

I am troubleshooting a WOL issue for into SDA Fabric with the option "WOL outside the fabric". The WOL inside the fabric works well if the client placed into the SDA fabric and the L2-flooding is active.

- WOL inside works well [ok]
 - o DNAC Version 1.3.3.9 and 2.1.2.8
 - o IOS-XE 16.12.3
- WOL Outside the fabric not [nok]
 - o DNAC Version 2.1.2.8
 - o IOS-XE 17.3.4

The documentation is not available on CCO or a Guideline.

WOL outside the fabric requires the following:

#	complies
DNAC 1.2.5/6 for L2-Broadcast	yes
DNAC 2.1.2.4 for directed-Broadcast	yes
Edge and Border require \geq 17.3.1	yes
Routers, Nexus 7700 are not supported	-

The following SW and HW is in use in my Lab:

Feature	HW	Release/Remark
Controller	DNAC	DNAC 2.1.2.8
CP/B	CAT9500	IOS-XE 17.3.4
SD-Access FE	CAT9300	IOS-XE 17.3.4
Fusion (FSR), not a part of SDA	CAT9500	IOS-XE 17.3.4
802.1x	Overall FE & FE Ext.	enabled
MCAST	All Nodes	Active with PIM-SM (underlay) and ASM into overlay

WOL inside the fabric is migrated to outside. Unfortunately, this does not work as desired. The magic packets are not forwarded via multicast to the fabric edge.

The WOL packets are visible on the border node but do not enter the fabric. So, the sleeping hosts cannot be wake up.

```
brn-gen14-bn-001#show mon cap cap buf dis "ip.addr==10.82.2.102"
Starting the packet display ..... Press Ctrl + Shift + 6 to exit

1248  4.873523  10.82.2.102 b^F^R 10.82.143.13 WOL 148 MagicPacket for b8:ae:ed:78:6f:ca (b8:ae:ed:78:6f:ca)

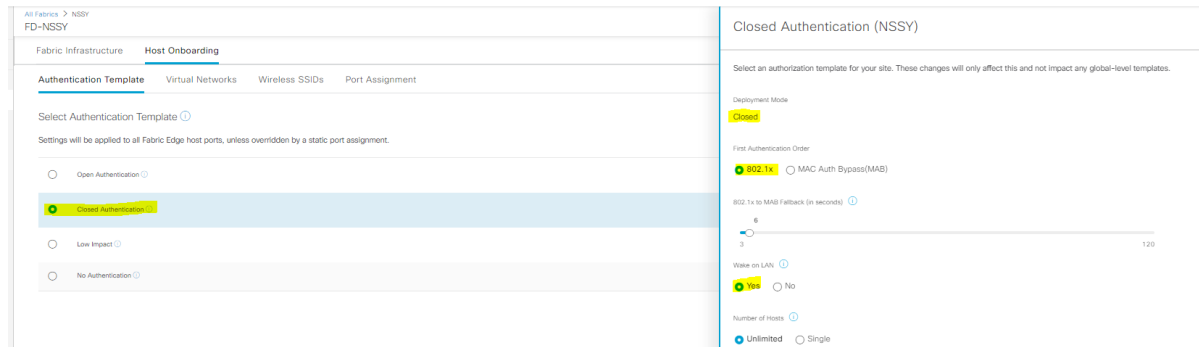
ICMP chek to IP 10.82.143.1

brn-gen14-bn-001# show mon cap cap buf dis "ip.addr==10.82.2.102"
Starting the packet display ..... Press Ctrl + Shift + 6 to exit

2975 11.785563 10.82.2.102 b^F^R 10.82.143.11 ICMP 102 Echo (ping) request id=0x0008, seq=5/1280, ttl=61
5468 21.334234 10.82.143.1 b^F^R 10.82.2.102 ICMP 98 Echo (ping) reply id=0x000a, seq=1/256, ttl=255
5736 22.345624 10.82.143.1 b^F^R 10.82.2.102 ICMP 98 Echo (ping) reply id=0x000a, seq=2/512, ttl=255
```

DNAC Host Onboarding settings:

1. Wake on Lan is enabled "Yes"
2. Closed Mode is active with 802.1x



Virtual Network – CORP on Data network (CORP) is IP-direct broadcast and Layer-2 flooding enabled.

VLAN Name	IP Address Pool	VLAN ID	Traffic Type	Scalable Group	Common Pool	Wireless Pool	Layer 2 only	IP-directed broadcast	Layer 2 Flooding
VLAN_1021	ESB-1021-CORP-CENTRAL 10.82.143.0/24	201	Data	-	Disabled	Disabled	Disabled	Disabled	Disabled
VLAN_1021	ESB-1021-CORP 10.82.143.0/24	1021	Data	-	Disabled	Disabled	Disabled	Enabled	Enabled
VLAN_1021	ESB-1021-CORP-STG 10.82.143.0/24	1021	Data	-	Disabled	Disabled	Disabled	Disabled	Disabled

If you enable «direct broadcast» then configure the DNAC on CP/B these:

CP/B - brn-gen14-bn-001

!-- Vlan ADD & Snooping -----

```
vlan 1021
name 10_82_143_0-CORP
!
ip dhcp snooping vlan 1021
!
```

!-- SVI - WoL Direct-Broadcast enabled -----

```
interface Vlan1021
description Configured from Cisco DNA-Center
mac-address 0000.0c9f.f45c
vrf forwarding CORP
ip address 10.82.143.1 255.255.255.0
ip helper-address 10.82.200.10
ip helper-address 10.82.200.20
no ip redirects
ip directed-broadcast
ip route-cache same-interface
no lisp mobility liveness test
lisp mobility 10_82_143_0-CORP-IPV4
no autostate
```

!-- LISP - new instance-id 8208 - WoL Vlan 1021 -----

```
instance-id 4099
!- ADD
dynamic-eid 10_82_143_0-CORP-IPV4
database-mapping 10.82.143.0/24 locator-set rloc_a1d772a0-2d3c-4fc3-adf7-4618f269c4d6
exit-dynamic-eid
!
router lisp
instance-id 8188
remote-rloc-probe on-route-change
service ethernet
eid-table vlan 1021
broadcast-underlay 239.0.17.1
flood arp-nd
flood unknown-unicast
database-mapping mac locator-set rloc_a1d772a0-2d3c-4fc3-adf7-4618f269c4d6
exit-service-ethernet
!
exit-instance-id
!
```

```

router bgp 420000001
address-family ipv4 vrf CORP
network 10.82.143.0 mask 255.255.255.0
!
cts role-based enforcement vlan-list 1021
!
!-- Remove - Loopback1021 if WOL active "Outside the fabric"
interface Loopback1021
description Loopback Border
vrf forwarding CORP
ip address 10.82.143.1 255.255.255.255
!
!- EOF - DNAC modification

!-- MCAST LP4099
interface Loopback4099
vrf forwarding CORP
ip address 10.82.147.1 255.255.255.255
ip pim sparse-mode
!
!-- Underlay
interface Loopback60000
ip address 10.82.140.1 255.255.255.255
ip pim sparse-mode
ip router isis

```

FE-Edge: brn-gen14-en-050

```

!-- template DefaultWiredDot1xClosedAuth

template DefaultWiredDot1xClosedAuth
dot1x pae authenticator
dot1x timeout supp-timeout 2
dot1x max-req 3
switchport mode access
switchport voice vlan 2046
mab
access-session control-direction in
access-session closed
access-session port-control auto
authentication periodic
authentication timer reauthenticate server

!-- Access Port

interface GigabitEthernet1/0/1
description Access-Port with 802.1x - lan <LS:CV>
switchport mode access
device-tracking attach-policy IPDT_POLICY
ip flow monitor dnacmonitor input
ip flow monitor dnacmonitor output
access-session control-direction in
dot1x timeout tx-period 2
dot1x max-reauth-req 3
source template DefaultWiredDot1xClosedAuth
spanning-tree portfast
spanning-tree bpduguard enable
service-policy input DNA-MARKING_IN
service-policy output DNA-dscp#APIC_QOS_Q_OUT

!-- CORP VN

vrf definition CORP
!
address-family ipv4
exit-address-family
!
interface Vlan1021
description Configured from Cisco DNA-Center
mac-address 0000.0c9f.f45c
vrf forwarding CORP
ip address 10.82.143.1 255.255.255.0
ip helper-address 10.82.200.10
ip helper-address 10.82.200.20
no ip redirects
ip pim passive
ip route-cache same-interface
ip igmp version 3
ip igmp explicit-tracking
no lisp mobility liveness test
lisp mobility 10_82_143_0-CORP-IPV4
!
interface Vlan1036
description Configured from Cisco DNA-Center

```

```
mac-address 0000.0c9f.f46b
vrf forwarding CORP
ip address 10.82.155.1 255.255.255.0
ip helper-address 10.82.200.10
ip helper-address 10.82.200.20
no ip redirects
ip pim passive
ip route-cache same-interface
ip igmp version 3
ip igmp explicit-tracking
no lisp mobility liveness test
lisp mobility 10_82_155_0-CORP-IPV4
!
interface Vlan2047
description Configured from Cisco DNA-Center
mac-address 0000.0c9f.f85e
vrf forwarding CORP
ip address 10.82.136.1 255.255.255.0
ip helper-address 10.82.200.10
ip helper-address 10.82.200.20
no ip redirects
ip pim passive
ip route-cache same-interface
ip igmp version 3
ip igmp explicit-tracking
no lisp mobility liveness test
lisp mobility 10_82_136_0-CORP-IPV4
!
interface LISP0
!
interface LISP0.4099
ip pim lisp transport multicast
ip pim lisp core-group-range 232.0.0.1 1000
!
interface Loopback4099
vrf forwarding CORP
ip address 10.82.147.5 255.255.255.255
ip pim sparse-mode
!
ip pim vrf CORP rp-address 10.82.147.1
ip pim vrf CORP register-source Loopback4099
ip pim vrf CORP ssm default
```

From a network perspective it all looks to be fine, anyone have any suggestions?

I like to ask some questions to the community before opening a TAC.

My questions are as follows:

- Does anyone have experience with WoL outside the Fabric?
- In which IOS/DNAC version does this work properly?
- Are any workarounds available?
- How this works technically with WOL and SDA?

Thank you for your answer

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