Building an ISP using OSS

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**Bits missing! Lightning Talk Edition**

Introduction

- Both ISP & Hosting spheres have heavy Open Source Software use

- Within iseek over 99% of all server environments are Linux based

- Typical Linux use in ISP spaces is in supporting infrastructure such as Mail, DNS, Radius, DB etc.

- Termination however (ie. What actually handles a users PPP session) is (or was) typically handled by Cisco equipment

The Basics
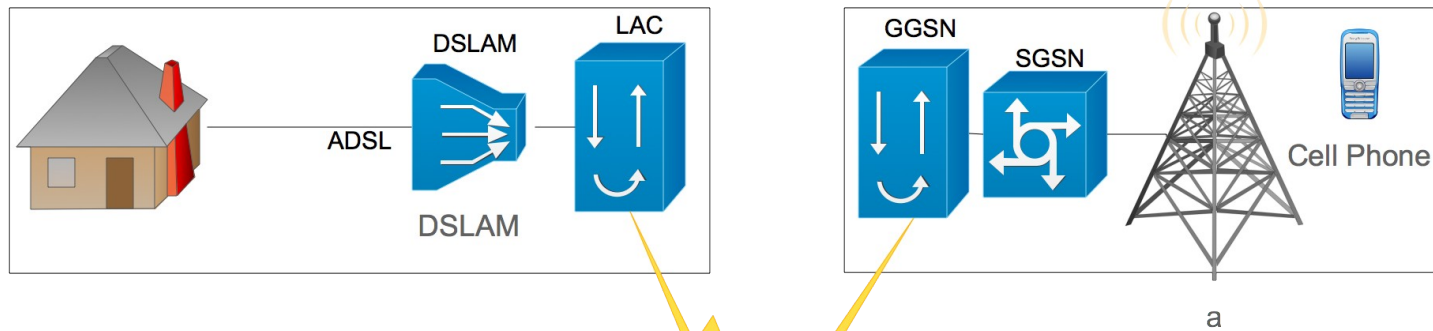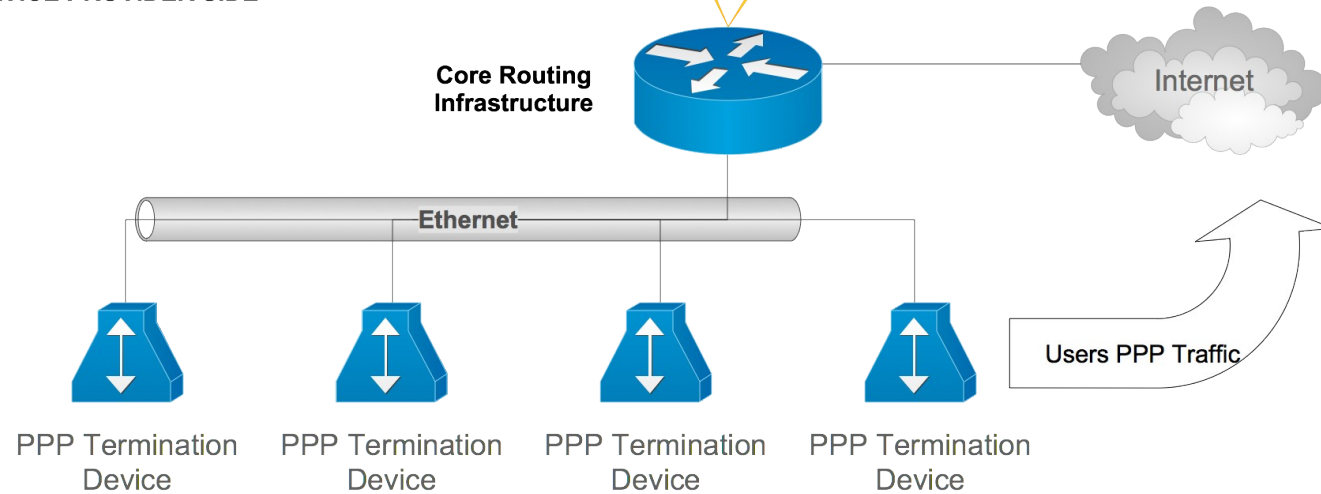
General 3G/ADSL Termination using Cisco Equipment

Comparison

- Traditional
  - Cisco 7200 PPP Termination devices
  - Limited cluster support. Each session terminated on a specific router. Balancing done with multiple endpoint addresses in Radius attributes
  - Walled Garden & Throttle support impact overall service count
  - ~$10,000 per device for 5,000 PPP sessions

- The Open Source Way
  - Multiple Linux servers (about 6 per cluster)
  - Commodity server equipment with CentOS deployment
  - L2TPNS Installation
  - Multiple walled garden capabilities
  - Multiple Radius based Throttle capabilities
  - Multicast based clustering support
  - ~$8,000 per cluster for 50,000 PPP sessions

L2TPNS
History

Homepage: http://l2tpns.sourceforge.net

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- First release in mid 2004, originally written by two Optus engineers for termination of Optus Home ADSL services.
- Original Developers
    - Brenden Odea (now a Google employee)
    - Fred Nerk
- Reached final 'Stable' in late 2006
- Development started again with iseek code contributions in early 2010 adding:
    - Multiple Walled Garden support
    - Multiple Dynamic Address allocation pool support
    - Automatic addition of realm for 3G compatibility
    - Plugin to rewrite calling station id into username for 3G compatibility
    - Plugin to rewrite Australian +61 → 0 for easier 3G compatibility
    - Centos5 Compatibility

~~Live~~ Demonstration

- Compile and install (or RPM build, there is a SPEC!)
- How configure a ~~two~~ one node L2TPNS cluster
  - BGP Setup
  - ~~IP Address pool setup~~
  - ~~Base Garden name setup~~
  - Linux side IP Forward Setup (ip_forward sysctl)
  - Tweaking settings (MTU, Radius timeouts, Duplicate IP/Session behaviour etc)
- Testing a 3G termination
- ~~Enable/Disable Walled Garden on session~~
- ~~Enable/Disable Throttle on session~~
- ~~Looking at accounting data~~
- Kicking a user offline

Configuration

- BGP Configuration
  router bgp 12345
  neighbour 1.2.3.4 remote-as 12345
    - No BGP secret support (Router ACLs are important!)

- IP Pool Setup (Simple config)
  - In /etc/l2tpns/ip_pool
      1.2.3.4/24
    - Requires l2tpns restart (careful on clusters or face split brain IP announcements)
- Walled Garden support
  - set gardens "mygarden"
  - set default_garden "mygarden"
    - Radius attribute thrown to add Walled-Garden.
    - Additional Radius attribute to specify Walled Garden name

Looking at users

- List them all:
  - mylns# show sess
  - SID TID Username   IP   I T G 6   opened downloaded   uploaded idle LAC   CLI
  - 1   2 xxxx   123.200.1.68 N N N N   16247   1395754   633903   3 123.200.199.233 xxxxx
  - 2   1 xxxx   123.200.1.19 N N N N   25937   41751859   6180106   9 123.200.199.237 xxxxx
  - 4   2 xxxx   123.200.1.27 N N N N   10192 112845699   3571154   51 123.200.199.233 xxxxx
  - <snip>
- List one of them:
  - mylns# show sess 1
    - Session 305:
    - User: xxxxx
    - Calling Num: xxxxx
    - Called Num: splns357
    - Tunnel ID: 2
    - PPP Phase: Network
    - IPCP state: Opened
    - IPV6CP state: Closed
    - CCP state: Stopped
    - IP address: 123.200.1.68
    - Unique SID: 240351
    - Opened: 24727 seconds
    - Idle time: 24 seconds
    - Bytes In/Out: 12225175/3155542
    - Pkts In/Out: 17357/13576
    - MRU: 1500
    - Rx Speed: 8640000
    - Tx Speed: 8640000
    - Intercepted: no
    - Walled Garden: no
    - IP Pool: Default
    - Throttled: no

One Handed Admin

- Kick a user live
  - See if the user is online: show session | i user
  - Kick off the user: drop user bad@user.com
  - Or: drop session [session-id]

- Throttle a user live
  - Does work but Radius attributes are generally better unless you want to do paid topups
  - Find the user: show session | i user
  - Throttle the user to 64k up/down: throttle nice@user.com 64
  - Unthrottle user: no throttle nice@user.com

Current Deployments

- iseek continues to use L2TPNS for multiple projects including:
  - Virtual ISP Deployments
  - Gowireless Internet Services (15,000+ users)
  - A number of specialist deployments including:
    - Name Withheld (100,000 users across 2 clusters)
    - Name Withheld (25,000 users across 2 VMWare clusters)

Future Direction
Do we have time?

- Code base work still on going
- Currently planned features:
  - Free content support (ie. Separated accounting files based on destination)
  - Garden/Throttle based accounting (ie. Data loss reports)
  - Benchmark suite/guide to facilitate lower cost benchmarking

Questions?

Thanks!