Module 7 CoreXL and SecureXL

Module 7: CoreXL and SecureXL

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Objectives

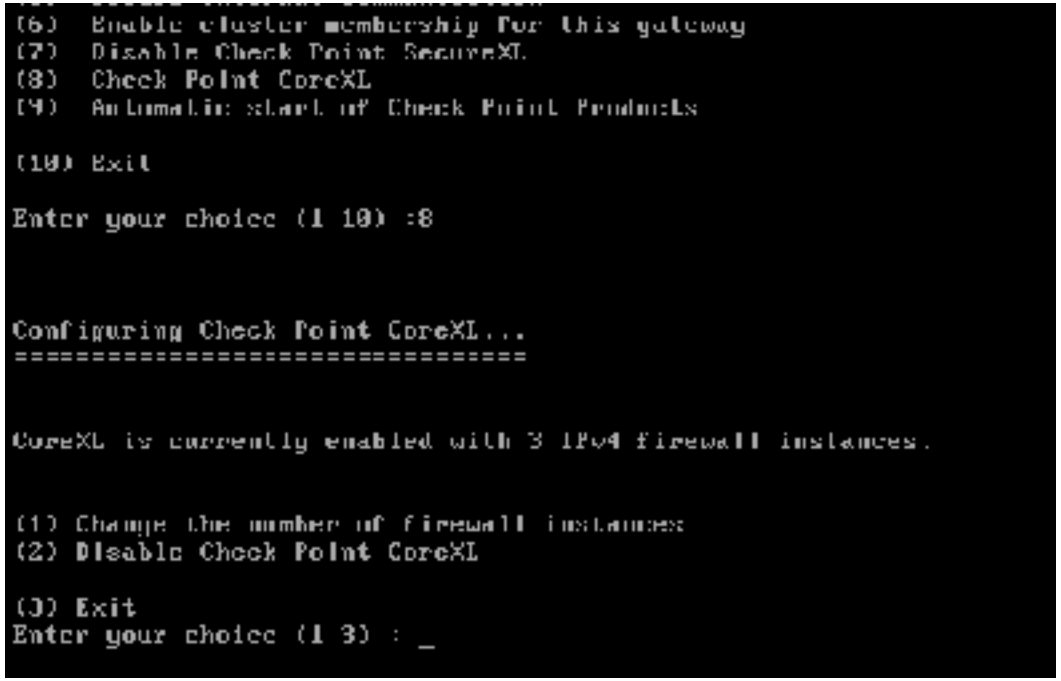
- Comprehend the effects of CoreXL for Multiple Core Firewalls
- Apply SecureXL for packet and session rate acceleration of firewall traffic
- Utilize CoreXL and SecureXL in performance tuning for firewalls

CoreXL

- Firewall Instance
- Multiple Core Servers
- Leveraging Multiple Firewall Instances for increased performance

CoreXL

- Firewall Instance Replication across multiple core gateways
- Example to the right
  - 3 Firewall Instances
  - 1 Secure Network Distributor



```
(6)  Enable cluster membership for this gateway
(7)  Disable Check Point SecureXL
(8)  Check Point CoreXL
(9)  Automatic start of Check Point Products

(10) Exit

Enter your choice (1 10) :8


Configuring Check Point CoreXL...
=================================


CoreXL is currently enabled with 3 IPv4 firewall instances.


(1) Change the number of firewall instances
(2) Disable Check Point CoreXL

(3) Exit
Enter your choice (1 3) : _
```

CoreXL

- Secure Network Distributor
- Default distribution of cores
  - 1 Distributor for 4 core Security Gateways
  - 2 Distributor for 8 core Security Gateway

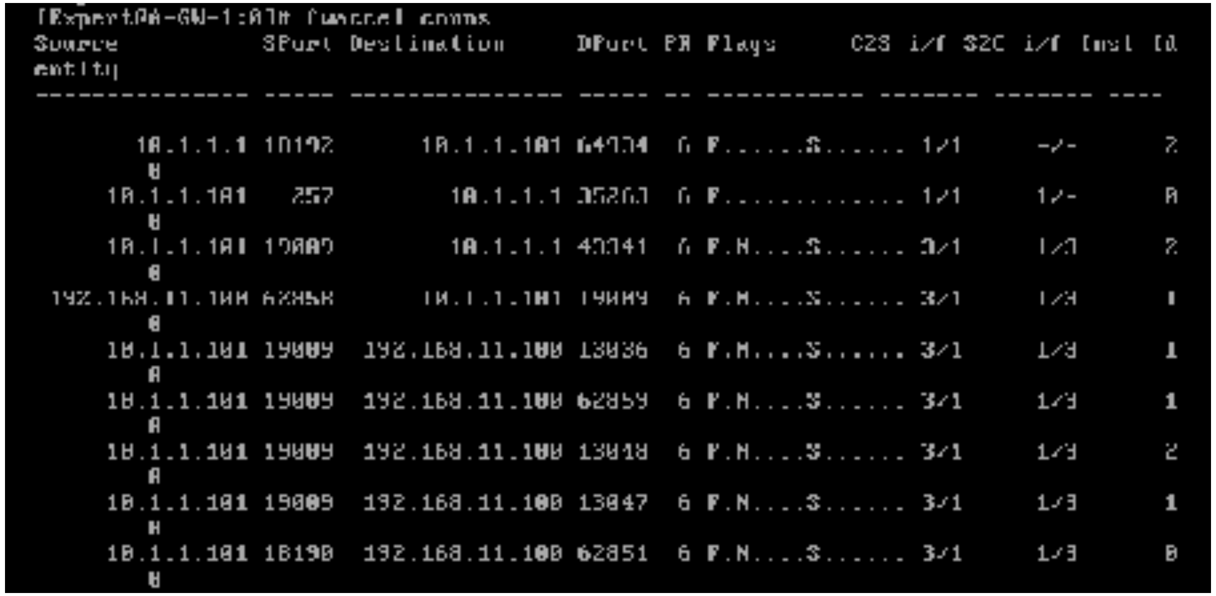
- Depending on performance issues the number of instances can be changed using cpconfig
- Clustered Security Gateways need to have the same number of firewall instances

SecureXL

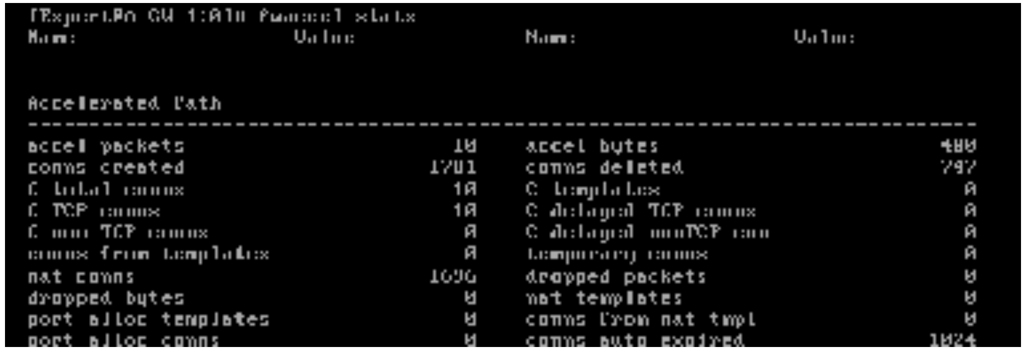
- Accelerating Traffic that has been inspected by the firewall
- State information is maintained
- Packet Rate Acceleration
- Session Rate Acceleration

SecureXL

- Packet Rate Acceleration
- SecureXL Table



```
[Expert@A-GW-1:0]# fwaccel conns
Source          SPort Destination     DPort PR Flags       C2S i/f S2C i/f Inst Id
entity
--------------- ----- --------------- ----- -- ----------- ------- ------- ----

       10.1.1.1 10192      10.1.1.101 64774  6 F.......S...... 1/1     -/-       2
      0
     10.1.1.101   257        10.1.1.1 35263  6 F.............. 1/1     1/-       0
      0
     10.1.1.101 19009        10.1.1.1 40741  6 F.N.....S...... 3/1     1/3       2
      0
 192.168.11.100 62858      10.1.1.101 19009  6 F.N.....S...... 3/1     1/3       1
      0
     10.1.1.101 19009  192.168.11.100 13036  6 F.N.....S...... 3/1     1/3       1
      0
     10.1.1.101 19009  192.168.11.100 62859  6 F.N.....S...... 3/1     1/3       1
      0
     10.1.1.101 19009  192.168.11.100 13018  6 F.N.....S...... 3/1     1/3       2
      0
     10.1.1.101 19009  192.168.11.100 13047  6 F.N.....S...... 3/1     1/3       1
      0
     10.1.1.101 18190  192.168.11.100 62851  6 F.N.....S...... 3/1     1/3       0
      0
```



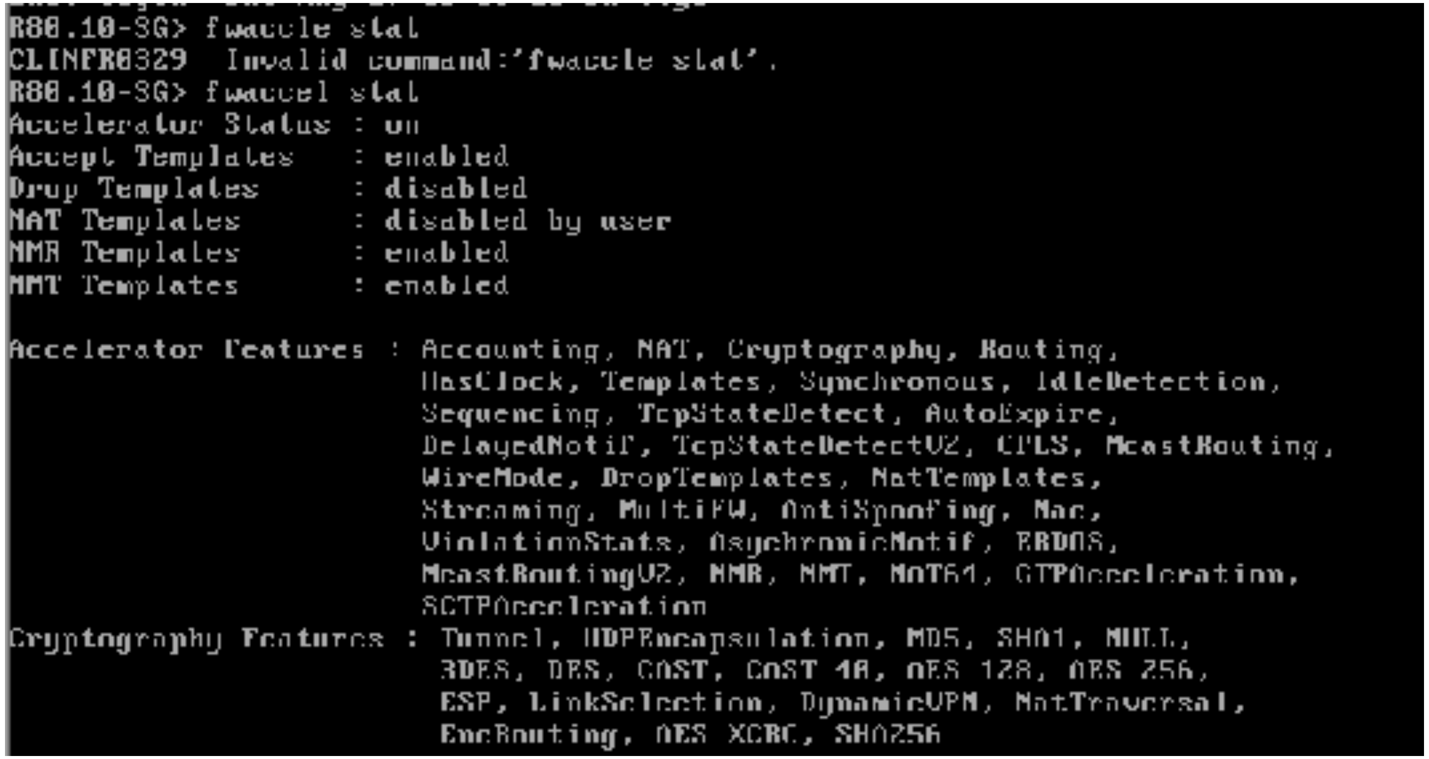
```
[Expert@A-GW-1:0]# fwaccel stats
Name:                      Value:          Name:                      Value:


Accelerated Path
--------------------------------------------------------------------------------
accel packets                 10          accel bytes                    480
conns created               1701          conns deleted                  797
C total conns                 10          C templates                      0
C TCP conns                   10          C delayed TCP conns              0
C non TCP conns                0          C delayed nonTCP con             0
conns from templates           0          temporary conns                  0
nat conns                   1696          dropped packets                  0
dropped bytes                  0          nat templates                    0
port alloc templates           0          conns from nat tmpl              0
port alloc conns               0          conns auto expired            1024
```

SecureXL

- Session Rate Acceleration
- Templates
  - Source Port is not checked in rulebase so an asterisk replaces the source port
  - When packet matches the other 4 fields, a connection is created from the template

Performance Tuning

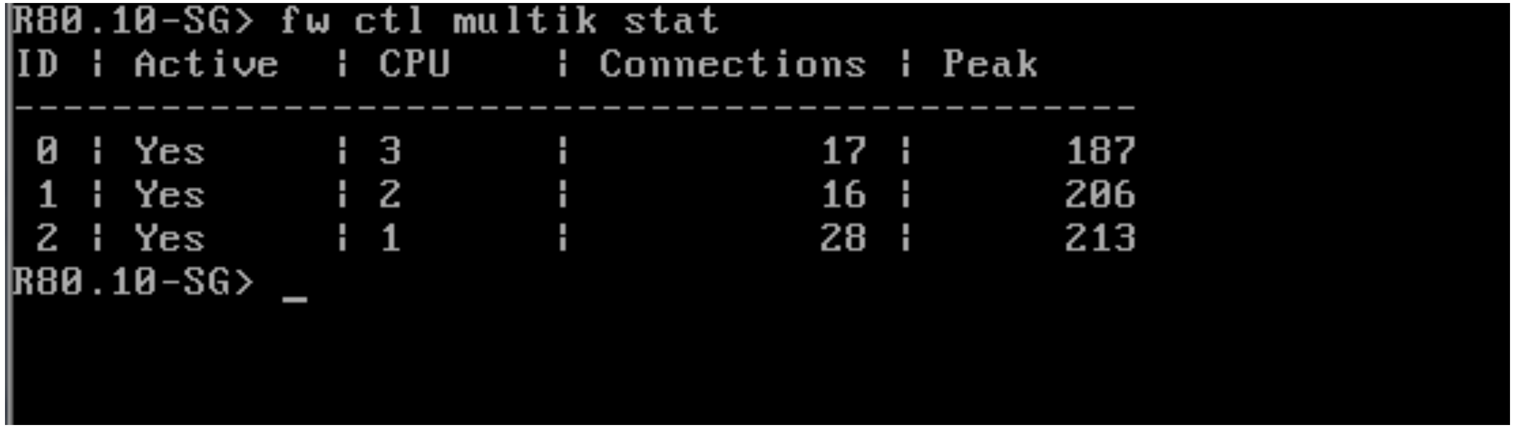
- Performance Pack
- SecureXL Templates
- NAT Templates
- Delayed Notification



```
R80.10-SG> fwaccle stat
CLINFR0329  Invalid command:'fwaccle stat'.
R80.10-SG> fwaccel stat
Accelerator Status : on
Accept Templates   : enabled
Drop Templates     : disabled
NAT Templates      : disabled by user
NMR Templates      : enabled
NMT Templates      : enabled

Accelerator Features : Accounting, NAT, Cryptography, Routing,
                       HasClock, Templates, Synchronous, IdleDetection,
                       Sequencing, TcpStateDetect, AutoExpire,
                       DelayedNotif, TcpStateDetectV2, CPLS, McastRouting,
                       WireMode, DropTemplates, NatTemplates,
                       Streaming, MultiFW, AntiSpoofing, Nac,
                       ViolationStats, AsychronicNotif, ERDOS,
                       McastRoutingV2, NMR, NMT, NAT64, GTPAcceleration,
                       SCTPAcceleration
Cryptography Features : Tunnel, UDPEncapsulation, MD5, SHA1, NULL,
                        3DES, DES, CAST, CAST 40, AES 128, AES 256,
                        ESP, LinkSelection, DynamicVPN, NatTraversal,
                        EncRouting, AES XCBC, SHA256
```

Performance Tuning

- Performance Pack
- CoreXL
  - fwaffininity.conf
  - fw ctl affinity
  - fw ctl multik stat



```
R80.10-SG> fw ctl multik stat
ID ¦ Active  ¦ CPU    ¦ Connections ¦ Peak
----------------------------------------------
 0 ¦ Yes     ¦ 3      ¦          17 ¦      187
 1 ¦ Yes     ¦ 2      ¦          16 ¦      206
 2 ¦ Yes     ¦ 1      ¦          28 ¦      213
R80.10-SG> _
```

Performance Tuning

- Multi-Queue
  - Make Sure SecurXL is enabled
  - Make sure that the network interfaces support Multi-Queue
  - Examine CPU Utilization
  - Examine CPU roles allocation
  - Decide if more CPU’s can be allocated to the SND

Summary

- Implemented CoreXL for a multiple core Security Gateway
- Implement SecureXL for connection and session rate acceleration
- Performance Tuning of Security Gateway by modifying the rulebase, SecureXL and CoreXL

Bibliography

Check Point R80.10 Security Gateway Technical Administration Guide
California: USA

Check Point R80.10 Security Gateway Performance Tuning Administration Guide California: USA