



Licensing Cisco MDS 9000 Series NX-OS Software Features

Licenses are available for all switches in the Cisco MDS 9000 Series. Licensing allows you to access specified premium features on the switch after you install the appropriate license for that feature.

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Cisco MDS NX-OS Software Licenses

This section contains information related to licensing types, options, procedures, installation, and management for the Cisco MDS NX-OS software.

Licensing Terminology

The following terms are used in this document:

Licensed feature

Permission to use a particular feature through a license file, a hardware object, or a legal contract. This permission is limited to the number of users, number of instances, time span, and the implemented device.

Licensed application

A software feature that requires a license to be used.

License enforcement

A mechanism that prevents a feature from being used without first obtaining a license.

Node-locked license

A license that can only be used on a particular device using the device's unique host ID.

Host IDs

A unique chassis serial number that is specific to each device.

Software license claim certificate

A document entitling its rightful owner to use licensed features on one device as described in that document.

Product Authorization Key (PAK)

The PAK allows you to obtain a license key from one of the sites listed in the software license claim certificate document. After registering at the specified website, you will receive your license key file and installation instructions through e-mail.

License key file

A device-specific unique file that specifies the licensed features. Each file contains digital signatures to prevent tampering and modification. License keys are required to use a licensed feature. License keys are enforced within a specified time span.

Missing license

If the bootflash has been corrupted or a supervisor module replaced after you have installed a license, that license shows as missing. The feature still works. You should reinstall the license as soon as possible.

Evaluation license

A temporary license. Evaluation licenses are time bound (valid for a specified number of days) and are tied to a host ID (device serial number).

Permanent license

A license that is not time bound is called a permanent license.

Grace period

The amount of time the features in a license package can continue functioning without a license.

Support

If you purchased Cisco support through a Cisco reseller, contact the reseller directly. If you purchased support directly from Cisco, contact Cisco Technical Support at this URL: http://www.cisco.com/en/US/support/tsd_cisco_worldwide_contacts.html

Licensing Model

The licensing model defined for the Cisco MDS product line has two options:

Feature-based licenses allow features that are applicable to the entire switch.

**Note**

- A SAN extension license is included in the base license for the Cisco MDS 9000 24/10-Port SAN Extension Module (DS-X9334-K9).

This table describes feature-based licenses.

Table 1: Feature-Based Licenses

Feature License	Features
Enterprise package (ENTERPRISE_PKG)	<ul style="list-style-type: none"> • FC Port security • VSAN-based access control • Fibre Channel Security Protocol (FC-SP) authentication • Advanced traffic engineering—quality of service (QoS) • IPsec and IKE for IPv4 <p>Note From Cisco MDS NX-OS Release 9.2(2), the IPsec feature is included in the default feature set and does not require an ENTERPRISE_PKG license on the Cisco MDS 9220i Fabric Switch.</p> <ul style="list-style-type: none"> • IKE digital certificates • Enhanced VSAN routing inter-VSAN routing (IVR) over Fibre Channel • IVR Network Address Translation (NAT) over Fibre Channel • Zone-based traffic prioritizing • Zone-based FC QoS • Extended BB_Credits • Fibre Channel write acceleration • FCIP encryption • Fabric binding for Fibre Channel • SAN device virtualization • Cisco TrustSec Fibre Channel Link Encryption

Feature License	Features
SAN Telemetry package SAN_TELEMETRY_PKG	

Feature License	Features
	<p data-bbox="839 287 1003 312">SAN Analytics</p> <p data-bbox="839 333 1523 422">The SAN Analytics feature is used to collect, store, and fetch the data of interest. This feature allows you to analyze data only on the switch.</p> <p data-bbox="839 443 1511 506">Note The SAN_TELEMETRY_PKG license is a switch based license only.</p> <p data-bbox="839 537 1503 632">The following provides information about the licenses that are supported on Cisco switches and the release from which it supports these licenses:</p> <ul data-bbox="878 653 1523 1087" style="list-style-type: none"> <li data-bbox="878 653 1523 741">• Cisco MDS 9700 Series Multilayer Directors: Supports the SAN_ANALYTICS_PKG and SAN_TELEMETRY_PKG licenses from Cisco MDS NX-OS Release 8.2(1). <li data-bbox="878 762 1523 850">• Cisco MDS 9396T 32-Gbps 96-Port Fibre Channel Fabric Switch: Supports only the SAN_ANALYTICS_PKG license from Cisco MDS NX-OS Release 8.4(1). <li data-bbox="878 871 1523 959">• Cisco MDS 9148T 32-Gbps 48-Port Fibre Channel Fabric Switch: Supports only the SAN_ANALYTICS_PKG license from Cisco MDS NX-OS Release 8.4(1). <li data-bbox="878 980 1523 1087">• Cisco MDS 9132T 32-Gbps 32-Port Fibre Channel Fabric Switch: Supports only the SAN_ANALYTICS_PKG license from Cisco MDS NX-OS Release 8.3(1). <p data-bbox="839 1119 1523 1371">If you have purchased the SAN_TELEMETRY_PKG license, you can continue to use it only to analyze data on your switch in Cisco MDS NX-OS Release 8.3(1) or later releases. However, we recommend that you upgrade to the SAN_ANALYTICS_PKG license that is available from Cisco MDS NX-OS Release 8.3(1) to analyze data not only on the switch but also on the Cisco Data Center Network Manager (DCNM) or supported third party devices or apps.</p> <p data-bbox="839 1392 1523 1518">To upgrade from SAN_TELEMETRY_PKG used in Cisco MDS NX-OS Release 8.2(1) to SAN_ANALYTICS_PKG that is available in Cisco MDS NX-OS Release 8.3(1), perform these steps:</p> <ol data-bbox="839 1539 1511 1682" style="list-style-type: none"> <li data-bbox="839 1539 1511 1602">1. Use the no feature analytics command to disable the SAN analytics feature. <li data-bbox="839 1623 1511 1682">2. Use the clear license filename to uninstall the SAN_TELEMETRY_PKG license. <p data-bbox="878 1703 1495 1791">Note You can uninstall a license before or after upgrading the software as long as the license package is not in use.</p> <ol data-bbox="839 1833 1385 1866" style="list-style-type: none"> <li data-bbox="839 1833 1385 1866">3. Upgrade to Cisco MDS NX-OS Release 8.3(1).

Feature License	Features
	<p>4. Use the install license <i>filename</i> to install the SAN_ANALYTICS_PKG license.</p> <p>Note If you have already purchased the SAN_TELEMETRY_PKG license, you can upgrade to the SAN_ANALYTICS_PKG license for free.</p> <p>5. Use the feature analytics command to enable the SAN analytics feature.</p> <p>This feature supports the following license models:</p> <ul style="list-style-type: none"> • Grace-period license—If you do not have a license and enable the analytic feature using the feature analytics command, the feature functions for 120 days. <p>Note After 120 days of using the analytics feature, this feature will be disabled.</p> • Term-based license—Term-based license for the SAN Analytics and Telemetry feature is a traditional license that is valid for a minimum of three years. A message will be displayed 90 days before the license expiry date as a reminder to renew the license. The message will continue to display on the 89th, 60th, 30th day, once every day for the last 28 days, and once every hour for the last 7 days of the license expiry date. <p>Note After the license expiry, the SAN Analytics feature will be disabled after you reload the switch, using the reload command.</p>

Feature License	Features
SAN Analytics package SAN_ANALYTICS_PKG	<p>SAN Analytics and SAN Telemetry Streaming</p> <p>The SAN Analytics and SAN Telemetry Streaming provides insights into your fabric by allowing you to monitor, analyze, identify, and troubleshoot performance issues. This solution allows you to analyze data not only on the switch but also on the Cisco Data Center Network Manager (DCNM) or supported third party devices or apps.</p> <p>Note</p> <ul style="list-style-type: none"> • The SAN_ANALYTICS_PKG license is a switch based license only. • For the SAN Analytics and SAN Telemetry Streaming feature to work on DCNM, you need to purchase the DCNM Advanced SAN Feature License and SAN Analytics license. For more information on the licensing information on DCNM, see the "Advanced SAN Feature Licenses" topic in the Cisco DCNM Licensing Guide. <p>This solution is supported from Cisco MDS Release 8.3(1) and later releases and supports the following license models:</p> <ul style="list-style-type: none"> • Grace-period license—If you do not have a license and enable the analytic feature using the feature analytics command, the feature functions for 120 days. <p>Note After 120 days of using the analytics feature, this feature will be disabled.</p> <ul style="list-style-type: none"> • Term-based license—Term-based license for the SAN Analytics and Telemetry feature is a traditional license that is valid for a minimum of three years. A message will be displayed 90 days before the license expiry date as a reminder to renew the license. The message will continue to display on the 89th, 60th, 30th day, once every day for the last 28 days, and once every hour for the last 7 days of the license expiry date. <p>Note After the license expiry, the SAN Analytics feature will be disabled after you reload the switch, using the reload command.</p>
Mainframe package (MAINFRAME_PKG)	<ul style="list-style-type: none"> • Switch cascading • IBM TotalStorage Virtual Tape Server (VTS) • IBM TotalStorage XRC application • Port swap, block, prohibit

Feature License	Features
DCNM-SAN License packages	For DCNM related licensing information, see the Cisco DCNM Licensing Guide .
NDFC License packages	For NDFC related licensing information, see the License Management chapter in Cisco NDFC Fabric Controller Configuration Guide.
<p>On-demand Port Activation Licensing package (PORT_ACTIVATION_PKG) (M9220I-UPGK9=) (M9250IP20-16G=) (M9148T-PL8) (M9396T-PL16) (M9132T-PL8) (M9124V-PL8) (M9148V-PL8)</p> <p>Note The license manager does not prevent installing more port licenses than the available physical ports on the switch. The extra licenses if installed, will not affect the normal behavior of the licensed ports.</p>	<ul style="list-style-type: none"> • On the Cisco MDS 9220i Switch: <ul style="list-style-type: none"> • Fibre Channel ports: Only the first 4 Fibre Channel ports out of the 12 ports are active by default. The FC_PORT_ACTIV_9220I_PKG enables additional 8 Fibre Channel ports. IPS ports: Only the first 2 IPS ports operating in 1-Gbps speed mode are active by default (IP Storage 1/1 and IP Storage 1/2). The IPS_PORT_ACTIV_9220I_PKG enables other speed modes. • Cisco MDS 9148V with 48 x 8/16/32/64-Gbps multispeed ports and 1-rack unit (1RU) SAN fabric switch. 24 ports are enabled by default and the other ports are enabled in increments of 8. • Cisco MDS 9124Vx with 24 x 8/16/32/64-Gbps multispeed ports and 1-rack unit (1RU) SAN fabric switch. 8 ports are enabled by default and the other ports are enabled in increments of 8. • Cisco MDS 9132T 32-Gbps 32-Port Fibre Channel Switches have 16 32-Gbps FC ports (FC1/1-16) in the base chassis and 16 32-Gbps FC ports on the LEM module (FC1/17-32). Port licenses are not movable between the base chassis and the LEM module.
<p>Data Mobility Manager (DMM) (DMM_FOR_SSM_PKG) (M9250IDMMT6M)</p>	<ul style="list-style-type: none"> • Online migration of heterogenous arrays • Simultaneous migration of multiple LUNs • Unequal size LUN migration • Rate adjusted migration • Verification of migrated data • Secure erasure of migrated data • Dual fabric support



Note License packages for Cisco DMM (Cisco Data Mobility Manager) and Cisco SME (Cisco Storage Media Encryption) are documented in the [Cisco MDS 9000 Series Data Mobility Manager Configuration Guide](#).

Licensing High Availability

As with other Cisco NX-OS features, the licensing feature also maintains the following high-availability standards:

- Installing any license in the device is a nondisruptive process.
- Installing a license automatically saves a copy of permanent licenses to the chassis.
- If you have enabled the grace period feature, enabling a licensed feature that does not have a license key starts a counter on the grace period. You then have 120 days to install the appropriate license keys, disable the use of that feature, or disable the grace period feature. If at the end of the 120-day grace period the device does not have a valid license key for the feature, the Cisco NX-OS software automatically disables the feature and removes the configuration from the device.

Devices with dual supervisors have the following additional high-availability features:

- The license software runs on both supervisor modules and provides failover protection.
- The license key file is mirrored on both supervisor modules. Even if both supervisor modules fail, the license file continues to function from the version that is available on the chassis.

License Transfers Between Devices

A license is specific to the physical device for which it is issued and is not valid on any other physical device. The license cannot be transferred.

**Note**

- Cisco ONE Software license can be transferred from one device to another as a replacement.
- Return Material Authorization (RMA) certified devices need new license file and can be obtained from Technical Assistance Center (TAC) license team.
- If you have a single supervisor module on your Cisco NX-OS device and you replace the supervisor module, you must reinstall the license key file.
If you are evaluating a license when you replace the supervisor module, the grace period of the license is usually set to 120 days. On a dual supervisor system, the grace period of the license will be overwritten from the existing active supervisor module to the new stand-by supervisor module.
- If you purchased Cisco support through a Cisco reseller, contact the reseller directly. If you purchased support directly from Cisco, contact Cisco Technical Support at this URL: http://www.cisco.com/en/US/support/tsd_cisco_worldwide_contacts.html
- If the supervisor modules are interchanged between two different Cisco MDS chassis, `license missing` message is displayed under the **show license usage** command. Use the **clear license filename** command to uninstall the license package and re-install the license files. However, the licensed features will continue to work.

On-Demand Port Activation Licensing

This section describes how to use the on-demand port activation licensing feature on the Cisco MDS 9132T, Cisco MDS 9148T, Cisco MDS 9148V, Cisco MDS 9124V Cisco MDS 9148S, Cisco MDS 9250i, and Cisco MDS 9396S switches.

About On-Demand Port Activation Licensing

You can expand your SAN connectivity as needed by enabling users to purchase and install additional port licenses. By default, all ports are eligible for license activation.

Port-Naming Conventions

This table describes the port-naming conventions for the Cisco Fabric switches.

Table 2: Port-Naming Conventions for Cisco Fabric Switches

Cisco MDS 9124V Switch	fc1/1 through fc1/8
Cisco MDS 9132T Switch	Cisco MDS 9132T Switch
Cisco MDS 9148S Switch	fc1/1 through fc1/48
Cisco MDS 9148T Switch	fc1/1 through fc1/48
Cisco MDS 9148V Switch	fc1/1 through fc1/24
Cisco MDS 9220i Switch	fc1/1 through fc1/12 and IPS 1/1 through 1/6

Cisco MDS 9250i Switch	fc1/1 through fc1/40 and IPS 1/1-2 ETH 1/1-8
Cisco MDS 9396S Switch	fc1/1 through fc1/96
Cisco MDS 9396T Switch	fc1/1 through fc1/96

Port Licensing

Cisco MDS 9250i Switch

On Cisco MDS 9250i Switch, 20 16-Gbps Fibre Channel ports are active by default. To enable the other 20 16-Gbps Fibre Channel ports, you must obtain a license. The 8 10-Gbps FCoE ports are active by default. The two fixed 10-Gbps IP storage services ports do not require additional license.

Cisco MDS 9220i Switch

- Fibre Channel ports: Only the first 4 ports out of the 12 ports are active by default. However, you can move the default license from the first 4 ports to any of the other 8 ports. To enable the other 8 ports, you must obtain a license. The additional license will enable the extra 8 ports.
- IP Storage (IPS) ports: Only the first two ports that are operating in 1-Gbps speed mode are active by default (IPStorage 1/1 and IPStorage 1/2). You cannot move the default license from these ports to the other IPS ports such as IPStorage 1/3 through 1/6.

Default license for IPS ports is available only in the 1-Gbps speed mode. In any other speed mode (10 Gbps or 40 Gbps), ports need additional port activation license.

The port licenses for Fibre Channel and IPS ports are bundled into a single license. You need to install this license for enabling additional ports for both Fibre Channel and IPS ports.

The following example displays the license status on a Cisco MDS 9220i switch:

```
switch# show lic usage
Feature                               Ins Lic  Status Expiry Date Comments
                               Count
-----
FM_SERVER_PKG                         No  -   Unused          -
ENTERPRISE_PKG                        No  -   In use          Grace 49D 13H
FC_PORT_ACTIV_9220I_PKG                Yes 12   In use never     -
IPS_PORT_ACTIV_9220I_PKG               Yes  4   In use never     -
IPS_1G_PORT_ACTIV_9220I_PKG            No  2   In use never     -
-----

switch# show lic default
Feature                               Default License Count
-----
FM_SERVER_PKG                         -
ENTERPRISE_PKG                        -
FC_PORT_ACTIV_9220I_PKG                4
IPS_PORT_ACTIV_9220I_PKG               0
IPS_1G_PORT_ACTIV_9220I_PKG            2
-----

switch# show port-license
Available FC port activation licenses are 0
Available IPS port activation licenses are 2
-----
```

Interface	Cookie	Port Activation License
fc1/1	16777216	acquired
fc1/2	16781312	acquired
fc1/3	16785408	acquired
fc1/4	16789504	acquired
fc1/5	16793600	acquired
fc1/6	16797696	acquired
fc1/7	16801792	acquired
fc1/8	16805888	acquired
fc1/9	16809984	acquired
fc1/10	16814080	acquired
fc1/11	16818176	acquired
fc1/12	16822272	acquired
fcip1	167772160	eligible
fcip3	167772162	eligible
IPStorage1/1	33554432	acquired
IPStorage1/2	33558528	acquired
IPStorage1/3	33562624	acquired
IPStorage1/4	33566720	acquired
IPStorage1/5	33570816	eligible
IPStorage1/6	33574912	ineligible

Default Configuration

The following example shows the default port license configuration for the Cisco MDS 9132T Switch:

```
switch# show port-license
Available port activation licenses are 8
-----
Interface Cookie      Port Activation License
-----
fc1/1      16777216    acquired
fc1/2      16781312    acquired
fc1/3      16785408    acquired
fc1/4      16789504    acquired
fc1/5      16793600    acquired
fc1/6      16797696    acquired
fc1/7      16801792    acquired
fc1/8      16805888    acquired
fc1/9      16809984    eligible
fc1/10     16814080    eligible
fc1/11     16818176    eligible
fc1/12     16822272    eligible
fc1/13     16826368    eligible
fc1/14     16830464    eligible
fc1/15     16834560    eligible
fc1/16     16838656    eligible
fc1/17     16842752    acquired
fc1/18     16846848    acquired
fc1/19     16850944    acquired
fc1/20     16855040    acquired
fc1/21     16859136    acquired
fc1/22     16863232    acquired
fc1/23     16867328    acquired
fc1/24     16871424    acquired
fc1/25     16875520    acquired
fc1/26     16879616    acquired
fc1/27     16883712    acquired
fc1/28     16887808    acquired
fc1/29     16891904    acquired
```

```

fc1/30    16896000    acquired
fc1/31    16900096    acquired
fc1/32    16904192    acquired

```



Note The cookie is used to acquire a license. Use the **show license usage PORT_ACTIV_8132U_PKG** command to show the cookies for acquired licenses.

```

switch# show license usage poRT_ACTIV_9132U_PKG
Application
-----
Port Manager (fc1/1)
Port Manager (fc1/2)
Port Manager (fc1/3)
Port Manager (fc1/4)
Port Manager (fc1/5)
Port Manager (fc1/6)
Port Manager (fc1/7)
Port Manager (fc1/8)
-----

```

The following example shows the default port license configuration for the Cisco MDS 9250i Switch:

```

switch# show port-license
Available port activation licenses are 20
-----
Interface    Cookie      Port Activation License
-----
fc1/1        16777216    acquired
fc1/2        16781312    acquired
fc1/3        16785408    acquired
fc1/4        16789504    acquired
fc1/5        16793600    acquired
fc1/6        16797696    acquired
fc1/7        16801792    acquired
fc1/8        16805888    acquired
fc1/9        16809984    acquired
fc1/10       16814080    acquired
fc1/11       16818176    acquired
fc1/12       16822272    acquired
fc1/13       16826368    acquired
fc1/14       16830464    acquired
fc1/15       16834560    acquired
fc1/16       16838656    acquired
fc1/17       16842752    acquired
fc1/18       16846848    acquired
fc1/19       16850944    acquired
fc1/20       16855040    acquired
fc1/21       16859136    eligible
fc1/22       16863232    eligible
fc1/23       16867328    eligible
fc1/24       16871424    eligible
fc1/25       16875520    eligible
fc1/26       16879616    eligible
fc1/27       16883712    eligible
fc1/28       16887808    eligible
fc1/29       16891904    eligible
fc1/30       16896000    eligible

```

fc1/31	16900096	eligible
fc1/32	16904192	eligible
fc1/33	16908288	eligible
fc1/34	16912384	eligible
fc1/35	16916480	eligible
fc1/36	16920576	eligible
fc1/37	16924672	eligible
fc1/38	16928768	eligible
fc1/39	16932864	eligible
fc1/40	16936960	eligible



Note The cookie is used to acquire a license. Use the **show license usage PORT_ACTIV_20P** command to show the cookies for acquired licenses.

```
switch# show license usage PORT_ACTIV_20P
Application
```

```
-----
Port Manager (fc1/1)
Port Manager (fc1/2)
Port Manager (fc1/3)
Port Manager (fc1/4)
Port Manager (fc1/5)
Port Manager (fc1/6)
Port Manager (fc1/7)
Port Manager (fc1/8)
Port Manager (fc1/9)
Port Manager (fc1/10)
Port Manager (fc1/11)
Port Manager (fc1/12)
Port Manager (fc1/13)
Port Manager (fc1/14)
Port Manager (fc1/15)
Port Manager (fc1/16)
Port Manager (fc1/17)
Port Manager (fc1/18)
Port Manager (fc1/19)
Port Manager (fc1/20)
```

The following example shows the default port license configuration for the Cisco MDS 9396S Switch:

```
switch# show port-license
Available port activation licenses are 0
-----
Interface      Cookie      Port Activation License
-----
fc1/1          16777216    acquired
fc1/2          16781312    acquired
fc1/3          16785408    acquired
fc1/4          16789504    acquired
fc1/5          16793600    acquired
fc1/6          16797696    acquired
fc1/7          16801792    acquired
fc1/8          16805888    acquired
fc1/9          16809984    acquired
fc1/10         16814080    acquired
fc1/11         16818176    acquired
fc1/12         16822272    acquired
fc1/13         16826368    acquired
fc1/14         16830464    acquired
```

fc1/15	16834560	acquired
fc1/16	16838656	acquired
fc1/17	16842752	acquired
fc1/18	16846848	acquired
fc1/19	16850944	acquired
fc1/20	16855040	acquired
fc1/21	16859136	acquired
fc1/22	16863232	acquired
fc1/23	16867328	acquired
fc1/24	16871424	acquired
fc1/25	16875520	acquired
fc1/26	16879616	acquired
fc1/27	16883712	acquired
fc1/28	16887808	acquired
fc1/29	16891904	acquired
fc1/30	16896000	acquired
fc1/31	16900096	acquired
fc1/32	16904192	acquired
fc1/33	16908288	acquired
fc1/34	16912384	acquired
fc1/35	16916480	acquired
fc1/36	16920576	acquired
fc1/37	16924672	acquired
fc1/38	16928768	acquired
fc1/39	16932864	acquired
fc1/40	16936960	acquired
fc1/41	16941056	acquired
fc1/42	16945152	acquired
fc1/43	16949248	acquired
fc1/44	16953344	acquired
fc1/45	16957440	acquired
fc1/46	16961536	acquired
fc1/47	16965632	acquired
fc1/48	16969728	acquired
fc1/49	16973824	eligible
fc1/50	16977920	eligible
fc1/51	16982016	eligible
fc1/52	16986112	eligible
fc1/53	16990208	eligible
fc1/54	16994304	eligible
fc1/55	16998400	eligible
fc1/56	17002496	eligible
fc1/57	17006592	eligible
fc1/58	17010688	eligible
fc1/59	17014784	eligible
fc1/60	17018880	eligible
fc1/61	17022976	eligible
fc1/62	17027072	eligible
fc1/63	17031168	eligible
fc1/64	17035264	eligible
fc1/65	17039360	eligible
fc1/66	17043456	eligible
fc1/67	17047552	eligible
fc1/68	17051648	eligible
fc1/69	17055744	eligible
fc1/70	17059840	eligible
fc1/71	17063936	eligible
fc1/72	17068032	eligible
fc1/73	17072128	eligible
fc1/74	17076224	eligible
fc1/75	17080320	eligible
fc1/76	17084416	eligible
fc1/77	17088512	eligible

fc1/78	17092608	eligible
fc1/79	17096704	eligible
fc1/80	17100800	eligible
fc1/81	17104896	eligible
fc1/82	17108992	eligible
fc1/83	17113088	eligible
fc1/84	17117184	eligible
fc1/85	17121280	eligible
fc1/86	17125376	eligible
fc1/87	17129472	eligible
fc1/88	17133568	eligible
fc1/89	17137664	eligible
fc1/90	17141760	eligible
fc1/91	17145856	eligible
fc1/92	17149952	eligible
fc1/93	17154048	eligible
fc1/94	17158144	eligible
fc1/95	17162240	eligible
fc1/96	17166336	eligible



Note The cookie is used to acquire a license. Use the **show license usage PORT_ACTIV_9396S_PKG** command to show the cookies for acquired licenses.

```
switch# show license usage PORT_ACTIV_9396S_PKG
```

```
Application
```

```
-----
Port Manager (fc1/1)
Port Manager (fc1/2)
Port Manager (fc1/3)
Port Manager (fc1/4)
Port Manager (fc1/5)
Port Manager (fc1/6)
Port Manager (fc1/7)
Port Manager (fc1/8)
Port Manager (fc1/9)
Port Manager (fc1/10)
Port Manager (fc1/11)
Port Manager (fc1/12)
Port Manager (fc1/13)
Port Manager (fc1/14)
Port Manager (fc1/15)
Port Manager (fc1/16)
Port Manager (fc1/17)
Port Manager (fc1/18)
Port Manager (fc1/19)
Port Manager (fc1/20)
Port Manager (fc1/21)
Port Manager (fc1/22)
Port Manager (fc1/23)
Port Manager (fc1/24)
Port Manager (fc1/25)
Port Manager (fc1/26)
Port Manager (fc1/27)
Port Manager (fc1/28)
Port Manager (fc1/29)
Port Manager (fc1/30)
Port Manager (fc1/31)
Port Manager (fc1/32)
Port Manager (fc1/33)
Port Manager (fc1/34)
```



```

Port Manager (fc1/35)
Port Manager (fc1/36)
Port Manager (fc1/37)
Port Manager (fc1/38)
Port Manager (fc1/39)
Port Manager (fc1/40)
Port Manager (fc1/41)
Port Manager (fc1/42)
Port Manager (fc1/43)
Port Manager (fc1/44)
Port Manager (fc1/45)
Port Manager (fc1/46)
Port Manager (fc1/47)
Port Manager (fc1/48)

```

License Status Definitions

This table defines the port activation license status terms.

Table 3: Port Activation License Status Definitions

Port Activation License Status	Definition
acquired	The port is licensed and active.
eligible	The port is eligible to receive a license but does not yet have one.
ineligible	The port is not allowed to receive a license.

By default, when you install additional port license activation packages, the activation status of ports changes from "eligible" to "acquired." If you prefer to accept the default behavior, no further action is required.



Note You can uninstall licenses for ports not in use; however, you cannot uninstall default licenses.

This table describes the port license assignments for the Cisco MDS 9148S Switch.

Table 4: Default Port License Assignments for Cisco MDS 9148S Switch

License Package (PORT_ACTIV_9148S_PKG)	Assigned to Ports on the Cisco MDS 9148S Switch
Default	1–12
PORT_ACTIV_9148S_PKG	13–48

You can use the **show license usage** command to view any licenses assigned to a switch. If a license is in use, the status displayed is In use. If a license is installed but features or ports have acquired the license, then the status displayed is Unused.

The default license package for the Cisco MDS 9148S Switch is as follows:

```
switch# show license usage
```

Feature	Ins	Lic	Status	Expiry Date	Comments
	Count				
FM_SERVER_PKG	Yes	-	Unused	never	-
ENTERPRISE_PKG	No	-	Unused		Grace expired
PORT_ACTIV_9148S_PKG	No	12	In use	never	-

This example displays the output when you do not have port licenses and try to activate a port license:

```
switch# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# interface fc1/50
switch(config-if)# shutdown
switch(config-if)# port-license acquire
fc1/50: (error) port activation license not available
switch(config-if)# no shutdown
switch(config-if)# end
switch# show interface fc1/50
fc1/50 is down (SFP not present)
  Hardware is Fibre Channel
  Port WWN is 20:32:8c:60:4f:0d:27:70
  Admin port mode is F, trunk mode is off
  snmp link state traps are enabled
  Port vsan is 1
  Receive data field Size is 2112
  Beacon is turned off
  Logical type is Unknown(0)
  5 minutes input rate 0 bits/sec,0 bytes/sec, 0 frames/sec
  5 minutes output rate 0 bits/sec,0 bytes/sec, 0 frames/sec
    0 frames input,0 bytes
      0 discards,0 errors
      0 invalid CRC/FCS,0 unknown class
      0 too long,0 too short
    0 frames output,0 bytes
      0 discards,0 errors
      0 input OLS,0 LRR,0 NOS,0 loop inits
      0 output OLS,0 LRR, 0 NOS, 0 loop inits
  Last clearing of "show interface" counters : never

switch# show running-config interface fc1/50

!Command: show running-config interface fc1/50
!Time: Mon Apr 17 11:47:08 2017

version 8.1(1)

interface fc1/50
  switchport mode F
  no shutdown

switch# show port-license | i 1/50
fc1/50      16977920      eligible
```

This table describes the port license assignments for the Cisco MDS 9250i Switch.

Table 5: Default Port License Assignments for Cisco MDS 9250i Switch

License Package (PORT_ACTIV_20P)	Assigned to Ports on the Cisco MDS 9250i Switch
Default	1-20

License Package (PORT_ACTIV_20P)	Assigned to Ports on the Cisco MDS 9250i Switch
PORT_ACTIV_20P	21–40

You can use the **show license usage** command to view any licenses assigned to a switch. If a license is in use, the status displayed is In use. If a license is installed but no ports have acquired a license, then the status displayed is Unused.

The default license package for the Cisco MDS 9250i Switch is as follows:

```
switch# show license usage
Feature                               Ins  Lic  Status Expiry Date Comments
                               Count
-----
DMM_9250                             No   0   Unused          -
IOA_9250                             No   0   Unused          -
XRC_ACCL                             No   -   Unused          -
FM_SERVER_PKG                         Yes  -   Unused never    -
MAINFRAME_PKG                         No   -   Unused          -
ENTERPRISE_PKG                        No   -   Unused          -
PORT_ACTIV_20P                        No  20   In use never    -
-----
```

This table describes the port license assignments for the Cisco MDS 9396S Switch.

Table 6: Default Port License Assignments for Cisco MDS 9396S Switch

License Package (PORT_ACTIV_9396S_PKG)	Assigned to Ports on the Cisco MDS 9396S Switch
Default	1–48
First PORT_ACTIV_9396S_PKG	49-60
Second PORT_ACTIV_9396S_PKG	61-72
Third PORT_ACTIV_9396S_PKG	73-84
Fourth PORT_ACTIV_9396S_PKG	85-96

You can use the **show license usage** command to view any licenses assigned to a switch. If a license is in use, the status displayed is In use. If a license is installed but features or ports have acquired the license, then the status displayed is Unused.

The default license package for the Cisco MDS 9396S Switch is as follows:

```
switch# show license usage
Feature                               Ins  Lic  Status Expiry Date Comments
                               Count
-----
FM_SERVER_PKG                         No   -   Unused          -
ENTERPRISE_PKG                        No   -   In use          Grace 24D 0H
PORT_ACTIV_9396S_PKG                  No  48   In use never    -
-----
```

Related Documentation

The documentation set for the Cisco MDS 9000 Series includes the following documents. To find a document online, use the Cisco MDS NX-OS Documentation Locator at:

http://www.cisco.com/en/US/docs/storage/san_switches/mds9000/roadmaps/doclocator.htm

Cisco DCNM documentation is available at the following URL:

http://www.cisco.com/en/US/products/ps9369/tsd_products_support_series_home.html

Release Notes

- *Cisco MDS 9000 Series Release Notes for Cisco MDS NX-OS Releases*
- *Cisco MDS 9000 Series Release Notes for MDS SAN-OS Releases*
- *Cisco MDS 9000 Series Release Notes for Storage Services Interface Images*
- *Cisco MDS 9000 Series Release Notes for Cisco MDS 9000 EPLD Images*
- *Cisco Data Center Network Manager Release Notes*

Regulatory Compliance and Safety Information

Regulatory Compliance and Safety Information for the Cisco MDS 9000 Series

Compatibility Information

- *Cisco Data Center Interoperability Support Matrix*
- *Cisco MDS 9000 NX-OS Hardware and Software Compatibility Information and Feature Lists*
- *Cisco MDS NX-OS Release Compatibility Matrix for Storage Service Interface Images*
- *Cisco MDS 9000 Series Switch-to-Switch Interoperability Configuration Guide*
- *Cisco MDS NX-OS Release Compatibility Matrix for IBM SAN Volume Controller Software for Cisco MDS 9000*

Hardware Installation

- *Cisco MDS 9700 Director Hardware Installation Guide*
- *Cisco MDS 9500 Series Hardware Installation Guide*
- *Cisco MDS 9250i Multiservice Switch Hardware Installation Guide*
- *Cisco MDS 9200 Series Hardware Installation Guide*

Software Installation and Upgrade

- *Cisco MDS 9000 Series Storage Services Interface Image Install and Upgrade Guide*
- *Cisco MDS 9000 Series Storage Services Module Software Installation and Upgrade Guide*

- *Cisco MDS 9000 NX-OS Release 4.1(x) and SAN-OS 3(x) Software Upgrade and Downgrade Guide*

Cisco NX-OS

- *Cisco MDS 9000 Series NX-OS Fundamentals Configuration Guide*
- *Cisco MDS 9000 Series NX-OS Licensing Guide*
- *Cisco MDS 9000 Series NX-OS System Management Configuration Guide*
- *Cisco MDS 9000 Series NX-OS Interfaces Configuration Guide*
- *Cisco MDS 9000 Series NX-OS Fabric Configuration Guide*
- *Cisco MDS 9000 Series NX-OS Quality of Service Configuration Guide*
- *Cisco MDS 9000 Series NX-OS Security Configuration Guide*
- *Cisco MDS 9000 Series NX-OS IP Services Configuration Guide*
- *Cisco MDS 9000 Series NX-OS Intelligent Storage Services Configuration Guide*
- *Cisco MDS 9000 Series NX-OS High Availability and Redundancy Configuration Guide*
- *Cisco MDS 9000 Series NX-OS Inter-VSAN Routing Configuration Guide*

Command-Line Interface

Cisco MDS 9000 Series Command Reference

Intelligent Storage Networking Services Configuration Guides

- *Cisco MDS 9000 I/O Acceleration Configuration Guide*
- *Cisco MDS 9000 Series SANTap Deployment Guide*
- *Cisco MDS 9000 Series Data Mobility Manager Configuration Guide*
- *Cisco MDS 9000 Series Storage Media Encryption Configuration Guide*
- *Cisco MDS 9000 Series Secure Erase Configuration Guide*
- *Cisco MDS 9000 Series Cookbook for Cisco MDS SAN-OS*

Troubleshooting and Reference

- *Cisco NX-OS System Messages Reference*
- *Cisco MDS 9000 Series NX-OS Troubleshooting Guide*
- *Cisco MDS 9000 Series NX-OS MIB Quick Reference*
- *Cisco MDS 9000 Series NX-OS SMI-S Programming Reference*
- *Cisco DCNM for SAN Database Schema Reference*

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- To find warranty information for a specific product or product family, access [Cisco Warranty Finder](#).

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