User Defined Source Port Ranges for PAT

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The User Defined Source Port Ranges for PAT feature enables the specification of source port ranges for Port Address Translation (PAT) for SIP, H.323, and Skinny Real-Time Transport Protocol (RTP) and RTP Control Protocol (RTCP).

Finding Feature Information in This Module

Your Cisco IOS software release may not support all of the features documented in this module. To reach links to specific feature documentation in this module and to see a list of the releases in which each feature is supported, use the "Feature Information for User Defined Source Port Ranges for PAT" section on page 6.

Finding Support Information for Platforms and Cisco IOS and Catalyst OS Software Images

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

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Restrictions for User Defined Source Port Ranges for PAT

- The size of port range that can be reserved is limited to a multiple of 64.
- The start port for the port range should also be a multiple of 64.

Information About User Defined Source Port Ranges for PAT

Before you configure the source port ranges for PAT, you should understand the following concept:

- User Defined Source Port Ranges for PAT Overview, page 2
- Even Port Parity, page 2

User Defined Source Port Ranges for PAT Overview

In order for VoIP traffic to not be in violation of the RTP standards and best practices, even/odd pairing of ports for RTP and RTCP traffic for SIP ALG, Skinny and H.323 has been made available.

Following is a scenario of what happens to VoIP traffic translated using PAT without user defined ports.

The first VoIP traffic getting translated using PAT, would request for port 16384 and would get to use port 16384 for its RTP traffic.

The second VoIP traffic stream getting translated using PAT would also request 16384 for its RTP. Since this port number is already in use by the first call, PAT would translate the 16384 source port for the second phone to 1024 (assuming the port was free) and this would be in violation of the RTP standards/best practices.

A third call would end up using port 1025 and others would increment from there.

Each call after the first call would end up having its inside source port translated to an external port assignment that is out of specifications for RTP, and this would continue until PAT binding fir the first call expires.

Problems associated with RTP traffic being assigned to a non-standard port by PAT:

- Inability for compressed RTP (cRTP) to be invoked in the return direction, as it only operates on RTP flows with compliant port numbers.
- Difficulty in properly classifying voice traffic for corresponding QoS treatment.
- Violation of standard firewall policies that specifically account for RTP/TRCP traffic by specified standard port range.

Even Port Parity

Cisco IOS NAT SIP gateways normally select the next available port+1 for SIP fixup in the NAT translations. The NAT gateway does not check for even/odd pair for RTP/TRCP port numbers, and as a result issues may arise with SIP user agents that are strictly following the encouraged even/odd parity for RTP/RTCP port numbers.

Even port parity for SIP, H.323, and skinny is supported by default and it can be turned off forcing the odd RTP ports allocation.

How to Configure Source Port Ranges for PAT

This section contains the following task:

Configuring Source Port Ranges for PAT

Perform this task to assign a set of ports and associate a map to them.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **ip nat port-map** *mapname* **application** *application* **start** *startport* **size** *size*
4. **ip nat inside source list** *list-name* **pool** *pool-name* **overload portmap** *portmap-name*

DETAILED STEPS

	Command or Action	Purpose
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	**ip nat portmap** *mapname* **application** *application* **startport** *startport* **size** *size* **Example:** `Router(config)# ip nat portmap NAT-1 application sip-rtp startport 32128 size 128`	Defines the port map.
Step 4	**ip nat inside source list** *list-name* **pool** *pool-name* **overload portmap** *portmap-name* **Example:** `Router(config)# ip nat inside source list 1 pool A overload portmap NAT-1`	Associates the port map to the NAT configuration.

Configuration Examples for User Defined Source Port Ranges for PAT

This section provides the following configuration example:

- User Defined Source Port Ranges for PAT: Example, page 4

User Defined Source Port Ranges for PAT: Example

The following examples shows how to assign a set of ports and associate a map to them.

```
ip nat portmap NAT-I
 cisco-rtp-h323-low
 appl sip-rtp startport 32128 size 128
 appl sip-rtp startport 32000 size 64
ip nat inside source list 1 pool A overload portmap NAT-I
```

Macros have been defined to make port map configuration easier. Table 1 lists the name of the macros and the ports.

Table 1 Macro Names and Ports

Macro Name	Ports	Application
cisco-rtp-h323-low	16384-32767	H.323
cisco-rtp-h323-high	49152-65535	H.323
cisco-rtp-skinny-low	16384-32767	Skinny
cisco-rtp-skinny-high	49152-65535	Skinny
cisco-rtp-sip-low	16384-32767	SIP
cisco-rtp-sip-high	49152-65535	SIP

How to Configure Even Port Parity

This section contains the following task:

- Configuring Even Port Parity, page 4

Configuring Even Port Parity

Even port parity for H.323, SIP, and skinny is supported by default and can be turned off forcing the odd ports allocation.

Perform this task to enable even port parity.

SUMMARY STEPS

1. **enable**
2. **configure terminal**

3. **ip nat service {allow-h323-even-rtp-ports | allow-sip-even-rtp-ports | allow-skinny-even-rtp-ports}**

DETAILED STEPS

	Command or Action	Purpose
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	**ip nat service {allow-h323-even-rtp-ports | allow-sip-even-rtp-ports | allow-skinny-even-rtp-ports}** **Example:** `Router(config)# ip nat service allow-h323-even-rtp-ports`	Establishes even port parity for H323, the SIP protocol, or the skinny protocol.

Configuration Examples for Even Port Parity

This section provides the following configuration example:

• Even Port Parity: Example, page 5

Even Port Parity: Example

The following example enables even port parity for H.323.

```
ip nat service allow-h323-even-rtp-ports
```

The following example enables even port parity for SIP.

```
ip nat service allow-sip-even-rtp-ports
```

The following example enables even port parity for the skinny protocol.

```
ip nat service allow-skinny-even-rtp-ports
```

Additional References

The following sections provide references related to using application level gateways with NAT.

Related Documents

Related Topic	Document Title
NAT commands: complete command syntax, command mode, defaults, usage guidelines, and examples	*Cisco IOS IP Addressing Services Command Reference*

Standards

Standards	Title
None	

MIBs

MIBs	MIBs Link
None	To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL: http://www.cisco.com/go/mibs

Technical Assistance

Description	Link
The Cisco Technical Support website contains thousands of pages of searchable technical content, including links to products, technologies, solutions, technical tips, and tools. Registered Cisco.com users can log in from this page to access even more content.	http://www.cisco.com/techsupport

Feature Information for User Defined Source Port Ranges for PAT

Table 2 lists the features in this module and provides links to specific configuration information. Only features that were introduced or modified in Cisco IOS Release 12.2(1) or later appear in the table.

Not all commands may be available in your Cisco IOS software release. For details on when support for specific commands was introduced, see the command reference documents.

For information on a feature in this technology that is not documented here, see the "Configuring Network Address Translation Features Roadmap."

Cisco IOS software images are specific to a Cisco IOS software release, a feature set, and a platform. Use Cisco Feature Navigator to find information about platform support and Cisco IOS software image support. Access Cisco Feature Navigator at http://www.cisco.com/go/fn. You must have an account on Cisco.com. If you do not have an account or have forgotten your username or password, click **Cancel** at the login dialog box and follow the instructions that appear.

Note Table 2 lists only the Cisco IOS software release that introduced support for a given feature in a given Cisco IOS software release train. Unless noted otherwise, subsequent releases of that Cisco IOS software release train also support that feature.

Table 2 Feature Information for User Defined Source Port Ranges for PAT

Feature Name	Releases	Feature Configuration Information
User Defined Source Port Ranges for PAT feature	12.4(11)T	The User Defined Source Port Ranges for PAT feature enables the specification of source port ranges for Port Address Translation (PAT) for SIP, H.323, and Skinny Real-Time Transport Protocol (RTP) and RTP Control Protocol (RTCP). The following sections provide information about this feature: • "How to Configure Source Port Ranges for PAT" section on page 3 • "How to Configure Even Port Parity" section on page 4