System z Expo

October 13 – 17, 2008 – Las Vegas, Nevada

Managing your Red Hat Enterprise Linux Guests With RHN Satellite

Session ID: zLP07

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Authorized IBM Training

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Agenda

- What is Red Hat Network?
  - What are the modules?
  - What are the deployment architectures?
  - How's it run on System z?
- Live Demo

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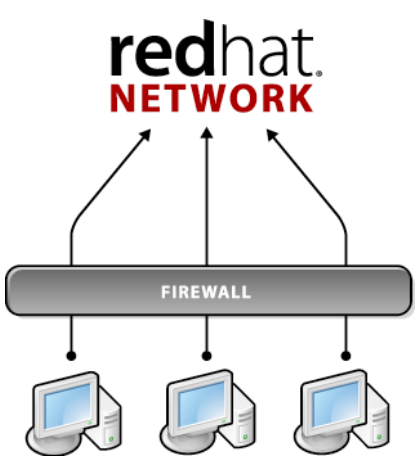
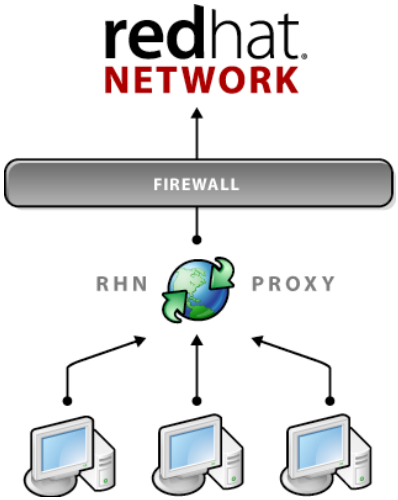
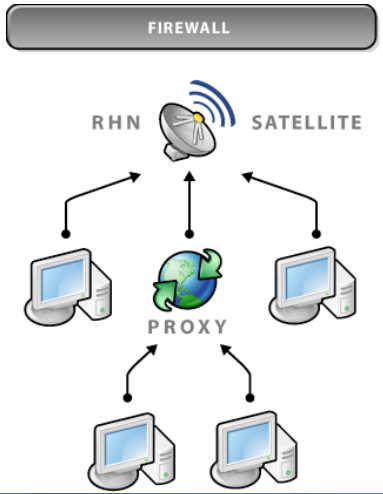
Red Hat Network

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







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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

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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

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Example Usage

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

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Red Hat Network Components

Service Modules

- Update
- Management
- Provisioning
- Monitoring

Architectures

- Hosted
- Satellite

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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

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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

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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

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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

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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.

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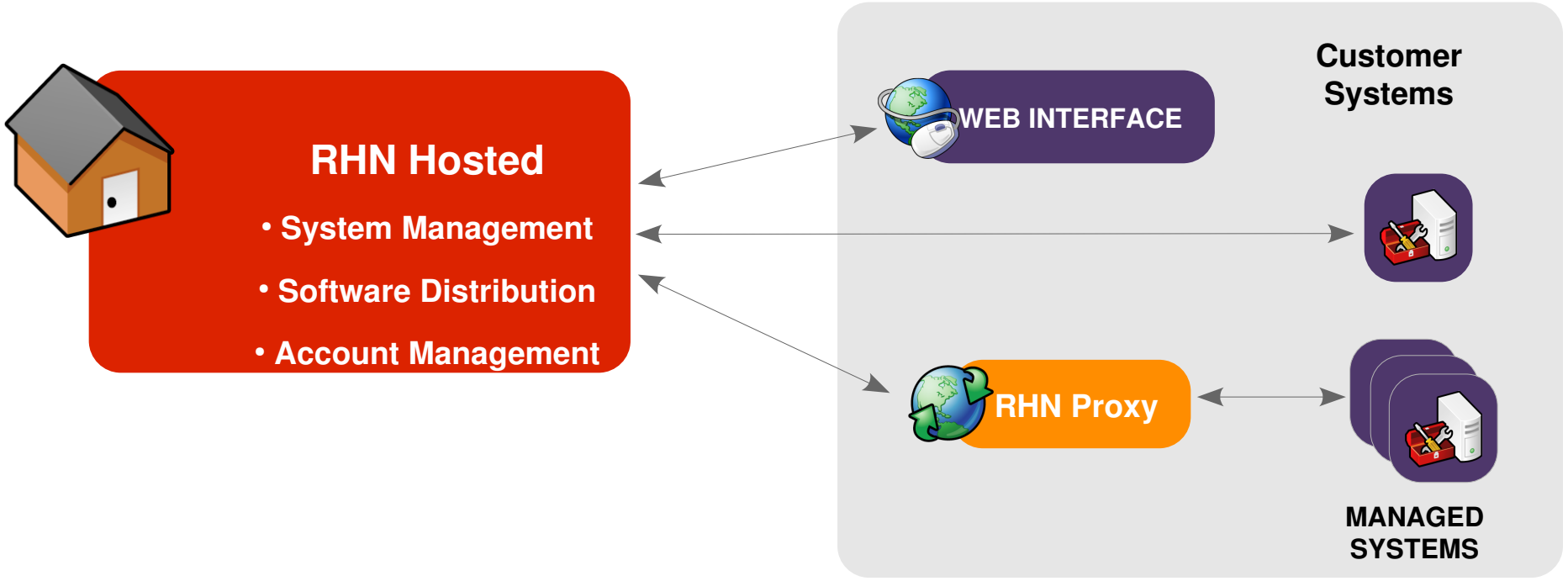
Hosted Deployment Model



- 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

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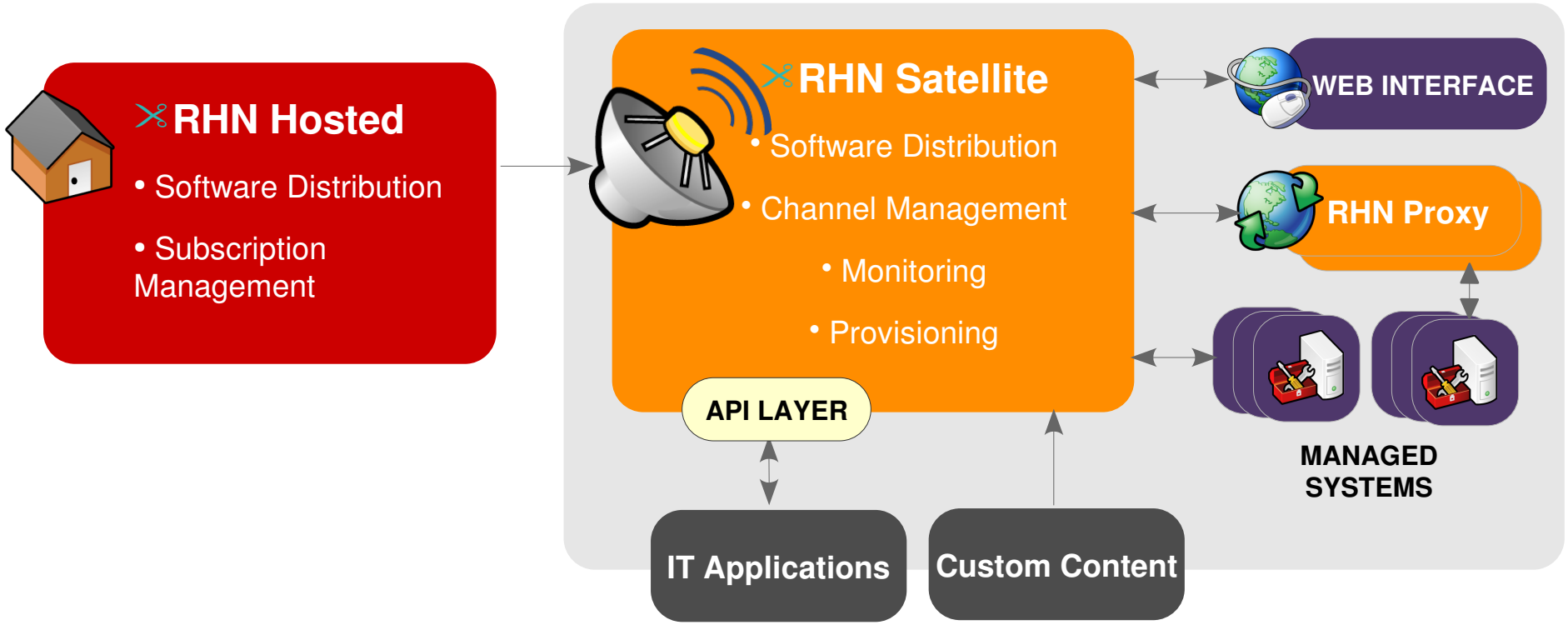
Satellite Deployment Module



- Local database stores all packages, profiles, and system information
- Syncs content from RHN Hosted, can run disconnected from the internet
- Custom content distribution

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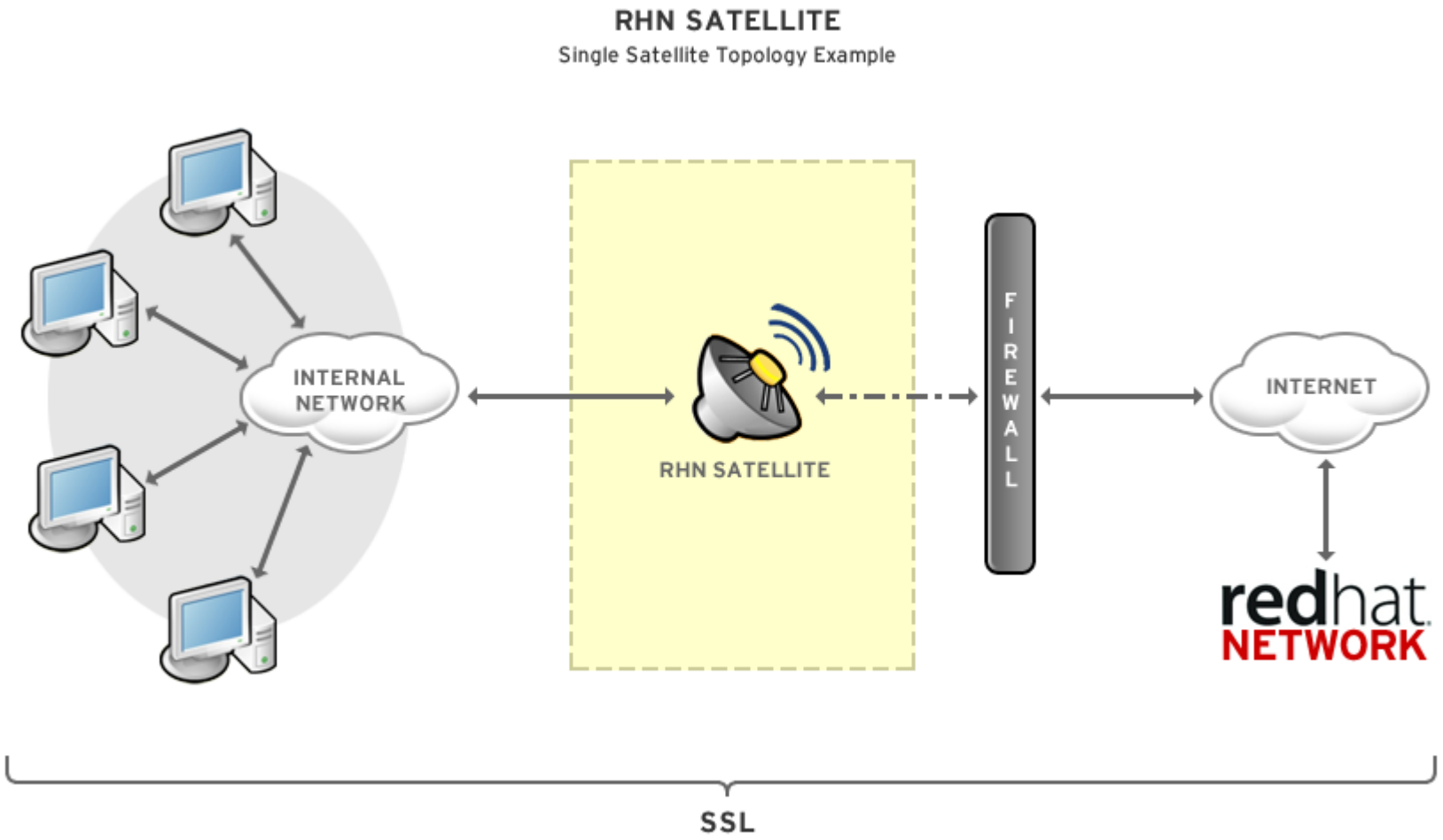
Example – Single Satellite



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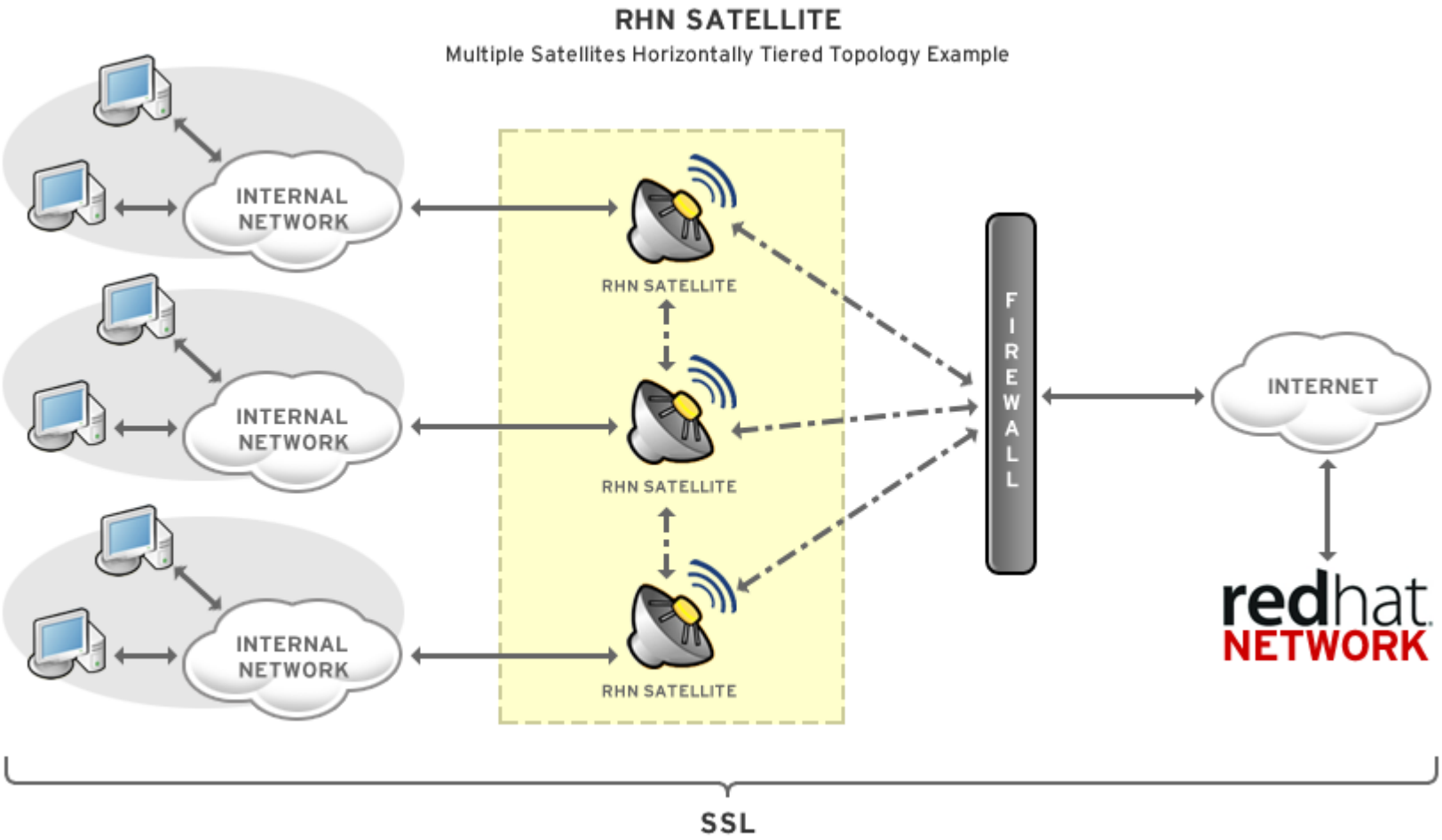
Example – Multi Tiered Satellite



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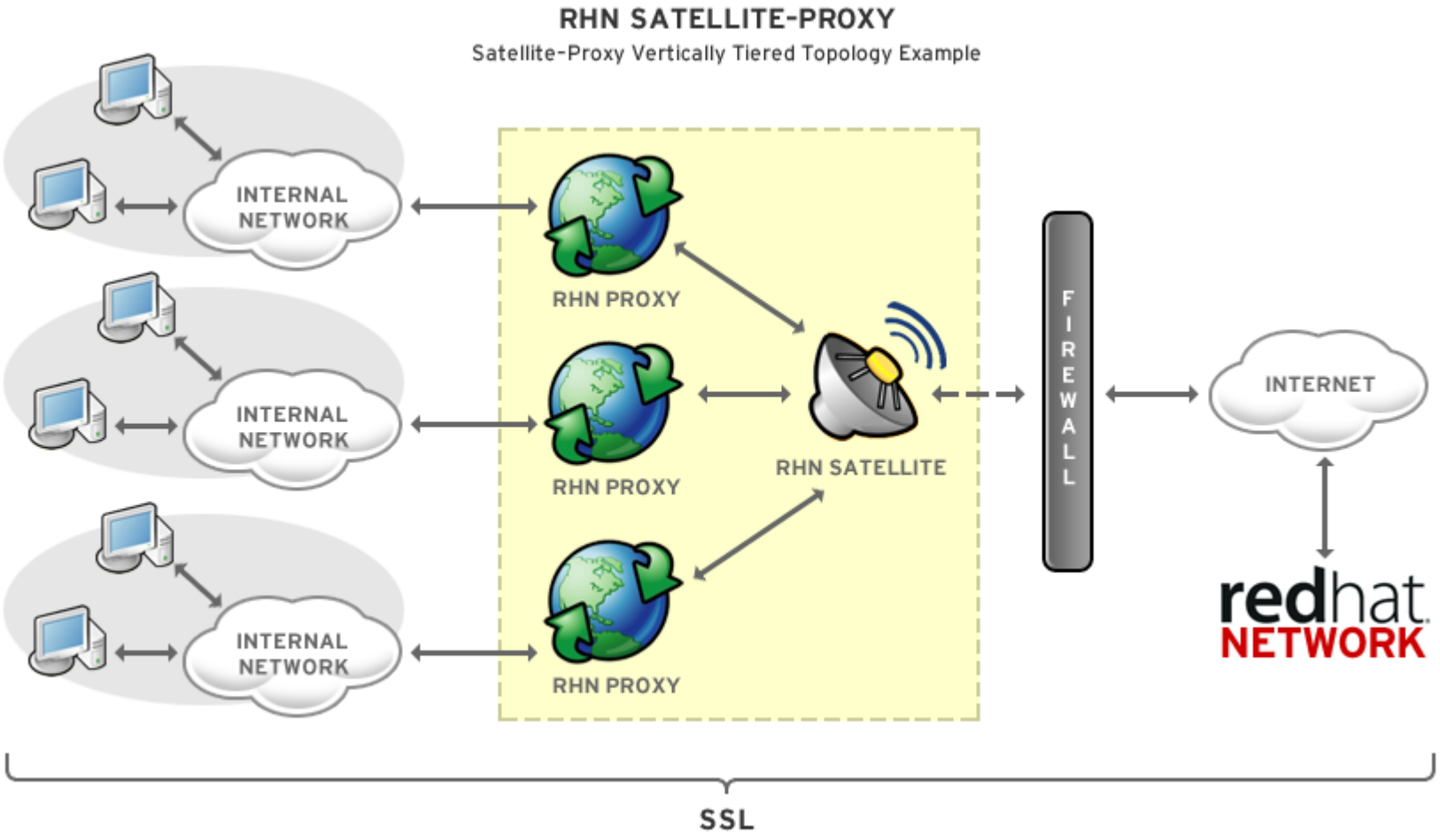
Example – Proxy Vertically Tiered Satellite



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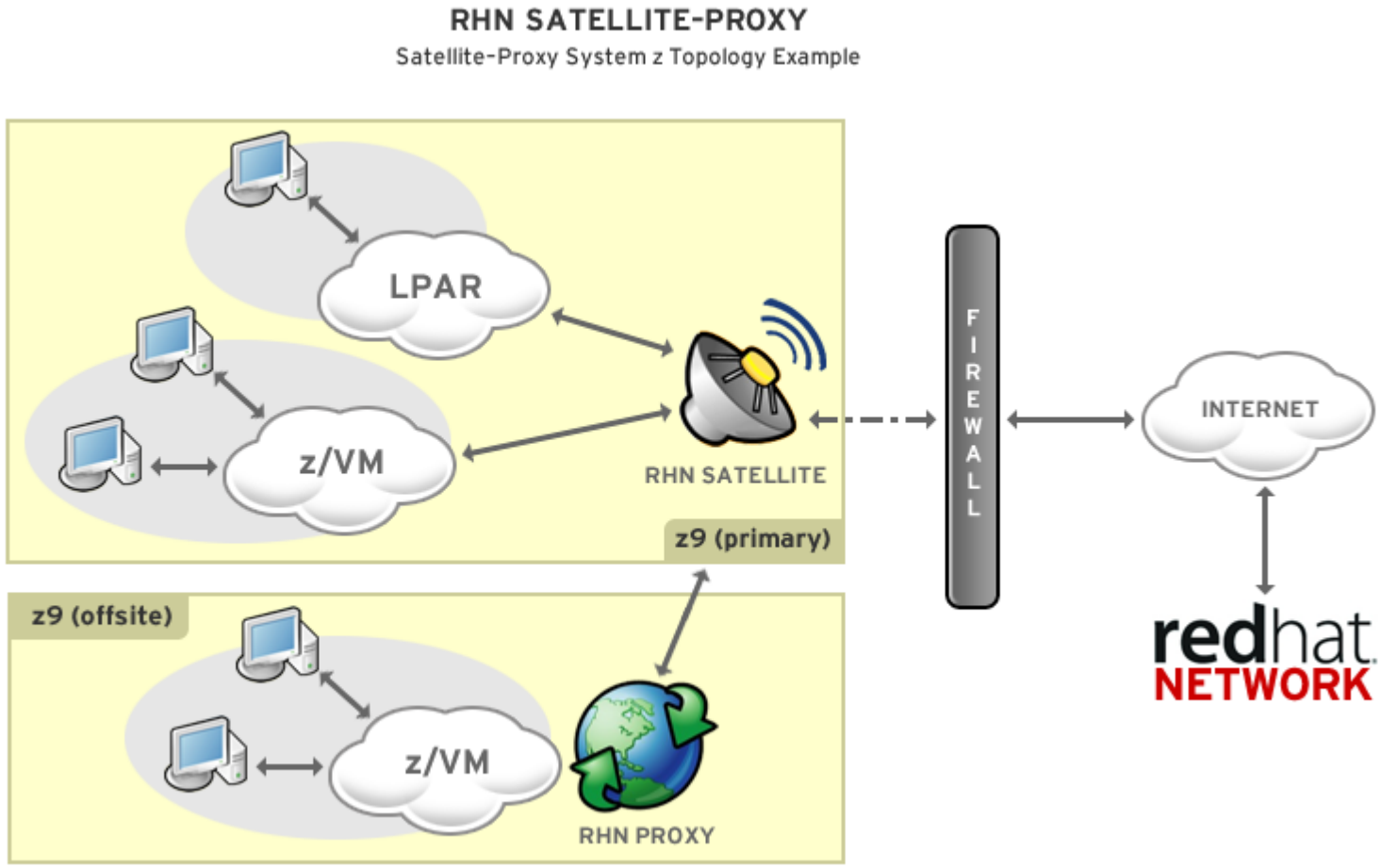
Example – System z



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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.

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How It Works

- **Management Tools**
  - Database and file system syncrhonization 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

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Installation Requirements

- **Software**
  - RHEL 4 (31-bit or 64-bit)
  - @Base install
- **Hardware**
  - 1 to 2 (virtual) IFLs
  - 2 to 4 GB storage (memory)
  - 1 GB swap (combination VDISK, disk)
  - 1 x mod3 for OS install
  - Estimated 12 GB disk space for embedded database
  - 6 GB per channel (disk)

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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

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Example RHN Certificate (XML)

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

    iQBGBAARAwAGBQJCAG7yAAoJEJ5yna8GlHkysOkAn07qmlUrkGKs7/5yb8H/nboGmhHkAJ9wdmqOeKfcBa3lUDL5
    oNMEBP/dg===0Kv7
            -----END PGP SIGNATURE-----
            </rhn-cert-signature>

</rhn-cert>
```

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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

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Importing Packages (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

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Importing 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.

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Further Information

- **Problem**
  - Where can I find further information on RHN Satellite?

- Solution
  - Red Hat Knowledgebase
    - http://kbase.redhat.com/faq/
  - RHN Documentation
    - https://rhn.redhat.com/help/
  - RHN Satellite Users mailing list
    - https://www.redhat.com/mailman/listinfo/rhn-satellite-users
  - RHN Satellite comes with 24/7 support
    - https://www.redhat.com/apps/support/

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Contacting Red Hat Support

- **Problem**
  - My Satellite is not working, what should I do?

- Solution
  - 1) Gather data, include
    - RHN Satellite Debug `/usr/bin/satellite-debug`
    - System Report `/usr/sbin/sysreport`
    - RHN Proxy Debug (if needed) `/usr/bin/rhn-proxy-debug`
  - 2) Contact Red Hat Support with data

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QUESTIONS?

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APPENDIX

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Tech Data

- **RHN Satellite Components**
- Apache
- Java & RHN Push
- Monitoring
- Database & Taskomatic
- Misc data

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RHN Satellite Components

- **Web Server – Apache**
  - Satellite Web UI
  - /XMLRPC
  - /API
- Java – Tomcat (new)
- RHN Push – Jabber
  - osa-dispatcher (server side)
  - osad (client side)
- Monitoring Technology (new)
  - Monitoring Backend
  - Monitoring Scout
- Database Server – Oracle 9i

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RHN Satellite: Apache

- Apache processes within RHN Satellite handle multiple types of requests
  - Satellite Web UI with perl and java components
  - /XMLRPC, /API & /APPLET via python
- Main configuration files
  - /etc/httpd/conf/httpd.conf
  - /etc/httpd/conf/rhn/
  - /etc/rhn/rhn.conf
- Runs with standard httpd daemon on ports 80 and 443
- Apache writes to various log files in the follow locations
  - /var/log/rhn/
  - /var/log/httpd/
- Misc files of note
  - SSL Certificates used by Apache
  - /etc/httpd/conf/ssl.key/server.key
  - /etc/httpd/conf/ssl.crt/server.crt

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RHN Satellite: Java & RHN Push

- Tomcat is communicated to via Apache for portions of the Java Web UI within RHN Satellite 4.0
- Main configuration file
  - /etc/tomcat5/tomcat5.conf
- Main log directory
  - /var/log/tomcat5/
- Tomcat daemon listens to ports
  - 8005
  - 8009
  - 8080
- The jabber protocol is used by RHN to push scheduled actions to systems.
  - Satellite connects to jabber (osa-dispatcher)
  - Clients connect to jabber (osad)
- Main configuration files for push technology
  - /etc/jabberd/jabberd.cfg
  - /etc/rhn/rhn.conf
- Main log files are
  - /var/log/messages
  - /var/log/rhn/osa-dispatcher.log

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RHN Satellite: Monitoring

- Monitoring Backend
- Monitoring Scout
- Some of the monitoring configuration files
  - /etc/rhn/rhn.conf
  - /etc/rhn/cluster.ini
  - /etc/NOCpulse.ini
  - /etc/httpd/conf/rhn/rhn_monitoring.conf
- Specific to Scout
  - /home/nocpulse/etc/SatCluster.ini
- Monitoring has one main nanny script which is gogo.pl
- Nearly all Monitoring logging is done within
  - /home/nocpulse/var/
  - /opt/notification/var/

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RHN Satellite: Database

- RHN Satellite needs communication to an Oracle 9i Database Server
  - Embedded or External Oracle
- Main configuration files for database
  - /etc/tnsnames.ora
  - /etc/rhn/rhn.conf
  - /opt/apps/oracle/config/9.2.0/spfilerhnsat.ora
- Listener daemon (tnslsnr) runs localhost only on port 1290
- Main log files for Oracle
  - /var/log/rhn/rhn_database.log
  - /rhnsat/admin/rhnsat/bdump/alert_rhnsat.log

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Anything Else To Know?

- **The most important configuration file**
  - /etc/rhn/rhn.conf
- Two common general options of interest that can be changed
  - traceback_mail – change the default email address alerts go to. Check this email address for traceback emails if something goes wrong
  - debug - default is 1, setting to 5 or 6 is enough for troubleshooting
- Restart RHN Satellite services using command
  - `service rhn-satellite restart`
  - This will run the following service scripts
    - `jabberd rhn-database osa-dispatcher taskomatic`
    - `tomcat5 httpd Monitoring MonitoringScout`

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