Setup a Professional ISP Using MikroTik and Bandwidth Control in Bridge mode

MikroTik Routers to deliver Giga-bits of Traffic, Also we use it as a Bandwidth controller and firewall.

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Presentation Objectives

MikroTik as Core & Bandwidth Controller and Distribution Router for ISP

- Limitations of MikroTik
- Advantages of MikroTik
- Using Mikrotik as a Bandwidth Controller and Firewall.
- Sizing and choosing Suitable Hardware
- Splitting Load to Multiple Routers
Target Audience

- ISP more than 500 mbps Bandwidth.
- Fast growing Broadband ISP who will reach their achievement as a market leader.
- 500 mbps bandwidth at NOC
- ISP looking for cost effective Bandwidth Controller.
- ISP interested in Distribute their service.
Current Trends

Options available for ISPs

Core Router:
- CISCO
- JUNIPER
Limitations of MikroTik

Router Hardware
- Tested & Certified Hardware with Benchmark
- Best performing Network Adapters System CPU Uses 32 bit
- Difficulty in Expansion & Scaling
- Slow Packet Forwarding & packet Drops at High Load
MikroTik Advantage

- Runs on Standard Hardware
- Quick, simple and Low Cost Licensing
- Use Existing Knowledge and experience on MikroTik
- GUI to monitor
- Cost Effective Redundancy Planned Scale-ability
Common Do's and Don't

- Separate Core And Access Routers  Avoid NAT
- Avoid Connection Tracking
- Allocate One Interrupt per LAN Card  Allocate One CPU Core per LAN
- Local Traffic not through Core Router
- Fast CPU & RAM
Proposed Network Diagram
In Core Router CCR 1072-1G-8S+ Connect More than 5Gbps Internet Bandwidth, License Level 6 which is direct connected to the BW controller and GGC Router. All the NAT and Upstream and Downstream BGP announce from this router.
In Caching Router CCR 1072-1G-8S+ Server More than 8 Gbps Caching Bandwidth, License Level 6 which is directly connected to the BW controller and Core Router. All the Caching Server is connected to this router and Caching Server BGP Network is announced from here.
Bandwidth Controller

In Bandwidth Controller Router Dell Server R430 with 4 1G Lan Card and 4 10G Lan Card, which is using as a firewall and Bandwidth Controller. All the Firewall and queuing policy is implementing here. Logically it using as a Bridge Mode, While Distribution router directly Connected to the core and Caching server through this router.
In Distribution Router CCR 1072-1G-8S+ Distribute all the bandwidth, all kinds of distribution and routing policy is implementing here. Example- BGP, OSPF, Static routing.
Working Policy

To done this Task We Need to know about some knowledge of BGP and Configure it as per the proposed diagram.

What Is BGP?
The Border Gateway Protocol (BGP) is the protocol used throughout the Internet to exchange routing information between networks. It is the language spoken by routers on the Internet to determine how packets can be sent from one router to another to reach their final destination.

What Is ASN Number?
An AS is a group of IP networks operated by one or more network operator(s) that has a single and clearly defined external routing policy. There are two types of AS Numbers:
Public AS Numbers (1-64,495)
Private AS Numbers (64,512 – 65,534)
Reserved to use documentation (64,511-64,496)
0 and 65,535 – Reserved.
MikroTik BGP
BGP PROPERTIES
CORE ROUTER BGP INSTANCING AND CONFIGURATION
DISTRIBUTION ROUTER BGP
NETWORK CONFIGURATION
DISTRIBUTION ROUTER BGP PEER CONFIGURATION
Now We Can do It to Our networks
Scalability

- Current Setup is can be scaled to 10 gig
- Standby Router is kept for fail over
- Total Cost of ownership of this setup is just 5% of other options
- Existing Experience and knowledge on MikroTik is used for configuration and management.
- No dependancy on any proprietary hardware.
QUESTIONS
Thanks For Attending MUM

Any Further query
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