Classifying Network Traffic Using NBAR in Cisco IOS XE Software

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Network-Based Application Recognition (NBAR) is a classification engine that recognizes and classifies a wide variety of protocols and applications. When NBAR recognizes and classifies a protocol or application, the network can be configured to apply the appropriate quality of service (QoS) for that application or traffic with that protocol.

This module contains an overview of classifying network traffic using NBAR in Cisco IOS XE software.

Finding Feature Information

Your software release may not support all the features documented in this module. For the latest feature information and caveats, see 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 at the end of this document.

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.

Restrictions for Classifying Network Traffic Using NBAR

NBAR does not support the following applications:

- Non-IP traffic.

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- Multiprotocol Label Switching (MPLS)-labeled packets. NBAR classifies IP packets only. You can, however, use NBAR to classify IP traffic before the traffic is handed over to MPLS. Use the modular QoS CLI (MQC) to set the IP differentiated services code point (DSCP) field on the NBAR-classified packets and make MPLS map the DSCP setting to the MPLS experimental (EXP) setting inside the MPLS header.
- NBAR processing. By design, NBAR processing is temporarily disabled during the In-Service Software Upgrade (ISSU). The following syslog message indicates the restart of the NBAR classification once ISSU is complete: "%NBAR_HA-5-NBAR_INFO: NBAR sync DONE!".
- Multicast packet classification.
- Asymmetric flows with stateful protocols.
- Packets that originate from or destined to the router running NBAR.

Note In the NBAR context, asymmetric flows are flows in which different packets of the flow go through different routers, for reasons such as load balancing implementation or asymmetric routing, where packets flow through different routes in different directions.

NBAR is not supported on the following logical interfaces:

- Dialer interfaces
- Dynamic tunnels such as Dynamic Virtual Tunnel Interface (DVTI)
- Fast Etherchannels
- IPv6 tunnels that terminate on the router
- Multilink interfaces such as Multilink Point-to-Point Protocol (MLPPP) and Multilink Frame Relay (MLFR)
- MPLS
- Overlay Transport Virtualization (OTV) overlay interfaces
- Port channels
- VRF-Aware Service Infrastructure (VASI)

Note In cases where encapsulation is not supported by NBAR on some of the links, you can apply NBAR on other interfaces of the router to perform input classification. For example, you can configure NBAR on LAN interfaces to classify output traffic on the WAN link.

The following virtual interfaces are supported in Cisco IOS XE Release 3.5S and later releases:

- Generic routing encapsulation (GRE)
- IPsec IPv4 tunnel (including tunneled IPv6) in protocol discovery mode and MQC mode (cryptomap mode is not supported)
- IPsec IPv6 tunnel in protocol discovery mode but not in MQC mode (cryptomap mode is not supported)
- Multipoint GRE/Dynamic Multipoint VPN in protocol discovery mode

Note NBAR requires more CPU power when NBAR is enabled on tunneled interfaces.

If protocol discovery is enabled on both the tunnel interface and the physical interface on which the tunnel interface is configured, the packets that are designated to the tunnel interface are counted on both

interfaces. On the physical interface, the packets are classified and are counted based on the encapsulation. On the tunnel interface, the packets are classified and are counted based on the L7 protocol.

Information About Classifying Network Traffic Using NBAR

NBAR Functionality

NBAR is a classification engine that recognizes and classifies a wide variety of protocols and applications, including web-based and other difficult-to-classify applications and protocols that use dynamic TCP/UDP port assignments.

When NBAR recognizes and classifies a protocol or application, the network can be configured to apply the appropriate QoS for that application or traffic with that protocol. The QoS is applied using the MQC.

Note For more information about the MQC, see the "Applying QoS Features Using the MQC" module.

NBAR introduces several classification features that identify applications and protocols from Layer 4 through Layer 7. These classification features are as follows:

- Statically assigned TCP and UDP port numbers.
- Non-TCP and non-UDP IP protocols.
- Dynamically assigned TCP and UDP port numbers. This kind of classification requires stateful inspection, that is, the ability to inspect a protocol across multiple packets during packet classification.
- Subport classification or classification based on deep packet inspection, that is, classification inspecting the packets.

Note Access Control Lists (ACLs) can also be used for classifying static port protocols. However, NBAR is easier to configure and can provide classification statistics that are not available when ACLs are used.

NBAR includes a Protocol Discovery feature that provides an easy way to discover application protocols that are operating on an interface. For more information about Protocol Discovery, see the "Enabling Protocol Discovery" module.

Note NBAR classifies network traffic by application or protocol. Network traffic can be classified without using NBAR. For information about classifying network traffic without using NBAR, see the "Classifying Network Traffic" module.

NBAR includes the Protocol Pack feature that provides an easy way to load protocols and helps NBAR recognize additional protocols for network traffic classification. A protocol pack is set a of protocols developed and packed together. A new protocol pack can be loaded on the router to replace the default IOS protocol pack that is already present in the router.

NBAR Benefits

Identifying and classifying network traffic is an important first step in implementing QoS. A network administrator can more effectively implement QoS in a networking environment after identifying the number and types of applications and protocols that are running on a network.

NBAR gives network administrators the ability to see the different types of protocols and the amount of traffic generated by each protocol. After NBAR gathers this information, users can organize traffic into classes. These classes can then be used to provide different levels of service for network traffic, thereby allowing better network management by providing the appropriate level of network resources for the network traffic.

NBAR and Classification of HTTP Traffic

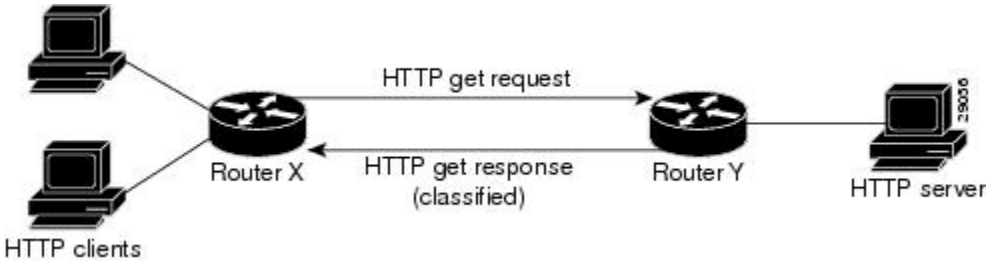
This section includes information about the following topics:

Classification of HTTP Traffic by URL Host or MIME

NBAR can classify application traffic by looking beyond the TCP/UDP port numbers of a packet. This is called subport classification. NBAR looks into the TCP/UDP payload itself and classifies packets based on content within the payload such as the transaction identifier, message type, or other similar data.

Classification of HTTP traffic by URL, host, or Multipurpose Internet Mail Extension (MIME) type is an example of subport classification. NBAR classifies HTTP traffic by text within the URL or host fields of a request using regular expression matching. HTTP client request matching in NBAR supports most HTTP request methods such as GET, PUT, HEAD, POST, DELETE, OPTIONS, CONNECT, and TRACE. The NBAR engine then converts the specified match string into a regular expression.

The figure below illustrates a network topology with NBAR in which Router Y is the NBAR-enabled router.



When specifying a URL for classification, include only the portion of the URL that follows the www.*hostname.domain* in the **match** statement. For example, for the URL www.cisco.com/latest/whatsnew.html, include only /latest/whatsnew.html with the **match** statement (for instance, **match protocol http url /latest/whatsnew.html**).

Host specifications are identical to URL specifications. NBAR performs a regular expression match on the host field contents inside an HTTP packet and classifies all packets from that host. For example, for the URL www.cisco.com/latest/whatsnew.html, include only www.cisco.com.

For MIME type matching, the MIME type can contain any user-specified text string. A list of the Internet Assigned Numbers Authority (IANA) supported MIME types can be found at the following URL:

http://www.iana.org/assignments/media-types/

When matching by MIME type, NBAR matches a packet containing the MIME type and all subsequent packets until the next HTTP transaction.

NBAR supports URL and host classification in the presence of persistent HTTP. NBAR does not classify packets that are part of a pipelined request. With pipelined requests, multiple requests are pipelined to the server before previous requests are serviced. Pipelined requests are not supported with subclassification and tunneled protocols that use HTTP as the transport protocol.

The NBAR Extended Inspection for HTTP Traffic feature allows NBAR to scan TCP ports that are not well known and to identify HTTP traffic that traverses these ports. HTTP traffic classification is no longer limited to the well-known and defined TCP ports.

Classification of HTTP Traffic Using HTTP Header Fields

NBAR introduces expanded ability for users to classify HTTP traffic using information in the HTTP header fields.

HTTP works using a client/server model. HTTP clients open connections by sending a request message to an HTTP server. The HTTP server then returns a response message to the HTTP client (this response message is typically the resource requested in the request message from the HTTP client). After delivering the response, the HTTP server closes the connection and the transaction is complete.

HTTP header fields are used to provide information about HTTP request and response messages. HTTP has numerous header fields. For additional information on HTTP headers, see section 14 of RFC 2616: *Hypertext Transfer Protocol--HTTP/1.1*. This RFC can be found at the following URL:

http://www.w3.org/Protocols/rfc2616/rfc2616-sec14.html

NBAR is able to classify the following HTTP header fields:

- For request messages (client to server), the following HTTP header fields can be identified using NBAR:

  - User-Agent
  - Referer
  - From
- For response messages (server to client), the following HTTP header fields can be identified using NBAR:
  - Server
  - Location
  - Content-Base
  - Content-Encoding

Note In Cisco IOS XE Release 3.1S and later releases, up to 56 parameters or subclassifications per protocol per router can be specified with the **match protocol http** command. These parameters or subclassifications can be a combination of any of the available match choices, such as host matches, MIME matches, server matches, and URL matches. For other Cisco IOS XE releases and platforms, the maximum is 24 parameters or subclassifications per protocol per router.

Within NBAR, the **match protocol http c-header-field** command is used to specify that NBAR identify request messages (the "c" in the **c-header-field** portion of the command is for client). The **match protocol http s-header-field** command is used to specify response messages (the "s" in the **s-header-field** portion of the command is for server).

Note In Cisco IOS XE Release 3.1S and later releases, the **c-header-field** and **s-header-field** keywords and associated arguments in the **match protocol http** command are not available. The same functionality is achieved by using the individual keywords and arguments. For more information, see the syntax of the **match protocol http** command in the Cisco IOS Quality of Service Solutions Command Reference.

Note The **c-header-field** performs subclassifications based on a single value in the user-agent, the referrer, or from header field values. The **s-header-field** performs subclassifications based on a single value in the server, location, content-encoding, or content-base header field values. These header field values are not related to each other. Hence, the **c-header** and **s-header** fields are replaced by the user-agent, referrer, from, server, content-base, content-encoding, and location parameters as per the intent and need of HTTP subclassification.

Combinations of Classification of HTTP Headers and URL Host or MIME Type to Identify HTTP Traffic

Note that combinations of URL, Host, MIME type, and HTTP headers can be used during NBAR configuration. These combinations provide customers with more flexibility to classify specific HTTP traffic based on their network requirements.

NBAR and Classification of Citrix ICA Traffic

NBAR can classify Citrix Independent Computing Architecture (ICA) traffic and perform subport classification of Citrix traffic based on the published application name or ICA tag number.

This section includes information about the following topics:

Classification of Citrix ICA Traffic by Published Application Name

NBAR can monitor Citrix ICA client requests for a published application destined to a Citrix ICA Master browser. After the client requests the published application, the Citrix ICA Master browser directs the client to the server with the most available memory. The Citrix ICA client then connects to this Citrix ICA server for the application.

Note For Citrix to monitor and classify traffic by the published application name, Server Browser Mode on the Master browser must be used.

In Server Browser Mode, NBAR statefully tracks and monitors traffic and performs a regular expression search on the packet contents for the published application name specified by the **match protocol citrix** command. The published application name is specified by using the **app** keyword and the *application-name-string* argument of the **match protocol citrix** command. For more information about the **match protocol citrix** command, see the Cisco IOS Quality of Service Solutions Command Reference.

The Citrix ICA session triggered to carry the specified application is cached, and traffic is classified appropriately for the published application name.

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Citrix ICA Client Modes

Citrix ICA clients can be configured in various modes. NBAR cannot distinguish among Citrix applications in all modes of operation. Therefore, network administrators might need to collaborate with Citrix administrators to ensure that NBAR properly classifies Citrix traffic.

A Citrix administrator can configure Citrix to publish Citrix applications individually or as the entire desktop. In the Published Desktop mode of operation, all applications within the published desktop of a client use the same TCP session. Therefore, differentiation among applications is impossible, and NBAR can be used to classify Citrix applications only as aggregates (by looking at port 1494).

The Published Application mode for Citrix ICA clients is recommended when you use NBAR. In Published Application mode, a Citrix administrator can configure a Citrix client in either seamless or nonseamless (windows) modes of operation. In nonseamless mode, each Citrix application uses a separate TCP connection, and NBAR can be used to provide interapplication differentiation based on the name of the published application.

Seamless mode clients can operate in one of two submodes: session sharing or nonsession sharing. In seamless session sharing mode, all clients share the same TCP connection, and NBAR cannot differentiate among applications. Seamless sharing mode is enabled by default in some software releases. In seamless nonsession sharing mode, each application for each particular client uses a separate TCP connection. NBAR can provide interapplication differentiation in seamless nonsession sharing mode.

Note NBAR operates properly in Citrix ICA secure mode. Pipelined Citrix ICA client requests are not supported.

Classification of Citrix ICA Traffic by ICA Tag Number

Citrix uses one TCP session each time an application is opened. In the TCP session, a variety of Citrix traffic may be intermingled in the same session. For example, print traffic may be intermingled with interactive traffic, causing interruption and delay for a particular application. Most users likely would prefer that printing be handled as a background process and that printing not interfere with the processing of higher-priority traffic.

To accommodate this preference, the Citrix ICA protocol includes the ability to identify Citrix ICA traffic based on the ICA tag number of the packet. The ability to identify, tag, and prioritize Citrix ICA traffic is referred to as ICA Priority Packet Tagging. With ICA Priority Packet Tagging, Citrix ICA traffic is categorized as high, medium, low, and background, depending on the ICA tag of the packet.

When ICA traffic priority tag numbers are used, and the priority of the traffic is determined, QoS features can be implemented to determine how the traffic will be handled. For example, QoS traffic policing can be configured to transmit or drop packets with a specific priority.

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Citrix ICA Packet Tagging

The Citrix ICA tag is included in the first two bytes of the Citrix ICA packet, after the initial negotiations are completed between the Citrix client and server. These bytes are not compressed or encrypted.

The first two bytes of the packet (byte 1 and byte 2) contain the byte count and the ICA priority tag number. Byte 1 contains the low-order byte count, and the first two bits of byte 2 contain the priority tags. The other six bits contain the high-order byte count.

The ICA priority tag value can be a number from 0 to 3. The number indicates the packet priority, with 0 being the highest priority and 3 being the lowest priority.

To prioritize Citrix traffic by the ICA tag number of the packet, you must specify the tag number using the **ica-tag** keyword and the *ica-tag-value* argument of the **match protocol citrix** command. For more information about the **match protocol citrix** command, see the Cisco IOS Quality of Service Solutions Command Reference .

The table below contains information about different Citrix traffic and the respective priority tags.

Table 1 Citrix ICA Packet Tagging

Priority	ICA Bits (decimal)	Sample Virtual Channels
High	0	Video, mouse, and keyboard screen updates
Medium	1	Program neighborhood, clipboard, audio mapping, and license management
Low	2	Client common equipment (COM) port mapping and client drive mapping

Priority	ICA Bits (decimal)	Sample Virtual Channels
Background	3	Auto client update, client printer mapping, and original equipment manufacturers (OEM) channels

NBAR and RTP Payload Type Classification

Real-time Transport Protocol (RTP) is a packet format for multimedia data streams. It can be used for media-on-demand and for interactive services such as Internet telephony. RTP consists of a data part and a control part. The control part is called Real-Time Transport Control Protocol (RTCP). RTCP is a separate protocol that is supported by NBAR. It is important to note that the NBAR RTP Payload Type Classification feature does not identify RTCP packets and that RTCP packets run on odd-numbered ports and RTP packets run on even-numbered ports.

The data part of RTP is a thin protocol that provides support for applications with real-time properties such as continuous media (audio and video), which includes timing reconstruction, loss detection, and security and content identification. RTP is discussed in RFC 1889 (*A Transport Protocol for Real-Time Applications*)and RFC 1890 (*RTP Profile for Audio and Video Conferences with Minimal Control*).

The RTP payload type is the data transported by RTP in a packet, for example audio samples or compressed video data.

NBAR RTP Payload Type Classification feature not only allows real-time audio and video traffic to be statefully identified, but can also differentiate on the basis of audio and video codecs to provide more granular QoS. The RTP Payload Type Classification feature, therefore, looks deep into the RTP header to classify RTP packets.

For more information on the classification of RTP with NBAR, see http://www.cisco.com/en/US/products/ps6616/products_white_paper09186a0080110040.shtml

NBAR and Classification of Custom Protocols and Applications

NBAR supports the use of custom protocols to identify custom applications. Custom protocols support static port-based protocols and applications that NBAR does not currently support. You can add to the set of protocols and application types that NBAR recognizes by creating custom protocols.

Custom protocols extend the capability of NBAR Protocol Discovery to classify and monitor additional static port applications and allow NBAR to classify nonsupported static port traffic.

Once the custom protocols are defined, you can then use them with the help of NBAR Protocol Discovery and the MQC to classify the traffic.

With NBAR supporting the use of custom protocols, NBAR can map static TCP and UDP port numbers to the custom protocols.

There are two types of custom protocols:

- Predefined custom protocols
- User-defined custom protocols

NBAR includes the following features related to predefined custom protocols and applications:

- Custom protocols have to be named custom-xx, with xx being a number.
- Ten custom applications can be assigned using NBAR, and each custom application can have up to 16 TCP and 16 UDP ports each mapped to an individual custom protocol. The real-time statistics of each custom protocol can be monitored using Protocol Discovery.

- When you create a custom protocol after creating a variable, you can use the **match protocol** command to classify traffic on the basis of a specific value in the custom protocol.

NBAR includes the following features related to user-defined custom protocols and applications:

- The ability to inspect the payload for certain matching string patterns at a specific offset.
- The ability to allow users to define the names of their custom protocol applications. The user-named protocol can then be used by Protocol Discovery, the Protocol Discovery MIB, the **match protocol** command, and the **ip nbar port-map** command as an NBAR-supported protocol.
- The ability of NBAR to inspect custom protocols specified by traffic direction (that is, traffic heading toward a source or destination rather than traffic in both directions), if desired by the user.
- CLI support that allows a user configuring a custom application to specify a range of ports rather than to specify each port individually.
- The **variable** keyword, the *field-name* argument, and the *field-length* argument were added to the **ip nbar custom** command.

This additional keyword and two additional arguments allow for creation of more than one custom protocol based on the same port numbers.

Note Defining a user-defined custom protocol restarts the NBAR feature, whereas defining predefined custom protocol does not restart the NBAR feature.

NBAR and Classification with Dynamic PDLMs

Dynamic Packet Description Language Modules (PDLM) allow new protocol support or enhance existing protocol support for NBAR without the requirement of a Cisco IOS XE release upgrade and router reload. If the support is for enhancing protocols for NBAR, then the module version of the PDLM should be greater than the existing version of the PDLM. Subsequent Cisco IOS XE releases incorporate support for these new protocols.

Note PDLMs must be loaded on both Route Processors (RPs) when using the ASR 1006 redundant hardware setup.

Dynamic PDLMs are platform-specific and have Software Family Identifier (SFI) embedded in them. Dynamic PDLMs of other platforms cannot be loaded on Cisco ASR 1000 Series Routers.

NBAR and Classification of Peer-to-Peer File-Sharing Applications

The following applications are the most common peer-to-peer file-sharing applications supported by NBAR:

- BitTorrent
- DirectConnect
- eDonkey
- eMule
- FastTrack
- KazaA (and KazaA Lite and KazaA Lite Resurrection)
- Win MX
- POCO

In Cisco IOS XE Release 2.5 the DirectConnect and the eDonkey P2P protocols support the following subclassifications:

- eDonkey supports the following subclassification options:
  - file-transfer
  - search-file-name
  - text-chat
- KazaA, FastTrack, and Gnuetella support the file-transfer subclassification.

The Gnutella file sharing became classifiable using NBAR in Cisco IOS XE Release 2.5.

Applications that use the Gnutella protocol are Bearshare, Gnewtellium, Gnucleus, Gtk-Gnutella, Limewire, Mutella, Phex, Qtella, Swapper, and Xolo. The traffic from the applications that use the Gnutella protocol will be classified as Gnutella and not as the respective application.

NBAR Scalability

Interface Scalability

In Cisco IOS XE Release 2.4 and earlier releases, there is no limit on the number of interfaces on which protocol discovery can be enabled.

The table below provides the details of the protocol discovery supported interface and the release number.

Table 2 Release and Protocol Discovery Interface Support

Release	Number of Interfaces Supported with Protocol Discovery
Cisco IOS XE Release 2.5	128
Cisco IOS XE Release 2.6	256
Cisco IOS XE Release 2.7	32
Cisco IOS XE Release 3.2S and later releases	32

Flow Scalability

In Cisco IOS XE Release 2.5, the following flows are supported:

- A maximum of 250K bidirectional flows on Edge Services Processor (ESP)10 and ESP20 hardware.
- A maximum of 125K bidirectional flows on ESP5.

If this limit is exceeded or there is a flow memory constraint, new flows will be classified as Unknown.

In Cisco IOS XE Release 3.1, the following flows are supported:

- A maximum of 125K bidirectional flows on Forwarding Processor (FP)5 platform.
- A maximum of 250K bidirectional flows on FP10, FP20, and FP40 platform.

If this limit is exceeded or there is a flow memory constraint, new flows will be classified as Unknown.

In Cisco IOS XE Release 3.2, the following flows are supported:

- A maximum of 500K bidirectional flows on FP5/1Rack Units (RU) platform.
- A maximum of 1M bidirectional flows on 10/10/40 platform.

If this limit is exceeded or there is a flow memory constraint, new flows will be classified as Unknown.

In Cisco IOS XE Release 3.3S, the number of bidirectional flows and the platforms supported are the same as in Cisco IOS XE Release 3.2. A new method to reduce the number of active flows based on quick aging is introduced.

Quick aging occurs under the following conditions:

- TCP flows that do not reach the established state.
- UDP flows with fewer than five packets that are not classified within the specified quick aging timeout.
- Flows that are not classified within the specified quick aging timeout.

The quick aging method reduces the number of flows required for NBAR operation up to three times or more depending on the network behavior.

In Cisco IOS XE Release 3.4S, the following flows are supported:

- A default flow capacity of 500K bidirectional flows on ESP5/1Rack Units (RU) platform.
- A default flow capacity of 1M bidirectional flows on 10/20/40 platform.

Flow Table Sizing

The **ip nbar resources flow max-sessions** command provides the option to override the default maximum flow sessions to be allowed in a flow table. The performance of the router with the NBAR feature depends on the memory size and the number of flows configured for the flow table. The flexibility to change the number of flows helps in increasing the performance of the system depending on the capacity of the router. To verify the NBAR flow statistics, use the **show ip nbar resources flow** command.

The following table provides the details of the platform and the flow size limits.

Table 3 Platform and Flow Size Details

Platform	Maximum number of flows	Default number of flows	Memory upper limit [MB] (70% of platform memory)
ESP5/1RU	750,000	500,000	179
ESP10	1,650,000	1,000,000	358
ESP20	3,500,000	1,000,000	716
ESP40	3,500,000	1,000,000	716

The recommended number of flow configuration on all the platforms is 50,000 flows.

Note The flow size cannot be increased if the overall system memory usage is already 90%.

NBAR-Supported Protocols

The **match protocol**(NBAR) command is used to classify traffic on the basis of protocols supported by NBAR. NBAR can classify the following types of protocols:

- Non-UDP and non-TCP IP protocols
- TCP and UDP protocols that use statically assigned port numbers
- TCP and UDP protocols that use statically assigned port numbers, but still require stateful inspection.
- TCP and UDP protocols that dynamically assign port numbers and therefore require stateful inspection

The table below lists the NBAR-supported protocols available in Cisco IOS XE software, sorted by category. The table also provides information about the protocol type, the well-known port numbers (if applicable), the syntax for entering the protocol in NBAR, and the Cisco IOS XE software release in which the protocol was initially supported. This table is updated when a protocol becomes supported in Cisco IOS XE software.

Table 4 NBAR-Supported Protocols

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
Enterprise Applications	Novadigm	TCP/ UDP	3460-3465	Novadigm Enterprise Desktop Manager (EDM)	novadigm	Cisco IOS XE Release 2.3
	Citrix (ICA, CGP, IMA, SB)	TCP/ UDP	TCP: 1494, 2512, 2513, 2598 UDP: 1604	Citrix ICA traffic	citrix citrix app citrix ica-tag	Cisco IOS XE Release 2.5
	Oracle	TCP	1525	Oracle	ora-srv	Cisco IOS XE Release 2.3
	PCAnywhere	TCP/UDP	TCP: 5631, 65301 UDP: 22, 5632	Symantic PCAnywhere	pcanywhere	Cisco IOS XE Release 2.3
	SAP	TCP	3300-3315 3200-3215 3600-3615	SAP Systems Applications Product in Data processing	sap	Cisco IOS XE Release 2.5
	Exchange [1]	TCP	135	MS-RPC for Exchange	exchange	Cisco IOS XE Release 2.5
Routing Protocols	BGP	TCP/ UDP	179	Border Gateway Protocol	bgp	Cisco IOS XE Release 2.3

1 For Cisco IOS XE Release 2.5, Cisco supports Exchange 03 and 07 only. MS client access is recognized, but web client access is not recognized.

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
	EGP	IP	8	Exterior Gateway Protocol	egp	Cisco IOS XE Release 2.3
	EIGRP	IP	88	Enhanced Interior Gateway Routing Protocol	eigrp	Cisco IOS XE Release 2.3
	OSPF	IP	89	Open Shortest Path First	ospf	Cisco IOS XE Release 2.3
	RIP	UDP	520	Routing Information Protocol	rip	Cisco IOS XE Release 2.3
	STUN-NAT	TCP/UDP	3478	Session Traversal Utilities for NAT (STUN)	stun-nat	Cisco IOS XE Release 3.5S
Database	SQL-exec	TCP/UDP	9088	SQL Exec	sqlexec	Cisco IOS XE Release 2.3
	SQL*NET	TCP/ UDP	1521	SQL*NET for Oracle	sqlnet	Cisco IOS XE Release 2.5
Financial	FIX	TCP	Heuristic	Financial Information Exchange	fix	Cisco IOS XE Release 2.5
Security and Tunneling	GRE	IP	47	Generic Routing Encapsulation	gre	Cisco IOS XE Release 2.3
	IPINIP	IP	4	IP in IP	ipinip	Cisco IOS XE Release 2.3
	IPsec	IP/TCP	50, 51 TCP-Heuristic	IP Encapsulating Security Payload/ Authentication-Header	ipsec	Cisco IOS XE Release 2.3 Cisco IOS XE Release 3.3S
	L2TP	UDP	1701	L2F/L2TP Tunnel	l2tp	Cisco IOS XE Release 2.3
	PPTP	TCP	1723	Point-to-Point Tunneling Protocol for VPN	pptp	Cisco IOS XE Release 2.3

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
	SFTP	TCP	990	Secure FTP	secure-ftp	Cisco IOS XE Release 2.3
	SHTTP	TCP	443	Secure HTTP	secure-http	Cisco IOS XE Release 2.1
	SIMAP	TCP/ UDP	585, 993	Secure Internet Message Access Protocol	secure-imap	Cisco IOS XE Release 2.3
	SIRC	TCP/ UDP	994	Secure Internet Relay Chat	secure-irc	Cisco IOS XE Release 2.3
	SLDAP	TCP/ UDP	636	Secure Lightweight Directory Access Protocol	secure-ldap	Cisco IOS XE Release 2.3
	SNNTP	TCP/ UDP	563	Secure Network News Transfer Protocol	secure-nntp	Cisco IOS XE Release 2.3
	SOCKS	TCP	1080	Firewall Security Protocol	socks	Cisco IOS XE Release 2.3
	SPOP3	TCP/ UDP	995	Secure POP3	secure-pop3	Cisco IOS XE Release 2.3
	SSH	TCP	22	Secured Shell	ssh	Cisco IOS XE Release 2.3
	STELNET	TCP	992	Secure Telnet	secure-telnet	Cisco IOS XE Release 2.3
Network Management	ICMP	IP	1	Internet Control Message Protocol	icmp	Cisco IOS XE Release 2.3
	SNMP	TCP/ UDP	161, 162	Simple Network Management Protocol	snmp	Cisco IOS XE Release 2.3
	Syslog	UDP	514	System Logging Utility	syslog	Cisco IOS XE Release 2.3
Network Mail Services	Gmail			Gmail and Gmail-chat traffic	gmail | chat	Cisco IOS XE Release 3.5S

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
	IMAP	TCP/ UDP	143, 220	Internet Message Access Protocol	imap	Cisco IOS XE Release 2.3
	Notes	TCP/ UDP	1352	Lotus Notes	notes	Cisco IOS XE Release 2.3 Cisco IOS XE Release 2.3
	POP3	TCP/ UDP	110, Heuristic	Post Office Protocol	pop3	Cisco IOS XE Release 2.1
	SMTP	TCP	25, Heuristic	Simple Mail Transfer Protocol	smtp	Cisco IOS XE Release 2.3
Directory	DHCP/ BOOTP	UDP	67, 68	Dynamic Host Configuration Protocol/ Bootstrap Protocol	dhcp	Cisco IOS XE Release 2.1
	DNS	TCP/ UDP	53	Domain Name System	dns	Cisco IOS XE Release 2.1
	Finger	TCP	79	Finger User Information Protocol	finger	Cisco IOS XE Release 2.3
	Kerberos	TCP/ UDP	88, 749	Kerberos Network Authentication Service	kerberos	Cisco IOS XE Release 2.3
	LDAP	TCP/ UDP	389	Lightweight Directory Access Protocol	ldap	Cisco IOS XE Release 2.3
Internet	FTP	TCP	21, 21000, Heuristic	File Transfer Protocol	ftp	Cisco IOS XE Release 2.3
	Gopher	TCP/ UDP	70	Internet Gopher Protocol	gopher	Cisco IOS XE Release 2.3
	HTTP	TCP	80, Heuristic	Hypertext Transfer Protocol	http	Cisco IOS XE Release 2.1 Cisco IOS XE Release 2.5

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
	IRC	TCP/ UDP	194	Internet Relay Chat	irc	Cisco IOS XE Release 2.3
	NNTP	TCP/ UDP	119, Heuristic	Network News Transfer Protocol	nntp	Cisco IOS XE Release 2.3
	Telnet	TCP	23	Telnet Protocol	telnet	Cisco IOS XE Release 2.1
	TFTP	UDP	69	Trivial File Transfer Protocol	tftp	Cisco IOS XE Release 2.5
Signaling	AppleQTC	TCP/UDP	458	Apple Quick Time	appleqtc	Cisco IOS XE Release 2.3
	Chargen	TCP/UDP	19	Character Generator	chargen	Cisco IOS XE Release 2.3
	ClearCase	TCP/UDP	371	Clear Case Protocol Software Informer	clearcase	Cisco IOS XE Release 2.3
	Corba	TCP/UDP	683, 684	Corba Internet Inter-Orb Protocol (IIOP)	corba-iiop	Cisco IOS XE Release 2.3
	Daytime	TCP/UDP	13	Daytime Protocol	daytime	Cisco IOS XE Release 2.3
	Doom	TCP/UDP	666	Doom	doom	Cisco IOS XE Release 2.3
	Echo	TCP/UDP	7	Echo Protocol	echo	Cisco IOS XE Release 2.3
	IBM DB2	TCP/UDP	523	IBM Information Management	ibm-db2	Cisco IOS XE Release 2.3
	IPX	TCP/UDP	213	Internet Packet Exchange	server-ipx	Cisco IOS XE Release 2.3
	ISAKMP	TCP/UDP	500	Internet Security Association and Key Management Protocol	isakmp	Cisco IOS XE Release 2.3

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
	ISI-GL	TCP/UDP	55	Interoperable Self Installation Graphics Language	isi-gl	Cisco IOS XE Release 2.3
	KLogin	TCP	543	KLogin	klogin	Cisco IOS XE Release 2.3
	KShell	TCP	544	KShell	kshell	Cisco IOS XE Release 2.3
	LockD	TCP/UDP	4045	LockD	lockd	Cisco IOS XE Release 2.3
	MSSQL	TCP	1433	Microsoft Structured Query Language (SQL) Server	mssql	Cisco IOS XE Release 2.3
	RSVP	IP/ UDP	IP: 46 UDP: 1698, 1699	Resource Reservation Protocol	rsvp	Cisco IOS XE Release 2.3
RPC	NFS	TCP/UDP	2049	Network File System	nfs	Cisco IOS XE Release 2.3
	Sunrpc	TCP/ UDP	111, Heuristic	Sun Remote Procedure Call	sunrpc	Cisco IOS XE Release 2.5
Non-IP and LAN/ Legacy	NetBIOS	TCP/ UDP	TCP-137, 138 UDP-137,139	NetBIOS over IP (MS Windows)	netbios	Cisco IOS XE Release 2.3
	Nickname	TCP/UDP	43	Nickname	nicname	Cisco IOS XE Release 2.3
	NPP	TCP/UDP	92	Network Payment Protocol	npp	Cisco IOS XE Release 2.3
Voice	H.323	TCP	Heuristic	H.323 Teleconferencin g Protocol	h323	Cisco IOS XE Release 2.1
	SIP	TCP/UPD	5060	Session Initiation Protocol	sip	Cisco IOS XE Release 2.1

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
	Skype[2]	TCP/UDP	TCP-80, Heuristic	VoIP Client Software	skype	Cisco IOS XE Release 2.1 Cisco IOS XE Release 2.5
	RTP	TCP/ UDP	Heuristic	Real-Time Transport Protocol Payload Classification	rtp	Cisco IOS XE Release 2.5
Desktop Media	CUSeeMe	TCP/UDP	TCP: 7648, 7649 UDP: 24032	CU-SeeMe Desktop Video Conference	cuseeme	Cisco IOS XE Release 2.3
Streaming Media	RTSP	TCP	554, 8554	Real-Time Streaming Protocol	rtsp	Cisco IOS XE Release 2.3
Peer-to-Peer File-Sharing Applications	BitTorrent[3]	TCP	Heuristic, or 6881-6889	BitTorrent File Transfer Traffic	bittorrent	Cisco IOS XE Release 2.5
	DirectConnect	TCP	80, 411-413, Heuristic	Direct Connect File Transfer Traffic	directconnect	Cisco IOS XE Release 2.5
	eDonkey/eMule[4]	TCP	80, 4662, Heuristic	eDonkey File-Sharing Application eMule traffic is also classified as eDonkey traffic in NBAR.	edonkey	Cisco IOS XE Release 2.5
	eDonkey-static	TCP	80, 4662	Classifies some of the edonkey traffic based on WKP only.	edonkey-static	Cisco IOS XE Release 3.3S
	Encrypted Emule	TCP	Heuristic	P2P file sharing encrypted protocol	encrypted-emule	Cisco IOS XE Release 3.4S
	FastTrack	N/A	Heuristic	FastTrack traffic	fasttrack	Cisco IOS XE Release 2.5

2 Cisco software supports Skype 1.0, 2.5, 3.0, and 4.0. In Skype 4.0, the classification may not be complete.
3 BitTorrent classifies only unencrypted traffic.
4 eDonkey classifies only unencrypted traffic.

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
	FastTrack Static	N/A	Heuristic	FastTrack Static	fasttrack-static	Cisco IOS XE Release 3.3S
	Gnutella	TCP/UDP	Heuristic, or TCP-80, 6346-6349, 6355,5634 UDP-6346-6348	Gnutella traffic	gnutella	Cisco IOS XE Release 2.5
	Gnutella Networking	TCP/UDP	Heuristic, or UDP-6346-6348	Gnutella Networking traffic	networking-gnutella	Cisco IOS XE Release 3.4S
	KaZaA	TCP/ UPD	Heuristic	KaZaA Note that earlier KaZaA version 1 traffic can be classified using FastTrack.	kazaa2	Cisco IOS XE Release 2.5
	WinMX	TCP	6699	WinMX Peer-to-Peer File-Sharing	winmx	Cisco IOS XE Release 2.5
Voice and Video	cisco-ip-camera			Cisco Video Surveillance Camera	cisco-ip-camera	Cisco IOS XE Release 3.5S
	gtalk-video			Google Talk Video Call	gtalk-video	Cisco IOS XE Release 3.5S
	gtalk-voip			Google Talk Voice	gtalk-voip	Cisco IOS XE Release 3.5S
	livemeeting			Microsoft Office Live Meeting	livemeeting	Cisco IOS XE Release 3.5S
	megavideo			Video Hosting Service	megavideo	Cisco IOS XE Release 3.5S
	netflix			Netflix Video	netflix	Cisco IOS XE Release 3.5S
	rtmpe			Real Time Messaging Protocol	rtmpe	Cisco IOS XE Release 3.5S

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
	viber			Viber VoIP is an iPhone voice communication application	viber	Cisco IOS XE Release 3.5S
Miscellaneous	3Com AMP3	TCP/UDP	629	3Com AMP3	3com-amp3	Cisco IOS XE Release 3.1S
	3Com TSMUX	TCP/UDP	106	3Com TSMUX	3com-tsmux	Cisco IOS XE Release 3.1S
	3PC	TCP/UDP	34	Third Party Connect Protocol	3pc	Cisco IOS XE Release 3.1S
	914 C/G	TCP/UDP	211	Texas Instruments 914 Terminal	914c/g	Cisco IOS XE Release 3.1S
	9PFS	TCP/UDP	564	Plan 9 file service	9pfs	Cisco IOS XE Release 3.1S
	ACAP	TCP/UDP	674	ACAP	acap	Cisco IOS XE Release 3.1S
	ACAS	TCP/UDP	62	ACA Services	acas	Cisco IOS XE Release 3.1S
	AccessBuilder	TCP/UDP	888	Access Builder	accessbuilder	Cisco IOS XE Release 3.1S
	AccessNetwork	TCP/UDP	699	Access Network	accessnetwork	Cisco IOS XE Release 3.1S
	ACP	TCP/UDP	599	Aeolon Core Protocol	acp	Cisco IOS XE Release 3.1S
	ACR-NEMA	TCP/UDP	104	ACR-NEMA Digital Img	acr-nema	Cisco IOS XE Release 3.1S
	AED-512	TCP/UDP	149	AED 512 Emulation service	aed-512	Cisco IOS XE Release 3.1S
	Agentx	TCP/UDP	705	AgentX	agentx	Cisco IOS XE Release 3.1S
	Alpes	TCP/UDP	463	Alpes	alpes	Cisco IOS XE Release 3.1S

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
	AMInet	TCP/UDP	2639	AMInet	aminet	Cisco IOS XE Release 3.1S
	AN	TCP/UDP	107	Active Networks	an	Cisco IOS XE Release 3.1S
	ANET	TCP/UDP	212	ATEXSSTR	anet	Cisco IOS XE Release 3.1S
	ANSANotify	TCP/UDP	116	ANSA REX Notify	ansanotify	Cisco IOS XE Release 3.1S
	ANSATrader	TCP/UDP	124	ansatrader	ansatrader	Cisco IOS XE Release 3.1S
	AODV	TCP/UDP	654	AODV	aodv	Cisco IOS XE Release 3.1S
	Apertus-LDP	TCP/UDP	539	Apertus Tech Load Distribution	apertus-ldp	Cisco IOS XE Release 3.1S
	AppleQTC	TCP/UDP	458	apple quick time	appleqtc	Cisco IOS XE Release 3.1S
	AppleQTSRVR	TCP/UDP	545	appleqtcsrvr	appleqtcsrvr	Cisco IOS XE Release 3.1S
	Applix	TCP/UDP	999	Applix ac	applix	Cisco IOS XE Release 3.1S
	ARCISDMS	TCP/UDP	262	arcisdms	arcisdms	Cisco IOS XE Release 3.1S
	ARGUS	TCP/UDP	13	ARGUS	argus	Cisco IOS XE Release 3.1S
	Ariel2	TCP/UDP	419	Ariel1	ariel1	Cisco IOS XE Release 3.1S
	Ariel2	TCP/UDP	421	Ariel2	ariel2	Cisco IOS XE Release 3.1S
	Ariel3	TCP/UDP	422	Ariel3	ariel3	Cisco IOS XE Release 3.1S
	ARIS	TCP/UDP	104	ARIS	aris	Cisco IOS XE Release 3.1S
	ARNS	TCP/UDP	384	A remote network server system	arns	Cisco IOS XE Release 3.1S

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
	ASA	TCP/UDP	386	ASA Message router object def	asa	Cisco IOS XE Release 3.1S
	ASA-Appl-Proto	TCP/UDP	502	asa-appl-proto	asa-appl-proto	Cisco IOS XE Release 3.1S
	ASIPRegistry	TCP/UDP	687	asipregistry	asipregistry	Cisco IOS XE Release 3.1S
	ASIP-Webadmin	TCP/UDP	311	AppleShare IP WebAdmin	asip-webadmin	Cisco IOS XE Release 3.1S
	AS-Servermap	TCP/UDP	449	AS Server Mapper	as-servermap	Cisco IOS XE Release 3.1S
	AT-3	TCP/UDP	203	AppleTalk Unused	at-3	Cisco IOS XE Release 3.1S
	AT-5	TCP/UDP	205	AppleTalk Unused	at-5	Cisco IOS XE Release 3.1S
	AT-7	TCP/UDP	207	AppleTalk Unused	at-7	Cisco IOS XE Release 3.1S
	AT-8	TCP/UDP	208	AppleTalk Unused	at-8	Cisco IOS XE Release 3.1S
	AT-Echo	TCP/UDP	204	AppleTalk Echo	at-echo	Cisco IOS XE Release 3.1S
	AT-NBP	TCP/UDP	202	AppleTalk Name Binding	at-nbp	Cisco IOS XE Release 3.1S
	AT-RTMP	TCP/UDP	201	AppleTalk Routing Maintenance	at-rtmp	Cisco IOS XE Release 3.1S
	AT-ZIS	TCP/UDP	206	AppleTalk Zone Information	at-zis	Cisco IOS XE Release 3.1S
	Audit	TCP/UDP	182	Unisys Audit SITP	audit	Cisco IOS XE Release 3.1S
	Auditd	TCP/UDP	48	Digital Audit daemon	auditd	Cisco IOS XE Release 3.1S
	Aurora-CMGR	TCP/UDP	364	Aurora CMGR	aurora-cmgr	Cisco IOS XE Release 3.1S

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
	AURP	TCP/UDP	387	Appletalk Update-Based Routing Protocol	aurp	Cisco IOS XE Release 3.1S
	AUTH	TCP/UDP	113	Authentication Service	auth	Cisco IOS XE Release 3.1S
	Avian	TCP/UDP	486	avian	avian	Cisco IOS XE Release 3.1S
	AX25	TCP/UDP	93	AX.25 Frames	ax25	Cisco IOS XE Release 3.1S
	Banyan-RPC	TCP/UDP	567	Banyan-RPC	banyan-rpc	Cisco IOS XE Release 3.1S
	Banyan-VIP	TCP/UDP	573	Banyan-VIP	banyan-vip	Cisco IOS XE Release 3.1S
	BBNRCCMON	TCP/UDP	10	BBN RCC Monitoring	bbnrccmon	Cisco IOS XE Release 3.1S
	BDP	TCP/UDP	581	Bundle Discovery protocol	bdp	Cisco IOS XE Release 3.1S
	BFTP	TCP/UDP	152	Background File Transfer Program	bftp	Cisco IOS XE Release 3.1S
	BGMP	TCP/UDP	264	Border Gateway Multicast Protocol	bgmp	Cisco IOS XE Release 3.1S
	BGP	TCP/UDP	179	Border Gateway Protocol	bgp	Cisco IOS XE Release 3.1S
	BGS-NSI	TCP/UDP	482	BGS-NSI	bgs-nsi	Cisco IOS XE Release 3.1S
	Bhevent	TCP/UDP	357	Bhevent	bhevent	Cisco IOS XE Release 3.1S
	BHFHS	TCP/UDP	248	BHFHS	bhfhs	Cisco IOS XE Release 3.1S
	BHMDS	TCP/UDP	310	BHMDS	bhmds	Cisco IOS XE Release 3.1S

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
	BL-IDM	TCP/UDP	142	Britton Lee IDM	bl-idm	Cisco IOS XE Release 3.1S
	BMPP	TCP/UDP	632	BMPP	bmpp	Cisco IOS XE Release 3.1S
	BNA	TCP/UDP	49	BNA	bna	Cisco IOS XE Release 3.1S
	Bnet	TCP/UDP	415	BNET	bnet	Cisco IOS XE Release 3.1S
	Borland-DSJ	TCP/UDP	707	Borland-dsj	borland-dsj	Cisco IOS XE Release 3.1S
	BR-SAT-Mon	TCP/UDP	76	Backroom SATNET Monitoring	br-sat-mon	Cisco IOS XE Release 3.1S
	Cableport-AX	TCP/UDP	282	Cable Port A/X	cableport-ax	Cisco IOS XE Release 3.1S
	Cab-Protocol	TCP/UDP	595	CAB Protocol	cab-protocol	Cisco IOS XE Release 3.1S
	Cadlock	TCP/UDP	770	Cadlock	cadlock	Cisco IOS XE Release 3.1S
	CAIlic	TCP/UDP	216	Computer Associates Intl License Server	CAIlic	Cisco IOS XE Release 3.1S
	CBT	TCP/UDP	7	CBT	cbt	Cisco IOS XE Release 3.1S
	CDC	TCP/UDP	223	Certificate Distribution Center	cdc	Cisco IOS XE Release 3.1S
	CFDPTKT	TCP/UDP	120	cfdptkt	cfdptkt	Cisco IOS XE Release 3.1S
	CFTP	TCP/UDP	62	CFTP	cftp	Cisco IOS XE Release 3.1S
	CHAOS	TCP/UDP	16	Chaos	chaos	Cisco IOS XE Release 3.1S
	CharGen	TCP/UDP	19	Character Generator	chargen	Cisco IOS XE Release 3.1S

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
	Cisco IOS XE Release 3.1S	ChShell	TCP/UDP	562	chcmd	chshell
	Cimplex	TCP/UDP	673	Cimplex	cimplex	Cisco IOS XE Release 3.1S
	Cisco-FNA	TCP/UDP	130	Cisco FNATIVE	cisco-fna	Cisco IOS XE Release 3.1S
	Cisco-SYS	TCP/UDP	132	Cisco SYSMAINT	cisco-sys	Cisco IOS XE Release 3.1S
	Cisco-TDP	TCP/UDP	711	Cisco TDP	cisco-tdp	Cisco IOS XE Release 3.1S
	Cisco-TNA	TCP/UDP	131	Cisco TNATIVE	cisco-tna	Cisco IOS XE Release 3.1S
	Clearcase	TCP/UDP	371	Clearcase	clearcase	Cisco IOS XE Release 3.1S
	Cloanto-Net-1	TCP/UDP	356	Cloanto-net-1	cloanto-net-1	Cisco IOS XE Release 3.1S
	CMIP-Agent	TCP/UDP	164	CMIP/TCP Agent	cmip-agent	Cisco IOS XE Release 3.1S
	CMIP-Man	TCP/UDP	163	CMIP/TCP Manager	cmip-man	Cisco IOS XE Release 3.1S
	Coauthor	TCP/UDP	1529	Oracle	coauthor	Cisco IOS XE Release 3.1S
	Codaauth2	TCP/UDP	370	Codaauth2	codaauth2	Cisco IOS XE Release 3.1S
	Collaborator	TCP/UDP	622	Collaborator	collaborator	Cisco IOS XE Release 3.1S
	Commerce	TCP/UDP	542	Commerce	commerce	Cisco IOS XE Release 3.1S
	Compaq-Peer	TCP/UDP	110	Compaq Peer Protocol	compaq-peer	Cisco IOS XE Release 3.1S
	Compressnet	TCP/UDP	2	Management Utility	compressnet	Cisco IOS XE Release 3.1S
	COMSCM	TCP/UDP	437	COMSCM	comscm	Cisco IOS XE Release 3.1S

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
	CON	TCP/UDP	759	Con	con	Cisco IOS XE Release 3.1S
	Conference	TCP/UDP	531	Chat	conference	Cisco IOS XE Release 3.1S
	Connendp	TCP/UDP	693	Almanid Connection Endpoint	connendp	Cisco IOS XE Release 3.1S
	ContentServer	TCP/UDP	3365	Contentserver	contentserver	Cisco IOS XE Release 3.1S
	CoreRJD	TCP/UDP	284	Corerjd	corerjd	Cisco IOS XE Release 3.1S
	Courier	TCP/UDP	530	RPC	courier	Cisco IOS XE Release 3.1S
	Covia	TCP/UDP	64	Communications Integrator	covia	Cisco IOS XE Release 3.1S
	CPHB	TCP/UDP	73	Computer Protocol Heart Beat	cphb	Cisco IOS XE Release 3.1S
	CPNX	TCP/UDP	72	Computer Protocol Network Executive	cpnx	Cisco IOS XE Release 3.1S
	Creativepartnr	TCP/UDP	455	Creativepartnr	creativepartnr	Cisco IOS XE Release 3.1S
	Creativeserver	TCP/UDP	453	Creativeserver	creativeserver	Cisco IOS XE Release 3.1S
	CRS	TCP/UDP	507	CRS	crs	Cisco IOS XE Release 3.1S
	CRTP	TCP/UDP	126	Combat Radio Transport Protocol	crtp	Cisco IOS XE Release 3.1S
	CRUDP	TCP/UDP	127	Combat Radio User Datagram	crudp	Cisco IOS XE Release 3.1S
	CryptoAdmin	TCP/UDP	624	Crypto Admin	cryptoadmin	Cisco IOS XE Release 3.1S

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
	CSI-SGWP	TCP/UDP	348	Cabletron Management Protocol	csi-sgwp	Cisco IOS XE Release 3.1S
	CSNET-NS	TCP/UDP	105	Mailbox Name Nameserver	csnet-ns	Cisco IOS XE Release 3.1S
	CTF	TCP/UDP	84	Common Trace Facility	ctf	Cisco IOS XE Release 3.1S
	CUSTIX	TCP/UDP	528	Customer Ixchange	custix	Cisco IOS XE Release 3.1S
	CVC_Hostd	TCP/UDP	442	CVC_Hostd	cvc_hostd	Cisco IOS XE Release 3.1S
	Cybercash	TCP/UDP	551	Cybercash	cybercash	Cisco IOS XE Release 3.1S
	Cycleserv	TCP/UDP	763	Cycleserv	cycleserv	Cisco IOS XE Release 3.1S
	Cycleserv2	TCP/UDP	772	Cycleserv2	cycleserv2	Cisco IOS XE Release 3.1S
	Dantz	TCP/UDP	497	Dantz	dantz	Cisco IOS XE Release 3.1S
	DASP	TCP/UDP	439	Dasp	dasp	Cisco IOS XE Release 3.1S
	DataSurfSRV	TCP/UDP	461	DataRamp Svr	datasurfsrv	Cisco IOS XE Release 3.1S
	DataSurfSRVSec	TCP/UDP	462	DataRamp Svr svs	datasurfsrvsec	Cisco IOS XE Release 3.1S
	Datex-ASN	TCP/UDP	355	datex-asn	datex-asn	Cisco IOS XE Release 3.1S
	Daytime	TCP/UDP	13	Daytime (RFC 867)	daytime	Cisco IOS XE Release 3.1S
	Dbase	TCP/UDP	217	dBASE Unix	dbase	Cisco IOS XE Release 3.1S
	DCCP	TCP/UDP	33	Datagram Congestion Control Protocol	dccp	Cisco IOS XE Release 3.1S

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
	DCN-Meas	TCP/UDP	19	DCN Measurement Subsystems	dcn-meas	Cisco IOS XE Release 3.1S
	DCP	TCP/UDP	93	Device Control Protocol	dcp	Cisco IOS XE Release 3.1S
	DCTP	TCP/UDP	675	DCTP	dctp	Cisco IOS XE Release 3.1S
	DDM-DFM	TCP/UDP	447	DDM Distributed File management	ddm-dfm	Cisco IOS XE Release 3.1S
	DDM-RDB	TCP/UDP	446	DDM-Remote Relational Database Access	ddm-rdb	Cisco IOS XE Release 3.1S
	DDM-SSL	TCP/UDP	448	DDM-Remote DB Access Using Secure Sockets	ddm-ssl	Cisco IOS XE Release 3.1S
	DDP	TCP/UDP	37	Datagram Delivery Protocol	ddp	Cisco IOS XE Release 3.1S
	DDX	TCP/UDP	116	D-II Data Exchange	ddx	Cisco IOS XE Release 3.1S
	DEC_DLM	TCP/UDP	625	dec_dlm	dec_dlm	Cisco IOS XE Release 3.1S
	Decap	TCP/UDP	403	Decap	decap	Cisco IOS XE Release 3.1S
	Decauth	TCP/UDP	316	Decauth	decauth	Cisco IOS XE Release 3.1S
	Decbsrv	TCP/UDP	579	Decbsrv	decbsrv	Cisco IOS XE Release 3.1S
	Decladebug	TCP/UDP	410	DECLadebug Remote Debug Protocol	decladebug	Cisco IOS XE Release 3.1S
	Decvms-sysmgt	TCP/UDP	441	Decvms-sysmgt	decvms-sysmgt	Cisco IOS XE Release 3.1S
	DEI-ICDA	TCP/UDP	618	dei-icda	dei-icda	Cisco IOS XE Release 3.1S

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
	DEOS	TCP/UDP	76	Distributed External Object Store	deos	Cisco IOS XE Release 3.1S
	Device	TCP/UDP	801	Device	device	Cisco IOS XE Release 3.1S
	DGP	TCP/UDP	86	Dissimilar Gateway Protocol	dgp	Cisco IOS XE Release 3.1S
	DHCP-Failover	TCP/UDP	647	DHCP Failover	dhcp-failover	Cisco IOS XE Release 3.1S
	DHCP-Failover2	TCP/UDP	847	dhcp-failover2	dhcp-failover2	Cisco IOS XE Release 3.1S
	DHCPv6-client	TCP/UDP	546	DHCPv6 Client	dhcpv6-client	Cisco IOS XE Release 3.1S
	DHCPv6-server	TCP/UDP	547	DHCPv6 Server	dhcpv6-server	Cisco IOS XE Release 3.1S
	Dicom	TCP/UDP	Heuristic	Digital Imaging and Communications in Medicine	dicom	Cisco IOS XE Release 3.3S
	Digital-VRC	TCP/UDP	466	digital-vrc	digital-vrc	Cisco IOS XE Release 3.1S
	Directplay	TCP/UDP	2234	DirectPlay	directplay	Cisco IOS XE Release 3.1S
	Directplay8	TCP/UDP	6073	DirectPlay8	directplay8	Cisco IOS XE Release 3.1S
	Directv-Catlg	TCP/UDP	3337	Direct TV Data Catalog	directv-catlg	Cisco IOS XE Release 3.1S
	Directv-Soft	TCP/UDP	3335	Direct TV Software Updates	directv-soft	Cisco IOS XE Release 3.1S
	Directv-Tick	TCP/UDP	3336	Direct TV Tickers	directv-tick	Cisco IOS XE Release 3.1S
	Directv-Web	TCP/UDP	3334	Direct TV Webcasting	directv-web	Cisco IOS XE Release 3.1S

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
	Discard	TCP/UDP	9	Discard	discard	Cisco IOS XE Release 3.1S
	Disclose	TCP/UDP	667	campaign contribution disclosures	disclose	Cisco IOS XE Release 3.1S
	Dixie	TCP/UDP	96	DIXIE Protocol Specification	dixie	Cisco IOS XE Release 3.1S
	DLS	TCP/UDP		Directory Location Service	dls	Cisco IOS XE Release 3.1S
	DLS-Mon	TCP/UDP	198	Directory Location Service Monitor	dls-mon	Cisco IOS XE Release 3.1S
	DN6-NLM-AUD	TCP/UDP	195	DNSIX Network Level Module Audit	dn6-nlm-aud	Cisco IOS XE Release 3.1S
	DNA-CML	TCP/UDP	436	DNA-CML	dna-cml	Cisco IOS XE Release 3.1S
	DNS	TCP/UDP	53	Domain Name Server lookup	dns	Cisco IOS XE Release 3.1S
	DNSIX	TCP/UDP	90	DNSIX Security Attribute Token Map	dnsix	Cisco IOS XE Release 3.1S
	DOOM	TCP/UDP	666	Doom Id Software	doom	Cisco IOS XE Release 3.1S
	DPSI	TCP/UDP	315	DPSI	dpsi	Cisco IOS XE Release 3.1S
	DSFGW	TCP/UDP	438	DSFGW	dsfgw	Cisco IOS XE Release 3.1S
	DSP	TCP/UDP	33	Display Support Protocol	dsp	Cisco IOS XE Release 3.1S
	DSP3270	TCP/UDP	246	Display Systems Protocol	dsp3270	Cisco IOS XE Release 3.1S
	DSR	TCP/UDP	48	Dynamic Source Routing Protocol	dsr	Cisco IOS XE Release 3.1S

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
	DTAG-DTE-SB	TCP/UDP	352	DTAG	dtag-ste-sb	Cisco IOS XE Release 3.1S
	Cisco IOS XE Release 3.1S	DTK	TCP/UDP	365	DTK	dtk
	DWR	TCP/UDP	644	DWR	dwr	Cisco IOS XE Release 3.1S
	Echo	TCP/UDP	7	Echo	echo	Cisco IOS XE Release 3.1S
	EGP	TCP/UDP	8	Exterior Gateway Protocol	egp	Cisco IOS XE Release 3.1S
	EIGRP	TCP/UDP	88	Enhanced Interior Gateway Routing Protocol	eigrp	Cisco IOS XE Release 3.1S
	ELCSD	TCP/UDP	704	errlog copy/ server daemon	elcsd	Cisco IOS XE Release 3.1S
	EMBL-NDT	TCP/UDP	394	EMBL Nucleic Data Transfer	embl-ndt	Cisco IOS XE Release 3.1S
	EMCON	TCP/UDP	14	EMCON	emcon	Cisco IOS XE Release 3.1S
	EMFIS-CNTLl	TCP/UDP	141	EMFIS Control Service	emfis-cntl	Cisco IOS XE Release 3.1S
	EMFIS-Data	TCP/UDP	140	EMFIS Data Service	emfis-data	Cisco IOS XE Release 3.1S
	Encap	TCP/UDP	98	Encapsulation Header	encap	Cisco IOS XE Release 3.1S
	Encrypted BitTorrent	TCP	Heuristic	Encrypted BitTorrent	encrypted-bittorrent	Cisco IOS XE Release 3.4S
	Entomb	TCP/UDP	775	Entomb	entomb	Cisco IOS XE Release 3.1S
	Entrust-AAAS	TCP/UDP	680	Entrust-aaas	entrust-aaas	Cisco IOS XE Release 3.1S
	Entrust-AAMS	TCP/UDP	681	Entrust-aams	entrust-aams	Cisco IOS XE Release 3.1S

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
	Entrust-ASH	TCP/UDP	710	Entrust Administration Service Handler	entrust-ash	Cisco IOS XE Release 3.1S
	Entrust-KMSH	TCP/UDP	709	Entrust Key Management Service Handler	entrust-kmsh	Cisco IOS XE Release 3.1S
	Entrust-SPS	TCP/UDP	640	entrust-sps	entrust-sps	Cisco IOS XE Release 3.1S
	ERPC	TCP/UDP	121	Encore Expedited Remote Pro.Call	erpc	Cisco IOS XE Release 3.1S
	ESCP-IP	TCP/UDP	621	escp-ip	escp-ip	Cisco IOS XE Release 3.1S
	ESRO-GEN	TCP/UDP	259	Efficient Short Remote Operations	esro-gen	Cisco IOS XE Release 3.1S
	ESRP-EMSDP	TCP/UDP	642	ESRO-EMSDP V1.3	esro-emsdp	Cisco IOS XE Release 3.1S
	EtherIP	TCP/UDP	97	Ethernet-within-IP Encapsulation	etherip	Cisco IOS XE Release 3.1S
	Eudora-Set	TCP/UDP	592	Eudora Set	eudora-set	Cisco IOS XE Release 3.1S
	EXEC	TCP/UDP	512	remote process execution	exec	Cisco IOS XE Release 3.1S
	Fatserv	TCP/UDP	347	Fatmen Server	fatserv	Cisco IOS XE Release 3.1S
	FC	TCP/UDP	133	Fibre Channel	fc	Cisco IOS XE Release 3.1S
	FCP	TCP/UDP	510	FirstClass Protocol	fcp	Cisco IOS XE Release 3.1S
	Finger	TCP/UDP	79	Finger	finger	Cisco IOS XE Release 3.1S
	FIRE	TCP/UDP	125	FIRE	fire	Cisco IOS XE Release 3.1S
	FlexLM	TCP/UDP	744	Flexible License Manager	flexlm	Cisco IOS XE Release 3.1S

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
	FLN-SPX	TCP/UDP	221	Berkeley rlogind with SPX auth	fln-spx	Cisco IOS XE Release 3.1S
	FTP-Agent	TCP/UDP	574	FTP Software Agent System	ftp-agent	Cisco IOS XE Release 3.1S
	FTP-Data	TCP/UDP	20	FTP-Data	ftp-data	Cisco IOS XE Release 3.1S
	FTPS-Data	TCP/UDP	989	ftp protocol, data, over TLS/SSL	ftps-data	Cisco IOS XE Release 3.1S
	Fujitsu-Dev	TCP/UDP	747	Fujitsu Device Control	fujitsu-dev	Cisco IOS XE Release 3.1S
	GACP	TCP/UDP	190	Gateway Access Control Protocol	gacp	Cisco IOS XE Release 3.1S
	GDOMAP	TCP/UDP	538	gdomap	gdomap	Cisco IOS XE Release 3.1S
	Genie	TCP/UDP	402	Genie Protocol	genie	Cisco IOS XE Release 3.1S
	Genrad-MUX	TCP/UDP	176	Genrad-mux	genrad-mux	Cisco IOS XE Release 3.1S
	GGF-NCP	TCP/UDP	678	GNU Generation Foundation NCP	ggf-ncp	Cisco IOS XE Release 3.1S
	GGP	TCP/UDP	3	Gateway-to-Gateway	ggp	Cisco IOS XE Release 3.1S
	Ginad	TCP/UDP	634	ginad	ginad	Cisco IOS XE Release 3.1S
	GMTP	TCP/UDP	100	GMTP	gmtp	Cisco IOS XE Release 3.1S
	Go-Login	TCP/UDP	491	Go-login	go-login	Cisco IOS XE Release 3.1S
	Gopher	TCP/UDP	70	Gopher	gopher	Cisco IOS XE Release 3.1S
	Graphics	TCP/UDP	41	Graphics	graphics	Cisco IOS XE Release 3.1S
	GRE	TCP/UDP	47	General Routing Encapsulation	gre	Cisco IOS XE Release 3.1S

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
	GRIDFTP	-	-	File Transfer Protocol over the Grid	gridftp	Cisco IOS XE Release 3.5S
	Groove	TCP/UDP	2492	Groove	groove	Cisco IOS XE Release 3.1S
	GSS-HTTP	TCP/UDP	488	gss-http	gss-http	Cisco IOS XE Release 3.1S
	GSS-XLICEN	TCP/UDP	128	GNU Generation Foundation NCP	gss-xlicen	Cisco IOS XE Release 3.1S
	gtalk-chat	-	-	Instant messaging between Google Talk servers and its clients	gtalk-chat	Cisco IOS XE Release 3.5S
	GTP-User	TCP/UDP	2152	GTP-User Plane	gtp-user	Cisco IOS XE Release 3.1S
	HA-Cluster	TCP/UDP	694	ha-cluster	ha-cluster	Cisco IOS XE Release 3.1S
	HAP	TCP/UDP	661	hap	hap	Cisco IOS XE Release 3.1S
	Hassle	TCP/UDP	375	Hassle	hassle	Cisco IOS XE Release 3.1S
	HCP-Wismar	TCP/UDP	686	Hardware Control Protocol Wismar	hcp-wismar	Cisco IOS XE Release 3.1S
	HDAP	TCP/UDP	263	hdap	hdap	Cisco IOS XE Release 3.1S
	Hello-port	TCP/UDP	652	HELLO_PORT	hello-port	Cisco IOS XE Release 3.1S
	HEMS	TCP/UDP	151	hems	hems	Cisco IOS XE Release 3.1S
	HIP	TCP/UDP	139	Host Identity Protocol	hip	Cisco IOS XE Release 3.1S
	HMMP-IND	TCP/UDP	612	HMMP Indication	hmmp-ind	Cisco IOS XE Release 3.1S

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
	HMMP-OP	TCP/UDP	613	HMMP Operation	hmmp-op	Cisco IOS XE Release 3.1S
	HMP	TCP/UDP	20	Host Monitoring	hmp	Cisco IOS XE Release 3.1S
	HOPOPT	TCP/UDP	0	IPv6 Hop-by-Hop Option	hopopt	Cisco IOS XE Release 3.1S
	Hostname	TCP/UDP	101	NIC Host Name Server	hostname	Cisco IOS XE Release 3.1S
	HP-Alarm-Mgr	TCP/UDP	383	HP performance data alarm manager	hp-alarm-mgr	Cisco IOS XE Release 3.1S
	HP-Collector	TCP/UDP	381	HP performance data collector	hp-collector	Cisco IOS XE Release 3.1S
	HP-Managed-Node	TCP/UDP	382	HP performance data managed node	hp-managed-node	Cisco IOS XE Release 3.1S
	HTTP-ALT	TCP/UDP	8080	HTTP Alternate	http-alt	Cisco IOS XE Release 3.1S
	HTTP-Mgmt	TCP/UDP	280	http-mgmt	http-mgmt	Cisco IOS XE Release 3.1S
	HTTP-RPC-EPMAP	TCP/UDP	593	HTTP RPC Ep Map	http-rpc-epmap	Cisco IOS XE Release 3.1S
	Hybrid-POP	TCP/UDP	473	Hybrid-pop	hybrid-pop	Cisco IOS XE Release 3.1S
	Hyper-G	TCP/UDP	418	Hyper-g	hyper-g	Cisco IOS XE Release 3.1S
	Hyperwave-ISP	TCP/UDP	692	Hyperwave-isp	hyperwave-isp	Cisco IOS XE Release 3.1S
	IAFDBase	TCP/UDP	480	iafdbase	iafdbase	Cisco IOS XE Release 3.1S
	IAFServer	TCP/UDP	479	iafserver	iafserver	Cisco IOS XE Release 3.1S
	IASD	TCP/UDP	432	iasd	iasd	Cisco IOS XE Release 3.1S

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
	IATP	TCP/UDP	117	Interactive Agent Transfer Protocol	iatp	Cisco IOS XE Release 3.1S
	IBM-App	385		IBM Application	ibm-app	Cisco IOS XE Release 3.1S
	IBM-DB2	TCP/UDP	523	IBM-DB2	ibm-db2	Cisco IOS XE Release 3.1S
	IBProtocol	TCP/UDP	6714	Internet Backplane Protocol	ibprotocol	Cisco IOS XE Release 3.1S
	ICLCNet-Locate	TCP/UDP	886	ICL coNETion locate server	iclcnet-locate	Cisco IOS XE Release 3.1S
	ICLNet_SVInfo	TCP/UDP	887	ICL coNETion server info	iclcnet_svinfo	Cisco IOS XE Release 3.1S
	ICMP	TCP/UDP	1	Internet Control Message	icmp	Cisco IOS XE Release 3.1S
	IDFP	TCP/UDP	549	idfp	idfp	Cisco IOS XE Release 3.1S
	IDPR	TCP/UDP	35	Inter-Domain Policy Routing Protocol	idpr	Cisco IOS XE Release 3.1S
	IDPRr-CMTP	TCP/UDP	38	IDPR Control Message Transport Protocol	idpr-cmtp	Cisco IOS XE Release 3.1S
	IDRP	TCP/UDP	45	Inter-Domain Routing Protocol	idrp	Cisco IOS XE Release 3.1S
	IEEE-MMS	TCP/UDP	651	ieee-mms	ieee-mms	Cisco IOS XE Release 3.1S
	IEEE-MMS-SSL	TCP/UDP	695	ieee-mms-ssl	ieee-mms-ssl	Cisco IOS XE Release 3.1S
	IFMP	TCP/UDP	101	Ipsilon Flow Management Protocol	ifmp	Cisco IOS XE Release 3.1S
	IGRP	TCP/UDP	9	Cisco interior gateway	igrp	Cisco IOS XE Release 3.1S

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
	IIOP	TCP/UDP	535	iiop	iiop	Cisco IOS XE Release 3.1S
	IL	TCP/UDP	40	IL Transport Protocol	il	Cisco IOS XE Release 3.1S
	IMSP	TCP/UDP	406	Interactive Mail Support Protocol	imsp	Cisco IOS XE Release 3.1S
	InBusiness	TCP/UDP	244	Inbusiness	inbusiness	Cisco IOS XE Release 3.1S
	Infoseek	TCP/UDP	414	InfoSeek	infoseek	Cisco IOS XE Release 3.1S
	Ingres-Net	TCP/UDP	134	INGRES-NET Service	ingres-net	Cisco IOS XE Release 3.1S
	I-NLSP	TCP/UDP	52	Integrated Net Layer Security TUBA	i-nlsp	Cisco IOS XE Release 3.1S
	Intecourier	TCP/UDP	495	Intecourier	intecourier	Cisco IOS XE Release 3.1S
	Integra-SME	TCP/UDP	484	Integra Software Management Environment	integra-sme	Cisco IOS XE Release 3.1S
	Intrinsia	TCP/UDP	503	intrinsa	intrinsa	Cisco IOS XE Release 3.1S
	IPCD	TCP/UDP	576	ipcd	ipcd	Cisco IOS XE Release 3.1S
	IPComp	TCP/UDP	108	IP Payload Compression Protocol	ipcomp	Cisco IOS XE Release 3.1S
	IPCServer	TCP/UDP	600	Sun IPC server	ipcserver	Cisco IOS XE Release 3.1S
	IPCV	TCP/UDP	71	Internet Packet Core Utility	ipcv	Cisco IOS XE Release 3.1S
	IPDD	TCP/UDP	578	ipdd	ipdd	Cisco IOS XE Release 3.1S
	IPINIP	TCP/UDP	4	IP in IP	ipinip	Cisco IOS XE Release 3.1S

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
	IPIP	TCP/UDP	94	IP-within-IP Encapsulation Protocol	ipip	Cisco IOS XE Release 3.1S
	IPLT	TCP/UDP	129	IPLT	iplt	Cisco IOS XE Release 3.1S
	IPP	TCP/UDP	631	Internet Printing Protocol	ipp	Cisco IOS XE Release 3.1S
	IPPC	TCP/UDP	67	Internet Pluribus Packet Core	ippc	Cisco IOS XE Release 3.1S
	Ipv6-Frag	TCP/UDP	44	Fragment Header for IPv6	ipv6-frag	Cisco IOS XE Release 3.1S
	Ipv6-ICMP	TCP/UDP	58	ICMP for IPv6	ipv6-icmp	Cisco IOS XE Release 3.1S
	Ipv6INIP	TCP/UDP	41	Ipv6 encapsulated	ipv6inip	Cisco IOS XE Release 3.1S
	ipv6-NonXT	TCP/UDP	59	No Next Header for IPv6	ipv6-nonxt	Cisco IOS XE Release 3.1S
	Ipv6-OPTS	TCP/UDP	60	Destination Options for IPv6	ipv6-opts	Cisco IOS XE Release 3.1S
	Ipv6-Route	TCP/UDP	43	Routing Header for IPv6	ipv6-route	Cisco IOS XE Release 3.1S
	IRC	TCP/UDP	194	Internet Relay Chat	irc	Cisco IOS XE Release 3.1S
	IRC-SERV	TCP/UDP	529	IRC-SERV	irc-serv	Cisco IOS XE Release 3.1S
	IRTP	TCP/UDP	28	Internet Reliable Transaction	irtp	Cisco IOS XE Release 3.1S
	IS99C	TCP/UDP	379	TIA/EIA/IS-99 modem client	is99c	Cisco IOS XE Release 3.1S
	IS99S	TCP/UDP	380	TIA/EIA/IS-99 modem server	is99s	Cisco IOS XE Release 3.1S
	ISAKMP	UDP	500, 4500	Internet Security Association & Key Management Protocol	isakmp	Cisco IOS XE Release 3.1S

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
	ISI-GI	TCP/UDP	55	ISI Graphics Language	isi-gl	Cisco IOS XE Release 3.1S
	ISIS	TCP/UDP	124	ISIS over IPv4	isis	Cisco IOS XE Release 3.1S
	ISO-ILL	TCP/UDP	499	ISO ILL Protocol	iso-ill	Cisco IOS XE Release 3.1S
	ISO-IP	TCP/UDP	147	iso-ip	iso-ip	Cisco IOS XE Release 3.1S
	ISO-TP0	TCP/UDP	146	iso-tp0	iso-tp0	Cisco IOS XE Release 3.1S
	ISO-TP4	TCP/UDP	29	ISO Transport Protocol Class 4	iso-tp4	Cisco IOS XE Release 3.1S
	ISO-TSAP	TCP/UDP	102	ISO-TSAP Class 0	iso-tsap	Cisco IOS XE Release 3.1S
	ISO-TSAP-C2	TCP/UDP	399	ISO Transport Class 2 Non-Control	iso-tsap-c2	Cisco IOS XE Release 3.1S
	ITM-MCELL-S	TCP/UDP	828	itm-mcell-s	itm-mcell-s	Cisco IOS XE Release 3.1S
	IXP-IN-IP	TCP/UDP	111	IPX in IP	ixp-in-ip	Cisco IOS XE Release 3.1S
	Jargon	TCP/UDP	148	Jargon	jargon	Cisco IOS XE Release 3.1S
	Kali	TCP/UDP	2213	Kali	kali	Cisco IOS XE Release 3.1S
	K-Block	TCP/UDP	287	K-block	k-block	Cisco IOS XE Release 3.1S
	Keyserver	TCP/UDP	584	Key Server	keyserver	Cisco IOS XE Release 3.1S
	KIS	TCP/UDP	186	KIS Protocol	kis	Cisco IOS XE Release 3.1S
	Klogin	TCP/UDP	543	klogin	klogin	Cisco IOS XE Release 3.1S

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
	Knet-CMP	TCP/UDP	157	KNET/VM Command/ Message Protocol	knet-cmp	Cisco IOS XE Release 3.1S
	Konspire2b	TCP/UDP	6085	Konspire2b p2p network	Konspire2b	Cisco IOS XE Release 3.1S
	Kpasswd	TCP/UDP	464	Kpasswd	kpasswd	Cisco IOS XE Release 3.1S
	Kryptolan	TCP/UDP	398	Kryptolan	kryptolan	Cisco IOS XE Release 3.1S
	Kshell	TCP/UDP	544	Kshell	kshell	Cisco IOS XE Release 3.1S
	L2TP	TCP/UDP	1701	l2tp	l2tp	Cisco IOS XE Release 3.1S
	LA-Maint	TCP/UDP	51	IMP Logical Address Maintenance	la-maint	Cisco IOS XE Release 3.1S
	LANServer	TCP/UDP	637	lanserver	lanserver	Cisco IOS XE Release 3.1S
	LARP	TCP/UDP	91	Locus Address Resolution Protocol	larp	Cisco IOS XE Release 3.1S
	LDAP	TCP/UDP	389	Lightweight Directory Access Protocol	ldap	Cisco IOS XE Release 3.1S
	LDP	TCP/UDP	646	LDP	ldp	Cisco IOS XE Release 3.1S
	Leaf-1	TCP/UDP	25	Leaf-1	leaf-1	Cisco IOS XE Release 3.1S
	Leaf-2	TCP/UDP	26	Leaf-2	leaf-2	Cisco IOS XE Release 3.1S
	Legent-1	TCP/UDP	373	Legent Corporation	legent-1	Cisco IOS XE Release 3.1S
	Legent-2	TCP/UDP	374	Legent Corporation	legent-2	Cisco IOS XE Release 3.1S

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
	LJK-Login	TCP/UDP	472	ljk-login	ljk-login	Cisco IOS XE Release 3.1S
	Lockd	TCP/UDP	4045	NFS Lock Daemon Manager	lockd	Cisco IOS XE Release 3.1S
	Locus-Con	TCP/UDP	127	Locus PC-Interface Conn Server	locus-con	Cisco IOS XE Release 3.1S
	Locus-Map	TCP/UDP	125	Locus PC-Interface Net Map Ser	locus-map	Cisco IOS XE Release 3.1S
	MAC-SRVR-Admin	TCP/UDP	660	MacOS Server Admin	mac-srvr-admin	Cisco IOS XE Release 3.1S
	Magenta-Logic	TCP/UDP	313	Magenta-logic	magenta-logic	Cisco IOS XE Release 3.1S
	Mailbox-LM	TCP/UDP	505	Mailbox-lm	mailbox-lm	Cisco IOS XE Release 3.1S
	Mailq	TCP/UDP	174	MAILQ	mailq	Cisco IOS XE Release 3.1S
	Maitrd	TCP/UDP	997	Maitrd	maitrd	Cisco IOS XE Release 3.1S
	MANET	TCP/UDP	138	MANET Protocols	manet	Cisco IOS XE Release 3.1S
	MasqDialer	TCP/UDP	224	Masqdialer	masqdialer	Cisco IOS XE Release 3.1S
	Matip-Type-A	TCP/UDP	350	MATIP Type A	matip-type-a	Cisco IOS XE Release 3.1S
	Matip-Type-B	TCP/UDP	351	MATIP Type B	matip-type-b	Cisco IOS XE Release 3.1S
	MCIDAS	TCP/UDP	112	McIDAS Data Transmission Protocol	mcidas	Cisco IOS XE Release 3.1S
	MCNS-Sec	TCP/UDP	638	mcns-sec	mcns-sec	Cisco IOS XE Release 3.1S
	MDC-Portmapper	TCP/UDP	685	mdc-portmapper	mdc-portmapper	Cisco IOS XE Release 3.1S

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
	MeComm	TCP/UDP	668	MeComm	mecomm	Cisco IOS XE Release 3.1S
	MeRegister	TCP/UDP	669	MeRegister	meregister	Cisco IOS XE Release 3.1S
Merit-INP	TCP/UDP	32	MERIT Internodal Protocol	merit-inp	Cisco IOS XE Release 3.1S	
Meta5	TCP/UDP	393	Meta5	meta5	Cisco IOS XE Release 3.1S	
Metagram	TCP/UDP	99	Metagram	metagram	Cisco IOS XE Release 3.1S	
Meter	TCP/UDP	570	Meter	meter	Cisco IOS XE Release 3.1S	
Mfcobol	TCP/UDP	86	Micro Focus Cobol	mfcobol	Cisco IOS XE Release 3.1S	
MFE-NSP	TCP/UDP	31	MFE Network Services Protocol	mfe-nsp	Cisco IOS XE Release 3.1S	
MFTP	TCP/UDP	349	mftp	mftp	Cisco IOS XE Release 3.1S	
Micom-PFS	TCP/UDP	490	Micom-pfs	micom-pfs	Cisco IOS XE Release 3.1S	
MICP	TCP/UDP	95	Mobile Internetworking Control Pro.	micp	Cisco IOS XE Release 3.1S	
Micromuse-LM	TCP/UDP	1534	micromuse-lm	micromuse-lm	Cisco IOS XE Release 3.1S	
MIT-DOV	TCP/UDP	91	MIT Dover Spooler	mit-dov	Cisco IOS XE Release 3.1S	
MIT-ML-Dev	TCP/UDP	83	MIT ML Device	mit-ml-dev	Cisco IOS XE Release 3.1S	
Mobile	TCP/UDP	55	IP Mobility	mobile	Cisco IOS XE Release 3.1S	
MobileIP-Agent	TCP/UDP	434	mobileip-agent	mobileip-agent	Cisco IOS XE Release 3.1S	
MobilIP-MN	TCP/UDP	435	mobilip-mn	mobilip-mn	Cisco IOS XE Release 3.1S	

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
Mondex	TCP/UDP	471	Mondex	mondex	Cisco IOS XE Release 3.1S	
Monitor	TCP/UDP	561	Monitor	monitor	Cisco IOS XE Release 3.1S	
Mortgageware	TCP/UDP	367	Mortgageware	mortgageware	Cisco IOS XE Release 3.1S	
	MPLS-IN-IP	TCP/UDP	137	MPLS-in-IP	mpls-in-ip	Cisco IOS XE Release 3.1S
MPM	TCP/UDP	45	Message Processing Module	mpm	Cisco IOS XE Release 3.1S	
MPM-Flags	TCP/UDP	44	MPM FLAGS Protocol	mpm-flags	Cisco IOS XE Release 3.1S	
MPM-SND	TCP/UDP	46	MPM [default send]	mpm-snd	Cisco IOS XE Release 3.1S	
MPP	TCP/UDP	218	Netix Message Posting Protocol	mpp	Cisco IOS XE Release 3.1S	
MPTN	TCP/UDP	397	Multi Protocol Transport Network	mptn	Cisco IOS XE Release 3.1S	
MRM	TCP/UDP	679	mrm	mrm	Cisco IOS XE Release 3.1S	
MSDP	TCP/UDP	639	msdp	msdp	Cisco IOS XE Release 3.1S	
MSExch-Routing	TCP/UDP	691	MS Exchange Routing	msexch-routing	Cisco IOS XE Release 3.1S	
MSFT-GC	TCP/UDP	3268	Microsoft Global Catalog	msft-gc	Cisco IOS XE Release 3.1S	
MSFT-GC-SSL	TCP/UDP	3269	Microsoft Global Catalog with LDAP/SSL	msft-gc-ssl	Cisco IOS XE Release 3.1S	
MSG-AUTH	TCP/UDP	31	msg-auth	msg-auth	Cisco IOS XE Release 3.1S	
MSG-ICP	TCP/UDP	29	msg-icp	msg-icp	Cisco IOS XE Release 3.1S	

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
MSNP	TCP/UDP	1863	msnp	msnp	Cisco IOS XE Release 3.1S	
MS-OLAP	TCP/UDP	2393	Microsoft OLAP	ms-olap	Cisco IOS XE Release 3.1S	
MSP	TCP/UDP	18	Message Send Protocol	msp	Cisco IOS XE Release 3.1S	
MS-Rome	TCP/UDP	569	Microsoft rome	ms-rome	Cisco IOS XE Release 3.1S	
MS-Shuttle	TCP/UDP	568	Microsoft shuttle	ms-shuttle	Cisco IOS XE Release 3.1S	
	MS-wbt	TCP	3389/Heuristic	Microsoft Windows-based Terminal Services	ms-wbt	Cisco IOS XE Release 3.4S
MS-SQLl-M	TCP/UDP	1434	Microsoft-SQL-Monitor	ms-sql-m	Cisco IOS XE Release 3.1S	
	MTP	TCP/UDP	92	Multicast Transport Protocol	mtp	Cisco IOS XE Release 3.1S
Multiling-HTTP	TCP/UDP	777	Multiling HTTP	multiling-http	Cisco IOS XE Release 3.1S	
Multiplex	TCP/UDP	171	Network Innovations Multiplex	multiplex	Cisco IOS XE Release 3.1S	
Mumps	TCP/UDP	188	Plus Fives MUMPS	mumps	Cisco IOS XE Release 3.1S	
MUX	TCP/UDP	18	Multiplexing	mux	Cisco IOS XE Release 3.1S	
Mylex-MAPD	TCP/UDP	467	mylex-mapd	mylex-mapd	Cisco IOS XE Release 3.1S	
MySQL	TCP/UDP	3306	MySQL	mysql	Cisco IOS XE Release 3.1S	
Name	TCP/UDP	42	Host Name Server	name	Cisco IOS XE Release 3.1S	
NAMP	TCP/UDP	167	namp	namp	Cisco IOS XE Release 3.1S	

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
NARP	TCP/UDP	54	NBMA Address Resolution Protocol	narp	Cisco IOS XE Release 3.1S	
NAS	TCP/UDP	991	Netnews Administration System	nas	Cisco IOS XE Release 3.1S	
NCED	TCP/UDP	404	nced	nced	Cisco IOS XE Release 3.1S	
NCLD	TCP/UDP	405	ncld	ncld	Cisco IOS XE Release 3.1S	
NCP	TCP/UDP	524	NCP	ncp	Cisco IOS XE Release 3.1S	
NDSAuth	TCP/UDP	353	NDSAUTH	ndsauth	Cisco IOS XE Release 3.1S	
Nest-Protocol	TCP/UDP	489	Nest-protocol	nest-protocol	Cisco IOS XE Release 3.1S	
Net8-CMAN	TCP/UDP	1830	Oracle Net8 CMan Admin	net8-cman	Cisco IOS XE Release 3.1S	
Net-Assistant	TCP/UDP	3283	net-assistant	net-assistant	Cisco IOS XE Release 3.1S	
Netblt	TCP/UDP	30	Bulk Data Transfer Protocol	netblt	Cisco IOS XE Release 3.1S	
	NetGW	TCP/UDP	741	netgw	netgw	Cisco IOS XE Release 3.1S
	NetNews	TCP/UDP	532	readnews	netnews	Cisco IOS XE Release 3.1S
NetRCS	TCP/UDP	742	Network based RCS	netrcs	Cisco IOS XE Release 3.1S	
NetRJS-1	TCP/UDP	71	Remote Job Service	netrjs-1	Cisco IOS XE Release 3.1S	
NetRJS-2	TCP/UDP	72	Remote Job Service	netrjs-2	Cisco IOS XE Release 3.1S	
NetRJS-3	TCP/UDP	73	Remote Job Service	netrjs-3	Cisco IOS XE Release 3.1S	
NetRJS-4	TCP/UDP	74	Remote Job Service	netrjs-4	Cisco IOS XE Release 3.1S	

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
NETSC-Dev	TCP/UDP	155	NETSC	netsc-dev	Cisco IOS XE Release 3.1S	
NETSC-Prod	TCP/UDP	154	NETSC	netsc-prod	Cisco IOS XE Release 3.1S	
NetViewDM1	TCP/UDP	729	IBM NetView M	netviewdm1	Cisco IOS XE Release 3.1S	
NetviewDM2	TCP/UDP	730	IBM NetView DM	netviewdm2	Cisco IOS XE Release 3.1S	
NetviewDM3	TCP/UDP	731	IBM NetView DM	netviewdm3	Cisco IOS XE Release 3.1S	
Netwall	TCP/UDP	533	for emergency broadcasts	netwall	Cisco IOS XE Release 3.1S	
Netware-IP	TCP/UDP	396	Novell Netware over IP	netware-ip	Cisco IOS XE Release 3.1S	
New-RWHO	TCP/UDP	550	new who	new-rwho	Cisco IOS XE Release 3.1S	
NextStep	TCP/UDP	178	NextStep Window Server	nextstep	Cisco IOS XE Release 3.1S	
NFS	TCP/UDP	2049	Network File System	nfs	Cisco IOS XE Release 3.1S	
NicName	TCP/UDP	43	Who Is	nicname	Cisco IOS XE Release 3.1S	
NI-FTP	TCP/UDP	47	NI FTP	ni-ftp	Cisco IOS XE Release 3.1S	
NI-Mail	TCP/UDP	61	NI MAIL	ni-mail	Cisco IOS XE Release 3.1S	
	Nlogin	TCP/UDP	758	nlogin	nlogin	Cisco IOS XE Release 3.1S
	NMAP	TCP/UDP	689	nmap	nmap	Cisco IOS XE Release 3.1S
NMSP	TCP/UDP	537	Networked Media Streaming Protocol	nmsp	Cisco IOS XE Release 3.1S	
NNSP	TCP/UDP	433	nnsp	nnsp	Cisco IOS XE Release 3.1S	

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
Notes	TCP/UDP	1352	Lotus Notes(R)	notes	Cisco IOS XE Release 3.1S	
NovaStorBakcup	TCP/UDP	308	Novastor Backup	novastorbakcup	Cisco IOS XE Release 3.1S	
NPMP-GUI	TCP/UDP	611	npmp-gui	npmp-gui	Cisco IOS XE Release 3.1S	
NPMP-Local	TCP/UDP	610	npmp-local	npmp-local	Cisco IOS XE Release 3.1S	
NPMP-Trap	TCP/UDP	609	npmp-trap	npmp-trap	Cisco IOS XE Release 3.1S	
NPP	TCP/UDP	92	Network Printing Protocol	npp	Cisco IOS XE Release 3.1S	
NQS	TCP/UDP	607	nqs	nqs	Cisco IOS XE Release 3.1S	
NS	TCP/UDP	760	ns	ns	Cisco IOS XE Release 3.1S	
NSFNET-IGP	TCP/UDP	85	NSFNET-IGP	nsfnet-igp	Cisco IOS XE Release 3.1S	
NSIIOPS	TCP/UDP	261	IIOP Name Service over TLS/SSL	nsiiops	Cisco IOS XE Release 3.1S	
NSRMP	TCP/UDP	359	Network Security Risk Management Protocol	nsrmp	Cisco IOS XE Release 3.1S	
NSS-Routing	TCP/UDP	159	NSS-Routing	nss-routing	Cisco IOS XE Release 3.1S	
NSW-FE	TCP/UDP	27	NSW User System FE	nsw-fe	Cisco IOS XE Release 3.1S	
Ntalk	TCP/UDP	518	Ntalk	ntalk	Cisco IOS XE Release 3.1S	
NTP	TCP/ UDP	123	Network Time Protocol	ntp	Cisco IOS XE Release 2.3 Cisco IOS XE Release 3.1S	
	Cisco IOS XE Release 3.1S					

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
		NVP-II	TCP/UDP	11	Network Voice Protocol	nvp-ii
NXEdit	TCP/UDP	126	nxedit	nxedit	Cisco IOS XE Release 3.1S	
OBCBinder	TCP/UDP	183	ocbinder	ocbinder	Cisco IOS XE Release 3.1S	
OBEX	TCP/UDP	650	obex	obex	Cisco IOS XE Release 3.1S	
ObjCall	TCP/UDP	94	Tivoli Object Dispatcher	objcall	Cisco IOS XE Release 3.1S	
OCS_AMU	TCP/UDP	429	ocs_amu	ocs_amu	Cisco IOS XE Release 3.1S	
OCS_CMU	TCP/UDP	428	ocs_cmu	ocs_cmu	Cisco IOS XE Release 3.1S	
OCServer	TCP/UDP	184	ocserver	ocserver	Cisco IOS XE Release 3.1S	
ODMR	TCP/UDP	366	odmr	odmr	Cisco IOS XE Release 3.1S	
OHIMSRV	TCP/UDP	506	ohimsrv	ohimsrv	Cisco IOS XE Release 3.1S	
OLSR	TCP/UDP	698	olsr	olsr	Cisco IOS XE Release 3.1S	
OMGInitialRefs	TCP/UDP	900	omginitialrefs	omginitialrefs	Cisco IOS XE Release 3.1S	
OMServ	TCP/UDP	764	omserv	omserv	Cisco IOS XE Release 3.1S	
ONMUX	TCP/UDP	417	onmux	onmux	Cisco IOS XE Release 3.1S	
Opalis-RDV	TCP/UDP	536	Opalis-rdv	opalis-rdv	Cisco IOS XE Release 3.1S	
Opalis-Robot	TCP/UDP	314	oOpalis-robot	opalis-robot	Cisco IOS XE Release 3.1S	
OPC-Job-Start	TCP/UDP	423	IBM Operations Planning and Control Start	opc-job-start	Cisco IOS XE Release 3.1S	

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
OPC-Job-Track	TCP/UDP	424	IBM Operations Planning and Control Track	opc-job-track	Cisco IOS XE Release 3.1S	
	Openport	TCP/UDP	260	Openport	openport	Cisco IOS XE Release 3.5S
OpenVMS-Sysipc	TCP/UDP	557	Openvms-sysipc	openvms-sysipc	Cisco IOS XE Release 3.1S	
	Open VPN			Open VPN Protocol	openvpn	Cisco IOS XE Release 3.5S
OracleNames	TCP/UDP	1575	Oraclenames	oraclenames	Cisco IOS XE Release 3.1S	
OracleNet8CMAN	TCP/UDP	1630	Oracle Net8 Cman	oraclenet8cman	Cisco IOS XE Release 3.1S	
ORA-Srv	TCP/UDP	1525	Oracle TCP/IP Listener	ora-srv	Cisco IOS XE Release 3.1S	
Orbix-Config	TCP/UDP	3076	Orbix 2000 Config	orbix-config	Cisco IOS XE Release 3.1S	
Orbix-Locator	TCP/UDP	3075	Orbix 2000 Locator	orbix-locator	Cisco IOS XE Release 3.1S	
Orbix-Loc-SSL	TCP/UDP	3077	Orbix 2000 Locator SSL	orbix-loc-ssl	Cisco IOS XE Release 3.1S	
OSPF	TCP/UDP	89	Open Shortest Path First	ospf	Cisco IOS XE Release 3.1S	
OSU-NMS	TCP/UDP	192	OSU Network Monitoring System	osu-nms	Cisco IOS XE Release 3.1S	
Parsec-Game	TCP/UDP	6582	Parsec Gameserver	parsec-game	Cisco IOS XE Release 3.1S	
Passgo	TCP/UDP	511	Passgo	passgo	Cisco IOS XE Release 3.1S	
Passgo-Tivoli	TCP/UDP	627	Passgo-tivoli	passgo-tivoli	Cisco IOS XE Release 3.1S	
Password-Chg	TCP/UDP	586	Password Change	password-chg	Cisco IOS XE Release 3.1S	
Pawserv	TCP/UDP	345	Perf Analysis Workbench	pawserv	Cisco IOS XE Release 3.1S	

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
PCMail-SRV	TCP/UDP	158	PCMail Server	pcmail-srv	Cisco IOS XE Release 3.1S	
PDAP	TCP/UDP	344	Prospero Data Access Protocol	pdap	Cisco IOS XE Release 3.1S	
Personal-link	TCP/UDP	281	Personal-link	personal-link	Cisco IOS XE Release 3.1S	
PFTP	TCP/UDP	662	Parallel File Transfer Protocol	pftp	Cisco IOS XE Release 3.1S	
	PGM	TCP/UDP	113	PGM Reliable Transport Protocol	pgm	Cisco IOS XE Release 3.1S
Philips-VC	TCP/UDP	583	Philips Video-Conferencing	philips-vc	Cisco IOS XE Release 3.1S	
Phonebook	TCP/UDP	767	Phone	phonebook	Cisco IOS XE Release 3.1S	
Photuris	TCP/UDP	468	Photuris	photuris	Cisco IOS XE Release 3.1S	
PIM	TCP/UDP	103	Protocol Independent Multicast	pim	Cisco IOS XE Release 3.1S	
PIM-RP-DISC	TCP/UDP	496	PIM-RP-DISC	pim-rp-disc	Cisco IOS XE Release 3.1S	
PIP	TCP/UDP	1321	pip	pip	Cisco IOS XE Release 3.1S	
PIPE	TCP/UDP	131	Private IP Encapsulation within IP	pipe	Cisco IOS XE Release 3.1S	
PIRP	TCP/UDP	553	pirp	pirp	Cisco IOS XE Release 3.1S	
PKIX-3-CA-RA	TCP/UDP	829	PKIX-3 CA/RA	pkix-3-ca-ra	Cisco IOS XE Release 3.1S	
PKIX-Timestamp	TCP/UDP	318	pkix-timestamp	pkix-timestamp	Cisco IOS XE Release 3.1S	
PNNI	TCP/UDP	102	PNNI over IP	pnni	Cisco IOS XE Release 3.1S	

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
Pop2	TCP/UDP	109	Post Office Protocol - Version 2	pop2	Cisco IOS XE Release 3.1S	
Pop3	TCP/UDP	110, Heuristic	Post Office Protocol 3	pop3	Cisco IOS XE Release 3.1S	
POV-Ray	TCP/UDP	494	pov-ray	pov-ray	Cisco IOS XE Release 3.1S	
Powerburst	TCP/UDP	485	Air Soft Power Burst	powerburst	Cisco IOS XE Release 3.1S	
PPStream	TCP/UDP	Heuristic	P2P TV Application	ppstream	Cisco IOS XE Release 3.3S	
PPTP	TCP/UDP	1723	Point-to-Point Tunneling Protocol	pptp	Cisco IOS XE Release 3.1S	
	Cisco IOS XE Release 3.1S	Printer	TCP/UDP	515	spooler	printer
Print-SRV	TCP/UDP	170	Network PostScript	print-srv	Cisco IOS XE Release 3.1S	
PRM	TCP/UDP	21	Packet Radio Measurement	prm	Cisco IOS XE Release 3.1S	
PRM-NM	TCP/UDP	409	Prospero Resource Manager Node Man	prm-nm	Cisco IOS XE Release 3.1S	
PRM-SM	TCP/UDP	408	Prospero Resource Manager Sys. Man	prm-sm	Cisco IOS XE Release 3.1S	
Profile	TCP/UDP	136	PROFILE Naming System	profile	Cisco IOS XE Release 3.1S	
Prospero	TCP/UDP	191	Prosper Directory Service	prospero	Cisco IOS XE Release 3.1S	
PTCNameServic e	TCP/UDP	597	PTC Name Service	ptcnameservice	Cisco IOS XE Release 3.1S	
PTP	TCP/UDP	123	Performance Transparency Protocol	ptp	Cisco IOS XE Release 3.1S	

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
PTP-Event	TCP/UDP	319	PTP Event	ptp-event	Cisco IOS XE Release 3.1S	
PTP-General	TCP/UDP	320	PTP General	ptp-general	Cisco IOS XE Release 3.1S	
Pump	TCP/UDP	751	Pump	pump	Cisco IOS XE Release 3.1S	
PUP	TCP/UDP	12	PUP	pup	Cisco IOS XE Release 3.1S	
Purenoise	TCP/UDP	663	purenoise	purenoise	Cisco IOS XE Release 3.1S	
PVP	TCP/UDP	75	Packet Video Protocol	pvp	Cisco IOS XE Release 3.1S	
PWDGen	TCP/UDP	129	Password Generator Protocol	pwdgen	Cisco IOS XE Release 3.1S	
QBIKGDP	TCP/UDP	368	qbikgdp	qbikgdp	Cisco IOS XE Release 3.1S	
QFT	TCP/UDP	189	Queued File Transport	qft	Cisco IOS XE Release 3.1S	
QMQP	TCP/UDP	628	qmqp	qmqp	Cisco IOS XE Release 3.1S	
	QMTP	TCP/UDP	209	The Quick Mail Transfer Protocol	qmtp	Cisco IOS XE Release 3.1S
QNX	TCP/UDP	106	QNX	qnx	Cisco IOS XE Release 3.1S	
QoTD	TCP/UDP	17	Quote of the Day	qotd	Cisco IOS XE Release 3.1S	
QRH	TCP/UDP	752	qrh	qrh	Cisco IOS XE Release 3.1S	
QUOTD	TCP/UDP	762	quotad	quotad	Cisco IOS XE Release 3.1S	
RAP	TCP/UDP	38	Route Access Protocol	rap	Cisco IOS XE Release 3.1S	
RCMD	TCP	512-514	BSD r-commands	rcmd	Cisco IOS XE Release 3.3S	

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
RCP	TCP/UDP	469	Radio Control Protocol	rcp	Cisco IOS XE Release 2.3 Cisco IOS XE Release 3.1S	
RDA	TCP/UDP	630	rda	rda	Cisco IOS XE Release 3.1S	
RDB-DBS-DISP	TCP/UDP	1571	Oracle Remote Data Base	rdb-dbs-disp	Cisco IOS XE Release 3.1S	
RDP	TCP/UDP	27	Reliable Data Protocol	rdp	Cisco IOS XE Release 3.1S	
Realm-RUSD	TCP/UDP	688	ApplianceWare managment protocol	realm-rusd	Cisco IOS XE Release 3.1S	
RE-Mail-CK	TCP/UDP	50	Remote Mail Checking Protocol	re-mail-ck	Cisco IOS XE Release 3.1S	
RemoteFS	TCP/UDP	556	rfs server	remotefs	Cisco IOS XE Release 3.1S	
Remote-KIS	TCP/UDP	185	Remote-kis	remote-kis	Cisco IOS XE Release 3.1S	
REPCMD	TCP/UDP	641	repcmd	repcmd	Cisco IOS XE Release 3.1S	
REPSCMD	TCP/UDP	653	repscmd	repscmd	Cisco IOS XE Release 3.1S	
RESCAP	TCP/UDP	283	rescap	rescap	Cisco IOS XE Release 3.1S	
RIP	TCP/UDP	520	Routing Information Protocol	rip	Cisco IOS XE Release 3.1S	
	RIPING	TCP/UDP	521	ripng	ripng	Cisco IOS XE Release 3.1S
	RIS	TCP/UDP	180	Intergraph	ris	Cisco IOS XE Release 3.1S
RIS-CM	TCP/UDP	748	Russell Info Sci Calendar Manager	ris-cm	Cisco IOS XE Release 3.1S	

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
RJE	TCP/UDP	5	Remote Job Entry	rje	Cisco IOS XE Release 3.1S	
RLP	TCP/UDP	39	Resource Location Protocol	rlp	Cisco IOS XE Release 3.1S	
RLZDBASE	TCP/UDP	635	rlzdbase	rlzdbase	Cisco IOS XE Release 3.1S	
RMC	TCP/UDP	657	rmc	rmc	Cisco IOS XE Release 3.1S	
RMIActivation	TCP/UDP	1098	rmiactivation	rmiactivation	Cisco IOS XE Release 3.1S	
RMIRegistry	TCP/UDP	1099	rmiregistry	rmiregistry	Cisco IOS XE Release 3.1S	
RMonitor	TCP/UDP	560	Rmonitord	rmonitor	Cisco IOS XE Release 3.1S	
RMT	TCP/UDP	411	Remote MT Protocol	rmt	Cisco IOS XE Release 3.1S	
RPC2Portmap	TCP/UDP	369	rpc2portmap	rpc2portmap	Cisco IOS XE Release 3.1S	
RRH	TCP/UDP	753	rrh	rrh	Cisco IOS XE Release 3.1S	
RRP	TCP/UDP	648	Registry Registrar Protocol	rrp	Cisco IOS XE Release 3.1S	
RSH-SPX	TCP/UDP	222	Berkeley rshd with SPX auth	rsh-spx	Cisco IOS XE Release 3.1S	
RSVD	TCP/UDP	168	rsvd	rsvd	Cisco IOS XE Release 3.1S	
RSVP_Tunnel	TCP/UDP	363	rsvp_tunnel	rsvp_tunnel	Cisco IOS XE Release 3.1S	
RSVP-E2E-Ignore	TCP/UDP	134	RSVP-E2E-IGNORE	rsvp-e2e-ignore	Cisco IOS XE Release 3.1S	
Rsync	TCP/UDP	873	Rsync	rsync	Cisco IOS XE Release 3.1S	

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
RTelnet	TCP/UDP	107	Remote Telnet Service	rtelnet	Cisco IOS XE Release 2.3 Cisco IOS XE Release 3.1S	
	RTIP	TCP/UDP	771	rtip	rtip	Cisco IOS XE Release 3.1S
	RTMP	TCP	Heuristic	Real Time Messaging Protocol	rtmp	Cisco IOS XE Release 3.4S
RTSPS	TCP/UDP	322	RTSPS	rtsps	Cisco IOS XE Release 3.1S	
Rushd	TCP/UDP	696	Rushd	rushd	Cisco IOS XE Release 3.1S	
RVD	TCP/UDP	66	MIT Remote Virtual Disk Protocol	rvd	Cisco IOS XE Release 3.1S	
RXE	TCP/UDP	761	rxe	rxe	Cisco IOS XE Release 3.1S	
SAFT	TCP/UDP	487	saft Simple Asynchronous File Transfer	saft	Cisco IOS XE Release 3.1S	
Sanity	TCP/UDP	643	Sanity	sanity	Cisco IOS XE Release 3.1S	
SAT-EXPAK	TCP/UDP	64	SATNET and Backroom EXPAK	sat-expak	Cisco IOS XE Release 3.1S	
SAT-Mon	TCP/UDP	69	SATNET Monitoring	sat-mon	Cisco IOS XE Release 3.1S	
SCC-Security	TCP/UDP	582	scc-security	scc-security	Cisco IOS XE Release 3.1S	
SCC-SP	TCP/UDP	96	Semaphore Communications Sec. Pro.	scc-sp	Cisco IOS XE Release 3.1S	
SCO-DTMgr	TCP/UDP	617	SCO Desktop Administration Server	sco-dtmgr	Cisco IOS XE Release 3.1S	

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
SCOHELP	TCP/UDP	457	scohelp	scohelp	Cisco IOS XE Release 3.1S	
SCOI2ODialog	TCP/UDP	360	scoi2odialog	scoi2odialog	Cisco IOS XE Release 3.1S	
SCO-Inetmgr	TCP/UDP	615	Internet Configuration Manager	sco-inetmgr	Cisco IOS XE Release 3.1S	
SCO-SysMgr	TCP/UDP	616	SCO System Administration Server	sco-sysmgr	Cisco IOS XE Release 3.1S	
SCO-WebsrvrMg3	TCP/UDP	598	SCO Web Server Manager 3	sco-websrvrmg3	Cisco IOS XE Release 3.1S	
SCO-WebsrvrMgr	TCP/UDP	620	SCO WebServer Manager	sco-websrvrmgr	Cisco IOS XE Release 3.1S	
	SCPS	TCP/UDP	105	SCPS	scps	Cisco IOS XE Release 3.1S
SCTP	TCP/UDP	132	Stream Control Transmission Protocol	sctp	Cisco IOS XE Release 3.1S	
SCX-Proxy	TCP/UDP	470	scx-proxy	scx-proxy	Cisco IOS XE Release 3.1S	
SDNSKMP	TCP/UDP	558	SDNSKMP	sdnskmp	Cisco IOS XE Release 3.1S	
SDRP	TCP/UDP	42	Source Demand Routing Protocol	sdrp	Cisco IOS XE Release 3.1S	
Secure-ftp	TCP/UDP	990	ftp protocol, control, over TLS/SSL	secure-ftp	Cisco IOS XE Release 3.1S	
Secure-IRC	TCP/UDP	994	irc protocol over TLS	secure-irc	Cisco IOS XE Release 3.1S	
Secure-LDAP	TCP/UDP	636	ldap protocol over TLS	secure-ldap	Cisco IOS XE Release 3.1S	
Secure-NNTP	TCP/UDP	563	nntp protocol over TLS	secure-nntp	Cisco IOS XE Release 3.1S	
Secure-Pop3	TCP/UDP	995	pop3 protocol over TLS	secure-pop3	Cisco IOS XE Release 3.1S	

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
Secure-Telnet	TCP/UDP	992	telnet protocol over TLS	secure-telnet	Cisco IOS XE Release 3.1S	
Secure-VMTP	TCP/UDP	82	SECURE-VMTP	secure-vmtp	Cisco IOS XE Release 3.1S	
Semantix	TCP/UDP	361	Semantix	semantix	Cisco IOS XE Release 3.1S	
Send	TCP/UDP	169	SEND	send	Cisco IOS XE Release 3.1S	
Server-IPX	TCP/UDP	213	Internetwork Packet Exchange Protocol	server-ipx	Cisco IOS XE Release 3.1S	
Servstat	TCP/UDP	633	Service Status update	servstat	Cisco IOS XE Release 3.1S	
SET	TCP/UDP	257	Secure Electronic Transaction	set	Cisco IOS XE Release 3.1S	
SFS-Config	TCP/UDP	452	Cray SFS config server	sfs-config	Cisco IOS XE Release 3.1S	
	SFS-SMP-Net	TCP/UDP	451	Cray Network Semaphore server	sfs-smp-net	Cisco IOS XE Release 3.1S
SFTP	TCP/UDP	115	Simple File Transfer Protocol	sftp	Cisco IOS XE Release 3.1S	
SGCP	TCP/UDP	440	sgcp	sgcp	Cisco IOS XE Release 3.1S	
SGMP	TCP/UDP	153	sgmp	sgmp	Cisco IOS XE Release 3.1S	
SGMP-Traps	TCP/UDP	160	sgmp-traps	sgmp-traps	Cisco IOS XE Release 3.1S	
Shockwave	TCP/UDP	1626	Shockwave	shockwave	Cisco IOS XE Release 3.1S	
Shrinkwrap	TCP/UDP	358	Shrinkwrap	shrinkwrap	Cisco IOS XE Release 3.1S	
SIAM	TCP/UDP	498	siam	siam	Cisco IOS XE Release 3.1S	

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
SIFT-UFT	TCP/UDP	608	Sender-Initiated/ Unsolicited File Transfer	sift-uft	Cisco IOS XE Release 3.1S	
SILC	TCP/UDP	706	silc	silc	Cisco IOS XE Release 3.1S	
SitaraDir	TCP/UDP	2631	Sitaradir	sitaradir	Cisco IOS XE Release 3.1S	
SitaraMgmt	TCP/UDP	2630	Sitaramgmt	sitaramgmt	Cisco IOS XE Release 3.1S	
Sitaraserver	TCP/UDP	2629	sitaraserver	sitaraserver	Cisco IOS XE Release 3.1S	
SKIP	TCP/UDP	57	SKIP	skip	Cisco IOS XE Release 3.1S	
SKRONK	TCP/UDP	460	skronk	skronk	Cisco IOS XE Release 3.1S	
SM	TCP/UDP	122	SM	sm	Cisco IOS XE Release 3.1S	
Smakynet	TCP/UDP	122	Smakynet	smakynet	Cisco IOS XE Release 3.1S	
SmartSDP	TCP/UDP	426	Smartsdp	smartsdp	Cisco IOS XE Release 3.1S	
SMP	TCP/UDP	121	Simple Message Protocol	smp	Cisco IOS XE Release 3.1S	
	SMPNameRes	TCP/UDP	901	smpnameres	smpnameres	Cisco IOS XE Release 3.1S
	SMSD	TCP/UDP	596	smsd	smsd	Cisco IOS XE Release 3.1S
SMSP	TCP/UDP	413	Storage Management Services Protocol	smsp	Cisco IOS XE Release 3.1S	
SMUX	TCP/UDP	199	SMUX	smux	Cisco IOS XE Release 3.1S	
SNAGas	TCP/UDP	108	SNA Gateway Access Server	snagas	Cisco IOS XE Release 3.1S	
Snare	TCP/UDP	509	Snare	snare	Cisco IOS XE Release 3.1S	

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
S-Net	TCP/UDP	166	Sirius Systems	s-net	Cisco IOS XE Release 3.1S	
SNP	TCP/UDP	109	Sitara Networks Protocol	snp	Cisco IOS XE Release 3.1S	
SNPP	TCP/UDP	444	Simple Network Paging Protocol	snpp	Cisco IOS XE Release 3.1S	
SNTP-Heartbeat	TCP/UDP	580	SNTP HEARTBEAT	sntp-heartbeat	Cisco IOS XE Release 3.1S	
SoftPC	TCP/UDP	215	Insignia Solutions	softpc	Cisco IOS XE Release 3.1S	
Sonar	TCP/UDP	572	Sonar	sonar	Cisco IOS XE Release 3.1S	
SPMP	TCP/UDP	656	spmp	spmp	Cisco IOS XE Release 3.1S	
Sprite-RPC	TCP/UDP	90	Sprite RPC Protocol	sprite-rpc	Cisco IOS XE Release 3.1S	
SPS	TCP/UDP	130	Secure Packet Shield	sps	Cisco IOS XE Release 3.1S	
SPSC	TCP/UDP	478	spsc	spsc	Cisco IOS XE Release 3.1S	
SQL*Net	TCP/UDP	66	Oracle SQL*NET	sql*net	Cisco IOS XE Release 3.1S	
SQLExec	TCP/UDP	9088	SQL Informix	sqlexec	Cisco IOS XE Release 3.1S	
SQL-Net	TCP/UDP	150	SQL-NET	sql-net	Cisco IOS XE Release 3.1S	
	Cisco IOS XE Release 3.1S	SQLServ	TCP/UDP	118	SQL Services	sqlserv
SQLServer	TCP/UDP	1433	Microsoft-SQL-Server	sqlserver	Cisco IOS XE Release 3.1S	
SRC	TCP/UDP	200	IBM System Resource Controller	src	Cisco IOS XE Release 3.1S	
SRMP	TCP/UDP	193	Spider Remote Monitoring Protocol	srmp	Cisco IOS XE Release 3.1S	

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
SRP	TCP/UDP	119	SpectraLink Radio Protocol	srp	Cisco IOS XE Release 3.1S	
SRSSend	TCP/UDP	362	srssend	srssend	Cisco IOS XE Release 3.1S	
SS7NS	TCP/UDP	477	ss7ns	ss7ns	Cisco IOS XE Release 3.1S	
SSCOPMCE	TCP/UDP	128	SSCOPMCE	sscopmce	Cisco IOS XE Release 3.1S	
SSH	TCP/UDP	22	Secure Shell Protocol	ssh	Cisco IOS XE Release 3.1S	
Sshell	TCP/UDP	614	SSLshell	sshell	Cisco IOS XE Release 3.1S	
	SSL			Secure Socket Layer Protocol	ssl	Cisco IOS XE Release 3.5S
SST	TCP/UDP	266	SCSI on ST	sst	Cisco IOS XE Release 3.1S	
ST	TCP/UDP	5	Stream	st	Cisco IOS XE Release 3.1S	
StatSRV	TCP/UDP	133	Statistics Service	statsrv	Cisco IOS XE Release 3.1S	
STMF	TCP/UDP	501	stmf	stmf	Cisco IOS XE Release 3.1S	
STP	TCP/UDP	118	Schedule Transfer Protocol	stp	Cisco IOS XE Release 3.1S	
StreetTalk	TCP/UDP	566	Streettalk	streettalk	Cisco IOS XE Release 3.1S	
Stun-NAT	TCP/UDP	3478	STUN	stun-nat	Cisco IOS XE Release 3.1S	
STX	TCP/UDP	527	Stock IXChange	stx	Cisco IOS XE Release 3.1S	
Submission	TCP/UDP	587	Submission	submission	Cisco IOS XE Release 3.1S	
	Subntbcst_TFTP	TCP/UDP	247	subntbcst_tftp	subntbcst_tftp	Cisco IOS XE Release 3.1S

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
SU-MIT-TG	TCP/UDP	89	SU/MIT Telnet Gateway	su-mit-tg	Cisco IOS XE Release 3.1S	
Sun-DR	TCP/UDP	665	sun-dr	sun-dr	Cisco IOS XE Release 3.1S	
Sun-ND	TCP/UDP	77	SUN ND PROTOCOL-Temporary	sun-nd	Cisco IOS XE Release 3.1S	
SupDup	TCP/UDP	95	SUPDUP	supdup	Cisco IOS XE Release 3.1S	
Surf	TCP/UDP	1010	Surf	surf	Cisco IOS XE Release 3.1S	
Sur-Meas	TCP/UDP	243	Survey Measurement	sur-meas	Cisco IOS XE Release 3.1S	
Svrloc	TCP/UDP	427	Server Location	svrloc	Cisco IOS XE Release 3.1S	
Swift-RVF	TCP/UDP	97	Swift Remote Virtural File Protocol	swift-rvf	Cisco IOS XE Release 3.1S	
Swipe	TCP/UDP	53	IP with Encryption	swipe	Cisco IOS XE Release 3.1S	
Synoptics-Trap	TCP/UDP	412	Trap Convention Port	synoptics-trap	Cisco IOS XE Release 3.1S	
Synotics-Broker	TCP/UDP	392	SynOptics Port Broker Port	synotics-broker	Cisco IOS XE Release 3.1S	
Synotics-Relay	TCP/UDP	391	SynOptics SNMP Relay Port	synotics-relay	Cisco IOS XE Release 3.1S	
Systat	TCP/UDP	11	Active Users	systat	Cisco IOS XE Release 2.3 Cisco IOS XE Release 3.1S	
TACACS	TCP/UDP	49, 65	Terminal Access Controller Access Control System	tacacs	Cisco IOS XE Release 2.3 Cisco IOS XE Release 3.1S	
TAC News	TCP/UDP	98	TAC News	tacnews	Cisco IOS XE Release 3.1S	

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
Talk	TCP/UDP	517	Talk	talk	Cisco IOS XE Release 3.1S	
TCF	TCP/UDP	87	TCF	tcf	Cisco IOS XE Release 3.1S	
	Cisco IOS XE Release 3.1S	TD-Replica	TCP/UDP	268	Tobit David Replica	td-replica
TD-Service	TCP/UDP	267	Tobit David Service Layer	td-service	Cisco IOS XE Release 3.1S	
Teedtap	TCP/UDP	559	Teedtap	teedtap	Cisco IOS XE Release 3.1S	
Tell	TCP/UDP	754	Send	tell	Cisco IOS XE Release 3.1S	
Telnet	TCP/UDP	23	Telnet	telnet	Cisco IOS XE Release 3.1S	
Tempo	TCP/UDP	526	newdate	tempo	Cisco IOS XE Release 3.1S	
Tenfold	TCP/UDP	658	Tenfold	tenfold	Cisco IOS XE Release 3.1S	
Texar	TCP/UDP	333	Texar Security Port	texar	Cisco IOS XE Release 3.1S	
TICF-1	TCP/UDP	492	Transport Independent Convergence for FNA	ticf-1	Cisco IOS XE Release 3.1S	
TICF-2	TCP/UDP	493	Transport Independent Convergence for FNA	ticf-2	Cisco IOS XE Release 3.1S	
Timbuktu	TCP/UDP	407	Timbuktu	timbuktu	Cisco IOS XE Release 3.1S	
Time	TCP/UDP	37	Time	time	Cisco IOS XE Release 2.3 Cisco IOS XE Release 3.1S	
Timed	TCP/UDP	525	Timeserver	timed	Cisco IOS XE Release 3.1S	

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
TINC	TCP/UDP	655	tinc	tinc	Cisco IOS XE Release 3.1S	
TLISRV	TCP/UDP	1527	Oracle	tlisrv	Cisco IOS XE Release 3.1S	
TLSP	TCP/UDP	56	Transport Layer Security Protocol	tlsp	Cisco IOS XE Release 3.1S	
TNETOS	TCP/UDP	377	NEC Corporation	tnETOS	Cisco IOS XE Release 3.1S	
	TNS-CML	TCP/UDP	590	tns-cml	tns-cml	Cisco IOS XE Release 3.1S
TN-TL-FD1	TCP/UDP	476	tn-tl-fd1	tn-tl-fd1	Cisco IOS XE Release 3.1S	
	TOR			TOR Anonymity Online	tor	Cisco IOS XE Release 3.5S
TP++	TCP/UDP	39	TP++ Transport Protocol	tp++	Cisco IOS XE Release 3.1S	
TPIP	TCP/UDP	594	tpip	tpip	Cisco IOS XE Release 3.1S	
Trunk-1	TCP/UDP	23	Trunk-1	trunk-1	Cisco IOS XE Release 3.1S	
Trunk-2	TCP/UDP	24	Trunk-2	trunk-2	Cisco IOS XE Release 3.1S	
TServer	TCP/UDP	450	Computer Supported Telecomunicatio n Applications	tserver	Cisco IOS XE Release 3.1S	
TTP	TCP/UDP	84	TTP	ttp	Cisco IOS XE Release 3.1S	
UAAC	TCP/UDP	145	UAAC Protocol	uaac	Cisco IOS XE Release 3.1S	
UARPs	TCP/UDP	219	Unisys ARPs	uarps	Cisco IOS XE Release 3.1S	
UDPLite	TCP/UDP	136	UDPLite	udplite	Cisco IOS XE Release 3.1S	
UIS	TCP/UDP	390	uis	uis	Cisco IOS XE Release 3.1S	

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
uLISTProc	TCP/UDP	372	List Processor	ulistproc	Cisco IOS XE Release 3.1S	
ULP	TCP/UDP	522	ulp	ulp	Cisco IOS XE Release 3.1S	
ULPNet	TCP/UDP	483	ulpnet	ulpnet	Cisco IOS XE Release 3.1S	
Unidata-LDM	TCP/UDP	388	Unidata LDM	unidata-ldm	Cisco IOS XE Release 3.1S	
Unify	TCP/UDP	181	Unify	unify	Cisco IOS XE Release 3.1S	
UPS	TCP/UDP	401	Uninterruptible Power Supply	ups	Cisco IOS XE Release 3.1S	
	URM	TCP/UDP	606	Cray Unified Resource Manager	urm	Cisco IOS XE Release 3.1S
	UTI	TCP/UDP	120	UTI	uti	Cisco IOS XE Release 3.1S
Utime	TCP/UDP	519	Unixtime	utime	Cisco IOS XE Release 3.1S	
UTMPCD	TCP/UDP	431	utmpcd	utmpcd	Cisco IOS XE Release 3.1S	
UTMPSD	TCP/UDP	430	utmpsd	utmpsd	Cisco IOS XE Release 3.1S	
UUCP	TCP/UDP	540	uucpd	uucp	Cisco IOS XE Release 3.1S	
UUCP-Path	TCP/UDP	117	UUCP Path Service	uucp-path	Cisco IOS XE Release 3.1S	
UUCP-rLogin	TCP/UDP	541	uucp-rlogin	uucp-rlogin	Cisco IOS XE Release 3.1S	
UUIDGEN	TCP/UDP	697	UUIDGEN	uuidgen	Cisco IOS XE Release 3.1S	
VACDSM-App	TCP/UDP	671	VACDSM-APP	vacdsm-app	Cisco IOS XE Release 3.1S	
VACDSM-SWS	TCP/UDP	670	VACDSM-SWS	vacdsm-sws	Cisco IOS XE Release 3.1S	

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
VATP	TCP/UDP	690	Velazquez Application Transfer Protocol	vatp	Cisco IOS XE Release 3.1S	
VEMMI	TCP/UDP	575	vemmi	vemmi	Cisco IOS XE Release 3.1S	
VID	TCP/UDP	769	vid	vid	Cisco IOS XE Release 3.1S	
Videotex	TCP/UDP	516	videotex	videotex	Cisco IOS XE Release 3.1S	
VISA	TCP/UDP	70	VISA Protocol	visa	Cisco IOS XE Release 3.1S	
VNC	TCP/UDP	5800, 5900, 5901	Virtual Network Computing	vnc	Cisco IOS XE Release 2.3	
VMNet	TCP/UDP	175	vmnet	vmnet	Cisco IOS XE Release 3.1S	
VMPWSCS	TCP/UDP	214	vmpwscs	vmpwscs	Cisco IOS XE Release 3.1S	
VMTP	TCP/UDP	81	VMTP	vmtp	Cisco IOS XE Release 3.1S	
	VNAS	TCP/UDP	577	vnas	vnas	Cisco IOS XE Release 3.1S
VPP	TCP/UDP	677	Virtual Presence Protocol	vpp	Cisco IOS XE Release 3.1S	
VPPS-QUA	TCP/UDP	672	vpps-qua	vpps-qua	Cisco IOS XE Release 3.1S	
VPPS-VIA	TCP/UDP	676	vpps-via	vpps-via	Cisco IOS XE Release 3.1S	
VRRP	TCP/UDP	112	Virtual Router Redundancy Protocol	vrrp	Cisco IOS XE Release 3.1S	
VSINet	TCP/UDP	996	vsinet	vsinet	Cisco IOS XE Release 3.1S	
VSLMP	TCP/UDP	312	vslmp	vslmp	Cisco IOS XE Release 3.1S	
WAP-Push	TCP/UDP	2948	WAP PUSH	wap-push	Cisco IOS XE Release 3.1S	

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
WAP-Push-HTTP	TCP/UDP	4035	WAP Push OTA-HTTP port	wap-push-http	Cisco IOS XE Release 3.1S	
WAP-Push-HTTPS	TCP/UDP	4036	WAP Push OTA-HTTP secure	wap-push-https	Cisco IOS XE Release 3.1S	
WAP-Pushsecure	TCP/UDP	2949	WAP PUSH SECURE	wap-pushsecure	Cisco IOS XE Release 3.1S	
WAP-VACL-S	TCP/UDP	9207	WAP vCal Secure	wap-vcal-s	Cisco IOS XE Release 3.1S	
WAP-VCAL	TCP/UDP	9205	WAP vCal	wap-vcal	Cisco IOS XE Release 3.1S	
WAP-VCARD	TCP/UDP	9204	WAP vCard	wap-vcard	Cisco IOS XE Release 3.1S	
WAP-VCARD-S	TCP/UDP	9206	WAP vCard Secure	wap-vcard-s	Cisco IOS XE Release 3.1S	
WAP-WSP	TCP/UDP	9200	WAP connectionless session service	wap-wsp	Cisco IOS XE Release 3.1S	
WAP-WSP-S	TCP/UDP	9202	WAP secure connectionless session service	wap-wsp-s	Cisco IOS XE Release 3.1S	
WAP-WSP-WTP	TCP/UDP	9201	WAP session service	wap-wsp-wtp	Cisco IOS XE Release 3.1S	
WAP-WSP-WTP-S	TCP/UDP	9203	WAP secure session service	wap-wsp-wtp-s	Cisco IOS XE Release 3.1S	
	WB-Expak	TCP/UDP	79	WIDEBAND EXPAK	wb-expak	Cisco IOS XE Release 3.1S
WB-Mon	TCP/UDP	78	WIDEBAND Monitoring	wb-mon	Cisco IOS XE Release 3.1S	
Webster	TCP/UDP	765	Webster	webster	Cisco IOS XE Release 3.1S	
	Webex Meeting	TCP	Heuristic	Webex Meeting	webex-meeting	Cisco IOS XE Release 3.4S
WhoAmI	TCP/UDP	565	whoami	whoami	Cisco IOS XE Release 3.1S	

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
Whois++	TCP/UDP	63	whois++ Service	whois++	Cisco IOS XE Release 2.3 Cisco IOS XE Release 3.1S	
	Winny			winny2 and winnyP traffic	winny	Cisco IOS XE Release 3.5S
	Windows Update	TCP	80, 443, Heuristic	Windows Update	windows-update	Cisco IOS XE Release 3.4S
WorldFusion	TCP/UDP	2595	World Fusion	worldfusion	Cisco IOS XE Release 3.1S	
WPGS	TCP/UDP	780	wpgs	wpgs	Cisco IOS XE Release 3.1S	
WSN	TCP/UDP	74	Wang Span Network	wsn	Cisco IOS XE Release 3.1S	
XAct-Backup	TCP/UDP	911	Xact-backup	xact-backup	Cisco IOS XE Release 3.1S	
X-Bone-CTL	TCP/UDP	265	Xbone CTL	x-bone-ctl	Cisco IOS XE Release 3.1S	
XDMCP	TCP/UDP	177	X Display Manager Control Protocol	xdmcp	Cisco IOS XE Release 2.3 Cisco IOS XE Release 3.1S	
XDTP	TCP/UDP	3088	eXtensible Data Transfer Protocol	xdtp	Cisco IOS XE Release 3.1S	
XFER	TCP/UDP	82	XFER Utility	xfer	Cisco IOS XE Release 3.1S	
	XMPP Client			XMPP Client Connection	xmpp-client	Cisco IOS XE Release 3.5S
XNET	TCP/UDP	15	Cross Net Debugger	xnet	Cisco IOS XE Release 3.1S	
XNS-Auth	TCP/UDP	56	XNS Authentication	xns-auth	Cisco IOS XE Release 3.1S	
XNS-CH	TCP/UDP	54	XNS Clearinghouse	xns-ch	Cisco IOS XE Release 3.1S	
XNS-Courier	TCP/UDP	165	Xerox	xns-courier	Cisco IOS XE Release 3.1S	

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
	XNS-IDP	TCP/UDP	22	XEROX NS IDP	xns-idp	Cisco IOS XE Release 3.1S
XNS-Mail	TCP/UDP	58	XNS mail	xns-mail	Cisco IOS XE Release 3.1S	
XNS-Time	TCP/UDP	52	XNS Time Protocol	xns-time	Cisco IOS XE Release 3.1S	
XTP	TCP/UDP	36	XTP	xtp	Cisco IOS XE Release 3.1S	
XVTTP	TCP/UDP	508	xvttp	xvttp	Cisco IOS XE Release 3.1S	
XYPlex-Mux	TCP/UDP	173	Xyplex	xyplex-mux	Cisco IOS XE Release 3.1S	
X Windows	TCP	6000-6003	X Window System	xwindows	Cisco IOS XE Release 2.3 Cisco IOS XE Release 3.1S	
z39.50	TCP/UDP	210	ANSI Z39.50	z39.50	Cisco IOS XE Release 3.1S	
Zannet	TCP/UDP	317	Zannet	zannet	Cisco IOS XE Release 3.1S	
ZServ	TCP/UDP	346	Zebra server	zserv	Cisco IOS XE Release 3.1S	
AN	IP	107	Active Networks	an	Cisco IOS XE Release 3.1S	
AOL-Protocol[5]	Cisco IOS XE Release 3.3S		TCP	5190	America OnLine Protocol	aol-protocol
ARGUS	IP		13	ARGUS	argus	Cisco IOS XE Release 3.1S
ARIS	IP		104	ARIS	aris	Cisco IOS XE Release 3.1S
AX25	IP		93	AX.25 Frames	ax25	Cisco IOS XE Release 3.1S
BBNR RCC Mon	IP		10	BBN RCC Monitoring	bbnrccmon	Cisco IOS XE Release 3.1S

5 AOL-Protocol classifies traffic shared between ICQ and AOL clients.

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
BLIZWOW	TCp, UDP		3724	World of Warcraft Gaming Protocol	blizwow	Cisco IOS XE Release 3.1S
BNA		IP	49	BNA	bna	Cisco IOS XE Release 3.1S
	BR-SAT-Mon	IP	76	Backroom SATNET Monitoring	br-sat-mon	Cisco IOS XE Release 3.1S
	CBT	IP	7	CBT	cbt	Cisco IOS XE Release 3.1S
CFTP	IP	62	CFTP	cftp	Cisco IOS XE Release 3.1S	
Choas	IP	16	Chaos	chaos	Cisco IOS XE Release 3.1S	
Compaq-Peer	IP	110	Compaq Peer Protocol	compaq-peer	Cisco IOS XE Release 3.1S	
CPHB	IP	73	Computer Protocol Heart Beat	cphb	Cisco IOS XE Release 3.1S	
CPNX	IP	72	Computer Protocol Network Executive	cpnx	Cisco IOS XE Release 3.1S	
CRTP	IP	126	Combat Radio Transport Protocol	crtp	Cisco IOS XE Release 3.1S	
CRUDP	IP	127	Combat Radio User Datagram	crudp	Cisco IOS XE Release 3.1S	
DCCP	IP	33	Datagram Congestion Control Protocol	dccp	Cisco IOS XE Release 3.1S	
DCN-Meas	IP	19	DCN Measurement Subsystems	dcn-meas	Cisco IOS XE Release 3.1S	
DDP	IP	37	Datagram Delivery Protocol	ddp	Cisco IOS XE Release 3.1S	

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
DDX	IP	116	D-II Data Exchange	ddx	Cisco IOS XE Release 3.1S	
DGP	IP	86	Dissimilar Gateway Protocol	dgp	Cisco IOS XE Release 3.1S	
DSR	IP	48	Dynamic Source Routing Protocol	dsr	Cisco IOS XE Release 3.1S	
EGP	IP	8	Exterior Gateway Protocol	egp	Cisco IOS XE Release 3.1S	
EIGRP	IP	88	Enhanced Interior Gateway Routing Protocol	eigrp	Cisco IOS XE Release 3.1S	
EMCON	IP	14	EMCON	emcon	Cisco IOS XE Release 3.1S	
Encap	IP	98	Encapsulation Header	encap	15.1(3)T	
EtherIP	IP	97	Ethernet-within-IP Encapsulation	etherip	Cisco IOS XE Release 3.1S	
	FC	IP	133	Fibre Channel	fc	Cisco IOS XE Release 3.1S
FIRE	IP	125	FIRE	fire	Cisco IOS XE Release 3.1S	
GGP	IP	3	Gateway-to-Gateway	ggp	Cisco IOS XE Release 3.1S	
GMTP	IP	100	GMTP	gmtp	Cisco IOS XE Release 3.1S	
GRE	IP	47	General Routing Encapsulation	gre	Cisco IOS XE Release 3.1S	
HIP	IP	139	Host Identity Protocol	hip	Cisco IOS XE Release 3.1S	
HMP	IP	20	Host Monitoring	hmp	Cisco IOS XE Release 3.1S	
HopOpt	IP	0	IPv6 Hop-by-Hop Option	hopopt	Cisco IOS XE Release 3.1S	
ICQ	TCP	80, Heuristic	I seek you Instant Messaging Protocol	icq	Cisco IOS XE Release 3.3S	

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
IATP	IP	117	Interactive Agent Transfer Protocol	iatp	Cisco IOS XE Release 3.1S	
ICMP	IP	1	Internet Control Message	icmp	Cisco IOS XE Release 3.1S	
IDPR	IP	35	Inter-Domain Policy Routing Protocol	idpr	Cisco IOS XE Release 3.1S	
IDPR-CMTP	IP	38	IDPR Control Message Transport Protocol	idpr-cmtp	Cisco IOS XE Release 3.1S	
IDRP	IP	45	Inter-Domain Routing Protocol	idrp	Cisco IOS XE Release 3.1S	
IFMP	IP	101	Ipsilon Flow Management Protocol	ifmp	Cisco IOS XE Release 3.1S	
IGRP	IP	9	Cisco interior gateway	igrp	Cisco IOS XE Release 3.1S	
IL	IP	40	IL Transport Protocol	il	Cisco IOS XE Release 3.1S	
I-NLSP	IP	52	Integrated Net Layer Security TUBA	i-nlsp	Cisco IOS XE Release 3.1S	
IMPCOMP	IP	108	IP Payload Compression Protocol	ipcomp	Cisco IOS XE Release 3.1S	
	IPCU	IP	71	Internet Packet Core Utility	ipcu	Cisco IOS XE Release 3.1S
IPinIP	IP	4	IP in IP	ipinip	Cisco IOS XE Release 3.1S	
IPIP	IP	94	IP-within-IP Encapsulation Protocol	ipip	Cisco IOS XE Release 3.1S	
IPLT	IP	129	IPLT	iplt	Cisco IOS XE Release 3.1S	
IPPC	IP	67	Internet Pluribus Packet Core	ippc	Cisco IOS XE Release 3.1S	

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
IPv6-Frag	IP	44	Fragment Header for IPv6	ipv6-frag	Cisco IOS XE Release 3.1S	
IPv6-ICMP	IP	58	ICMP for IPv6	ipv6-icmp	Cisco IOS XE Release 3.1S	
IPv6INIP	IP	41	Ipv6 encapsulated	ipv6inip	Cisco IOS XE Release 3.1S	
IPv6-NONXT	IP	59	No Next Header for IPv6	ipv6-nonxt	Cisco IOS XE Release 3.1S	
IPv6-Opts	IP	60	Destination Options for IPv6	ipv6-opts	Cisco IOS XE Release 3.1S	
IPv6-Route	IP	43	Routing Header for IPv6	ipv6-route	Cisco IOS XE Release 3.1S	
IRTP	IP	28	Internet Reliable Transaction	irtp	Cisco IOS XE Release 3.1S	
ISIS	IP	124	ISIS over IPv4	isis	Cisco IOS XE Release 3.1S	
ISO-TP4	IP	29	ISO Transport Protocol Class 4	iso-tp4	Cisco IOS XE Release 3.1S	
IXP-in-IP	IP	111	IPX in IP	ixp-in-ip	Cisco IOS XE Release 3.1S	
LARP	IP	91	Locus Address Resolution Protocol	larp	Cisco IOS XE Release 3.1S	
Leaf-1	IP	25	Leaf-1	leaf-1	Cisco IOS XE Release 3.1S	
6to4 IPv6 Tunneled	L3 Protocol	--	6to4 IPv6 Tunneled	6to4 IPv6 Tunneled	Cisco IOS XE Release 3.2S	
	AYIYA IPv6 Tunneled	UDP	5072	IPv6 Tunneled based on AYIYA traffic	AYIYA IPv6 Tunneled	Cisco IOS XE Release 3.2S
	BabelGum	TCP, UDP	80 + Heuristic	BabelGum	BabelGum	Cisco IOS XE Release 3.2S
Baidu Movie	TCP, UDP	80 + Heuristic	Baidu Movie	Baidu Movie	Cisco IOS XE Release 3.2S	

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
DHCP	UDP	67,68	Dynamic Host Configuration Protocol	dhcp	Cisco IOS XE Release 3.2S	
DHT	UDP	Heuristic	Distributed sloppy Hash Table Protocol	DHT	Cisco IOS XE Release 3.2S	
Filetopia	TCP	Heuristic	Filetopia P2P file sharing	filetopia	Cisco IOS XE Release 3.2S	
Fring-VoIP	UDP	Heuristic	Fring VoIP	fring-voip	Cisco IOS XE Release 3.3S	
GoogleEarth	TCP	80 + Heuristic	GoogleEarth	GoogleEarth	Cisco IOS XE Release 3.2S	
Guruguru	TCP	Heuristic	Guruguru	guruguru	Cisco IOS XE Release 3.2S	
IMAP	TCP	143,220	Internet Mail Access Protocol	imap	Cisco IOS XE Release 3.2S	
IRC	TCP	80 + Heuristic	IRC	IRC	Cisco IOS XE Release 3.2S	
ISATAP IPv6 Tunneled	L3 Protocol		Intra-Site Automatic Tunnel Addressing Protocol (ISATAP) IPv6 Tunneled	ISATAP IPv6 Tunneled	Cisco IOS XE Release 3.2S	
iTunes	TCP	80 + Heuristic	iTunes	iTunes	Cisco IOS XE Release 3.2S	
Kuro	TCP	Heuristic	Kuro	kuro	Cisco IOS XE Release 3.3S	
Manolito	TCP, UDP	TCP - Heuristic port, UDP - 41170	Manolito P2P music sharing protocol	manolito	Cisco IOS XE Release 3.2S	
MapleStory	TCP	Heuristic	Maple Story Gaming Protocol	MapleStory	Cisco IOS XE Release 3.2S	
	Cisco IOS XE Release 3.2S					

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
		MGCP	TCP, UDP	UDP 2427/2727 - TCP 2427/2428/2727 + Heuristic	Media Gateway Control Protocol	mgcp
	Microsoftds	TCP, UDP	445	Microsoft-ds	microsoftds	Cisco IOS XE Release 3.3S
	MSN Messenger	TCP	1080,1863, 80, Hueristic	MSN Messenger	msn-messenger	Cisco IOS XE Release 3.3S
MyJabber File Transfer	TCP	Heuristic	MyJabber File Transfer	MyJabber File Transfer	Cisco IOS XE Release 3.2S	
Napster	TCP	80 + Heuristic	Napster	napster	Cisco IOS XE Release 3.2S	
Netshow	TCP	1755 + Heuristic	Netshow	netshow	Cisco IOS XE Release 3.2S	
NNTP	TCP	TCP - 119 + Heuristic, UDP -119	Network News Transfer Protocol	NNTP	Cisco IOS XE Release 3.2S	
NTP	UDP	123	Network Time Protocol	NTP	Cisco IOS XE Release 3.2S	
Pando	TCP,UDP	TCP - 80 + Heuristic, UDP - Heuristic	Pando	Pando	Cisco IOS XE Release 3.2S	
POCO	TCP, UDP	Heuristic	POCO File-Sharing Application	POCO	Cisco IOS XE Release 3.2S	
POP3	TCP	110, Heuristic	POP3	POP3	Cisco IOS XE Release 3.2S	
PPTP	TCP	1723	Point-to-Point Tunneling Protocol	pptp	Cisco IOS XE Release 3.2S	
RADIUS	UDP	1812, 1813	Remote Authentication Dial In User Service protocol	radius	Cisco IOS XE Release 3.3S	
	Cisco IOS XE Release 3.1S	SIP	TCP, UDP	TCP/UDP - 5060 + Heuristic	Session Initiation Protocol	sip

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
	Skinny	TCP	2000-2002	Skinny Call Control Protocol	skinny	Cisco IOS XE Release 3.3S
	Soribada	TCP	TCP - 80 + Heuristic, UDP - Heuristic	Soribada, Korean P2P music sharing Protocol	soribada	Cisco IOS XE Release 3.2S
	Soulseek	TCP	Heuristic	SoulSeek internet download manager Protocol	soulseek	Cisco IOS XE Release 3.3S
TeamSpeak	UDP	Heuristic	TeamSpeak internet based voice-conferencing Protocol	TeamSpeak	Cisco IOS XE Release 3.2S	
Telepresence-control	TCP,UDP	TCP- 5060, UDP-Heuristic	Telepresence-control	telepresence-control	Cisco IOS XE Release 3.2S	
Teredo IPv6 Tunneled	TCP,UDP	TCP-Heuristic, UDP - 3544 + Heuristic	Teredo IPv6 Tunneled	teredo-ipv6-tunneled	Cisco IOS XE Release 3.2S	
TFTP	UDP	69	Trivial File Transfer Protocol	tftp	Cisco IOS XE Release 3.2S	
TomatoPang	TCP	Heuristic	TomatoPang P2P Sharing Protocol	TomatoPang	Cisco IOS XE Release 3.2S	
Tunnel-HTTP	TCP	80 + Heuristic	HTTP Tunneling	tunnel-http	Cisco IOS XE Release 3.2S	
Ventrilo	TCP, UDP	Heuristic	Ventrilo VoIP Protocol	Ventrilo	Cisco IOS XE Release 3.2S	
Waste	TCP/UDP	Heuristic	Waste	waste	Cisco IOS XE Release 3.3S	
WebThunder	TCP, UDP	TCP-80, UDP-Heuristic	WebThunder Peer-to-Peer File Sharing	WebThunder	Cisco IOS XE Release 3.2S	
Yahoo-Messenger	TCP	TCP-5050/5101/1080/119/80 /Heuristic	Yahoo Messenger	yahoo-messenger	Cisco IOS XE Release 3.3S	

Category	Protocol	Type	WKP/IP Protocol	Description	Syntax	Cisco IOS XE Release
	Yahoo-Messenger- VoIP	TCP/UDP	Heuristic	Yahoo Messenger VoIP	yahoo-voip-messenger	Cisco IOS XE Release 3.3S
	Yahoo-Messenger- VoIP Yahoo-VoIP-over- SIP	TCP/UDP	5060/Heuristic	Yahoo VoIP over SIP	yahoo-voip-over-sip	Cisco IOS XE Release 3.4S

NBAR Protocol Discovery

NBAR includes a feature called Protocol Discovery. Protocol discovery provides an easy way to discover protocol packets passing through an interface. For more information about Protocol Discovery, see the "Enabling Protocol Discovery" module.

NBAR Protocol Discovery MIB

The NBAR Protocol Discovery MIB expands the capabilities of NBAR Protocol Discovery by providing the following new functionality through Simple Network Management Protocol (SNMP):

- Enable or disable Protocol Discovery per interface.
- Display Protocol Discovery statistics.
- Configure and display multiple top-n tables that list protocols by bandwidth usage.
- Configure thresholds based on traffic of particular NBAR-supported protocols or applications that report breaches and send notifications when these thresholds are exceeded.

For more information about the NBAR Protocol Discovery MIB, see the "Network-Based Application Recognition Protocol Discovery Management Information Base" module.

NBAR Configuration Processes

You can configure NBAR in the following two ways:

- Configuring NBAR using the MQC
- Enabling Protocol Discovery

For more information about the NBAR configuration, see the Cisco IOS XE QoS Configuration Guide.

Restarting NBAR

NBAR is restarted under the following circumstances.

- Custom protocol addition via CLI
- PDLM load
- RP switchover
- FP switchover
- Protocol pack installation
- Link-age change

Restart involves deactivating and reactivating NBAR. During this time, all packets are classified as 'Unknown' by NBAR. Once NBAR is reactivated, classification is activated.

Note Protocol Discovery statistics will be lost with RP Switchover.

NBAR Protocol Pack

The NBAR Protocol Pack provides an easy way to update protocols supported by NBAR without replacing the base IOS image that is already present in the router. A protocol pack is a set of protocols developed and packed together. For more information about the NBAR Protocol Pack, see the NBAR Protocol Pack feature document in Cisco IOS XE QoS Configuration Guide.

NBAR and Multipacket Classification

In Cisco IOS XE Release 3.3S, NBAR provides the ability to search large number of multipacket signatures simultaneously. This new technique is supported for many of the new protocols in Cisco IOS XE Release 3.3S and later releases. This technique also provides improved performance and accuracy for other protocols. Along with the support for new signatures, the multipacket classification capabilities change NBAR behavior in the following ways:

1. NBAR classification requires any number of payload packets between 1 and 15 packets in a flow depending on the protocol. Retransmitted packets are not counted in this process of calculation.
2. NBAR will not classify flows without any payload packets or any TCP payload packet with a wrong sequence number even if there are 15 payload packets for classification.
3. TCP retransmitted packets are not counted as valid packets for classification in the Multipacket Engine module. These type of packets can delay the classification until a sufficient number of valid payload packets are accumulated.
4. Payload packets with only static signatures in NBAR are classified after the single-packet and multipacket protocols are processed and failed. Therefore, a maximum of 15 payload packets can be classified as unknown until the final (static) classification decision is taken.
5. Due to these restrictions, custom protocols can be used to force the classification of the first packet, ignoring the existence of payload or correct sequence numbers in the port-based classification.

NBAR on VRF Interfaces

In Cisco IOS XE Release 3.3S and later releases, the NBAR IPv4 and IPv6 classification on VRF interfaces is supported.

Note Classification for Citrix protocol with "app" subclassification is not guaranteed on VRF interfaces when NBAR is enabled on VRF interfaces.

NBAR and IPv6

In Cisco IOS XE Release 3.3S and later releases, the following types of classification are supported:

- NBAR provides static port-based classification and IP protocol-based classification for IPv6 packets.
- NBAR supports IPv6 classification in protocol discovery mode, but not in MQC mode.

- NBAR always reads the next header field in the fixed IPv6 header to determine the transport layer protocol used by the packet's payload for IPv6 packets. If an IPv6 packet contains one or more extension headers, NBAR will not skip to the last IPv6 extension header to read the actual protocol type instead, NBAR classifies the packet as an IPv6 extension header packet.
- NBAR Support for IPv6 from Cisco IOS XE Release 3.5S and Later Releases, page 79

NBAR Support for IPv6 from Cisco IOS XE Release 3.5S and Later Releases

In Cisco IOS XE Release 3.5S and later releases, NBAR supports the following types of classification:

- Native IPv6 classification.
- Classification of IPv6 traffic flows inside tunneled IPv6 over IPv4 and teredo.
- IPv6 classification in protocol discovery mode and in MQC mode.
- Static and stateful classification.
- Flexible NetFlow with NBAR based fields on IPv6.

NBAR supports IPv6 in IPv4 (6to4, 6rd, and ISATAP), and teredo tunneled classification. The **ip nbar classification tunneled-traffic** command is used to enable the tunneled traffic classification. When the tunneled traffic classification is enabled, NBAR performs an application classification of the IPv6 packets carried inside IPv4 traffic. If the **ip nbar classification tunneled-traffic** command is disabled, the tunneled IPv6 packets are handled as IPv4 packets.

NBAR supports the capture of IPv6 fields and allows the creation of IPv6 traffic-based flow monitors. When you enable the **ipv6 flow monitor** command, the monitor is bound to the interface, NBAR classification is applied to the IPv6 traffic type, and Flexible NetFlow captures the application IDs in the IPv6 traffic flow.

NBAR Categorization and Attributes

The NBAR Categorization and Attributes feature provides the mechanism to match protocols or applications based on certain attributes. As there are many protocols and applications, categorizing them into different groups will help with reporting as well as performing group actions, such as applying QoS policies, on them. Attributes are statically assigned to each protocol or application, and they are not dependent on the traffic. The following attributes are available to configure the match criteria using the **match protocol attribute** command. They are:

- **application-group**: The **application-group** attribute allows the configuration of applications grouped together based on the same networking application as the match criteria. For example, Yahoo-Messenger, Yahoo-VoIP-messenger, and Yahoo-VoIP-over-SIP are grouped together under the yahoo-messenger-group.
- **category**: The **category** attribute allows you to configure applications that are grouped together based on the first level of categorization for each protocol as the match criteria. Similar applications are grouped together under one category. For example, the email category contains all email applications such as, Internet Mail Access Protocol (IMAP), Simple Mail Transfer Protocol (SMTP), Lotus Notes, and so forth.
- **sub-category**: The **sub-category** attribute provides the option to configure applications grouped together based on the second level of categorization for each protocol as the match criteria. For example, clearcase, dbase, rda, mysql and other database applications are grouped under the database group.
- **encrypted**: The **encrypted** attribute provides the option to configure applications grouped together based on whether the protocol is an encrypted protocol or not as the match criteria. Applications are grouped together based on whether they are encrypted and non-encrypted status of the applications.

Protocols for which the NBAR does not provide any value are categorized under the unassigned encrypted group.

- **tunnel**: The **tunnel** attribute provides the option to configure protocols based on whether or not a protocol tunnels the traffic of other protocols. Protocols for which the NBAR does not provide any value are categorized under the unassigned tunnel group. For example, Layer 2 Tunneling Protocols (L2TP).

Note Attribute-based protocol match configuration does not impact the granularity of classification either in reporting or in the protocol discovery information.

How to Configure Attribute-Based Protocol Match

- Configuring Attribute-Based Protocol Match, page 80

Configuring Attribute-Based Protocol Match

Perform this task to configure the attribute-based protocol match.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **class-map** [**type**] [**match-all** | **match-any**] *class-map-name*
4. **match protocol attribute application-group** *application-group* [*application-name*]
5. **match protocol attribute category** *application-category* [*application-name*]
6. **match protocol attribute encrypted** {**encrypted-no** | **encrypted-unassigned** | **encrypted-yes**} [*application-name*]
7. **match protocol attribute sub-category** *application-category* [*application-name*]
8. **match protocol attribute tunnel** {**tunnel-no** | **tunnel-unassigned** | **tunnel-yes**} [*application-name*]
9. **end**

DETAILED STEPS

Step 1 **enable**

Example:
```
Router> enable
```
Enables privileged EXEC mode.

- Enter your password if prompted.

Step 2 **configure terminal**

Example:
```
Router# configure terminal
```
Enters global configuration mode.

Step 3 **class-map** [**type**] [**match-all** | **match-any**] *class-map-name*

Example:
```
Router(config)# class-map cmap1
```
Creates a class map to be used for matching packets to a specified class and enters class-map configuration mode.

- Enter the name of the class map.

Step 4 **match protocol attribute application-group** *application-group* [*application-name*]

Example:
```
Router(config-cmap)# match protocol attribute application-group skype
```
Configures the specified application group as the match criterion.

- (Optional) Use the *application-name* attribute to configure the application and not the application group as the match criterion. The configuration is saved as **match protocol** *application-name* instead of **match protocol attribute application-group** *application-group*.

Step 5 **match protocol attribute category** *application-category* [*application-name*]

Example:
```
Router(config-cmap)# match protocol attribute category email
```
Configures the specified category as the match criteria attribute.

- (Optional) Use the *application-name* attribute to configure a specific application, and not the application category, as the match criterion. The configuration is saved as **match protocol** *application-name* instead of **match protocol attribute category** *application-category*.

Step 6 **match protocol attribute encrypted** {**encrypted-no** | **encrypted-unassigned** | **encrypted-yes**} [*application-name*]

Example:
```
Router(config-cmap)# match protocol attribute encrypted encrypted-yes
```
Configures the specified encryption status as the match criterion.

- Enter the **encrypted-yes** keyword to match all encrypted applications.

or

Enter the **encrypted-no** keyword to match all nonencrypted applications.

or

Enter the **encrypted-unassigned** keyword to match all applications that are not assigned any encryption status.

- (Optional) Use the *application-name* attribute to configure application within the specified encrypted status as the match criterion. The configuration is saved as **match protocol** *application-name* instead of **match protocol attribute encrypted** {**encrypted-no** | **encrypted-unassigned** | **encrypted-yes**}.

Step 7 **match protocol attribute sub-category** *application-category* [*application-name*]

Example:

```
Router(config-cmap)# match protocol attribute sub-category client-server
```

Configures the specified sub-category as the match criteria attribute.

- (Optional) Use the *application-name* attribute to configure a specific application, and not the sub-category, as the match criterion. The configuration is saved as **match protocol** *application-name* instead of **match protocol attribute sub-category** *application-category*.

Step 8 **match protocol attribute tunnel** {**tunnel-no** | **tunnel-unassigned** | **tunnel-yes**} [*application-name*]

Example:

```
Router(config-cmap)# match protocol attribute tunnel tunnel-yes
```

Configures the specified encryption status as the match criterion.

- Enter the **tunnel-no** keyword to specify the applications that are not tunneled as the match criterion.

or

Enter the **tunnel-unassigned** keyword to specify the applications that are unassigned for tunneling as the match criterion.

or

Enter the **tunnel-yes** keyword to specify the tunneled applications as the match criterion.

- (Optional) Use the *application-name* attribute to configure a specific application within the specified tunneling status as the match criterion. The configuration is saved as **match protocol** *application-name* instead of **match protocol attribute tunnel** {**tunnel-no** | **tunnel-unassigned** | **tunnel-yes**}.

Step 9 **end**

Example:

```
Router(config-cmap)# end
```

Exits class-map configuration mode and returns to privileged EXEC mode.

Configuration Examples for Classifying Network Traffic Using NBAR in Cisco IOS XE Software

Example: Classification of HTTP Traffic Using the HTTP Header Fields

In the following example, any request message that contains "somebody@cisco.com" in the User-Agent, Referer, or From field will be classified by NBAR. Typically, a term with a format similar to "somebody@cisco.com" would be found in the From header field of the HTTP request message.

```
class-map match-all class1
 match protocol http from "somebody@cisco.com"
```

In the following example, any request message that contains "http://www.cisco.com/routers" in the User-Agent, Referer, or From field will be classified by NBAR. Typically, a term with a format similar to "http://www.cisco.com/routers" would be found in the Referer header field of the HTTP request message.

```
class-map match-all class2
 match protocol http referer "http://www.cisco.com/routers"
```

In the following example, any request message that contains "CERN-LineMode/2.15" in the User-Agent, Referer, or From header field will be classified by NBAR. Typically, a term with a format similar to "CERN-LineMode/2.15" would be found in the User-Agent header field of the HTTP request message.

```
class-map match-all class3
 match protocol http user-agent "CERN-LineMode/2.15"
```

In the following example, any response message that contains "CERN/3.0" in the Content-Base (if available), Content-Encoding, Location, or Server header field will be classified by NBAR. Typically, a term with a format similar to "CERN/3.0" would be found in the Server header field of the response message.

```
class-map match-all class4
 match protocol http server "CERN/3.0"
```

In the following example, any response message that contains "http://www.cisco.com/routers" in the Content-Base (if available), Content-Encoding, Location, or Server header field will be classified by NBAR. Typically, a term with a format similar to "http://www.cisco.com/routers" would be found in the Content-Base (if available) or Location header field of the response message.

```
class-map match-all class5
 match protocol http location "http://www.cisco.com/routers"
```

In the following example, any response message that contains "gzip" in the Content-Base (if available), Content-Encoding, Location, or Server header field will be classified by NBAR. Typically, the term "gzip" would be found in the Content-Encoding header field of the response message.

```
class-map match-all class6
 match protocol http content-encoding "gzip"
```

Example: Combinations of Classification of HTTP Headers and URL Host or MIME Type to Identify HTTP Traffic

In the following example, HTTP header fields are combined with a URL to classify traffic. In this example, traffic with a User-Agent field of "CERN-LineMode/3.0" and a Server field of "CERN/3.0," along with URL "www.cisco.com/routers," will be classified using NBAR:

```
class-map match-all c-http
 match protocol http user-agent "CERN-LineMode/3.0"
```

```
 match protocol http server "CERN/3.0"
 match protocol http url "www.cisco.com/routers"
```

Example: NBAR and Classification of Custom Protocols and Applications

In the following example, the custom protocol app-sales1 will identify TCP packets that have a source port of 4567 and that contain the term "SALES" in the fifth byte of the payload:

```
Router(config)# ip nbar custom app-sales1 5 ascii SALES source tcp 4567
```

In the following example, the custom protocol virus-home will identify UDP packets that have a destination port of 3000 and that contain "0x56" in the seventh byte of the payload:

```
Router(config)# ip nbar custom virus-home 7 hex 0x56 destination udp 3000
```

In the following example, the custom protocol media_new will identify TCP packets that have a destination or source port of 4500 and that have a value of 90 at the sixth byte of the payload:

```
Router(config)# ip nbar custom media_new 6 decimal 90 tcp 4500
```

In the following example, the custom protocol msn1 will look for TCP packets that have a destination or source port of 6700:

```
Router(config)# ip nbar custom msn1 tcp 6700
```

In the following example, the custom protocol mail_x will look for UDP packets that have a destination port of 8202:

```
Router(config)# ip nbar custom mail_x destination udp 8202
```

In the following example, the custom protocol mail_y will look for UDP packets that have destination ports between 3000 and 4000 inclusive:

```
Router(config)# ip nbar custom mail_y destination udp range 3000 4000
```

Example: NBAR and Classification of Peer-to-Peer File-Sharing Applications

The **match protocol gnutella file-transfer** *regular-expression* and **match protocol fasttrack file-transfer** *regular-expression* commands are used to enable Gnutella and FastTrack classification in a traffic class. The **file-transfer** keyword indicates that a regular expression variable will be used to identify specific Gnutella or FastTrack traffic. The *regular-expression* variable can be expressed as "*" to indicate that all FastTrack or Gnutella traffic be classified by a traffic class.

In the following example, all FastTrack traffic is classified into class map nbar:

```
class-map match-all nbar
 match protocol fasttrack file-transfer "*"
```

Similarly, all Gnutella traffic is classified into class map nbar in the following example:

```
class-map match-all nbar
 match protocol gnutella file-transfer "*"
```

Wildcard characters in a regular expression can also be used to identify specified Gnutella and FastTrack traffic. These regular expression matches can be used to match on the basis of a filename extension or a particular string in a filename.

In the following example, all Gnutella files that have the .mpeg extension will be classified into class map nbar:

```
class-map match-all nbar
 match protocol gnutella file-transfer "*.mpeg"
```

In the following example, only Gnutella traffic that contains the characters "cisco" is classified:

```
class-map match-all nbar
 match protocol gnutella file-transfer "*cisco*"
```

The same examples can be used for FastTrack traffic:

```
class-map match-all nbar
 match protocol fasttrack file-transfer "*.mpeg"
```

or

```
class-map match-all nbar
 match protocol fasttrack file-transfer "*cisco*"
```

Example: Configuring Attribute-Based Protocol Match

The **match protocol attributes** command is used to configure different attributes as the match criteria for application recognition.

In the following example, the email-related applications category is configured as the match criterion:

```
Router# configure terminal
Router(config)# class-map mygroup
Router(config-cmap)# match protocol attribute category email
```

In the following example, skype-group applications are configured as the match criterion:

```
Router# configure terminal
Router(config)# class-map apps
Router(config-cmap)# match protocol attribute application-group skype-group
```

In the following example, encrypted applications are configured as the match criterion:

```
Router# configure terminal
Router(config)# class-map my-class
Router(config-cmap)# match protocol encrypted encrypted-yes
```

In the following example, Client-server subcategory applications are configured as the match criterion:

```
Router# configure terminal
Router(config)# class-map newmap
Router(config-cmap)# match protocol attribute sub-category client-server
```

In the following example, tunneled applications are configured as the match criterion:

```
Router# configure terminal
Router(config)# class-map mygroup
Router(config-cmap)# match protocol attribute tunnel tunnel-yes
```

The following sample output from the **show ip nbar attribute** command displays the details of all the attributes:

```
Router# show ip nbar attribute
      Name :  category
      Help :  category attribute
      Type :  group
    Groups :  email, newsgroup, location-based-services, instant-messaging, netg
      Need :  Mandatory
   Default :  other

      Name :  sub-category
      Help :  sub-category attribute
      Type :  group
```

```
    Groups :  routing-protocol, terminal, epayement, remote-access-terminal, nen
      Need :  Mandatory
   Default :  other

      Name :  application-group
      Help :  application-group attribute
      Type :  group
    Groups :  skype-group, wap-group, pop3-group, kerberos-group, tftp-group, bp
      Need :  Mandatory
   Default :  other

      Name :  tunnel
      Help :  Tunnelled applications
      Type :  group
    Groups :  tunnel-no, tunnel-yes, tunnel-unassigned
      Need :  Mandatory
   Default :  tunnel-unassigned

      Name :  encrypted
      Help :  Encrypted applications
      Type :  group
    Groups :  encrypted-yes, encrypted-no, encrypted-unassigned
      Need :  Mandatory
   Default :  encrypted-unassigned
```

The following sample output from the **show ip nbar protocol-attribute** command displays the details of the protocols:

```
Router# show ip nbar protocol-attribute

           Protocol Name :  ftp
                category :  file-sharing
            sub-category :  client-server
       application-group :  ftp-group
                  tunnel :  tunnel-no
               encrypted :  encrypted-no

           Protocol Name :  http
                category :  browsing
            sub-category :  other
       application-group :  other
                  tunnel :  tunnel-no
               encrypted :  encrypted-no

           Protocol Name :  egp
                category :  net-admin
            sub-category :  routing-protocol
       application-group :  other
                  tunnel :  tunnel-no
               encrypted :  encrypted-no

           Protocol Name :  gre
                category :  net-admin
            sub-category :  tunneling-protocols
       application-group :  other
                  tunnel :  tunnel-yes
               encrypted :  encrypted-no
```

Additional References

Related Documents

Related Topic	Document Title
Cisco IOS commands	Cisco IOS Master Commands List, All Releases

Related Topic	Document Title
QoS commands: complete command syntax, command modes, command history, defaults, usage guidelines, and examples	*Cisco IOS Quality of Service Solutions Command Reference*
Classifying network traffic if not using NBAR	"Classifying Network Traffic" module
Marking network traffic	"Marking Network Traffic" module
MQC	"Applying QoS Features Using the MQC" module
Protocol Discovery	"Enabling Protocol Discovery" module

Standards

Standard	Title
ISO 0009	*File Transfer Protocol (FTP)*
ISO 0013	*Domain Names - Concepts and Facilities*
ISO 0033	*The TFTP Protocol (Revision 2)*
ISO 0034	*Routing Information Protocol*
ISO 0053	*Post Office Protocol - Version 3*
ISO 0056	*RIP Version 2*

MIBs

MIB	MIBs Link
No new or modified MIBs are supported, and support for existing MIBs has not been modified.	To locate and download MIBs for selected platforms, Cisco software releases, and feature sets, use Cisco MIB Locator found at the following URL: http://www.cisco.com/go/mibs

RFCs

RFC	Title
RFC 742	*NAME/FINGER Protocol*
RFC 759	*Internet Message Protocol*
RFC 768	*User Datagram Protocol*
RFC 792	*Internet Control Message Protocol*
RFC 793	*Transmission Control Protocol*

RFC	Title
RFC 821	*Simple Mail Transfer Protocol*
RFC 827	*Exterior Gateway Protocol*
RFC 854	*Telnet Protocol Specification*
RFC 888	*"STUB" Exterior Gateway Protocol*
RFC 904	*Exterior Gateway Protocol Formal Specification*
RFC 951	*Bootstrap Protocol*
RFC 959	*File Transfer Protocol*
RFC 977	*Network News Transfer Protocol*
RFC 1001	*Protocol Standard for a NetBIOS Service on a TCP/UDP Transport: Concepts and Methods*
RFC 1002	*Protocol Standard for a NetBIOS Service on a TCP/UDP Transport: Detailed Specifications*
RFC 1057	*RPC: Remote Procedure Call*
RFC 1094	*NFS: Network File System Protocol Specification*
RFC 1112	*Host Extensions for IP Multicasting*
RFC 1157	*Simple Network Management Protocol*
RFC 1282	*BSD Rlogin*
RFC 1288	*The Finger User Information Protocol*
RFC 1305	*Network Time Protocol*
RFC 1350	*The TFTP Protocol (Revision 2)*
RFC 1436	*The Internet Gopher Protocol*
RFC 1459	*Internet Relay Chat Protocol*
RFC 1510	*The Kerberos Network Authentication Service*
RFC 1542	*Clarifications and Extensions for the Bootstrap Protocol*
RFC 1579	*Firewall-Friendly FTP*
RFC 1583	*OSPF Version 2*
RFC 1657	*Definitions of Managed Objects for the Fourth Version of the Border Gateway Protocol*
RFC 1701	*Generic Routing Encapsulation*

RFC	Title
RFC 1730	*Internet Message Access Protocol--Version 4*
RFC 1771	*A Border Gateway Protocol 4 (BGP-4)*
RFC 1777	*Lightweight Directory Access Protocol*
RFC 1831	*RPC: Remote Procedure Call Protocol Specification Version 2*
RFC 1889	*A Transport Protocol for Real-Time Applications*
RFC 1890	*RTP Profile for Audio and Video Conferences with Minimal Control*
RFC 1928	*SOCKS Protocol Version 5*
RFC 1939	*Post Office Protocol--Version 3*
RFC 1945	*Hypertext Transfer Protocol--HTTP/1.0*
RFC 1964	*The Kerberos Version 5 GSS-API Mechanism*
RFC 2045	*Multipurpose Internet Mail Extension (MIME) Part One: Format of Internet Message Bodies*
RFC 2060	*Internet Message Access Protocol--Version 4 rev1*
RFC 2068	*Hypertext Transfer Protocol--HTTP/1.1*
RFC 2131	*Dynamic Host Configuration Protocol*
RFC 2205	*Resource ReSerVation Protocol (RSVP)--Version 1 Functional Specification*
RFC 2236	*Internet Group Management Protocol, Version 2*
RFC 2251	*Lightweight Directory Access Protocol (v3)*
RFC 2252	*Lightweight Directory Access Protocol (v3): Attribute Syntax Definitions*
RFC 2253	*Lightweight Directory Access Protocol (v3): UTF-8 String Representation of Distinguished Names*
RFC 2401	*Security Architecture for the Internet Protocol*
RFC 2406	*IP Encapsulating Security Payload*
RFC 2453	*RIP Version 2*
RFC 2616	*Hypertext Transfer Protocol--HTTP/1.1* **Note** This RFC updates RFC 2068.

Technical Assistance

Description	Link
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.	http://www.cisco.com/cisco/web/support/index.html

Feature Information for Classifying Network Traffic Using NBAR

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 www.cisco.com/go/cfn. An account on Cisco.com is not required.

Table 5 Feature Information for Classifying Network Traffic Using NBAR in Cisco IOS XE software

Feature Name	Releases	Feature Information
Additional PDL Support for NBAR	Cisco IOS XE Release 3.1S	The additional PDL Support for NBAR feature provides support for additional PDLs. The following section provides information about this feature: NBAR and Classification of HTTP Traffic, page 4
Enhanced NBAR	Cisco IOS XE Release 3.2S	The Enhanced NBAR feature provides additional PDLs for Cisco IOS XE Release 3.2S. The following section provides information about this feature: NBAR-Supported Protocols, page 13

Feature Name	Releases	Feature Information
NBAR Categorization and Attributes	Cisco IOS XE Release 3.4S	The NBAR Categorization and Attributes feature provides the mechanism of matching the protocols grouped under specific categories based on the attributes. These categories are available for Class-Based Policy Language (CPL) as a match criteria for application recognition. The following section provides information about this feature: NBAR Categorization and Attributes, page 79
NBAR Classification Enhancements for IOS-XE3.5	Cisco IOS XE Release 3.5S	The NBAR Classification Enhancements feature provides additional classification support for native IPv6 classification and classification of flows inside tunneled IPv6 over IPv4. The following section provides information about this feature: NBAR Support for IPv6 from Cisco IOS XE Release 3.5S and Later Releases, page 79 The following commands were introduced or modified: **ip nbar classification tunneled-traffic**, **option** (FNF).
NBAR PDLM Supported in ASR 1000 Release 2.5	Cisco IOS XE Release 2.5 Cisco IOS XE Release 3.1S Cisco IOS XE Release 3.3S	This feature was integrated into Cisco IOS XE Release 2.5. NBAR-supported protocols were added for this release. The following section provides information about this feature: NBAR-Supported Protocols, page 13 The following command was modified: **match protocol** (NBAR).

Feature Name	Releases	Feature Information
NBAR Protocols	Cisco IOS XE Release 2.3	This feature was integrated into Cisco IOS XE Release 2.3. NBAR-supported protocols were added for this release. The following section provides information about this feature: NBAR-Supported Protocols, page 13 The following command was modified: **match protocol**(NBAR).
NBAR Real-time Transport Protocol Payload Classification	Cisco IOS XE Release 2.1	This feature was introduced on Cisco ASR 1000 Series Aggregation Services Routers. The following section provides information about this feature: NBAR-Supported Protocols, page 13
NBAR Static IPv4 IANA Protocols Pack1	Cisco IOS XE Release 3.1S	This feature was introduced on Cisco ASR 1000 Series Aggregation Services Routers. The following section provides information about this feature: NBAR-Supported Protocols, page 13
NBAR VRF aware	Cisco IOS XE Release 3.3S	This feature was introduced on Cisco ASR 1000 Series Aggregation Services Routers. The following section provides information about this feature: NBAR Scalability, page 11

Glossary

Encryption—Encryption is the application of a specific algorithm to data so as to alter the appearance of the data, making it incomprehensible to those who are not authorized to see the information.

HTTP —Hypertext Transfer Protocol. The protocol used by web browsers and web servers to transfer files, such as text and graphic files.

IANA —Internet Assigned Numbers Authority. An organization operated under the auspices of the Internet Society (ISOC) as a part of the Internet Architecture Board (IAB). IANA delegates authority for IP address-space allocation and domain-name assignment to the InterNIC and other organizations. IANA also maintains a database of assigned protocol identifiers used in the TCP/IP stack, including autonomous system numbers.

LAN —Local-area network. A high-speed, low-error data network that covers a relatively small geographic area (up to a few thousand meters). LANs connect workstations, peripherals, terminals, and other devices in a single building or other geographically limited area. LAN standards specify cabling and signaling at the physical and data link layers of the Open System Interconnection (OSI) model. Ethernet, FDDI, and Token Ring are widely used LAN technologies.

MIME —Multipurpose Internet Mail Extension. The standard for transmitting nontext data (or data that cannot be represented in plain ASCII code) in Internet mail, such as binary, foreign language text (such as Russian or Chinese), audio, and video data. MIME is defined in RFC 2045, *Multipurpose Internet Mail Extension (MIME) Part One: Format of Internet Message Bodies* .

MPLS —Multiprotocol Label Switching. A switching method that forwards IP traffic using a label. This label instructs the routers and the switches in the network where to forward the packets based on preestablished IP routing information.

MQC —Modular quality of service command-line interface. A CLI that allows you to define traffic classes, create and configure traffic policies (policy maps), and then attach the policy maps to interfaces. Policy maps are used to apply the appropriate quality of service (QoS) to network traffic.

Protocol Discovery —A feature included with NBAR. Protocol Discovery provides a way to discover the application protocols that are operating on an interface.

QoS —Quality of service. A measure of performance for a transmission system that reflects its transmission quality and service availability.

RTCP —RTP Control Protocol. A protocol that monitors the QoS of an IPv6 Real-Time Transport Protocol (RTP) connection and conveys information about the ongoing session.

Stateful protocol —A protocol that uses TCP and UDP port numbers that are determined at connection time.

Static protocol —A protocol that uses well-defined (predetermined) TCP and UDP ports for communication.

Subport classification —The classification of network traffic by information that is contained in the packet payload, that is, information found beyond the TCP or UDP port number.

TCP —Transmission Control Protocol. A connection-oriented transport layer protocol that provides reliable full-duplex data transmission. TCP is part of the TCP/IP protocol stack.

Tunneling —Tunneling is an architecture that is designed to provide the services necessary to implement any standard point-to-point encapsulation scheme.

UDP —User Datagram Protocol. A 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, *User Datagram Protocol* .

WAN —Wide-area network. A data communications network that serves users across a broad geographic area and often uses transmission devices provided by common carriers.

and other figures included in the document are shown for illustrative purposes only. Any use of actual IP addresses or phone numbers in illustrative content is unintentional and coincidental.