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Red Hat Enterprise Linux & System z

Shawn Wells (swells@redhat.com)

Solutions Architect, System z

Agenda

System z Use Case: Red Hat

- What RedHat uses our z9s for
- What it's allowed us to do

RHEL for System z

- What's in it now
- What our goals are

System z Use Case: How Red Hat Uses Z

- IBM zSeries 2094 (z9)
- IBM zSeries 2084 (z990)
- Shark storage (ESS unit 2105, 16 full drawers of disk)
 - Provided via FCP layer emulation
- Fully loaded z10 comes July '08

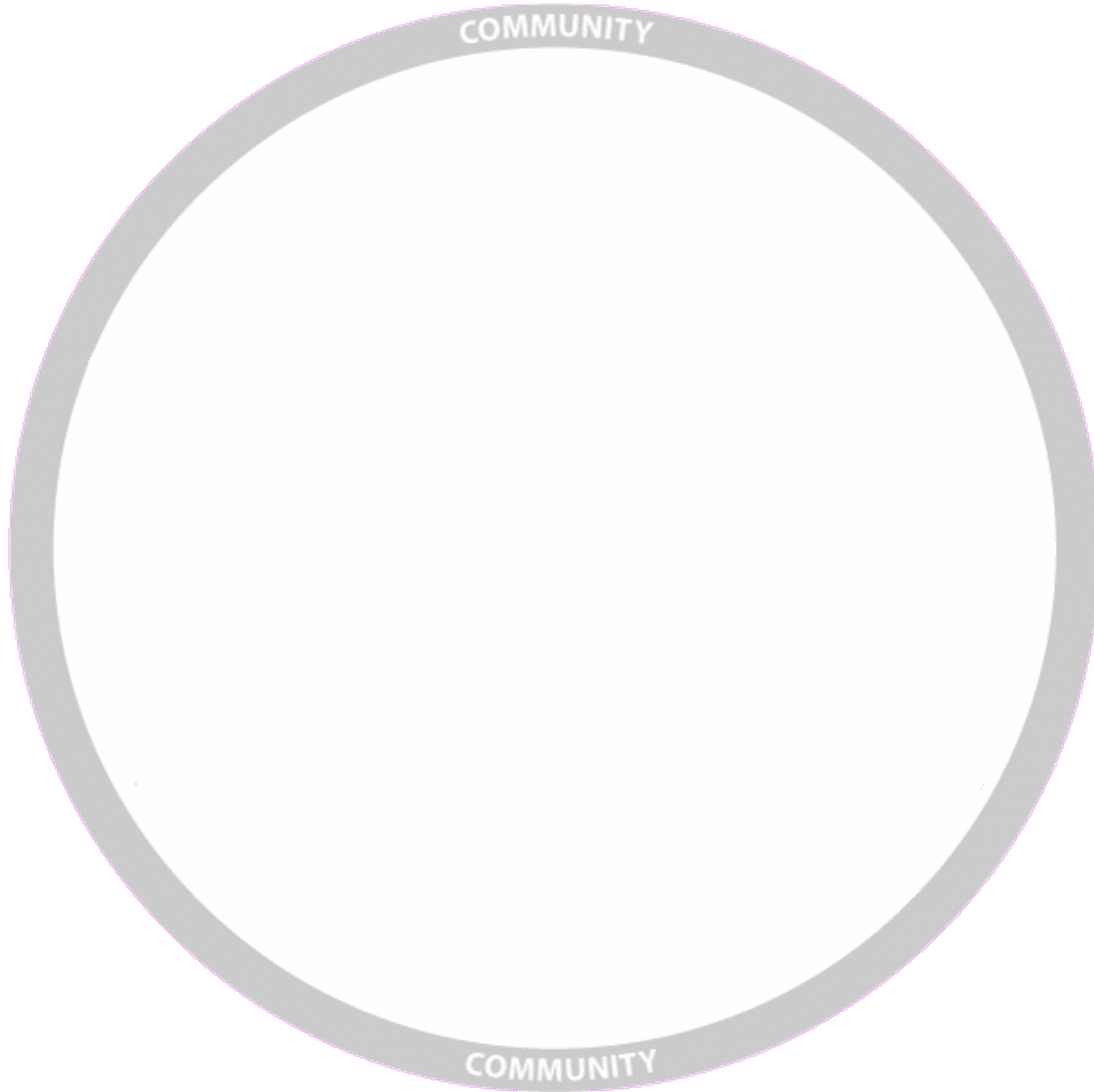
System z Use Case: How Red Hat Uses Z

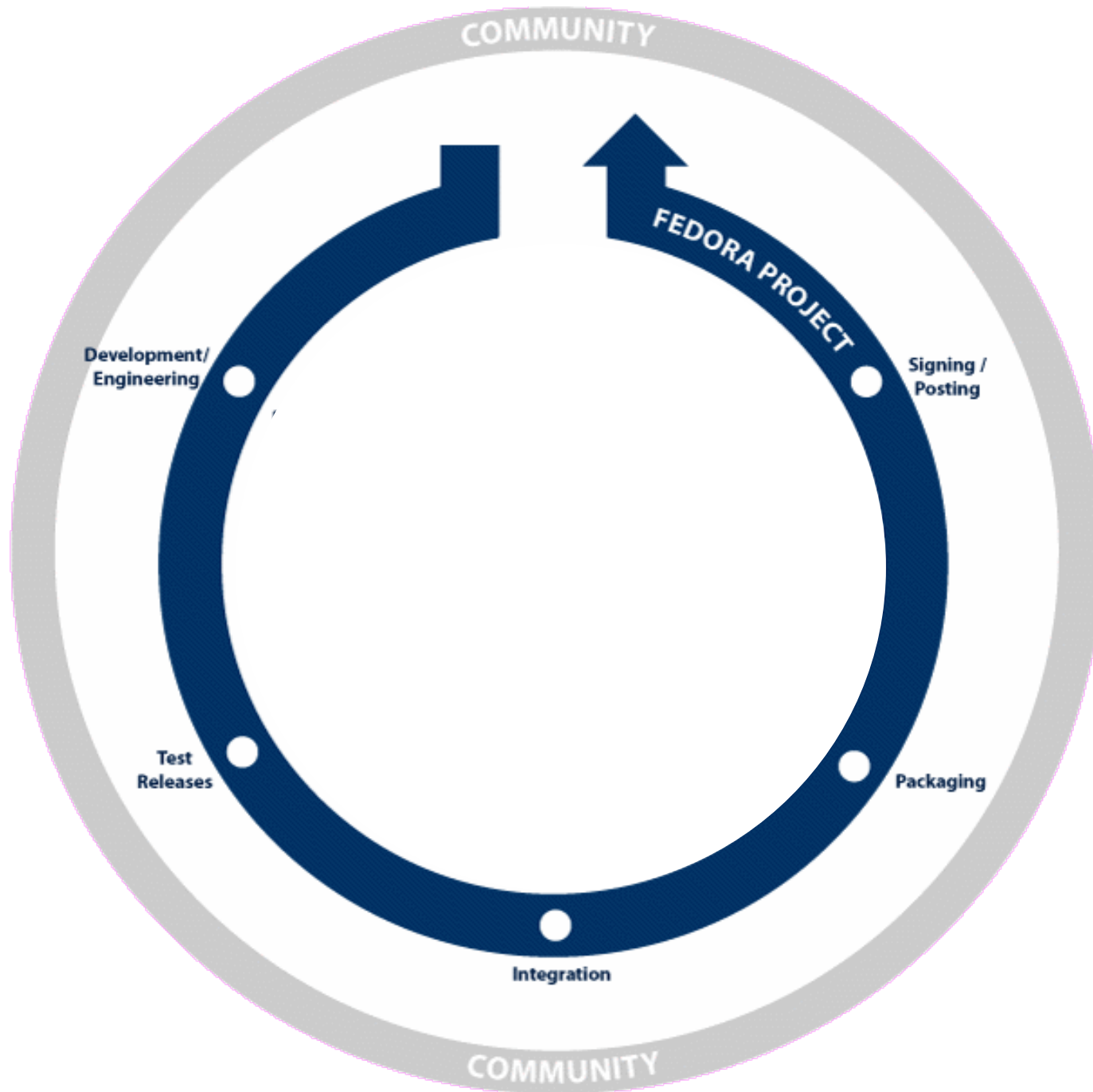
- **Training (internal/external)**
- **Development VMs**
 - s390-utils, kernel, integrating DeveloperWorks, etc
- **Quality Engineering**
 - VM for each RHEL distro released since RHEL 4 (4.0, 4.1..... 5.1)
- **Support Desk**
 - Emulating user problems

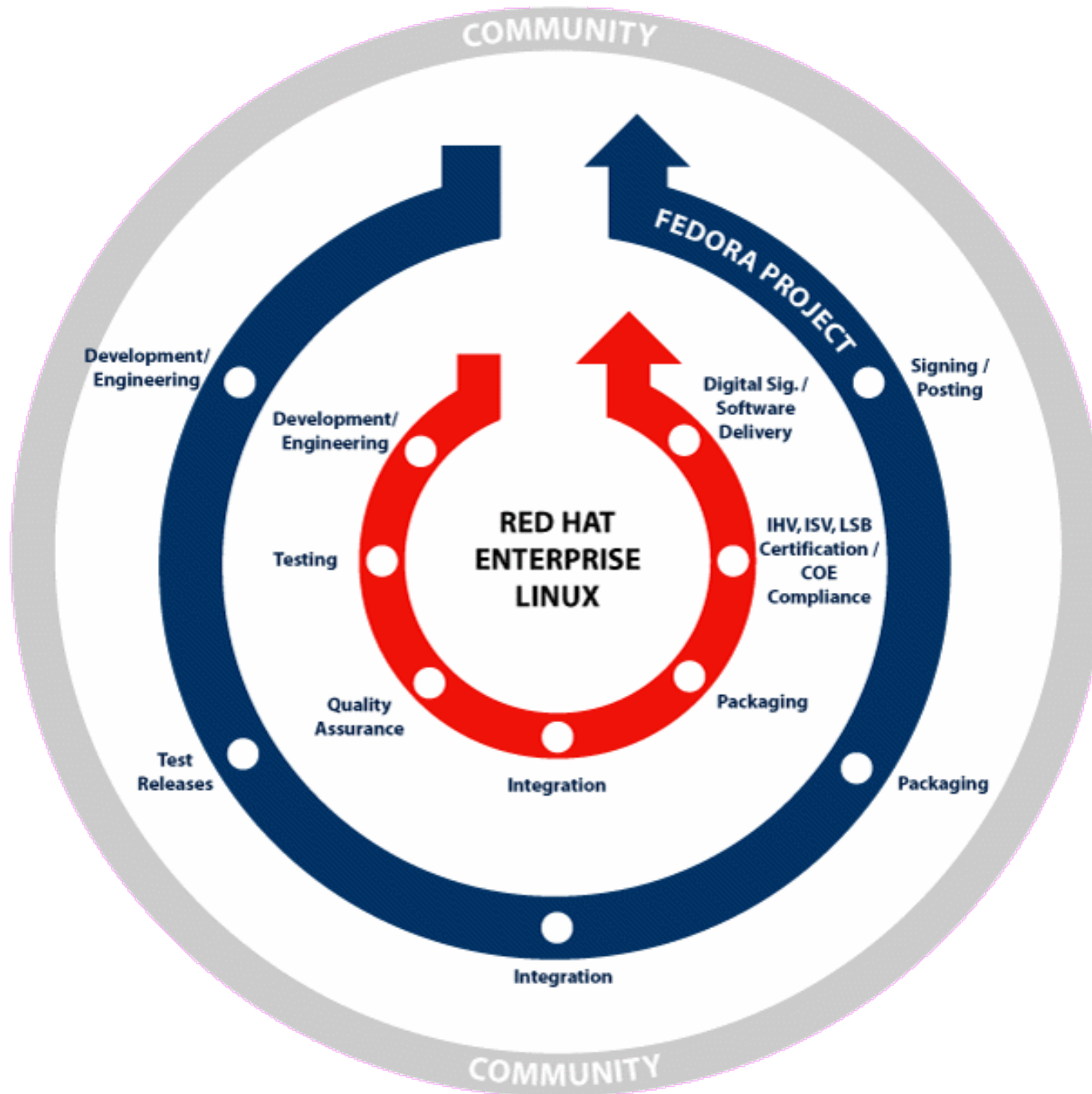
System z Use Case: How Red Hat Uses Z

- **JBoss Development (dev, test, prod)**
- **Red Hat Network Development (dev, test, prod)**
- **Enterprise IPA Development (dev, test, prod)**
- **Cross compilation of all RHEL architectures**
- **Staff accounts (sandbox environments, demos)**

Fedora for System z












System z Use Case: How Red Hat Z

- **Red Hat Network for deployment of new VMs, patching**
 - Managed by one staff member
 - Allows patching, reprovision z/VM guests, etc

Most Critical Systems		
System Name	All Updates	Security Errata
beltbuckle	226	 46
RHT_Laptop	246	 41
IAD_DevBox	204	 32
IAD_DevBox1	161	 19
RHT-IAD_turtle	7	 5

1 - 5 of 5 'Most Critical' systems displayed

System z Use Case: How Red Hat Z

■ RHN for Z: Lesson Learned

- When configuring the kickstart through the web interface, choose Static IP instead of DHCP.
- In the Extra Kernel Parameters text box, enter the information normally found in the CMS CONF file.
 - Single line!

```
DASD=100 HOSTNAME=example IPADDR=192.168.5.100 ...
```

Documented at:

http://kbase.redhat.com/faq/FAQ_49_12902.shtm

RHN Satellite Is Now Open Source

<http://spacewalk.redhat.com>

- Announced at Red Hat Summit 2008
 - remember the Fedora -> RHEL model?

What's new in RHEL5?

- Upstream DASD driver updates (RHEL 5.1)
- Upstream zFCP driver updates (RHEL 5.1)
- Crypto2 Express support
 - CEX2C, CEX2A models
- DCSS: Discontinuous Saved Memory Segment
 - Shared section of memory shared by several guests
 - Allows XIP2 (Execution in place)
 - XIP2fs integrated into ext2
- Faster minidisk access on 64-bit VMs
 - Diag 250; CP performs actual I/O operations
- SCSI (zFCP) multipath supported in the installer
- Support for vmhalt= kernel parameter to communicate with z/VM on shutdown

Results of IBM/RedHat Joint Engineering

RHEL 5.1

- Improved z/VM scheduling
- Improved RAS features
- Improved performance with key recompiled libraries

RHEL 5.2

- ***Support for new IBM z10***
- Improved IBM Director support to support fast connection to z/VM
- Improved Virtual Server Management
- Implementation of SCSI dump infrastructure
- Support for Dynamic CHPID reconfiguration
- Better network configuration tool support for System z network adapters
- Improved install experience with support for “ssh -X” with VNC
- Better network performance with skb scatter-gather support
- Implemented device-multipath support for xDR/GDPS

Results of IBM/RedHat Joint Engineering

- **Hipersocket MAC layer routing support**
 - Implementation of layer 2 routing support, matching OSA MAC layer capability
 - Ability to route through intermediate VSWITCH for L2 bridging to external networks
 - Enablement of IPv6 and L2 networks over hipersockets
- **STSI change for capacity provisioning**
 - Hardware exploitation of new STSI instruction
 - Permanent and temporary capacity provided in `/proc/sysinfo`
- **Upstreamed support for OSA 2 ports per CHPID**
 - Support for new OSA 2-port feature, occupying single I/O slot
 - Each port independently configured as CHPID type OSD or OSN

Thank You

Shawn Wells

Solutions Architect, Global Linux on System z Lead

Email: swells@redhat.com

Phone: 443-534-0130

<http://redhat.com/z>



Open Discussion

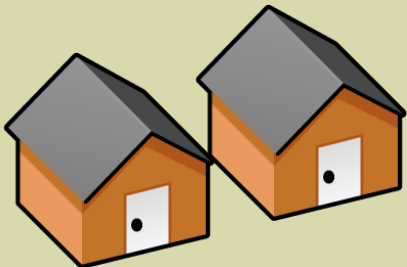


Supplimental Info

What is Red Hat Network?

A systems management platform designed to provide complete life cycle management of the operating system and its applications

Hosted



Update



Manage



Satellite



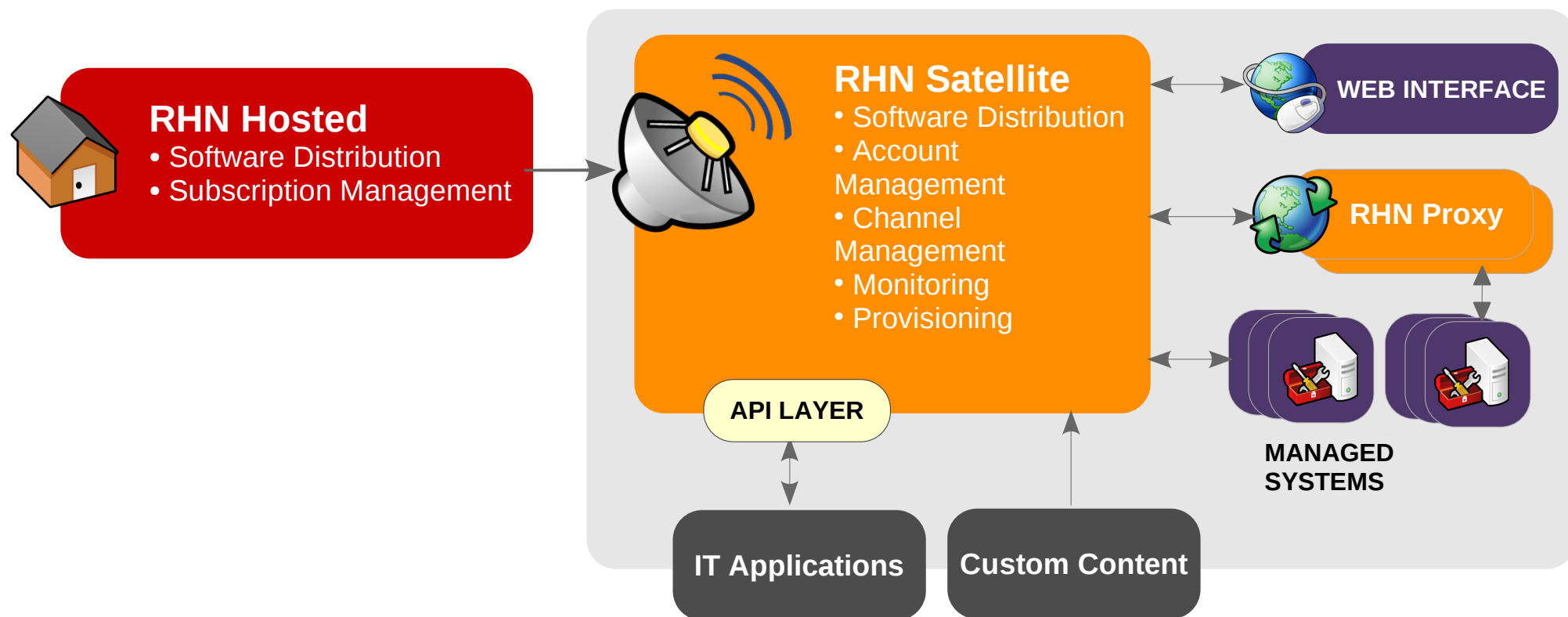
Provision



Monitor



RHN 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

Useful Links

- Technical mailing list (linux-390@vm.marist.edu)
 - Subscribe: <http://www2.marist.edu/htbin/wlvindex?linux-390>
 - Archive: <http://www.mail-archive.com/linux-390@vm.marist.edu/>

- RHEL 5 Virtualization Cookbook
 - <http://www.linuxvm.org/present/misc/virt-cookbook-RH5.pdf>
 - Update to 5.2 coming soon (currently under technical review)

- Presentations from SHARE user conferences and other links
 - <http://www.linuxvm.org/present/>
 - <http://www.linuxvm.org/>

RHEL 5.2 Bug Fixes, Installer Related

- BZ: https://bugzilla.redhat.com/show_bug.cgi?id=237508 [Private]
 - Summary: LCS device not found at install
- BZ: https://bugzilla.redhat.com/show_bug.cgi?id=305331 [Private]
 - Summary: sudo-1.6.8p12-10 segfaults when using ldap on s390
- BZ: https://bugzilla.redhat.com/show_bug.cgi?id=354661 [Private]
 - Summary: multipath paths fail using PAV Devices on DS8000 DS6000
- BZ: https://bugzilla.redhat.com/show_bug.cgi?id=279201 [Private]
 - Summary: zfcpcnf.sh fails in rc.sysinit if / partition and /usr partition are separated

RHEL 5.2 Bug Fixes, Storage Related

- BZ: https://bugzilla.redhat.com/show_bug.cgi?id=360701 [Private]
 - Summary: swap_dup: Bad swap file entry <xxxxxxx> without swap configured

- BZ: https://bugzilla.redhat.com/show_bug.cgi?id=360611 [Private]
 - Summary: FICON DS8000: File ID Miscompare after CHPID off via HMC

RHEL 5.2 Bug Fixes, I/O Related

- BZ: https://bugzilla.redhat.com/show_bug.cgi?id=360821 [Private]
 - Summary: qdio: too many interrupts on qdio-driven devices
- BZ: https://bugzilla.redhat.com/show_bug.cgi?id=360631 [Private]
 - Summary: qdio: time calculation is wrong
- BZ: https://bugzilla.redhat.com/show_bug.cgi?id=354801 [Private]
 - Summary: cio: Disable channel path measurements on shutdown/reboot
- BZ: https://bugzilla.redhat.com/show_bug.cgi?id=354831 [Private]
 - Summary: cio: Handle invalid subchannel set id in stsch
- BZ: https://bugzilla.redhat.com/show_bug.cgi?id=354821 [Private]
 - Summary: cio: Device status validity

RHEL 5.2 Bug Fixes, Networking Related

- BZ: https://bugzilla.redhat.com/show_bug.cgi?id=281241 [Private]
 - Summary: tcpdump does not show outgoing packets with fake_ll=1
- BZ: https://bugzilla.redhat.com/show_bug.cgi?id=354891 [Private]
 - Summary: qeth: recognize/handle RC=19 from Hydra 3 OSA
- BZ: https://bugzilla.redhat.com/show_bug.cgi?id=354851 [Private]
 - Summary: qeth: increment sequence number for incoming packets
- BZ: https://bugzilla.redhat.com/show_bug.cgi?id=267381 [Private]
 - Summary: QDIO based network connections hang with QIOASSIST ON

RHEL 5.2 Bug Fixes, Stability Related, p1

- BZ: https://bugzilla.redhat.com/show_bug.cgi?id=360591 [Private]
 - Summary: Operating System Message: Kernel panic - not syncing: Fatal exception in interrupt

- BZ: https://bugzilla.redhat.com/show_bug.cgi?id=253275 [Private]
 - Summary: Placing a kprobe on 'bc' instruction can crash the system

- BZ: https://bugzilla.redhat.com/show_bug.cgi?id=354811 [Private]
 - Summary: I/O stall, system crash due to scanning for units from FC transport class

- BZ: https://bugzilla.redhat.com/show_bug.cgi?id=354871 [Private]
 - Summary: qdio: System hang with zfcp in case of adapter problems

RHEL 5.2 Bug Fixes, Stability Related, p2

- BZ: https://bugzilla.redhat.com/show_bug.cgi?id=350861 [Private]
 - Summary: Kernel panic with lcs interface as dhcp server
- BZ: https://bugzilla.redhat.com/show_bug.cgi?id=330211 [Private]
 - Summary: qeth: crash during reboot after failing online setting
- BZ: https://bugzilla.redhat.com/show_bug.cgi?id=380981 [Private]
 - Summary: Kernel Panic during activation of OSA-devices with fake_ll
- BZ: https://bugzilla.redhat.com/show_bug.cgi?id=325451
 - Summary: ptrace compatibility problem with PTRACE_{PEEK,POKE}USR_AREA