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
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

- 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 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              IT 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 xxxx
  - 2  1 xxxx                       123.200.1.19  N N N N      25937   41751859    6180106    9 123.200.199.237 xxxx
  - 4  2 xxxx                       123.200.1.27  N N N N      10192  112845699    3571154   51 123.200.199.233 xxxx
  - <snip>

- **List one of them:**
  - `mylns# show sess 1`
  - **Session 305:**
    - **User:** xxxx
    - **Calling Num:** xxxx
    - **Called Num:** splIns357
    - **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!