



# 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).

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## 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](http://www.cisco.com/go/cfn). An account on Cisco.com is not required.

## 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

- [User Defined Source Port Ranges for PAT Overview, page 2](#)



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## 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 for 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 User Defined Source Port Ranges for PAT

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## 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 portmap *mapname* application *application* startport *startport* size *size*
4. ip nat inside source list *list - name* pool *pool - name* overload portmap *portmap - name*

**DETAILED STEPS**

Command or Action	Purpose
<p><b>Step 1</b> enable</p> <p><b>Example:</b></p> <pre>Router&gt; enable</pre>	<p>Enables privileged EXEC mode.</p> <ul style="list-style-type: none"> <li>• Enter your password if prompted.</li> </ul>
<p><b>Step 2</b> configure terminal</p> <p><b>Example:</b></p> <pre>Router# configure terminal</pre>	<p>Enters global configuration mode.</p>
<p><b>Step 3</b> ip nat portmap <i>mapname</i> application <i>application</i> startport <i>startport</i> size <i>size</i></p> <p><b>Example:</b></p> <pre>Router(config)# ip nat portmap NAT-1 application sip-rtp startport 32128 size 128</pre>	<p>Defines the port map.</p>
<p><b>Step 4</b> ip nat inside source list <i>list - name</i> pool <i>pool - name</i> overload portmap <i>portmap - name</i></p> <p><b>Example:</b></p> <pre>Router(config)# ip nat inside source list 1 pool A overload portmap NAT-1</pre>	<p>Associates the port map to the NAT configuration.</p>

## 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
<b>Step 1</b> <code>enable</code>  <b>Example:</b> <pre>Router&gt; enable</pre>	Enables privileged EXEC mode. <ul style="list-style-type: none"> <li>• Enter your password if prompted.</li> </ul>
<b>Step 2</b> <code>configure terminal</code>  <b>Example:</b> <pre>Router# configure terminal</pre>	Enters global configuration mode.
<b>Step 3</b> <code>ip nat service allow-h323-even-rtp-ports   allow-sip-even-rtp-ports  allow-skinny-even-rtp-ports</code>  <b>Example:</b> <pre>Router(config)# ip nat service allow-h323-even-rtp-ports</pre>	Establishes even port parity for H323, the SIP protocol, or the skinny protocol.

## Configuration Examples for User Defined Source Port Ranges for PAT

- [Example User Defined Source Port Ranges for PAT, page 4](#)
- [Example Even Port Parity, page 5](#)

### Example User Defined Source Port Ranges for PAT

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. The table below 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

Macro Name	Ports	Application
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

## Example Even Port Parity

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

### Related Documents

Related Topic	Document Title
Cisco IOS commands	<a href="#">Cisco IOS Master Commands List, All Releases</a>
NAT commands: complete command syntax, command mode, defaults, usage guidelines, and examples	<i>Cisco IOS IP Addressing Services Command Reference</i>

### Standards

Standards	Title
None	--

**MIBs**

MIBs	MIBs Link
•	To locate and download MIBs for selected platforms, Cisco software releases, and feature sets, use Cisco MIB Locator found at the following URL:  <a href="http://www.cisco.com/go/mibs">http://www.cisco.com/go/mibs</a>

**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.	<a href="http://www.cisco.com/cisco/web/support/index.html">http://www.cisco.com/cisco/web/support/index.html</a>

## Feature Information for User Defined Source Port Ranges for PAT

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](http://www.cisco.com/go/cfn). An account on Cisco.com is not required.

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

Feature Name	Releases	Feature Information
User Defined Source Port Ranges for PAT	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).

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