

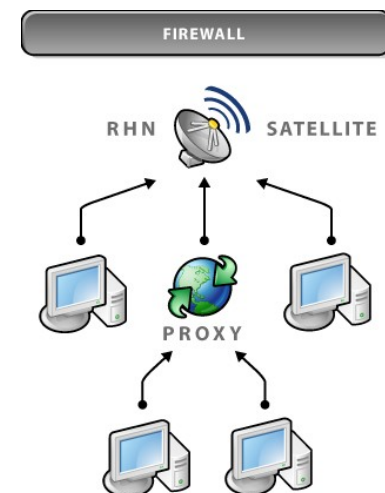
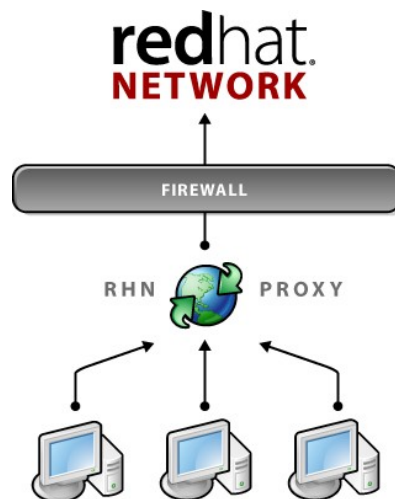
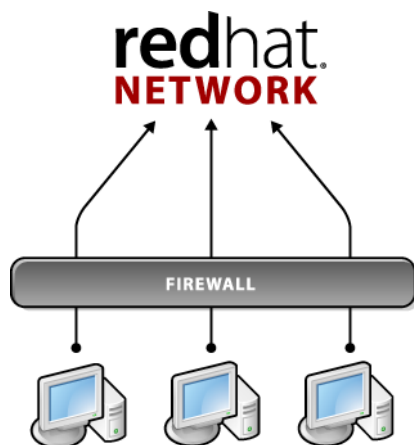


Managing your Red Hat Enterprise Linux guests with RHN Satellite

Matthew Davis, Level 1 Production Support Manager, Red Hat
Brad Hinson, Sr. Support Engineer Lead – System z, Red Hat
Mark Spencer, Sr. Solutions Architect – System z, Red Hat

Red Hat Network

- Red Hat's modular, Web-based Linux management platform
 - Highly scalable solution
 - Integrates with existing platforms
- Modular approach
 - Updates – Management – Provisioning – Monitoring



What is Red Hat Network?

A systems management platform designed to provide complete lifecycle management of the operating system and applications.

- A single solution for lifecycle management of compute resources
 - Installing and provisioning new system
 - Updating systems
 - Managing configuration files
 - Monitoring performance
 - Redeploying for a new purpose



Why use Red Hat Network?

Red Hat Network makes Linux:

Deployable

- Provision thousands of machines at once without touching them

Scalable

- Expand IS/IT capabilities without expanding resources

Manageable

- Update 1,000 systems as easily as 1

Consistent

- Ensure that security fixes and configuration changes are applied across your organization

Benefits of Red Hat Network

Lower system administration costs

- Management tools let you maximize your hardware investment
- Complete installation takes only minutes (Hosted) to 1-2 days (Satellite)

Increase productivity

- 4-10X system admin productivity, easily allowing 150+ systems/system admin
- Flexible architecture allows use of GUI, API, or CLI (scripted) interface
- All tasks automated - allowing you to move beyond “guru bottleneck”

Improve security

- Content stream comes directly & immediately from Red Hat
- Complete audit trail and various predefined reports
- Policies and permissions provide centrally managed role-based administration

Example: Using Red Hat Network for adaptive infrastructure

Many enterprises want to use hardware more efficiently

- Demand for externally-facing services often shifts. In order to adapt to changing demand conditions, administrators need flexible systems
- It can take hours to manually re-deploy a single system

Detect when demand increases

- Red Hat Network can alert you when systems or applications reach defined levels of performance
- Allows you to take action before customers notice performance degradation

Re-deploy systems quickly

- Red Hat Network stores profiles that can include packages, custom applications, configuration files, and more
- Use the profiles to change under-utilized systems to the type of system needed to meet current business needs
- In 20-30 minutes, you can have hundreds of systems re-deployed

Red Hat Network components

Service Modules

- Update
- Management
- Provisioning
- Monitoring

Architectures

- Hosted
- Satellite



Update Module

**Easily obtain
security updates,
patches, and new OS
versions**



**Remove undesired
packages through
the simple RHN web
interface**

**Automatically update
systems with the
latest security fixes**



- Included in every Enterprise Linux subscription
- All content is digitally signed for added security
- Full dependency checking ensures the integrity of your system

Management Module



Manage groups of systems as easily as a single system

Assign permissions to administrators for managing different groups or roles



Schedule updates to occur during maintenance windows

- Powerful search capabilities let you identify systems based on packages, system information, and much more
- Compare package profiles between systems to quickly spot differences
- Manage both Enterprise Linux and Solaris systems within the same RHN interface

Provisioning Module

Provision existing or bare metal systems using predetermined profiles or system cloning



Improve consistency by using RHN to manage and deploy configuration files

Undo problematic changes with snapshots and rollback



- Use Provisioning to deploy Enterprise Linux, other applications, and customized configuration files
- Kickstart writer lets you quickly create templates used for provisioning
- Issue remote commands to perform additional pre- and post-install instructions

Monitoring Module



Dozens of low-impact probes can be set for each system

Group probes into suites for fast deployment



Receive email or pager notices when a probe reaches a predefined warning or critical threshold

- Monitor systems, as well as applications from Oracle, BEA, Apache, and MySQL
- View reports and graphs of probe performance over time
- Temporarily disable notifications – helpful when performing system maintenance
- Monitoring Module requires a Satellite deployment model

What can be monitored?

System Probes

Linux: CPU Usage, Disk I/O Throughput, Disk Usage, Interface Traffic, Load, Memory Usage, Process Health, ...

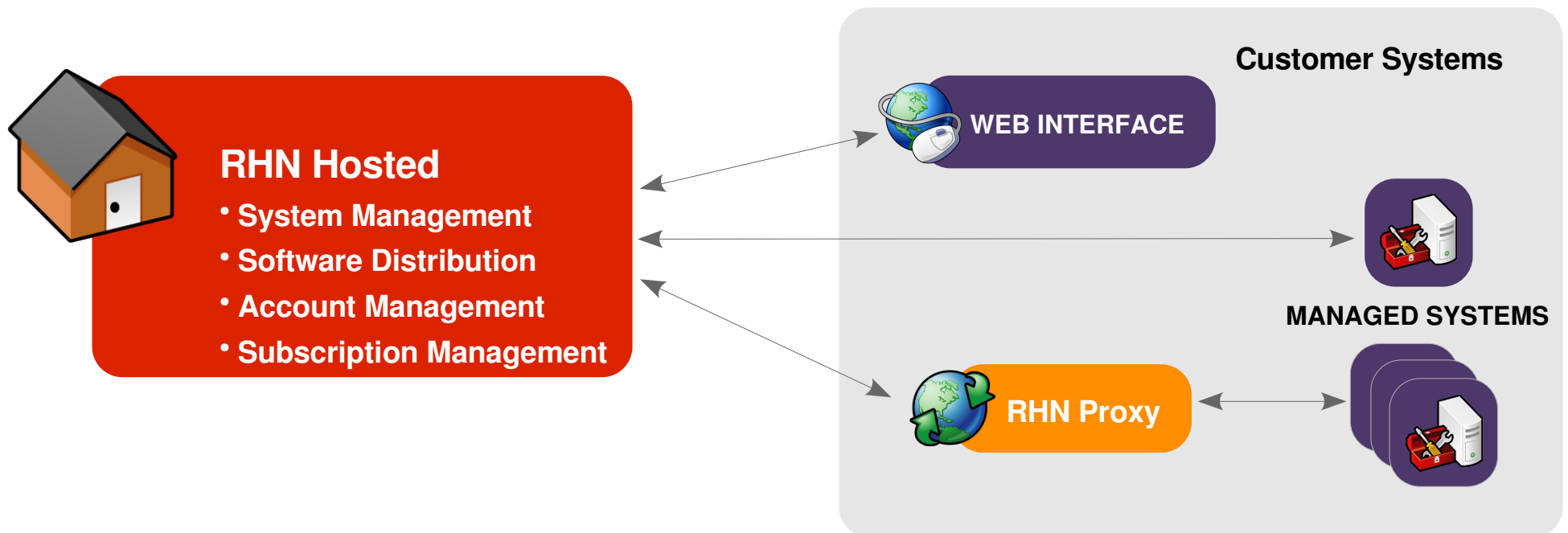
Network: FTP, HTTP, HTTPS, IMAP, Ping, POP, RPCService, SSH, SMTP, ...

Log Agent: Log Size, Pattern Matching, ...

Application Probes

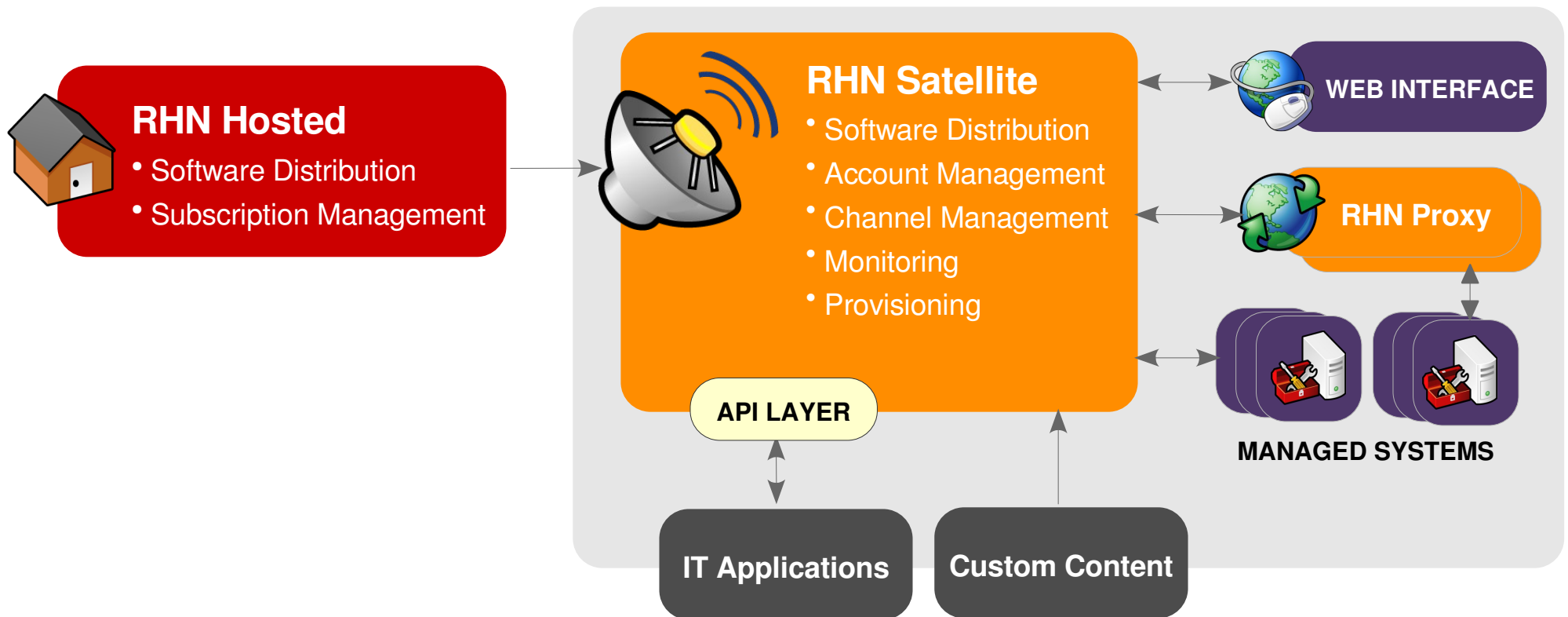
- **Oracle 8i/9i:** Availability, Client Connectivity, Disk Sort Ratio, Index Extents, Locks, Sessions, Tablespace Usage, TNS Ping, ...
- **BEA Weblogic:** Heap Free, JDBC Connection Pool, Server State, ...
- **Apache:** Processes, Traffic, Uptime
- **MySQL:** Database Accessibility, Opened Tables, Query Rate, Threads Running
-
-
- You can also create your own probes using tools provided through Red Hat Network.

Hosted deployment model



- Quick setup is designed to enable management for small deployments
- All system information, profiles, and packages are stored in Red Hat's servers
- Each managed system connects across the Internet for all managed actions
- RHN Proxy can be added to lower bandwidth use by caching packages locally

Satellite deployment model



- Enterprise management solution – enhanced control
- Local database stores all packages, profiles, and system information
- Syncs content from RHN Hosted
- Custom content distribution
- Can run disconnected from the Internet

Why use a Satellite Server?

Improved performance

- Systems connect to Satellite instead of each downloading content from Red Hat
- Satellite syncs with Red Hat to get the latest packages and errata
- Embedded Oracle database scales to thousands of connected systems

Better control

- Satellite can run disconnected from the Internet for maximum security
- Use custom channels to distribute in-house or 3rd party content
- Build around your processes – create cloned channels for staged environments

Advanced functionality

- Monitoring and Solaris Management only available to Satellite users
- Satellite enables kickstarts with Provisioning Module
- Kickstart trees integrated into package repository for easy provisioning
- Store and deploy configuration files from the Satellite to improve consistency

Satellite terms to understand

- ***Channel:*** A list of software packages. There are two types of channels (base, child).
- ***Organization Administrator:*** User role with highest level of control. This user can add users, systems, and system groups.
- ***Channel Administrator:*** This user can create/clone/modify software channels.
- ***Red Hat Update Agent:*** Client application that connects to RHN/Satellite.

How it Works

■ Database

- Your existing database (standalone) or bundled (embedded Oracle 9i R2)

■ RHN Satellite Server

- Entry point for *Red Hat Update Agent* running on clients
- Apache HTTP server serving XML-RPC requests)

■ RHN Satellite Web Interface

- Advanced system, system group, user, and channel management interface

■ RPM Repository

- Package repository for Red Hat RPM packages as well as middleware/custom RPM packages.

How it Works

■ Management Tools

- Database and file system synchronization tools
- RPM importing tools
- Channel maintenance tools (Web based)
- Errata management tools (Web based)
- User management tools (Web based)
- Client system and system grouping tools (Web based)
- *Red Hat Update Agent* on the client systems

Installation Requirements

■ Software

- RHEL 4 (31-bit or 64-bit)
- @Base install

■ Hardware

- 1 to 2 IFLs
- 2 to 4 GB storage (memory)
- 1 x mod3 for OS install
- Estimated 12 GB disk space for embedded database
- 6 GB per channel (disk)

Infrastructure Requirements

■ Network Ports

- (80, 443) outbound, unless running in disconnected mode
- (80, 443) inbound, for WebUI and client requests
- (4545) outbound, if monitoring is configured and probes are active on clients
- (5222) inbound, to push actions to client systems
- (5269) inbound, to push actions to RHN Proxy Server

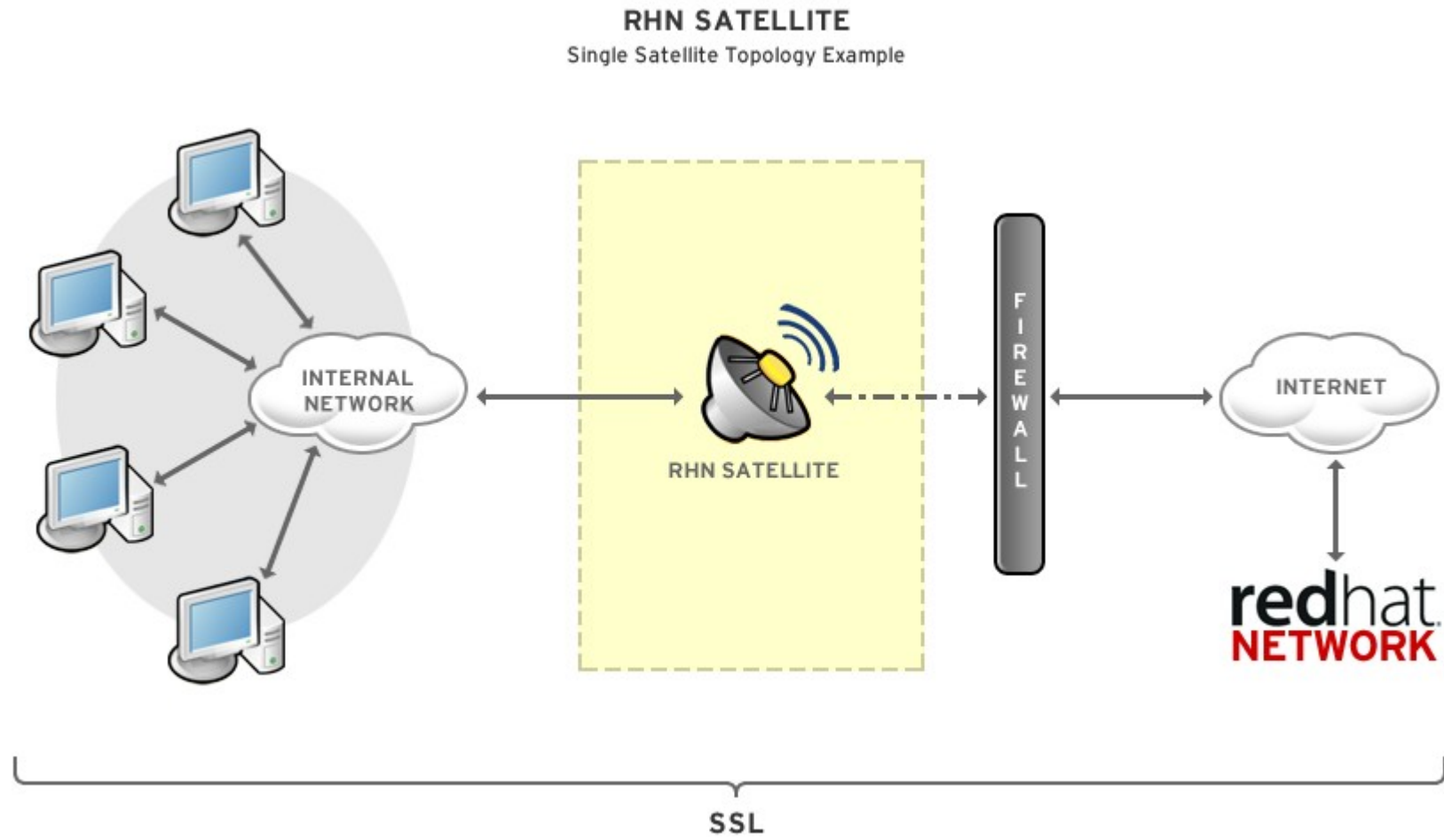
■ Other Requirements

- Red Hat Network account
- Entitlement Certificate

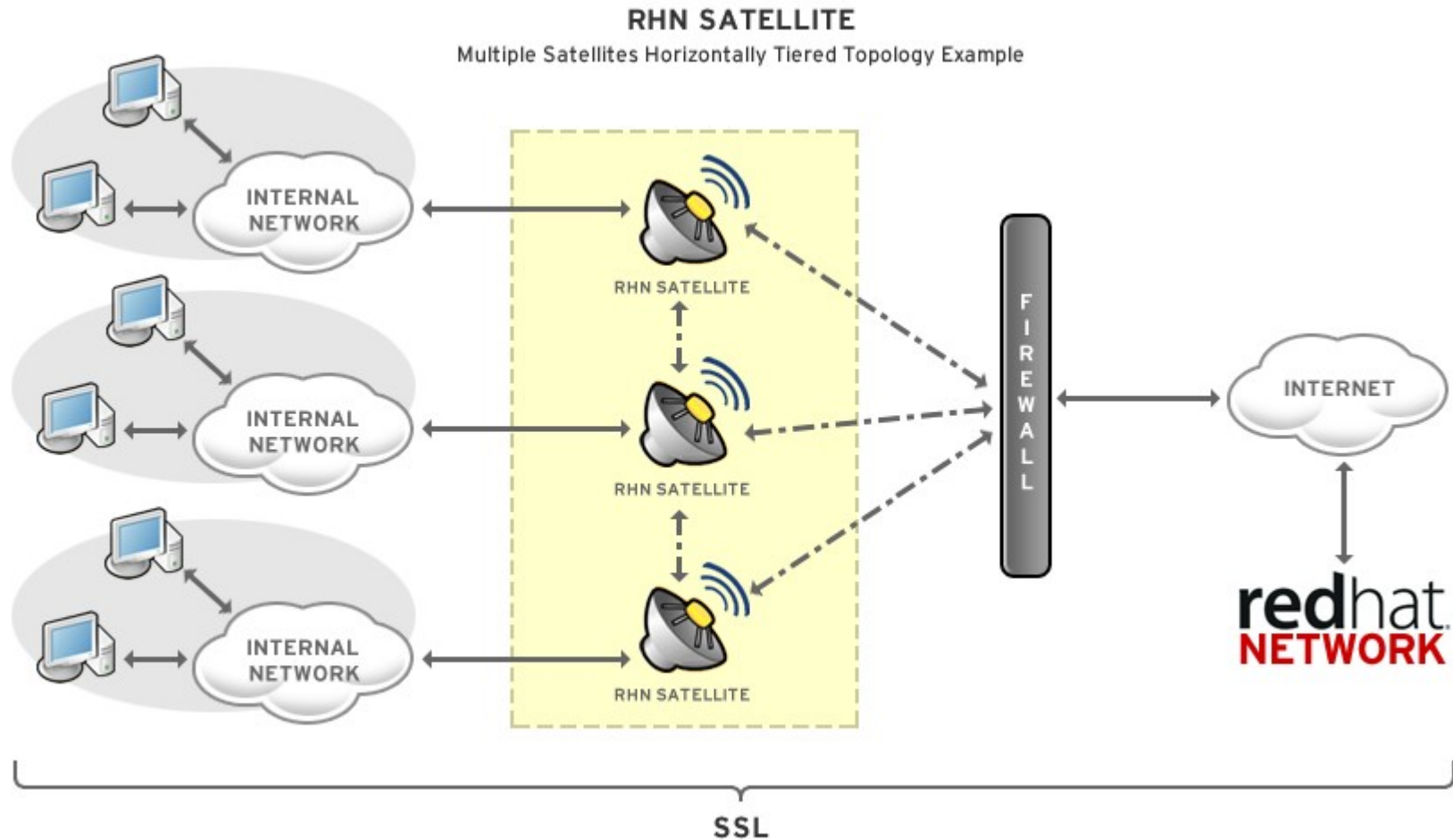
Example RHN Certificate (XML)

- `<rhncert version="0.1">`
- `<rhncert-field name="product">RHN-SATELLITE-001</rhncert-field>`
- `<rhncert-field name="owner">Clay's Precious Satellite</rhncert-field>`
- `<rhncert-field name="issued">2005-01-11 00:00:00</rhncert-field>`
- `<rhncert-field name="expires">2005-03-11 00:00:00</rhncert-field>`
- `<rhncert-field name="slots">30</rhncert-field>`
- `<rhncert-field name="provisioning-slots">30</rhncert-field>`
- `<rhncert-field name="nonlinux-slots">30</rhncert-field>`
- `<rhncert-field name="channel-families" quantity="10" family="rhel-cluster"/>`
- `<rhncert-field name="channel-families" quantity="30" family="rhel-ws-extras"/>`
- `<rhncert-field name="channel-families" quantity="10" family="rhel-es-extras"/>`
- `<rhncert-field name="channel-families" quantity="40" family="rhel-as"/>`
- `<rhncert-field name="channel-families" quantity="30" family="rhn-tools"/>`
- `<rhncert-field name="satellite-version">3.6</rhncert-field>`
- `<rhncert-field name="generation">2</rhncert-field>`
- `<rhncert-signature>`
- `-----BEGIN PGP SIGNATURE-----`
- `Version: Crypt::OpenPGP 1.03`
-
- `iQBGBAARAwAGBQJCAG7yAAoJEJ5yna8GIHkysOkAn07qmlUrkGKs7/5yb8H/nboG`
- `mhHkAJ9wdmqOeKfcBa3IUDL53oNMEBP/dg==`
- `=0Kv7`
- `-----END PGP SIGNATURE-----`
- `</rhncert-signature>`
- `</rhncert>`

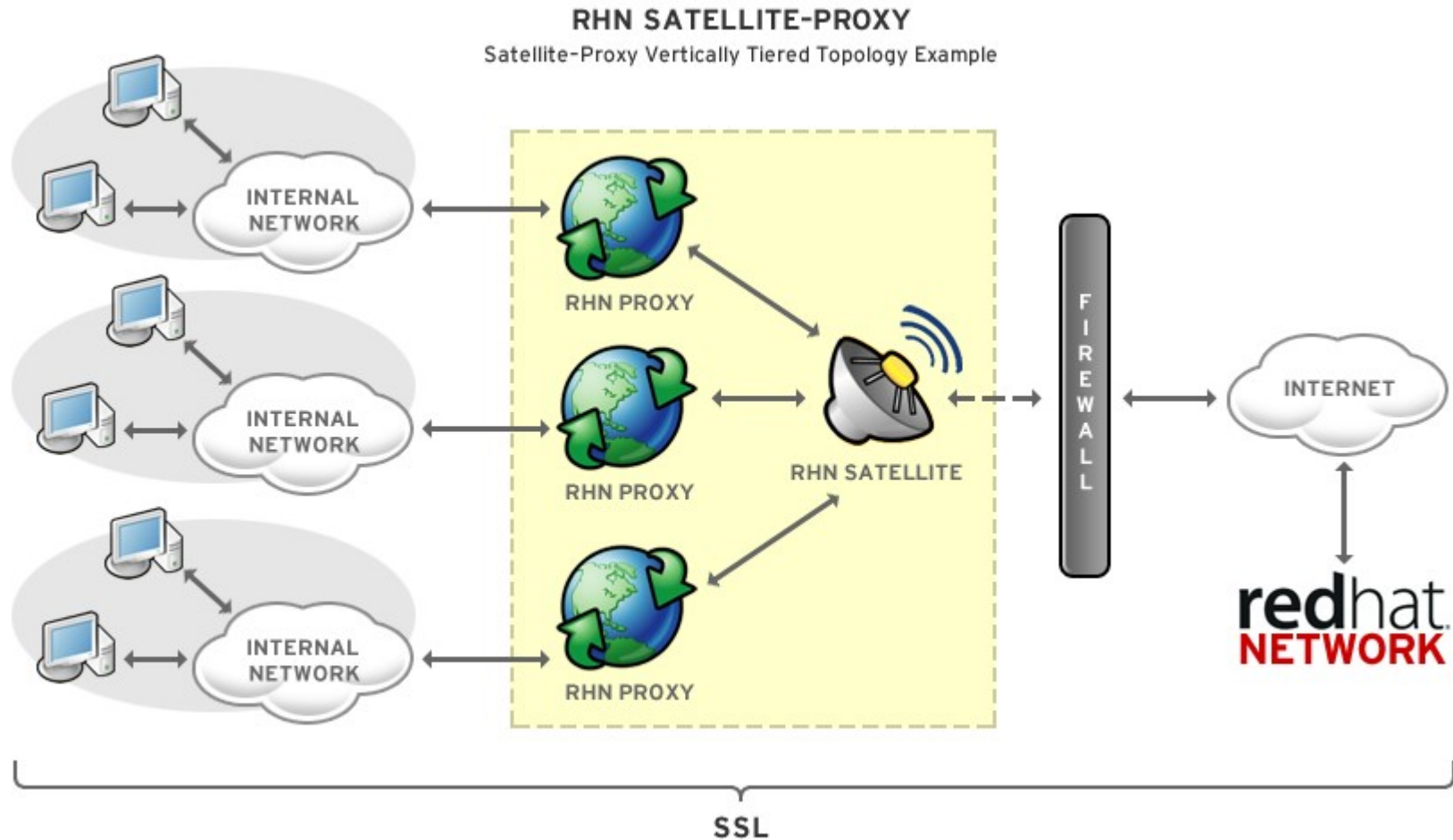
Example Topology – Single Satellite



Example Topology – Multiple Tiered

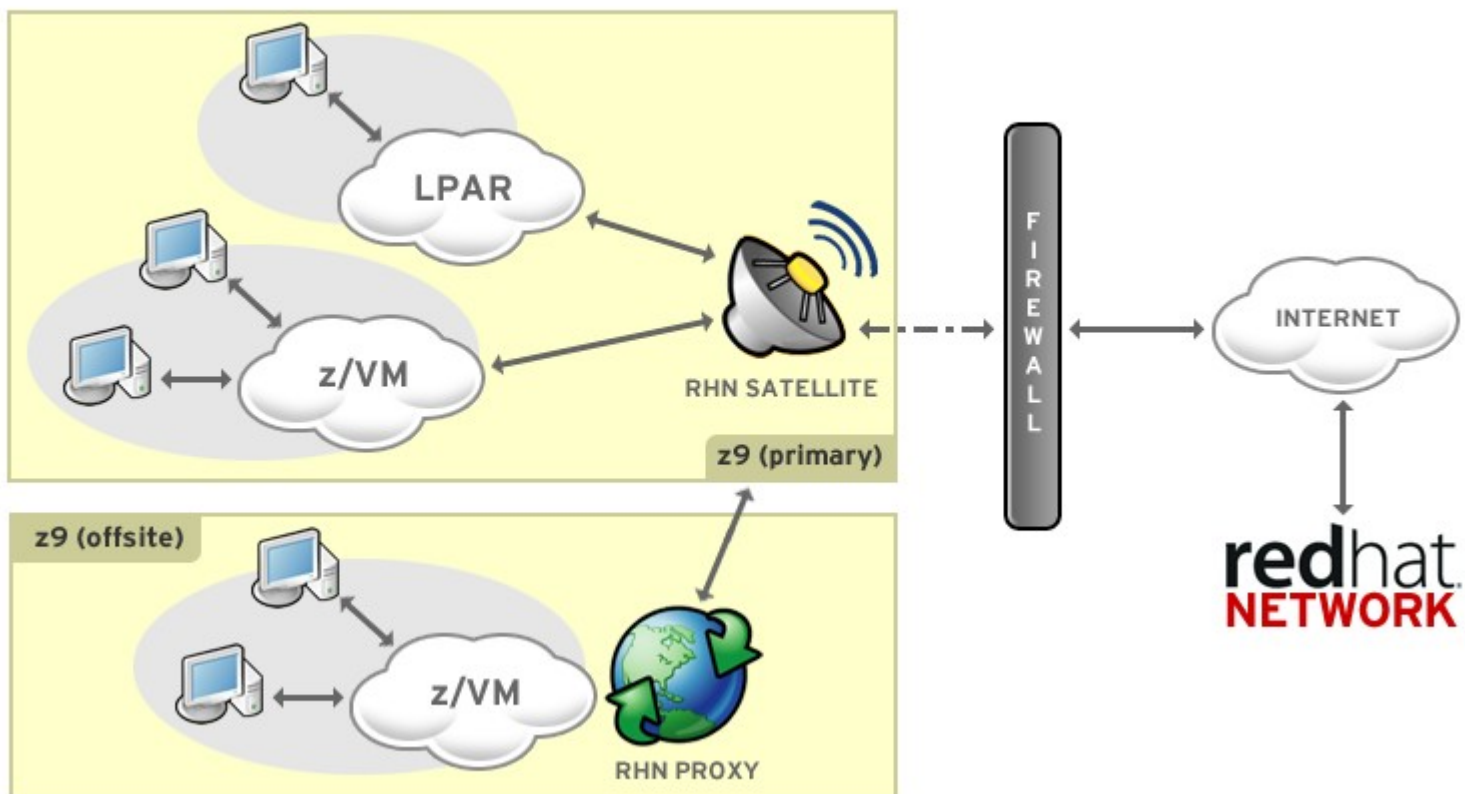


Example – Proxy Vertically Tiered



Example – System z (multiple site)

RHN SATELLITE-PROXY
Satellite-Proxy System z Topology Example



Installing RHN Satellite

- **mount -o loop iso_filename /media/**
- **cd /media; ./install.pl**
 - ./install.pl --help
 - ./install.pl --disconnected
- **Installer steps**
 - Create database
 - Import Satellite certificate
 - Register/Activate Satellite
 - Generate CA certificate for SSL traffic

Import Packages with satellite-sync

- **Synchronize metadata/packages with RHN**
 - Satellite connected to RHN
- **Internal steps**
 - channel-families – Import/sync channel family (architecture) data
 - channels – Import/sync channel data
 - rpms – Import/sync RPMs
 - packages – Import/sync full package data for RPMs retrieved successfully
 - errata – Import/sync Errata information

Import Packages (Disconnected)

- **Synchronize metadata/packages from Channel Content ISO**
 - Released shortly after each RHEL update on RHN, then in regular increments
- **Use channel data from another Satellite**
 - `rhn-satellite-exporter` exports channel families, architectures, channel metadata, blacklists, RPMs, RPM metadata, errata, and kickstarts
 - `rhn-satellite-exporter --dir=/var/sat-backup/`
 - `scp -r storage.example.com:/var/sat-backup/* /var/rhn-sat-import`
 - `satellite-sync --list-channels --mount-point /var/rhn-sat-import`
 - `satellite-sync -c rhel-s390x-as-4 --mount-point /var/rhn-sat-import`
 - Can specify multiple channels in one command. Estimate ~2 hours per channel.

Import Packages (Disconnected)

- **Synchronize metadata/packages from Channel Content ISO**
 - Released shortly after each RHEL update on RHN, then in regular increments
- **Use channel data from another Satellite**
 - `rhn-satellite-exporter` exports channel families, architectures, channel metadata, blacklists, RPMs, RPM metadata, errata, and kickstarts
 - `rhn-satellite-exporter --dir=/var/sat-backup/`
 - `scp -r storage.example.com:/var/sat-backup/* /var/rhn-sat-import`
 - `satellite-sync --list-channels --mount-point /var/rhn-sat-import`
 - `satellite-sync -c rhel-s390x-as-4 --mount-point /var/rhn-sat-import`
 - Can specify multiple channels in one command. Estimate ~2 hours per channel.



Questions?