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NATed Network Testing IxChariot

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1. Test Overview

Address-translated environments are a reality in virtually all IPv4based test networks. This test primer explains the key concepts to effectively use IxChariot with devices performing traditional static Network Address Translation (i.e. one-to-one NAT) and static Network Address Port Translation (NAPT). Configuration parameters for the Device Under Test (DUT) are specific to a Cisco PIX.

Objective

Many firewalls, gateways and routers contain the ability to statically map a public (outside) IP address to a private (inside) IP address. This section will explain a typical network topology as well as the configuration parameters for IxChariot and the DUT.

Setup

The DUT in the topology shown below is performing traditional static NAT for Performance Endpoint 1 (E1). This means that private IP address 192.168.2.61 is translated to 'public' IP address 99.99.99.61.

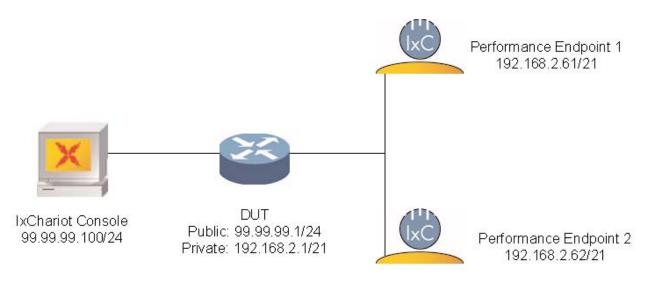


Figure 1. Test Topology

Methodology

IxChariot Configuration

First, access 'Options' -> 'Change User Settings' -> 'Firewall' tab from the main IxChariot Console and verify the settings below (default settings).

Change User Settings 🛛 🔀						
Directories R	un Options		gram	Throughput Ur		Warnings
Endpoint Pair Defaults VolP Pair Defaults		Hardware Performance Pair Defaults		Pair Defaults		
Traceroute Fi	rewall Options		lutput	Registration	R	esult Ranges
Enter the options for t	esting through f	irewalls	s			
- Console through firev	vall to Endpoint	1				
-	10		Port			
TCP		•	-			
SPX		~		_		
Hardware Performan	ce Pair Statistic	s 🔽	-			
Endpoint 1 through fi Use Endpoint 1 i Use Endpoint 1 f	dentifier in data					

Figure 2. Change User Settings Option

When creating the Performance Endpoint pairs, use 192.168.2.61 as 'Endpoint 1 network address' and use 192.168.2.62 as 'Endpoint 2 network address'. Select the Network protocol, application script and any applicable Service quality policy.

Add an Endpoint Pair		
Pair comment: Traditional NAT		
Endpoint 1 to Endpoint 2		
Endpoint 1 network address		
192.168.2.61		-
Endpoint 2 network address		
192.168.2.62		•
Network protocol	Service quality	
ТСР	•	•
Edit This Script Select Script OK OK		

Figure 3. Add an Endpoint Pair Option

Next, go to 'Edit Pair Setup', uncheck 'Use Endpoint 1 values from pair' and type in the public IP address that is being used for the one-to-one mapping, i.e. 99.99.99.61. Leave "Use Endpoint 2 values from pair' checked.

Edit Pair Setup	
Console to Endpoint 1	
🔲 Use Endpoint 1 values from pair	
How does the Console know Endpoint 1?	
99.99.99.61	•
Network protocol	Service quality
TCP	
Endpoint 1 to Endpoint 2	
Use Endpoint 2 values from pair	
How does Endpoint 1 know Endpoint 2?	
192.168.2.62	V
<u> </u>	

Figure 4. Edit Pair Setup Option

DUT Configuration

A summary of the PIX configuration is shown below:

global (outside) 1 interface nat (inside) 1 0.0.0.0 0.0.0.0 0 access-list outside permit tcp host 99.99.99.100 host 99.99.99.61 eq 10115 access-group outside in interface outside static (inside, outside) 99.99.99.61 192.168.2.61

2. Configuring IxChariot for NAPT

Objective and Setup

The firewall in the Figure 1 is doing port redirection for all hosts behind it, including the Performance Endpoints. Incoming traffic destined to tcp port 10115 (default IxChariot TCP port for traffic between Console and E1) is translated to Performance Endpoint 1.

Note: IxChariot allows you to change the default port number to an alternative number to comply with any access list policies you may have. See screenshot on how to change the default port 10115 to 10234.

Change User Settings 🛛 🔀				
Directories Run Options Endpoint Pair Defaults VolP Pair Traceroute Firewall Options Enter the options for testing through fire	Output	Throughput Units Hardware Performa Registration		
Console through firewall to Endpoint 1 TCP SPX Hardware Performance Pair Statistics	Auto Port			
Endpoint 1 through firewall to Endpoin Use Endpoint 1 identifier in data Use Endpoint 1 fixed port <u>U</u> ndo <u>H</u> elp	12			

Methodology

IxChariot Configuration

The IxChariot configuration for NAPT is the same as for traditional static NAT described above.

DUT Configuration

global (outside) 1 interface nat (inside) 1 0.0.0.0 0.0.0.0 0 0 static (inside,outside) tcp interface 10115 192.168.2.61 10115 netmask 255.255.255.255 0 0