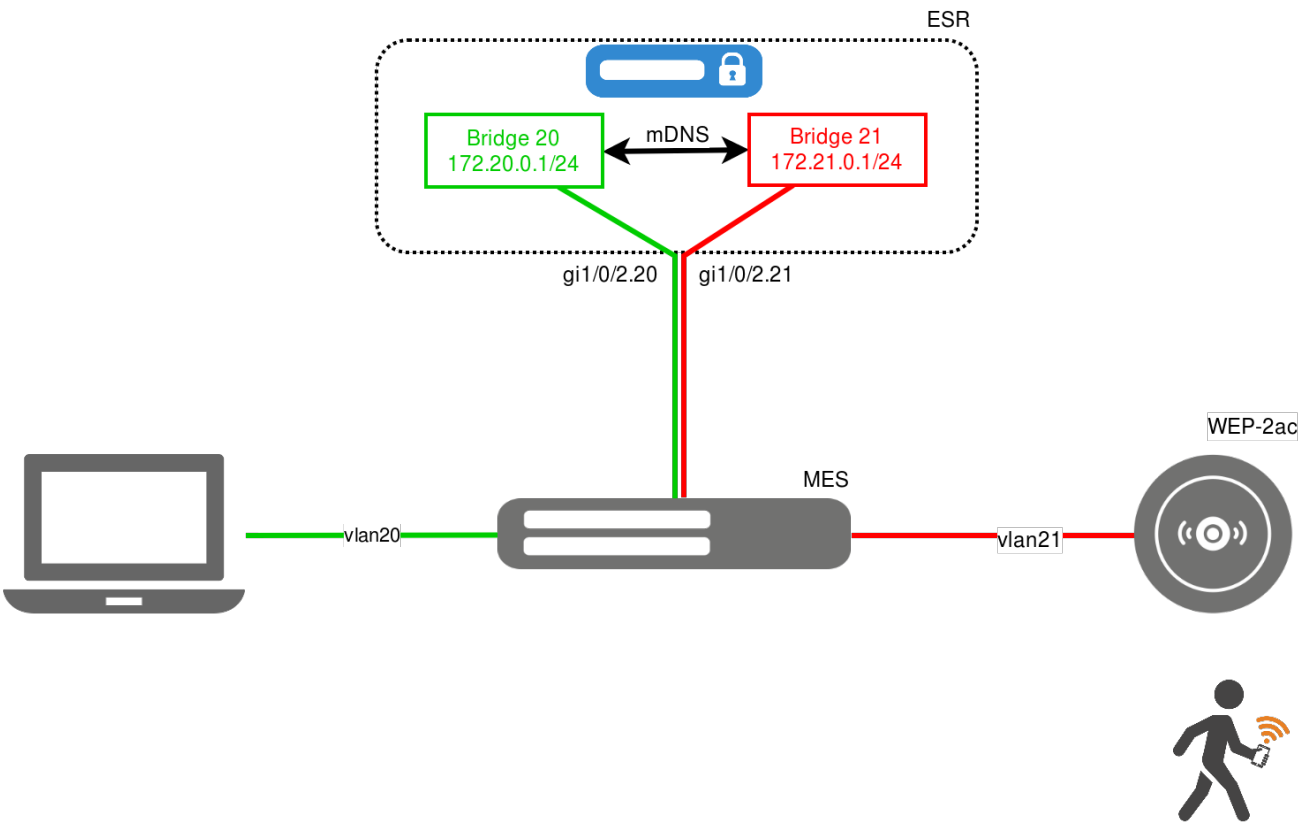


mDNS ESR (Bonjour)

-
- ESR
 - mDNS reflector
 - mDNS
 - mDNS
-
- ESR
-

: mDNS 172.20.0.0/24 172.21.0.0/24. SSH HTTPS.

ESR 1.6.4 mDNS reflector. mDNS L3 .
, Bridge 20, Bridge 21. mDNS Bridge 20 Bridge 21 .



ESR

VLAN 20, ESR Bridge 20 - gi1/0/2.20.

```
bridge 20
  ip firewall disable
  ip address 172.20.0.1/24
  enable
exit
```

VLAN 21, ESR Bridge 21 - gi1/0/2.21.

```
bridge 21
  ip firewall disable
  ip address 172.21.0.1/24
  enable
exit
```

```
-
interface gigabitethernet 1/0/2.20
  bridge-group 20
exit
interface gigabitethernet 1/0/2.21
  bridge-group 21
exit
```

mDNS reflector

ip mdns-reflector mDNS reflector. L3. . mDNS reflector Bridge 20 Bridge 21

```
bridge 20
  ip firewall disable
  ip address 172.20.0.1/24
  ip mdns-reflector
  enable
exit
bridge 21
  ip firewall disable
  ip address 172.21.0.1/24
  ip mdns-reflector
  enable
exit
```



BRAS, mDNS reflector mDNS (UDP:5353) **bypass-traffic-acl.**

mDNS

show ip mdns-reflector mDNS mDNS reflector.

```

ESR10# show ip mdns-reflector
Interface      IP address      Hostname
Port
-----
-----
br20           172.20.0.10     Book-tester-7.local    _raop._tcp
5000
br20           172.20.0.10     Book-tester-7.local    _net-assistant._udp
3283
br20           172.20.0.10     Book-tester-7.local    _afpovertcp._tcp
548
br20           172.20.0.10     Book-tester-7.local    _smb._tcp
445
br20           172.20.0.10     Book-tester-7.local    _rfb._tcp
5900
br20           172.20.0.10     Book-tester-7.local    _eppc._tcp
3031
br20           172.20.0.10     Book-tester-7.local    _sftp-ssh._tcp
22
br20           172.20.0.10     Book-tester-7.local    _ssh._tcp
22
br20           172.20.0.10     Book-tester-7.local    _https._tcp
443

```

clear ip mdns-reflector mDNS reflector.

mDNS

_ssh._tcp _https._tcp. url mDSN.

```

object-group url test_url
  url _ssh._tcp.local
  url _https._tcp.local
exit

```



URL , .

mDNS, .

```
ip mdns-reflector services test_url
```

```

ESR10# show ip mdns-reflector
Interface      IP address      Hostname
Port
-----
-----
br20           172.20.0.10     Book-tester-7.local    _ssh._tcp
22
br20           172.20.0.10     Book-tester-7.local    _https._tcp
443

```

multimedia, client. ESR self :

1. DHCP / ESR;
2. mDNS / ESR;
3. HTTPS/SSH ;
4. ICMP / ESR;

5. ICMP

```
object-group service ssh
  port-range 22
exit
object-group service https
  port-range 443
exit
object-group service dhcp_server
  port-range 67
exit
object-group service dhcp_client
  port-range 68
exit
object-group service mdns
  port-range 5353
exit
```

```
security zone client
exit
security zone multimedia
exit
```

Bridge (no ip firewall disable).

```
bridge 20
  security-zone multimedia
  ip address 172.20.0.1/24
  ip mdns-reflector
  enable
exit
bridge 21
  security-zone client
  ip address 172.21.0.1/24
  ip mdns-reflector
  enable
exit
```

```
security zone-pair multimedia self
  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 5
    action permit
    match protocol udp
```

```

        match destination-port mdns
        enable
    exit
exit
security zone-pair client self
    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 5
        action permit
        match protocol udp
        match destination-port mdns
        enable
    exit
exit
security zone-pair client multimedia
    rule 2
        action permit
        match protocol tcp
        match destination-port ssh
        enable
    exit
    rule 3
        action permit
        match protocol tcp
        match destination-port https
        enable
    exit
    rule 4
        action permit
        match protocol icmp
        enable
    exit
exit

```

ESR

```

#!/usr/bin/clish
#14
#1.6.4
#06/12/2019
#18:19:37
hostname ESR10

object-group service ssh
    port-range 22
exit
object-group service https
    port-range 443

```

```
exit
object-group service dhcp_server
  port-range 67
exit
object-group service dhcp_client
  port-range 68
exit
object-group service mdns
  port-range 5353
exit

object-group url test_url
  url _ssh._tcp.local
  url _https._tcp.local
exit

username admin
  password encrypted $6$OqYVDdLPN8ILZsQ/$iqWu8CPYGm8744FowOqaYD
/mnZQhqXmAuVm9Sf6nyS8nlv3nuA5Ez2Z5ASeKxU7tFFf3SoiPDEdyALKZjVbEP.
exit

vlan 2
exit

security zone client
exit
security zone multimedia
exit
security zone uplink
exit

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

snmp-server host 10.10.5.50
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 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 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 shutdown
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 "uplink"
  vlan 2
  security-zone uplink
  ip address dhcp
  enable
```

```
exit
```

```
bridge 20
  description "multimedia"
  security-zone multimedia
  ip address 172.20.0.1/24
  ip mdns-reflector
  enable
```

```
exit
```

```
bridge 21
  description "client"
  security-zone client
  ip address 172.21.0.1/24
  ip mdns-reflector
  enable
```

```
exit
```

```
interface gigabitethernet 1/0/1
  mode switchport
  switchport access vlan 2
```

```
exit
```

```
interface gigabitethernet 1/0/2.20
  bridge-group 20
```

```
exit
```

```
interface gigabitethernet 1/0/2.21
  bridge-group 21
```

```
exit
```

```
security zone-pair multimedia self
  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 icmp
    enable
exit
rule 4
    action permit
    match protocol udp
    match destination-port mdns
    enable
exit
exit
security zone-pair client self
    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 icmp
    enable
exit
rule 4
    action permit
    match protocol udp
    match destination-port mdns
    enable
exit
exit
security zone-pair client multimedia
    rule 2
        action permit
        match protocol tcp
        match destination-port ssh
        enable
exit
rule 3
    action permit
    match protocol tcp
    match destination-port https
    enable
exit
rule 4
    action permit
    match protocol icmp
    enable
exit
exit
security zone-pair uplink self
    rule 2
        action permit
        match protocol udp
        match source-port dhcp_server
        match destination-port dhcp_client
        enable
exit
rule 3
    action permit
    match protocol icmp
    enable
exit
rule 4
    action permit
    match protocol tcp
    match destination-port ssh
    enable
exit
```



```

exit

ip dhcp-server
ip dhcp-server pool br20_local_clients_vlan20
  network 172.20.0.0/24
  max-lease-time 000:00:15
  default-lease-time 000:00:10
  address-range 172.20.0.10-172.20.0.250
  default-router 172.20.0.1
  dns-server 172.20.0.1
exit
ip dhcp-server pool br21_local_clients_vlan21
  network 172.21.0.0/24
  max-lease-time 000:00:15
  default-lease-time 000:00:10
  address-range 172.21.0.10-172.21.0.250
  default-router 172.21.0.1
  dns-server 172.21.0.1
exit

ip mdns-reflector services test_url

ip ssh server

clock timezone gmt +7

ntp enable
ntp server 10.10.5.50
exit

```

```

Ethernet II, Src: Apple_93:c3:e0 (70:70:0d:93:c3:e0), Dst: IPv4mcast_fb (01:00:5e:00:00:fb)
802.1Q Virtual LAN, PRI: 0, DEI: 0, ID: 21
Internet Protocol Version 4, Src: 172.21.155.135, Dst: 224.0.0.251
User Datagram Protocol, Src Port: 5353, Dst Port: 5353
  Source Port: 5353
  Destination Port: 5353
  Length: 62
  Checksum: 0xfdc2 [correct]
  [Checksum Status: Good]
  [Stream index: 30]
Multicast Domain Name System (query)
  Transaction ID: 0x0000
  Flags: 0x0000 Standard query
  Questions: 1
  Answer RRs: 0
  Authority RRs: 0
  Additional RRs: 0
  Queries
    MacBook Air - tester._smb._tcp.local: type SRV, class IN, "QU" question
      Name: MacBook Air - tester._smb._tcp.local
      [Name Length: 36]
      [Label Count: 4]
      Type: SRV (Server Selection) (33)
      .000 0000 0000 0001 = Class: IN (0x0001)
      1... .... = "QU" question: True

```

Ethernet II, Src: EltexEnt_aa:1d:c0 (a8:f9:4b:aa:1d:c0), Dst: IPv4mcast_fb (01:00:5e:00:00:fb)
802.1Q Virtual LAN, PRI: 0, DEI: 0, ID: 7
Internet Protocol Version 4, Src: 172.20.0.1, Dst: 224.0.0.251
User Datagram Protocol, Src Port: 5353, Dst Port: 5353

Source Port: 5353
Destination Port: 5353
Length: 62
Checksum: 0x1948 [correct]
[Checksum Status: Good]
[Stream index: 32]

Multicast Domain Name System (query)

Transaction ID: 0x0000
Flags: 0x0000 Standard query
Questions: 1
Answer RRs: 0
Authority RRs: 0
Additional RRs: 0
Queries

MacBook Air - tester._smb._tcp.local: type SRV, class IN, "QM" question
Name: MacBook Air - tester._smb._tcp.local
[Name Length: 36]
[Label Count: 4]
Type: SRV (Server Selection) (33)
.000 0000 0000 0001 = Class: IN (0x0001)
0... = "QU" question: False

Ethernet II, Src: Apple_a5:8f:de (64:76:ba:a5:8f:de), Dst: IPv4mcast_fb (01:00:5e:00:00:fb)
802.1Q Virtual LAN, PRI: 0, DEI: 0, ID: 7
Internet Protocol Version 4, Src: 172.20.0.10, Dst: 224.0.0.251
User Datagram Protocol, Src Port: 5353, Dst Port: 5353

Source Port: 5353
Destination Port: 5353
Length: 189
Checksum: 0x182b [correct]
[Checksum Status: Good]
[Stream index: 188]

Multicast Domain Name System (response)

Transaction ID: 0x0000
Flags: 0x8400 Standard query response, No error
Questions: 0
Answer RRs: 6
Authority RRs: 0
Additional RRs: 0

Answers

_services._dns-sd._udp.local: type PTR, class IN, _smb._tcp.local

Name: _services._dns-sd._udp.local
Type: PTR (domain name Pointer) (12)
.000 0000 0000 0001 = Class: IN (0x0001)
0... = Cache flush: False
Time to live: 4500
Data length: 12
Domain Name: _smb._tcp.local

_services._dns-sd._udp.local: type PTR, class IN, _afpovertcp._tcp.local

Name: _services._dns-sd._udp.local
Type: PTR (domain name Pointer) (12)
.000 0000 0000 0001 = Class: IN (0x0001)
0... = Cache flush: False
Time to live: 4500
Data length: 14
Domain Name: _afpovertcp._tcp.local

_services._dns-sd._udp.local: type PTR, class IN, _rfb._tcp.local

Name: _services._dns-sd._udp.local
Type: PTR (domain name Pointer) (12)
.000 0000 0000 0001 = Class: IN (0x0001)
0... = Cache flush: False
Time to live: 4500
Data length: 7
Domain Name: _rfb._tcp.local

_services._dns-sd._udp.local: type PTR, class IN, _ssh._tcp.local

Name: _services._dns-sd._udp.local
Type: PTR (domain name Pointer) (12)
.000 0000 0000 0001 = Class: IN (0x0001)
0... = Cache flush: False
Time to live: 4500
Data length: 7
Domain Name: _ssh._tcp.local

_services._dns-sd._udp.local: type PTR, class IN, _sftp-ssh._tcp.local

Name: _services._dns-sd._udp.local
Type: PTR (domain name Pointer) (12)
.000 0000 0000 0001 = Class: IN (0x0001)
0... = Cache flush: False
Time to live: 4500
Data length: 12
Domain Name: _sftp-ssh._tcp.local

_services._dns-sd._udp.local: type PTR, class IN, _net-assistant._udp.local

Name: _services._dns-sd._udp.local
Type: PTR (domain name Pointer) (12)
.000 0000 0000 0001 = Class: IN (0x0001)
0... = Cache flush: False
Time to live: 4500
Data length: 17
Domain Name: _net-assistant._udp.local

[Unsolicited: True]

Ethernet II, Src: EltexEnt_aa:1d:c0 (a8:f9:4b:aa:1d:c0), Dst: IPv4mcast_fb (01:00:5e:00:00:fb)
802.1Q Virtual LAN, PRI: 0, DEI: 0, ID: 10
Internet Protocol Version 4, Src: 172.21.0.1, Dst: 224.0.0.251
User Datagram Protocol, Src Port: 5353, Dst Port: 5353

Source Port: 5353
Destination Port: 5353
Length: 189
Checksum: 0x79cb [correct]
[Checksum Status: Good]
[Stream index: 49]

Multicast Domain Name System (response)

Transaction ID: 0x0000
Flags: 0x8400 Standard query response, No error
Questions: 0
Answer RRs: 6
Authority RRs: 0
Additional RRs: 0
Answers

_services._dns-sd._udp.local: type PTR, class IN, _smb._tcp.local
Name: _services._dns-sd._udp.local
Type: PTR (domain name Pointer) (12)
.000 0000 0000 0001 = Class: IN (0x0001)
0... = Cache flush: False
Time to live: 4500
Data length: 12
Domain Name: _smb._tcp.local
_services._dns-sd._udp.local: type PTR, class IN, _net-assistant._udp.local
Name: _services._dns-sd._udp.local
Type: PTR (domain name Pointer) (12)
.000 0000 0000 0001 = Class: IN (0x0001)
0... = Cache flush: False
Time to live: 4500
Data length: 17
Domain Name: _net-assistant._udp.local
_services._dns-sd._udp.local: type PTR, class IN, _sftp-ssh._tcp.local
Name: _services._dns-sd._udp.local
Type: PTR (domain name Pointer) (12)
.000 0000 0000 0001 = Class: IN (0x0001)
0... = Cache flush: False
Time to live: 4500
Data length: 12
Domain Name: _sftp-ssh._tcp.local
_services._dns-sd._udp.local: type PTR, class IN, _ssh._tcp.local
Name: _services._dns-sd._udp.local
Type: PTR (domain name Pointer) (12)
.000 0000 0000 0001 = Class: IN (0x0001)
0... = Cache flush: False
Time to live: 4500
Data length: 7
Domain Name: _ssh._tcp.local
_services._dns-sd._udp.local: type PTR, class IN, _rfb._tcp.local
Name: _services._dns-sd._udp.local
Type: PTR (domain name Pointer) (12)
.000 0000 0000 0001 = Class: IN (0x0001)
0... = Cache flush: False
Time to live: 4500
Data length: 7
Domain Name: _rfb._tcp.local
_services._dns-sd._udp.local: type PTR, class IN, _afpovertcp._tcp.local
Name: _services._dns-sd._udp.local
Type: PTR (domain name Pointer) (12)
.000 0000 0000 0001 = Class: IN (0x0001)
0... = Cache flush: False
Time to live: 4500
Data length: 14
Domain Name: _afpovertcp._tcp.local

