

New and Changed Information

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Change Summary

The following tables summarize the new and changed information in this document, and shows the releases in which each feature is supported. Your software release might not support all the features in this document. For the latest caveats and feature information, see the Bug Search Tool at https://bst.cloudapps.cisco.com/bugsearch and the release notes for your software release.

Table 1: Feature History for Congestion Management

Feature Name	Release	Description	Where Documented
Transmit FC abort counter	9.4(5)	Support has been introduced for per-interface transmit FC Abort Sequence (ABTS) frame counters. This allows monitoring of health and performance of Cisco MDS FC fabrics.	Configuring Fibre Channel Interfaces
Link Negotiation Early Training Complete	9.4(5)	Support has been introduced for enhanced Fibre Channel link negotiation capability for simultaneous TC signaling and LSN completion during Fibre Channel link negotiation at 32 Gbps to interoperate with non-compliant devices.	Configuring Fibre Channel Interfaces
RDF indicates disabled FPM feature during device registration	9.4(5)	RDF indicates FPM feature not enabled while notifying registered devices.	Congestion Management
Test Smart Monitoring and Alerting	9.4(5)	Support has been introduced for generating test syslogs and SNMP traps for SMA. This allows testing of remote automation that processes these alerts.	Congestion Management
Congestion Isolation for over-utilization action	9.4(5)	Actions for congestion isolation for over-utilization are summarized.	Congestion Management
PMON Over-Util support for NPV mode	9.4(5)	Support has been introduced for tx-overutilization counter in NPV mode.	About PMON Transmit Overutilization Counter

Feature Name	Release	Description	Where Documented
FPIN without PLOGI	9.4(5)	Support has been introduced to send FPIN notifications to the target port by the Fabric Controller even if PLOGI (Port Login) has not occurred.	Congestion Management
Smart Monitoring and Alerting	9.4(4)	Smart Monitoring and Alertng (SMA) feature is available in the production environment. This feature provides congestion alerting and real time monitoring.	Congestion Management
Fabric Congestion and Diagnostics	9.4(4)	Support to send on demand RDF requests directly to connected HBAs has been added.	Congestion Management
Over-Utilization Counter in PMON	9.4(4)	Support for the following are added: • FPIN peer congestion notification • FPIN warning level	About PMON Transmit Overutilization Counter
Over-Utilization Counter in PMON	9.4(3)	Support for overutilization counter and its associated mechanisms are introduced to enhance network performance by providing better detection and management of congestion.	About PMON Transmit Overutilization Counter
system transceiver power-control command to automatically power off the transceiver if interface is in admin shutdown.	9.4(2)	This command was introduced.	Configuring Transceiver (SFP) Power Saving
RxWait feature for the 64G module and 64G Fabric switches	9.3(2)	RxWait is now displayed in the following commands for interfaces on 64G capable modules/switches: • show interface • show interface counters detailed • show interface rxwait-history • show logging onboard rxwait	Congestion Management

Feature Name	Release	Description	Where Documented
DIRL Supported Devices in Switch and NPV modes	9.3(2)	Updated list of devices that support DIRL in NPV mode for Release 9.3(2).	Congestion Management
HBA Extended Receiver Ready	9.3(1)	Added support on F and NP ports. HBA ER_RDY is in preview (beta) status and not to be used in the production environment.	Congestion Management
DIRL NPV Support	9.3(1)	Enhanced to support the switches in NPV mode.	Congestion Management
Fabric Notifications	9.2(1)	The Fabric Notification — FPIN and Congestion Signal feature are out of the preview (beta) status and is used in the production environment.	Congestion Management
TxWait OBFL	9.2(1)	The TxWait OBFL file size was increased from 512 KB to 8 MB.	Congestion Management

Feature Name	Release	Description	Where Documented
Congestion Isolation	8.5(1)	This feature is now handled by Fabric Performance Monitor (FPM). The following commands were introduced: • **feature fpm** • **fpm congested-device** {**exclude** | **static**} **list** • **member pwwn** *pwwn* **vsan** *id* [**credit-stall**] • **fpm congested-device recover pwwn** *pwwn* **vsan** *id* The following commands were deprecated: • **congestion-isolation** {**include** | **exclude**} **pwwn** *pwwn* **vsan** *vsan-id* • **feature congestion-isolation** • **show congestion-isolation** {**exclude-list** | **global-list** | **ifindex-list** | **include-list** | **pmon-list** | **remote–list** | **status**} • **congestion-isolation remove interface** *slot*/*port*	Congestion Management

Feature Name	Release	Description	Where Documented
Congestion Isolation Recovery	8.5(1)	The Congestion Isolation Recovery feature automatically recovers the flow which was moved to low-priority VL after it was detected as slow back to normal VL; thereby, recovering the flow. The following commands were introduced: • **feature fpm** • **fpm congested-device** {**exclude** | **static**} **list** • **member pwwn** *pwwn* **vsan** *id* [**credit-stall**] • **fpm congested-device recover pwwn** *pwwn* **vsan** *id* • **port-monitor cong-isolation-recover** {**recovery-interval** *seconds* | **isolate-duration** *hours* **num-occurrence** *number*} The **counter** port monitor command was modified to add the **cong-isolate-recover** port-guard action.	Congestion Management

Feature Name	Release	Description	Where Documented
Fabric Notifications	8.5(1)	Fabric Notifications are used to notify end devices of performance impacting conditions and behaviors that affect the normal flow of IO such as link integrity degradation and congestion. The following commands were introduced: • **feature fpm** • **counter txwait warning-signal-threshold** *count1* **alarm-signal-threshold** *count2* **portguard congestion-signals** • **fpm congested-device** {**exclude** | **static**} **list** • **member pwwn** *pwwn* **vsan** *id* [**credit-stall**] • **fpm congested-device recover pwwn** *pwwn* **vsan** *id* • **fpm fpin period** *seconds* • **fpm congestion-signal period** *seconds* • **show fpm** {**fpin** | **registration** {**congestion-signal** | **summary**} | **congested-device database** [**exclude** | **local** | **remote** | **static**]} **vsan** *id* • **port-monitor fpin** {**recovery-interval** *seconds* | **isolate-duration** *hours* **num-occurrence** *number*} The **counter** port monitor command was modified to add the **FPIN** port-guard action.	Congestion Management

Feature Name	Release	Description	Where Documented
Dynamic Ingress Rate Limiting (DIRL)	8.5(1)	DIRL is used to automatically limit the amount of traffic that is flowing through a switch port that is congested. The following commands were introduced: • **feature fpm** • **fpm dirl** {**exclude list** | **reduction** *percentage* **recovery** *percentage* • **member** {**fc4-feature target** | **interface fc** *slot/port*} • **fpm dirl recover interface fc** *slot/port* • **show fpm** {**dirl exclude** | **fpin vsan** *id* | **ingress-rate-limit** {**events** | **status**} **interface fc***slot/port*} • **port-monitor dirl recovery-interval** *seconds* The **counter** port monitor command was modified to add the **DIRL** port-guard action.	Congestion Management

Feature Name	Release	Description	Where Documented
Fibre Channel and Fibre Channel over Ethernet (FCoE)	8.4(1)	The following commands were modified: • The **show hardware internal rxwait-history** [**module** *number* | **port** *number*] command was changed to **show interface** [*interface-range*] **rxwait-history**. • The **show hardware internal txwait-history** [**module** *number* | **port** *number*] command was changed to **show interface** [*interface-range*] **txwait-history**. • The **show process creditmon txwait-history** [**module** *number* [**port** *number*]] command was changed to **show interface** [*interface-range*] **txwait-history**. The following command outputs were modified: • **show interface** *interface-range* **aggregate-counters** • **show interface** *interface-range* **counters** • **show interface** *interface-range* **counters detailed** • **show interface priority-flow-control** • **show interface vfc** *interface-range* **counters detailed**	Congestion Management

Feature Name	Release	Description	Where Documented
Fibre Channel over Ethernet (FCoE)	8.2(1)	New FCoE commands were introduced and some FCoE commands were modified to align with the commands used in Fibre Channel.	Congestion Management
Extended Receiver Ready	8.1(1)	This feature allows each Inter-Switch Link (ISL) between supporting switches to be split into four separate virtual links, with each virtual link assigned its own buffer-to-buffer credits. The following commands were introduced: • **show flow-control** {**er_rdy** | **r_rdy**} [**module** *number*] • **switchport vl-credit** {**default** | **vl0** *value* **vl1** *value* **vl2** *value* **vl3** *value*} • **system fc flow-control** {**default** | **er_rdy** | **r_rdy**}	Congestion Management

Feature Name	Release	Description	Where Documented
Congestion Isolation	8.1(1)	This feature allows devices to be categorized as slow by either configuration command or by the port monitor. The following commands were introduced: • **congestion-isolation** {**include** | **exclude**} **pwwn** *pwwn* **vsan** *vsan-id* • **feature congestion-isolation** • **show congestion-isolation** {**exclude-list** | **global-list** | **ifindex-list** | **include-list** | **pmon-list** | **remote–list** | **status**} The *cong-isolate* portguard action was added to the following commands: • **counter credit-loss-reco** • **counter tx-credit-not-available** • **counter tx-slowport-oper-delay** • **counter tx-wait**	Congestion Management
Congestion Drop Timeout, No-Credit Frame Timeout, and Slow-Port Monitor Timeout Values for Fibre Channel	8.1(1)	The link connecting a core switch to a Cisco NPV switch should be treated as an ISL (core port) for the purposes of congestion-drop, no-credit-drop, and slowport-monitor thresholds for Fibre Channel. Previously, core ports were subject to any change in the congestion-drop or no-credit-drop mode F value.	Congestion Management

Feature Name	Release	Description	Where Documented
Slow Drain Detection and Congestion Isolation	8.1(1)	The new Congestion Isolation feature can detect a slow-drain device via port monitor or manual configuration and isolate it from other normally performing devices on an ISL. Once the traffic to the slow-drain device is isolated, the traffic to the rest of the normally behaving devices remain unaffected. Traffic isolation is accomplished via the following three features: **1.** Extended Receiver Ready **2.** Congestion Isolation **3.** Port monitor portguard action for Congestion Isolation	Congestion Management

Table 2: Feature History for Interfaces

Feature Name	Release	Description	Where Documented
Interfaces and Port Channels			
Port Beaconing	8.4(1)	This feature is supported on Cisco MDS switches that are operating in Cisco N-Port Virtualizer (Cisco NPV) mode.	Configuring Interfaces
Port Beaconing	8.3(1)	This feature can be used to identify individual switch and directly attached peer ports in a data center environment.	Configuring Interfaces
Port Beaconing	8.4(1)	This feature is supported on Cisco MDS switches that are operating in Cisco NPV mode.	Configuring Interfaces
Port Monitor	8.4(1)	Added support to configure a logging severity level for port monitor syslog messages.	Configuring Interfaces

Feature Name	Release	Description	Where Documented
Interfaces	8.4(1)	Fixed the output formatting of the **show logging onboard txwait** command.	Configuring Interfaces
Port Beaconing	8.3(1)	This feature can be used to identify individual switch and directly attached peer ports in a data center environment.	Configuring Interfaces
Interface Modes	8.1(1)	The link connecting from a core switch to a Cisco N-Port Virtualizer (NPV) switch must be treated as an ISL (core port) in interfaces and port channels. Port monitor may take portguard action on the link if it is treated as an edge port, which will result in the loss of connectivity to the devices that are connected to the Cisco NPV switch.	Configuring Interfaces
Port Monitor			
Port Monitor Policy	8.5(1)	A new port monitor portguard action (cong-isolate-recover) was introduced for the credit-loss-reco, tx-credit-not-available, tx-slowport-oper-delay, and txwait counters.	
Port Monitor	8.1(1)	The following commands were modified: • **port-type** {**access-port** | **trunks** | **all**} • **logical-type** {**core** | **edge** | **all**}	

Feature Name	Release	Description	Where Documented
Port Monitor Policy	8.1(1)	A new port monitor portguard action (cong-isolate) was introduced for the credit-loss-reco, tx-credit-not-available, tx-slowport-oper-delay, and txwait counters.	

Table 3: Feature History for Interface Buffers

Feature Name	Release	Description	Where Documented
Buffer-to-Buffer Credit Recovery	8.4(1)	Support for buffer-to-buffer credit recovery for NP ports.	
Buffer-to-Buffer Credit Recovery	8.2(1)	Support for buffer-to-buffer credit recovery for F ports.	
Enhanced Receiver Ready	8.1(1)	This feature was introduced. The following commands were introduced: • show flow-control er_rdy • switchport vl-credit • system fc flow-control er_rdy	

Table 4: Feature History for Port Channels

Feature Name	Release	Description	Where Documented
Port channels	8.4(1)	The default port channel mode is changed from On to Active mode.	

Table 5: Feature History for N Port Identifier Virtualization

Feature Name	Release	Description	Where Documented
N Port Virtualization (NPV) Load Balancing	8.5(1)	NPV load balancing scheme is enhanced to propose a mapping of server interfaces to external interfaces based on the throughput value so that the traffic can be evenly distributed on the external interfaces. The following commands were introduced: • **show npv traffic-map proposed** • **npv traffic-map analysis clear**	
N Port Identifier Virtualization	8.4(2)	The NPIV feature is enabled by default.	
NP Ports	8.4(1)	Buffer-to-Buffer State Change Notification (BBSCN) allowed on NP Ports	