Configuration Templates

This appendix provides the configurations per tenant type.

Configuration Template for Gold Service Class

This section presents the configuration templates for the Gold service class.

Aggregation Nexus 7000 Gold Configuration

This section provides an aggregation Nexus 7000 Gold configuration.

```
vrf context customer_gold1_priv
  ip route 0.0.0.0/0 10.1.6.11

vrf context customer_gold1_pub
  ip route 11.1.0.0/16 10.1.5.11

interface Vlan201
  no shutdown
  ip flow monitor fm_vmdc23 input sampler sp_vmdc23
  vrf member customer_gold1_priv
  no ip redirects
  ip address 11.1.1.2/24
  no ipv6 redirects
  no ip arp gratuitous hsrp duplicate
  hsrp version 2
```

```
   hsrp 201
     preempt
     priority 150
     ip 11.1.1.1

interface Vlan301
  no shutdown
  ip flow monitor fm_vmdc23 input sampler sp_vmdc23
  vrf member customer_gold1_priv
  no ip redirects
  ip address 11.1.2.2/24
  no ipv6 redirects
  hsrp version 2
  hsrp 301
    preempt
    priority 150
    ip 11.1.2.1

interface Vlan401
  no shutdown
  ip flow monitor fm_vmdc23 input sampler sp_vmdc23
  vrf member customer_gold1_priv
  no ip redirects
  ip address 11.1.3.2/24
  no ipv6 redirects
  hsrp version 2
  hsrp 401
    preempt
    priority 150
    ip 11.1.3.1

interface Vlan1201
  no shutdown
  ip flow monitor fm_vmdc23 input sampler sp_vmdc23
  vrf member customer_gold1_priv
  no ip redirects
  ip address 10.1.6.2/24
  no ipv6 redirects
  hsrp version 2
  hsrp 1201
    preempt
    priority 150
    ip 10.1.6.1

interface Vlan1301
  no shutdown
  ip flow monitor fm_vmdc23 input sampler sp_vmdc23
  vrf member customer_gold1_pub
  no ip redirects
  ip address 10.1.5.2/24
  no ipv6 redirects
  hsrp version 2
  hsrp 1301
    preempt
    priority 150
    ip 10.1.5.1

interface port-channel343.201
  vrf member customer_gold1_pub
  ip address 10.1.34.3/24

interface Ethernet3/9.201
  vrf member customer_gold1_pub
  ip address 10.1.1.2/24
```

```
       no ip arp gratuitous hsrp duplicate

interface Ethernet4/9.201
  vrf member customer_gold1_pub
  ip address 10.1.3.2/24
  no ip arp gratuitous hsrp duplicate

router bgp 65501
  vrf customer_gold1_pub
    log-neighbor-changes
    address-family ipv4 unicast
      redistribute static route-map SET-COMM
      additional-paths send
      additional-paths receive
    neighbor 10.1.1.1
      remote-as 109
      address-family ipv4 unicast
        inherit peer-policy PREFER->PE1 1
    neighbor 10.1.3.1
      remote-as 109
      address-family ipv4 unicast
        send-community
    neighbor 10.1.34.4
      remote-as 65501
      address-family ipv4 unicast
        inherit peer-policy ibgp-policy 1
        no send-community
        next-hop-self
```

ASA Gold Configurations

This section provided templates for ASA Gold configurations.

ASA Gold Tenant Perimeter Firewall Configuration

This section provides an ASA Gold tenant perimeter firewall configuration.

```
dc02-asa-fw1/admin# changeto c customer-gold1
dc02-asa-fw1/customer-gold1# sh run
: Saved
:
ASA Version 9.0(1) <context>
!
terminal width 511
hostname customer-gold1
enable password 8Ry2YjIyt7RRXU24 encrypted
xlate per-session deny tcp any4 any4
xlate per-session deny tcp any4 any6
xlate per-session deny tcp any6 any4
xlate per-session deny tcp any6 any6
xlate per-session deny udp any4 any4 eq domain
xlate per-session deny udp any4 any6 eq domain
xlate per-session deny udp any6 any4 eq domain
xlate per-session deny udp any6 any6 eq domain
passwd 2KFQnbNIdI.2KYOU encrypted
```

```
names
!
interface Management0/0
 management-only
 nameif mgmt
 security-level 100
 ip address 192.168.50.201 255.255.255.0 standby 192.168.50.202
!
interface Port-channel1.1201
dc02-asa-fw1/customer-gold1# ter
dc02-asa-fw1/customer-gold1# terminal ?

  monitor  Syslog monitor
  no       Turn off syslogging to this terminal
  pager    Control page length for pagination. The page length set here is not saved
to configuration.
dc02-asa-fw1/customer-gold1# terminal pa
dc02-asa-fw1/customer-gold1# terminal pager ?

  <0-2147483647>  Pager lines, 0 means no page-limit
  lines           The number following this keyword determines the number of lines in
a page before ---more--- prompt appears, default is 24
dc02-asa-fw1/customer-gold1# terminal pager 0
dc02-asa-fw1/customer-gold1# sh run
: Saved
:
ASA Version 9.0(1) <context>
!
terminal width 511
hostname customer-gold1
enable password 8Ry2YjIyt7RRXU24 encrypted
xlate per-session deny tcp any4 any4
xlate per-session deny tcp any4 any6
xlate per-session deny tcp any6 any4
xlate per-session deny tcp any6 any6
xlate per-session deny udp any4 any4 eq domain
xlate per-session deny udp any4 any6 eq domain
xlate per-session deny udp any6 any4 eq domain
xlate per-session deny udp any6 any6 eq domain
passwd 2KFQnbNIdI.2KYOU encrypted
names
!
interface Management0/0
 management-only
 nameif mgmt
 security-level 100
 ip address 192.168.50.201 255.255.255.0 standby 192.168.50.202
!
interface Port-channel1.1201
 nameif inside
 security-level 100
 ip address 10.1.6.11 255.255.255.0 standby 10.1.6.12
!
interface Port-channel1.1301
 nameif outside
 security-level 0
 ip address 10.1.5.11 255.255.255.0 standby 10.1.5.12
!
interface Port-channel1.1401
 nameif dmz
 security-level 80
 ip address 10.1.8.21 255.255.255.0 standby 10.1.8.22
!
object network SP-CLIENTS-POOL
```

```
 range 51.1.1.1 51.1.1.254
object network SP-CLIENTS->DMZ
 range 0.0.0.0 255.255.255.255
object network test1
 range 51.1.2.1 51.1.2.254
object-group network SP-CLIENTS-NETWORK
 network-object 40.1.0.0 255.255.0.0
 network-object 10.1.0.0 255.255.0.0
 network-object 131.0.0.0 255.0.0.0
 network-object 51.1.2.0 255.255.255.0
object-group service SP-CLIENTS-PROTOCOLS-TCP tcp
 port-object eq www
 port-object eq https
 port-object eq ftp
 port-object eq ssh
 port-object eq domain
object-group service SP-CLIENTS-PROTOCOLS-UDP udp
 port-object eq tftp
 port-object eq domain
 port-object range 10000 30000
object-group network DMZ-VPN-NETWORK
 network-object 11.1.4.0 255.255.255.0
 network-object 11.255.0.0 255.255.0.0
object-group service DMZ-VPN-PROTOCOLS-TCP tcp
 port-object eq www
 port-object eq https
 port-object eq ssh
 port-object eq ftp
object-group service DMZ-VPN-PROTOCOLS-UDP udp
 port-object eq tftp
 port-object eq domain
 port-object range 10000 30000
access-list DMZ-VPN extended permit tcp object-group DMZ-VPN-NETWORK any object-group
DMZ-VPN-PROTOCOLS-TCP
access-list DMZ-VPN extended permit udp object-group DMZ-VPN-NETWORK any object-group
DMZ-VPN-PROTOCOLS-UDP
access-list DMZ-VPN extended permit icmp object-group DMZ-VPN-NETWORK any
access-list OUTSIDE extended permit tcp object-group SP-CLIENTS-NETWORK any
object-group SP-CLIENTS-PROTOCOLS-TCP
access-list OUTSIDE extended permit udp object-group SP-CLIENTS-NETWORK any
object-group SP-CLIENTS-PROTOCOLS-UDP
access-list OUTSIDE extended permit icmp object-group SP-CLIENTS-NETWORK any
pager lines 24
logging enable
logging timestamp
logging standby
logging monitor debugging
logging buffered debugging
logging trap errors
logging asdm informational
logging facility 17
logging device-id context-name
logging host mgmt 192.168.11.100
no logging message 713167
no logging message 713123
no logging message 313001
no logging message 725001
no logging message 725002
no logging message 710005
no logging message 113009
no logging message 302015
no logging message 302014
no logging message 302013
no logging message 602303
```

```
no logging message 609001
no logging message 715007
no logging message 302016
mtu mgmt 1500
mtu inside 1500
mtu outside 1500
mtu dmz 1500
monitor-interface inside
monitor-interface outside
monitor-interface dmz
icmp unreachable rate-limit 1 burst-size 1
no asdm history enable
arp timeout 14400
!
object network SP-CLIENTS->DMZ
 nat (outside,dmz) dynamic SP-CLIENTS-POOL
object network test1
 nat (outside,inside) dynamic test1
access-group OUTSIDE in interface outside
access-group DMZ-VPN in interface dmz
route outside 0.0.0.0 0.0.0.0 10.1.5.1 1
route inside 11.0.0.0 255.0.0.0 10.1.6.1 1
route dmz 11.1.4.0 255.255.255.0 10.1.8.11 1
route dmz 11.255.0.0 255.255.0.0 10.1.8.11 1
route inside 111.0.0.0 255.0.0.0 10.1.6.1 1
route mgmt 192.168.0.0 255.255.0.0 192.168.50.1 1
timeout xlate 3:00:00
timeout pat-xlate 0:00:30
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
timeout tcp-proxy-reassembly 0:01:00
timeout floating-conn 0:00:00
user-identity default-domain LOCAL
snmp-server host mgmt 192.168.11.12 community ***** version 2c
no snmp-server location
no snmp-server contact
crypto ipsec security-association pmtu-aging infinite
telnet timeout 5
ssh timeout 5
no threat-detection statistics tcp-intercept
!
class-map inspection_default
 match default-inspection-traffic
!
!
policy-map type inspect dns preset_dns_map
 parameters
  message-length maximum client auto
  message-length maximum 512
policy-map global_policy
 class inspection_default
  inspect ftp
  inspect h323 h225
  inspect h323 ras
  inspect ip-options
  inspect netbios
  inspect rsh
  inspect rtsp
  inspect skinny
  inspect esmtp
  inspect sqlnet
  inspect sunrpc
```

```
  inspect tftp
  inspect sip
  inspect xdmcp
  inspect dns preset_dns_map
!
Cryptochecksum:d41d8cd98f00b204e9800998ecf8427e
: end
dc02-asa-fw1/customer-gold1
```

ASA Gold Tenant DMZ Firewall Configuration

This section provides an ASA Gold tenantDMZ firewall configuration.

```
dc02-asa-fw1/customer-gold1# changeto c customer-gold1-dmz
dc02-asa-fw1/customer-gold1-dmz# ter
dc02-asa-fw1/customer-gold1-dmz# terminal p 0
dc02-asa-fw1/customer-gold1-dmz# sh run
: Saved
:
ASA Version 9.0(1) <context>
!
terminal width 511
hostname customer-gold1-dmz
enable password 8Ry2YjIyt7RRXU24 encrypted
xlate per-session deny tcp any4 any4
xlate per-session deny tcp any4 any6
xlate per-session deny tcp any6 any4
xlate per-session deny tcp any6 any6
xlate per-session deny udp any4 any4 eq domain
xlate per-session deny udp any4 any6 eq domain
xlate per-session deny udp any6 any4 eq domain
xlate per-session deny udp any6 any6 eq domain
xlate per-session deny tcp any4 any4
xlate per-session deny tcp any4 any6
xlate per-session deny tcp any6 any4
xlate per-session deny tcp any6 any6
xlate per-session deny udp any4 any4 eq domain
xlate per-session deny udp any4 any6 eq domain
xlate per-session deny udp any6 any4 eq domain
xlate per-session deny udp any6 any6 eq domain
passwd 2KFQnbNIdI.2KYOU encrypted
names
!
interface Management0/0
 management-only
 nameif mgmt
 security-level 100
 ip address 192.168.50.221 255.255.255.0 standby 192.168.50.222
!
interface Port-channel1.1401
 nameif inside
 security-level 100
 ip address 10.1.8.11 255.255.255.0 standby 10.1.8.12
!
interface Port-channel1.1501
 nameif dmz
 security-level 80
 ip address 10.1.7.11 255.255.255.0 standby 10.1.7.22
!
interface Port-channel1.1701
 nameif vpn
 security-level 50
 ip address 11.255.1.251 255.255.255.0 standby 11.255.1.252
```

Configuration Template for Gold Service Class

```
!
interface Port-channel1.2000
 nameif internet
 security-level 0
 ip address 100.200.1.11 255.255.255.0 standby 100.200.1.12
!
object network SERVER1
 host 11.1.4.11
object network SERVER3
 host 11.1.4.13
object network SERVER2
 host 11.1.4.12
object network WEB-VIP
 host 11.1.4.111
object network t1
object network SERVER8
 host 11.1.4.100
object network SERVER7
 host 11.1.4.151
object-group service INTERNET-PROTOCOLS-TCP tcp
 port-object eq www
 port-object eq https
 port-object eq ssh
object-group service VPN-PROTOCOLS-TCP tcp
 port-object eq www
 port-object eq https
 port-object eq ssh
object-group service INTERNET-PROTOCOLS-UDP udp
 port-object eq tftp
 port-object range 10000 30000
access-list INTERNET extended permit tcp any any object-group INTERNET-PROTOCOLS-TCP
access-list INTERNET extended permit icmp any any
access-list INTERNET extended permit udp any any object-group INTERNET-PROTOCOLS-UDP
access-list VPN extended permit tcp any any object-group INTERNET-PROTOCOLS-TCP
access-list VPN extended permit icmp any any
access-list DMZ extended permit ip any any
pager lines 24
logging enable
logging timestamp
logging standby
logging monitor debugging
logging buffered debugging
logging trap errors
logging asdm informational
logging facility 17
logging device-id context-name
logging host mgmt 192.168.11.100
no logging message 713167
no logging message 713123
no logging message 313001
no logging message 725001
no logging message 725002
no logging message 710005
no logging message 113009
no logging message 302015
no logging message 302014
no logging message 302013
no logging message 602303
no logging message 609001
no logging message 715007
no logging message 302016
mtu mgmt 1500
```

ASA Gold Tenant SSL and IPSec VPN Configuration

This section provides an ASA Gold tenant SSL and IPSec VPN configuration.

```
rypto ipsec ikev1 transform-set ipsec-tz esp-3des esp-md5-hmac
crypto ipsec security-association pmtu-aging infinite
crypto dynamic-map ipsec-cm 1 set ikev1 transform-set ipsec-tz
crypto dynamic-map ipsec-cm 1 set security-association lifetime seconds 7200
crypto map ipsec-cm 1 ipsec-isakmp dynamic ipsec-cm
crypto map ipsec-cm interface internet
crypto ca trustpool policy
crypto ikev1 enable internet
crypto ikev1 policy 1
 authentication pre-share
 encryption 3des
 hash md5
 group 2
 lifetime 3600
tunnel-group customer_gold1-ipsec type remote-access
tunnel-group customer_gold1-ipsec general-attributes
 address-pool customer_gold1
 authentication-server-group (internet) LOCAL
 authorization-server-group (internet) LOCAL
tunnel-group customer_gold1-ipsec ipsec-attributes
 ikev1 pre-shared-key *****
group-policy customer_gold1-ipsec internal
group-policy customer_gold1-ipsec attributes
 vpn-simultaneous-logins 200
 vpn-tunnel-protocol ikev1
 group-lock value customer_gold1-ipsec
 split-tunnel-policy tunnelspecified
 split-tunnel-network-list value customer_gold1
 vlan 1701
username ipsec1 password S8ZObXJyIluJKbJX encrypted
username ipsec1 attributes
 vpn-group-policy customer_gold1-ipsec
webvpn
 enable internet
 no anyconnect-essentials
 csd image disk0:/csd_3.6.6210-k9.pkg
 anyconnect image disk0:/anyconnect-win-3.1.01065-k9.pkg 1
 anyconnect profiles anyconnect-profile disk0:/RDP.xml
 anyconnect enable
 tunnel-group-preference group-url
tunnel-group customer_gold1-ssl type remote-access
tunnel-group customer_gold1-ssl general-attributes
 address-pool customer_gold1
 authentication-server-group (internet) LOCAL
 authorization-server-group (internet) LOCAL
tunnel-group customer_gold1-ssl webvpn-attributes
 group-url https://100.200.1.51/customer_gold1 enable
dc02-asa5555-1# sh run group-policy customer_gold1-ssl
group-policy customer_gold1-ssl internal
group-policy customer_gold1-ssl attributes
 vpn-simultaneous-logins 200
 vpn-tunnel-protocol ssl-client ssl-clientless
 group-lock value customer_gold1-ssl
 split-tunnel-policy tunnelspecified
 split-tunnel-network-list value customer_gold1
 vlan 1701
 webvpn
  anyconnect profiles value anyconnect-profile type user
dc02-asa5555-1# sh run username ssl1
```

```
username ssl1 password JSKNK4oromgGd3D9 encrypted
username ssl1 attributes
 vpn-group-policy customer_gold1-ssl
dc02-asa5555-1#
```

ACE Gold Configuration

This section provides an ACE Gold configuration.

```
dc02-ace-1/Admin# changeto customer_gold1
dc02-ace-1/customer_gold1# terminal length 0
dc02-ace-1/customer_gold1# sh run
Generating configuration....

logging enable
logging standby
logging timestamp
logging trap 6
logging buffered 7
logging monitor 6
logging facility 17
logging device-id context-name
logging host 192.168.11.100 udp/514
no logging message 251008
no logging message 302022
no logging message 302023
no logging message 302024
no logging message 302025
no logging message 106023

arp interval 1440

access-list app-acl line 8 extended permit ip any any
access-list db-acl line 8 extended permit ip any any
access-list t1 line 8 extended permit tcp 11.1.1.0 255.255.255.0 11.1.2.0
255.255.255.0
access-list web-acl line 8 extended deny udp 11.0.0.0 255.0.0.0 eq tftp any
access-list web-acl line 16 extended deny udp 11.0.0.0 255.0.0.0 eq 30000 any
access-list web-acl line 24 extended permit ip any any

probe ftp ftp-probe
  interval 2
  faildetect 5
  passdetect interval 2
  passdetect count 5
  receive 1
  expect status 200 400
  connection term forced
probe http http-probe
  interval 2
  faildetect 5
  passdetect interval 2
  passdetect count 5
  receive 1
  expect status 200 400
  connection term forced

rserver host app-server1
  ip address 11.1.2.11
  inservice
rserver host app-server2
  ip address 11.1.2.12
```

```
                      inservice
        rserver host app-server3
          ip address 11.1.2.13
          inservice
        rserver host db-server1
          ip address 11.1.3.11
          inservice
        rserver host db-server2
          ip address 11.1.3.12
          inservice
        rserver host db-server3
          ip address 11.1.3.13
          inservice
        rserver host udp-host
          ip address 11.1.1.100
          inservice
        rserver host udp-host:30000
          ip address 11.1.1.101
          inservice
        rserver host web-server1
          ip address 11.1.1.11
          inservice
        rserver host web-server2
          ip address 11.1.1.12
          inservice
        rserver host web-server3
          ip address 11.1.1.13
          inservice
        rserver host web-spirent
          ip address 11.1.1.151
          inservice

        serverfarm host app-serverfarm
          rserver app-server1
            inservice
          rserver app-server2
            inservice
          rserver app-server3
            inservice
        serverfarm host db-serverfarm
          rserver db-server1
            inservice
          rserver db-server2
            inservice
          rserver db-server3
            inservice
        serverfarm host udp-serverfarm
          rserver udp-host
            inservice
        serverfarm host udp-serverfarm:30000
          rserver udp-host:30000
            inservice
        serverfarm host web-serverfarm
          rserver web-server1
            inservice
          rserver web-server2
          rserver web-server3
          rserver web-spirent
            inservice

        parameter-map type connection tcp_pm
          set tcp wan-optimization rtt 0
        parameter-map type connection udp_pm
          set timeout inactivity 300
```

```
sticky http-cookie customer_gold1-http-cookie customer_gold1-http
  cookie insert browser-expire
  serverfarm web-serverfarm
  timeout 10
  replicate sticky
sticky http-cookie customer_gold1-web-app-cookie customer_gold1-web->app
  cookie insert browser-expire
  serverfarm app-serverfarm
  timeout 10
  replicate sticky
sticky ip-netmask 255.255.255.255 address both customer_gold1-app->db
  serverfarm db-serverfarm
  timeout 10
  replicate sticky

class-map type http loadbalance match-any cm-app-subnet
  2 match source-address 11.1.2.0 255.255.255.0
class-map type http loadbalance match-any cm-http
  2 match http url /.*.txt
  3 match http url /.*.html
class-map type http loadbalance match-any cm-web-subnet
  2 match source-address 11.1.1.0 255.255.255.0

class-map match-all app->db-vip
  2 match virtual-address 11.1.3.111 tcp eq www
class-map type http loadbalance match-all cm-app->db
  2 match class-map cm-http
  3 match class-map cm-app-subnet
class-map type http loadbalance match-all cm-web->app
  2 match class-map cm-http
  3 match class-map cm-web-subnet
class-map type management match-any management-traffic
  2 match protocol ssh any
  3 match protocol http any
  4 match protocol https any
  5 match protocol icmp any
  6 match protocol telnet any
  7 match protocol snmp source-address 192.168.0.0 255.255.0.0
class-map match-all udp-vip
  2 match virtual-address 11.1.1.111 udp eq 69
class-map match-all udp-vip:30000
  2 match virtual-address 11.1.1.111 udp eq 30000
class-map match-all web->app-vip
  2 match virtual-address 11.1.2.111 tcp eq www
class-map match-all web-vip
  2 match virtual-address 11.1.1.111 tcp eq www

policy-map type management first-match management-traffic
  class management-traffic
    permit

policy-map type loadbalance first-match app->db-lb-policy
  class cm-app->db
    sticky-serverfarm customer_gold1-app->db
policy-map type loadbalance first-match udp-lb-policy
  class class-default
    serverfarm udp-serverfarm
policy-map type loadbalance first-match udp-lb-policy:30000
  class class-default
    serverfarm udp-serverfarm:30000
policy-map type loadbalance first-match web->app-lb-policy
  class cm-web->app
    sticky-serverfarm customer_gold1-web->app
```

```
policy-map type loadbalance first-match web-lb-policy
  class cm-http
    sticky-serverfarm customer_gold1-http

policy-map multi-match app->db-lb
  class app->db-vip
    loadbalance vip inservice
    loadbalance policy app->db-lb-policy
    loadbalance vip icmp-reply active
    nat dynamic 3 vlan 401
policy-map multi-match lb-policy
  class web-vip
    loadbalance vip inservice
    loadbalance policy web-lb-policy
    loadbalance vip icmp-reply active
    nat dynamic 1 vlan 201
    connection advanced-options tcp_pm
  class udp-vip
    loadbalance vip inservice
    loadbalance policy udp-lb-policy
    loadbalance vip icmp-reply
    nat dynamic 11 vlan 201
    connection advanced-options udp_pm
  class udp-vip:30000
    loadbalance vip inservice
    loadbalance policy udp-lb-policy:30000
    loadbalance vip icmp-reply active
    nat dynamic 12 vlan 201
    connection advanced-options udp_pm
policy-map multi-match web->app-lb
  class web->app-vip
    loadbalance vip inservice
    loadbalance policy web->app-lb-policy
    loadbalance vip icmp-reply active
    nat dynamic 2 vlan 301

service-policy input management-traffic

interface vlan 60
  description mgmt
  ip address 192.168.60.21 255.255.255.0
  peer ip address 192.168.60.22 255.255.255.0
  no shutdown
interface vlan 201
  description web tier
  ip address 11.1.1.22 255.255.255.0
  alias 11.1.1.21 255.255.255.0
  peer ip address 11.1.1.23 255.255.255.0
  access-group input web-acl
  nat-pool 1 11.1.1.24 11.1.1.30 netmask 255.255.255.0 pat
  nat-pool 11 11.1.1.41 11.1.1.41 netmask 255.255.255.255
  nat-pool 12 11.1.1.42 11.1.1.42 netmask 255.255.255.255
  service-policy input lb-policy
  no shutdown
interface vlan 301
  description app tier
  ip address 11.1.2.22 255.255.255.0
  alias 11.1.2.21 255.255.255.0
  peer ip address 11.1.2.23 255.255.255.0
  access-group input app-acl
  nat-pool 2 11.1.2.24 11.1.2.30 netmask 255.255.255.0 pat
  service-policy input web->app-lb
  no shutdown
interface vlan 401
```

```
   description db tier
   ip address 11.1.3.22 255.255.255.0
   alias 11.1.3.21 255.255.255.0
   peer ip address 11.1.3.23 255.255.255.0
   access-group input db-acl
   nat-pool 3 11.1.3.24 11.1.3.30 netmask 255.255.255.0 pat
   service-policy input app->db-lb
   no shutdown
interface vlan 501
   no normalization

ft track host 1

ip route 0.0.0.0 0.0.0.0 11.1.1.1
ip route 192.168.0.0 255.255.0.0 192.168.60.1

snmp-server community public group Network-Monitor

snmp-server host 192.168.11.39 traps version 2c public

snmp-server host 192.168.11.41 traps version 2c public

snmp-server trap-source vlan 60

snmp-server enable traps rate-limit bandwidth
snmp-server enable traps slb serverfarm
snmp-server enable traps slb vserver
snmp-server enable traps slb real
snmp-server enable traps syslog
snmp-server enable traps snmp authentication
snmp-server enable traps snmp linkup
snmp-server enable traps snmp linkdown
username admin password 5 $1$d0VCV53d$J1bjlQoaSO8xhAoYReeh90  role Admin domain
default-domain

dc02-ace-1/customer_gold1#
```

ASR 1000 PE Gold Tenant Configuration

This section provides an ASR 1000 PE Gold tenant configuration.

```
dc02-asr1k-pe1#sh run vrf customer_gold1
Building configuration...

Current configuration : 1386 bytes
vrf definition customer_gold1
 rd 21:1
 route-target export 21:1
 route-target import 31:1
 !
 address-family ipv4
 exit-address-family
!
!
interface TenGigabitEthernet0/2/0
 no ip address
 load-interval 30
 carrier-delay up 60
 cdp enable
!
interface TenGigabitEthernet0/2/0.201
 encapsulation dot1Q 201
```

```
 vrf forwarding customer_gold1
 ip address 10.1.1.1 255.255.255.0
 ip flow monitor input_monitor input
 ip flow monitor output_monitor output
 plim qos input map cos  5  queue strict-priority
 service-policy input gold-in
 service-policy output gold-out-parent
!
interface TenGigabitEthernet0/3/0
 no ip address
 load-interval 30
 carrier-delay up 60
 cdp enable
!
interface TenGigabitEthernet0/3/0.201
 encapsulation dot1Q 201
 vrf forwarding customer_gold1
 ip address 10.1.4.1 255.255.255.0
 ip flow monitor input_monitor input
 ip flow monitor output_monitor output
 plim qos input map cos  5  queue strict-priority
 service-policy input gold-in
 service-policy output gold-out-parent
!
router bgp 109
 !
 address-family ipv4 vrf customer_gold1
  neighbor 10.1.1.2 remote-as 65501
  neighbor 10.1.1.2 activate
  neighbor 10.1.1.2 inherit peer-policy DC2_PEER_POLICY
  neighbor 10.1.4.2 remote-as 65501
  neighbor 10.1.4.2 activate
  neighbor 10.1.4.2 inherit peer-policy DC2_PEER_POLICY
 exit-address-family
!
ip route vrf customer_gold1 169.0.0.0 255.0.0.0 Null0 track 1
end
```

Nexus 1000V Gold Configuration

This section provides a Nexus 1000V Gold configuration.

```
#---- one time config
class-map type qos match-all gold-ef
  match dscp 46
policy-map type qos gold
  class gold-ef
    set cos 5
    police cir 50 mbps bc 200 ms conform set-cos-transmit 5 violate drop
    set dscp 40
  class class-default
    police cir 250 mbps bc 200 ms conform set-cos-transmit 2 violate set dscp dscp
table pir-markdown-map
    set qos-group 88
    set dscp 16

port-profile type vethernet gold-profile
  switchport mode access
  service-policy input gold
  pinning id 2
  no shutdown
  state enabled
```

```
#--- once for each tenant
vlan 201,301,401,1601

vservice node gold001-vsg01 type vsg
  ip address 192.168.54.51
  adjacency l3
  fail-mode open
vservice node gold001-vsg02 type vsg
  ip address 192.168.54.61
  adjacency l3
  fail-mode open

vservice path gold001-tier1
  node gold001-vsg01 profile gold-tier1 order 10
vservice path gold001-tier2
  node gold001-vsg01 profile gold-tier2 order 10
vservice path gold001-tier3
  node gold001-vsg01 profile gold-tier3 order 10
vservice path gold001-dmz
  node gold001-vsg02 profile gold-dmz order 10

port-profile type ethernet system-data-uplink
  switchport trunk allowed vlan add 201,301,401,1601

port-profile type vethernet gold001-v0201
  vmware port-group
  inherit port-profile gold-profile
  switchport access vlan 201
  state enabled
  org root/gold001
  vservice path gold001-tier1
port-profile type vethernet gold001-v0301
  vmware port-group
  inherit port-profile gold-profile
  switchport access vlan 301
  state enabled
  org root/gold001
  vservice path gold001-tier2
port-profile type vethernet gold001-v0401
  vmware port-group
  inherit port-profile gold-profile
  switchport access vlan 401
  state enabled
  org root/gold001
  vservice path gold001-tier3
port-profile type vethernet gold001-v1601
  vmware port-group
  inherit port-profile gold-profile
  switchport access vlan 1601
  state enabled
  org root/gold001
  vservice path gold001-dmz
```

Configuration Template for Silver Service Class

This section presents the configuration templates for the Silver service class.

Aggregation Nexus 7000 Silver Configuration

```
vrf context customer_silver1

interface Vlan501
  no shutdown
  ip flow monitor fm_vmdc23 input sampler sp_vmdc23
  vrf member customer_silver1
  no ip redirects
  ip address 11.2.1.2/24
  no ipv6 redirects
  no ip arp gratuitous hsrp duplicate
  hsrp version 2
  hsrp 501
    preempt
    priority 150
    ip 11.2.1.1

interface Vlan601
  no shutdown
  ip flow monitor fm_vmdc23 input sampler sp_vmdc23
  vrf member customer_silver1
  no ip redirects
  ip address 11.2.2.2/24
  no ipv6 redirects
  hsrp version 2
  hsrp 601
    preempt
    priority 150
    ip 11.2.2.1

interface Vlan701
  no shutdown
  ip flow monitor fm_vmdc23 input sampler sp_vmdc23
  vrf member customer_silver1
  no ip redirects
  ip address 11.2.3.2/24
  no ipv6 redirects
  hsrp version 2
  hsrp 701
    preempt
    priority 150
    ip 11.2.3.1

interface port-channel343.501
  encapsulation dot1q 501
  service-policy type qos input ingress-qos-policy
  vrf member customer_silver1
  ip address 10.2.34.3/24
  no shutdown

interface Ethernet3/9.501
  encapsulation dot1q 501
  service-policy type qos input ingress-qos-policy
  vrf member customer_silver1
  ip address 10.2.1.2/24
```

```
        no ip arp gratuitous hsrp duplicate
        no shutdown

    interface Ethernet4/9.501
        encapsulation dot1q 501
        service-policy type qos input ingress-qos-policy no-stats
        vrf member customer_silver1
        ip address 10.2.3.2/24
        no ip arp gratuitous hsrp duplicate
        no shutdown

    router bgp 65501
        vrf customer_silver1
            graceful-restart-helper
            log-neighbor-changes
            address-family ipv4 unicast
                redistribute direct route-map SERVER-NET-SET-COMM
                additional-paths send
                additional-paths receive
            neighbor 10.2.1.1
                remote-as 109
                address-family ipv4 unicast
                    inherit peer-policy PREFER->PE1 1
            neighbor 10.2.3.1
                remote-as 109
                address-family ipv4 unicast
                    send-community
            neighbor 10.2.34.4
                remote-as 65501
                address-family ipv4 unicast
                    inherit peer-policy ibgp-policy 1
                    no send-community
```

ACE Silver Tenant Configuration

This section provides an ACE Silver tenant configuration.

```
dc02-ace-3/customer_silver1# sh run
Generating configuration....

logging enable
logging standby
logging timestamp
logging trap 6
logging facility 17
logging device-id context-name
logging host 192.168.11.100 udp/514
no logging message 106023

arp interval 1440

access-list app-acl line 8 extended permit ip any any
access-list capture-list line 8 extended permit ip any any
access-list db-acl line 8 extended permit ip any any
access-list web-acl line 8 extended deny udp 11.0.0.0 255.0.0.0 eq tftp any
access-list web-acl line 16 extended deny udp 11.0.0.0 255.0.0.0 eq 30000 any
access-list web-acl line 24 extended permit ip any any

probe ftp ftp-probe
    interval 2
    faildetect 5
    passdetect interval 2
```

```
                      passdetect count 5
                      receive 1
                      expect status 200 400
                      connection term forced
                 probe http http-probe
                      interval 2
                      faildetect 5
                      passdetect interval 2
                      passdetect count 5
                      receive 1
                      expect status 200 400
                      connection term forced

                 rserver host app-server1
                      ip address 11.2.2.11
                      inservice
                 rserver host app-server2
                      ip address 11.2.2.12
                      inservice
                 rserver host app-server3
                      ip address 11.2.2.13
                      inservice
                 rserver host db-server1
                      ip address 11.2.3.11
                      inservice
                 rserver host db-server2
                      ip address 11.2.3.12
                      inservice
                 rserver host db-server3
                      ip address 11.2.3.13
                      inservice
                 rserver host udp-host
                      ip address 11.2.1.100
                      inservice
                 rserver host web-server1
                      ip address 11.2.1.11
                      inservice
                 rserver host web-server2
                      ip address 11.2.1.12
                      inservice
                 rserver host web-server3
                      ip address 11.2.1.13
                      inservice
                 rserver host web-spirent
                      ip address 11.2.1.151
                      inservice

                 serverfarm host app-serverfarm
                      rserver app-server1
                          inservice
                      rserver app-server2
                          inservice
                      rserver app-server3
                          inservice
                 serverfarm host db-serverfarm
                      rserver db-server1
                          inservice
                      rserver db-server2
                          inservice
                      rserver db-server3
                          inservice
                 serverfarm host udp-serverfarm
                      rserver udp-host
                          inservice
```

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```
serverfarm host web-serverfarm
  rserver web-server1
  rserver web-server2
  rserver web-server3
  rserver web-spirent
    inservice

parameter-map type connection tcp_pm
  set tcp wan-optimization rtt 0
parameter-map type connection udp_pm
  set timeout inactivity 300

sticky http-cookie customer_gold1-http-cookie customer_gold1-http
  cookie insert browser-expire
  serverfarm web-serverfarm
  timeout 10
  replicate sticky
sticky http-cookie customer_gold1-web-app-cookie customer_gold1-web->app
  cookie insert browser-expire
  serverfarm app-serverfarm
  timeout 10
  replicate sticky
sticky ip-netmask 255.255.255.255 address both customer_gold1-app->db
  serverfarm db-serverfarm
  timeout 10
  replicate sticky

class-map type http loadbalance match-any cm-app-subnet
  2 match source-address 11.2.2.0 255.255.255.0
class-map type http loadbalance match-any cm-http
  2 match http url /.*.txt
  3 match http url /.*.html
class-map type http loadbalance match-any cm-web-subnet
  2 match source-address 11.2.1.0 255.255.255.0

class-map match-all app->db-vip
  2 match virtual-address 11.2.3.111 tcp eq www
class-map type http loadbalance match-all cm-app->db
  2 match class-map cm-http
  3 match class-map cm-app-subnet
class-map type http loadbalance match-all cm-web->app
  2 match class-map cm-http
  3 match class-map cm-web-subnet
class-map type management match-any management-traffic
  2 match protocol ssh any
  3 match protocol http any
  4 match protocol https any
  5 match protocol icmp any
  6 match protocol telnet any
  7 match protocol snmp source-address 192.168.0.0 255.255.0.0
class-map match-all udp-vip
  2 match virtual-address 11.2.1.111 udp eq 69
class-map match-all web->app-vip
  2 match virtual-address 11.2.2.111 tcp eq www
class-map match-all web-vip
  2 match virtual-address 11.2.1.111 tcp eq www

policy-map type management first-match management-traffic
  class management-traffic
    permit

policy-map type loadbalance first-match app->db-lb-policy
  class cm-app->db
    sticky-serverfarm customer_gold1-app->db
```

```
policy-map type loadbalance first-match udp-lb-policy
  class class-default
    serverfarm udp-serverfarm
policy-map type loadbalance first-match web->app-lb-policy
  class cm-web->app
    sticky-serverfarm customer_gold1-web->app
policy-map type loadbalance first-match web-lb-policy
  class cm-http
    sticky-serverfarm customer_gold1-http

policy-map multi-match app->db-lb
  class app->db-vip
    loadbalance vip inservice
    loadbalance policy app->db-lb-policy
    loadbalance vip icmp-reply active
    nat dynamic 3 vlan 701
  class udp-vip
policy-map multi-match lb-policy
  class web-vip
    loadbalance vip inservice
    loadbalance policy web-lb-policy
    loadbalance vip icmp-reply active
    nat dynamic 1 vlan 501
    connection advanced-options tcp_pm
  class udp-vip
    loadbalance vip inservice
    loadbalance policy udp-lb-policy
    loadbalance vip icmp-reply
    nat dynamic 11 vlan 501
    connection advanced-options udp_pm
policy-map multi-match web->app-lb
  class web->app-vip
    loadbalance vip inservice
    loadbalance policy web->app-lb-policy
    loadbalance vip icmp-reply active
    nat dynamic 2 vlan 601

service-policy input management-traffic

interface vlan 60
  description mgmt
  ip address 192.168.60.61 255.255.255.0
  peer ip address 192.168.60.62 255.255.255.0
  no shutdown
interface vlan 501
  description web tier
  ip address 11.2.1.22 255.255.255.0
  alias 11.2.1.21 255.255.255.0
  peer ip address 11.2.1.23 255.255.255.0
  access-group input web-acl
  nat-pool 1 11.2.1.24 11.2.1.30 netmask 255.255.255.0 pat
  nat-pool 11 11.2.1.41 11.2.1.41 netmask 255.255.255.0
  service-policy input lb-policy
  no shutdown
interface vlan 601
  description app tier
  ip address 11.2.2.22 255.255.255.0
  alias 11.2.2.21 255.255.255.0
  peer ip address 11.2.2.23 255.255.255.0
  access-group input app-acl
  nat-pool 2 11.2.2.24 11.2.2.30 netmask 255.255.255.0 pat
  service-policy input web->app-lb
  no shutdown
interface vlan 701
```

```
  description db tier
  ip address 11.2.3.22 255.255.255.0
  alias 11.2.3.21 255.255.255.0
  peer ip address 11.2.3.23 255.255.255.0
  access-group input db-acl
  nat-pool 3 11.2.3.24 11.2.3.30 netmask 255.255.255.0 pat
  service-policy input app->db-lb
  no shutdown

ip route 0.0.0.0 0.0.0.0 11.2.1.1
ip route 192.168.0.0 255.255.0.0 192.168.60.1

dc02-ace-3/customer_silver1
```

ASR 1000 PE Silver Tenant Configuration

This section provides an ASR 1000 PE CE Silver tenant configuration.

```
vrf definition customer_silver1
 rd 22:1
 route-target export 22:1
 route-target import 32:1
 !
 address-family ipv4
 exit-address-family
!
!
interface TenGigabitEthernet0/2/0
 no ip address
 load-interval 30
 carrier-delay up 60
 cdp enable
!
interface TenGigabitEthernet0/2/0.501
 encapsulation dot1Q 501
 vrf forwarding customer_silver1
 ip address 10.2.1.1 255.255.255.0
 ip flow monitor input_monitor input
 ip flow monitor output_monitor output
 plim qos input map cos  5  queue strict-priority
 service-policy input silver-in
 service-policy output silver-out-parent
!
interface TenGigabitEthernet0/3/0
 no ip address
 load-interval 30
 carrier-delay up 60
 cdp enable
!
interface TenGigabitEthernet0/3/0.501
 encapsulation dot1Q 501
 vrf forwarding customer_silver1
 ip address 10.2.4.1 255.255.255.0
 ip flow monitor input_monitor input
 ip flow monitor output_monitor output
 plim qos input map cos  5  queue strict-priority
 service-policy input silver-in
 service-policy output silver-out-parent
!
router bgp 109
 !
 address-family ipv4 vrf customer_silver1
```

```
                      import path selection all
                      import path limit 10
                      bgp advertise-best-external
                      neighbor 10.2.1.2 remote-as 65501
                      neighbor 10.2.1.2 activate
                      neighbor 10.2.1.2 inherit peer-policy DC2_PEER_POLICY
                      neighbor 10.2.4.2 remote-as 65501
                      neighbor 10.2.4.2 activate
                      neighbor 10.2.4.2 inherit peer-policy DC2_PEER_POLICY
                     exit-address-family
                    !
                    ip route vrf customer_silver1 169.0.0.0 255.0.0.0 Null0 track 1
                    end
```

Nexus 1000V Silver Configuration

This section provides a Nexus 1000v Silver configuration.

```
#---- one time config
policy-map type qos silver
  class class-default
    set qos-group 89
    police cir 62500 kbps bc 200 ms conform set-cos-transmit 2 violate set dscp dscp
table pir-markdown-map
    set dscp 16

port-profile type vethernet silver-profile
  switchport mode access
  service-policy input silver
  pinning id 3
  no shutdown
  state enabled

#--- once for each tenant
vlan 501,601,701

vservice node silver001-vsg01 type vsg
  ip address 192.168.54.101
  adjacency l3
  fail-mode open

vservice path silver001-tier1
  node silver001-vsg01 profile silver-tier1 order 10
vservice path silver001-tier2
  node silver001-vsg01 profile silver-tier2 order 10
vservice path silver001-tier3
  node silver001-vsg01 profile silver-tier3 order 10

port-profile type ethernet system-data-uplink
  switchport trunk allowed vlan add 501,601,701

port-profile type vethernet silver001-v0501
  vmware port-group
  inherit port-profile silver-profile
  switchport access vlan 501
  state enabled
  org root/silver001
  vservice path silver001-tier1
port-profile type vethernet silver001-v0601
  vmware port-group
  inherit port-profile silver-profile
  switchport access vlan 601
```

```
    state enabled
    org root/silver001
    vservice path silver001-tier2
port-profile type vethernet silver001-v0701
    vmware port-group
    inherit port-profile silver-profile
    switchport access vlan 701
    state enabled
    org root/silver001
    vservice path silver001-tier3
```

Configuration Template for Bronze Service Class

This section presents the configuration templates for the Bronze service class.

Aggregation Nexus 7000 Bronze Configuration

This section provides an aggregation Nexus 7000 Bronze configuration.

```
interface Vlan801
  no shutdown
  ip flow monitor fm_vmdc23 input sampler sp_vmdc23
  vrf member customer_bronze1
  no ip redirects
  ip address 11.3.1.2/24
  no ipv6 redirects
  no ip arp gratuitous hsrp duplicate
  hsrp version 2
  hsrp 801
    preempt
    priority 150
    ip 11.3.1.1

interface port-channel343.801
  encapsulation dot1q 801
  service-policy type qos input ingress-qos-policy no-stats
  vrf member customer_bronze1
  ip address 10.3.34.3/24
  no shutdown

interface Ethernet3/9.801
  encapsulation dot1q 801
  service-policy type qos input ingress-qos-policy no-stats
  vrf member customer_bronze1
  ip address 10.3.1.2/24
  no ip arp gratuitous hsrp duplicate
  no shutdown

interface Ethernet4/9.801
  encapsulation dot1q 801
  service-policy type qos input ingress-qos-policy no-stats
  vrf member customer_bronze1
  ip address 10.3.3.2/24
  no ip arp gratuitous hsrp duplicate
```

```
      no shutdown

vrf context customer_bronze1
router bgp 65501
  vrf customer_bronze1
    log-neighbor-changes
    address-family ipv4 unicast
      redistribute direct route-map SERVER-NET-SET-COMM
      nexthop trigger-delay critical 100 non-critical 300
    neighbor 10.3.1.1
      remote-as 109
      address-family ipv4 unicast
        inherit peer-policy PREFER->PE1 1
    neighbor 10.3.3.1
      remote-as 109
      address-family ipv4 unicast
        send-community
    neighbor 10.3.34.4
      remote-as 65501
      address-family ipv4 unicast
```

ASR 1000 PE Bronze Configuration

This section provides an ASR 1000 PE Bronze configuration.

```
vrf definition customer_bronze1
 rd 23:1
 route-target export 23:1
 route-target import 33:1
 !
 address-family ipv4
 exit-address-family
!
!
interface TenGigabitEthernet0/2/0
 no ip address
 load-interval 30
 carrier-delay up 60
 cdp enable
!
interface TenGigabitEthernet0/2/0.801
 encapsulation dot1Q 801
 vrf forwarding customer_bronze1
 ip address 10.3.1.1 255.255.255.0
 ip flow monitor input_monitor input
 ip flow monitor output_monitor output
 plim qos input map cos  5  queue strict-priority
 service-policy output bronze-out-parent
!
interface TenGigabitEthernet0/3/0
 no ip address
 load-interval 30
 carrier-delay up 60
 cdp enable
!
interface TenGigabitEthernet0/3/0.801
 encapsulation dot1Q 801
 vrf forwarding customer_bronze1
 ip address 10.3.4.1 255.255.255.0
 ip flow monitor input_monitor input
 ip flow monitor output_monitor output
 plim qos input map cos  5  queue strict-priority
```

```
 service-policy output bronze-out-parent
!
router bgp 109
 !
 address-family ipv4 vrf customer_bronze1
  neighbor 10.3.1.2 remote-as 65501
  neighbor 10.3.1.2 activate
  neighbor 10.3.1.2 inherit peer-policy DC2_PEER_POLICY
  neighbor 10.3.4.2 remote-as 65501
  neighbor 10.3.4.2 activate
  neighbor 10.3.4.2 inherit peer-policy DC2_PEER_POLICY
 exit-address-family
!
ip route vrf customer_bronze1 169.0.0.0 255.0.0.0 Null0 track 1
```

Nexus 1000V Bronze Configuration

This section provides a Nexus 1000V Bronze configuration.

```
#---- one time config
policy-map type qos bronze
  class class-default
    set cos 0
    police cir 500 mbps bc 200 ms conform transmit violate drop
    set dscp 0

port-profile type vethernet bronze-profile
  switchport mode access
  service-policy input bronze
  pinning id 3
  no shutdown
  state enabled

#--- once for each tenant
vlan 801

vservice node bronze001-vsg01 type vsg
  ip address 192.168.54.201
  adjacency l3
  fail-mode open

vservice path bronze001-vmdc
  node bronze001-vsg01 profile bronze order 10

port-profile type ethernet system-data-uplink
  switchport trunk allowed vlan add 801

port-profile type vethernet bronze001-v0801
  vmware port-group
  inherit port-profile bronze-profile
  switchport access vlan 801
  state enabled
  org root/vbronze001
  vservice path bronze001-vmdc
```

Configuration Template for Copper Service Class

This section presents the configuration templates for the Copper service class.

Aggregation Nexus 7000 Copper Configuration

This section provides an aggregation Nexus 7000 Copper configuration.

```
ip route 100.201.1.0/24 100.200.1.61 tag 1111

interface Vlan2000
  no shutdown
  no ip redirects
  ip address 100.200.1.2/24
  no ipv6 redirects
  hsrp version 2
  hsrp 2000
    preempt
    priority 110
    ip 100.200.1.1

interface Vlan2001
  description test for snmptrap
  no shutdown
  ip flow monitor fm_vmdc23 input sampler sp_vmdc23
  vrf member customer_smb1
  no ip redirects
  ip address 11.4.1.2/24
  no ipv6 redirects
  hsrp version 2
  hsrp 2001
    preempt
    priority 110
    ip 11.4.1.1

interface Vlan3001
  no shutdown
  ip flow monitor fm_vmdc23 input sampler sp_vmdc23
  vrf member customer_smb1
  no ip redirects
  ip address 10.9.1.2/24
  no ipv6 redirects
  hsrp version 2
  hsrp 3001
    preempt
    priority 110
    ip 10.9.1.1

interface port-channel343
  service-policy type qos input ingress-qos-policy
  service-policy type queuing output vmdc23-8e-4q4q-out
  ip address 100.200.0.17/30

interface Ethernet3/9.2000
  description PC-to-PE1
  encapsulation dot1q 2000
  service-policy type qos input ingress-qos-policy
  ip address 100.200.0.2/30
  no shutdown
```

```
interface Ethernet4/9.2000
  encapsulation dot1q 2000
  service-policy type qos input ingress-qos-policy no-stats
  ip address 100.200.0.10/30
  no shutdown

router bgp 65501

  address-family ipv4 unicast
    redistribute direct route-map DC2-INTERNET-SUBNET
    redistribute static route-map SERVICED-PREFIXES-SET-COMM
    nexthop trigger-delay critical 100 non-critical 300

  neighbor 100.200.0.1
    remote-as 109
    address-family ipv4 unicast
      send-community
      weight 60000
      next-hop-self
  neighbor 100.200.0.9
    remote-as 109
    address-family ipv4 unicast
      send-community
      next-hop-self
  neighbor 100.200.0.18 remote-as 65501
    address-family ipv4 unicast
      route-map filter-100.200.1.61 out
      next-hop-self
```

ASA Copper Configuration

This section provides an ASA Copper configuration.

```
interface Port-channel1.2000
 nameif outside
 security-level 0
 ip address 100.200.1.61 255.255.255.0 standby 100.200.1.62
!
interface Port-channel1.3001
 nameif smb1
 security-level 100
 ip address 10.9.1.61 255.255.255.0 standby 10.9.1.62
!

object network smb1-mapped
 range 100.201.1.1 100.201.1.10
object network smb1-real
 subnet 11.4.1.0 255.255.255.0
object network smb-1-server1
 host 11.4.1.11
object network smb-1-server2
 host 11.4.1.12
object network smb-1-server3
 host 11.4.1.13

object network smb-1-server21
 host 11.4.1.21
object network smb-1-server22
 host 11.4.1.22
object network smb-1-server23
 host 11.4.1.23
```

```
object network smb-1-server24
 host 11.4.1.24
object network smb-1-server25
 host 11.4.1.25
object network smb-1-server26
 host 11.4.1.26
object network smb-1-server27
 host 11.4.1.27
object network smb-1-server28
 host 11.4.1.28
object network smb-1-server29
 host 11.4.1.29
object network smb-1-server30
 host 11.4.1.30

mtu smb1 1500

monitor-interface outside
icmp unreachable rate-limit 1 burst-size 1
no asdm history enable
arp timeout 14400
!
object network smb1-real
 nat (smb1,outside) dynamic smb1-mapped
object network smb-1-server1
 nat (smb1,outside) static 100.201.1.11
object network smb-1-server2
 nat (smb1,outside) static 100.201.1.12
object network smb-1-server3
 nat (smb1,outside) static 100.201.1.13

object network smb-1-server21
 nat (smb1,outside) static 100.201.1.21
object network smb-1-server22
 nat (smb1,outside) static 100.201.1.22
object network smb-1-server23
 nat (smb1,outside) static 100.201.1.23
object network smb-1-server24
 nat (smb1,outside) static 100.201.1.24
object network smb-1-server25
 nat (smb1,outside) static 100.201.1.25
object network smb-1-server26
 nat (smb1,outside) static 100.201.1.26
object network smb-1-server27
 nat (smb1,outside) static 100.201.1.27
object network smb-1-server28
 nat (smb1,outside) static 100.201.1.28
object network smb-1-server29
 nat (smb1,outside) static 100.201.1.29
object network smb-1-server30
 nat (smb1,outside) static 100.201.1.30

route outside 0.0.0.0 0.0.0.0 100.200.1.1 1
route smb1 11.4.1.0 255.255.255.0 10.9.1.1 1
```

Note   The configuration above is for the private ip address server tenants, if public ip address server tenants, remove all the nat configurations.

ASR 1000 PE Copper Configuration

This section provides an ASR 1000 PE Copper configuration.

```
interface TenGigabitEthernet0/2/0.2000
 encapsulation dot1Q 2000
 ip address 100.200.0.1 255.255.255.252
 cdp enable
 service-policy input internet-in
 service-policy output internet-out-parent

interface TenGigabitEthernet0/3/0.2000
 encapsulation dot1Q 2000
 ip address 100.200.0.13 255.255.255.252
 cdp enable
 service-policy input internet-in
 service-policy output internet-out-parent

router bgp 109
 template peer-policy DC2_PEER_POLICY
  route-map DC2_PATH_PREFERENCE in
  route-map default out
  default-originate route-map default-condition
  send-community both
 exit-peer-policy
 !
 bgp log-neighbor-changes
 bgp graceful-restart restart-time 120
 bgp graceful-restart stalepath-time 360
 bgp graceful-restart

 neighbor 100.200.0.2 remote-as 65501
 neighbor 100.200.0.14 remote-as 65501
 !
 address-family ipv4
  bgp additional-paths install
  redistribute connected
  redistribute static

  neighbor 100.200.0.2 activate
  neighbor 100.200.0.2 route-map DC2_INT_PREFER in
  neighbor 100.200.0.14 activate
  neighbor 100.200.0.14 route-map DC2_INT_PREFER in
  maximum-paths 2
  maximum-paths ibgp 2
 exit-address-family
```

Nexus 1000V Copper Configuration

This section provides a Nexus 1000V Copper configuration.

```
#---- one time config
policy-map type qos bronze
  class class-default
    set cos 0
    police cir 500 mbps bc 200 ms conform transmit violate drop
    set dscp 0

port-profile type vethernet smb-profile
  switchport mode access
  service-policy input bronze
```

```
    pinning id 3
    no shutdown
    state enabled

#--- once for each tenant
vlan 2001

vservice node smb001-vsg01 type vsg
    ip address 192.168.54.151
    adjacency l3
    fail-mode open

vservice path smb001-vmdc
    node smb001-vsg01 profile smb order 10

port-profile type ethernet system-data-uplink
    switchport trunk allowed vlan add 2001

port-profile type vethernet smb001-v2001
    vmware port-group
    inherit port-profile smb-profile
    switchport access vlan 2001
    state enabled
    org root/smb001
    vservice path smb001-vmdc
```

Configuration Template for Nexus 5548 ICS switch

The Nexus 5000 ICS switch does not have any per-tenant configurations, other than the VLANs to be allowed. The data VLANs used by tenants can be added on the Nexus 5000 ICS switch, but this should be planned and configured in advance for different ranges needed. Further modifications and updates can be done as tenants are added and deleted as required.

LAN Configuration

The following configuration shows the port-channel configuration between the Nexus 5548 ICS switch and Nexus 7004 Aggregation switches:

```
#Portchannel between dc02-n5k-ics1 and dc02-n7k-agg1

interface port-channel534
    description vPC to N7K-Aggs
    switchport mode trunk
    spanning-tree port type network
    speed 10000
    vpc 4000
```

The following configuration shows the port-channel configuration between the Nexus 5548 ICS switch and the UCS Fabric Interconnect 6248. There are two port-channels, 88 and 89, that carry all LAN data traffic in the data network.

```
interface port-channel88
    description vPC to dc02-ucs01-a
    switchport mode trunk
    switchport trunk allowed vlan
201-210,301-310,401-410,501-520,601-620,701-720,801-820,1601-1610,1801-1860,1990,2001-
2010
    spanning-tree port type edge trunk
    vpc 88
```

```
interface port-channel89
  description vPC to dc02-ucs01-b
  switchport mode trunk
  switchport trunk allowed vlan
201-210,301-310,401-410,501-520,601-620,701-720,801-820,1601-1610,1801-1860,1990,2001-
2010
  spanning-tree port type edge trunk
  vpc 89
```

Only the VLANs that carry the LAN data traffic for all the tenants (Gold, Silver, Bronze, and Copper) are allowed on the port-channels going to the UCS. A list of all data VLANs is obtained from the above configuration.

The following configuration shows the port-channel between the Nexus 5548 ICS switch and NetApp Filers 6040. This port-channel carries only the NFS traffic, and hence only the NFS VLAN (1990) is allowed on the port-channel. There are two port-channels with one going to each of the filers (Filer-A and Filer-B).

```
interface port-channel26
  description vPC to netapp -A
  switchport mode trunk
  switchport trunk allowed vlan 1990
  service-policy type queuing input vmdc-nas-in-policy
  service-policy type queuing output vmdc-nas-out-policy
  vpc 26

interface port-channel28
  description vPC to netapp -B
  switchport mode trunk
  switchport trunk allowed vlan 1990
  service-policy type queuing input vmdc-nas-in-policy
  service-policy type queuing output vmdc-nas-out-policy
  vpc 28
```

SAN Configuration

The following configuration shows the port-channel between Nexus 5548 ICS switch and NetApp Filers and/or UCS Fabric Interconnect for FCP connectivity:

```
interface san-port-channel 2
  channel mode active
  switchport mode F
  switchport description Port-channel UCS FI/Filers & 5k ICS switch

interface fc2/10
  switchport mode F
  switchport description to_UCS_fi
  channel-group 2 force
  no shutdown

interface fc2/12
  switchport mode F
  switchport description to netapp filer
  no shutdown
```