



Business DIY:Building Enterprise Infrastructure on Linux Part 1



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Handouts

- Handouts for this session are not on the CD but are available for download from:

<http://www.sinenomine.net/downloads/lahulpe/L975.pdf>

Agenda

- Why do it yourself?
 - What are the necessary pieces?
 - What tools do we have to put the pieces together?
 - Where can more information be found?
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Why Do It Yourself?

- In many cases, commercial packages are overkill
 - Understanding of the basic construction and design protocols
 - There are loads of commercial packages available, but the price tag is often prohibitive
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DIY

- It's a case of “sweat equity”
 - Building it yourself gets you exactly what you need at a price you can afford
 - Analagous to going to the home improvement store and buying the lumber and tools – at the end of the project, you have new skills, and a sense of accomplishment
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But I Don't Know How...

- Well, that's why you're here...8-)
 - Three keys to success:
 - A Plan
 - A Materials List
 - Plenty of Help
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Our Scenario

■ Penny Penguin



■ Ice Floe Homes

- Premier provider of prefab igloos to discerning consumers in a growing market
 - Wants to build a WWW-based business
 - Concerns:
 - Security
 - Reliability
 - Scalability
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Our Hero

- Claude Consultant



- Business specialty:

- Business Infrastructure
 - Network Design
 - Bulk Herring Purchases
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The Plan



- Successful implementations need:
 - Business Goals
 - Network Design
 - Network Address Plan
 - Application Server Design
 - Product Selection
 - Timeline
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Penny's Dream eBusiness



- Electronic mail for all her employees
 - Online ordering system for custom igloo homes
 - Access to existing manufacturing data and billing living in her OS/390 system
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Plan: Goals



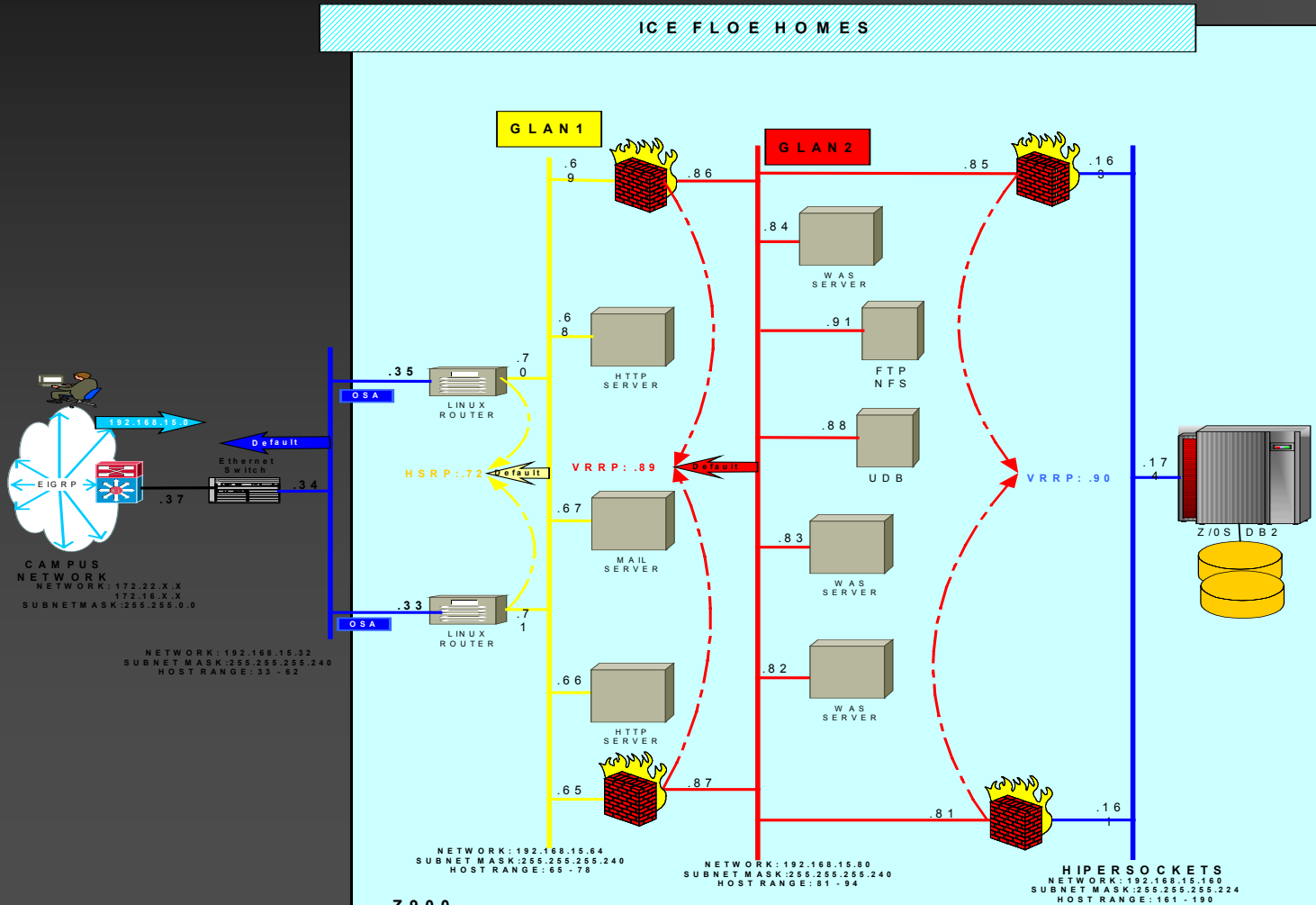
- WWW server and application server infrastructure should be separate to allow individual scalability and later load-balancing
 - Traffic should flow only between designated sources and destinations
 - Data should be stored in existing enterprise database and accessed via live queries
 - Design should consume a minimum number of externally routable IP addresses
 - Failover and routing resilience should be a feature
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Design Concepts



- Separate application server/WWW server requirement and live data queries indicate a multi-tier implementation
 - Some firewalling needs to be present to handle IP NAT and rules
 - Cost will be a factor, but Penny has a z900 for her z/OS system
 - Speed to market is a factor, as the Packed Earth Housing Collective is opening new stores in Penny's area
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Design Concepts



Design Concepts



- Design uses virtual networks and Linux on S/390 to rapidly deploy solution
 - Use of z/VM and Guest LAN infrastructure replicates standard logical design procedures inside z900
 - Application and HTTP servers are separated, access to database is performed with remote queries
 - Linux instances serve as firewalls
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Why Do It This Way?

- Primarily, DIY infrastructure is emulating the architecture built with commercial products, but with open-source applications filling the commercial roles
 - In this concept implementation, we use Linux as the platform to replace network devices and as the base OS for the applications servers
 - Note that we choose not to replace z/OS as the database server; this is usually a religious issue and not necessary for success
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Application Choices



- Penny needs solutions for:
 - Operating System
 - Firewall
 - Network routing
 - HTTP server
 - Web applications server
 - Mail server
 - IMAP server

- Claude chooses to use Linux applications to best meet Penny's needs
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Operating System



- SuSE
 - Red Hat
 - TurboLinux
 - Debian
- Claude happens to have SuSE handy, and most of the tools needed are present in that release.
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Firewall Solutions



- Linux 2.2 based:
 - Ipchains
 - Portfw
 - Linux 2.4 based:
 - iptables
 - Ipchains/iptables:
 - Provides NAT/PAT/port forwarding
 - Access-list based packet filtering
 - Included with a majority of Linux distributions
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Network Routing



- Zebra
 - Advanced IP Routing
 - iproute2
 - Zebra provides RIP, RIP2, OSPF, and BGP routing daemons
 - Advanced IP routing adds virtual IP address management, VRRP, equal-cost route injection
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HTTP Server



- Apache
- thttpd
- Apache is the de-facto standard and is portable



Web Applications Server



- Tomcat
 - PHP
 - Perl/CGI

 - Websphere
 - BEA Weblogic
- For simplicity's sake, PHP is generally capable of handling most requirements, but use of Websphere or Weblogic may be desirable for later development of other applications
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Mail (SMTP) Server



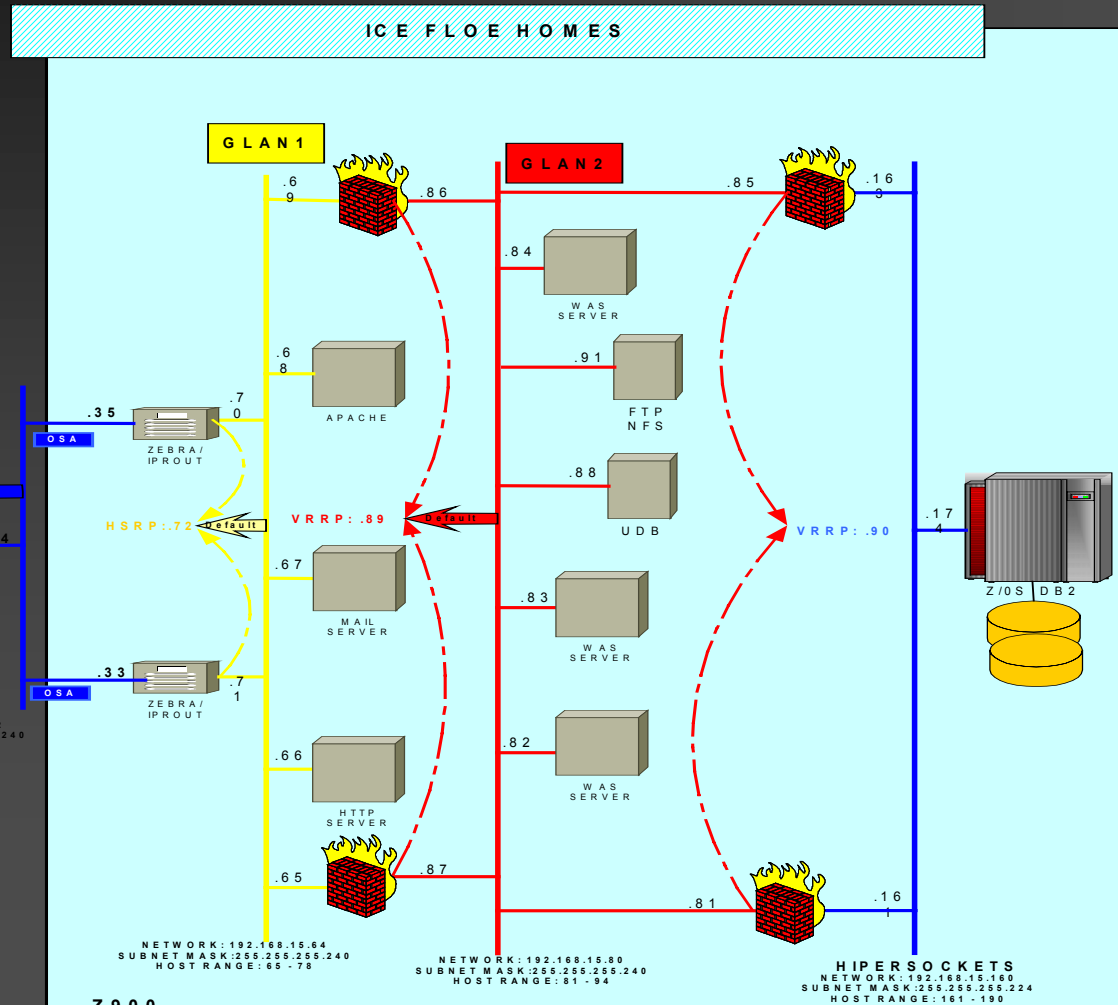
- Sendmail
 - Exim
 - Postfix
- Sendmail is the most widely supported tool, but is more difficult to configure
 - Exim or postfix are the default in Debian and newer SuSEs
 - If a choice is available, sendmail is the safest bet
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IMAP Server



- UW IMAP
 - Cyrus IMAP
 - Cyrus provides ACL security for mailboxes and folders (desirable)
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Applications Design



Applications List



■ Open Source

- Iptables
- Zebra
- Apache
- Cyrus IMAP
- Sendmail

■ Commercial

- SuSE Linux (2.4 kernel)
 - Z/VM 4.3
 - Websphere AS
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More Information

- www.sourceforge.net
 - www.isc.org
 - www.apache.org
 - www.suse.de
 - www.ibm.com
 - Many OS tools
 - Sendmail/bind
 - Apache info
 - SuSE info
 - Websphere/VM
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Part 2: Steps

- In part 2, we:
 - Show defining the network to VM
 - Setting up Linux configuration
 - Loading applications
 - Configuring failover
 - See you after the break!
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