Manual Supplement: Version 07.5.04 Operating System

T-Flow Redundant Management Module (MV)
for the HP ProCurve Routing Switch 9304M, 9308M, and 9315M

Software release 07.5.04 is the only release available for the T-FLow Redundant Management Module (MV). (For more on software branches, see “Software Image Files” on page 13.)

Minimum S/W Version:	HP ProCurve Series 9300 Routing Switch Modules:
07.1.10	These Redundant Management Modules: • J4845A ProCurve 9300 GigLX Redundant Management Module (8-port, MII) • J4846A ProCurve 9300 GigSX Redundant Management Module (8-port, MII) • J4847A ProCurve 9300 Redundant Management Module (0-port, MII)
07.1.19	These Redundant Management Modules: • All of the modules listed for release 7.1.10. • J4857A HP ProCurve 9300 Mini-GBIC Redundant Management Module (8-port, MIV)
7.5.04	These Redundant Management Modules • J4879A HP ProCurve 9300 T-Flow Redundant Management Module
7.6.00	These Redundant Management Modules • J4885A HP ProCurve 9300 EP Mini GBIC Redundant Management Module

These release notes provide useful procedures, information, and notes for routing switch operation and management with the HP ProCurve T-Flow Redundant Management Module.

These release notes describe of the operation of the HP ProCurve T-Flow Redundant Management Module.For documentation describing the other features available in the Series 9300 routing switches, refer to the Documentation CD_ROM you received with your modules.
For the latest version of any documentation, visit: http://www.hp.com/go/procurve

Flash Images: The flash image files for this software release differ depending on the type of management module you use. Refer to “Software Image Files” on page 13.

SNMP: Beginning with software release 05.2.16, the software does not have a default read-write SNMP community. If you use the default community name “private” as the password for web management access or for read-write access through a network management application, you need to use the CLI to add the read-write community string first.

SSH: Beginning with software release 7.5.04, HP supports Secure Shell (SSH) version 1.

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Applicable Products

HP ProCurve 9304M Routing Switch (J4139A)
HP ProCurve 9308M Routing Switch (J4138A)
HP ProCurve 9315M Routing Switch (J4874A)

HP ProCurve 9300 T-Flow Redundant Management Module (J4879A)

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USING THE T-FLOW REDUNDANT MANAGEMENT MODULE 1
OVERVIEW 1
MANAGEMENT AND CO-PROCESSING CPUS 1
Feature Coexistence 2
TEMPERATURE SENSOR 2
MANAGEMENT REDUNDANCY 2
Management Redundancy and Hot Swap 3
TSP LOAD SHARING 3
Example Configuration 1 4
Example Configuration 2 5
Displaying the Slot Allocations for the TSPs 5
Changing Slot Allocations 6
CHANGING THE MANAGEMENT SESSION FROM THE MP TO A TSP 6
LOGGING IN TO A TSP 6
LOGGING OUT FROM THE TSP 6
TSP COMMANDS 6
DISPLAYING TRM MODULE INFORMATION 7
DISPLAYING THE SOFTWARE VERSION RUNNING ON THE MODULE 7
DISPLAYING THE SOFTWARE VERSIONS INSSLLED ON THE MODULE 8
DISPLAYING GENERAL MODULE INFORMATION 9
DETERMINING MODULE STATUS 10
Status LEDs 11
Software 11
DETERMINING THE SLOT ALLOCATIONS FOR THE TSPS 12
SOFTWARE IMAGE FILES 13
BOOT CODE VERSION REQUIREMENTS 13

Using the T-Flow Redundant Management Module

The T-Flow Redundant Management Module, version 1 (TRM) is a new redundant management module for Series 9300 chassis devices. The TRM supports all of the features supported by the Management II, III, and IV modules, but enhances feature performance using new hardware architecture.

NOTE: This section does not describe how to configure redundancy parameters. For more on this topic, refer to the chapter titled Management modules in the Advanced Configuration and User Guide for you routing switch.

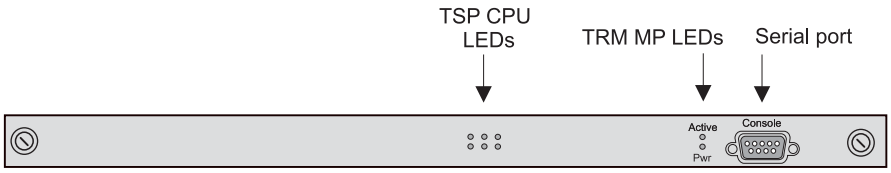
Overview

The TRM provides enhanced performance using distributed processing among multiple CPUs. The multiple CPUs enable the TRM to perform the following in hardware:

- Process Access Control Lists (ACLs)
- Perform Policy-Based Routing (PBRs)
- Perform Network Address Translation (NAT)
- Collect statistics and export them for NetFlow-based accounting and billing

Figure 1 shows the TRM.

Figure 1 T-Flow Redundant Management Module version 1 (TRM)



The TRM does not have network interfaces but does have a serial management interface. In addition, the module has status LEDs for its Management Processor (MP) and T-Flow Switching Processors (TSPs), described in “Management and Co-Processing CPUs” on page 1 and “Status LEDs” on page 11.

Management and Co-Processing CPUs

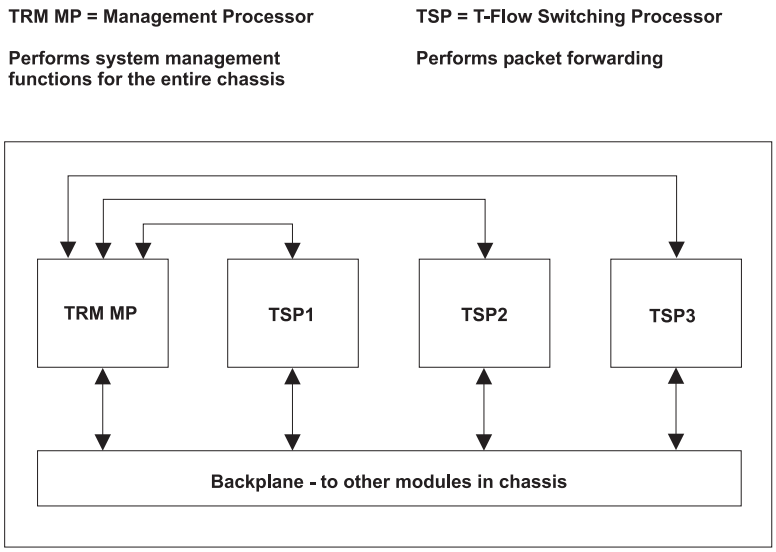
The TRM contains four CPUs:

- One MP (Management Processor) – The MP performs management functions for the entire chassis.
- Three T-Flow Switching Processors (TSPs) – The TSPs perform Layer 2 and Layer 3 switching for the forwarding modules.

The MP and the TSPs have their own flash memory with primary and secondary areas.

Figure 2 illustrates the architecture of the TRM.

Figure 2 Architecture of TRM



Feature Coexistence

The TRM architecture allows all the following features to be configured and active on a given port at the same time.

- Input ACLs
- Input rate limiting
- NetFlow Export
- sFlow Export
- Network Address Translation (NAT)
- Policy-Based Routing (PBR)
- Output ACLs
- Output rate limiting

When two or more of these features are applicable for a packet, the TRM processes the features in the order listed above.

Temperature Sensor

The TRM also contains a temperature sensor. The sensor generates a Syslog message and SNMP trap if the module's temperature exceeds a specified warning level or shutdown level. You can use the CLI or Web management interface to display the management module's temperature and to change the warning and shutdown temperature levels. Refer to the "Using the Temperature Sensor" in chapter 4, "Configuring Basic Features the Installation and Getting Started Guide for your routing switch.

Management Redundancy

The TRM supports management redundancy. You can install a second TRM to act as a backup and take over management of the chassis device if the active TRM becomes unavailable.

Management redundancy is described in the chapter, titled "Using Redundant Management Modules" in the Installation and Getting Started Guide for your routing switch. Management redundancy using a pair of TRM modules works as described in the chapter, with the following important differences:

- The TSP CPUs on both modules actively process traffic. Only the TRM MP CPU on the standby module is in

backup mode. The TSP CPUs on the standby module actively process traffic.

- The TSP CPU flash code is not automatically synchronized. To synchronize the flash code on the TSP CPUs, use the **vm copy tftp flash** command, described under “File Synchronization Between the Active and Standby Redundant Management Modules” in the chapter titled “Using Redundant Management Modules” in the Installation and Getting Started Guide for your routing switch. The flash code on the TRM CPU is automatically synchronized.
- If you use a pair of TRM management modules in a chassis for redundancy, the device does not reassign the forwarding modules assigned to the TSP CPUs on the active module to the other module following a hot swap. See the next section.

Management Redundancy and Hot Swap

If you use a pair of TRM management modules in a chassis for redundancy, the device does not reassign the forwarding modules assigned to the TSP CPUs on the active module to the other module following a hot swap. This is true in the following cases:

- If you insert a standby TRM into an active device, the device does not replicate the assignments of the forwarding modules to the TSP CPUs on the standby module. To work around this issue, use the **vm-map** command to assign the forwarding modules to the TSP CPUs on the standby module after you insert the module.
- If you remove a standby TRM module that has taken over forwarding on an active device, the forwarding modules assigned to the TSP CPUs on the standby module are not reassigned to the TSP CPUs on the default active module. To avoid traffic interruption, use the **vm-map** command to assign the forwarding modules to the TSP CPUs on the default active TRM module ***before removing the standby module***.

To list the TSP CPU assignments, enter the following command: **show vm-map**

To assign forwarding modules to TSP CPUs, enter the following command:

vm vm-map <from-slotnum> **vm-slot** <to-slotnum> **vm-cpu** <cpunum>

The <from-slotnum> parameter specifies the slot that contains the forwarding module.

The <to-slotnum> parameter specifies the slot that contains the TRM.

The <cpunum> parameter specifies the TSM CPU on <to-slotnum> that will perform the processing. The TSM CPUs are numbered from 1 – 3.

TSP Load Sharing

The TRM optimizes performance by distributing responsibility for the forwarding modules across the TSPs, so that each TSP has sole responsibility for a given forwarding module and the modules are as evenly distributed across the TSPs in terms of bandwidth.

When you power on or reset the TRM, the module assigns each of the forwarding modules to a TSP according to each module’s weight. A forwarding module’s weight is a number that represents its total forwarding capacity. The weight is measured in units of 1 for each 100 Mbps. For example, Table 3 shows the weights for some common forwarding module types. Notice that the weight for 10/100 modules is based on the higher bandwidth (100 Mbps instead of 10 Mbps) for all ports.

Table 3: Forwarding Module Weights

Module type	Total Mbps capacity	Weight
24-port 10/100 Mbps	2400	24
4-port 1000 Mbps	4000	40
8-port 1000 Mbps	8000	80

The device assigns the forwarding modules to TSPs in numerical order (always starting with TSP 1) and beginning with the module with the highest weight and working down to the module with the lowest weight.

The device assigns a forwarding module's ports to only one TSP. A single module's ports are never distributed across multiple TSPs.

The allocations determine the TSP that will process traffic received on a forwarding module's ports. For example, if an 8-port Gigabit module in slot 3 is allocated to TSP 1, then that CPU processes all the traffic received on the module's ports.

NOTE: If you hot-swap a module into or out of the chassis after the allocations have taken place at startup, the device does not re-allocate modules to even out the load sharing. Instead, the device allocates the module you insert to the TSP that currently has the least weight allocated to it. If you remove a module, the device subtracts the module's weight from the TSP to which the module was allocated.

Here are some examples of load sharing allocations for various configurations. Notice that for a four-slot chassis, each forwarding module is allocated to its own TSP. The module's weights determine the TSPs to which they are allocated. For a chassis with more than four slots, some TSPs are allocated more than one module. Nonetheless, the allocations are based on the forwarding modules' weights and provide the most even distribution possible.

Example Configuration 1

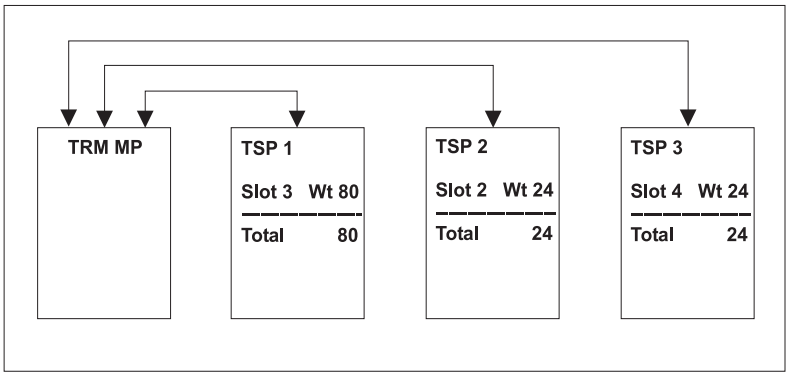
Table 4 shows a module configuration and the resulting TSP allocations for a four-slot chassis. Notice that since the TRM does not have any forwarding ports, the module does not need to be allocated to a TSP.

Table 4: Example Configuration 1

Slot	Module type	Weight	Order allocated	TSP
1	TRM	n/a	n/a	n/a
2	24-port 10/100	24	2	TSP 2
3	8-port Gigabit	80	1	TSP 1
4	24-port 10/100	24	3	TSP 3

Figure 5 shows the TSP allocations for this configuration.

Figure 5 TSP allocations for example configuration 1



The device begins with the highest-weight module, in this case the 8-port Gigabit module in slot 3, and allocates that module's ports to TSP 1. The device then allocates the module with the second-highest weight, in this case the 24-port 10/100 module in slot 2, to the next TSP with the lowest allocated weight, which is TSP 2. Finally, the device allocates the last forwarding module, the 24-port 10/100 module in slot 4, to the next TSP with the lowest allocated weight, TSP 3.

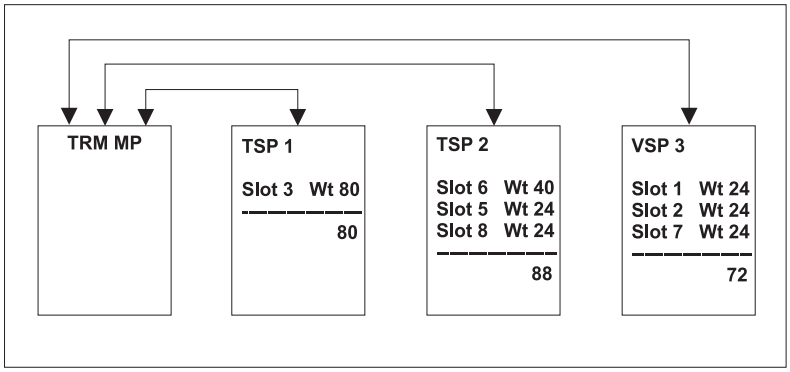
Example Configuration 2

Table 6: Example Configuration 2

Slot	Module type	Weight	Order allocated	TSP
1	24-port 10/100	24	3	TSP 3
2	24-port 10/100	24	4	TSP 3
3	8-port Gigabit	80	1	TSP 1
4	TRM	n/a	n/a	n/a
5	24-port 10/100	24	5	TSP 2
6	4-port Gigabit	40	2	TSP 2
7	24-port 10/100	24	6	TSP 3
8	24-port 10/100	24	7	TSP 2

Figure 7 shows the TSP allocations for this configuration.

Figure 7 TSP allocations for example configuration 2



As in the previous example, the device starts with the highest-weight module, in this case the 8-port Gigabit module in slot 3, and allocates that module to TSP 1. The device then allocates the second-highest weighted module to TSP 2, and the third-highest weighted module to TSP 3. For the next module, the device selects the TSP with the lowest allocated weight; in this case, that is TSP 3. And so on. As shown in this example, the resulting distribution is fairly even among the three CPUs.

Displaying the Slot Allocations for the TSPs

To display the allocations, enter the **show vm-map** command. See "Determining the Slot Allocations for the TSPs" on page 12.

Changing Slot Allocations

The default allocations are applicable to almost all configurations. However, you can remap a module to another TSP CPU. To do so, enter a command such as the following at the global CONFIG level of the CLI:

```
HPswitch(config)# vm vm-map slot 3 vm-slot 2 vm-cpu 1
```

This command remaps processing for the modules in slot 3 to TSP CPU 1 on the TRM in slot 2.

Syntax: vm vm-map <from-slotnum> vm-slot <to-slotnum> vm-cpu <cpunum>

The <from-slotnum> parameter specifies the slot that contains the forwarding module.

The <to-slotnum> parameter specifies the slot that contains the TRM.

The <cpunum> parameter specifies the TSM CPU on <to-slotnum> that will perform the processing. The TSM CPUs are numbered from 1 – 3.

Changing the Management Session from the MP to a TSP

By default, management sessions you open with the TRM are established with the MP. However, you can establish a session directly with a TSP. Each TSP supports some commands at the Privileged EXEC level.

NOTE: You can enter configuration commands only to the MP, not directly to a TSP.

The CLI provides a remote login facility for changing the management session to a TSP. When you log in to a TSP, the CLI management session changes from the MP to the TSP. At this point, commands apply only to the TSP. To enter commands to the MP, you must log out of the TSP. The CLI prompt changes to indicate the chassis slot number and TSP you are logged on to.

Logging In to a TSP

To log in to a TSP, enter a command such as the following at the Privileged EXEC level of the CLI:

```
HPswitch# rconsole 2 1
HPswitch2/1 #
```

This command changes the management session from the MP to TSP 1 on the TRM in slot 2. Notice that the end of the command prompt changes to indicate the slot number and TSP number.

Syntax: rconsole <slotnum> <cpunum>

The <slotnum> parameter specifies the chassis slot that contains the module.

- Slots in a four-slot chassis are numbered 1 – 4, from top to bottom.
- Slots in an eight-slot chassis are numbered 1 – 8, from left to right.
- Slots in a fifteen-slot chassis are numbered 1 – 15, from left to right.

The <cpunum> parameter specifies the TSP. The TSPs are numbered from 1 – 3.

Logging Out from the TSP

To log out from a management session with a TSP, enter the following command at the User EXEC or Privileged EXEC level:

```
HPswitch2/1 # rconsole-exit
HPswitch#
```

Syntax: rconsole-exit

NOTE: You must enter the entire command name (**rconsole-exit**). The CLI will not accept abbreviated forms of the command.

TSP Commands

The following commands are supported at the TSP command prompt:

- **rconsole-exit** – Logs out of the TSP.
- **show ?** – Displays the available show commands. The following show commands are available:
  - **show arp** – Displays the ARP table.
  - **show filter** – Displays configured filters.
  - **show ip access-lists** – Shows the configured ACLs.
  - **show ip cache** – Shows the IP cache.
  - **show ip nat** – Shows NAT information.
  - **show ip route** – Shows the IP route table.
  - **show mac-address** – Shows the MAC table.
  - **show running-config** – Shows the running-config.
  - **show usage** – Shows Layer 4 session table information.
  - **show trunk** – Shows trunk group information.
  - **show vlans** – Shows VLAN information.
- **write terminal** – Displays the running-config on the management console.

With a few exceptions, the command syntax and displays are the same as described in the *HP ProCurve Command Line Interface Reference*. Here are the exceptions:

- The **show ip route** command displays only 20 entries at a time. The command has an optional parameter, <num>, that indicates the entry at which you want the display to begin.
- The output of the **show trunk** and **show vlans** commands is different from the output format for these commands when entered on the MP.

Displaying TRM Module Information

You can display the following TRM information:

- Software versions – see “Displaying the Software Version Running on the Module” on page 7
- General module information – “Displaying General Module Information” on page 9
- Module status – see “Determining Module Status” on page 10
- Slot allocations for the TSPs – see “Determining the Slot Allocations for the TSPs” on page 12

The commands in this section are supported on the MP, not on the TSPs.

Displaying the Software Version Running on the Module

To display the software version running on the TRM, use either of the following methods.

USING THE CLI

To display the software version running on the module, enter the following command at any CLI level:

```
HPswitch#show version
  SW: Version 07.5.04T23 Hewlett-Packard Company
      Compiled on Jun 08 2002 at 08:19:15 labeled as T1R07504
      (3328874 bytes) from Secondary foundry/T1R07504.BIN
      J4139A HP ProCurve Routing Switch 9304M
  HW: ProCurve HP9304 Routing Switch, SYSIF version 21
==========================================================================
SL 1: T-Flow Management Module, SYSIF 2, ACTIVE
      Serial #:   SA25010396
    0 MB SHM, 3 Application Processors
 8192 KB BRAM, SMC version 1, ICBM version 21
  SW: (1)07.5.04T72 (2)07.5.04T72 (3)07.5.04T72
==========================================================================
SL 4: 24 Port 100TX Switch Module
      Serial #: SA25010456
 2048 KB BRAM, SMC version 2, ICBM version 21
  256 KB PRAM(256K+0K) and 2048*8 CAM entries for DMA 12, version 0808
  256 KB PRAM(256K+0K) and shared CAM entries for DMA 13, version 0808
  256 KB PRAM(256K+0K) and shared CAM entries for DMA 14, version 0808
==========================================================================
Active management module:
  500 MHz Power PC processor 750 (version 8/8302) 62 MHz bus
  512 KB boot flash memory
16384 KB code flash memory
  256 KB SRAM
  512 MB DRAM
The system uptime is 42 minutes 21 seconds

The system : started=warm start   reloaded=by "reload"
```

Syntax: show version

The command shows information about the TRM and also lists all the software versions running on the device. The TRM information is shown in this example in bold text.

USING THE WEB MANAGEMENT INTERFACE

You cannot display the module software versions using the Web management interface.

Displaying the Software Versions InsSlled on the Module

To display the software versions installed in the flash areas of the TRM and the TSPs, use the following method.

USING THE CLI

To display the software in the device's flash areas, enter the following command at any CLI level:

```
HPswitch#show flash
Active management module:
Code Flash Type: AMD 29F032B, Size: 64 * 65536 = 4194304, Unit: 4
Boot Flash Type: AMD 29F040, Size: 8 * 65536 = 524288
Compressed Pri Code size = 2725859, Version 07.3.03dT23 (hv1r07303d.bin)
Compressed Sec Code size = 3328874, Version 07.5.04T23 (foundry/T1R07504.BIN)
Maximum Code Image Size Supported: 7011840 (0x006afe00)
Boot Image size = 251628, Version 07.05.04 (foundry/M2B07504.BIN)

T-FLOW module slot 1 CPU 1:
Code Flash Type: AMD 29LV033C, Size: 64 * 65536 = 4194304
Boot Flash Type: AMD 29LV010B, Size: 8 * 16384 = 131072
Compressed Pri Code: size = 1217631 Version 07.3.03dT72
Compressed Sec Code: size = 1252784 Version 07.5.04T72
Maximum Code Image Size Supported: 2096640 (0x001ffe00)
Boot Image size = 34752 Version 07.01.00
Maximum Boot Image Size Supported: 131072 (0x00020000)

T-FLOW module slot 1 CPU 2:
Code Flash Type: AMD 29LV033C, Size: 64 * 65536 = 4194304
Boot Flash Type: AMD 29LV010B, Size: 8 * 16384 = 131072
Compressed Pri Code: size = 1217631 Version 07.3.03dT72
Compressed Sec Code: size = 1252784 Version 07.5.04T72
Maximum Code Image Size Supported: 2096640 (0x001ffe00)
Boot Image size = 34752 Version 07.01.00
Maximum Boot Image Size Supported: 131072 (0x00020000)

T-FLOW module slot 1 CPU 3:
Code Flash Type: AMD 29LV033C, Size: 64 * 65536 = 4194304
Boot Flash Type: AMD 29LV010B, Size: 8 * 16384 = 131072
Compressed Pri Code: size = 1217631 Version 07.3.03dT72
Compressed Sec Code: size = 1252784 Version 07.5.04T72
Maximum Code Image Size Supported: 2096640 (0x001ffe00)
Boot Image size = 34752 Version 07.01.00
Maximum Boot Image Size Supported: 131072 (0x00020000)
```

Syntax: show flash

The lines highlighted in bold in this example list the software installed on the module:

- The Compressed Pri Code and Compressed Sec Code lines list the flash code installed in the flash areas on the module.
- The Boot Image line lists the boot code.
- The VM lines list the flash images and boot code installed on the TSPs. The numbers following "VM" indicate the chassis slot number that contains the TRM and the TSP number on the TRM.

Displaying General Module Information

To display general module information, use the following method.

USING THE CLI

To display general information for a TRM, enter the following command at any CLI level:

```
SC1-Main-1#sh vm-state
================================================
T-FLOW MODULE (1) App CPU    0 MB SHM, 3 Application Processors
        CPU 1 in state of T-FLOW_STATE_RUNNING
        CPU 2 in state of T-FLOW_STATE_RUNNING
        CPU 3 in state of T-FLOW_STATE_RUNNING
---------------
Module 1 App CPU 1, SW: Version 07.5.04T72
Compiled on Jun 08 2002 at 03:45:44 labeled as TSP07504
DRAM 268M, BRAM 262K, FPGA Version 0050
Code Flash 4M: Primary (1217631 bytes, 07.3.03dT72),
               Secondary (1252784 bytes, 07.5.04T72)
Boot Flash 131K, Boot Version 07.01.00
The system uptime is 10 day 10 hour 3 minute 0 second
General Status: 0 ipc msg rec, 2 ipc msg sent
---------------
Module 1 App CPU 2, SW: Version 07.5.04T72
Compiled on Jun 08 2002 at 03:45:44 labeled as TSP07504
DRAM 268M, BRAM 262K, FPGA Version 0050
Code Flash 4M: Primary (1217631 bytes, 07.3.03dT72),
               Secondary (1252784 bytes, 07.5.04T72)
Boot Flash 131K, Boot Version 07.01.00
The system uptime is 10 day 10 hour 3 minute 0 second
General Status: 0 ipc msg rec, 2 ipc msg sent
---------------
Module 1 App CPU 3, SW: Version 07.5.04T72
Compiled on Jun 08 2002 at 03:45:44 labeled as TSP07504
DRAM 268M, BRAM 262K, FPGA Version 0050
Code Flash 4M: Primary (1217631 bytes, 07.3.03dT72),
               Secondary (1252784 bytes, 07.5.04T72)
Boot Flash 131K, Boot Version 07.01.00
The system uptime is 10 day 10 hour 3 minute 0 second
General Status: 0 ipc msg rec, 2 ipc msg sent
```

Syntax: show vm-state

This command displays the state of the TRM, the software version running on the module, and detailed information for each TSP on the module.

USING THE WEB MANAGEMENT INTERFACE

You cannot display general TRM information using the Web management interface.

Determining Module Status

You can determine the status of a TRM in the following ways:

- Status LEDs – Each TSP has LEDs that show send and receive activity for the processor. The MP has LEDs for data activity (both send and receive) and power.
- Module information in software – The module information displayed by the software indicates whether the module came up properly.

Status LEDs

You can determine the status of a TRM processor by observing its LEDs. The processors have the following LEDs. Each TSP has its own column of TxAct and RxAct LEDs. The left column shows activity for TSP 1, the middle column shows activity for TSP 2, and the right column shows activity for TSP 3.

Table 8: TRM LEDs

LED	Position	State	Meaning
Active	Upper LED to the left of the serial interface	On	The MP is active.
		Off	The MP is not active.
Power	Lower LED to the left of the serial interface	On	The power status is good.
		Off	The power status is not good.
TxAct	Upper LED near the middle of the module	Blinking	The TSP is transmitting data.
RxAct	Lower LED near the middle of the module	Blinking	The TSP is receiving data.

Software

You can display status information for a TRM using either of the following methods.

NOTE:

- Slots in a four-slot chassis are numbered 1 – 4, from top to bottom.
- Slots in an eight-slot chassis are numbered 1 – 8, from left to right.
- Slots in a fifteen-slot chassis are numbered 1 – 15, from left to right.

USING THE CLI

To display the status of a TRM using the CLI, enter the following command at any CLI level:

```
HPswitch(config)# show module
    Module                          Status    Ports Starting MAC
S1:
S2: Configured as B0GMR VM Management Module
S3: B24E Copper Switch Module       OK         24   00e0.52c2.9f40
S4: B24E Copper Switch Module       OK         24   00e0.52c2.9f60
S5:
S6: B0GMR VM Management Module      ACTIV       0
S7:
S8:
```

Syntax: show module

The Status column shows the module status. A TRM can have one of the following statuses:

- ACTIVE – The module is currently the active management module.
- STANDBY – The module is the standby management module. (This applies only to management modules

that support redundancy.)

- COMING UP – The module is coming up as the standby module. This status can be observed during switchover.
- FAILED – This status indicates that the host module failed to come up.
- OK – This status indicates that the module came up and is operating normally.

NOTE: The ACTIVE, STANDBY, and COMING UP status values apply only to management modules.

USING THE WEB MANAGEMENT INTERFACE

1. Select the Home link to display the System configuration sheet, if not already displayed.
2. Select the Module link to display the Module panel. The Status column shows the module status. A Web Switching module can have one of the following statuses:
   - ACTIVE – The module is currently the active management module.
   - STANDBY – The module is the standby management module. (This applies only to management modules that support redundancy.)
   - COMING UP – The module is coming up as the standby module. This status can be observed during switchover.
   - FAILED – This status indicates that the host module failed to come up.
   - OK – This status indicates that the module came up and is operating normally.

   NOTE: The ACTIVE, STANDBY, and COMING UP status values apply only to management modules.

Determining the Slot Allocations for the TSPs

The TRM automatically load balances processing by allocating chassis slots to the TSPs according to the total bandwidth of the modules in the slots. To list the slot allocations, use the following CLI method.

USING THE CLI

To display the slot allocations for the TSPs, enter the following command at any CLI level:

```
HPswitch(config)# show vm-map
slot 2 (weight 24 x 100M) is processed by vsp 1/2 (weight 24)
slot 3 (weight 8 x 1000M) is processed by vsp 1/1 (weight 80)
slot 4 (weight 24 x 100M) is processed by vsp 1/3 (weight 24)
```

Syntax: show vm-map

This example shows the slot allocations for a four-slot chassis. The output displays rows only for the slots that contain forwarding modules. No information is displayed for empty slots.

Each row shows the following information:

- The chassis slot (“slot 2” in the first row of the example above)
- The weight of the module in the slot (“weight 24 x 100M” in the first row of the example above)
- The chassis slot that contains the TRM and the TSP to which the forwarding module described by this row is allocated (“is processed by vsp 1/2”). The “1” in this example indicates the TRM is in chassis slot 1. The “2” in this example indicates that TSP 2 is handling the forwarding module in slot 2.
- The total weight assigned to the TSP (“weight 24“ in the first row of this example).

NOTE: If the ports on a module are not up, the output says "will be processed" instead of "is processed" and the weight is listed as "0". In this case, the TRM reserves a TSP for the module but does not add weight for the module's ports to the reserved TSP.

NOTE: For reference, this example matches "Example Configuration 1" on page 4.

Software Image Files

To run this software release, you need the boot and flash images listed in the following tables.

NOTE: If you are upgrading a Layer 3 Switch image from software release 07.2.01 or earlier, you will not be able to load a higher software release into flash memory. Software release 07.2.01 and earlier support TFTP of files up to 2.8MB but the 07.2.06 and higher Layer 3 Switch images are larger than that.

To upgrade the flash code, you first must either upgrade to 07.2.02 or boot the new software release from a TFTP server. After doing one of these things, you can copy the new flash code to flash memory. Software releases 07.2.02 and later support TFTP transfers of files up to 3.5MB.

CAUTION: In general, although new boot code versions sometimes become available, you do not need to upgrade your boot code unless either of the following is true:

—You want to boot over the network using TFTP on a port on a new type of hardware module. For example, if you want to boot the device over a 10 Gigabit Ethernet port, you must upgrade the boot code to at least the version that supports booting over the 10 Gigabit Ethernet ports.

—You need a bug fix contained in the boot code.

If neither of these cases applies to your device, HP ProCurve ***recommends that you do not upgrade your boot code***. If something goes wrong while you are copying the new boot code to the device, the device may become inoperable and will require repair from the factory. See "Boot Code Version Requirements" on page 13.

Product	Boot Image	Flash Image
HP ProCurve 9315M HP ProCurve 9308M HP ProCurve 9304M	TRM module: • M2B07504.bin (MP code) • VSB07100.bin (TSP code)	TRM module: • T1R07504.bin (MP code) • TSP07504.bin (TSP code)(

Boot Code Version Requirements

The boot code version already installed on your device is compatible with this software release. You do not need to upgrade the boot code unless either of the following is true:

- You want to boot over the network using TFTP on a port on a new type of hardware module. For example, if you want to boot the device over a 10 Gigabit Ethernet port, you must upgrade the boot code to at least the version that supports booting over the 10 Gigabit Ethernet ports.
- You need a bug fix contained in the boot code.

If neither of these cases applies to your device, HP ProCurve ***recommends that you do not upgrade your boot code***. If something goes wrong while you are copying the new boot code to the device, the device may become inoperable and will require repair from the factory.

Boot Image	Description
M2B07504.bin	Contains a fix that allows proper file synchronization in redundant management configurations using TRM or M4 management modules. In previous versions, the running-config is not copied to the standby module.
M2B07501.bin	Allows you to boot the flash code from a TFTP server using a 10 Gigabit Ethernet port.
M2B07500.bin	Minimum required version for the flash code image containing MPLS (N2M07500.bin or later).
M2B07202.bin	Contains a fix for a management redundancy issue. In the previous version of boot code, if the active management module became unavailable, both the active and standby modules remained at the boot code prompt. Minimum required version for a 15-slot chassis device.
M2B07201.bin	Contains a fix for a management redundancy issue. In the previous version of boot code, if you designated one of the redundant management modules to be the default active module and the chassis slot number for that module was higher than eight, the boot code did not support the designation.
M2B07108.bin	Minimum required version for a 4-slot or 8-slot chassis device.
VSB07100.bin	Minimum required version for the TSP CPUs on the TRM. This boot code is installed on the TSP CPUs themselves, not on the management CPU.

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