

Redundancy with Failover option



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CAUTION

Configurations from the scenarios below are examples that demonstrate the potential capabilities of the Infinet Wireless devices. The configurations may vary depending on the model and firmware version. We do not recommend copying this solutions to the hardware without checking.

Description

InfiLINK 2x2 / InfiMAN 2x2 and InfiLINK Evolution / InfiMAN Evolution families units have a functional channels redundancy function. A hot reserve might be created by using the Failover option. The Failover option does not depend on the method of data transmission on the main link. The only condition is connectivity at level 2 between Infinet Wireless devices through both links.

The principle of operation is extremely simple. The Infinet Wireless device, on which the Failover option is configured, checks the availability of a specific MAC address through the primary link. If this MAC address is available, then the operation of the backup link is blocked. The radio module stops broadcasting on the backup master. The reserved slave device only listens to the radio while there is no signal from the master. Thus, the backup link can operate on the same frequency as the main one, but it does not have any influence on it. As soon as the tracked MAC address disappears in the main link, the backup link will be unlocked and traffic will begin to be transmitted over it. The process is completely automatic. However, the transition to a backup link is associated with a short-term idle time. Traffic will return automatically to the primary link as soon as backup link is failure. For example, in the figure below, if the Master 1 - Slave 1 link is selected as the main one, the Master 2 device will turn off the radio interface, and the Slave 2 device will switch to the broadcast listening mode.

The tracked MAC address can be determined in two ways: automatically and manually. In the figure below, regardless of the selected method, the Master 1 will track the Slave 1 MAC address and the Master 2 - Slave 2 MAC address.

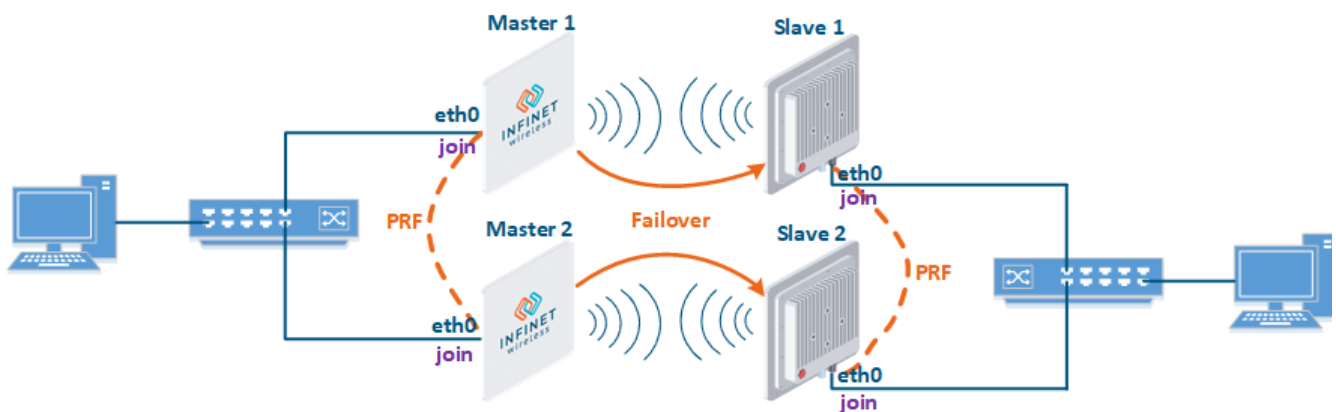


Figure 1 - Redundancy with Failover option

If InfiLINK 2x2, InfiMAN 2x2, InfiLINK Evolution or InfiMAN Evolution families devices are used as the main link, this gives additional advantages. In this case, both radio links can be configured with the Failover option. For both links, the quality of the established connection will be automatically evaluated. Connection with the worst indicators will automatically become a backup link. Channel selection parameters can be controlled manually.



NOTE

It is also possible to connect two Infinet devices to one external antenna or use one radio frequency.

The Failover option is a part of the MINT proprietary protocol, so the task implementation will require joining all devices into a single MINT area. After joining devices into a single MINT area, there is a risk of a switching loop appearance. In this article, we will review two ways to prevent the switching loop appearance:

- Using different switch groups (figure 2a): different switch groups are used for data transmission on the main and backup links, on the Master 1-Slave 1 link switch group #1 is used, on the Master 2 - Slave 2 link switch group #2 is used.
- Using the switch border option (figure 2b): the `switch border` option must be enabled on all prf interfaces. At the same time, it is allowed to use the same switch groups for data transmission on the main and backup links.

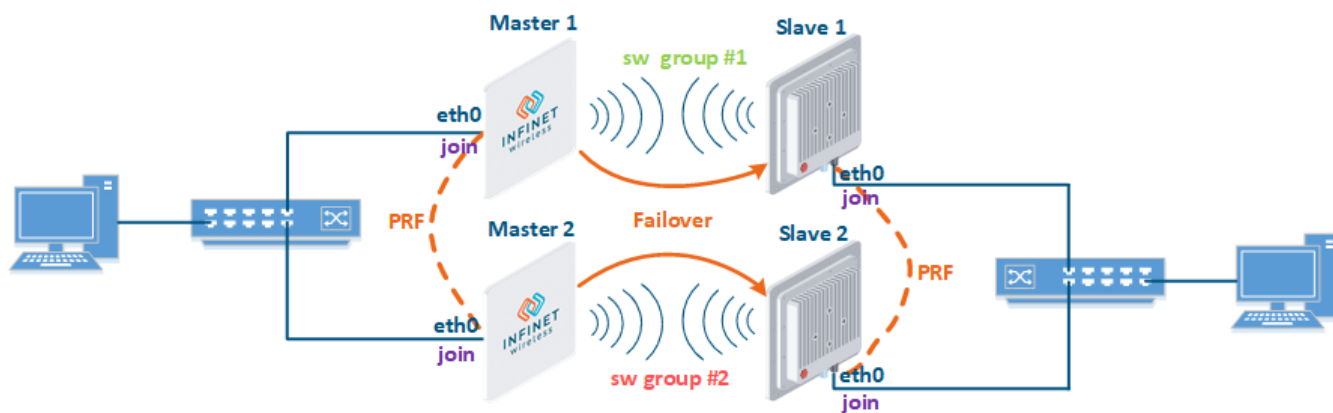


Figure 2a - Example with different switch groups

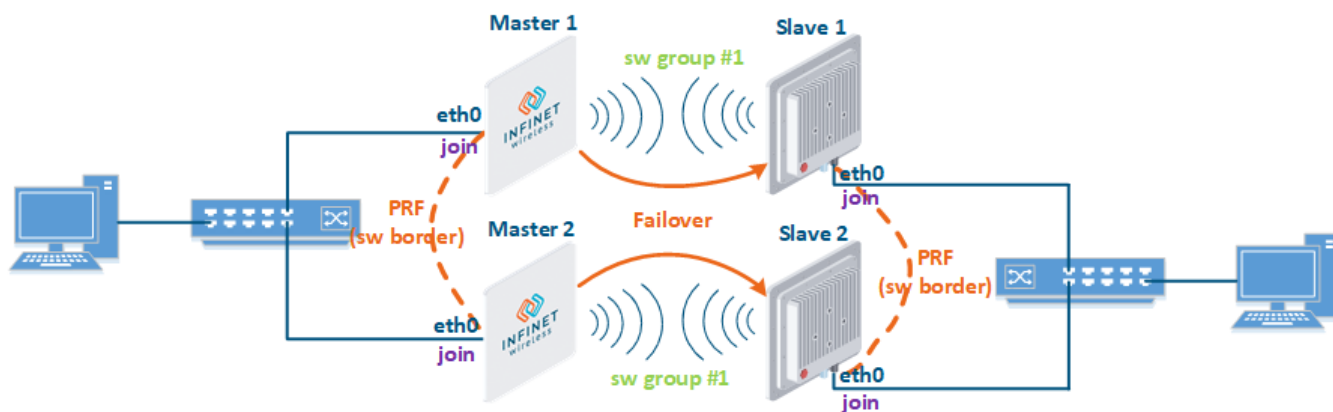


Figure 2b - Example with switch border option usage

Configuration of Failover in WANFlex	
<pre>mint IFNAME [-]failover {MAC auto}</pre>	
Command	Description
<pre>mint IFNAME failover MAC</pre>	Enable Failover option to check "MAC" availability
<pre>mint IFNAME failover auto</pre>	Enable Failover option to check "MAC" availability. "MAC" will be selected in automatic mode
<pre>mint IFNAME [-]failover</pre>	Disable Failover

Configuration Example

A management is VLAN 100 inside a switch group #100. A transport of user data is inside a switch group #1.



CAUTION

STP protocol may block correct working Failover option, so it should be disabled. Failover option causes short-time loops in one broadcast domain.



CAUTION

If the devices of the main and backup links are mounted on the same site and use the same frequency channel, we recommend to use different "Network SID". This will avoid establishing cross links: Master 1 - Slave 2 and Master 2 - Slave 1. In this example, the Network SIDs 10101010 and 10101011 are used.



CAUTION

The article provides one of the possible configurations of radio link settings and data transmission. The configuration used in your network may differ from the one shown.

- Configure Master 1 and Slave 1 as the main link.

Master 1

```
rf rf5.0 band 40
rf rf5.0 mimo
rf rf5.0 freq 5000 bitr 300000 sid 10101010 burst
rf rf5.0 txpwr 25 pwrctl distance auto
dfs rf5.0 dfsoff
mint rf5.0 -roaming leader
mint rf5.0 -type master
mint rf5.0 -name "Master 1"
mint rf5.0 -key "123456789"
mint rf5.0 poll start
ifc svi100 up
ifc vlan100 vlan 100 vlandev eth0 up
sw group 100 add vlan100 rf5.0
sw group 100 order 1
svi 100 group 100
ifc svi100 192.168.1.1/24
sw group 100 stp off
sw group 100 start
```

Slave 1

```
rf rf5.0 band 40
rf rf5.0 mimo
rf rf5.0 burst
dfs rf5.0 dfsoff
mint rf5.0 prof 1 -band 40 -freq 5000 -bitr 300000 -sid 10101010 -nodeid 00020 -type slave -netid 0 -
minbitr 30000 -autobitr -mimo -key "123456789"
mint rf5.0 -name "Slave 1"
ifc svi100 up
ifc vlan100 vlan 100 vlandev eth0 up
sw group 100 add vlan100 rf5.0
svi 100 group 100
ifc svi100 192.168.1.2/24
switch group 100 order 1
sw group 100 stp off
sw group 100 start
```

- Configure Master 2 and Slave 2 as a backup link.

Master 2

```
rf rf5.0 band 40
rf rf5.0 mimo
rf rf5.0 freq 5000 bitr 300000 sid 10101011 burst
rf rf5.0 txpwr 25 pwrctl distance auto
dfs rf5.0 dfsoff
mint rf5.0 -roaming leader
mint rf5.0 -type master
mint rf5.0 -name "Master 2"
mint rf5.0 -key "123456789"
mint rf5.0 poll start
ifc svi100 up
ifc vlan100 vlan 100 vlandev eth0 up
sw group 100 add vlan100 rf5.0
svi 100 group 100
ifc svi100 192.168.1.3/24
switch group 100 order 1
sw group 100 stp off
sw group 100 start
```

Slave 2

```
rf rf5.0 band 40
rf rf5.0 mimo
rf rf5.0 burst
dfs rf5.0 dfsoff
mint rf5.0 prof 1 -band 40 -freq 5000 -bitr 300000 -sid 10101011 -nodeid 00040 -type slave -netid 0 -
minbitr 30000 -autobitr -mimo -key "123456789"
mint rf5.0 -name "Slave 2"
ifc svi100 up
ifc vlan100 vlan 100 vlandev eth0 up
sw group 100 add vlan100 rf5.0
svi 100 group 100
ifc svi100 192.168.1.4/24
switch group 100 order 1
sw group 100 stp off
sw group 100 start
```

- Create one MINT domain.

Master 1

```
ifc prf0 up
prf 0 parent eth0
mint prf0 -name "Master 1 prf"
mint prf0 -nodeid 00050
mint prf0 -type master
mint prf0 -mode fixed
mint prf0 -key "123456789"
mint prf0 -authmode public
mint prf0 start
mint join rf5.0 prf0
```

Slave 1

```
ifc prf0 up
prf 0 parent eth0
mint prf0 -name "Slave 1 prf"
mint prf0 -nodeid 00080
mint prf0 -type master
mint prf0 -mode fixed
mint prf0 -key "123456789"
mint prf0 -authmode public
mint prf0 start
mint join rf5.0 prf0
```

Master 2

```
ifc prf0 up
prf 0 parent eth0
mint prf0 -name "Master 2 prf"
mint prf0 -nodeid 00070
mint prf0 -type master
mint prf0 -mode fixed
mint prf0 -key "123456789"
mint prf0 -authmode public
mint prf0 start
mint join rf5.0 prf0
```

Slave 2

```
ifc prf0 up
prf 0 parent eth0
mint prf0 -name "Slave 2 prf"
mint prf0 -nodeid 00090
mint prf0 -type master
mint prf0 -mode fixed
mint prf0 -key "123456789"
mint prf0 -authmode public
mint prf0 start
mint join rf5.0 prf0
```

- Configure switch groups for data transmission.

Use different switch groups (figure 2a):

Master 1

```
switch group 1 add eth0 rf5.0
switch group 1 start
```

Slave 1

```
switch group 1 add eth0 rf5.0
switch group 1 start
```

Master 2

```
switch group 2 add eth0 rf5.0
switch group 2 start
```

Slave 2

```
switch group 2 add eth0 rf5.0
switch group 2 start
```

Use switch border option (figure 2b):

Master 1

```
switch group 1 add eth0 rf5.0
switch group 1 start
```

```
mint prf0 swborder
```

Slave 1

```
switch group 1 add eth0 rf5.0
switch group 1 start
```

```
mint prf0 swborder
```

Master 2

```
switch group 1 add eth0 rf5.0
switch group 1 start
```

```
mint prf0 swborder
```

Slave 2

```
switch group 1 add eth0 rf5.0
switch group 1 start
```

```
mint prf0 swborder
```

- Enable Failover option.

Manual MAC address settings:

Master 1

```
mint rf5.0 failover "MAC Slave 1"
```


Master 2
<pre>mint rf5.0 failover "MAC Slave 2"</pre>

Automatic MAC address settings:

Master 1
<pre>mint rf5.0 failover auto</pre>

Master 2
<pre>mint rf5.0 failover auto</pre>

- Manual backup link selection.

 **CAUTION**
When Failover option is enabled on two Infinet devices of the InfiLINK 2x2, InfiMAN 2x2, InfiLINK Evolution or InfiMAN Evolution families, a situation may occur when both links are equal in their characteristics (link cost). In this case, you need to manually specify which of the links will be redundant, assigning an additional cost to a specific interface.

Master 2
<pre>mint rf5.0 -extracost 3000</pre>

Slave 2
<pre>mint rf5.0 -extracost 3000</pre>