Cisco ENCS Single WAN IP Deployment Scenarios

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Single WAN IP Deployment

A single WAN IP deployment can be considered when the Cisco ENCS is preconfigured at the corporate main office with the service provider's WAN IP address, and shipped to the branch office for quick deployment. At the branch office, you do not have to perform any installation or configuration task. You just have to boot the system with the preconfigured setup. The single WAN IP deployment scenario could vary as per customer requirements. The following are two sample single WAN IP deployment scenarios with the Cisco ISRv:

Ensure that you preconfigure the Cisco ENCS at the main office before shipping the device to the branch office. You cannot connect to the remote branch office from your main office in a single WAN IP deployment scenario.

- Single WAN IP Deployment with Gigabit Ethernet Interface
- Single WAN IP Deployment with the 4G Interface
Preconfiguring the Cisco ENCS for a Single WAN IP Deployment

To preconfigure the Cisco ENCS:

1. Install Cisco Enterprise NFVIS on the Cisco ENCS via CIMC. For details, see Installing Cisco Enterprise NFVIS on a Cisco ENCS 5100 and 5400.
2. Connect your local system (laptop) to the local management interface of the host server.
4. Upload the Cisco ISRv image using the portal, and register the VM.
5. From the portal, remove the default Gigabit Ethernet 0/0 or GE0-0 WAN interface.
6. Deploy Cisco ISRv with Gigabit Ethernet 2 for SRIOV-1 and Gigabit Ethernet 3 for the wan-net.
7. Open the Cisco ISRv VNC.
8. From the VNC console, configure ISRv Gigabit Ethernet 2 and Gigabit Ethernet 3 interfaces with appropriate IP addresses. Then, perform a "no shut" of the interfaces.
9. Set the WAN static IP address to be on the same subnet as ISRv Gigabit Ethernet 2 IP address, and use ISRv Gigabit Ethernet 2 interface IP address as the default gateway.
10. Ping with the Cisco ISRv IP address to ensure connectivity.
11. Configure Dynamic Multipoint VPN on the Cisco ISRv, and ensure the main server can access the portal.

**Single WAN IP Deployment with Gigabit Ethernet Interface 0/0**

In this scenario, two Gigabit Ethernet interfaces are configured on the Cisco ISRv: Gigabit Ethernet2 as the outbound interface and Gigabit Ethernet3 as the internal interface. The outbound interface IP address is provided by the service provider. The internal interface is the WAN interface that serves as the default gateway for Cisco Enterprise NFVIS.

```plaintext
crypto isakmp policy 5
  authentication pre-share
group 2
crypto isakmp key dmvpnkey address 0.0.0.0

crypto ipsec transform-set dmvpnset esp-3des esp-sha-hmac
  mode tunnel

crypto ipsec profile dmvpnprof
  set security-association lifetime seconds 1200
  set transform-set dmvpnset

! DMVPN tunnel configuration
interface Tunnel100
  ip address 192.0.2.3 255.255.255.0
  no ip redirects
  ip mtu 1440
  ip nhrp authentication dmvpnkey
  ip nhrp map 192.0.2.1 198.51.100.1
  ip nhrp network-id 90
  ip nhrp nhs 192.0.2.2
  tunnel source GigabitEthernet2
  tunnel mode gre multipoint
  tunnel key 100000
  tunnel protection ipsec profile dmvpnprof

! interface GigabitEthernet2
  description this is the outbound interface
  ip address 198.51.100.2 255.255.0.0

interface GigabitEthernet3
  description this is the inside interface
  ip address 192.0.2.10 255.255.255.0

! router eigrp 90
  network 10.4.76.0 0.0.0.255
  network 192.0.2.1
  eigrp stub connected
  no auto-summary

! ip route 20.1.0.0 255.255.0.0 198.51.100.1

! Smart license configuration
  ip name-server 198.51.100.9
  ip domain lookup
  service internal
do test license smart dev-cert Enable
```
Single WAN IP Deployment with the 4G Interface

In this scenario, a 4G interface (NIM card) is configured as the outbound interface and Gigabit Ethernet3 as the internal interface. The outbound interface IP address is provided by the service provider. The internal interface is the WAN interface that serves as the default gateway for Cisco Enterprise NFVIS.

License Level: ax
License Type: N/A (Smart License Enabled)
Next reload license Level: ax

Single WAN IP Deployment with the 4G Interface

In this scenario, a 4G interface (NIM card) is configured as the outbound interface and Gigabit Ethernet3 as the internal interface. The outbound interface IP address is provided by the service provider. The internal interface is the WAN interface that serves as the default gateway for Cisco Enterprise NFVIS.
ip domain name cisco.com

! **IPsec configuration**

crypto isakmp policy 5
   authentication pre-share
group 2
crypto isakmp key dmvpnkey address 0.0.0.0
! crypto ipsec transform-set dmvpnset esp-3des esp-sha-hmac
   mode tunnel
! crypto ipsec profile dmvpnprof
   set security-association lifetime seconds 1200
   set transform-set dmvpnset

! **4G interface**
controller Cellular 0/2/0
lte modem link-recovery rssi onset-threshold -110
lte modem link-recovery monitor-timer 20
lte modem link-recovery wait-timer 10
lte modem link-recovery debounce-count 6
! no ip ftp passive
ip ftp username admin
ip ftp password admin

! **DMVPN tunnel configuration**

interface Tunnel100
   ip address 198.51.100.3 255.255.255.0
   no ip redirects
   ip mtu 1440
   ip nhrp authentication dmvpnkey
   ip nhrp map 198.51.100.5 192.0.2.7
   ip nhrp network-id 90
   ip nhrp nhs 198.51.100.5
tunnel source Cellular0/2/0
tunnel mode gre multipoint
tunnel key 100000
tunnel protection ipsec profile dmvpnprof
!
interface GigabitEthernet2
   ip address 198.51.100.6 255.255.255.0
   ip nat inside
   negotiation auto
!
interface GigabitEthernet3
   ip address 198.51.100.11 255.255.255.0
   negotiation auto
!
interface Cellular0/2/0
   ip address negotiated
   load-interval 30
dialer in-band
dialer idle-timeout 0
dialer-group 1
ipv6 address autoconfig
pulse-time 1
! interface Cellular0/2/1
  no ip address
!
router eigrp 90
  network 198.51.100.0 0.0.0.255
  network 198.52.100.0 0.0.0.255
  network 99.0.0.0
eigrp stub connected
!
virtual-service csr_mgmt
  ip shared host-interface GigabitEthernet1
  activate
  ip forward-protocol nd
  ip http server
  ip http authentication local
  ip http secure-server
!
ip route 0.0.0.0 0.0.0.0 Cellular0/2/0
ip route 192.0.2.12 255.255.255.0 198.51.100.5
ip route 192.0.2.13 255.255.255.255 198.51.100.5
ip route 192.0.2.14 255.255.255.255 198.51.100.5
ip route 192.0.2.15 255.255.255.255 198.51.100.5
ip route vrf Mgmt-intf 0.0.0.0 0.0.0.0 198.51.100.20
ip ssh authentication-retries 5
ip ssh rsa keypair-name ssh-key
ip ssh version 2
ip scp server enable
!
dialer-list 1 protocol ip permit
!
line con 0
  stopbits 1
line vty 0 4
  password cisco123
login local
  transport input telnet ssh
!
ntp server 198.51.100.17