



Sample L2 Interchassis HA Configuration

This chapter provides a sample interchassis wsg-service High Availability (HA) configuration for SecGW functionality between four VPC-VSM instances (StarOS VMs) running on VSMs in separate ASR 9000 chassis.

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Configuration Overview

Interchassis Layer 2 redundancy supports hot standby redundancy between two VPC-VSM instances in different ASR 9000 chassis. The standby instance is ready to become active once a switchover is triggered. SA re-negotiation is not required and traffic loss is minimal.

The route database on the standby VSM must contain only the routes that were successfully injected by the active VSM.

Because of the asymmetric assignment of VSM resources among StarOS VMs, an operator should configure one-to-one mapping between StarOS VMs across active/standby VSMs in different ASR 9000 chassis. See the table below.

Table 1: Recommended Mapping of Interchassis StarOS VMs

Active VSM	Standby VSM
VM1 – SecGW1	VM1 – SecGW1
VM2 – SecGW2	VM2 – SecGW2
VM3 – SecGW3	VM3 – SecGW3
VM4 – SecGW4	VM4 – SecGW4

Each VM will be monitored via separate HSRP configurations and connected to separate oneP (CA) sessions so that switchover of one VM will not affect the other VMs.

Sample ASR 9000 chassis RSP configurations are provided for primary and standby chassis.

The sample configurations provided for an SecGW VM (Virtual Machine) configuration must be replicated on each CPU-VM complex on both the active and standby VSMs. Each VSM supports four CPU-VM complexes (SecGWs).

ASR 9000 Chassis RSP Configuration (IOS-XR)



Important

Primary and standby ASR 9000 chassis must be configured to handle the SecGWs (CPU-VM complexes) running on ASR 9000 VSMs. There are four CPU-VM complexes per VSM.

The sample configurations must be applied to the primary and backup ASR 9000 chassis. Each chassis will have unique and shared IP addresses to assure high availability across chassis.

Notes:

- Set basic chassis parameters
- Enable oneP communication. (TLS protocol)
- Enable virtual services and assign virtual interfaces for each CPU-VM complex.
- Configure physical Gigabit Ethernet (GigE) ASR 9000 interfaces. Shutdown unused ports.
- Configure a GigE public interface (with VLANs) for IKE and ESP traffic on each CPU-VM complex.
- Configure a GigE private interface (with VLANs) for clear traffic on each CPU-VM complex.
- Configure a 10 Gigabit Ethernet (10GigE) interface for IKE and ESP traffic on each CPU-VM complex. Shut down unused ports.
 - Configure a VLAN on this interface for clear and SRP traffic.
 - Configure a VLAN on this interface for SRP traffic.
 - Configure a VLAN on this interface for clear traffic
- Configure a 10GigE Management interface on each CPU-VM complex.
- Configure a Bridged Virtual Interface (BVI) for the chassis. A BVI interface configured on the RSP is used as the sess-ip-address in all four SecGW(s) for bringing up the oneP session between the RSP and SecGW.
- Configure static IPv4 and IPV6 addresses.
- Configure an L2 VPN.
- Configure HSRP tracking for each CPU-VM complex (shared parameters across ASR 9000 chassis).
- Configure IP Service Level Agreement (SLA) operations.

ASR 9000 Primary Chassis

```
hostname <ASR9K_primary_hostname>
clock timezone <timezone>
clock <clock_settings>
logging console critical
logging buffered 99999999
tftp vrf default ipv4 server homedir /
telnet vrf default ipv4 server max-servers 50
domain name <domain_name>
cdp
configuration commit auto-save filename <unique_ASR9K_config_filename>
vrf ike1

vrf ike2
```

```
vrf ike3

vrf ike4

line console
  exec-timeout 0 0
  length 50

line default
  exec-timeout 0 0

onep
  transport type tls localcert onep-tp disable-remotecert-validation

virtual-service enable
virtual-service SecGW1
  vnic interface TenGigE0/4/1/0
  vnic interface TenGigE0/4/1/1
  vnic interface TenGigE0/4/1/2
  activate

virtual-service enable
virtual-service SecGW2
  vnic interface TenGigE0/4/1/3
  vnic interface TenGigE0/4/1/4
  vnic interface TenGigE0/4/1/5
  activate

virtual-service enable
virtual-service SecGW3
  vnic interface TenGigE0/4/1/6
  vnic interface TenGigE0/4/1/7
  vnic interface TenGigE0/4/1/8
  activate

virtual-service enable
virtual-service SecGW4
  vnic interface TenGigE0/4/1/9
  vnic interface TenGigE0/4/1/10
  vnic interface TenGigE0/4/1/11
  activate

interface Loopback1
  ipv4 address 65.65.0.1 255.255.255.255

interface MgmtEth0/RSP0/CPU0/0
  ipv4 address 10.78.1.40 255.255.255.0

interface MgmtEth0/RSP0/CPU0/1
  ipv4 address 8.40.2.101 255.255.0.0

interface GigabitEthernet0/0/0/0
  shutdown

interface GigabitEthernet0/0/0/1
```

```
shutdown

interface GigabitEthernet0/0/0/2
shutdown

interface GigabitEthernet0/0/0/3
shutdown

interface GigabitEthernet0/0/0/4
shutdown

interface GigabitEthernet0/0/0/5
description "SRP Link - direct Connect to <ASR9K_primary_hostname>"
gigabitEthernet 0/0/0/5"
ipv4 address 87.87.87.10 255.255.255.0
speed 1000
transceiver permit pid all

interface GigabitEthernet0/0/0/6
shutdown

interface GigabitEthernet0/0/0/7
shutdown

interface GigabitEthernet0/0/0/8
shutdown

interface GigabitEthernet0/0/0/9
shutdown

interface GigabitEthernet0/0/0/10
shutdown

interface GigabitEthernet0/0/0/11
shutdown

interface GigabitEthernet0/0/0/12
shutdown

interface GigabitEthernet0/0/0/13
shutdown

interface GigabitEthernet0/0/0/14
shutdown

interface GigabitEthernet0/0/0/15
shutdown

interface GigabitEthernet0/0/0/16
shutdown

interface GigabitEthernet0/0/0/17
shutdown

interface GigabitEthernet0/0/0/18
```

```
description "Public Interface: IKE and ESP Traffic"
cdp
transceiver permit pid all
dot1q tunneling ethertype 0x9200

interface GigabitEthernet0/0/0/18.1871
description "Public Interface: IKE and ESP Traffic - VM1"
ipv4 address 187.0.1.10 255.255.255.0
ipv6 address 1871::10/64
ipv6 enable
encapsulation dot1q 1871

interface GigabitEthernet0/0/0/18.1872
description "Public Interface: IKE and ESP Traffic - VM2"
ipv4 address 187.0.2.10 255.255.255.0
ipv6 address 1872::10/64
ipv6 enable
encapsulation dot1q 1872

interface GigabitEthernet0/0/0/18.1873
description "Public Interface: IKE and ESP Traffic - VM3"
ipv4 address 187.0.3.10 255.255.255.0
ipv6 address 1873::10/64
ipv6 enable
encapsulation dot1q 1873

interface GigabitEthernet0/0/0/18.1874
description "Public Interface: IKE and ESP Traffic - VM4"
ipv4 address 187.0.4.10 255.255.255.0
ipv6 address 1874::10/64
ipv6 enable
encapsulation dot1q 1874

interface GigabitEthernet0/0/0/19
description Private Interface, Clear Traffic
cdp
transceiver permit pid all
dot1q tunneling ethertype 0x9200

interface GigabitEthernet0/0/0/19.1881
description "Private Interface, Clear Traffic - VM1"
ipv4 address 188.0.1.10 255.255.255.0
ipv6 address 1881::10/64
ipv6 enable
encapsulation dot1q 1881

interface GigabitEthernet0/0/0/19.1882
description "Private Interface, Clear Traffic - VM2"
ipv4 address 188.0.2.10 255.255.255.0
ipv6 address 1882::10/64
ipv6 enable
encapsulation dot1q 1882
```

```
interface GigabitEthernet0/0/0/19.1883
  description "Private Interface, Clear Traffic - VM3"
  ipv4 address 188.0.3.10 255.255.255.0
  ipv6 address 1883::10/64
  ipv6 enable
  encapsulation dot1q 1883

interface GigabitEthernet0/0/0/19.1884 <clear-traffic_VLANid_VM4>
  description "Private Interface, Clear Traffic - VM4"
  ipv4 address 188.0.4.10 255.255.255.0
  ipv6 address 1884::10/64
  ipv6 enable
  encapsulation dot1q 1884

interface GigabitEthernet0/0/0/20
  shutdown

interface GigabitEthernet0/0/0/21
  shutdown

interface GigabitEthernet0/0/0/22
  shutdown

interface GigabitEthernet0/0/0/23
  shutdown

interface GigabitEthernet0/0/0/24
  shutdown

interface GigabitEthernet0/0/0/25
  shutdown

interface GigabitEthernet0/0/0/26
  shutdown

interface GigabitEthernet0/0/0/27
  shutdown

interface GigabitEthernet0/0/0/28
  shutdown

interface GigabitEthernet0/0/0/29
  shutdown

interface GigabitEthernet0/0/0/30
  shutdown

interface GigabitEthernet0/0/0/31
  shutdown

interface GigabitEthernet0/0/0/32
  shutdown

interface GigabitEthernet0/0/0/33
```

```
shutdown

interface GigabitEthernet0/0/0/34
shutdown

interface GigabitEthernet0/0/0/35
shutdown

interface GigabitEthernet0/0/0/36
shutdown

interface GigabitEthernet0/0/0/37
shutdown

interface GigabitEthernet0/0/0/38
shutdown

interface GigabitEthernet0/0/0/39
shutdown

interface TenGigE0/4/1/0
description "IKE and ESP traffic VM1"
transceiver permit pid all
dot1q tunneling ethertype 0x9200

interface TenGigE0/4/1/0.1871
description "IKE and ESP traffic for VM1"
ipv4 address 31.31.31.10 255.255.255.0
ipv6 address 2031::10/64
encapsulation dot1q 1871

interface TenGigE0/4/1/1
description "Clear and srp traffic VM1"
transceiver permit pid all
dot1q tunneling ethertype 0x9200

interface TenGigE0/4/1/1.1259
description "srp traffic VM1"
ipv4 address 71.71.71.10 255.255.255.0
ipv6 address <10Gig_SRP_IPv6-address/mask>
encapsulation dot1q 2071::10/64

interface TenGigE0/4/1/2
description "Management interface for VM1"
transceiver permit pid all
l2transport

interface TenGigE0/4/1/3
description "IKE and ESP traffic VM2"
transceiver permit pid all
dot1q tunneling ethertype 0x9200

interface TenGigE0/4/1/3.1872
```

```
description "IKE and ESP traffic for VM2"
ipv4 address 32.32.32.10 255.255.255.0
ipv6 address 2032::10/64
encapsulation dot1q 1872

interface TenGigE0/4/1/4
description "Clear and srp traffic VM2"
transceiver permit pid all
dot1q tunneling ethertype 0x9200

interface TenGigE0/4/1/4.1260
description "srp traffic VM2"
ipv4 address 72.72.72.10 255.255.255.0
ipv6 address 2072::10/64
encapsulation dot1q 1260

interface TenGigE0/4/1/4.1882
description "clear traffic VM2"
ipv4 address 52.52.52.10 255.255.255.0
ipv6 address 2052::10/64
encapsulation dot1q 1882

interface TenGigE0/4/1/5
description "Management interface for VM2"
transceiver permit pid all
l2transport

interface TenGigE0/4/1/6
description "IKE and ESP traffic VM3"
transceiver permit pid all
dot1q tunneling ethertype 0x9200

interface TenGigE0/4/1/6.1873
description "IKE and ESP traffic for VM3"
ipv4 address 33.33.33.10 255.255.255.0
ipv6 address 2033::10/64
encapsulation dot1q 1873

interface TenGigE0/4/1/7
description "Clear and srp traffic VM3"
transceiver permit pid all
dot1q tunneling ethertype 0x9200

interface TenGigE0/4/1/7.1261
description "srp traffic VM3"
ipv4 address 73.73.73.10 255.255.255.0
ipv6 address 2073::10/64
encapsulation dot1q 1261

interface TenGigE0/4/1/7.1883
description "clear traffic VM3"
ipv4 address 53.53.53.10 255.255.255.0
```



```
ipv6 address 2053::10/64
encapsulation dot1q 1883

interface TenGigE0/4/1/8
description "Management interface for VM3"
transceiver permit pid all
l2transport

interface TenGigE0/4/1/9
description "IKE and ESP traffic VM4"
transceiver permit pid all
dot1q tunneling ethertype 0x9200

interface TenGigE0/4/1/9.1874
description "IKE and ESP traffic for VM3"
ipv4 address 34.34.34.10 255.255.255.0
ipv6 address 2034::10/64
encapsulation dot1q 1874

interface TenGigE0/4/1/10
description "Clear and srp traffic VM4"
transceiver permit pid all
dot1q tunneling ethertype 0x9200

interface TenGigE0/4/1/10.1262
description "srp traffic VM4"
ipv4 address 74.74.74.10 255.255.255.0
ipv6 address 2074::10/64
encapsulation dot1q 1262

interface TenGigE0/4/1/10.1884
description "clear traffic VM4"
ipv4 address 54.54.54.10 255.255.255.0
ipv6 address 2054::10/64
encapsulation dot1q 1884

interface TenGigE0/4/1/11
description "Management interface for VM4"
transceiver permit pid all
l2transport

interface BVI1
ipv4 address 100.100.100.10 255.255.255.0

router static
address-family ipv4 unicast
5.5.0.0/16 34.34.34.33
10.78.0.0/16 MgmtEth0/RSP0/CPU0/0
35.35.35.35/32 31.31.31.11
36.36.36.36/32 32.32.32.11
37.37.37.37/32 33.33.33.11
```

```

38.38.38.38/32 34.34.34.11
64.103.217.0/24 10.78.1.1
65.65.0.0/16 188.0.1.100
66.66.0.0/16 188.0.2.100
67.67.0.0/16 188.0.3.100
68.68.0.0/16 188.0.4.100
81.81.81.0/24 GigabitEthernet0/0/0/5 87.87.87.9
82.82.82.0/24 GigabitEthernet0/0/0/5 87.87.87.9
83.83.83.0/24 GigabitEthernet0/0/0/5 87.87.87.9
84.84.84.0/24 GigabitEthernet0/0/0/5 87.87.87.9
92.0.0.0/8 187.0.1.11
93.0.0.0/8 187.0.2.11
94.0.0.0/8 187.0.3.11
95.0.0.0/8 187.0.4.11
202.153.144.0/24 8.40.0.1

```

```

address-family ipv6 unicast
2035::35/128 2031::11
2036::36/128 2032::11
2037::37/128 2034::11
2038::38/128 2034::11
2065::/64 1881::100
2066::/64 1882::100
2067::/64 1883::100
2068::/64 1884::100
2092::/64 1871::11
2093::/64 1872::11
2094::/64 1873::11
2095::/64 1874::11

```

l2vpn

```

xconnect group wsg

bridge group irb
bridge-domain irb1
interface TenGigE0/4/1/2

interface TenGigE0/4/1/5

interface TenGigE0/4/1/8

interface TenGigE0/4/1/11

routed interface BVI1

```

router hsrp

```

interface GigabitEthernet0/0/0/18.1871
address-family ipv4
hsrp 4

```

```
preempt
priority 101
address 187.0.1.20
track object WsgIPsla
track object PublicHsrp

address-family ipv6
hsrp 12
preempt
priority 101
track object WsgIPsla
track object PublicHsrp
address global 1871::20
address linklocal autoconfig

interface GigabitEthernet0/0/0/18.1872
address-family ipv4
hsrp 5
preempt
priority 101
address 187.0.2.20
track object WsgIPsla1
track object PublicHsrp

address-family ipv6
hsrp 13
preempt
priority 101
track object WsgIPsla1
track object PublicHsrp
address global 1872::20
address linklocal autoconfig

interface GigabitEthernet0/0/0/18.1873
address-family ipv4
hsrp 6
preempt
priority 101
address 187.0.3.20
track object WsgIPsla2
track object PublicHsrp

interface GigabitEthernet0/0/0/18.1874
```

```
address-family ipv6
  hsrp 14
    preempt
    priority 101
    track object WsgIPsla2
    track object PublicHsrp
    address global 1873::20
    address linklocal autoconfig
```

```
address-family ipv4
  hsrp 7
    preempt
    priority 101
    address 187.0.4.20
    track object WsgIPsla3
    track object PublicHsrp
```

```
address-family ipv6
  hsrp 15
    preempt
    priority 101
    track object WsgIPsla3
    track object PublicHsrp
    address global 1874::20
    address linklocal autoconfig
```

```
interface GigabitEthernet0/0/0/19.1881
  address-family ipv4
    hsrp 8
      preempt
      priority 101
      address 188.0.1.20
      track object WsgIPsla
      track object PublicHsrp
```

```
address-family ipv6
  hsrp 16
    preempt
    priority 101
    track object WsgIPsla
    track object PublicHsrp
    address global 1881::20
    address linklocal autoconfig
```

```
interface GigabitEthernet0/0/0/19.1882
  address-family ipv4
    hsrp 9
      preempt
      priority 101
      address 188.0.2.20
      track object WsgIPsla1
      track object PublicHsrp
```

```
address-family ipv6
  hsrp 17
    preempt
    priority 101
    track object WsgIPsla1
    track object PublicHsrp
    address global 1882::20
    address linklocal autoconfig
```

```
interface GigabitEthernet0/0/0/19.1883
  address-family ipv4
    hsrp 10
      preempt
      priority 101
      address 188.0.3.20
      track object WsgIPsla2
      track object PublicHsrp
```

```
address-family ipv6
  hsrp 18
    preempt
    priority 101
    track object WsgIPsla2
    track object PublicHsrp
    address global 1883::20
    address linklocal autoconfig
```

```
interface GigabitEthernet0/0/0/19.1884
  address-family ipv4
    hsrp 11
      preempt
      priority 101
      address 188.0.4.20
      track object WsgIPsla3
      track object PublicHsrp
```

```
address-family ipv6
  hsrp 19
    preempt
    priority 101
    track object WsgIPsla3
    track object PublicHsrp
    address global 1884::20
    address linklocal autoconfig
```

```
ipsla
  operation 200
    type icmp echo
    destination address 31.31.31.100
    timeout 300
    frequency 1
```

```
operation 201
  type icmp echo
  destination address 32.32.32.100
  timeout 300
  frequency 1
```

```
operation 202
  type icmp echo
  destination address 33.33.33.100
  timeout 300
  frequency 1
```

```
operation 203
  type icmp echo
  destination address 34.34.34.100
  timeout 300
  frequency 1
```

```
schedule operation 200
  start-time now
  life forever
```

```
schedule operation 201
  start-time now
  life forever
```

```
schedule operation 202
```

```
start-time now
life forever

schedule operation 203
start-time now
life forever

track WsgIPsla
type rtr 200 reachability
delay up 1
delay down 1

track WsgIPsla1
type rtr 201 reachability
delay up 1
delay down 1

track WsgIPsla2
type rtr 202 reachability
delay up 1
delay down 1

track WsgIPsla3
type rtr 203 reachability
delay up 1
delay down 1

track PublicHsrp
type line-protocol state
interface GigabitEthernet0/0/0/18

delay up 1
delay down

crypto ca trustpoint onep-tp
crl optional
subject-name CN=<ASR9K_primary_hostname>.<domain_name>
enrollment url terminal

end
```

ASR 9000 Backup Chassis

```
hostname <ASR9K_backup_hostname>
clock timezone <timezone>
clock <clock_settings>
logging console critical
logging buffered 99999999
tftp vrf default ipv4 server homedir disk:0
telnet vrf default ipv4 server max-servers 10
domain name <domain_name>
```

```

cdp advertise v1
configuration commit auto-save filename <unique_ASR9K_config_filename>
vrf ike1

vrf ike2

vrf ike3

vrf ike4

line console
  exec-timeout 0 0
  length 50

line default
  exec-timeout 0 0

onep
  transport type tls localcert onep-tp disable-remotecert-validation

virtual-service enable
virtual-service SecGW1
  vnic interface TenGigE0/4/1/0
  vnic interface TenGigE0/4/1/1
  vnic interface TenGigE0/4/1/2
  activate

virtual-service enable
virtual-service SecGW2
  vnic interface TenGigE0/4/1/3
  vnic interface TenGigE0/4/1/4
  vnic interface TenGigE0/4/1/5
  activate

virtual-service enable
virtual-service SecGW3
  vnic interface TenGigE0/4/1/6
  vnic interface TenGigE0/4/1/7
  vnic interface TenGigE0/4/1/8
  activate

virtual-service enable
virtual-service SecGW4
  vnic interface TenGigE0/4/1/9
  vnic interface TenGigE0/4/1/10
  vnic interface TenGigE0/4/1/11
  activate

interface Loopback1
  ipv4 address 65.65.0.1 255.255.255.255

interface MgmtEth0/RSP0/CPU0/0
  ipv4 address 10.78.1.50 255.255.255.0

interface MgmtEth0/RSP0/CPU0/1

```



```
    ipv4 address 8.40.4.200 255.255.0.0

interface GigabitEthernet0/0/0/0
  shutdown

interface GigabitEthernet0/0/0/1
  shutdown

interface GigabitEthernet0/0/0/2
  shutdown

interface GigabitEthernet0/0/0/3
  shutdown

interface GigabitEthernet0/0/0/4
  shutdown

interface GigabitEthernet0/0/0/5
  description "SRP Link - direct Connect to <ASR9K_backupy_hostname>"
  gigabitEthernet 0/0/0/5"
  ipv4 address 87.87.87.9 255.255.255.0
  speed 1000
  transceiver permit pid all

interface GigabitEthernet0/0/0/6
  shutdown

interface GigabitEthernet0/0/0/7
  shutdown

interface GigabitEthernet0/0/0/8
  shutdown

interface GigabitEthernet0/0/0/9
  shutdown

interface GigabitEthernet0/0/0/10
  shutdown

interface GigabitEthernet0/0/0/11
  shutdown

interface GigabitEthernet0/0/0/12
  shutdown

interface GigabitEthernet0/0/0/13
  shutdown

interface GigabitEthernet0/0/0/14
  shutdown

interface GigabitEthernet0/0/0/15
  shutdown

interface GigabitEthernet0/0/0/16
```

```
shutdown

interface GigabitEthernet0/0/0/17
shutdown

interface GigabitEthernet0/0/0/18
description "Public Interface: IKE and ESP Traffic"
cdp
transceiver permit pid all
dot1q tunneling ethertype 0x9200

interface GigabitEthernet0/0/0/18.1871
description "Public Interface: IKE and ESP Traffic - VM1"
ipv4 address 187.0.1.9 255.255.255.0
ipv6 address 1871::9/64
ipv6 enable
encapsulation dot1q 1871

interface GigabitEthernet0/0/0/18.1872
description "Public Interface: IKE and ESP Traffic - VM2"
ipv4 address 187.0.2.9 255.255.255.0
ipv6 address 1872::9/64
ipv6 enable
encapsulation dot1q 1872

interface GigabitEthernet0/0/0/18.1873
description "Public Interface: IKE and ESP Traffic - VM3"
ipv4 address 187.0.3.9 255.255.255.0
ipv6 address 1873::9/64
ipv6 enable
encapsulation dot1q 1873

interface GigabitEthernet0/0/0/18.1874
description "Public Interface: IKE and ESP Traffic - VM4"
ipv4 address 187.0.4.9 255.255.255.0
ipv6 address 1874::9/64
ipv6 enable
encapsulation dot1q 1874

interface GigabitEthernet0/0/0/19
description Private Interface, Clear Traffic
cdp
transceiver permit pid all
dot1q tunneling ethertype 0x9200

interface GigabitEthernet0/0/0/19.1881
description "Private Interface, Clear Traffic - VM1"
ipv4 address 188.0.1.9 255.255.255.0
ipv6 address 1881::9/64
ipv6 enable
encapsulation dot1q 1881

interface GigabitEthernet0/0/0/19.1882
```

```
description "Private Interface, Clear Traffic - VM2"
ipv4 address 188.0.2.9 255.255.255.0
ipv6 address 1882::9/64
ipv6 enable
encapsulation dot1q 1882

interface GigabitEthernet0/0/0/19.1883
description "Private Interface, Clear Traffic - VM3"
ipv4 address 188.0.3.9 255.255.255.0
ipv6 address 1883::9/64
ipv6 enable
encapsulation dot1q 1883

interface GigabitEthernet0/0/0/19.1884 <clear-traffic_VLANid_VM4>
description "Private Interface, Clear Traffic - VM4"
ipv4 address 188.0.4.9 255.255.255.0
ipv6 address 1884::9/64
ipv6 enable
encapsulation dot1q 1884

interface GigabitEthernet0/0/0/20
shutdown

interface GigabitEthernet0/0/0/21
shutdown

interface GigabitEthernet0/0/0/22
shutdown

interface GigabitEthernet0/0/0/23
shutdown

interface GigabitEthernet0/0/0/24
shutdown

interface GigabitEthernet0/0/0/25
shutdown

interface GigabitEthernet0/0/0/26
shutdown

interface GigabitEthernet0/0/0/27
shutdown

interface GigabitEthernet0/0/0/28
shutdown

interface GigabitEthernet0/0/0/29
shutdown

interface GigabitEthernet0/0/0/30
shutdown

interface GigabitEthernet0/0/0/31
```

```
shutdown

interface GigabitEthernet0/0/0/32
shutdown

interface GigabitEthernet0/0/0/33
shutdown

interface GigabitEthernet0/0/0/34
shutdown

interface GigabitEthernet0/0/0/35
shutdown

interface GigabitEthernet0/0/0/36
shutdown

interface GigabitEthernet0/0/0/37
shutdown

interface GigabitEthernet0/0/0/38
shutdown

interface GigabitEthernet0/0/0/39
shutdown

interface TenGigE0/4/1/0
description "IKE and ESP traffic VM1"
transceiver permit pid all
dot1q tunneling ethertype 0x9200

interface TenGigE0/4/1/0.1871
description "IKE and ESP traffic for VM1"
ipv4 address 41.41.41.10 255.255.255.0
ipv6 address 2041::10/64
encapsulation dot1q 1871

interface TenGigE0/4/1/1
description "Clear and srp traffic VM1"
transceiver permit pid all
dot1q tunneling ethertype 0x9200

interface TenGigE0/4/1/1.1359
description "srp traffic VM1"
ipv4 address 81.81.81.10 255.255.255.0
ipv6 address 2081::10/64
encapsulation dot1q 1359

interface TenGigE0/4/1/1.1881
description "clear traffic VM1"
ipv4 address 61.61.61.10 255.255.255.0
ipv6 address 2061::10/64
encapsulation dot1q 1881
```

```
interface TenGigE0/4/1/2
  description "Management interface for VM1"
  transceiver permit pid all
  l2transport

interface TenGigE0/4/1/3
  description "IKE and ESP traffic VM2"
  transceiver permit pid all
  dot1q tunneling ethertype 0x9200

interface TenGigE0/4/1/3.1872
  description "IKE and ESP traffic for VM2"
  ipv4 address 42.42.42.10 255.255.255.0
  ipv6 address 2042::10/64
  encapsulation dot1q 1872

interface TenGigE0/4/1/4
  description "Clear and srp traffic VM2"
  transceiver permit pid all
  dot1q tunneling ethertype 0x9200

interface TenGigE0/4/1/4.1360
  description "srp traffic VM2"
  ipv4 address 82.82.82.10 255.255.255.0
  ipv6 address 2082::10/64
  encapsulation dot1q 1360

interface TenGigE0/4/1/4.1882
  description "clear traffic VM2"
  ipv4 address 62.62.62.10 255.255.255.0
  ipv6 address 2062::10/64
  encapsulation dot1q 1882

interface TenGigE0/4/1/5
  description "Management interface for VM2"
  transceiver permit pid all
  l2transport

interface TenGigE0/4/1/6
  description "IKE and ESP traffic VM3"
  transceiver permit pid all
  dot1q tunneling ethertype 0x9200

interface TenGigE0/4/1/6.1873
  description "IKE and ESP traffic for VM3"
  ipv4 address 43.43.43.10 255.255.255.0
  ipv6 address 2043::10/64
  encapsulation dot1q 1873

interface TenGigE0/4/1/7
```

```
description "Clear and srp traffic VM3"
transceiver permit pid all
dot1q tunneling ethertype 0x9200

interface TenGigE0/4/1/7.1361
description "srp traffic VM3"
ipv4 address 83.83.83.10 255.255.255.0
ipv6 address 2083::10/64
encapsulation dot1q 1361

interface TenGigE0/4/1/7.1883
description "clear traffic VM3"
ipv4 address 63.63.63.10 255.255.255.0
ipv6 address 2063::10/64
encapsulation dot1q 1883

interface TenGigE0/4/1/8
description "Management interface for VM3"
transceiver permit pid all
l2transport

interface TenGigE0/4/1/9
description "IKE and ESP traffic VM4"
transceiver permit pid all
dot1q tunneling ethertype 0x9200

interface TenGigE0/4/1/9.1874
description "IKE and ESP traffic for VM3"
ipv4 address 44.44.44.10 255.255.255.0
ipv6 address 2044::10/64
encapsulation dot1q 1874

interface TenGigE0/4/1/10
description "Clear and srp traffic VM4"
transceiver permit pid all
dot1q tunneling ethertype 0x9200

interface TenGigE0/4/1/10.1362
description "srp traffic VM4"
ipv4 address 84.84.84.10 255.255.255.0
ipv6 address 2084::10/64
encapsulation dot1q 1362

interface TenGigE0/4/1/10.1884
description "clear traffic VM4"
ipv4 address 64.64.64.10 255.255.255.0
ipv6 address 2064::10/64
encapsulation dot1q 1884

interface TenGigE0/4/1/11
description "Management interface for VM4"
transceiver permit pid all
```

```
l2transport

interface BVI3
  ipv4 address 192.168.122.2 255.255.255.0

router static
  address-family ipv4 unicast
    10.78.0.0/16 MgmtEth0/RSP0/CPU0/0
    35.35.35.35/32 41.41.41.11
    36.36.36.36/32 42.42.42.11
    37.37.37.37/32 43.43.43.11
    38.38.38.38/32 44.44.44.11
    64.103.217.0/24 10.78.1.1
    65.65.0.0/16 188.0.1.100
    66.66.0.0/16 188.0.2.100
    67.67.0.0/16 188.0.3.100
    68.68.0.0/16 188.0.4.100
    81.81.81.0/24 GigabitEthernet0/0/0/5 87.87.87.10
    82.82.82.0/24 GigabitEthernet0/0/0/5 87.87.87.10
    83.83.83.0/24 GigabitEthernet0/0/0/5 87.87.87.10
    84.84.84.0/24 GigabitEthernet0/0/0/5 87.87.87.10
    92.0.0.0/8 187.0.1.11
    93.0.0.0/8 187.0.2.11
    94.0.0.0/8 187.0.3.11
    95.0.0.0/8 187.0.4.11
    202.153.144.25/32 8.40.0.1

  address-family ipv6 unicast
    2035::35/128 2041::11
    2036::36/128 2042::11
    2037::37/128 2044::11
    2038::38/128 2044::11
    2065::/64 1881::100
    2066::/64 1882::100
    2067::/64 1883::100
    2068::/64 1884::100
    2092::/64 1871::11
    2093::/64 1872::11
    2094::/64 1873::11
    2095::/64 1874::11

l2vpn
  xconnect group wsg

  bridge group irb
    bridge-domain irb1
      interface TenGigE0/4/1/2

      interface TenGigE0/4/1/5
```

```
interface TenGigE0/4/1/8

interface TenGigE0/4/1/11

routed interface BVI3

router hsrp
interface GigabitEthernet0/0/0/18.1871
address-family ipv4
  hsrp 4
    preempt
    priority 101
    address 187.0.1.20
    track object WsgIPsla
    track object PublicHsrp

address-family ipv6
  hsrp 12
    preempt
    priority 101
    track object WsgIPsla
    track object PublicHsrp
    address global 1871::20
    address linklocal autoconfig

interface GigabitEthernet0/0/0/18.1872
address-family ipv4
  hsrp 5
    preempt
    priority 101
    address 187.0.2.20
    track object WsgIPsla1
    track object PublicHsrp

address-family ipv6
  hsrp 13
    preempt
    priority 101
    track object WsgIPsla1
    track object PublicHsrp
    address global 1872::20
    address linklocal autoconfig

interface GigabitEthernet0/0/0/18.1873
```



```
address-family ipv4
  hsrp 6
    preempt
    priority 101
    address 187.0.3.20
    track object WsgIPsla2
    track object PublicHsrp

interface GigabitEthernet0/0/0/18.1874
  address-family ipv6
    hsrp 14
      preempt
      priority 101
      track object WsgIPsla2
      track object PublicHsrp
      address global 1873::20
      address linklocal autoconfig

address-family ipv4
  hsrp 7
    preempt
    priority 101
    address 187.0.4.20
    track object WsgIPsla3
    track object PublicHsrp

address-family ipv6
  hsrp 15
    preempt
    priority 101
    track object WsgIPsla3
    track object PublicHsrp
    address global 1874::20
    address linklocal autoconfig

interface GigabitEthernet0/0/0/19.1881
  address-family ipv4
    hsrp 8
      preempt
      priority 101
      address 188.0.1.20
      track object WsgIPsla
      track object PublicHsrp
```

```
address-family ipv6
  hsrp 16
    preempt
    priority 101
    track object WsgIPsla
    track object PublicHsrp
    address global 1881::20
    address linklocal autoconfig
```

```
interface GigabitEthernet0/0/0/19.1882
  address-family ipv4
    hsrp 9
      preempt
      priority 101
      address 188.0.2.20
      track object WsgIPsla1
      track object PublicHsrp
```

```
address-family ipv6
  hsrp 17
    preempt
    priority 101
    track object WsgIPsla1
    track object PublicHsrp
    address global 1882::20
    address linklocal autoconfig
```

```
interface GigabitEthernet0/0/0/19.1883
  address-family ipv4
    hsrp 10
      preempt
      priority 101
      address 188.0.3.20
      track object WsgIPsla2
      track object PublicHsrp
```

```
address-family ipv6
  hsrp 18
    preempt
    priority 101
    track object WsgIPsla2
    track object PublicHsrp
    address global 1883::20
    address linklocal autoconfig
```

```
interface GigabitEthernet0/0/0/19.1884
  address-family ipv4
    hsrp 11
      preempt
      priority 101
      address 188.0.4.20
      track object WsgIPsla3
      track object PublicHsrp
```

```
address-family ipv6
  hsrp 19
    preempt
    priority 101
    track object WsgIPsla3
    track object PublicHsrp
    address global 1884::20
    address linklocal autoconfig
```

```
ipsla
  operation 200
    type icmp echo
    destination address 41.41.41.100
    timeout 300
    frequency 1
```

```
operation 201
  type icmp echo
  destination address 42.42.42.100
  timeout 300
  frequency 1
```

```
operation 202
  type icmp echo
  destination address 43.43.43.100
  timeout 300
  frequency 1
```

```
operation 203
  type icmp echo
  destination address 44.44.44.100
  timeout 300
  frequency 1
```

```
schedule operation 200
  start-time now
  life forever

schedule operation 201
  start-time now
  life forever

schedule operation 202
  start-time now
  life forever

schedule operation 203
  start-time now
  life forever

track WsgIPsla
  type rtr 200 reachability
  delay up 1
  delay down 1

track WsgIPsla1
  type rtr 201 reachability
  delay up 1
  delay down 1

track WsgIPsla2
  type rtr 202 reachability
  delay up 1
  delay down 1

track WsgIPsla3
  type rtr 203 reachability
  delay up 1
  delay down 1

track PublicHsrp
  type line-protocol state
  interface GigabitEthernet0/0/0/18

  delay up 1
  delay down

crypto ca trustpoint onep-tp
  crl optional
  subject-name CN=<ASR9K_backup_hostname>.<domain_name>
  enrollment url terminal

end
```

SecGW VM Configuration (StarOS)



Important

Each SecGW (CPU-VM complex) must be separately configured as described below for corresponding VSMs in both the primary and backup ASR 9000 chassis. There are four CPU-VM complexes per ASR 9000 VSM.

The unique parameters for each CPU-VM complex must correspond with interface settings configured for the primary and backup ASR 9000 chassis.

Notes:

- Enable hidden CLI test-commands.
- Install SecGW License.
- Assign unique host name per CPU-VM complex.
- Set crash log size to 2048 with compression.
- Require Session Recovery.
- Create local context with unique parameters per CPU-VM complex.
- Enable wsg-service with unique parameters per CPU-VM complex.
- Create SRP context with unique parameters per CPU-VM complex.
- Enable Connected Apps session with unique password and session name per CPU-VM complex.
- Set wsg-lookup priorities.
- Appropriately configure ethernet ports with unique parameters per CPU-VM complex. Refer to the tables below for mapping of sample IP addresses for each SecGW.

Table 2: StarOS IP Address Mapping - SecGW1

Variable	Primary ASR 9000	Backup ASR 9000
<interface_LOCAL1_IPv4-address>	100.100.100.1 255.255.255.0	192.168.122.15 255.255.255.0
<iproute_LOCAL1_IPv4-address_mask>	0.0.0.0 0.0.0.0 100.100.100.10	0.0.0.0 0.0.0.0 192.168.122.2
<wsg_acl1_permit_IPv4-address_mask>	65.65.0.0 0.0.255.255 45.45.0.0 0.0.255.255	65.65.0.0 0.0.255.255 45.45.0.0 0.0.255.255
<wsg_acl1_permit_IPv6-address/mask>	2065:: ::ffff:ffff:ffff:ffff 2045:: ::ffff:ffff:ffff:ffff	2065:: ::ffff:ffff:ffff:ffff 2045:: ::ffff:ffff:ffff:ffff
<wsg_pool1_IPv4-address>	45.45.0.1 45.45.58.254	45.45.0.1 45.45.58.254
<wsg_pool1_IPv6-address/mask>	2045::/56	2045::/56
<crypto_foo_local_IPv4-address>	35.35.35.35	35.35.35.35
<crypto_foo-1_local_IPv6-address>	2035::35	2035::35
<wsg_interface_clear_IPv4-address_mask>	51.51.51.11 255.255.255.0	61.61.61.11 255.255.255.0
<wsg_interface_clear_IPv6-address/mask>	2051::11/64	2061::11/64

Variable	Primary ASR 9000	Backup ASR 9000
<wsg_interface_ike_IPv4-address_mask>	31.31.31.11 255.255.255.0	41.41.41.11 255.255.255.0
<wsg_interface_ike_IPv6-address/mask>	2031::11/64	2041::11/64
<wsg_interface_ike-loop_IPv4-address_mask>	35.35.35.35 255.255.255.255	35.35.35.35 255.255.255.255
<wsg_interface_ike-loop_IPv6-address/mask>	2035::35/128	2035::35/128
<wsg_interface_ike-loop1_IPv4-address_mask>	31.31.31.100 255.255.255.255	41.41.41.100 255.255.255.255
<wsg-service_bind_IPv4-address>	35.35.35.35	35.35.35.35
<wsg-service_bind_IPv6-address>	2035::35	2035::35
<wsg_iproute_clear_IPv4-address_mask>	65.65.0.0 255.255.0.0	65.65.0.0 255.255.0.0
<wsg_iproute_clear_IPv4-address>	51.51.51.10	61.61.61.10
<wsg_iproute_ike1_IPv4-address_mask>	187.0.1.0 255.255.255.0	187.0.1.0 255.255.255.0
<wsg_iproute_ike1_IPv4-address>	31.31.31.10	41.41.41.10
<wsg_iproute_ike2_IPv4-address_mask>	92.0.0.0 255.0.0.0	92.0.0.0 255.0.0.0
<wsg_iproute_ike2_IPv4-address>	31.31.31.10	41.41.41.10
<wsg_iproute_ike3_IPv4-address_mask>	188.0.1.0 255.255.255.0	188.0.1.0 255.255.255.0
<wsg_iproute_ike3_IPv4-address>	31.31.31.10	41.41.41.10
<wsg_iproute_clear_IPv6-address/mask>	2065::/64	2065::/64
<wsg_iproute_clear_nextthop_IPv6-address>	2051::10	2061::10
<wsg_iproute_ike1_IPv6-address/mask>	2092::/64	2092::/64
<wsg_iproute_ike1_nextthop_IPv6-address>	2031::10	2041::10
<wsg_iproute_ike2_IPv6-address/mask>	1871::/64	1871::/64
<wsg_iproute_ike2_nextthop_IPv6-address>	2031::10	2041::10
<wsg_iproute_ike2_IPv6-address/mask>	1881::/64	1881::/64
<wsg_iproute_ike2_nextthop_IPv6-address>	2031::10	2041::10
<wsg_rri_nextthop_IPv4-address>	51.51.51.11	61.61.61.11
<wsg_rri_nextthop_IPv6-address>	—	—
<srp_monitor_hsrp_vlan_id>	1871	1871
<srp_hsrp-group_number>	4	4
<srp_peer_IPv4-address>	81.81.81.11	71.71.71.11
<srp_bind_IPv4-address>	71.71.71.11	81.81.81.11
<srp_interface_icsr_IPv4-address_mask>	71.71.71.11 255.255.255.0	81.81.81.11 255.255.255.0
<srp_iproute_icsr_IPv4-address_mask>	81.81.81.0 255.255.255.0	71.71.71.0 255.255.255.0
<srp_iproute_icsr_IPv4-address>	71.71.71.10	81.81.81.10

Variable	Primary ASR 9000	Backup ASR 9000
<connectedapps_session_IPv4-address>	100.100.100.10	192.168.122.2
<port_1/10_vlan_id>	—	—
<port_1/11_vlan_id_srp>	1259	1871
<port_1/11_vlan_id_wsg>	1881	1881

Table 3: StarOS IP Address Mapping - SecGW2

Variable	Primary ASR 9000	Backup ASR 9000
<interface_LOCAL1_IPv4-address>	100.100.100.2 255.255.255.0	192.168.122.16 255.255.255.0
<iproute_LOCAL1_IPv4-address_mask>	0.0.0.0 0.0.0.0 100.100.100.10	0.0.0.0 0.0.0.0 192.168.122.2
<wsg_acl1_permit_IPv4-address_mask>	66.66.0.0 0.0.255.255 46.46.0.0 0.0.255.255	66.66.0.0 0.0.255.255 46.46.0.0 0.0.255.255
<wsg_acl1_permit_IPv6-address/mask>	2066:: :ffff:ffff:ffff:ffff 2046:: :ffff:ffff:ffff:ffff	2066:: :ffff:ffff:ffff:ffff 2046:: :ffff:ffff:ffff:ffff
<wsg_pool1_IPv4-address>	46.46.0.1 46.46.58.254	46.46.0.1 46.46.58.254
<wsg_pool1_IPv6-address/mask>	2046::/56	2046::/56
<crypto_foo_local_IPv4-address>	36.36.36.36	36.36.36.36
<crypto_foo-1_local_IPv6-address>	2036::36	2036::36
<wsg_interface_clear_IPv4-address_mask>	52.52.52.11 255.255.255.0	62.62.62.11 255.255.255.0
<wsg_interface_clear_IPv6-address/mask>	2052::11/64	2062::11/64
<wsg_interface_ike_IPv4-address_mask>	52.52.52.11 255.255.255.0	42.42.42.12 255.255.255.0
<wsg_interface_ike_IPv6-address/mask>	2032::11/64	2042::11/64
<wsg_interface_ike-loop_IPv4-address_mask>	36.36.36.36 255.255.255.255	36.36.36.36 255.255.255.255
<wsg_interface_ike-loop_IPv6-address/mask>	2036::36/128	2036::36/128
<wsg_interface_ike-loop1_IPv4-address_mask>	32.32.32.100 255.255.255.255	42.42.42.100 255.255.255.255
<wsg-service_bind_IPv4-address>	36.36.36.36	36.36.36.36
<wsg-service_bind_IPv6-address>	2036::36	2036::36
<wsg_iproute_clear_IPv4-address_mask>	66.66.0.0 255.255.0.0	66.66.0.0 255.255.0.0
<wsg_iproute_clear_IPv4-address>	52.52.52.10	62.62.62.10
<wsg_iproute_ike1_IPv4-address_mask>	187.0.2.0 255.255.255.0	187.0.2.0 255.255.255.0
<wsg_iproute_ike1_IPv4-address>	32.32.32.10	42.42.42.10
<wsg_iproute_ike2_IPv4-address_mask>	93.0.0.0 255.0.0.0	93.0.0.0 255.0.0.0

Variable	Primary ASR 9000	Backup ASR 9000
<wsg_iproute_ike2_IPv4-address>	32.32.32.10	42.42.42.10
<wsg_iproute_ike3_IPv4-address_mask>	188.0.2.0 255.255.255.0	188.0.2.0 255.255.255.0
<wsg_iproute_ike3_IPv4-address>	32.32.32.10	42.42.42.10
<wsg_iproute_clear_IPv6-address/mask>	2066::/64	2066::/64
<wsg_iproute_clear_nextthop_IPv6-address>	2052::10	2062::10
<wsg_iproute_ike1_IPv6-address/mask>	2093::/64	2093::/64
<wsg_iproute_ike1_nextthop_IPv6-address>	2032::10	2042::10
<wsg_iproute_ike2_IPv6-address/mask>	1872::/64	1872::/64
<wsg_iproute_ike2_nextthop_IPv6-address>	2032::10	2042::10
<wsg_iproute_ike2_IPv6-address/mask>	1882::/64	1882::/64
<wsg_iproute_ike2_nextthop_IPv6-address>	2032::10	2042::10
<wsg_rri_nextthop_IPv4-address>	52.52.52.11	62.62.62.11
<wsg_rri_nextthop_IPv6-address>	2052::11	2062::11
<srp_monitor_hsrp_vlan_id>	1872	1872
<srp_hsrp-group_number>	5	5
<srp_peer_IPv4-address>	82.82.82.11	72.72.72.11
<srp_bind_IPv4-address>	72.72.72.11	82.82.82.11
<srp_interface_icsr_IPv4-address_mask>	72.72.72.11 255.255.255.0	82.82.82.11 255.255.255.0
<srp_iproute_icsr_IPv4-address_mask>	82.82.82.0 255.255.255.0	71.71.71.0 255.255.255.0
<srp_iproute_icsr_IPv4-address>	72.72.72.11	82.82.82.11
<connectedapps_session_IPv4-address>	100.100.100.10	192.168.122.2
<port_1/10_vlan_id>	—	—
<port_1/11_vlan_id_srp>	1260	1360
<port_1/11_vlan_id_wsg>	1882	1882

Table 4: StarOS IP Address Mapping - SecGW3

Variable	Primary ASR 9000	Backup ASR 9000
<interface_LOCAL1_IPv4-address>	100.100.100.3 255.255.255.0	192.168.122.17 255.255.255.0
<iproute_LOCAL1_IPv4-address_mask>	0.0.0.0 0.0.0.0 100.100.100.10	0.0.0.0 0.0.0.0 192.168.122.2
<wsg_acl1_permit_IPv4-address_mask>	67.67.0.0 0.0.255.255 47.47.0.0 0.0.255.255	67.67.0.0 0.0.255.255 47.47.0.0 0.0.255.255

Variable	Primary ASR 9000	Backup ASR 9000
<wsg_acl1_permit_IPv6-address/mask>	2067:: ::ffff:ffff:ffff:ffff 2047:: ::ffff:ffff:ffff:ffff	2067:: ::ffff:ffff:ffff:ffff 2047:: ::ffff:ffff:ffff:ffff
<wsg_pool1_IPv4-address>	47.47.0.1 47.47.58.254	47.47.0.1 47.47.58.254
<wsg_pool1_IPv6-address/mask>	2047::/56	2047::/56
<crypto_foo_local_IPv4-address>	37.37.37.37	37.37.37.37
<crypto_foo-1_local_IPv6-address>	2037::37	2037::37
<wsg_interface_clear_IPv4-address_mask>	53.53.53.11 255.255.255.0	63.63.63.11 255.255.255.0
<wsg_interface_clear_IPv6-address/mask>	2053::11/64	2063::11/64
<wsg_interface_ike_IPv4-address_mask>	33.33.33.11 255.255.255.0	43.43.43.12 255.255.255.0
<wsg_interface_ike_IPv6-address/mask>	2033::11/64	2043::11/64
<wsg_interface_ike-loop_IPv4-address_mask>	37.37.37.37 255.255.255.255	37.37.37.37 255.255.255.255
<wsg_interface_ike-loop_IPv6-address/mask>	2037::37/128	2037::37/128
<wsg_interface_ike-loop1_IPv4-address_mask>	33.33.33.100 255.255.255.255	43.43.43.100 255.255.255.255
<wsg-service_bind_IPv4-address>	37.37.37.37	37.37.37.37
<wsg-service_bind_IPv6-address>	2037::37	2037::37
<wsg_iproute_clear_IPv4-address_mask>	67.67.0.0 255.255.0.0	67.67.0.0 255.255.0.0
<wsg_iproute_clear_IPv4-address>	53.53.53.10	63.63.63.10
<wsg_iproute_ike1_IPv4-address_mask>	187.0.3.0 255.255.255.0	187.0.3.0 255.255.255.0
<wsg_iproute_ike1_IPv4-address>	33.33.33.10	43.43.43.10
<wsg_iproute_ike2_IPv4-address_mask>	94.0.0.0 255.0.0.0	94.0.0.0 255.0.0.0
<wsg_iproute_ike2_IPv4-address>	33.33.33.10	43.43.43.10
<wsg_iproute_ike3_IPv4-address_mask>	188.0.3.0 255.255.255.0	188.0.3.0 255.255.255.0
<wsg_iproute_ike3_IPv4-address>	33.33.33.10	43.43.43.10
<wsg_iproute_clear_IPv6-address/mask>	2067::/64	2067::/64
<wsg_iproute_clear_nexthop_IPv6-address>	2053::10	2063::10
<wsg_iproute_ike1_IPv6-address/mask>	2094::/64	2094::/64
<wsg_iproute_ike1_nexthop_IPv6-address>	2033::10	2043::10
<wsg_iproute_ike2_IPv6-address/mask>	1873::/64	1873::/64
<wsg_iproute_ike2_nexthop_IPv6-address>	2033::10	2043::10
<wsg_iproute_ike2_IPv6-address/mask>	1883::/64	1883::/64
<wsg_iproute_ike2_nexthop_IPv6-address>	2033::10	2043::10

Variable	Primary ASR 9000	Backup ASR 9000
<wsg_rri_nexthop_IPv4-address>	53.53.53.11	63.63.63.11
<wsg_rri_nexthop_IPv6-address>	2053::11	2063::11
<srp_monitor_hsrp_vlan_id>	1873	1873
<srp_hsrp-group_number>	6	5
<srp_peer_IPv4-address>	83.83.83.11	73.73.73.11
<srp_bind_IPv4-address>	73.73.73.11	83.83.83.11
<srp_interface_icsr_IPv4-address_mask>	73.73.73.11 255.255.255.0	83.83.83.11 255.255.255.0
<srp_iproute_icsr_IPv4-address_mask>	83.83.83.0 255.255.255.0	73.73.73.0 255.255.255.0
<srp_iproute_icsr_IPv4-address>	73.73.73.11	83.83.83.11
<connectedapps_session_IPv4-address>	100.100.100.10	192.168.122.2
<port_1/10_vlan_id>	1873	1873
<port_1/11_vlan_id_srp>	1260	1361
<port_1/11_vlan_id_wsg>	1882	1883

Table 5: StarOS IP Address Mapping - SecGW4

Variable	Primary ASR 9000	Backup ASR 9000
<interfsace_LOCAL1_IPv4-address>	100.100.100.4 255.255.255.0	192.168.122.18 255.255.255.0
<iproute_LOCAL1_IPv4-address_mask>	0.0.0.0 0.0.0.0 100.100.100.10	0.0.0.0 0.0.0.0 192.168.122.2
<wsg_acl1_permit_IPv4-address_mask>	68.68.0.0 0.0.255.255 48.48.0.0 0.0.255.255	68.68.0.0 0.0.255.255 48.48.0.0 0.0.255.255
<wsg_acl1_permit_IPv6-address/mask>	2068:: ::ffff:ffff:ffff:ffff 2048:: ::ffff:ffff:ffff:ffff	2068:: ::ffff:ffff:ffff:ffff 2048:: ::ffff:ffff:ffff:ffff
<wsg_pool1_IPv4-address>	48.48.0.1 48.48.58.254	48.48.0.1 48.48.58.254
<wsg_pool1_IPv6-address/mask>	2048::/56	2048::/56
<crypto_foo_local_IPv4-address>	38.38.38.38	38.38.38.38
<crypto_foo-1_local_IPv6-address>	2038::38	2038::38
<wsg_interface_clear_IPv4-address_mask>	54.54.54.11 255.255.255.0	64.64.64.11 255.255.255.0
<wsg_interface_clear_IPv6-address/mask>	2054::11/64	2064::11/64
<wsg_interface_ike_IPv4-address_mask>	34.34.34.11 255.255.255.0	44.44.44.12 255.255.255.0
<wsg_interface_ike_IPv6-address/mask>	2034::11/64	2044::11/64
<wsg_interface_ike-loop_IPv4-address_mask>	38.38.38.38 255.255.255.255	38.38.38.38 255.255.255.255

Variable	Primary ASR 9000	Backup ASR 9000
<wsg_interface_ike-loop_IPv6-address/mask>	2038::38/128	2038::38/128
<wsg_interface_ike-loop1_IPv4-address_mask>	34.34.34.100 255.255.255.255	44.44.44.100 255.255.255.255
<wsg-service_bind_IPv4-address>	38.38.38.38	38.38.38.38
<wsg-service_bind_IPv6-address>	2038::38	2038::38
<wsg_iproute_clear_IPv4-address_mask>	68.68.0.0 255.255.0.0	68.68.0.0 255.255.0.0
<wsg_iproute_clear_IPv4-address>	54.54.54.10	64.64.64.10
<wsg_iproute_ike1_IPv4-address_mask>	187.0.4.0 255.255.255.0	187.0.4.0 255.255.255.0
<wsg_iproute_ike1_IPv4-address>	34.34.34.10	44.44.44.10
<wsg_iproute_ike2_IPv4-address_mask>	95.0.0.0 255.0.0.0	95.0.0.0 255.0.0.0
<wsg_iproute_ike2_IPv4-address>	34.34.34.10	44.44.44.10
<wsg_iproute_ike3_IPv4-address_mask>	188.0.4.0 255.255.255.0	188.0.4.0 255.255.255.0
<wsg_iproute_ike3_IPv4-address>	34.34.34.10	44.44.44.10
<wsg_iproute_clear_IPv6-address/mask>	2068::/64	2068::/64
<wsg_iproute_clear_nexthop_IPv6-address>	2054::10	2064::10
<wsg_iproute_ike1_IPv6-address/mask>	2095::/64	2095::/64
<wsg_iproute_ike1_nexthop_IPv6-address>	2034::10	2044::10
<wsg_iproute_ike2_IPv6-address/mask>	1874::/64	1874::/64
<wsg_iproute_ike2_nexthop_IPv6-address>	2034::10	2044::10
<wsg_iproute_ike2_IPv6-address/mask>	1884::/64	1884::/64
<wsg_iproute_ike2_nexthop_IPv6-address>	2034::10	2044::10
<wsg_ri_nexthop_IPv4-address>	54.54.54.11	64.64.64.11
<wsg_ri_nexthop_IPv6-address>	2054::11	2064::11
<srp_monitor_hsrp_vlan_id>	1874	1874
<srp_hsrp-group_number>	7	7
<srp_peer_IPv4-address>	84.84.84.11	74.74.74.11
<srp_bind_IPv4-address>	74.74.74.11	84.84.84.11
<srp_interface_icsr_IPv4-address_mask>	74.74.74.11 255.255.255.0	84.84.84.11 255.255.255.0
<srp_iproute_icsr_IPv4-address_mask>	84.84.84.0 255.255.255.0	74.74.74.0 255.255.255.0
<srp_iproute_icsr_IPv4-address>	74.74.74.11	84.84.84.11
<connectedapps_session_IPv4-address>	100.100.100.10	192.168.122.2
<port_1/10_vlan_id>	1874	1874
<port_1/11_vlan_id_srp>	1262	1362

Variable	Primary ASR 9000	Backup ASR 9000
<port_1/11_vlan_id_wsg>	1884	1884

SecGW VM Configuration - Primary ASR 9000 Chassis

```

config
  cli hidden
  tech-support test-commands encrypted password <unique_encrypted_password>
  cli test-commands encrypted password <unique_encrypted_password>
  license key "
<SecGW_license_key>
  system hostname <ASR9K_hostname>-<SecGW#>
  orbem
    no siop-port
    no iiop-port
  #exit
  crash max-size 2048 compression gzip
  require session recovery
  context local
    no ip guarantee framed-route local-switching
    interface LOCAL1
      ip address <LOCAL1_IPv4-address>
    #exit
    server ftpd
    #exit
    ssh key
<unique_encrypted_ssh_key1>
    ssh key
<unique_encrypted_ssh_key2>
    ssh key
<unique_encrypted_ssh_key3>
    server sshd
      subsystem sftp
    #exit
    server telnetd
    #exit
    subscriber default
    exit
    administrator admin encrypted password <unique_encrypted_password>
    aaa group default
    #exit
    ip route <iproute_:LOCAL1_IPv4-address_mask> LOCAL1
  #exit
  port ethernet 1/1
    no shutdown
    bind interface LOCAL1 local
  #exit
  ca-certificate name test
  pem data
  "-----BEGIN CERTIFICATE-----n

```

```

<certificate_data>
-----END CERTIFICATE-----"
#exit
context wsg
  ip access-list acl1
    permit ip <wsg_acl1_permit_IPv4-address_mask><wsg_acl1_permit_IPv4-address_mask>
#exit
  ipv6 access-list acl1
    permit ip <wsg_acl1_permit_IPv6-address_mask><wsg_acl1_permit_IPv6-address_mask>
#exit
  no ip guarantee framed-route local-switching
ip pool pool1 range <wsg_pool1_IPv4-address/mask> <wsg_pool1_IPv4-address> public
0
  ipv6 pool ipv6-pool1 prefix <wsg_pool1_IPv6-address/mask> public 0
  ipsec transform-set tselsa-foo
#exit
  ikev2-ikesa transform-set ikesa-foo
#exit
  crypto template foo ikev2-dynamic
    authentication local pre-shared-key encrypted key
<unique_encrypted_key_per_CPU-VM>
    authentication remote pre-shared-key encrypted key
<unique_encrypted_key_per_CPU-VM>
    ikev2-ikesa transform-set list ikesa-foo
    ikev2-ikesa rekey
    payload foo-sa0 match childsa match ipv4
    ipsec transform-set list tselsa-foo
    rekey keepalive
#exit
    identity local id-type ip-addr id <crypto_foo_IPv4-address>
#exit
  crypto template foo-1 ikev2-dynamic
    authentication local pre-shared-key encrypted key <encrypted_key>
    authentication remote pre-shared-key encrypted key <encrypted_key>
    ikev2-ikesa transform-set list ikesa-foo
    ikev2-ikesa rekey
    payload foo-sa0 match childsa match ipv6
    ipsec transform-set list tselsa-foo
    rekey keepalive
#exit
    identity local id-type ip-addr id <crypto_fool_local_IPv6-address_mask>
#exit
  interface clear
    ip address <wsg_interface_clear_IPv4-address>
    ipv6 address <wsg_interface_clear_IPv6-address> secondary
#exit
  interface ike loopback
    ip address <wsg_interface_ike_IPv4-address mask> srp-activate
    ipv6 address <wsg_interface_ike_IPv6-address/mask> srp-activate
#exit
  interface ike-loop loopback
    ip address <wsg_interface_ike-loop_IPv4-address_mask> srp-activate

```

```

#exit
interface ike-loop-v6 loopback
    ipv6 address <wsg_interface_ike-loop_IPv6-address/mask> srp-activate
#exit
interface ike-loop1 loopback
    ip address <wsg_interface_ike-loop1_IPv4-address_mask> srp-activate
#exit
subscriber default
exit
aaa group default
#exit
wsg-service ipv4
    deployment-mode site-to-site
    ip access-group acl1
    bind address <wsg-service_bind_IPv4-address> crypto-template foo
#exit
wsg-service ipv6
    deployment-mode site-to-site
    ipv6 access-group acl1
    bind address <wsg-service_bind_IPv6-address_per_CPU-VM> crypto-template
foo-1
#exit
ip route <wsg_iproute_clear_IPv4-address_mask> <wsg_iproute_clear__IPv4-address>
clear
    ip route <wsg_iproute_ike1_IPv4-address mask> <wsg_iproute_ike1_IPv4-address> ike
    ip route <wsg_iproute_ike2_IPv4-address mask> <wsg_iproute_ike2_IPv4-address> ike
    ip route <wsg_iproute_ike3_IPv4-address mask> <wsg_iproute_ike3_IPv4-address> ike
    ipv6 route <wsg_iproute_clear_IPv6-address/mask>
<wsg_iproute_clear_nexthop_IPv6-address> interface clear
    ipv6 route <wsg_iproute_ike1_IPv6-address/mask> <wsg_iproute_ike1_nexthop_IPv6-address>
interface ike
    ipv6 route <wsg_iproute_ike2_IPv6-address/mask>
<wsg_iproute_ike2_nexthop_IPv6-address> interface ike
    ipv6 route <wsg_iproute_ike3_IPv6-address/mask>
<wsg_iproute_ike3_nexthop_IPv6-address> interface ike
    ip rri next-hop <wsg_rri_nexthop_IPv4-address> interface clear
    ipv6 rri next-hop <wsg_rri_nexthop_IPv6-address> interface clear
#exit
context srp
    no ip guarantee framed-route local-switching
    service-redundancy-protocol
        chassis-mode primary
        hello-interval 3
        configuration-interval 60
        dead-interval 15
        checkpoint session duration non-ims-session 30
        route-modifier threshold 10
        priority 10
    monitor hsrp interface GigabitEthernet0/0/0/18. <srp_monitor_hsrp_vlan_ID>
afi-type IPv4 hsrp-group<srp_hsrp-group_number>
    peer-ip-address <srp_peer_IPv4-address>

```

```
    bind address <srp_bind_IPv4-address>
#exit
interface icsr
    ip address <srp_interface_icsr_IPv4-address_mask_per_CPU-VM>
#exit
subscriber default
exit
aaa group default
#exit
ip route <srp_iproute_IPv4-address_mask><srp_iproute_IPv4-address> icsr
#exit

connectedapps
    sess-userid cisco
    sess-passwd encrypted password <encrypted_password>
    sess-name hsrp
    sess-ip-address <connectapps_session_IPv4-address>
    rri-mode BOTH
    ha-chassis-mode inter
    ha-network-mode L2
    ca-certificate-name test
    activate
#exit
wsg-lookup
    priority 1 source-netmask 32 destination-netmask 32
    priority 2 source-netmask 128 destination-netmask 128
    priority 3 source-netmask 64 destination-netmask 64
#exit
port ethernet 1/10
    no shutdown
    vlan <port_1/10_vlan_id>
        no shutdown
        bind interface ike wsg
    #exit
#exit
port ethernet 1/11
    no shutdown
    vlan <port_1/11_vlan_id_srp>
        no shutdown
        bind interface icsr srp
    #exit
    vlan <port_1/11_vlan_id_wsg>
        no shutdown
        bind interface clear wsg
    #exit
#exit
end
```

SecGW VM Configuration - Backup ASR 9000 Chassis

```

config
cli hidden
tech-support test-commands encrypted password <unique_encrypted_password>
cli test-commands encrypted password <unique_encrypted_password>

```



Important

The logging disable eventid entries should only be applied to SecGW2, SecGW3 and SecGW4.

```

logging disable eventid 10171
logging disable eventid 10638
logging disable eventid 12690
logging disable eventid 1298
logging disable eventid 55629
logging disable eventid 77601 to 77602
license key "
<SecGW_license_key>
system hostname <ASR9K_hostname>-<SecGW#>
orbem
no siop-port
no iiop-port
#exit
crash max-size 2048 compression gzip
require session recovery
context local
no ip guarantee framed-route local-switching
interface LOCAL1
ip address <LOCAL1_IPv4-address>
#exit
server ftpd
#exit
ssh key
<unique_encrypted_ssh_key1>
ssh key
<unique_encrypted_ssh_key2>
ssh key
<unique_encrypted_ssh_key3>
server sshd
subsystem sftp
#exit
server telnetd
#exit
subscriber default
exit
administrator admin encrypted password <unique_encrypted_password>
aaa group default
#exit
ip route <iproute_:LOCAL1_IPv4-address_mask> LOCAL1
#exit
port ethernet 1/1

```



```

no shutdown
bind interface LOCAL1 local
#exit
ca-certificate name test
pem data
"-----BEGIN CERTIFICATE-----n
<certificate_data>
-----END CERTIFICATE-----"
#exit
context wsg
ip access-list acl1
    permit ip <wsg_acl1_permit_IPv4-address_mask><wsg_acl1_permit_IPv4-address_mask>
#exit
ipv6 access-list acl1
    permit ip <wsg_acl1_permit_IPv6-address_mask><wsg_acl1_permit_IPv6-address_mask>
#exit
no ip guarantee framed-route local-switching
ip pool pool1 range <wsg_pool1_IPv4-address/mask> <wsg_pool1_IPv4-address> public
0
ipv6 pool ipv6-pool1 prefix <wsg_pool1_IPv6-address/mask> public 0
ipsec transform-set tselsa-foo
#exit
ikev2-ikesa transform-set ikesa-foo
#exit
crypto template foo ikev2-dynamic
    authentication local pre-shared-key encrypted key
<unique_encrypted_key_per_CPU-VM>
    authentication remote pre-shared-key encrypted key
<unique_encrypted_key_per_CPU-VM>
    ikev2-ikesa transform-set list ikesa-foo
    ikev2-ikesa rekey
    payload foo-sa0 match childsa match ipv4
    ipsec transform-set list tselsa-foo
    rekey keepalive
#exit
identity local id-type ip-addr id <crypto_foo_IPv4-address>
#exit
crypto template foo-1 ikev2-dynamic
    authentication local pre-shared-key encrypted key <encrypted_key>
    authentication remote pre-shared-key encrypted key <encrypted_key>
    ikev2-ikesa transform-set list ikesa-foo
    ikev2-ikesa rekey
    payload foo-sa0 match childsa match ipv6
    ipsec transform-set list tselsa-foo
    rekey keepalive
#exit
identity local id-type ip-addr id <crypto_fool_local_IPv6-address_mask>
#exit
interface clear
    ip address <wsg_interface_clear_IPv4-address>
    ipv6 address <wsg_interface_clear_IPv6-address> secondary
#exit

```

```

interface ike loopback
    ip address <wsg_interface_ike_IPv4-address mask> srp-activate
    ipv6 address <wsg_interface_ike_IPv6-address/mask> srp-activate
#exit
interface ike-loop loopback
    ip address <wsg_interface_ike-loop_IPv4-address_mask> srp-activate
#exit
interface ike-loop-v6 loopback
    ipv6 address <wsg_interface_ike-loop_IPv6-address/mask> srp-activate
#exit
interface ike-loop1 loopback
    ip address <wsg_interface_ike-loop1_IPv4-address_mask> srp-activate
#exit
subscriber default
exit
aaa group default
#exit
wsg-service ipv4
    deployment-mode site-to-site
    ip access-group acl1
    bind address <wsg-service_bind_IPv4-address> crypto-template foo
#exit
wsg-service ipv6
    deployment-mode site-to-site
    ipv6 access-group acl1
    bind address <wsg-service_bind_IPv6-address_per_CPU-VM> crypto-template
foo-1
#exit
ip route <wsg_iproute_clear_IPv4-address_mask> <wsg_iproute_clear_IPv4-address>
clear
    ip route <wsg_iproute_ike1_IPv4-address mask> <wsg_iproute_ike1_IPv4-address> ike
    ip route <wsg_iproute_ike2_IPv4-address mask> <wsg_iproute_ike2_IPv4-address> ike
    ip route <wsg_iproute_ike3_IPv4-address mask> <wsg_iproute_ike3_IPv4-address> ike
    ipv6 route <wsg_iproute_clear_IPv6-address/mask>
<wsg_iproute_clear_nexthop_IPv6-address> interface clear
    ipv6 route <wsg_iproute_ike1_IPv6-address/mask> <wsg_iproute_ike1_nexthop_IPv6-address>
interface ike
    ipv6 route <wsg_iproute_ike2_IPv6-address/mask>
<wsg_iproute_ike2_nexthop_IPv6-address> interface ike
    ipv6 route <wsg_iproute_ike3_IPv6-address/mask>
<wsg_iproute_ike3_nexthop_IPv6-address> interface ike
    ip rri next-hop <wsg_rri_nexthop_IPv4-address> interface clear
    ipv6 rri next-hop <wsg_rri_nexthop_IPv6-address> interface clear
#exit
context srp
    no ip guarantee framed-route local-switching
    service-redundancy-protocol
        chassis-mode primary
        hello-interval 3
        configuration-interval 60
        dead-interval 15

```

```

    checkpoint session duration non-ims-session 30
    route-modifier threshold 10
    priority 10
    monitor hsrp interface GigabitEthernet0/0/0/18. <srp_monitor_hsrp_vlan_ID>
afi-type IPv4 hsrp-group <srp_hsrp-group_number>
    peer-ip-address <srp_peer_IPv4-address>
    bind address <srp_bind_IPv4-address>
#exit
interface icsr
    ip address <srp_interface_icsr_IPv4-address_mask_per_CPU-VM>
#exit
subscriber default
exit
aaa group default
#exit
ip route <srp_iproute_IPv4-address_mask><srp_iproute_IPv4-address> icsr
#exit

connectedapps
    sess-userid cisco
    sess-passwd encrypted password <encrypted_password>
    sess-name hsrp
    sess-ip-address <connectapps_session_IPv4-address>
    rri-mode BOTH
    ha-chassis-mode inter
    ha-network-mode L2
    ca-certificate-name test
    activate
#exit
wsg-lookup
    priority 1 source-netmask 32 destination-netmask 32
    priority 2 source-netmask 128 destination-netmask 128
    priority 3 source-netmask 64 destination-netmask 64
#exit
port ethernet 1/10
    no shutdown
    vlan <port_1/10_vlan_id>
        no shutdown
        bind interface ike wsg
    #exit
#exit
port ethernet 1/11
    no shutdown
    vlan <port_1/11_vlan_id_srp>
        no shutdown
        bind interface icsr srp
    #exit
    vlan <port_1/11_vlan_id_wsg>
        no shutdown
        bind interface clear wsg
    #exit

```

```
#exit  
end
```