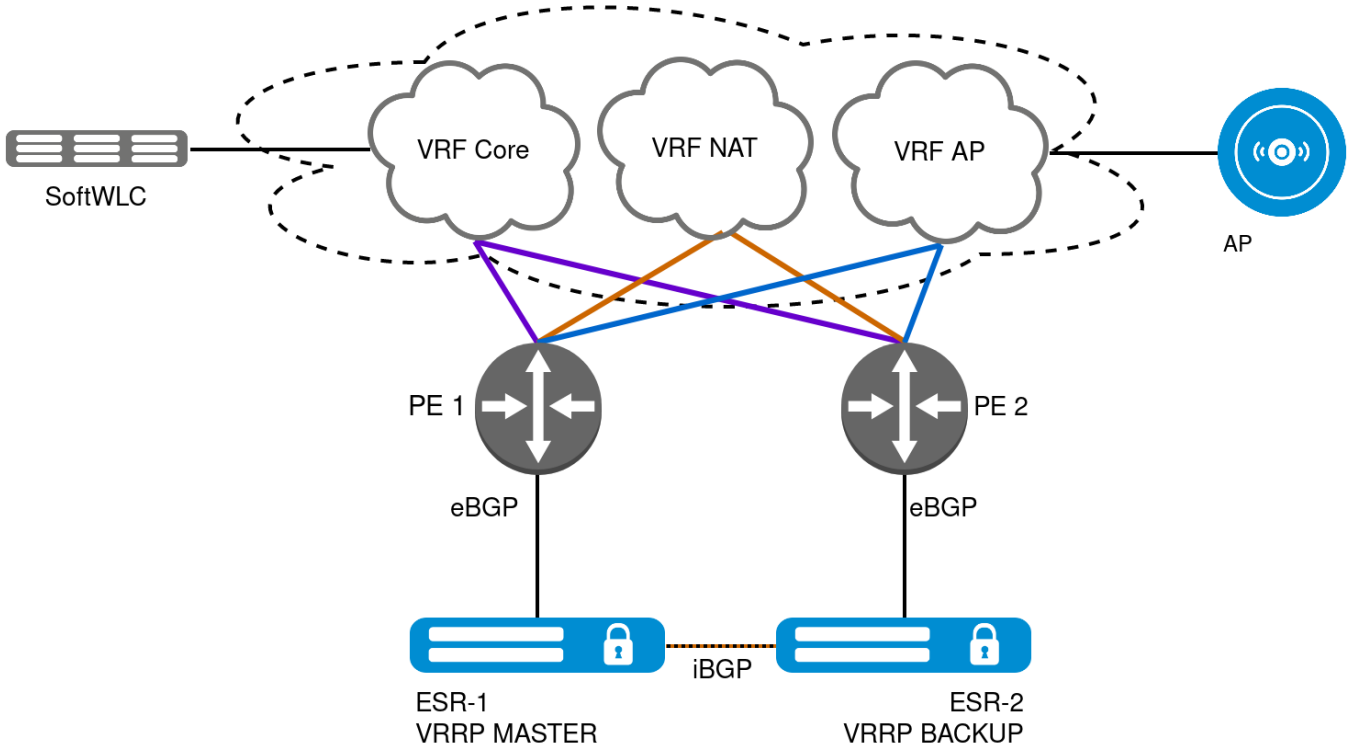
c VRRP+BGP

-
-
-
  - ESR
  - VRRP
    - AS-path
    - Multi exit discriminator (MED)
  - local preference , ESR
  - VRRP PE, ESR VRRP MASTER
-
-
  - ESR

ESR " " (PE 1 PE 2) . 1. , , PoE , L3 / ( ).

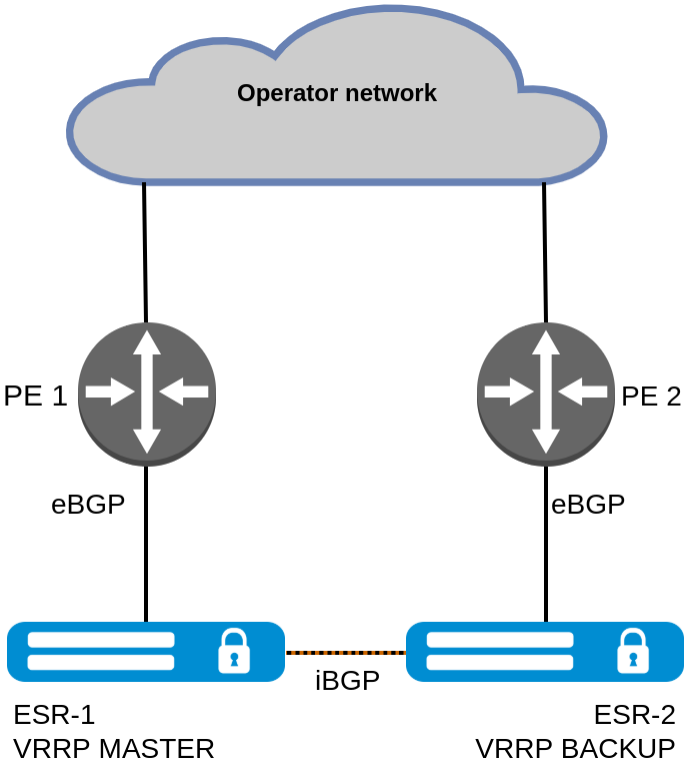
- VRF AP.
- VRF NAT, NAT.
- VRF core ESR SoftWLC.

ESR PE . ESR GRE . , PE ESR, , .



. 1.

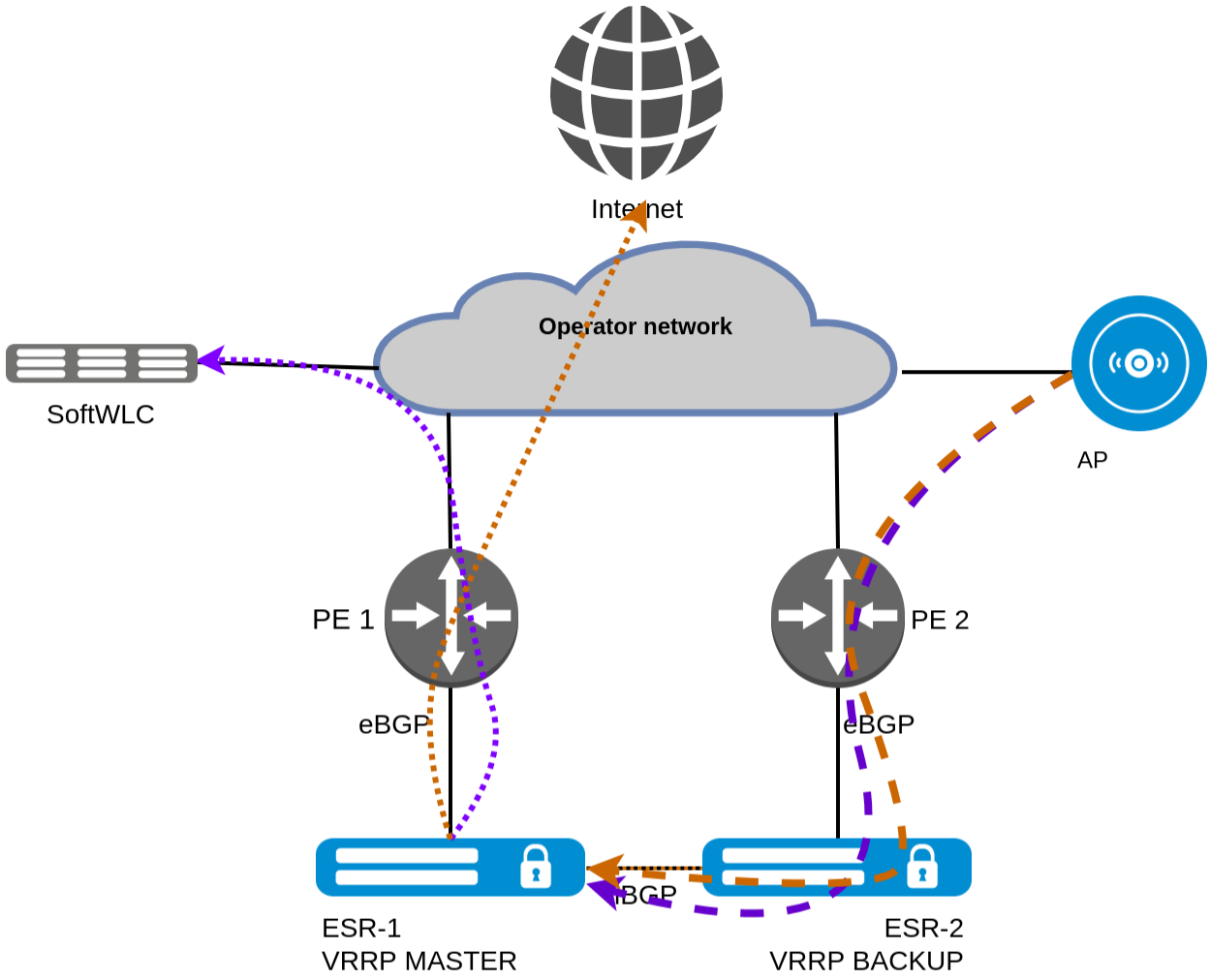
. 2 , BGP .



. 2.

VRRP :

1. ESR-1 ESR-2 GRE VRF AP. , GRE PE 2 ESR-2, VRRP BACKUP GRE . GRE ESR-1 ESR-2, VRF core ( ) VRF NAT ( ) PE 1, . 3.



трафик управления ТД внутри GRE

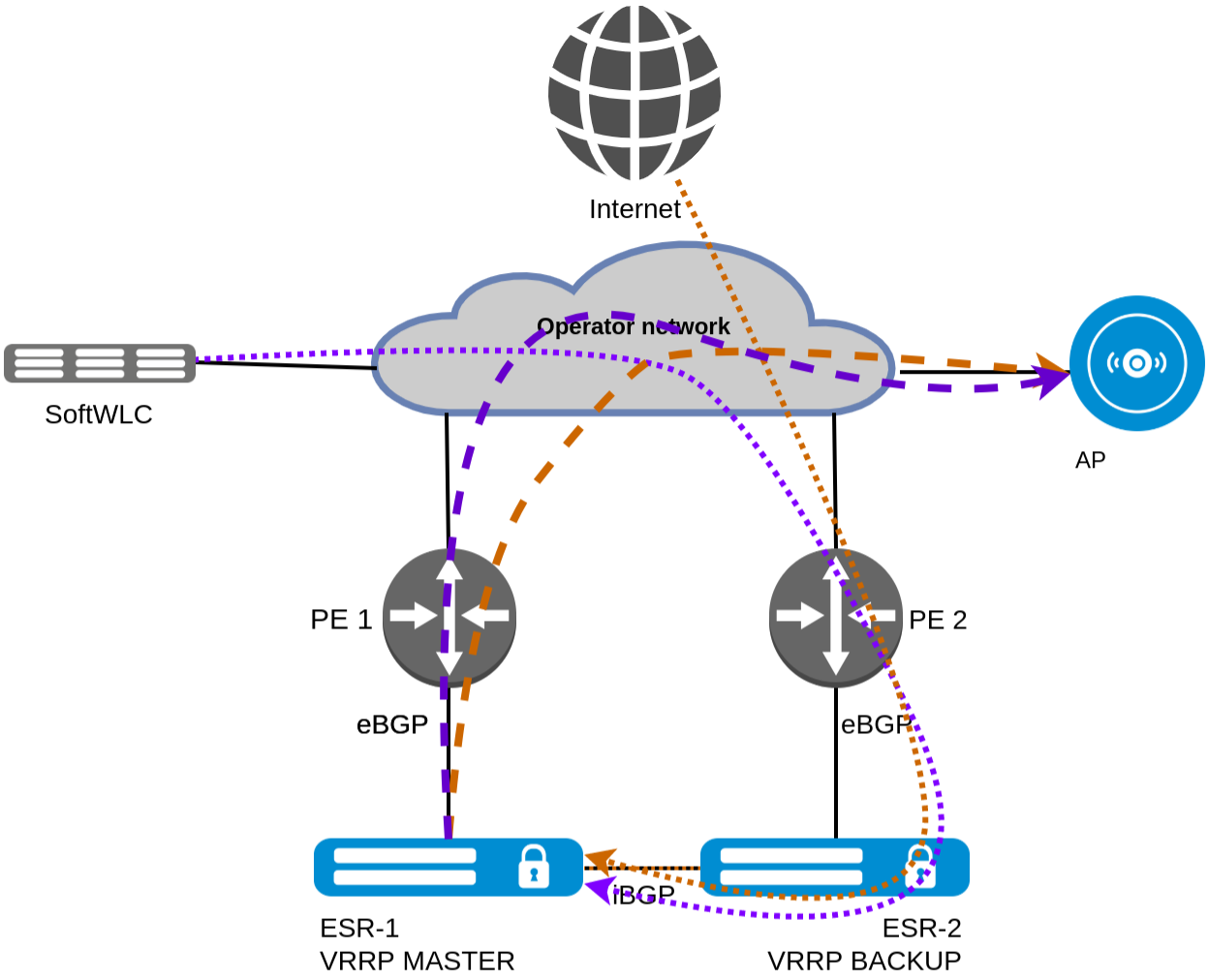
трафик клиентов ТД внутри GRE

трафик управления ТД после декапсуляции из GRE

трафик клиентов ТД после декапсуляции из GRE

. 3.

2. ESR-1 ESR-2 VRF core VRF NAT. ESR-2 PE 2. , SoftWLC, VRF NAT c ESR-2 ESR-1, VRRP MASTER GRE PE 1, . 4.



трафик управления ТД внутри GRE

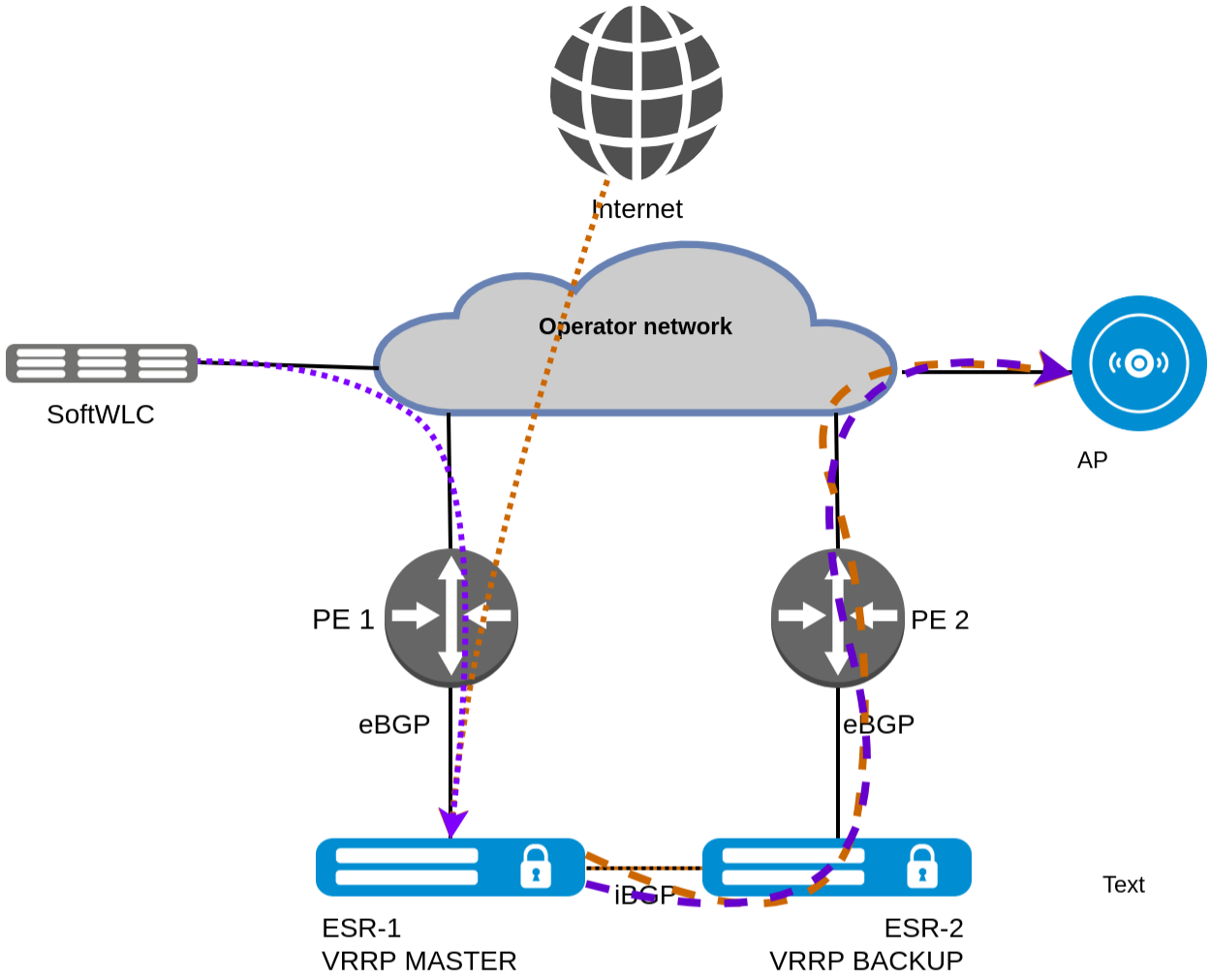
трафик клиентов ТД внутри GRE

трафик управления ТД до инкапсуляции в GRE

трафик клиентов ТД до инкапсуляции из GRE

. 4.

3. PE 1 PE2 ESR-1/ESR-2 , SoftWLC NAT. ESR-1 ESR-2 , iBGP . , ESR, VRRP MASTER, , ESR VRRP BACKUP. , . 5.



трафик управления ТД внутри GRE

трафик клиентов ТД внутри GRE

трафик управления ТД до инкапсуляции в GRE

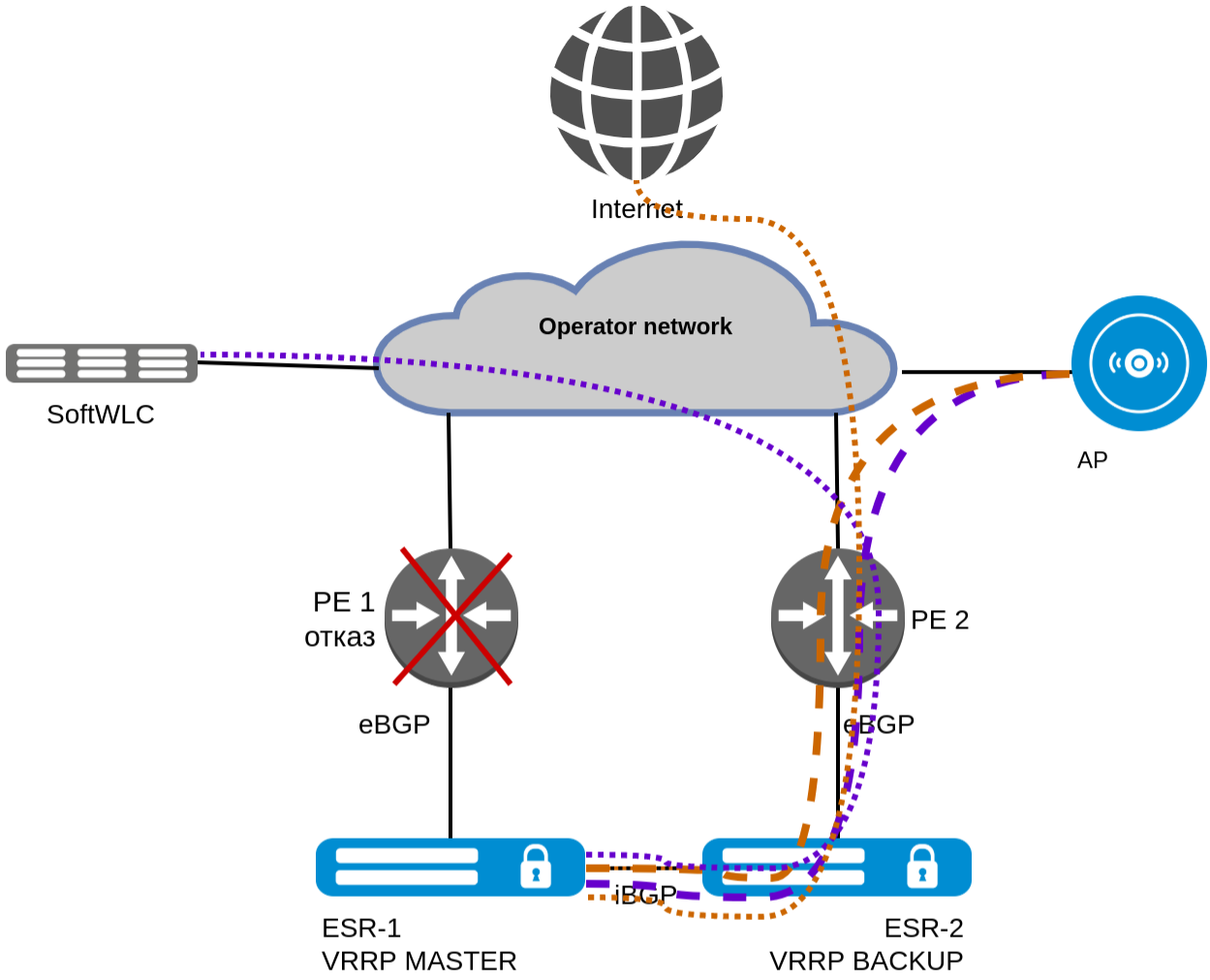
трафик клиентов ТД до инкапсуляции из GRE

. 5.

:

- ;
- , .. ESR ( );
- ESR L2 VPN ;
- EoGRE (ESR100/200/1000) /SSID, .. (up/down) .

4. PE 1, ESR-1, VRRP MASTER , (. 6).



трафик управления ТД внутри GRE

трафик клиентов ТД внутри GRE

трафик управления ТД до инкапсуляции в GRE

трафик клиентов ТД до инкапсуляции из GRE

. 6.

:

- , ;
- ESR L2 VPN ;
- .

ESR. ESR, :

- L2 VRRP, GRE, ;
- , ;
- iBGP ESR-1 ESR-2.

1 2 :

- BGP VRRP ESR. VRRP MASTER BGP, PE .

3:

- , ESR iBGP, BGP , , PE ESR.

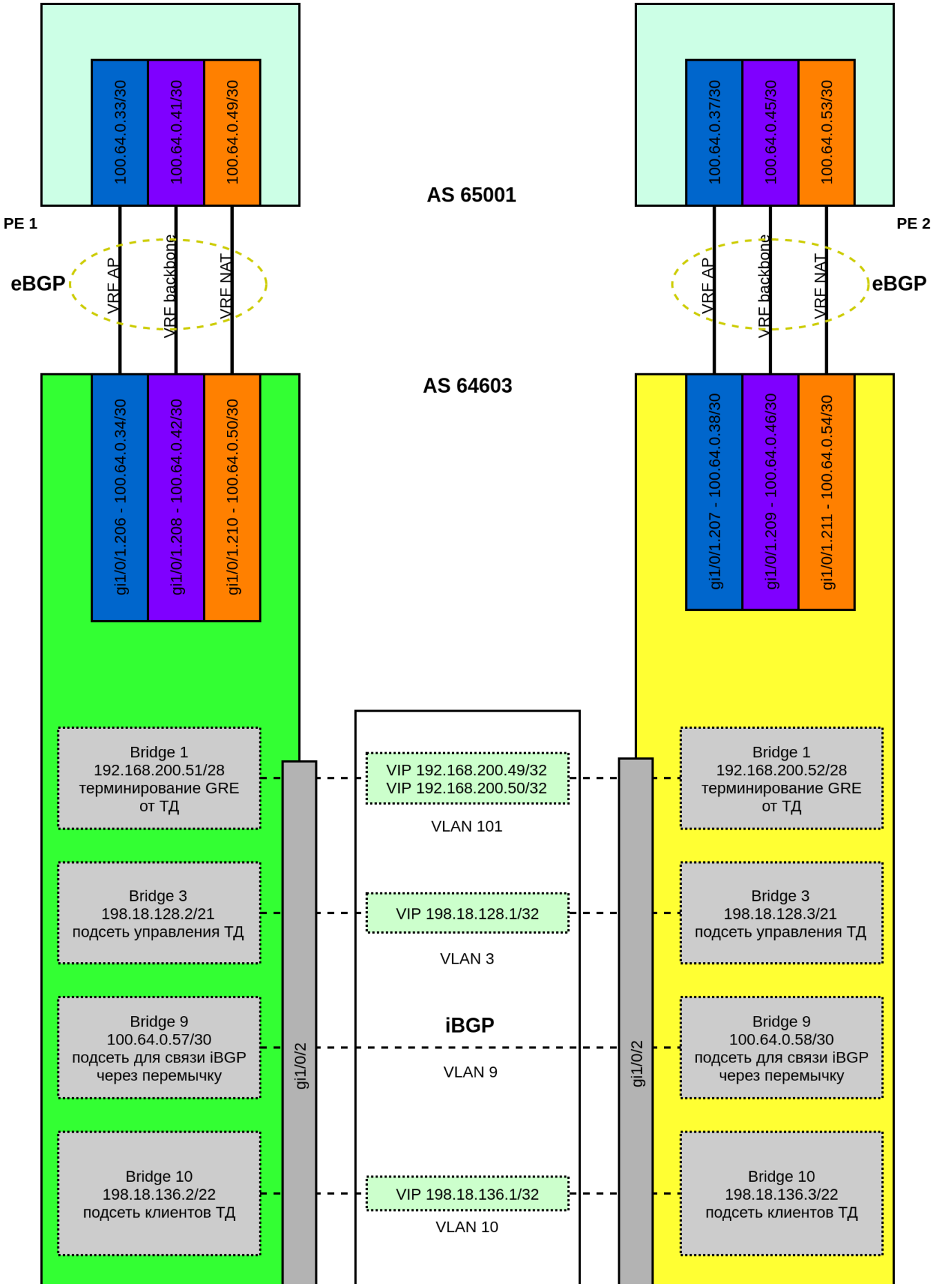
4:

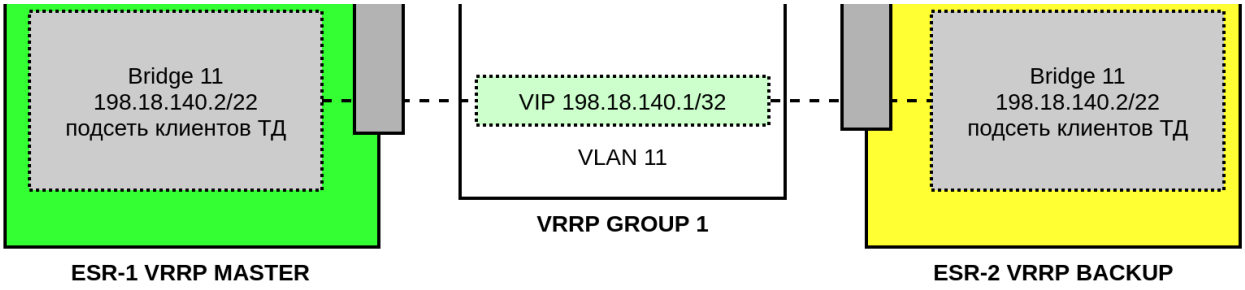
- VRRP PE ESR. PE, VRRP ESR, PE .

ESR

, . .

, ESR, , . 7.


AS 65001
AS 64603
PE 1
PE 2
eBGP
eBGP
100.64.0.33/30
100.64.0.41/30
100.64.0.49/30
100.64.0.37/30
100.64.0.45/30
100.64.0.53/30
VRF AP
VRF backbone
VRF NAT
VRF AP
VRF backbone
VRF NAT
gi1/0/1.206 - 100.64.0.34/30
gi1/0/1.208 - 100.64.0.42/30
gi1/0/1.210 - 100.64.0.50/30
gi1/0/1.207 - 100.64.0.38/30
gi1/0/1.209 - 100.64.0.46/30
gi1/0/1.211 - 100.64.0.54/30
Bridge 1
192.168.200.51/28
терминирование GRE
от ТД
Bridge 3
198.18.128.2/21
подсеть управления ТД
Bridge 9
100.64.0.57/30
подсеть для связи iBGP
через перемычку
Bridge 10
198.18.136.2/22
подсеть клиентов ТД
gi1/0/2
VIP 192.168.200.49/32
VIP 192.168.200.50/32
VLAN 101
VIP 198.18.128.1/32
VLAN 3
iBGP
VLAN 9
VIP 198.18.136.1/32
VLAN 10
gi1/0/2
Bridge 1
192.168.200.52/28
терминирование GRE
от ТД
Bridge 3
198.18.128.3/21
подсеть управления ТД
Bridge 9
100.64.0.58/30
подсеть для связи iBGP
через перемычку
Bridge 10
198.18.136.3/22
подсеть клиентов ТД



. 7.

:

ESR-1 (gi1/0/1) - PE 1. - eBGP VRF.

		IP
VRF AP	gi1/0/1.206	100.64.0.34/30
VRF core	gi1/0/1.208	100.64.0.42/30
VRF NAT	gi1/0/1.210	100.64.0.50/30

ESR-2 (gi1/0/1) - PE2. - eBGP VRF.

		IP
VRF AP	gi1/0/1.207	100.64.0.38/30
VRF core	gi1/0/1.209	100.64.0.46/30
VRF NAT	gi1/0/1.211	100.64.0.54/30

ESR-1 (gi1/0/3) ESR-2 (gi1/0/3). VRRP Bridge 1, 3, 10, 11 vlan. iBGP ESR Bridge 9.

	/	VRRP IP	ESR-1 IP address	ESR-2 IP address
GRE	bridge 1 / 101	192.168.200.49/32 192.168.200.50/32	192.168.200.51/28	192.168.200.52/28
	bridge 3 / 3	198.18.128.1/32	198.18.128.2/21	198.18.128.3/21
ESR-1	bridge 9 / 9	n/a	100.64.0.57/30	100.64.0.58/30
	bridge 10 / 10	198.18.136.1/32	198.18.140.2/22	198.18.140.3/22
	bridge 11 / 11	198.18.140.1/32	198.18.140.2/22	198.18.140.3/22

VRRP

ESR, VRRP MASTER, BGP , PE . , VRRP , . VRRP VRRP, MASTER, ESR, VRRP MASTER, BGP. , - AS-path Multi exit discriminator (MED). .

AS-path

AS-path , ESR, VRRP MASTER, AS-path , AS-path , . "tracking 1" (ESR):

```
tracking 1
  vrrp 3 not state master
  enable
exit
```

tracking 1 60. VRRP id 3. VRRP id, bridge 3, ESR. .. VRRP , . , VRRP MASTER. , .. VRRP BACKUP FAULT. tracking BGP , ESR .

route-map, "track 1". BGP (AS-path prepend). AS .

```
route-map out_BGP_GRE
  rule 10
    match ip address object-group gre_termination
    action set as-path prepend 64603 track 1
    action permit
  exit
exit
route-map out_BGP_AP
  rule 10
    match ip address object-group mgmt_AP
    action set as-path prepend 64603 track 1
    action permit
  exit
exit
route-map out_BGP_NAT
  rule 10
    match ip address object-group clients_AP
    action set as-path prepend 64603 track 1
    action permit
  exit
exit
```

route-map ESR.

ESR-1:

```
router bgp 64603
  address-family ipv4
    redistribute connected
    neighbor 100.64.0.33
      remote-as 65001
      route-map out_BGP_GRE out
      update-source 100.64.0.34
      enable
    exit
    neighbor 100.64.0.41
      remote-as 65001
      route-map out_BGP_AP out
      update-source 100.64.0.42
      enable
    exit
    neighbor 100.64.0.49
      remote-as 65001
      route-map out_BGP_NAT out
      update-source 100.64.0.50
      enable
    exit
    enable
  exit
exit
```

ESR-2:

```
router bgp 64603
  address-family ipv4
    redistribute connected
    neighbor 100.64.0.37
      remote-as 65001
      route-map out_BGP_GRE out
      update-source 100.64.0.38
      enable
    exit
    neighbor 100.64.0.45
      remote-as 65001
      route-map out_BGP_AP out
      update-source 100.64.0.46
      enable
    exit
    neighbor 100.64.0.53
      remote-as 65001
      route-map out_BGP_NAT out
      update-source 100.64.0.54
      enable
    exit
    enable
  exit
exit
```

, ESR-2, VRRP BACKUP, AS-path AS:

```
Beta# show ip bgp 64603 neighbors 100.64.0.37 advertise-routes
Status codes: u - unicast, b - broadcast, m - multicast, a - anycast
              * - valid, > - best
Origin codes: i - IGP, e - EGP, ? - incomplete

     Network              Next Hop             Metric  LocPrf      Weight Path
*> u 192.168.200.48/28    100.64.0.38                  100         0      64603 64603 ?

Beta# show ip bgp 64603 neighbors 100.64.0.45 advertise-routes
Status codes: u - unicast, b - broadcast, m - multicast, a - anycast
              * - valid, > - best
Origin codes: i - IGP, e - EGP, ? - incomplete

     Network              Next Hop             Metric  LocPrf      Weight Path
*> u 198.18.140.0/22      100.64.0.46                  100         0      64603 64603 ?
*> u 198.18.136.0/22      100.64.0.46                  100         0      64603 64603 ?
*> u 198.18.128.0/21      100.64.0.46                  100         0      64603 64603 ?
*> u 198.18.144.0/22      100.64.0.46                  100         0      64603 64603 ?
*> u 100.64.0.56/30       100.64.0.46                  100         0      64603 64603 ?

Beta# show ip bgp 64603 neighbors 100.64.0.53 advertise-routes
Status codes: u - unicast, b - broadcast, m - multicast, a - anycast
              * - valid, > - best
Origin codes: i - IGP, e - EGP, ? - incomplete

     Network              Next Hop             Metric  LocPrf      Weight Path
*> u 198.18.140.0/22      100.64.0.54                  100         0      64603 64603 ?
*> u 198.18.136.0/22      100.64.0.54                  100         0      64603 64603 ?
*> u 198.18.128.0/21      100.64.0.54                  100         0      64603 64603 ?
*> u 198.18.144.0/22      100.64.0.54                  100         0      64603 64603 ?
```

, BGP AS-path ESR, VRRP BACKUP, , VRRP MASTER.

! , , . . :

- AS-path prepend (AS-path);
- AS-path;
- , BGP.

Multi exit discriminator (MED)

Multi exit discriminator (MED) BGP .

"tracking 1" (ESR):

```
tracking 1
  vrrp 3 not state master
  enable
exit
```

route-map, BGP, "track 1" MED = 1000. 0 4294967295. .. ESR, VRRP MASTER, , , 0, .

```
route-map out_BGP_GRE
  rule 10
    match ip address object-group gre_termination
    action set metric bgp 1000 track 1
    action permit
  exit
exit
route-map out_BGP_AP
  rule 10
    match ip address object-group mgmt_AP
    action set metric bgp 1000 track 1
    action permit
  exit
exit
route-map out_BGP_NAT
  rule 10
    match ip address object-group clients_AP
    action set metric bgp 1000 track 1
    action permit
  exit
exit
```

route-map ESR.

ESR-1:

```
router bgp 64603
  address-family ipv4
    redistribute connected
    neighbor 100.64.0.33
      remote-as 65001
      route-map out_BGP_GRE out
      update-source 100.64.0.34
      enable
    exit
    neighbor 100.64.0.41
      remote-as 65001
      route-map out_BGP_AP out
      update-source 100.64.0.42
      enable
    exit
    neighbor 100.64.0.49
      remote-as 65001
      route-map out_BGP_NAT out
      update-source 100.64.0.50
      enable
    exit
    enable
  exit
exit
```

ESR-2:

```
router bgp 64603
  address-family ipv4
    redistribute connected
    neighbor 100.64.0.37
      remote-as 65001
      route-map out_BGP_GRE out
      update-source 100.64.0.38
      enable
    exit
    neighbor 100.64.0.45
      remote-as 65001
      route-map out_BGP_AP out
      update-source 100.64.0.46
      enable
    exit
    neighbor 100.64.0.53
      remote-as 65001
      route-map out_BGP_NAT out
      update-source 100.64.0.54
      enable
    exit
    enable
  exit
exit
```

, ESR-2, VRRP VRRP BACKUP, MED , :

```
Beta# show ip bgp 64603 neighbors 100.64.0.37 advertise-routes
Status codes: u - unicast, b - broadcast, m - multicast, a - anycast
              * - valid, > - best
Origin codes: i - IGP, e - EGP, ? - incomplete

     Network              Next Hop            Metric  LocPrf      Weight Path
*> u 192.168.200.48/28    100.64.0.38         1000    100         0      64603 ?

Beta# show ip bgp 64603 neighbors 100.64.0.45  advertise-routes
Status codes: u - unicast, b - broadcast, m - multicast, a - anycast
              * - valid, > - best
Origin codes: i - IGP, e - EGP, ? - incomplete

     Network              Next Hop            Metric  LocPrf      Weight Path
*> u 198.18.140.0/22      100.64.0.46         1000    100         0      64603 ?
*> u 198.18.136.0/22      100.64.0.46         1000    100         0      64603 ?
*> u 198.18.128.0/21      100.64.0.46         1000    100         0      64603 ?
*> u 198.18.144.0/22      100.64.0.46         1000    100         0      64603 ?
*> u 100.64.0.56/30       100.64.0.46         1000    100         0      64603 ?

Beta# show ip bgp 64603 neighbors 100.64.0.53  advertise-routes
Status codes: u - unicast, b - broadcast, m - multicast, a - anycast
              * - valid, > - best
Origin codes: i - IGP, e - EGP, ? - incomplete

     Network              Next Hop            Metric  LocPrf      Weight Path
*> u 198.18.140.0/22      100.64.0.54         1000    100         0      64603 ?
*> u 198.18.136.0/22      100.64.0.54         1000    100         0      64603 ?
*> u 198.18.128.0/21      100.64.0.54         1000    100         0      64603 ?
*> u 198.18.144.0/22      100.64.0.54         1000    100         0      64603 ?
```

! , , . . :

- MED;
- "" , , , Weight, local preference, AS-path origin code ;
- . . , .

route-map as-path prepend metric .

local preference , ESR

, SoftWLC , , iBGP ESR, PE. local preference - ESR BGP local preference iBGP 100, ESR PE (PE, iBGP).

ESR-1:

route-map, action set local-preference 20:

```
route-map in_PREF
  rule 10
    action set local-preference 20
    action permit
  exit
exit
```

route-map ESR-1 iBGP (ESR-2):

```
router bgp 64603
  address-family ipv4
    redistribute connected
    neighbor 100.64.0.58
      remote-as 64603
      route-map in_PREF in
      next-hop-self
      update-source 100.64.0.57
      enable
    exit
    enable
  exit
exit
```

, , ESR-2, BGP local-preference 20:

```
ALfa# sh ip bgp 64603 neighbors 100.64.0.58 routes
Status codes: u - unicast, b - broadcast, m - multicast, a - anycast
              * - valid, > - best
Origin codes: i - IGP, e - EGP, ? - incomplete

     Network              Next Hop            Metric  LocPrf      Weight Path
*  u 0.0.0.0/0            100.64.0.58                 20          0      65001 64602 i
*  u 198.18.140.0/22      100.64.0.58                 20          0           ?
*  u 198.18.136.0/22      100.64.0.58                 20          0           ?
*  u 198.18.128.0/21      100.64.0.58                 20          0           ?
*  u 10.10.60.0/24        100.64.0.58                 20          0      65001 ?
*  u 198.18.144.0/22      100.64.0.58                 20          0           ?
*  u 100.64.0.16/28       100.64.0.58                 20          0      65001 ?
*  u 192.168.200.48/28    100.64.0.58                 20          0           ?
*  u 100.64.0.56/30       100.64.0.58                 20          0           ?
*  u 100.123.0.0/24       100.64.0.58                 20          0      65001 ?
*  u 192.168.250.0/24     100.64.0.58                 20          0      65001 64602 ?
*> u 100.64.0.52/30       100.64.0.58                 20          0           ?
*> u 100.64.0.44/30       100.64.0.58                 20          0           ?
*  u 100.110.0.0/23       100.64.0.58                 20          0           ?
*> u 100.64.0.36/30       100.64.0.58                 20          0           ?
```

ESR-2:

```
route-map in_PREF
  rule 10
    action set local-preference 20
    action permit
  exit
exit

router bgp 64603
  address-family ipv4
    redistribute connected
    neighbor 100.64.0.57
      remote-as 64603
      route-map in_PREF in
      next-hop-self
      update-source 100.64.0.58
      enable
    exit
    enable
  exit
exit
```

, :

```
Beta# sh ip bgp 64603 neighbors 100.64.0.57 routes
Status codes: u - unicast, b - broadcast, m - multicast, a - anycast
              * - valid, > - best
Origin codes: i - IGP, e - EGP, ? - incomplete

     Network              Next Hop            Metric  LocPrf      Weight Path
*  u 0.0.0.0/0            100.64.0.57                 20          0      65001 64602 i
*  u 198.18.140.0/22      100.64.0.57                 20          0           ?
*> u 198.18.136.1/32      100.64.0.57                 20          0           ?
*  u 198.18.136.0/22      100.64.0.57                 20          0           ?
*> u 198.18.140.1/32      100.64.0.57                 20          0           ?
*> u 198.18.128.1/32      100.64.0.57                 20          0           ?
*  u 198.18.128.0/21      100.64.0.57                 20          0           ?
*> u 198.18.144.1/32      100.64.0.57                 20          0           ?
*  u 10.10.60.0/24        100.64.0.57                 20          0      65001 ?
*  u 198.18.144.0/22      100.64.0.57                 20          0           ?
*  u 100.64.0.16/28       100.64.0.57                 20          0      65001 ?
*> u 192.168.200.50/32    100.64.0.57                 20          0           ?
*  u 192.168.200.48/28    100.64.0.57                 20          0           ?
*> u 192.168.200.49/32    100.64.0.57                 20          0           ?
*  u 100.64.0.56/30       100.64.0.57                 20          0           ?
*  u 100.123.0.0/24       100.64.0.57                 20          0      65001 ?
*  u 192.168.250.0/24     100.64.0.57                 20          0      65001 64602 ?
*> u 100.64.0.48/30       100.64.0.57                 20          0           ?
*> u 100.64.0.40/30       100.64.0.57                 20          0           ?
*  u 100.110.0.0/23       100.64.0.57                 20          0           ?
*> u 100.64.0.32/30       100.64.0.57                 20          0           ?
```

VRRP PE, ESR VRRP MASTER

PE VRRP track IP. IP PE VRRP FAULT . , VRRP.

Bridge 3 (, VRRP) vrrp track-ip 100.64.0.45 (IP PE VRF core).

```
bridge 3
  description "mgmt_AP"
  vlan 3
  security-zone trusted
  ip address 198.18.128.3/21
  ip helper-address 100.123.0.2
  ip helper-address vrrp-group 1
  vrrp id 3
  vrrp ip 198.18.128.1/32
  vrrp priority 190
  vrrp group 1
  vrrp preempt disable
  vrrp track-ip 100.64.0.45
  vrrp
  protected-ports
  protected-ports exclude vlan
  ports vrrp filtering enable
  ports vrrp filtering exclude vlan
  enable
exit
```

: vrrp track-ip 100.64.0.45 PE 100.64.0.45, VRF core. IP , PE.

ping probe, 5 (vrrp track-ip packets 1 5), 10 (vrrp track-ip interval 3 60). VRRP :

1. , vrrp track-ip, ping probe - ;
2. , , , , ping probe;
3. ping probe , VRRP (bridge 3) FAULT - VRRP MASTER ESR, BACKUP.
4. PIng probe ;
5. PE , VRRP FAULT Initialize, VRRP BACKUP, vrrp preempt disable vrrp priority ESR, , vrrp priority , ESR. , vrrp preempt delay .

, PE ESR, , VRRP FAULT, VRRP ESR.

, , ESR PE .

ESR

ESR-1:

```
hostname ESR-1

ip firewall sessions counters
ip firewall sessions classification enable
ip firewall sessions allow-unknown
object-group service telnet
  port-range 23
exit
object-group service ssh
  port-range 22
exit
object-group service dhcp_server
  port-range 67
exit
object-group service dhcp_client
  port-range 68
exit
object-group service ntp
  port-range 123
exit
object-group service snmp
  port-range 161-162
exit
object-group service COA
  port-range 3799
  port-range 31812-31813
exit
object-group service bgp
  port-range 179
exit
object-group service dns
  port-range 53
exit
object-group service firewall_failover
  port-range 3333
exit

object-group network SoftWLC
  ip prefix 100.123.0.0/24
exit
object-group network gre_termination
  ip prefix 192.168.200.48/28
exit
object-group network mgmt_AP
  ip prefix 198.18.128.0/21
  ip prefix 198.18.136.0/22
  ip prefix 198.18.140.0/22
  ip prefix 100.64.0.56/30
exit
object-group network clients_AP
  ip prefix 198.18.136.0/22
  ip prefix 198.18.140.0/22
exit
object-group network Admnet
```

```
  ip prefix 100.123.0.0/24
  ip prefix 100.64.0.40/30
exit
object-group network nets
  ip prefix 10.0.0.0/8
  ip prefix 192.168.0.0/16
  ip prefix 172.16.0.0/12
exit
object-group network cross
  ip prefix 100.64.0.32/30
  ip prefix 100.64.0.40/30
  ip prefix 100.64.0.48/30
  ip prefix 100.64.0.56/30
exit
object-group network DNS
  ip prefix 100.123.0.0/24
exit
object-group network CoA_servers
  ip prefix 100.123.0.0/24
exit
object-group network VRF_AP
  ip prefix 100.64.0.32/30
exit
object-group network VRF_CORE
  ip prefix 192.168.200.48/28
  ip prefix 100.64.0.56/30
  ip prefix 198.18.128.0/21
  ip prefix 198.18.136.0/22
  ip prefix 198.18.140.0/22
exit
object-group network VRF_NAT
  ip prefix 100.64.0.48/30
exit

radius-server timeout 10
radius-server retransmit 5
radius-server host 100.123.0.2
  key ascii-text testing123
  timeout 11
  priority 20
  source-address 198.18.128.2
  auth-port 31812
  acct-port 31813
  retransmit 10
  dead-interval 10
exit
aaa radius-profile PCRF
  radius-server host 100.123.0.2
exit
das-server COA
  key ascii-text testing123
  port 3799
  clients object-group SoftWLC
exit
aaa das-profile COA
  das-server COA
exit

vlan 3
  force-up
exit
vlan 10
  force-up
exit
vlan 11
  force-up
exit
vlan 101
  force-up
exit
vlan 3101
```

```
  force-up
exit
vlan 3102
  force-up
exit
vlan 9
exit

security zone trusted
exit
security zone untrusted
exit
security zone gre
exit
security zone neighbour
exit
security zone user
exit

route-map out_BGP_GRE
  rule 10
    match ip address object-group gre_termination
    action set as-path prepend 64603 track 1
    action set metric bgp 1000 track 1
    action permit
  exit
exit
route-map out_BGP_AP
  rule 10
    match ip address object-group mgmt_AP
    action set as-path prepend 64603 track 1
    action set metric bgp 1000 track 1
    action permit
  exit
exit
route-map out_BGP_NAT
  rule 10
    match ip address object-group clients_AP
    action set as-path prepend 64603 track 1
    action set metric bgp 1000 track 1
    action permit
  exit
exit
route-map in_PREF
  rule 10
    action set local-preference 20
    action permit
  exit
exit
tracking 1
  vrrp 3 not state master
  enable
exit
router bgp 64603
  address-family ipv4
    redistribute connected
    neighbor 100.64.0.33
      remote-as 65001
      route-map out_BGP_GRE out
      update-source 100.64.0.34
      enable
    exit
    neighbor 100.64.0.41
      remote-as 65001
      route-map out_BGP_AP out
      update-source 100.64.0.42
      enable
    exit
    neighbor 100.64.0.49
      remote-as 65001
      route-map out_BGP_NAT out
```

```
      update-source 100.64.0.50
      enable
    exit
    neighbor 100.64.0.58
      remote-as 64603
      route-map in_PREF in
      next-hop-self
      update-source 100.64.0.57
      enable
    exit
    enable
  exit
exit

snmp-server
snmp-server system-shutdown
snmp-server community "public11" ro
snmp-server community "private1" rw

snmp-server host 100.123.0.2
exit

snmp-server enable traps
snmp-server enable traps config
snmp-server enable traps config commit
snmp-server enable traps config confirm
snmp-server enable traps environment
snmp-server enable traps environment pwrin
snmp-server enable traps environment pwrin-insert
snmp-server enable traps environment fan
snmp-server enable traps environment fan-speed-changed
snmp-server enable traps environment fan-speed-high
snmp-server enable traps environment memory-flash-critical-low
snmp-server enable traps environment memory-flash-low
snmp-server enable traps environment memory-ram-critical-low
snmp-server enable traps environment memory-ram-low
snmp-server enable traps environment cpu-load
snmp-server enable traps environment cpu-critical-temp
snmp-server enable traps environment cpu-overheat-temp
snmp-server enable traps environment cpu-supercooling-temp
snmp-server enable traps environment board-overheat-temp
snmp-server enable traps environment board-supercooling-temp
snmp-server enable traps environment sfp-overheat-temp
snmp-server enable traps environment sfp-supercooling-temp
snmp-server enable traps environment switch-overheat-temp
snmp-server enable traps environment switch-supercooling-temp
snmp-server enable traps wifi
snmp-server enable traps wifi wifi-tunnels-number-in-bridge-high
snmp-server enable traps file-operations
snmp-server enable traps file-operations successful
snmp-server enable traps file-operations failed
snmp-server enable traps file-operations canceled
snmp-server enable traps interfaces
snmp-server enable traps interfaces rx-utilization-high
snmp-server enable traps interfaces tx-utilization-high
snmp-server enable traps interfaces number-high
snmp-server enable traps screen
snmp-server enable traps screen dest-limit
snmp-server enable traps screen source-limit
snmp-server enable traps screen icmp-threshold
snmp-server enable traps screen udp-threshold
snmp-server enable traps screen syn-flood
snmp-server enable traps screen land
snmp-server enable traps screen winnuke
snmp-server enable traps screen icmp-frag
snmp-server enable traps screen udp-frag
snmp-server enable traps screen icmp-large
snmp-server enable traps screen syn-frag
snmp-server enable traps screen unknown-proto
snmp-server enable traps screen ip-frag
snmp-server enable traps screen port-scan
```

```
snmp-server enable traps screen ip-sweep
snmp-server enable traps screen syn-fin
snmp-server enable traps screen fin-no-ack
snmp-server enable traps screen no-flag
snmp-server enable traps screen spoofing
snmp-server enable traps screen reserved
snmp-server enable traps screen quench
snmp-server enable traps screen echo-request
snmp-server enable traps screen time-exceeded
snmp-server enable traps screen unreachable
snmp-server enable traps screen tcp-all-flags
snmp-server enable traps entity
snmp-server enable traps entity config-change
snmp-server enable traps entity-sensor
snmp-server enable traps entity-sensor threshold
snmp-server enable traps envmon
snmp-server enable traps envmon fan
snmp-server enable traps envmon shutdown
snmp-server enable traps envmon supply
snmp-server enable traps envmon temperature
snmp-server enable traps flash
snmp-server enable traps flash insertion
snmp-server enable traps flash removal
snmp-server enable traps snmp
snmp-server enable traps snmp authentication
snmp-server enable traps snmp coldstart
snmp-server enable traps snmp linkdown
snmp-server enable traps snmp linkup
snmp-server enable traps syslog

bridge 1
  description "GRE_termination"
  vlan 101
  security-zone gre
  ip address 192.168.200.51/28
  vrrp id 1
  vrrp ip 192.168.200.49/32
  vrrp ip 192.168.200.50/32 secondary
  vrrp priority 200
  vrrp group 1
  vrrp preempt disable
  vrrp
  ipv6 enable
  protected-ports
  protected-ports exclude vlan
  ports vrrp filtering enable
  ports vrrp filtering exclude vlan
  enable
exit
bridge 3
  description "mgmt_AP"
  vlan 3
  security-zone trusted
  ip address 198.18.128.2/21
  ip helper-address 100.123.0.2
  ip helper-address vrrp-group 1
  vrrp id 3
  vrrp ip 198.18.128.1/32
  vrrp priority 200
  vrrp group 1
  vrrp preempt disable
  vrrp track-ip 100.64.0.41
  vrrp
  protected-ports
  protected-ports exclude vlan
  ports vrrp filtering enable
  ports vrrp filtering exclude vlan
  enable
exit
bridge 9
  description "neighbour"
```

```
  vlan 9
  security-zone neighbour
  ip address 100.64.0.57/30
  enable
exit
bridge 10
  description "data1_AP"
  vlan 3101
  ports firewall enable
  security-zone user
  ip address 198.18.136.2/22
  ip helper-address 100.123.0.2
  ip helper-address vrrp-group 1
  vrrp id 10
  vrrp ip 198.18.136.1/32
  vrrp priority 200
  vrrp group 1
  vrrp preempt disable
  vrrp
  ip policy route-map Fltr_PBR
  location data10
  enable
exit
bridge 11
  description "data2_AP"
  vlan 3102
  ports firewall enable
  security-zone user
  ip firewall disable
  ip address 198.18.140.2/22
  ip helper-address 100.123.0.2
  ip helper-address vrrp-group 1
  vrrp id 11
  vrrp ip 198.18.140.1/32
  vrrp priority 200
  vrrp group 1
  vrrp preempt disable
  vrrp
  location data11
  protected-ports
  protected-ports exclude vlan
  ports vrrp filtering enable
  ports vrrp filtering exclude vlan
  enable
exit

interface port-channel 1
  mode hybrid
  switchport general pvid 2334
  switchport general allowed vlan add 2334 untagged
  security-zone untrusted
exit
interface gigabitethernet 1/0/1
  description "UpLink"
  mode hybrid
exit
interface gigabitethernet 1/0/1.206
  description "VRF_AP"
  security-zone gre
  ip address 100.64.0.34/30
  ipv6 enable
exit
interface gigabitethernet 1/0/1.208
  description "VRF_CORE"
  security-zone trusted
  ip address 100.64.0.42/30
  ipv6 enable
exit
interface gigabitethernet 1/0/1.210
  description "VRF_NAT"
  security-zone untrusted
```

```
  ip address 100.64.0.50/30
  ipv6 enable
exit

interface gigabitethernet 1/0/2
  description "neighbour"
  mode hybrid
  switchport forbidden default-vlan
  switchport general acceptable-frame-type tagged-only
  switchport general allowed vlan add 3,9-11,101 tagged
exit
interface service-port 1
  service-policy dynamic
exit
tunnel softgre 1
  description "mgmt"
  mode management
  local address 192.168.200.49
  default-profile
  enable
exit
tunnel softgre 1.1
  bridge-group 3
  enable
exit
tunnel softgre 2
  description "data"
  mode data
  local address 192.168.200.50
  default-profile
  enable
exit

security zone-pair gre self
  rule 1
    action permit
    match protocol gre
    enable
  exit
  rule 2
    action permit
    match protocol vrrp
    enable
  exit
  rule 3
    action permit
    match protocol tcp
    match destination-port aptd
    enable
  exit
  rule 4
    action permit
    match protocol icmp
    enable
  exit
  rule 10
    action permit
    match protocol tcp
    match source-address cross
    match source-port bgp
    match destination-port bgp
    enable
  exit
exit
security zone-pair trusted self
  rule 1
    action permit
    match protocol vrrp
    enable
  exit
  rule 2
```

```
    action permit
    match protocol udp
    match source-port dhcp_server
    match destination-port dhcp_server
    enable
  exit
  rule 3
    action permit
    match protocol udp
    match source-port dhcp_client
    match destination-port dhcp_server
    enable
  exit
  rule 4
    action permit
    match protocol icmp
    enable
  exit
  rule 10
    action permit
    match source-address SoftWLC
    enable
  exit
  rule 11
    action permit
    match source-address Admnet
    enable
  exit
  rule 20
    action permit
    match protocol tcp
    match source-address cross
    match source-port bgp
    match destination-port bgp
    enable
  exit
exit
security zone-pair trusted trusted
  rule 1
    action permit
    enable
  exit
exit
security zone-pair user untrusted
  rule 1
    action permit
    enable
  exit
exit
security zone-pair user self
  rule 1
    action permit
    match protocol icmp
    enable
  exit
  rule 2
    action permit
    match protocol udp
    match source-port dhcp_client
    match destination-port dhcp_server
    enable
  exit
  rule 3
    action permit
    match protocol tcp
    match destination-port redirect
    enable
  exit
  rule 4
    action permit
    match protocol vrrp
```

```
    enable
  exit
  rule 5
    action permit
    match protocol udp
    match source-port dhcp_server
    match destination-port dhcp_server
    enable
  exit
exit
security zone-pair user trusted
  rule 1
    action permit
    match protocol udp
    match source-port dhcp_client
    match destination-port dhcp_server
    enable
  exit
  rule 2
    action permit
    match protocol udp
    match destination-address DNS
    match destination-port dns
    enable
  exit
exit
security zone-pair trusted user
  rule 1
    action permit
    match protocol udp
    match source-port dhcp_server
    match destination-port dhcp_client
    enable
  exit
  rule 2
    action permit
    match protocol udp
    match source-port dhcp_server
    match destination-port dhcp_server
    enable
  exit
  rule 3
    action permit
    match protocol icmp
    enable
  exit
exit
security zone-pair trusted untrusted
  rule 1
    action permit
    enable
  exit
exit
security zone-pair gre gre
  rule 1
    action permit
    enable
  exit
exit
security zone-pair neighbour self
  rule 2
    action permit
    match protocol tcp
    match destination-port bgp
    enable
  exit
  rule 3
    action permit
    match protocol udp
    match destination-port firewall_failover
    enable
```

```
  exit
  rule 4
    action permit
    match protocol udp
    match source-port dhcp_server
  exit
  rule 10
    action permit
    match protocol gre
    enable
  exit
  rule 20
    action permit
    match protocol icmp
    enable
  exit
  rule 30
    action permit
    match protocol vrrp
    enable
  exit
  rule 40
    action permit
    match protocol udp
    match source-port dhcp_server
    match destination-port dhcp_server
    enable
  exit
  rule 50
    action permit
    match protocol udp
    match source-port dhcp_client
    match destination-port dhcp_server
    enable
  exit
  rule 60
    action permit
    match source-address SoftWLC
    enable
  exit
  rule 80
    action permit
    match source-address Admnet
    enable
  exit
  rule 90
    action permit
    match protocol tcp
    match destination-port aptd
    enable
  exit
  rule 100
    action permit
    match protocol tcp
    match destination-port telnet
    enable
  exit
exit
security zone-pair neighbour trusted
  rule 10
    action permit
    enable
  exit
exit
security zone-pair neighbour untrusted
  rule 10
    action permit
    enable
  exit
exit
security zone-pair neighbour gre
```

```
  rule 10
    action permit
    enable
  exit
exit
security zone-pair neighbour user
  rule 10
    action permit
    match protocol udp
    match source-port dhcp_server
    match destination-port dhcp_client
    enable
  exit
exit
security zone-pair trusted neighbour
  rule 10
    action permit
    enable
  exit
exit
security zone-pair gre neighbour
  rule 10
    action permit
    enable
  exit
exit
security zone-pair user neighbour
  rule 10
    action permit
    match protocol udp
    match destination-port dns
    enable
  exit
  rule 20
    action permit
    match not source-address nets
    enable
  exit
exit
security zone-pair untrusted self
  rule 10
    action permit
    match protocol tcp
    match source-address cross
    match source-port bgp
    match destination-port bgp
    enable
  exit
exit

security passwords history 0
ip firewall failover sync-type unicast
ip firewall failover source-address 198.18.128.2
ip firewall failover destination-address 100.64.0.58
ip firewall failover port 3333
ip firewall failover

ip dhcp-relay

wireless-controller
  peer-address 100.64.0.58
  nas-ip-address 198.18.128.2
  vrrp-group 1
  data-tunnel configuration radius
  aaa das-profile COA
  aaa radius-profile PCRF
  enable
exit
ip telnet server
ip ssh server
```

ESR-2:

```
hostname ESR-2

ip firewall sessions counters
ip firewall sessions classification enable
ip firewall sessions allow-unknown
object-group service telnet
  port-range 23
exit
object-group service ssh
  port-range 22
exit
object-group service dhcp_server
  port-range 67
exit
object-group service dhcp_client
  port-range 68
exit
object-group service ntp
  port-range 123
exit
object-group service snmp
  port-range 161-162
exit
object-group service COA
  port-range 3799
  port-range 31812-31813
exit
object-group service bgp
  port-range 179
exit
object-group service dns
  port-range 53
exit
object-group service firewall_failover
  port-range 3333
exit

object-group network SoftWLC
  ip prefix 100.123.0.0/24
exit
object-group network gre_termination
  ip prefix 192.168.200.48/28
exit
object-group network mgmt_AP
  ip prefix 198.18.128.0/21
  ip prefix 198.18.136.0/22
  ip prefix 198.18.140.0/22
  ip prefix 100.64.0.56/30
exit
object-group network clients_AP
  ip prefix 198.18.136.0/22
  ip prefix 198.18.140.0/22
exit
object-group network Admnet
  ip prefix 100.123.0.0/24
  ip prefix 100.64.0.44/30
exit
object-group network nets
  ip prefix 10.0.0.0/8
  ip prefix 192.168.0.0/16
  ip prefix 172.16.0.0/12
exit
object-group network cross
  ip prefix 100.64.0.36/30
  ip prefix 100.64.0.44/30
  ip prefix 100.64.0.52/30
  ip prefix 100.64.0.56/30
```

```
exit
object-group network DNS
  ip prefix 100.123.0.0/24
exit
object-group network CoA_servers
  ip prefix 100.123.0.0/24
exit
object-group network VRF_AP
  ip prefix 100.64.0.36/30
exit
object-group network VRF_CORE
  ip prefix 192.168.200.48/28
  ip prefix 100.64.0.44/30
  ip prefix 198.18.128.0/21
  ip prefix 198.18.136.0/22
  ip prefix 198.18.140.0/22
exit
object-group network VRF_NAT
  ip prefix 100.64.0.56/30
exit

radius-server timeout 10
radius-server retransmit 5
radius-server host 100.123.0.2
  key ascii-text testing123
  timeout 11
  priority 20
  source-address 198.18.128.3
  auth-port 31812
  acct-port 31813
  retransmit 10
  dead-interval 10
exit
aaa radius-profile PCRF
  radius-server host 100.123.0.2
exit
das-server COA
  key ascii-text testing123
  port 3799
  clients object-group SoftWLC
exit
aaa das-profile COA
  das-server COA
exit

vlan 3
  force-up
exit
vlan 10
  force-up
exit
vlan 11
  force-up
exit
vlan 101
  force-up
exit
vlan 9
exit

security zone trusted
exit
security zone untrusted
exit
security zone gre
exit
security zone neighbour
exit
security zone user
exit
```

```
route-map out_BGP_GRE
  rule 10
    match ip address object-group gre_termination
    action set as-path prepend 64603 track 1
    action set metric bgp 1000 track 1
    action permit
  exit
exit
route-map out_BGP_AP
  rule 10
    match ip address object-group mgmt_AP
    action set as-path prepend 64603 track 1
    action set metric bgp 1000 track 1
    action permit
  exit
exit
route-map out_BGP_NAT
  rule 10
    match ip address object-group clients_AP
    action set as-path prepend 64603 track 1
    action set metric bgp 1000 track 1
    action permit
  exit
exit
route-map in_PREF
  rule 10
    action set local-preference 20
    action permit
  exit
exit
tracking 1
  vrrp 3 not state master
  enable
exit
router bgp 64603
  address-family ipv4
    redistribute connected
    neighbor 100.64.0.37
      remote-as 65001
      route-map out_BGP_GRE out
      update-source 100.64.0.38
      enable
    exit
    neighbor 100.64.0.45
      remote-as 65001
      route-map out_BGP_AP out
      update-source 100.64.0.46
      enable
    exit
    neighbor 100.64.0.53
      remote-as 65001
      route-map out_BGP_NAT out
      update-source 100.64.0.54
      enable
    exit
    neighbor 100.64.0.57
      remote-as 64603
      route-map in_PREF in
      next-hop-self
      update-source 100.64.0.58
      enable
    exit
    enable
  exit
exit

snmp-server
snmp-server community "public11" ro
snmp-server community "private1" rw

snmp-server host 100.123.0.2
```

```
exit

snmp-server enable traps
snmp-server enable traps config
snmp-server enable traps config commit
snmp-server enable traps config confirm
snmp-server enable traps environment
snmp-server enable traps environment pwrin
snmp-server enable traps environment pwrin-insert
snmp-server enable traps environment fan
snmp-server enable traps environment fan-speed-changed
snmp-server enable traps environment fan-speed-high
snmp-server enable traps environment memory-flash-critical-low
snmp-server enable traps environment memory-flash-low
snmp-server enable traps environment memory-ram-critical-low
snmp-server enable traps environment memory-ram-low
snmp-server enable traps environment cpu-load
snmp-server enable traps environment cpu-dp-critical-temp
snmp-server enable traps environment cpu-dp-overheat-temp
snmp-server enable traps environment cpu-dp-supercooling-temp
snmp-server enable traps environment cpu-mgmt-critical-temp
snmp-server enable traps environment cpu-mgmt-overheat-temp
snmp-server enable traps environment cpu-mgmt-supercooling-temp
snmp-server enable traps environment board-overheat-temp
snmp-server enable traps environment board-supercooling-temp
snmp-server enable traps environment sfp-overheat-temp
snmp-server enable traps environment sfp-supercooling-temp
snmp-server enable traps environment switch-overheat-temp
snmp-server enable traps environment switch-supercooling-temp
snmp-server enable traps wifi
snmp-server enable traps wifi wifi-tunnels-number-in-bridge-high
snmp-server enable traps file-operations
snmp-server enable traps file-operations successful
snmp-server enable traps file-operations failed
snmp-server enable traps file-operations canceled
snmp-server enable traps interfaces
snmp-server enable traps interfaces rx-utilization-high
snmp-server enable traps interfaces tx-utilization-high
snmp-server enable traps interfaces number-high
snmp-server enable traps screen
snmp-server enable traps screen dest-limit
snmp-server enable traps screen source-limit
snmp-server enable traps screen icmp-threshold
snmp-server enable traps screen udp-threshold
snmp-server enable traps screen syn-flood
snmp-server enable traps screen land
snmp-server enable traps screen winnuke
snmp-server enable traps screen icmp-frag
snmp-server enable traps screen udp-frag
snmp-server enable traps screen icmp-large
snmp-server enable traps screen syn-frag
snmp-server enable traps screen unknown-proto
snmp-server enable traps screen ip-frag
snmp-server enable traps screen port-scan
snmp-server enable traps screen ip-sweep
snmp-server enable traps screen syn-fin
snmp-server enable traps screen fin-no-ack
snmp-server enable traps screen no-flag
snmp-server enable traps screen spoofing
snmp-server enable traps screen reserved
snmp-server enable traps screen quench
snmp-server enable traps screen echo-request
snmp-server enable traps screen time-exceeded
snmp-server enable traps screen unreachable
snmp-server enable traps screen tcp-all-flags
snmp-server enable traps entity
snmp-server enable traps entity config-change
snmp-server enable traps entity-sensor
snmp-server enable traps entity-sensor threshold
snmp-server enable traps envmon
snmp-server enable traps envmon fan
```

```
snmp-server enable traps envmon shutdown
snmp-server enable traps envmon supply
snmp-server enable traps envmon temperature
snmp-server enable traps flash
snmp-server enable traps flash insertion
snmp-server enable traps flash removal
snmp-server enable traps snmp
snmp-server enable traps snmp authentication
snmp-server enable traps snmp coldstart
snmp-server enable traps snmp linkdown
snmp-server enable traps snmp linkup
snmp-server enable traps syslog

bridge 1
  description "GRE_termination"
  vlan 101
  security-zone gre
  ip address 192.168.200.52/28
  vrrp id 1
  vrrp ip 192.168.200.49/32
  vrrp ip 192.168.200.50/32 secondary
  vrrp priority 190
  vrrp group 1
  vrrp preempt disable
  vrrp
  protected-ports
  protected-ports exclude vlan
  ports vrrp filtering enable
  ports vrrp filtering exclude vlan
  enable
exit
bridge 3
  description "mgmt_AP"
  vlan 3
  security-zone trusted
  ip address 198.18.128.3/21
  ip helper-address 100.123.0.2
  ip helper-address vrrp-group 1
  vrrp id 3
  vrrp ip 198.18.128.1/32
  vrrp priority 190
  vrrp group 1
  vrrp preempt disable
  vrrp track-ip 100.64.0.45
  vrrp track-ip interval 9
  vrrp
  protected-ports
  protected-ports exclude vlan
  ports vrrp filtering enable
  ports vrrp filtering exclude vlan
  enable
exit
bridge 9
  description "neighbour"
  vlan 9
  security-zone neighbour
  ip address 100.64.0.58/30
  enable
exit
bridge 10
  description "data1_AP"
  vlan 10
  security-zone user
  ip address 198.18.136.3/22
  ip helper-address 100.123.0.2
  ip helper-address vrrp-group 1
  vrrp id 10
  vrrp ip 198.18.136.1/32
  vrrp priority 190
  vrrp group 1
  vrrp preempt disable
```

```
  vrrp
  ip policy route-map pbr_rule_1
  location data10
  protected-ports
  protected-ports exclude vlan
  ports vrrp filtering enable
  ports vrrp filtering exclude vlan
  enable
exit
bridge 11
  description "data2_AP"
  vlan 11
  security-zone user
  ip address 198.18.140.3/22
  ip helper-address 100.123.0.2
  ip helper-address vrrp-group 1
  vrrp id 11
  vrrp ip 198.18.140.1/32
  vrrp priority 190
  vrrp group 1
  vrrp preempt disable
  vrrp
  ip policy route-map pbr_rule_1
  location data11
  protected-ports
  protected-ports exclude vlan
  ports vrrp filtering enable
  ports vrrp filtering exclude vlan
  enable
exit

interface gigabitethernet 1/0/1.207
  description "VRF_AP"
  security-zone gre
  ip address 100.64.0.38/30
  ipv6 enable
exit
interface gigabitethernet 1/0/1.209
  description "VRF_CORE"
  security-zone trusted
  ip address 100.64.0.46/30
  ipv6 enable
exit
interface gigabitethernet 1/0/1.211
  description "VRF_NAT"
  security-zone untrusted
  ip address 100.64.0.54/30
  ipv6 enable
exit
interface gigabitethernet 1/0/2
  description "neighbour"
  mode hybrid
  switchport forbidden default-vlan
  switchport general acceptable-frame-type tagged-only
  switchport general allowed vlan add 3,9-11,101 tagged
exit
interface service-port 1
  service-policy dynamic
exit
tunnel softgre 1
  description "mgmt"
  mode management
  local address 192.168.200.49
  default-profile
  enable
exit
tunnel softgre 1.1
  bridge-group 3
  enable
exit
tunnel softgre 2
```

```
  description "data"
  mode data
  local address 192.168.200.50
  default-profile
  enable
exit

security zone-pair gre self
  rule 1
    action permit
    match protocol gre
    enable
  exit
  rule 2
    action permit
    match protocol vrrp
    enable
  exit
  rule 3
    action permit
    match protocol tcp
    match destination-port aptd
    enable
  exit
  rule 4
    action permit
    match protocol icmp
    enable
  exit
  rule 10
    action permit
    match protocol tcp
    match source-address cross
    match source-port bgp
    match destination-port bgp
    enable
  exit
exit
security zone-pair trusted self
  rule 1
    action permit
    match protocol vrrp
    enable
  exit
  rule 2
    action permit
    match protocol udp
    match source-port dhcp_server
    match destination-port dhcp_server
    enable
  exit
  rule 3
    action permit
    match protocol udp
    match source-port dhcp_client
    match destination-port dhcp_server
    enable
  exit
  rule 4
    action permit
    match protocol icmp
    enable
  exit
  rule 10
    action permit
    match source-address SoftWLC
    enable
  exit
  rule 11
    action permit
    match source-address Admnet
```

```
    enable
  exit
  rule 20
    action permit
    match protocol tcp
    match source-address cross
    match source-port bgp
    match destination-port bgp
    enable
  exit
exit
security zone-pair trusted trusted
  rule 1
    action permit
    enable
  exit
exit
security zone-pair user untrusted
  rule 1
    action permit
    enable
  exit
exit
security zone-pair user self
  rule 1
    action permit
    match protocol icmp
    enable
  exit
  rule 2
    action permit
    match protocol udp
    match source-port dhcp_client
    match destination-port dhcp_server
    enable
  exit
  rule 3
    action permit
    match protocol tcp
    match destination-port redirect
    enable
  exit
  rule 4
    action permit
    match protocol vrrp
    enable
  exit
  rule 5
    action permit
    match protocol udp
    match source-port dhcp_server
    match destination-port dhcp_server
    enable
  exit
exit
security zone-pair user trusted
  rule 1
    action permit
    match protocol udp
    match source-port dhcp_client
    match destination-port dhcp_server
    enable
  exit
  rule 2
    action permit
    match protocol udp
    match destination-address DNS
    match destination-port dns
    enable
  exit
exit
```

```
security zone-pair trusted user
  rule 1
    action permit
    match protocol udp
    match source-port dhcp_server
    match destination-port dhcp_client
    enable
  exit
  rule 2
    action permit
    match protocol udp
    match source-port dhcp_server
    match destination-port dhcp_server
    enable
  exit
  rule 3
    action permit
    match protocol icmp
    enable
  exit
exit
security zone-pair trusted untrusted
  rule 1
    action permit
    enable
  exit
exit
security zone-pair gre gre
  rule 1
    action permit
    enable
  exit
exit
security zone-pair neighbour self
  rule 2
    action permit
    match protocol tcp
    match destination-port bgp
    enable
  exit
  rule 3
    action permit
    match protocol udp
    match destination-port firewall_failover
    enable
  exit
  rule 4
    action permit
    match protocol udp
    match source-port dhcp_server
  exit
  rule 10
    action permit
    match protocol gre
    enable
  exit
  rule 20
    action permit
    match protocol icmp
    enable
  exit
  rule 30
    action permit
    match protocol vrrp
    enable
  exit
  rule 40
    action permit
    match protocol udp
    match source-port dhcp_server
    match destination-port dhcp_server
```

```
    enable
  exit
  rule 50
    action permit
    match protocol udp
    match source-port dhcp_client
    match destination-port dhcp_server
    enable
  exit
  rule 60
    action permit
    match source-address SoftWLC
    enable
  exit
  rule 80
    action permit
    match source-address Admnet
    enable
  exit
  rule 90
    action permit
    match protocol tcp
    match destination-port aptd
    enable
  exit
  rule 100
    action permit
    match protocol tcp
    match destination-port telnet
    enable
  exit
exit
security zone-pair neighbour trusted
  rule 10
    action permit
    enable
  exit
exit
security zone-pair neighbour untrusted
  rule 10
    action permit
    enable
  exit
exit
security zone-pair neighbour gre
  rule 10
    action permit
    enable
  exit
exit
security zone-pair neighbour user
  rule 10
    action permit
    match protocol udp
    match source-port dhcp_server
    match destination-port dhcp_client
    enable
  exit
exit
security zone-pair trusted neighbour
  rule 10
    action permit
    enable
  exit
exit
security zone-pair gre neighbour
  rule 10
    action permit
    enable
  exit
exit
```

```
security zone-pair user neighbour
  rule 10
    action permit
    match protocol udp
    match destination-port dns
    enable
  exit
  rule 20
    action permit
    match not source-address nets
    enable
  exit
exit
security zone-pair untrusted self
  rule 10
    action permit
    match protocol tcp
    match source-address cross
    match source-port bgp
    match destination-port bgp
    enable
  exit
exit

security passwords history 0
ip firewall failover sync-type unicast
ip firewall failover source-address 198.18.128.3
ip firewall failover destination-address 100.64.0.57
ip firewall failover port 3333
ip firewall failover

ip dhcp-relay

wireless-controller
  peer-address 100.64.0.57
  nas-ip-address 198.18.128.3
  vrrp-group 1
  data-tunnel configuration radius
  aaa das-profile COA
  aaa radius-profile PCRF
  enable
exit
ip telnet server
ip ssh server
```