Q-Balancer®

How To Guide:

WAN Load Balancing with DNS Routing

Introduction

In a multiple WAN network, link load balancer or firewall usually decides the outbound path for a destined domain with the IP address from its first DNS lookup.

Issue

When new requests to the same destined domains arise, they will take the same path. However some domains, especially large organizations, have multiple IP addresses and randomly change their IP resolution from time to time. Therefore, path decisions based on destined FQDN cannot work accurately as new sessions will possibly not match the policy-based routing rules.

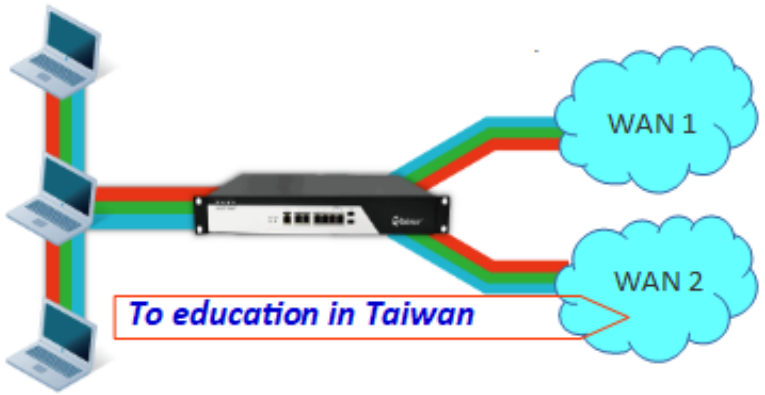
Solution: WAN Load Balancing with DNS Routing

With the advanced mechanism of DNS routing, the Q-Balancer is able to precisely route traffic to the Internet via a particular gateway based on the destined domain names. Whenever a request to a destined domain arises, the solution will dynamically check its updated DNS database and then decides the path.

Diagram Example

The following is a simplified version of network diagram:

On port 4
LAN Subnet: 10.168.1.0/24
Interface IP: 10.168.1.254



On port 1
WAN 1: example_1
IP: 203.67.222.40
Subnet: 203.67.222.40/30
GW:203.67.222.1

On port 2
WAN 2: example_2
IP: 100.100.100.6
Subnet:100.100.100.0/29
GW:100.100.100.1

Requirements

In this case, we are requested to:

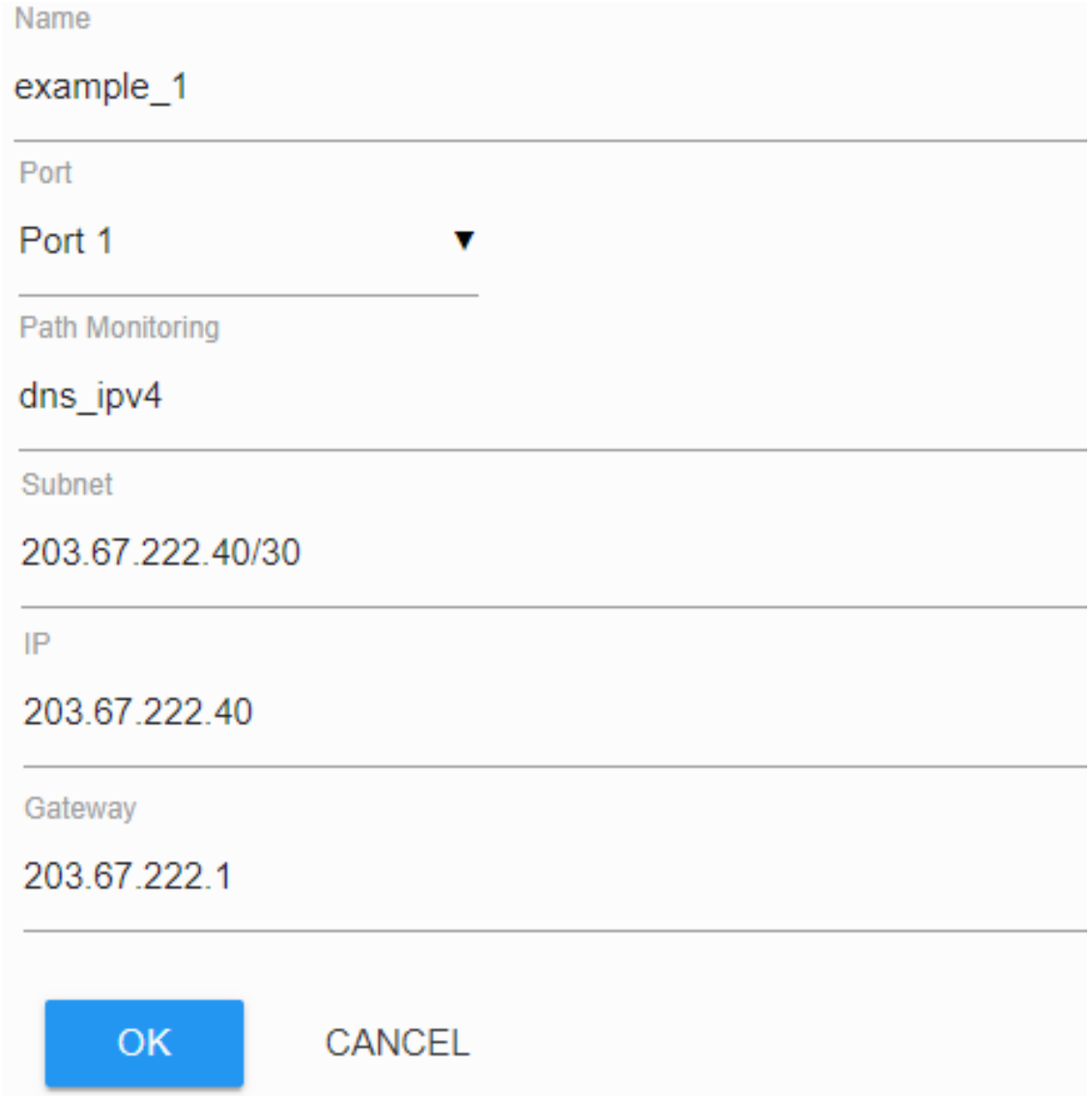
1. direct all traffic to the Internet via WAN 1 and WAN 2 at the same time, while LAN users can still access the Internet when/if one of the WAN links is down or saturated.

2. direct traffic to all education organizations in Taiwan via WAN 2, and via WAN 1 in case WAN 2 is down.

Follow the steps below to configure the appliance:

1. *WAN > ADD > Static*
2. *LAN > ADD*
3. *Object > Host > ADD > FQDN*
4. *Object > DPS > ADD > Weight Round Robin by Connection*
5. *Object > DPS > ADD > Priority*
6. *Policy Routing > ADD*

WAN > ADD > Static



WAN > ADD > Static

Name

example_2

Port

Port 2 ▼

Path Monitoring

dns_ipv4 ▼

Subnet

100.100.100.0/29

IP

100.100.100.6

Gateway

100.100.100.1

Down/Up Speed

15.3 / 2.9 Mbps

OK CANCEL

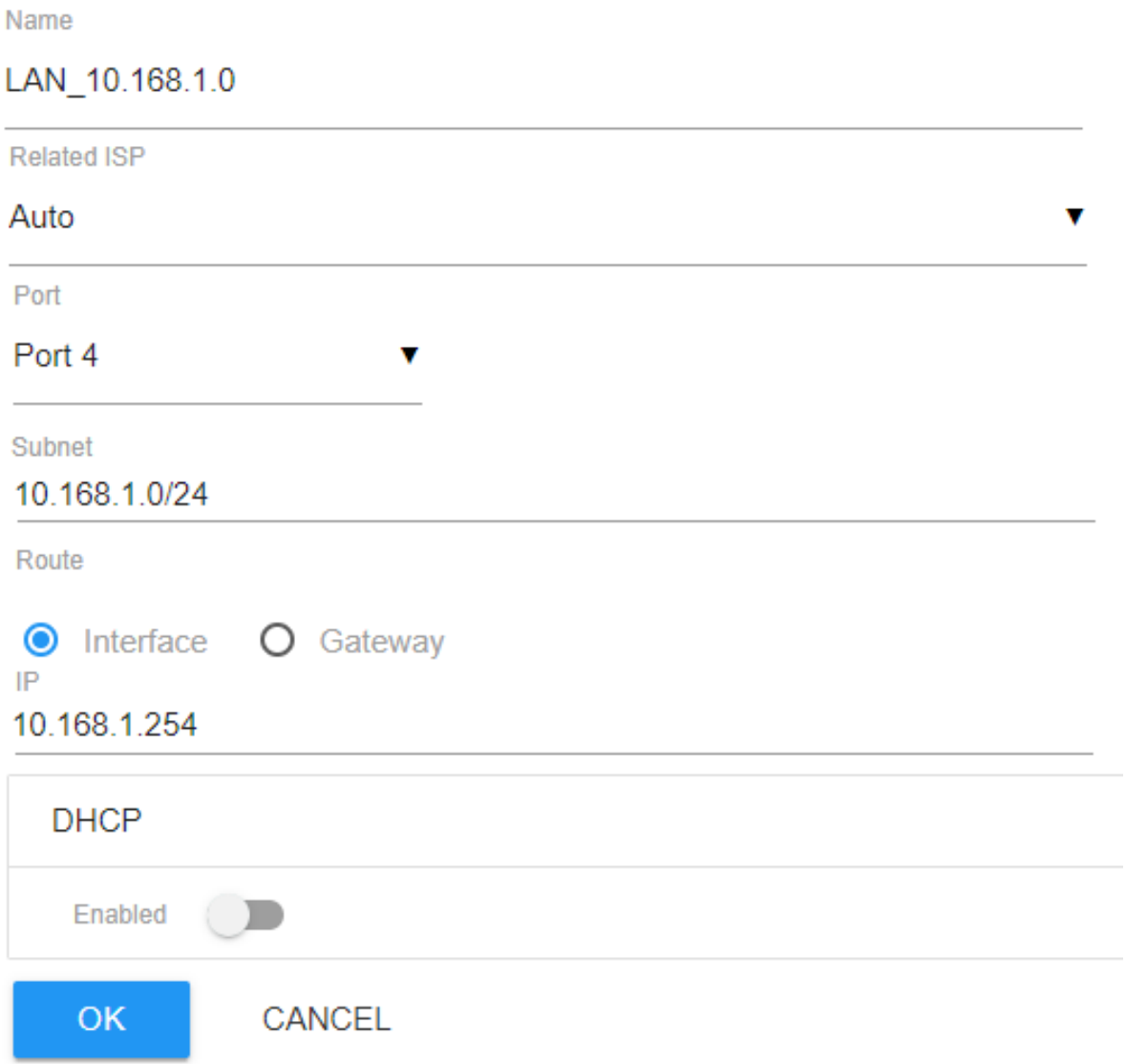
WAN configuration is done as follows:

WAN

ADD DELETE

Status	Type	Name	Port	Interface	Subnet	IP	Gateway
✓	Static	example_1	Port 1	eth0_6	203.67.222.40/30	203.67.222.40	203.67.222.1
✓	Static	example_2	Port 2	eth1_2	100.100.100.0/29	100.100.100.6	100.100.100.1

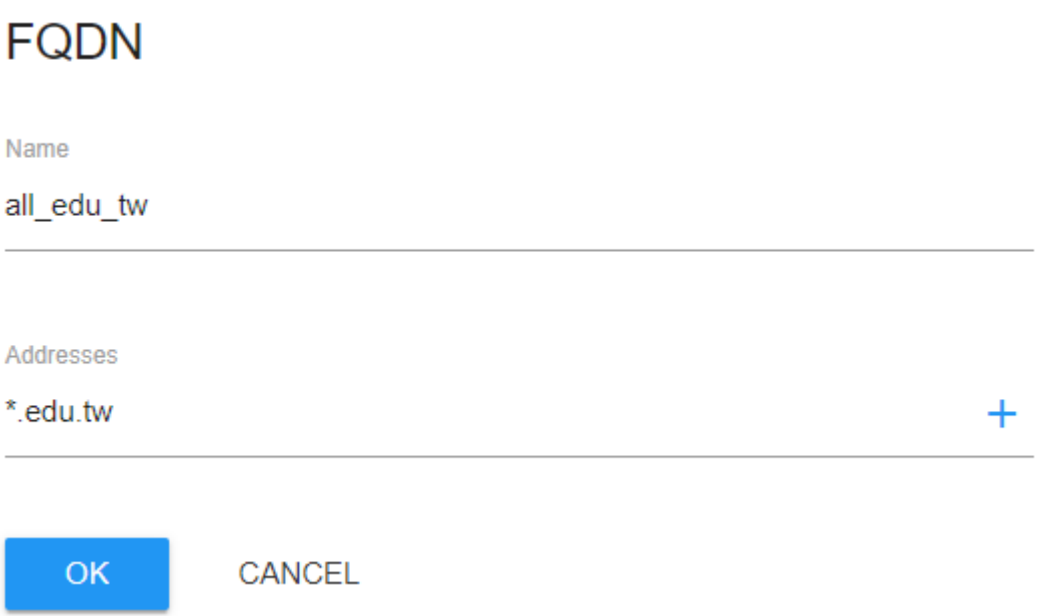
LAN > ADD


Name
LAN_10.168.1.0
Related ISP
Auto
Port
Port 4
Subnet
10.168.1.0/24
Route
Interface
Gateway
IP
10.168.1.254
DHCP
Enabled
OK
CANCEL

LAN

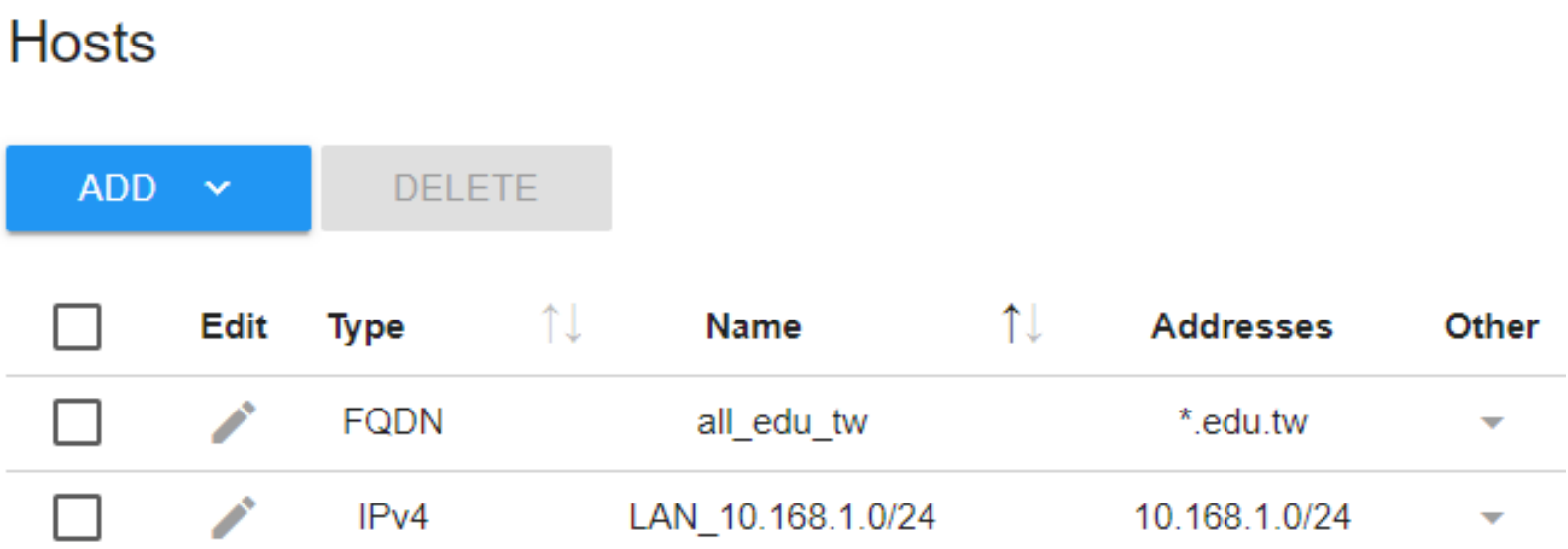
LAN configuration is done as follows:

Object > Host > ADD > FQDN



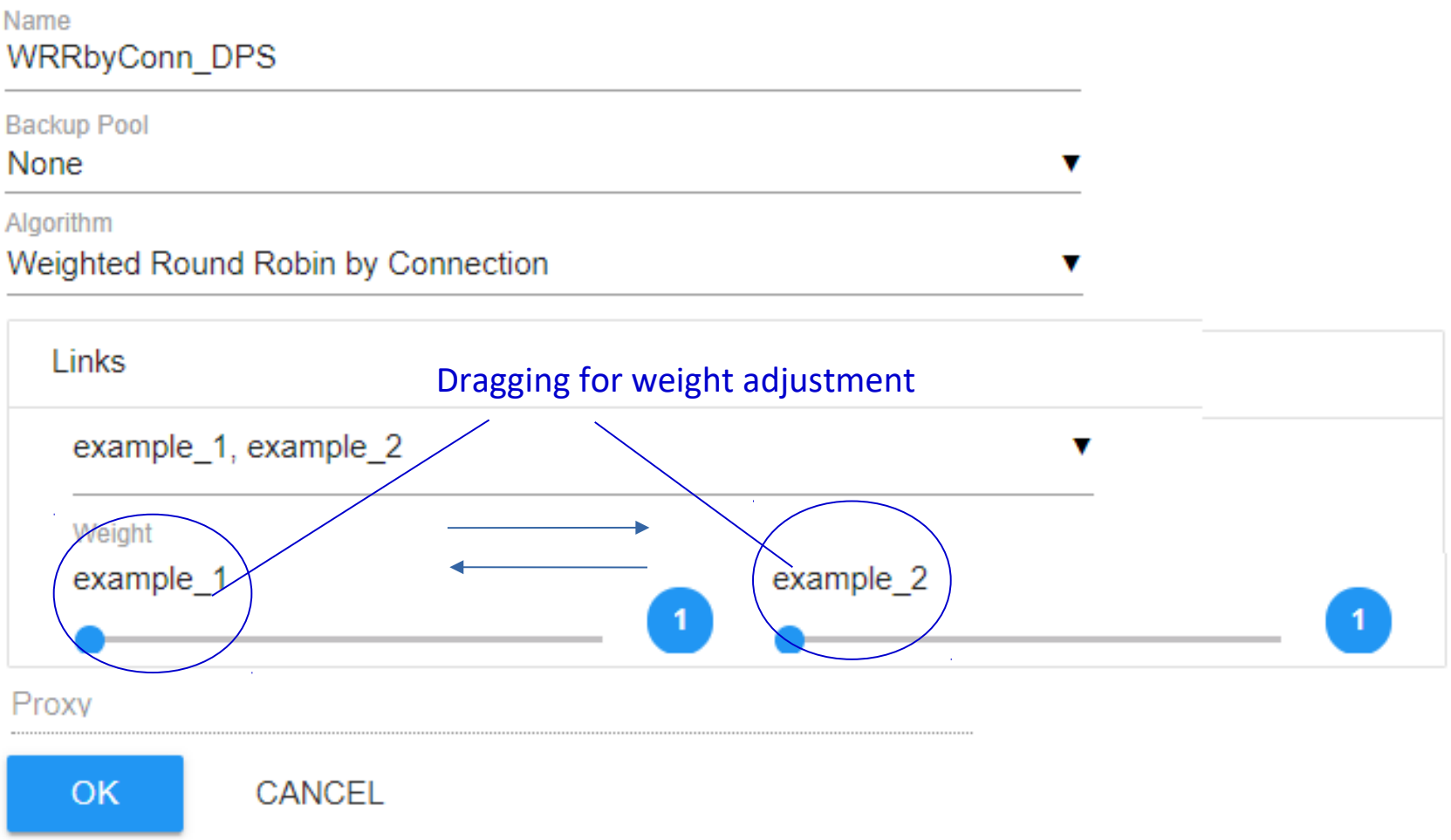
Object > Host

Host Object configuration is done as follows:



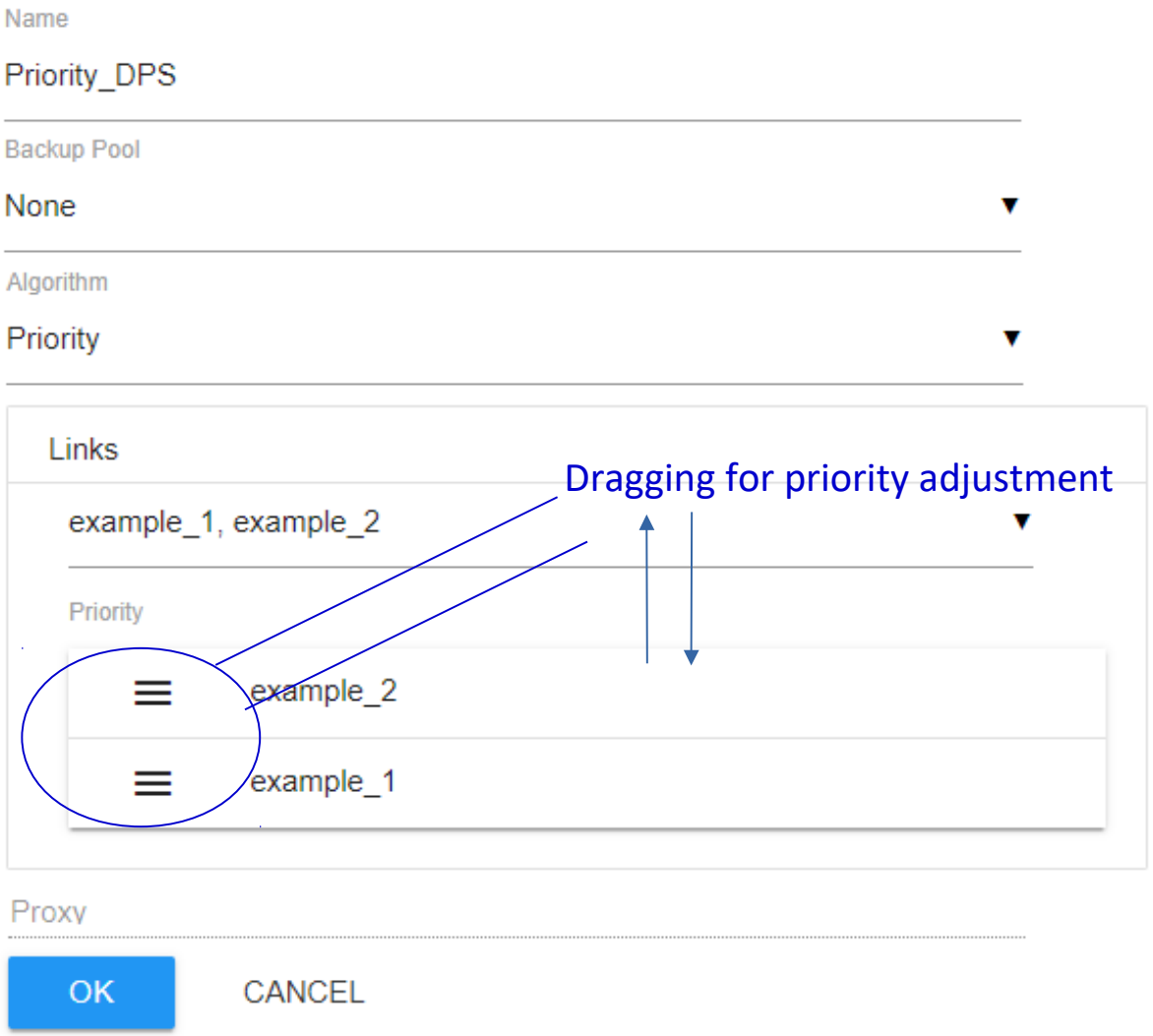
Objects > DPS > ADD > WRR by Connection

This is for LAN users to access the Internet via both WAN links.



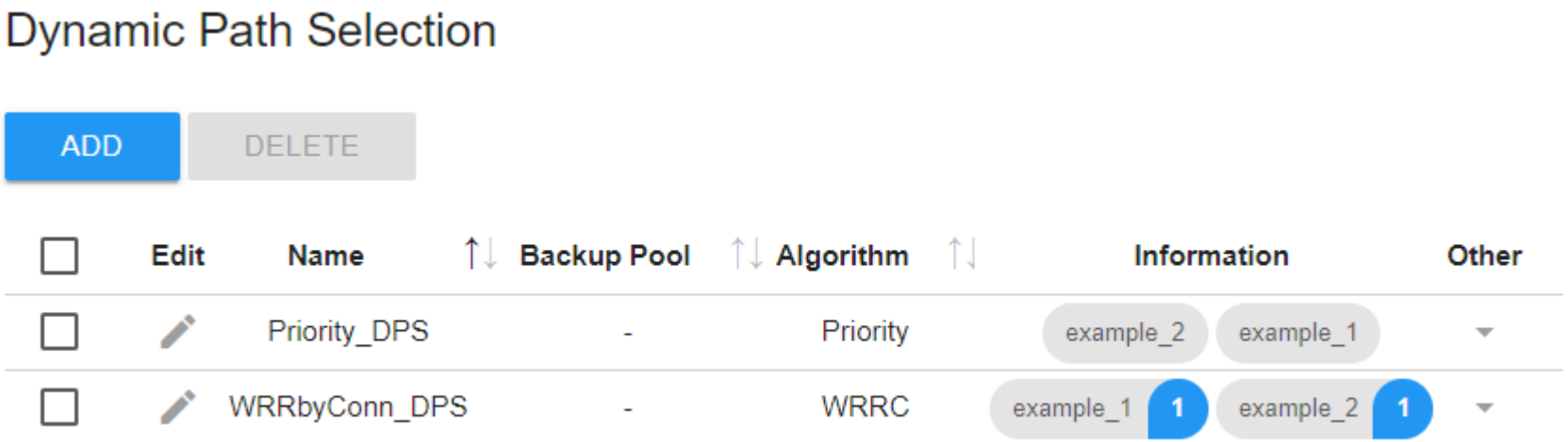
Object > DPS > ADD > Priority

Sending traffic destined for all.edu.tw via WAN 2, and via WAN 1 if/when WAN 2 is down.



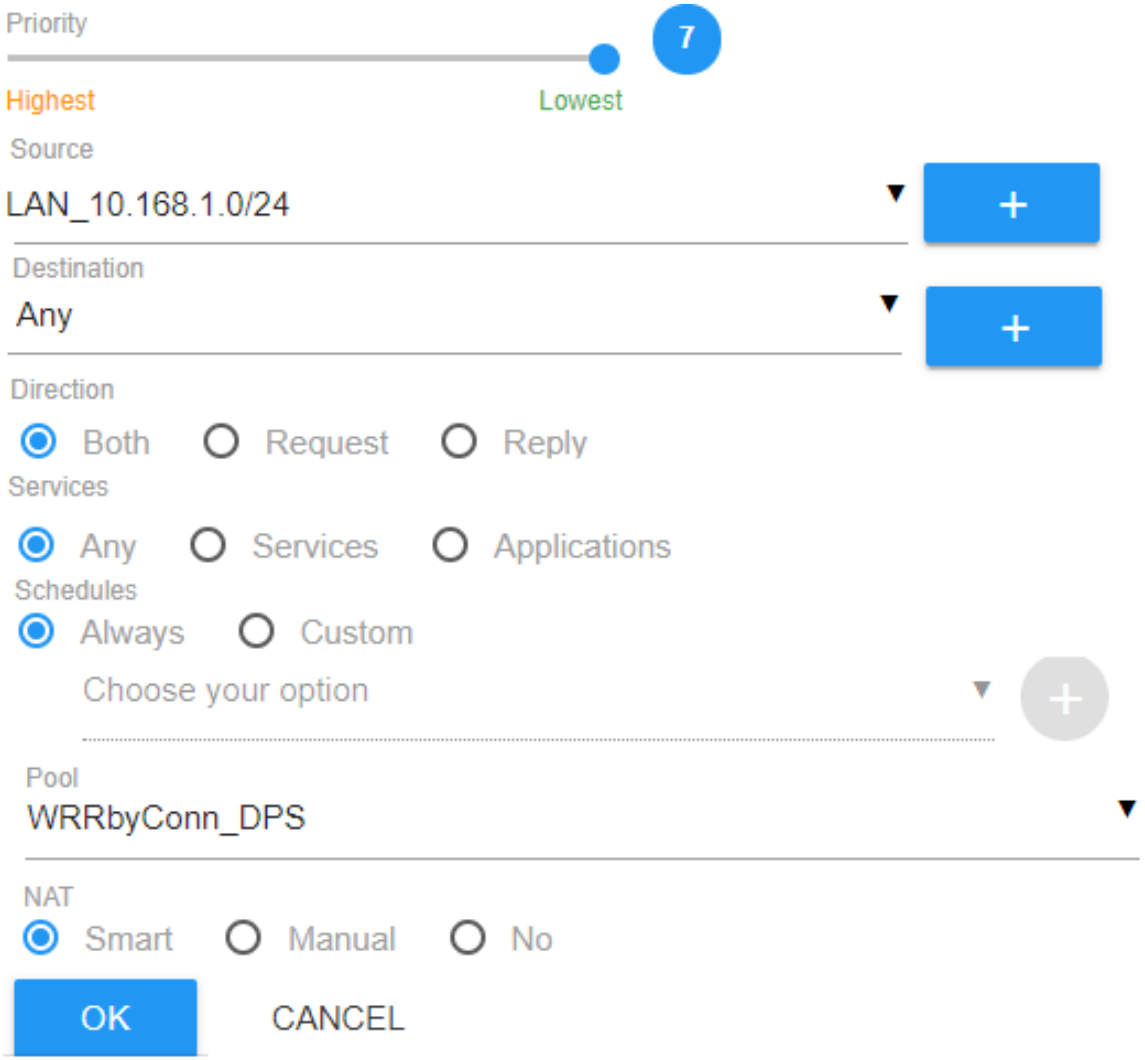
Dynamic Path Selection (DPS)

DPS configuration is done as follows:



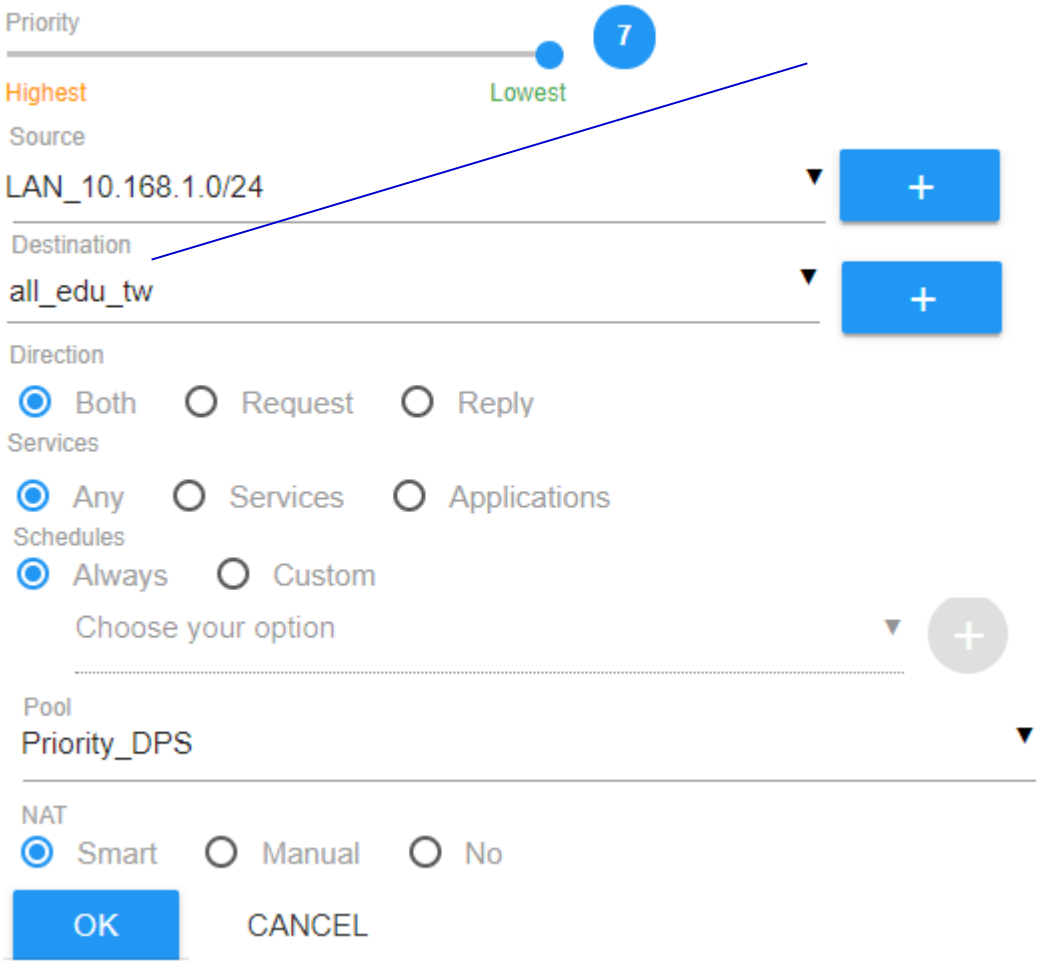
Policy Routing > ADD

This is for all traffic to the Internet.

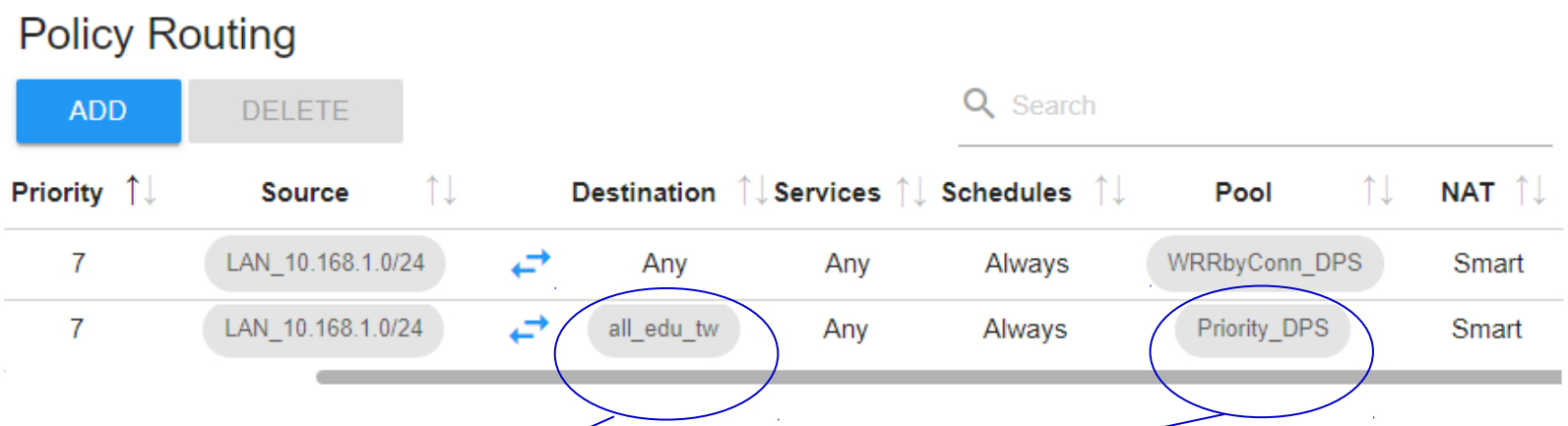


Policy Routing > ADD

This is for the traffic destined for all.edu.tw.



Policy Routing



Policy Routing for traffic destined for all.edu.tw is done.

Done!

1. The LAN hosts of 10.168.1.0/24 should be able to access the Internet via both WAN links concurrently.

2. Check if traffic destined for all.edu.tw goes to the Internet via WAN 2.