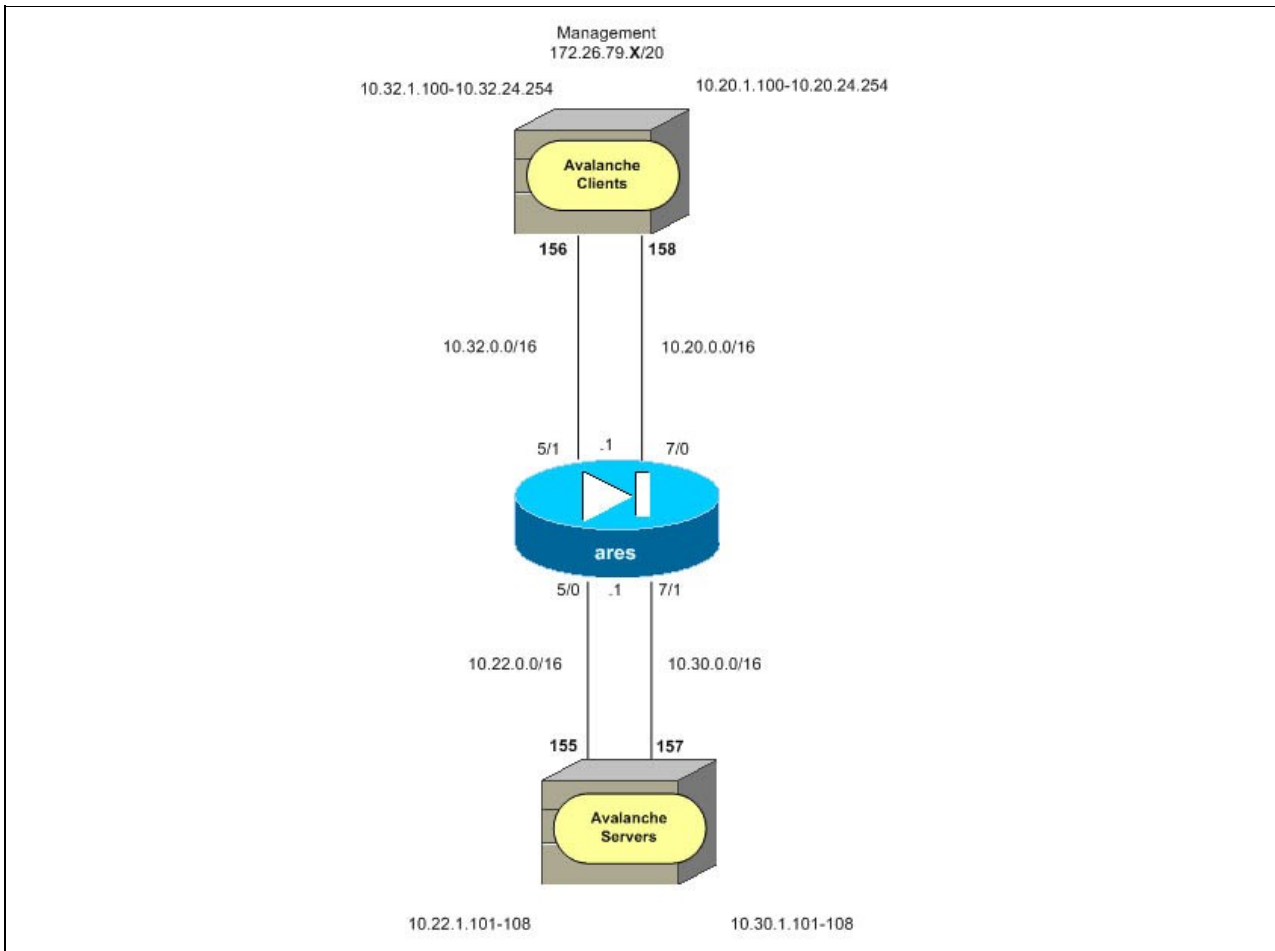


Test Details	
Goal of Test	<p>The purpose of this test is to get the maximum throughput the ASA can process using HTTP traffic. This traffic model is more close to the real world traffic.</p> <p>In order to produce the TCP traffic the Spirent Avalanche 2900 was used (4, 2900's with 1 ten-gigabit interface each). When looking at the diagram the numbers 155, 156, 157, 158 are the individual 2900 chassis. To produce bi-directional traffic through the ASA one client port is placed on the outside pulling a 512K byte object from one server port on the inside, and one client port is placed on the inside pulling a 512K byte object form one server port on the outside. The Avalanche Tool is configured with 10672 clients and 16 servers. This comes down to 667 clients each pointing to one of the 16 servers. Each client walks an action list of 10 gets to the servers address. With HTTP 1.1 with persistence this results in 10 transactions per tcp connection. For each get the server responds with a 512K byte object. Below are screen shots of the test tool setup.</p>
Data to Record	<ol style="list-style-type: none"> 1. <i>show cpu</i> 2. <i>show conn count</i> 3. <i>show io-bridge</i> 4. Capture results from the test tool
Estimated Time Needed	60 minutes

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Topology



Procedures

DESCRIPTION

1. On the client side configure (Avalanche Clients):
 - a. 1500 SimUsers for the load on each avalanche 2900
 - b. 16 subnets, with 667 hosts (10.100 to 12.254) pointing to one server on the reflector and assign one to each port.
 - c. 10 GETs on the action profile
2. On the server side, configure:
 - a. One server per port
 - b. 512k Object size
3. Bidirectional traffic is used (Clients from the inside to the outside and vice-versa)
4. While traffic is at steady state take a screen shot of the live Client Stats.

Configurations

```
ares# sh run
: Saved
:
ASA Version 8.1(1)
!
hostname ares
enable password 8Ry2YjIyt7RRXU24 encrypted
passwd 2KFQnbNIdI.2KYOU encrypted
names
!
interface Management0/0
 shutdown
 no nameif
 no security-level
 no ip address
 management-only
!
interface Management0/1
 shutdown
 no nameif
 no security-level
 no ip address
 management-only
!
interface GigabitEthernet3/0
 shutdown
 no nameif
 no security-level
 no ip address
!
interface GigabitEthernet3/1
 shutdown
 no nameif
 no security-level
 no ip address
!
interface GigabitEthernet3/2
 shutdown
 no nameif
 no security-level
 no ip address
!
interface GigabitEthernet3/3
 shutdown
 no nameif
 no security-level
 no ip address
!
interface TenGigabitEthernet5/0
 nameif outside_gi_1

 security-level 0
 ip address 10.22.0.1 255.255.0.0
!
interface TenGigabitEthernet5/1
 nameif inside_gi_1
 security-level 100
 ip address 10.32.0.1 255.255.0.0
!
interface TenGigabitEthernet7/0
```

ASA5580-40_TCP_Throughput_Performance_Single_Context_4_Interfaces_Configuration_Example

```
nameif inside_gi_2

security-level 100
ip addresss 10.20.0.1 255.255.0.0
!
interface TenGigabitEthernet7/1
nameif outside_gi_2
security-level 0
ip address 10.30.0.1 255.255.0.0
!
ftp mode passive
access-list in extended permit ip any any
access-list out extended permit ip any any
pager lines 24
logging enable
logging buffered warnings
mtu inside_gi 1500
mtu outside_gi 1500
no failover
icmp unreachable rate-limit 1 burst-size 1
icmp permit any echo inside_gi
icmp permit any echo-reply inside_gi
icmp permit any echo outside_gi
icmp permit any echo-reply outside_gi
asdm image disk0:/asdm-611.bin
no asdm history enable
arp timeout 14400
access-group out in interface inside_gi_1
access-group out in interface outside_gi_1
access-group out in interface inside_gi_2
access-group out in interface outside_gi_2

timeout xlate 3:00:00
timeout conn 1:00:00 half-closed 0:10:00 udp 0:02:00 icmp 0:00:02
timeout sunrpc 0:10:00 h323 0:05:00 h225 1:00:00 mgcp 0:05:00 mgcp-pat 0:05:00
timeout sip 0:30:00 sip_media 0:02:00 sip-invite 0:03:00 sip-disconnect 0:02:00
timeout sip-provisional-media 0:02:00 uauth 0:05:00 absolute
dynamic-access-policy-record DfltAccessPolicy
no snmp-server location
no snmp-server contact
snmp-server enable traps snmp authentication linkup linkdown coldstart
telnet timeout 5
ssh timeout 5
console timeout 0
no threat-detection basic-threat
no threat-detection statistics access-list
!
class-map inspection_default
match default-inspection-traffic
!
!
policy-map type inspect dns preset_dns_map
parameters
message-length maximum 512
policy-map global_policy
class inspection_default
inspect dns preset_dns_map
inspect ftp
inspect h323 h225
inspect h323 ras
inspect rsh
inspect rtsp
inspect esmtp
inspect sqlnet
```

ASA5580-40_TCP_Throughput_Performance_Single_Context_4_Interfaces_Configuration_Example

```
inspect skinny
inspect sunrpc
inspect xdmcp
inspect sip
inspect netbios
inspect tftp
!
prompt hostname context
Cryptochecksum:03cbf5e0557d3c2abac442316f5900b1
: end
```

Results

19,554.443 Mbps incoming to the clients and 299.43Mbps outgoing from the clients.
A total of 19853.873 of HTTP Throughput were achieved.

Remember that half the clients were connected on the inside of the ASA, and half the clients on th

```
ares# sh cpu
CPU utilization for 5 seconds = *79%*; 1 minute: 62%; 5 minutes: 21%
ares# sh conn count
*1044 in use*, 1049 most used
ares# sh conn count
*1044 in use*, 1049 most used
ares# sh io-bridge
I/O Bridge-0 slot usage
  Slot 00: 0 pps, 0 bps
  Slot 01: Ignored
  Slot 02: Ignored
  Slot 03: 0 pps, 0 bps
  Slot 04: Ignored
  *Slot 05: 2264848 pps, 19678943960 bps*
  Slot 06: Ignored

I/O Bridge-1 slot usage
  *Slot 07: 2252144 pps, 19602570400 bps*
  Slot 08: Ignored
```

```
Load distribution - Packets-per-second (10 seconds)
  I/O Bridge 00:  50%\|*****\*
  I/O Bridge 01:  50%\|*****\*
```

```
Load distribution - Bits-per-second (10 seconds)
  I/O Bridge 00:  50%\|*****\*
  I/O Bridge 01:  50%\|*****\*
```

Legend:
 bps - bits per second
 pps - packets per second

Screenshots

Test Tool Setup
Spirent Avalanche Network configuration
Client Network Tab

Client		Server		Content Files		Notes		Run		Results	
Loads		Actions		Profiles		Network		Subnets		Ports	
Miscellaneous Parameters											
Enable Round Robin DNS		<input type="checkbox"/>		Fairness Threshold		2147483647		bytes/sec/connection			
IGMP Version		2		IP Fragment Reassembly Timer		30000		milliseconds			
Proxy Parameters											
Enable Persistence		<input checked="" type="checkbox"/>		Maximum Transactions		100		per connection			
Enable Proxy Header		<input type="checkbox"/>		Maximum Connections				per client			
Enable Proxy Client		<input type="checkbox"/>		Proxy Server IP Address							
				Proxy Server Port No.							
TCP Parameters											
IPv4 Maximum Segment Size		1380		bytes		Enable Congestion Control		<input checked="" type="checkbox"/>			
IPv6 Maximum Segment Size		1440		bytes		Override Internal Timeout Calculation		<input type="checkbox"/>		with 2000 ms.	
Receive Window		32768		bytes		Retries		2			
Delayed Acks		<input checked="" type="checkbox"/>		Inactivity Timer		0		ms.			
Delayed Ack Timeout		200		ms.		Piggyback Get Requests		<input type="checkbox"/>		(HTTP Only)	
Delayed Ack Bytes		2920		bytes		Enable TCP Port Randomization		<input type="checkbox"/>			

Server Network Tab

Client		Server		Content Files		Notes		Run		Results	
Profiles		Transactions		Network		Subnets		Ports		Associations	
TCP Parameters											
IPv4 Maximum Segment Size		1380		bytes		Enable Congestion Control		<input checked="" type="checkbox"/>			
IPv6 Maximum Segment Size		1440		bytes		Override Internal Timeout Calculation		<input type="checkbox"/>		with 2000 ms.	
Receive Window		32768		bytes		Retries		2			
Delayed Acks		<input checked="" type="checkbox"/>		Inactivity Timer		0		ms.			
Delayed Ack Timeout		200		ms.							
Delayed Ack Bytes		2920		bytes							
IP Parameters											
Fragment Reassembly Timer		30000		milliseconds							

Spirent Avalanche Client Configuration

Client Associations

ASA5580-40_TCP_Throughput_Performance_Single_Context_4_Interfaces_Configuration_Example

Load Profile Type: User Based Global Global Profile Name: Default

Enabled	Action	Profile	Weight (P...)	Port	Subnet	Offset	Count	Number of Hosts	Inc	Start IP	End IP
<input checked="" type="checkbox"/>	10_30_1_101	Default	100 (100)	172.26.79.158:8,0	10_20_0_0_A (IPv4)	0	0	667	1	10.20.1.100	10.20.3.254
<input checked="" type="checkbox"/>	10_30_1_102	Default	100 (100)	172.26.79.158:8,1	10_20_0_0_B (IPv4)	0	0	667	1	10.20.4.100	10.20.6.254
<input checked="" type="checkbox"/>	10_30_1_103	Default	100 (100)	172.26.79.158:8,2	10_20_0_0_C (IPv4)	0	0	667	1	10.20.7.100	10.20.9.254
<input checked="" type="checkbox"/>	10_30_1_104	Default	100 (100)	172.26.79.158:8,3	10_20_0_0_D (IPv4)	0	0	667	1	10.20.10.100	10.20.12.254
<input checked="" type="checkbox"/>	10_30_1_105	Default	100 (100)	172.26.79.158:8,4	10_20_0_0_E (IPv4)	0	0	667	1	10.20.13.100	10.20.15.254
<input checked="" type="checkbox"/>	10_30_1_106	Default	100 (100)	172.26.79.158:8,5	10_20_0_0_F (IPv4)	0	0	667	1	10.20.16.100	10.20.18.254
<input checked="" type="checkbox"/>	10_30_1_107	Default	100 (100)	172.26.79.158:8,6	10_20_0_0_G (IPv4)	0	0	667	1	10.20.19.100	10.20.21.254
<input checked="" type="checkbox"/>	10_30_1_108	Default	100 (100)	172.26.79.158:8,7	10_20_0_0_H (IPv4)	0	0	667	1	10.20.22.100	10.20.24.254
<input checked="" type="checkbox"/>	10_22_1_101	Default	100 (100)	172.26.79.156:8,0	10_32_0_0_A (IPv4)	0	0	667	1	10.32.1.100	10.32.3.254
<input checked="" type="checkbox"/>	10_22_1_102	Default	100 (100)	172.26.79.156:8,1	10_32_0_0_B (IPv4)	0	0	667	1	10.32.4.100	10.32.6.254
<input checked="" type="checkbox"/>	10_22_1_103	Default	100 (100)	172.26.79.156:8,2	10_32_0_0_C (IPv4)	0	0	667	1	10.32.7.100	10.32.9.254
<input checked="" type="checkbox"/>	10_22_1_104	Default	100 (100)	172.26.79.156:8,3	10_32_0_0_D (IPv4)	0	0	667	1	10.32.10.100	10.32.12.254
<input checked="" type="checkbox"/>	10_22_1_105	Default	100 (100)	172.26.79.156:8,4	10_32_0_0_E (IPv4)	0	0	667	1	10.32.13.100	10.32.15.254
<input checked="" type="checkbox"/>	10_22_1_106	Default	100 (100)	172.26.79.156:8,5	10_32_0_0_F (IPv4)	0	0	667	1	10.32.16.100	10.32.18.254
<input checked="" type="checkbox"/>	10_22_1_107	Default	100 (100)	172.26.79.156:8,6	10_32_0_0_G (IPv4)	0	0	667	1	10.32.19.100	10.32.21.254
<input checked="" type="checkbox"/>	10_22_1_108	Default	100 (100)	172.26.79.156:8,7	10_32_0_0_H (IPv4)	0	0	667	1	10.32.22.100	10.32.24.254

Buttons: Generate Flat Subnets, Add Asso., Delete Asso.

Client Action List

Select an Actions List to Edit: 10_22_1_101

Actions

```

0
1 1 get http://10.22.1.101
2 1 get http://10.22.1.101
3 1 get http://10.22.1.101
4 1 get http://10.22.1.101
5 1 get http://10.22.1.101
6 1 get http://10.22.1.101
7 1 get http://10.22.1.101
8 1 get http://10.22.1.101
9 1 get http://10.22.1.101
10 1 get http://10.22.1.101
11 |
12
13
14
15

```

Tear Off/Dock Resources

Spirent Avalanche Server Configuration

Server Association

Profile	Port	Subnet	IPv4 Address Range
Default	172.26.79.155:8,0	10_22_0_0_A (IPv4)	10.22.1.101
Default	172.26.79.155:8,1	10_22_0_0_A (IPv4)	10.22.1.102
Default	172.26.79.155:8,2	10_22_0_0_A (IPv4)	10.22.1.103
Default	172.26.79.155:8,3	10_22_0_0_A (IPv4)	10.22.1.104
Default	172.26.79.155:8,4	10_22_0_0_A (IPv4)	10.22.1.105
Default	172.26.79.155:8,5	10_22_0_0_A (IPv4)	10.22.1.106
Default	172.26.79.155:8,6	10_22_0_0_A (IPv4)	10.22.1.107
Default	172.26.79.155:8,7	10_22_0_0_A (IPv4)	10.22.1.108
Default	172.26.79.157:8,0	10_30_0_0_A (IPv4)	10.30.1.101
Default	172.26.79.157:8,1	10_30_0_0_B (IPv4)	10.30.1.102
Default	172.26.79.157:8,2	10_30_0_0_C (IPv4)	10.30.1.103
Default	172.26.79.157:8,3	10_30_0_0_D (IPv4)	10.30.1.104
Default	172.26.79.157:8,4	10_30_0_0_E (IPv4)	10.30.1.105
Default	172.26.79.157:8,5	10_30_0_0_F (IPv4)	10.30.1.106
Default	172.26.79.157:8,6	10_30_0_0_G (IPv4)	10.30.1.107
Default	172.26.79.157:8,7	10_30_0_0_H (IPv4)	10.30.1.108

Server Transactions

Client Server Content Files Notes Run Results

Profiles Transactions Network Subnets Ports Associations

Select a Transaction Profile to Edit: Default

Response Properties

Timing: Fixed

Latency: 0 ms

Status Code: 200

Status Phrase: OK

Body Content Type: Ascii

Embedded String: Empty

String Position: Middle

Body Size: Fixed

Size: 512000 bytes

Fully Qualified Path:

Response Headers

MIME Type: text/html

Generate MD5 Header Every: 1000 Response

Last Modified Header

Type: Fixed

Date: 1 Jan 1970

Time: 0 hrs, 0 min, 17 sec.

Expires Header

Type: Fixed

Date: 1 Jan 1970

Time: 0 hrs, 0 min, 17 sec.

Additional Headers

Avalanche Load Specifications

ASA5580-40_TCP_Throughput_Performance_Single_Context_4_Interfaces_Configuration_Example

