



Interface Index Persistence

The Interface Index Persistence enhancement allows interfaces to be identified with unique values which will remain constant even when a device is rebooted. These interface identification values are used for network monitoring and management using Simple Network Management Protocol (SNMP).

- [Finding Feature Information, page 1](#)
- [Information about Interface Index Persistence, page 1](#)
- [Configuring Interface Index Persistence, page 2](#)
- [Additional References, page 5](#)
- [Feature Information for Interface Index Persistence, page 8](#)
- [Glossary, page 8](#)

Finding Feature Information

Your software release may not support all the features documented in this module. For the latest caveats and feature information, see [Bug Search Tool](#) and the release notes for your platform and software release. To find information about the features documented in this module, and to see a list of the releases in which each feature is supported, see the feature information table.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to www.cisco.com/go/cfn. An account on Cisco.com is not required.

Information about Interface Index Persistence

Interface Index Persistence

One of the identifiers most commonly used in SNMP-based network management applications is the interface index (ifIndex) value. IfIndex is a unique identifying number associated with a physical or logical interface; as far as most software is concerned, the ifIndex is the “name” of the interface.

Although there is no requirement in the relevant RFCs that the correspondence between particular ifIndex values and their interfaces be maintained across reboots, applications such as device inventory, billing, and fault detection increasingly depend on the maintenance of this correspondence.

This feature adds support for an ifIndex value that can persist across reboots, allowing users to avoid the workarounds previously required for consistent interface identification.

It is currently possible to poll the device at regular intervals to correlate the interfaces to the ifIndex, but it is not practical to poll this interface constantly. If this data is not correlated constantly, however, the data may be made invalid because of a reboot or the insertion of a new card into the device in between polls. Therefore, ifIndex persistence is the only way to guarantee data integrity.

IfIndex persistence means that the mapping between the ifDescr object values and the ifIndex object values (generated from the IF-MIB) will be retained across reboots.

Benefits of Interface Index Persistence

Association of Interfaces with Traffic Targets for Network Management

The Interface Index Persistence feature allows for greater accuracy when collecting and processing network management data by uniquely identifying input and output interfaces for traffic flows and SNMP statistics. Relating each interface to a known entity (such as an ISP customer) allows network management data to be more effectively utilized.

Accuracy for Mediation Fault Detection and Billing

Network data is increasingly being used worldwide for usage-based billing, network planning, policy enforcement, and trend analysis. The ifIndex information is used to identify input and output interfaces for traffic flows and SNMP statistics. Inability to reliably relate each interface to a known entity, such as a customer, invalidates the data.

Configuring Interface Index Persistence

The following sections contain the tasks to configure Interface Index Persistence:

Enabling and Disabling IfIndex Persistence Globally

Perform this task to enable IfIndex persistence globally.

Before You Begin

The configuration tasks described in this section assume that you have configured SNMP on your routing device and are using SNMP to monitor network activity using the Cisco command line interface and/or an NMS application.

The interface-specific ifIndex persistence command (**snmp ifindex persistence**) cannot be used on subinterfaces. A command applied to an interface is automatically applied to all subinterfaces associated with that interface.

Testing indicates that approximately 25 bytes of NVRAM storage are used by this feature per interface. There may be some boot delay exhibited on platforms with lower CPU speeds.



Note After ifIndex persistence commands have been entered, the configuration must be saved using the **copy running-config startup-config** EXEC mode command to ensure consistent ifIndex values.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **snmp-server ifindex persist**
4. **no snmp-server ifindex persist**
5. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Device> enable	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	configure terminal Example: Device# configure terminal	Enters global configuration mode.
Step 3	snmp-server ifindex persist Example: Device(config)# snmp-server ifindex persist	Globally enables ifIndex values that will remain constant across reboots.
Step 4	no snmp-server ifindex persist Example: Device(config)# no snmp-server ifindex persist	Disables global ifIndex persistence.
Step 5	end Example: Device(config)# end	Exits global configuration mode.

Enabling and Disabling IfIndex Persistence on Specific Interfaces

Perform this task to configure ifIndex persistence only on a specific interface.



Tip Use the **snmp ifindex clear** command on a specific interface when you want that interface to use the global configuration setting for ifIndex persistence. This command clears any ifIndex configuration commands previously entered for that specific interface.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **interface** *type slot / port*
4. **snmp ifindex persist**
5. **no snmp ifindex persist**
6. **end**
7. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Device> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2	configure terminal Example: Device# configure terminal	Enters global configuration mode.
Step 3	interface <i>type slot / port</i> Example: Device(config)# interface FastEthernet 0/1	Enters interface configuration mode for the specified interface. Note Note that the syntax of the interface command will vary depending on the platform you are using.
Step 4	snmp ifindex persist Example: Device(config-if)# snmp ifindex persist	Enables an ifIndex value that is constant across reboots on the specified interface.

	Command or Action	Purpose
Step 5	no snmp ifindex persist Example: Device(config-if)# no snmp ifindex persist	Disables an ifIndex value that is constant across reboots on the specified interface.
Step 6	end Example: Device(config-if)# end	Exits interface configuration mode.
Step 7	end Example: Device(config)# end	Exits global configuration mode.

Additional References

Related Documents

Related Topic	Document Title
Cisco IOS commands	Cisco IOS Master Command List, All Releases
SNMP commands: complete command syntax, command mode, command history, defaults, usage guidelines, and examples	Cisco IOS SNMP Command Reference
Cisco implementation of RFC 1724, RIP Version 2 MIB Extensions	RIPv2 Monitoring with SNMP Using the RFC 1724 MIB Extensions feature module
DSP Operational State Notifications for notifications to be generated when a digital signaling processor (DSP) is used	DSP Operational State Notifications feature module

Standards and RFCs

Standard/RFC	Title
CBC-DES (DES-56) standard	<i>Symmetric Encryption Protocol</i>
STD: 58	<i>Structure of Management Information Version 2 (SMIPv2)</i>

Standard/RFC	Title
RFC 1067	<i>A Simple Network Management Protocol</i>
RFC 1091	<i>Telnet terminal-type option</i>
RFC 1098	<i>Simple Network Management Protocol (SNMP)</i>
RFC 1157	<i>Simple Network Management Protocol (SNMP)</i>
RFC 1213	<i>Management Information Base for Network Management of TCP/IP-based internets:MIB-II</i>
RFC 1215	<i>Convention for defining traps for use with the SNMP</i>
RFC 1901	<i>Introduction to Community-based SNMPv2</i>
RFC 1905	<i>Common Management Information Services and Protocol over TCP/IP (CMOT)</i>
RFC 1906	<i>Telnet X Display Location Option</i>
RFC 1908	<i>Simple Network Management Protocol (SNMP)</i>
RFC 2104	<i>HMAC: Keyed-Hashing for Message Authentication</i>
RFC 2206	<i>RSVP Management Information Base using SMIPv2</i>
RFC 2213	<i>Integrated Services Management Information Base using SMIPv2</i>
RFC 2214	<i>Integrated Services Management Information Base Guaranteed Service Extensions using SMIPv2</i>
RFC 2271	<i>An Architecture for Describing SNMP Management Frameworks</i>
RFC 2570	<i>Introduction to Version 3 of the Internet-standard Network Management Framework</i>
RFC 2578	<i>Structure of Management Information Version 2 (SMIPv2)</i>
RFC 2579	<i>Textual Conventions for SMIPv2</i>
RFC 2580	<i>Conformance Statements for SMIPv2</i>
RFC 2981	<i>Event MIB</i>
RFC 2982	<i>Distributed Management Expression MIB</i>
RFC 3413	<i>SNMPv3 Applications</i>

Standard/RFC	Title
RFC 3415	<i>View-based Access Control Model (VACM) for the Simple Network Management Protocol (SNMP)</i>
RFC 3418	<i>Management Information Base (MIB) for the Simple Network Management Protocol (SNMP)</i>

MIBs

MIB	MIBs Link
<ul style="list-style-type: none"> • Circuit Interface Identification MIB • Cisco SNMPv2 • Ethernet-like Interfaces MIB • Event MIB • Expression MIB Support for Delta, Wildcarding, and Aggregation • Interfaces Group MIB (IF-MIB) • Interfaces Group MIB Enhancements • MIB Enhancements for Universal Gateways and Access Servers • MSDP MIB • NTP MIB • Response Time Monitor MIB • Virtual Switch MIB 	<p>To locate and download MIBs for selected platforms, releases, and feature sets, use Cisco MIB Locator found at the following URL:</p> <p>http://www.cisco.com/go/mibs</p>

Technical Assistance

Description	Link
<p>The Cisco Support and Documentation website provides online resources to download documentation, software, and tools. Use these resources to install and configure the software and to troubleshoot and resolve technical issues with Cisco products and technologies. Access to most tools on the Cisco Support and Documentation website requires a Cisco.com user ID and password.</p>	<p>http://www.cisco.com/cisco/web/support/index.html</p>

Feature Information for Interface Index Persistence

The following table provides release information about the feature or features described in this module. This table lists only the software release that introduced support for a given feature in a given software release train. Unless noted otherwise, subsequent releases of that software release train also support that feature.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to [. An account on Cisco.com is not required.](#)

Table 1: Feature Information for Interface Index Persistence

Feature Name	Releases	Feature Information
Interface Index Persistence	12.2(15)T 15.0(1)S	The Interface Index Persistence feature allows interfaces to be identified with unique values, which will remain constant even when a device is rebooted. These interface identification values are used for network monitoring and management using SNMP.

Glossary

MPLS VPN —Multiprotocol Label Switching Virtual Private Network

NMS —Network Management System. System responsible for managing at least part of a network. An NMS is generally a reasonably powerful and well-equipped computer, such as an engineering workstation. NMSs communicate with agents to help keep track of network statistics and resources.

SNMP —Simple Network Management Protocol. Network management protocol used almost exclusively in TCP/IP networks. SNMP provides a means to monitor and control network devices and to manage configurations, statistics collection, performance, and security.

SNMP communities —Authentication scheme that enables an intelligent network device to validate SNMP requests.

SNMPv2c —Version 2c of the Simple Network Management Protocol. SNMPv2c supports centralized and distributed network management strategies and includes improvements in the Structure of Management Information (SMI), protocol operations, management architecture, and security.

SNMPv3 —Version 3 of the Simple Network Management Protocol. Interoperable standards-based protocol for network management. SNMPv3 provides secure access to devices by a combination of authenticating and encrypting packets over the network.

UDP —User Datagram Protocol. Connectionless transport layer protocol in the TCP/IP protocol stack. UDP is a simple protocol that exchanges datagrams without acknowledgments or guaranteed delivery, requiring that error processing and retransmission be handled by other protocols. UDP is defined in RFC 768.

VRF —A VPN routing and forwarding instance. A VRF consists of an IP routing table, a derived forwarding table, a set of interfaces that use the forwarding table, and a set of rules and routing protocols that determine

what goes into the forwarding table. In general, a VRF includes the routing information that defines a customer VPN site that is attached to a PE device.

