



DFM Default Settings

The DFM configuration process uses settings to assign polling and threshold parameters to the managed elements in your network. These polling and threshold parameters define DFM management policies.

A setting is a collection of parameters common to a particular type of analysis (for example, the monitoring of environmental conditions). A component called a group contains zero or more settings and is related to managed elements in your network based on matching criteria. The two types of groups are described in these sections:

- [Polling, page 4-2](#)
- [Thresholds, page 4-7](#)

Each member of a group is configured according to the parameters defined in the group's settings. In this way, different polling and threshold values can be applied to different groups of devices, interfaces, or ports.

Default groups and settings are provided with DFM. This chapter describes the default settings. [Chapter 8, “Working with DFM Groups and Settings,”](#) describes the default groups.



Note

Each setting comprises parameters that have been assigned default values. You can fine-tune values to suit your specific needs. For more information about adjusting the parameters of a setting, refer to [Chapter 8, “Working with DFM Groups and Settings.”](#)

Polling

The following settings are accessible from the Polling tab of the Polling and Thresholds Console:

- [Connectivity Polling, page 4-3](#)
- [Environment Polling, page 4-5](#)
- [Performance Polling - Ports and Interfaces, page 4-5](#)
- [Performance Polling - Processor and Memory, page 4-6](#)

[Table 4-1](#) identifies the default polling settings contained in the different default polling groups.

**Note**

If you want to disable the polling on a device (by setting the AnalysisMode to Disabled from the Polling and Thresholds Console), be sure to disable all types of polling done on the device. For example, if you disable Performance polling on a switch, the switch will continue to be polled for Connectivity and Environment information. Alternatively, you can unmanage the device, which disables all ICMP and SNMP polling; refer to the [“Managing and Unmanaging DFM Inventory Elements” section on page 6-12](#). If you have installed DFM 1.2 Patch/IDU 1.2.9 or later, you can disable ICMP polling for specific IP addresses or groups of IP addresses; refer to the [“Disabling ICMP Polling” section on page 9-2](#).

Table 4-1 Polling Groups and Their Polling Settings

Default Polling Group(s)	Contain These Default Polling Setting(s)
Switches	Connectivity
Routers	Environment Performance
Hubs Bridges Uncertified Systems	Connectivity
Other Systems	Connectivity Performance Polling - Processor and Memory ¹

1. Performance Polling - Processor and Memory is supported on Other Systems only if you have downloaded and installed the latest Incremental Device Update (IDU) from the DFM download site: <http://www.cisco.com/cgi-bin/tablebuild.pl/cw2000-dfm>.

Connectivity Polling

The Connectivity Polling setting configures connectivity monitoring of a system (for example, a switch or router). System connectivity is monitored using a combination of ICMP (Ping) requests for IP status and SNMP requests for interface, port, and card status. If a device does not respond to an ICMP poll, it is placed on a “do not poll” list. (For more information about how DFM uses ICMP and SNMP requests, see [Chapter 9, “Polling.”](#))

If you have downloaded and installed DFM 1.2 Patch/IDU 1.2.9 (or later), you can also disable ICMP polling on an IP address without disabling SNMP polling. For more information, refer to the [“Disabling ICMP Polling” section on page 9-2.](#)

The following parameters are included in the Connectivity Polling setting.

Analysis Mode

Enables or disables the connectivity polling. The default is ENABLED.



Note

If you want to disable all polling on a device, be sure to disable the polling in all of the polling settings, as described in [Table 4-1](#).

Polling Interval

The time between successive SNMP polls. The default for SNMP polls is 240 seconds.

This setting also determines the interval for ICMP polls. The actual ICMP polling interval is calculated as follows (where `pollingInterval` is the SNMP polling interval being described in this section):

1. DFM calculates the offset using this formula:

```
offset = 60;
If (offset > pollingInterval * 0.5) {
offset = pollingInterval * 0.5;
}
```

2. DFM calculates the ICIM polling interval using this formula:

$$icimPollingInterval = pollingInterval - offset$$

Thus, the default ICMP and SNMP polling intervals are as follows:

- The ICMP polling interval is 3 minutes.
- The SNMP polling interval is 4 minutes.

Retries

The number of retry connectivity polls to perform when the initial poll fails. The default is 3.

Timeout

The amount of time allowed for the first poll request before it times out. The default is 700 milliseconds. Successive retries use longer times.

Environment Polling

The Environment Polling setting configures polling intervals used to monitor the environmental conditions of a system. System components such as the power supply, fan, voltage sensor, and temperature sensor elements are monitored.

The following parameters are included in the Environment Polling setting.

Analysis Mode

Enables or disables environment polling. The default is ENABLED.

**Note**

If you want to disable all polling on a device, be sure to disable the polling in all of the polling settings, as described in [Table 4-1](#).

Polling Interval

The time between successive environment polls. The default is 240 seconds.

Retries

The number of retry polls to perform when the initial poll fails. The default is 3.

Timeout

The amount of time allowed for the first poll request before it times out. The default is 700 milliseconds. Successive retries use longer times.

Performance Polling - Ports and Interfaces

The Performance Polling - Ports and Interfaces setting configures polling intervals used to monitor the performance characteristics of managed ports and interfaces.

The following parameters are included in the Performance Polling - Ports and Interfaces setting.

Analysis Mode

Enables or disables the performance polling. The default is ENABLED.

**Note**

If you want to disable all polling on a device, be sure to disable the polling in all of the polling settings, as described in [Table 4-1](#).

Polling Interval

The time between successive polls for interfaces and trunk ports. The default is 240 seconds.

Polling Interval Access Ports

The performance polling interval for access ports. The default is 1200 seconds.

Retries

The number of retry performance polls to perform when the initial poll fails. The default is 3.

Timeout

The amount of time allowed for the first poll request before it times out. The default is 700 milliseconds. Successive retries use longer times.

Performance Polling - Processor and Memory

The Performance Polling - Processor and Memory setting configures polling intervals used to monitor a system's processor and associated memory elements.

**Note**

Although the performance polling for processor and memory setting is available in the Switches Polling Group, it is not applicable to Cisco switches.

The following parameters are included in the Performance Polling - Processor and Memory setting.

Analysis Mode

Enables or disables the processor and memory performance polling. The default is ENABLED.

**Note**

If you want to disable all polling on a device, be sure to disable the polling in all of the polling settings, as described in [Table 4-1](#).

Polling Interval

The time between successive processor and memory performance polls, in seconds. The default is 240 seconds.

Retries

The number of retry processor and memory performance polls to perform when the initial poll fails. The default is 3.

Timeout

The amount of time allowed for the first poll request before it times out. The default is 700 milliseconds. Successive retries use longer times.

Thresholds

The following settings are accessible from the Thresholds tab of the Polling and Thresholds Console:

- [Backup Interface Support, page 4-9](#)
- [Connectivity, page 4-10](#)
- [Dial-on-Demand Interface Support, page 4-11](#)
- [Environment, page 4-11](#)
- [Ethernet Interface/Port Performance, page 4-12](#)

- [Generic Interface/Port Performance](#), page 4-14
- [Interface/Port Flapping](#), page 4-15
- [Processor and Memory](#), page 4-16

Table 4-2 identifies the groups that, by default, contain the threshold settings.

Table 4-2 Groups Containing Threshold Settings

Default Threshold Group(s)	Contain These Default Threshold Setting(s)
Interface Group - Backup	Backup Interface Support
Interface Group - Dial-on-Demand	Dial-on-Demand Interface Support
Interface Group - 1 Gb Ethernet Interface Group - 10/100 Mb Ethernet Port Group (Access Port) - 1 GB Ethernet Port Group (Access Port) - 10/100 GB Ethernet Port Group (Trunk Port) - 1 GB Ethernet Port Group (Trunk Port) - 10/100 GB Ethernet	Ethernet Interface/Port Performance
Interface Group - ATM Interface Group - FDDI Interface Group - ISDN Physical ¹ Interface Group - Serial Interface Group - Token Ring Interface Group - Other Interfaces	Generic Interface/Port Performance Interface/Port Flapping (contained in ATM, ISDN Physical, Serial, and Other Interfaces groups)
Interface Group - ISDN B Channel ¹	Dial-on-Demand Interface Support
Interface Group - ISDN D Channel ¹	Interface/Port Flapping
Port Group (Access Port) - ATM Port Group (Access Port) - Other Ports Port Group (Trunk Port) - ATM Port Group (Trunk Port) - Other Ports	Generic Interface/Port Performance

Table 4-2 Groups Containing Threshold Settings (continued)

Default Threshold Group(s)	Contain These Default Threshold Setting(s)
System Resource Group - Switches System Resource Group - Routers System Resource Group - Hubs and Bridges System Resource Group - Uncertified Systems System Resource Group - Other Systems	Connectivity
System Resource Group - Switches System Resource Group - Routers System Resource Group - Other Systems	Environment Processor and Memory
System Resource Group - Optical	Switches Connectivity Environment Processor and Memory

1. This interface group is available only if you have downloaded and installed the latest Incremental Device Update (IDU) from the DFM download page:
<http://www.cisco.com/cgi-bin/tablebuild.pl/cw2000-dfm>.

Backup Interface Support

The Backup Interface Support setting configures the intended use of an interface as a backup. When an interface is identified as a backup, the operational exception diagnosis is modified for it as follows:

- The Operationally Down notification is not generated if the interface is down.
- The Backup Activated notification is generated if the interface comes up.
- The Exceeded Maximum Uptime notification is generated if the interface stays up too long.

The following parameter is included in the Backup Interface Support setting.

Maximum Uptime

The maximum length of time, in seconds, that the interface may be up before the Exceeded Maximum Uptime notification is generated. If the value of this parameter is 0, the Exceeded Maximum Uptime event is disabled. The default value is 0.

Connectivity

The Connectivity setting configures connectivity threshold parameters for network adapters (ports and interfaces). It also controls the analysis of systems that repeatedly restart, triggering an operational exception. For more information about how Device Fault Manager concludes that a system is excessively restarting, refer to [Appendix A, “Excessive Restarts and Flapping.”](#)

The following parameters are included in the Connectivity setting.

Disable Notification Mode

Not supported.

IP Network Notification Mode

Not supported.

Restart Trap Threshold

The number of SNMP cold or warm start traps that must be received within the amount of time set by the Restart Trap Window parameter in order for DFM to consider a system to be performing excessive restarts. The default is 3. A value of 0 turns off restart analysis.



Note

If you want cold and warm start traps displayed immediately in the Monitoring Console, reset the value of RestartTrapThreshold to 1 in the Polling and Thresholds Console.

Restart Trap Window

The window of time used to monitor a system's repeated restarts. If the number of start traps meets or exceeds the Restart Trap Threshold during this window of time, the system is considered to be performing excessive restarts. The default is 15 minutes.

Dial-on-Demand Interface Support

The Dial-on-Demand Interface Support setting configures the intended use of an interface as a dial-on-demand interface. When an interface is identified as dial-on-demand the operational exception diagnosis is modified for it as follows:

- The Operationally Down notification is not generated if the interface is down.
- The Exceeded Maximum Uptime notification is generated if the interface stays up too long.

The following parameter is included in the Dial-on-Demand Interface Support setting.

Maximum Uptime

The maximum length of time that the interface may be up before the Exceeded Maximum Uptime notification is generated. If the value of this parameter is 0, the Exceeded Maximum Uptime event is disabled. The default value is 2 hours.

Environment

The Environment setting configures the monitoring of a system's environmental conditions. System components such as the power supply, fan, voltage sensor, and temperature sensor elements are monitored.

The following parameters are included in the Environment setting.

Relative Temperature Threshold

Indicates how close the current temperature value can be to the value that triggers an emergency shutdown, expressed as a percentage of the emergency shutdown value. For example, if the shutdown temperature is 50 degrees C and the Relative Temperature Threshold is 10%, the Out of Range Fault is notified if the temperature exceeds 45 degrees C. The default is 10%.

Relative Voltage Threshold

Indicates how close the current voltage value can be to the value that triggers an emergency shutdown, expressed as a percentage of the emergency shutdown value. For example, if the shutdown value is +30V, and the Relative Voltage Threshold is 10%, the Out of Range Fault is notified if the voltage exceeds +27V. The default is 5%.

Ethernet Interface/Port Performance

The Ethernet Interface/Port Performance setting configures the monitoring of an Ethernet network adapter's performance characteristics. Parameters in this setting control the notification of these faults:

- High Broadcast Rate
- High Collision Rate
- High Discard Rate
- High Queue Drop Rate
- High Error Rate
- High Utilization

The following parameters are included in the Ethernet Interface/Port Performance setting.

Broadcast Threshold

The upper threshold for broadcast traffic expressed as a percentage of the total bandwidth. The default is 15%.

Collision Threshold

The upper threshold for collisions expressed as a percentage of the total number of output packets. The default is 10%.

Discard Threshold

The upper threshold for dropped packets expressed as a percentage of the total number of packets. The default is 5%.

Error Threshold

The upper threshold for packet errors expressed as a percentage of the total number of packets. The default is 10%.

ErrorTraffic Threshold

**Note**

This threshold is supported only if you have downloaded and installed the latest Incremental Device Update (IDU) from the DFM download site:
<http://www.cisco.com/cgi-bin/tablebuild.pl/cw2000-dfm>.

The upper threshold for packet rate, expressed as a percentage of the total bandwidth. The value for ErrorTraffic threshold can include up to two decimal places. The default is 2%.

Queue Drop Threshold

The acceptable percentage of packets dropped because of full queues, expressed as a percentage of the total number of packets. The default is 1%.

Utilization Threshold

The upper threshold for link utilization expressed as a percentage of the total bandwidth. The default is 40%.

The upper limit for packet errors, expressed as a percentage of the total number of packets. The default is 2%.

Generic Interface/Port Performance

The Generic Interface/Port Performance setting configures the monitoring of a non-Ethernet network adapter's performance characteristics. It includes basic parameters common to all media types such as utilization, errors, broadcast, and packet drops. (These basic parameters are also included in the Ethernet Interface/Port Performance setting, however their default values may be different.) Parameters in this setting control the notification of these faults:

- High Broadcast Rate
- High Discard Rate
- High Error Rate
- High Queue Drop Rate
- High Utilization

The following parameters are included in the Generic Interface/Port Performance setting.

Broadcast Threshold

The upper threshold for broadcast traffic expressed as a percentage of the total bandwidth. The default is 15%.

Discard Threshold

The upper threshold for dropped packets expressed as a percentage of the total number of packets. The default is 5%.

Error Threshold

The upper threshold for packet errors expressed as a percentage of the total number of packets. The default is 10%.

ErrorTraffic Threshold

**Note**

This threshold is supported only if you have downloaded and installed the latest Incremental Device Update (IDU) from the DFM download site:
<http://www.cisco.com/cgi-bin/tablebuild.pl/cw2000-dfm>.

The ErrorTraffic threshold is the upper limit for packet errors, expressed as a percentage of the total number of packets. The default is 2%.

Queue Drop Threshold

The acceptable percentage of packets dropped because of full queues, expressed as a percentage of the total number of packets. The default is 1%.

Utilization Threshold

The upper threshold for link utilization expressed as a percentage of the total bandwidth. The default is 60%.

Interface/Port Flapping

The Interface/Port Flapping setting controls the analysis of network adapters (ports and interfaces) that are continually going up and down—“flapping.” Flapping analysis monitors SNMP link down traps to identify a flapping network adapter. Device Fault Manager reports flapping as a faulty condition. This condition, in turn, triggers an operational exception for the system or VLAN that the network adapter is part of. For more information about how Device Fault Manager concludes that a network adapter is flapping, refer to [Appendix A, “Excessive Restarts and Flapping.”](#)

The following parameters are included in the Interface/Port Flapping setting.

Link Trap Threshold

The number of SNMP link down traps that must be received within the Link Trap Window in order for Device Fault Manager to consider the interface or port flapping. The default is 3. A value of 0 turns off flapping analysis.

Link Trap Window

The window of time used to monitor flapping analysis of a port or interface. If the number of link down traps meets or exceeds the Link Trap Threshold during this window of time, the interface or port is considered to be flapping. The default is 5 minutes.

Processor and Memory

The Processor and Memory setting configures the performance monitoring of a system's processor and its associated memory elements. Parameters in this setting control the notification of these faults:

- High Utilization
- High Backplane Utilization (chassis)
- High Buffer Miss Rate
- High Buffer Utilization
- Fragmentation
- Insufficient Free Memory



Note

Although the Processor and Memory settings are available to the Switches and Optical Switches threshold groups, neither group uses the Memory Buffer Miss Threshold.

The following parameters are included in the Processor and Memory setting.

Backplane Utilization Threshold

The upper threshold for a switch's backplane utilization expressed as a percentage of the total backplane bandwidth. The default is 80%.

Free Memory Threshold

The lower threshold for the acceptable amount of free memory as measured by the ratio of free memory to the total memory. The default is 15%.

Memory Buffer Miss Threshold

The upper threshold for the number of buffer misses expressed as a percentage of the total number of buffer requests. The default is 10%.

Memory Buffer Utilization Threshold

The upper threshold for the number of buffers used expressed as a percentage of the total number of buffers. The default is 90%.

Memory Fragmentation Threshold

The lower threshold for memory fragmentation. The fragmentation value is the ratio of the largest number of contiguous unallocated bytes to the total amount of free memory. For example, a value of 5 indicates that the largest free buffer must be at least 5% of the free memory. The default is 5%.

Processor Utilization Threshold

The upper threshold for processor utilization expressed as a percentage of the total capacity of the processor. The default is 90%.

