8 Types of Fail over and load balance

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8 Types of Fail over and load balance

1. Using distance
2. Using bridge
3. Using vrrp
4. Using OSPF

1. Using mangle prerouting chain
2. Using mangle input-output chain
3. Using BGP
4. Using Bonding
Situation: Two ISP has given me two IP, When primary fails, secondary will be live auto.

IP > Route > add gateway with distance 1 and add another gateway with distance 2. lowest distance will be primary
Auto Fail Over Using Distance

ISP1

ISP2

Mikrotik Router

Hub/ Switch

LAN
Auto Fail Over Using Distance

ISP1  4G SIM  4G SIM

RB953GS
How to Configure:

[Description of the configuration process shown in the image, including the setup of the router interface, address list, route list, and DHCP client options.]
Situation: Point to Point/ Router to Router Connected with two/multiple fiber or Radio, If primary fails another will be live auto.

Bridge has STP/RSTP protocol, STP/RSTP control loop and work as failover. So No need any configure other than bridge
Fail Over With Bridge

Mikrotik Router-1

Mikrotik Router-2

Hub/ Switch

LAN
How to Configure:

1. Click on 'Bridge' in the left panel.
2. Click on 'ether1' and 'ether2' under the 'Ports' tab.
3. Verify the entries in the Address List.
   - For 'ether1': Interface 'bridge1', Address 192.168.1.1/24.
   - For 'ether2': Interface 'bridge1', Address 202.191.126.180/29.
Situation: Client wants failover with Hub or switch, There is no router at client end.

ISP end required Mikrotik: LAN configure on VRRP (logical Interface).

Both end Router will contain Same(gateway) IP
Fail Over With VRRP
How to Configure:

1. Navigate to "Interfaces" in the left panel.
2. Select the "ether3-LAN" interface.
3. Enable Preemption Mode under VRRP settings.
4. Add the "vmp1" interface to the list.
4. Using OSPF:

Situation: Nationwide very large network with Router and multiple link, OSPF used for internal fail over and auto update of Routing table.

add peering IP, add Network address with bit from OSPF > Network, Then only in main router you need to select: “if install as type2” from Routing > OSPF > Instance > “Redistribute default route”
Situation: Two or more WAN from different ISP, we want to merge all bandwidth including failover. Some IPs of Will be marked for ISP1 and Some Ips will be marked for ISP2
Load Balance with Fail Over

ISP1

ISP2

Mikrotik Router

Hub/ Switch

LAN

Three laptops connected to the LAN.
How to Configure:

<table>
<thead>
<tr>
<th>Interface</th>
<th>Dist. Address</th>
<th>Gateway</th>
<th>Distance</th>
<th>Routing Mark</th>
<th>Pref. Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS</td>
<td>0.0.0.0/0</td>
<td>10.0.0.1 reachable ether1-ISP-1</td>
<td>1</td>
<td>sp1</td>
<td></td>
</tr>
<tr>
<td>AS</td>
<td>0.0.0.0/0</td>
<td>10.0.0.3 reachable ether2-ISP2</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AS</td>
<td>0.0.0.0/0</td>
<td>10.0.0.5 reachable ether1-ISP-1</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DAC</td>
<td>10.0.0.0/30</td>
<td>ether1-ISP-1 reachable</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DAC</td>
<td>10.0.0.4/30</td>
<td>ether2-ISP2 reachable</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DAC</td>
<td>192.168.1.24</td>
<td>ether3-LAN reachable</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Routing Mark:**

- **sp1**
- **sp2**

**Gateway:**

- 10.0.0.1
- 10.0.0.5
How to Configure:

1. Navigate to the Firewall section.
2. Select the Mangle tab.
3. Under the Filter Rules tab, create a new rule.
4. In the General tab, set the Chain to 'prerouting' for the rule.
5. Set the Source Address to 192.168.1.128/25.
6. Set the Action to 'mark routing' with the Mark Value of isp2, and enable Passthrough.
7. Save and apply the rule.
5. Using mangle input-output chain:

**Situation:** Two or more WAN from different ISP, we want to merge all bandwidth including failover.

Mark connection with input chain, then mark routing for that connection which has marked.
Load Balance with Fail Over

ISP1

ISP2

Mikrotik Router

Hub/ Switch

LAN

Network Diagram

- ISP1 and ISP2 connected to Mikrotik Router
- Mikrotik Router connected to Hub/Switch
- Hub/Switch connected to LAN
- Load balancing and fail over configuration
How to Configure:

- **Gateway:** 10.0.0.1
- **Routing Mark:** sp1

- **Gateway:** 10.0.0.5
- **Routing Mark:** sp2

- **Gateway:** 10.0.1
- **Routing Mark:** sp2 (Incorrect)
How to Configure:

- **Mangle**: Chain: `output`
  - Action: `mark routing`
  - In Interface: `ether1-ISP-1`
  - Out Interface: `ether2-ISP`
  - Connection Mark: `conn-1`
  - Routing Mark: `conn-1`
  - Passthrough: checked

- **Mangle Rule**: Chain: `inout`
  - Action: `mark routing`
  - In Interface: `ether1-ISP-1`
  - Out Interface: `ether2-ISP`
  - Connection Mark: `conn-1`
  - Routing Mark: `conn-1`
  - Passthrough: checked
Situation: ISP is connected with multiple IIG, ISP has own Real IP and ASN

a) add Peering IP, Routing > BGP > Instance > Self ASN and IP,
b) BGP > Peer > Other’s ASN and IP
c) BGP > Network: add /24 and aggregate like /23, /22
d) Routing Filter: Create filter for specify network advertise.
Load Balance with BGP

IIG - 1

IIG - 2

Mikrotik Router

Hub/ Switch

LAN

Cloud Core Router

Configured with BGP for load balancing.
How to Configure Instance, Peer & Network:
How to Configure Route Filter:

```
Quick Set
  CAPsMAN

Interfaces
  Wireless
  Bridge
  PPP
  Switch
  Mesh

IP
  IPv6
  MPLS
  OpenFlow
  Routing

admin@D4:CA:6D:63:F1:C9 (BIJOY BGP) - WinBox v6.25 on RB450G (mipsbe)

<table>
<thead>
<tr>
<th>#</th>
<th>Chain</th>
<th>Prefix</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>mango-out</td>
<td>202.191.120.0/23</td>
<td>accept</td>
</tr>
<tr>
<td>5</td>
<td>mango-out</td>
<td>202.191.120.0/24</td>
<td>accept</td>
</tr>
<tr>
<td>7</td>
<td>mango-out</td>
<td>202.191.121.0/24</td>
<td>discard</td>
</tr>
<tr>
<td>3</td>
<td>mango-out</td>
<td>0.0.0.0/0</td>
<td>discard</td>
</tr>
<tr>
<td>4</td>
<td>btcl-out</td>
<td>202.191.120.0/23</td>
<td>accept</td>
</tr>
<tr>
<td>6</td>
<td>btcl-out</td>
<td>202.191.120.0/24</td>
<td>discard</td>
</tr>
<tr>
<td>1</td>
<td>btcl-out</td>
<td>202.191.121.0/24</td>
<td>accept</td>
</tr>
<tr>
<td>2</td>
<td>btcl-out</td>
<td>0.0.0.0/0</td>
<td>discard</td>
</tr>
</tbody>
</table>
```
Situation: To increase capacity of link / ether
Used only for Router to Router

Interface add bonding Slave = ether1, ether2,
Link Monitorin=ARP, remote IP=
Fail Over With Bonding

Mikrotik Router-1

Mikrotik Router-2

Hub/ Switch

LAN

Windows laptops connected to the network through the hub/switch.
How to Configure:

Interface bonding1

- Slaves: ether1, ether2
- Mode: balance
- Link Monitor: arp
- ARP IP Target: 10.0.0.2
THANK YOU
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