> disk0: asr9k-mpls-3.9.0
--------------------------------------------------

**2) Click on 'Add' button, to add the packages to router.  
Note: Source can be tftp:, ftp:, compactflash:, harddisk:, etc**

**Add Package**

TFTP File Path: compactflash:comp-asr9k-mini.pie-3.9.1

☐ Activate package after the Add operation

Add Cancel

**1) Install 'Add' the new XR Release Software Packages, one at a time**

Commit... Deactivate... FTP... Add... Activate... Remove...

# Manage Packages Tab (Upgrade to new XR SW) – ‘Install Activate’

The screenshot displays the Cisco Manage Packages interface. The top navigation bar includes tabs for Shelf Display, Inventory, All Alarms, Interfaces, Monitoring, Maintenance, and Troubleshooting. Below this, the Manage Packages tab is active, showing a list of packages. The interface is divided into two main sections: Active Packages (Orange highlights = Uncommitted) and Inactive Packages.

**Active Packages (Orange highlights = Uncommitted)**

Active Packages	
disk0:	comp-asr9k-mini-3.9.0
disk0:	asr9k-mgbl-3.9.0

**Inactive Packages**

<input checked="" type="checkbox"/>	disk0: comp-asr9k-mini-3.9.1
<input checked="" type="checkbox"/>	disk0: asr9k-mgbl-3.9.1
<input type="checkbox"/>	disk0: asr9k-mpls-3.9.0

**1) Select the new SW version packages to activate.**  
**Note: In this example, upgrade is from R3.9.0 to R3.9.1**

**2) Click on 'Activate' Button; a pop-up dialog will show up on screen**

**3) click on 'Yes' to initiate upgrade operation**

The 'Activate Packages' dialog box is shown, asking "Activate selected packages?". It has two buttons: "Yes" and "No".

Buttons at the bottom: Commit..., Deactivate..., FTP..., Add..., Activate..., Remove...

**Note: Router will Reload and ACT will be disconnected from the router for some time**



# Manage Packages Tab (Upgrade to new XR SW) – ‘Verify New SW’

The screenshot displays the Cisco NE Explorer interface. The top menu bar includes File, Edit, View, Tools, Window, and Help. The main toolbar contains icons for Shelf Display, Inventory, All Alarms, Interfaces, Monitoring, Maintenance, and Troubleshooting. The left sidebar features the NE Selector with a filter set to 172.27.148.25, Bi-State Alarm Counters showing 0, 0, 2, 0, 2, 0, and System Information. The System Information section is expanded, showing General information: IP Address (172.27.148.25), Username (lab), Hostname (Router), Admin User (Yes), and SW Version (3.9.1[00]). The Date/Time section shows System Date (Thu May 27 2010), System Time (16:13:23.530 pst), and System Uptime (4 minutes). The main area is divided into Active Packages (Orange highlights = Uncommitted) and Inactive Packages. The Active Packages list shows two entries: disk0: comp-asr9k-mini-3.9.1 and disk0: asr9k-mgbl-3.9.1. The Inactive Packages list shows three entries: disk0: comp-asr9k-mini-3.9.0, disk0: asr9k-mgbl-3.9.0, and disk0: asr9k-mpls-3.9.0. Annotations indicate that the new SW version 3.9.1[00] is reflected under System Information and that the new SW packages are showing up as Active Now.

**NE Selector** Filter

172.27.148.25

**Bi-State Alarm Counters**

0 0 2 0 2 0

**System Information**

**General**

IP Address	172.27.148.25
Username	lab
Hostname	Router
Admin User	Yes
SW Version	3.9.1[00]

**Date/Time**

System Date	Thu May 27 2010
System Time	16:13:23.530 pst
System Uptime	4 minutes

**Manage Packages** **Licenses**

**Active Packages (Orange highlights = Uncommitted)**

Active Packages	
disk0:	comp-asr9k-mini-3.9.1
disk0:	asr9k-mgbl-3.9.1

**Inactive Packages**

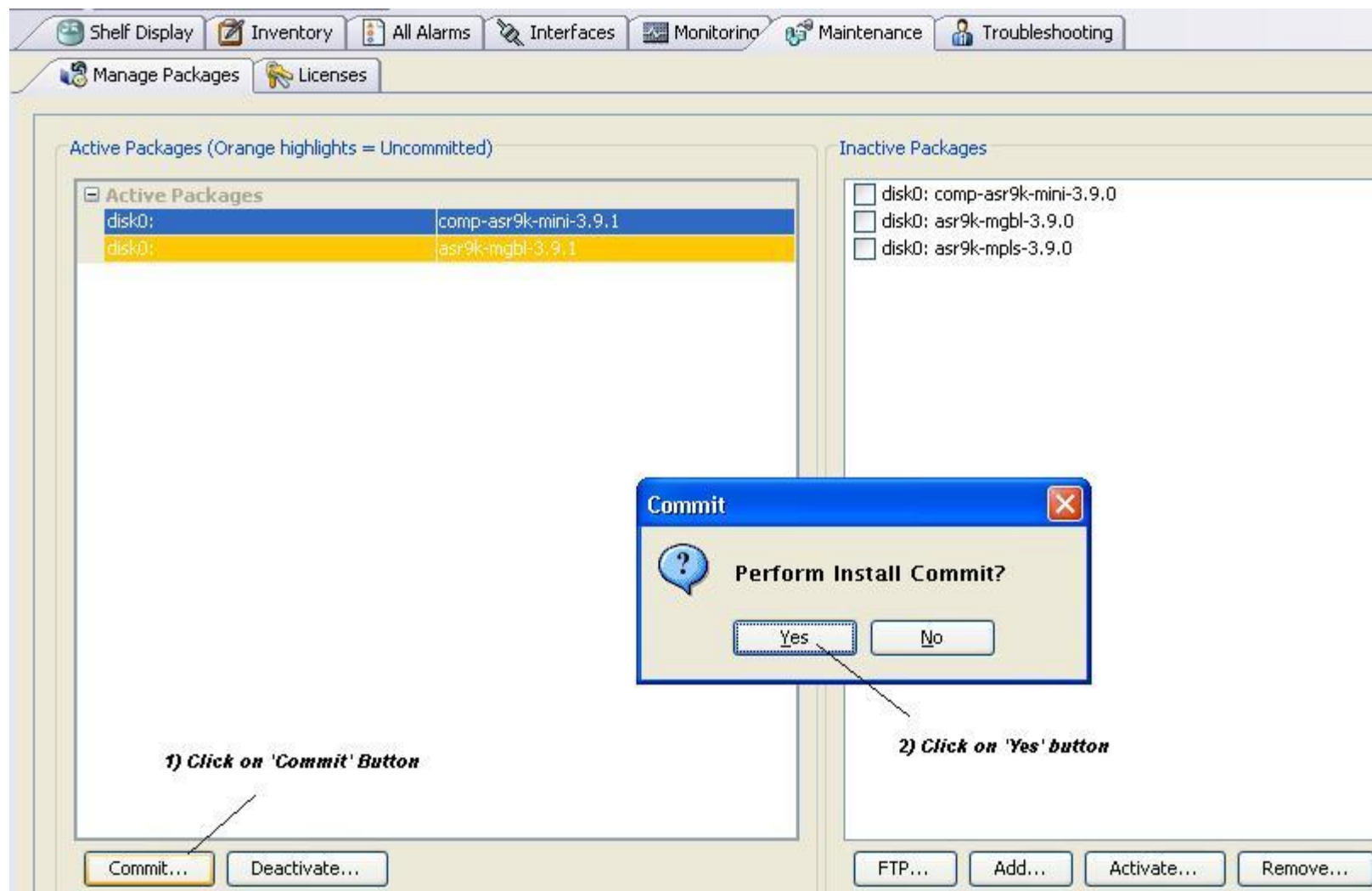
- ☐ disk0: comp-asr9k-mini-3.9.0
- ☐ disk0: asr9k-mgbl-3.9.0
- ☐ disk0: asr9k-mpls-3.9.0

**Commit...** **Deactivate...** **FTP...** **Add...** **Activate...** **Remove...**

*New SW Packages are showing up as Active Now*

*New SW Version is reflected under System Information*

# Manage Packages Tab (Upgrade to new XR SW) – ‘Commit New SW’



**Note: Perform 'Commit' operation, only when Router functionality is verified**



# Manage Packages Tab (Upgrade to new XR SW) – ‘Package Details of New SW’

The screenshot displays the Cisco Manage Packages interface. The top navigation bar includes tabs for Shelf Display, Inventory, All Alarms, Interfaces, Monitoring, Maintenance, and Troubleshooting. Below this, the 'Manage Packages' tab is active, with a sub-tab for 'Licenses'. The main area is divided into 'Active Packages (Orange highlights = Uncommitted)' and 'Inactive Packages'. The 'Active Packages' section shows a list of packages installed on disk0, including comp-asr9k-mini-3.9.1 and asr9k-mgbl-3.9.1. The 'Inactive Packages' section shows a list of packages that are not installed, including disk0: comp-asr9k-mini-3.9.0, disk0: asr9k-mgbl-3.9.0, and disk0: asr9k-mpls-3.9.0. A 'Package Details' dialog box is open, showing a detailed view of the packages installed on the device. The dialog box has tabs for 'Active Packages (Orange highlights = Uncommitted)' and 'Inactive Packages'. The 'Active Packages' tab is selected, showing a list of packages installed on the device, categorized by hardware component (0/3/CPU0, 0/RSP0/CPU0, 0/RSP1/CPU0). The 'Inactive Packages' tab is also visible, showing a list of packages that are not installed. A callout box points to the 'Package Details' button in the bottom left corner of the main interface, with the text: 'Click on 'Package Details' to verify new SW Packages, in detail'. The bottom of the interface shows a status bar with the text 'Status (NE: 172.27.148.25)' and buttons for 'Commit...', 'Deactivate...', 'Package Details', 'Install Log', and 'Refresh'.

Shelf Display Inventory All Alarms Interfaces Monitoring Maintenance Troubleshooting

Manage Packages Licenses

Active Packages (Orange highlights = Uncommitted)

Inactive Packages

Active Packages

disk0: comp-asr9k-mini-3.9.1

disk0: asr9k-mgbl-3.9.1

Package Details

Active Packages (Orange highlights = Uncommitted) Inactive Packages

0/3/CPU0

(3.9.1) disk0: 0/3/CPU0: asr9k-admin

(3.9.1) disk0: 0/3/CPU0: asr9k-base

(3.9.1) disk0: 0/3/CPU0: asr9k-diags

(3.9.1) disk0: 0/3/CPU0: asr9k-fpd

(3.9.1) disk0: 0/3/CPU0: asr9k-fwgdg

(3.9.1) disk0: 0/3/CPU0: asr9k-lc

(3.9.1) disk0: 0/3/CPU0: asr9k-os-mbi

(3.9.1) disk0: 0/3/CPU0: asr9k-scfclient

0/RSP0/CPU0

(3.9.1) disk0: 0/RSP0/CPU0: asr9k-admin

(3.9.1) disk0: 0/RSP0/CPU0: asr9k-base

(3.9.1) disk0: 0/RSP0/CPU0: asr9k-diags

(3.9.1) disk0: 0/RSP0/CPU0: asr9k-fpd

(3.9.1) disk0: 0/RSP0/CPU0: asr9k-fwgdg

(3.9.1) disk0: 0/RSP0/CPU0: asr9k-lc

(3.9.1) disk0: 0/RSP0/CPU0: asr9k-mgbl

(3.9.1) disk0: 0/RSP0/CPU0: asr9k-os-mbi

(3.9.1) disk0: 0/RSP0/CPU0: asr9k-rout

(3.9.1) disk0: 0/RSP0/CPU0: asr9k-scfclient

0/RSP1/CPU0

(3.9.1) disk0: 0/RSP1/CPU0: asr9k-admin

Click on 'Package Details' to verify new SW Packages, in detail

Commit... Deactivate...

Status (NE: 172.27.148.25)

Package Details Install Log Refresh

OK

## LicensesTab (under Maintenance)

- Displays all available licenses on the router.
- Display information includes Feature, Slot Based, Evaluation, Expired, Eval Days, Total License, Allocated License, Available License, Active License, and Licensed Slots.
- Supports filtering based on column criteria.
- Supports printing and exporting of tabular data.
- Supports column re-arrangement through the Preference dialog.
- Supports Find and Find Next operation.

## CLI CommandTab (under Troubleshooting)

- Supports and retrieve non-admin CLI operational command (i.e. show).
- Provides intelligent help tips while formulating the CLI command.
- Supports tab completion while formulating the CLI command.
- Supports Find, Find Next, Find Previous, Highlight, and Match Case operations on returned results.
- Supports copying of results to the Windows clipboard.
- Supports saving of results to an external file.

## Core FilesTab (under Troubleshooting)

- In order to support this operation, the **http server** must be enabled on the router.
- Displays all core dump files (including kernel cores) on the router.
- Supports capturing of the core files to an external directory.

## FPD VersionsTab (under Troubleshooting)

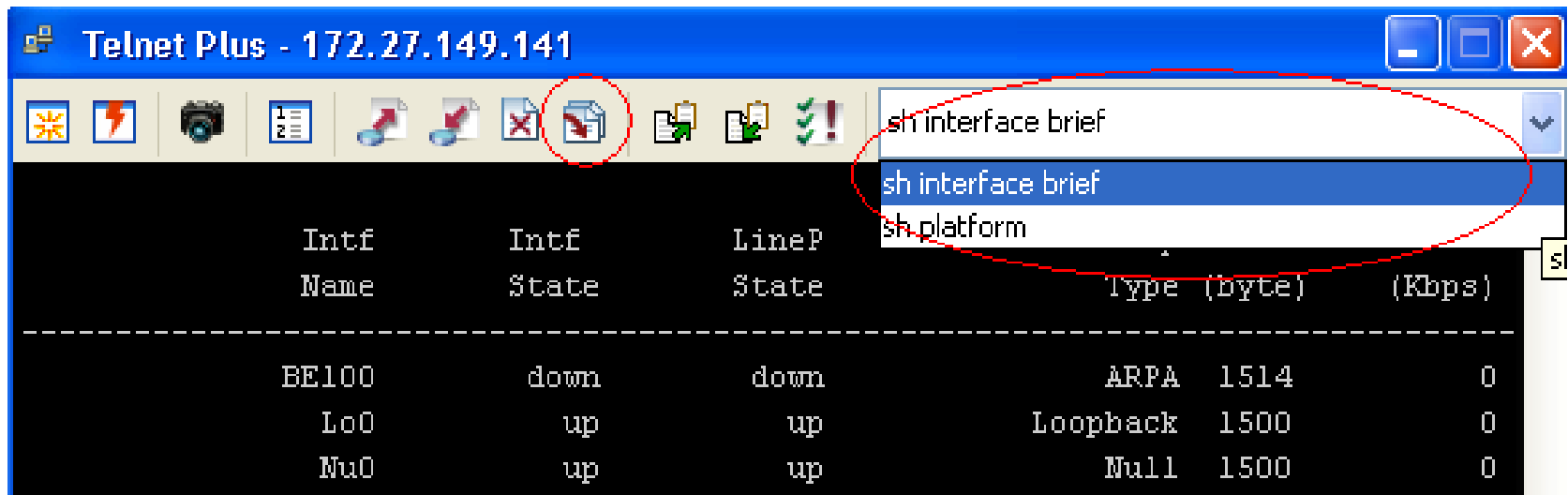
- Displays version information of Field Programmable Devices on each RSP and line card.
- Display information includes Card Location, Card Type, HW Version, Type, SubType, Instances, Current SW Version, and Upgrade or Downgrade status.

## Telnet/SSHv1/SSHv2 (via Toolbar Icons)

- Provides direct CLI connection to the router via non-secure or secure connection protocols.
- Supports processing of batch mode commands.
- Supports screen information capturing.
- Supports copying of last executed command.
- Supports loading and saving of previously used commands.
- Supports copy of selected text and paste operation.
- Supports color and font preferences.

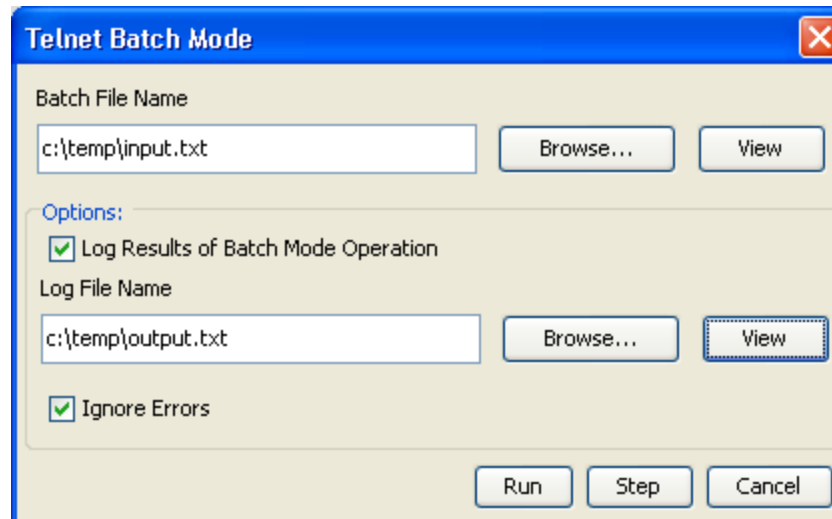
# Telnet/SSHv1/SSHv2 – Last Command List

- The Telnet and SSH applications have an internal clipboard that allows you to copy, save, and load commands in a command list.
- You can copy the last command executed to the Clipboard by clicking the Copy Last Command icon (circled in red).
- The saved commands can be saved to an external file.



## Telnet/SSHv1/SSHv2 – Executing a Batch Mode File

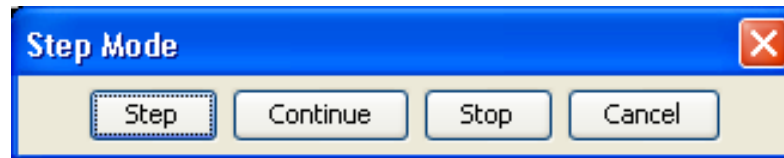
- Batch Mode allows you to import and execute a file containing multiple commands that must be executed in sequence. You can choose to issue commands in a batch mode by specifying the commands in a batch file.
- There are two modes of operation:
  - Run – All commands in the batch file are executed sequentially
  - Step – Commands are executed one at a time. Each command must be executed individually by the user.





## Telnet/SSHv1/SSHv2 – Executing a Batch Mode File

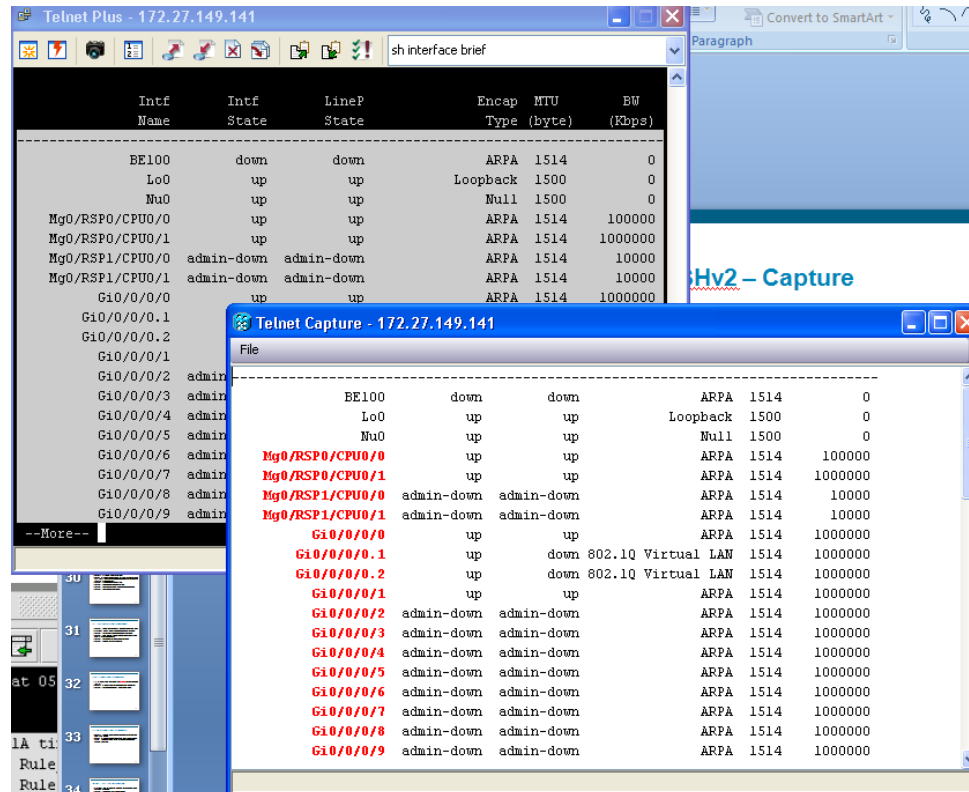
- If Run is chosen, the Telnet Batch Mode dialog box is closed and the commands are run sequentially.
- If Step is chosen, the Telnet Batch Mode dialog box is closed and a Step Mode dialog box appears.



- Click Step to execute a command.
- Click Continue to run through all the commands sequentially without stopping.
- Click Stop to stop the execution of a command.
- Click Cancel to close the Step Mode dialog box.

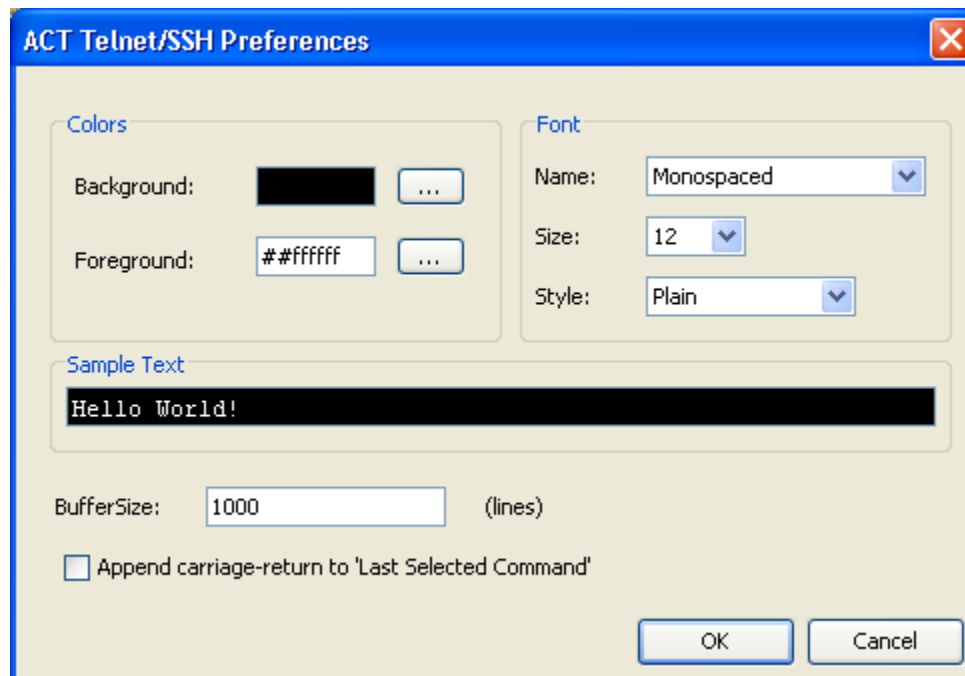
# Telnet/SSHv1/SSHv2 – Telnet Capture

- Choose the text in the Telnet or SSH windows to be displayed in the Telnet Capture. If you do not choose any text, the entire contents of the Telnet buffer are displayed in the Telnet Capture. Click the Camera icon to start the capture.



# Telnet/SSHv1/SSHv2 – Preferences

- You can customize the following Telnet and SSH preferences:
- Background color
- Foreground color
- Font type, size, and style
- Buffer size (number of lines displayed)



## Configuration Editor (via Toolbar Icon)

- Supports grouping of CLI configurations. Allows expand and collapse of those groupings.
- Supports keyword highlightings.
- Supports hyper-linking rules.
- Supports change tracking.
- Supports viewing of uncommitted configurations.
- Supports syntax checking.
- Supports locking of configuration file for mutual exclusive changes.
- Supports saving configurations to an external file.
- Supports loading of a configuration file on the router.
- Supports configuration rollback.
- Supports “?” for command-line interface help

# Configuration Editor – Change Tracking

- The change tracking feature highlights text whenever a change is made to the text.

Color	Description
Red	Line of configuration that you chose to delete. After you click Apply, the line is deleted.
Green	New line of configuration that you added since the last time you clicked Apply.
Cyan	Existing line of configuration that has been modified since the last time you click Apply.

```
00635  !
00636  ▢ l2vpn
00637  bridge group bg
00638  !
00639  !
00640  xml agent tty
00641  http server
00642  !
00643  end
```

# Configuration Editor – Syntax Checking

- This feature allows a chosen block of text or the entire contents of the Configuration Editor to be checked for syntax errors.
- Select the text, if you want to check a block of text
- Choose Tools -> Syntax Check Selection. The syntax is checked .
- If there is a syntax error, an invalid command error is displayed in red in the Configuration Editor

```
00164 [⊕] interface Loopback1000
00166      !
00167 [⊖] interface MgmtEth0/0/CPU0/0
00168      | description Management Ethernet
00169      |      ^
00170      | % Invalid input detected at '^' marker.
00171      | ipv4 address 172.19.75.41 255.255.255.128
00172      | !
00173      | !
```

# Configuration Editor – Hyperlinking Rules

- The hyperlink rules reside in the hyperlinkrules.txt text file.
- Example: < anchor expression > : < hyperlink expression >
- An anchor or hyperlink expression consists of a fixed string of text followed by an asterisk to designate the word to be hyperlinked and is used as the keyword to match the hyperlink to the corresponding section of configuration. Anchor expressions must always point to top-level (nonsubmode) configuration.
- You can have only one rule definition for each line in the hyperlink rules file. In addition, you can have only one anchor expression and one hyperlink expression for each line.

## Configuration Editor – Hyperlinking Rules Example

- Rule for linking references to access-lists to the corresponding access-list definition:

**< ipv4 access-list \* > : < ipv4 access-group \* >**

```
Ipv4 access-list test-list
```

```
    12 remark is a test
```

```
!
```

```
Interface POS0/1/0/0
```

```
    ipv4 access-group test-list ingress
```

```
!
```



# Configuration Editor – Hyperlinking Rules Example

- Example: < interface \* > : < interface \* >
- When the mouse cursor is over the hyperlink, the definition of the interface is displayed.

```
00627  ▢ router ospf 100
00628      router-id 20.20.20.20
00629  ▢ area 0
00630      interface GigabitEthernet0/0/0/1
00631      !
00632      interface GigabitEthernet0/1/0/1
00633      !
00634      !
00635      !
00636  ▢ 12vpn
00637      bridge group bg
00638      !
```

**interface GigabitEthernet0/1/0/1**  
**negotiation auto**  
**transceiver permit pid all**

# Configuration Editor – Command-Line Interface Help

- The Command-Line Interface (CLI) help feature provides a list of valid commands. Press ? to display a popup list of valid commands. Choose a command from the list to insert it into the Configuration Editor.

```
00624 | area 0
00625 | !
00626 | !
00627 |
00628 | ☒ aaa Authentication, Authorization and Accounting
00629 | ☐ abort Abort this configuration session
00630 | ☒ address-family AFI/SAFI configuration
00631 | address-pool IP Local address pool lists
00632 | alias Create an alias for entity
00633 | ancp Access Node Control Protocol
00634 | apply-template Apply configuration from a template
00635 | aps Configure SONET Automatic Protection Switching (APS)
00636 | arp Global ARP configuration for Static and Alias ARP entries
00637 | ☒ as-format Autonomous system number format
00638 |
00639 | !
00640 | !
00641 |
```

## Service Console (via Toolbar Icon)

- Provides direct connection to the router's Service Console application.
- Provides low level debuggings via service console data screens.