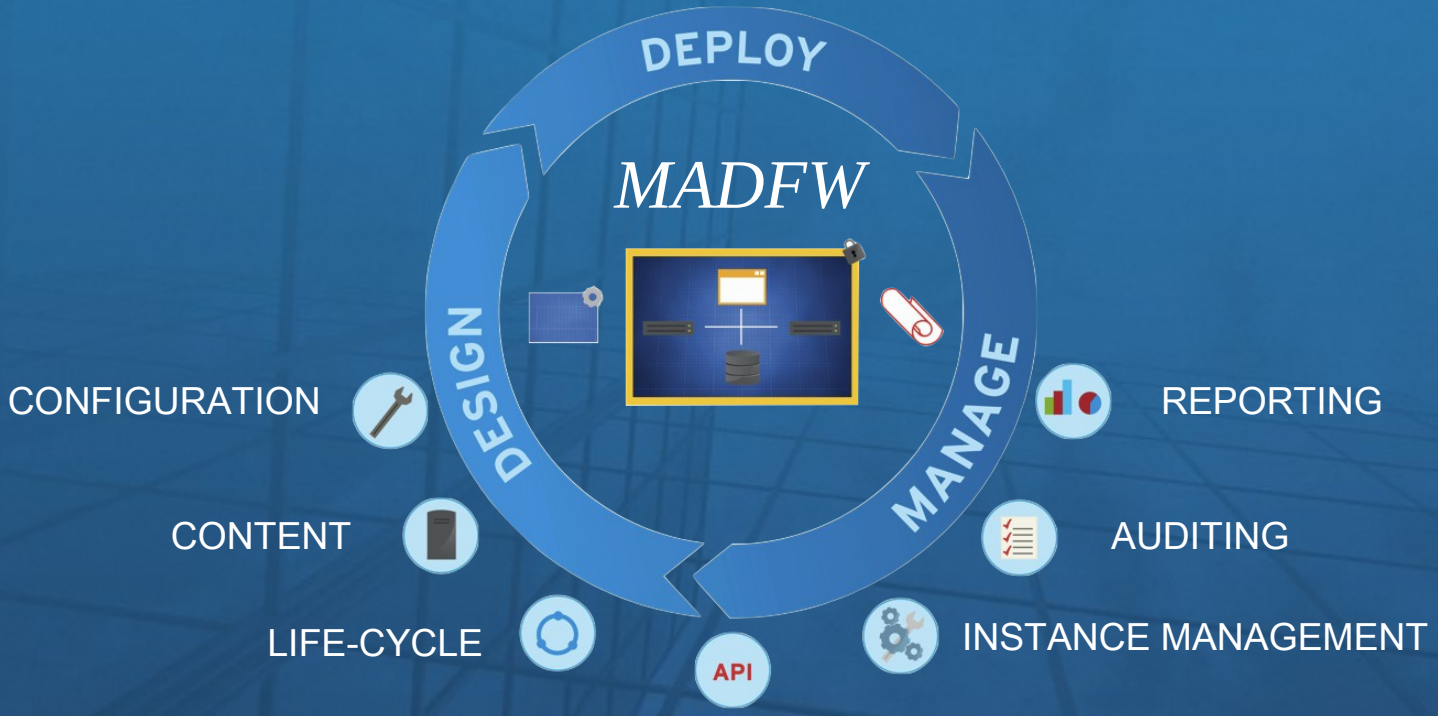
MADFW Program Review



Briefing Overview

(1) System Purpose & Capabilities — *Terry Seibel*

(2) System Design Review — *Shawn Wells*

- Infrastructure Review
- MADFW Common Services

(3) Demos — *Michele Newman*

- Workflow Overview
- Environment Interface
  - Tenant Self-Service Portal
  - System Management

System Purpose & Capabilities

MADFW System Purpose & Capabilities

- Why the project began
- What provide to MSD

- Manage infrastructure, not OS
- Provide RHEL versions **free** for unlimited use within MADFW environment
  - Inherit premium 24/7 support SLA from Red Hat Support
  -

MADFW Security Review

- ICD 503 C&A Lifecycle
  - H/L/L
  - Currently IATT
  - Verified by FN&ISD
    - SECSCAN
- Host/Tenant Model
  - We provide base infra (hypervisor down)
  - You provide OS and up

MADFW Architecture Review

MADFW: Hosting Capabilities

- Built for future growth and scalability

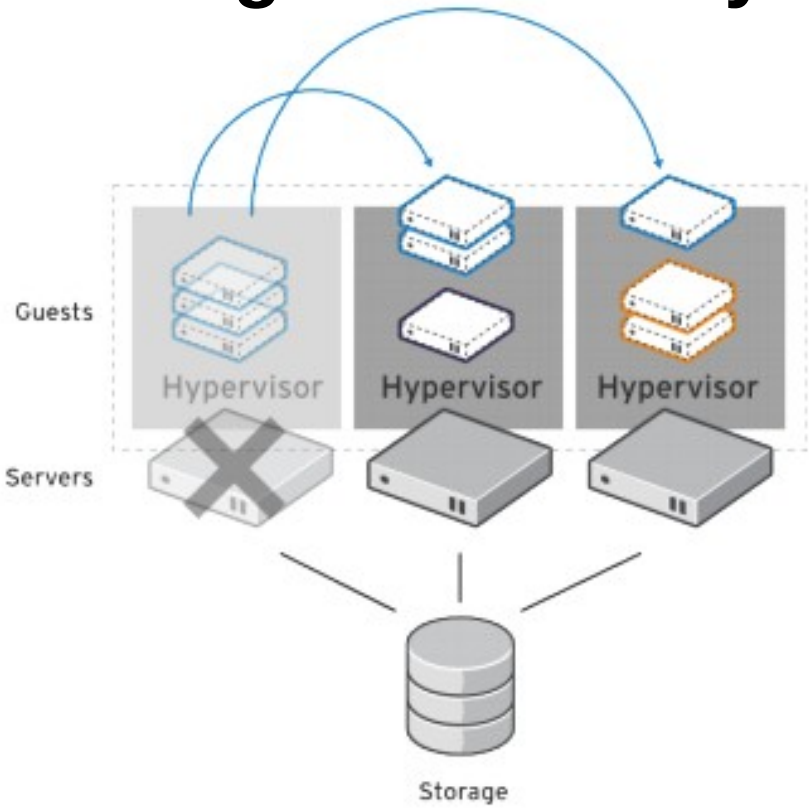
	Current MADFW Environmental Limitations	Technology Limitations
Logical CPUs/Hypervisor	xxxx	160
Physical RAM	xxxx	2TB
vCPU per Guest	64 vCPUs	
vRAM per Guest	512GB	

- Support for multiple tenant Operating Systems
  - RHEL 3, 4, 5, 6, and future versions (unlimited RHEL use for MADFW tenant VMs)
  - Microsoft Server 2003, 2008, 2008 R2
  - Microsoft Windows XP, Windows 7
  - Microsoft SVVP and WHQL Certified

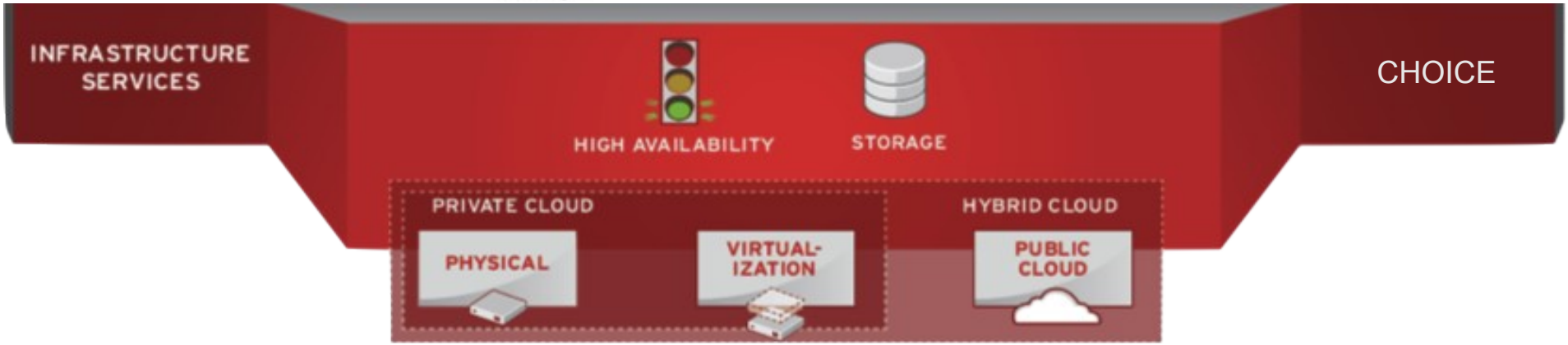
MADFW: Hosting Capabilities

Feature	Description
High Availability	Restart guest VMs from failed hosts automatically on other hosts
Live Migration	Move running VM between hosts with zero downtime
System Scheduler	Continuously load balance VMs based on resource usage/policies
Maintenance Manager	No downtime for virtual machines during planned maintenance windows. Hypervisor patching
Image Management	Template based provisioning, thin provisioning and snapshots
Monitoring & Reporting	For all objects in system – VM guests, hosts, networking, storage etc.
OVF Import/Export	Import and export VMs and templates using OVF files
V2V	Convert VMs from VMware and RHEL/Xen to MADFW

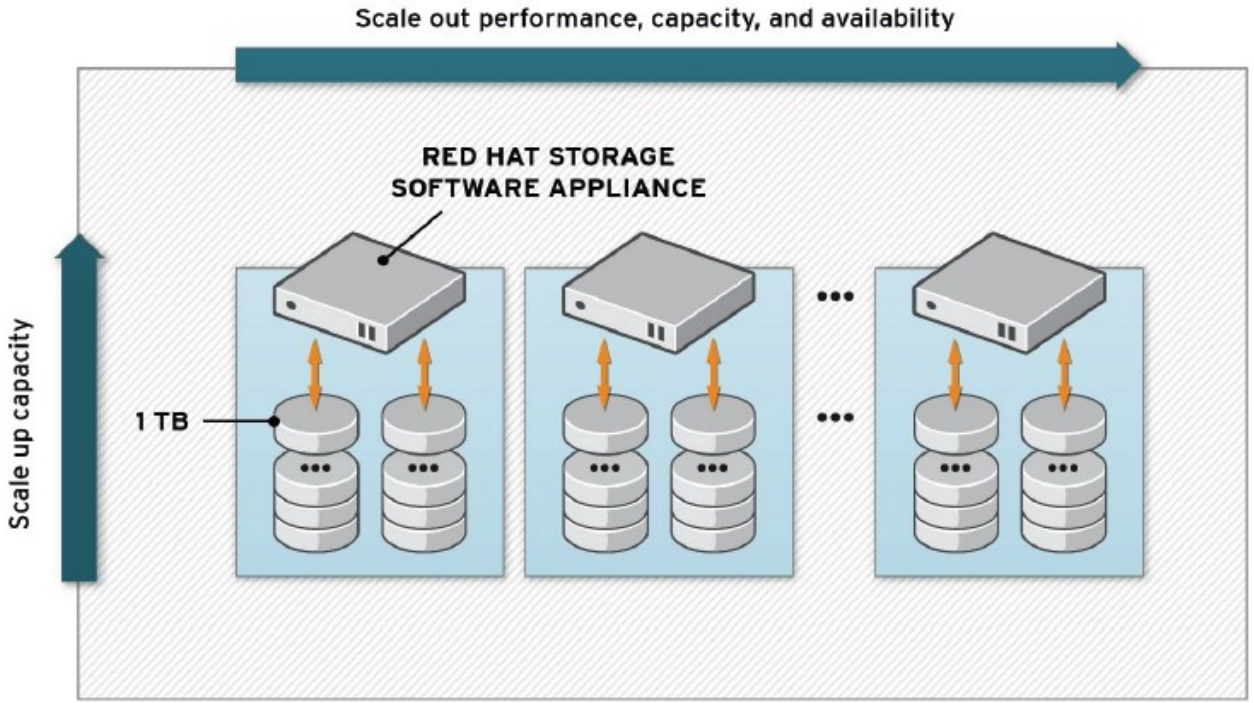
MADFW: High Availability



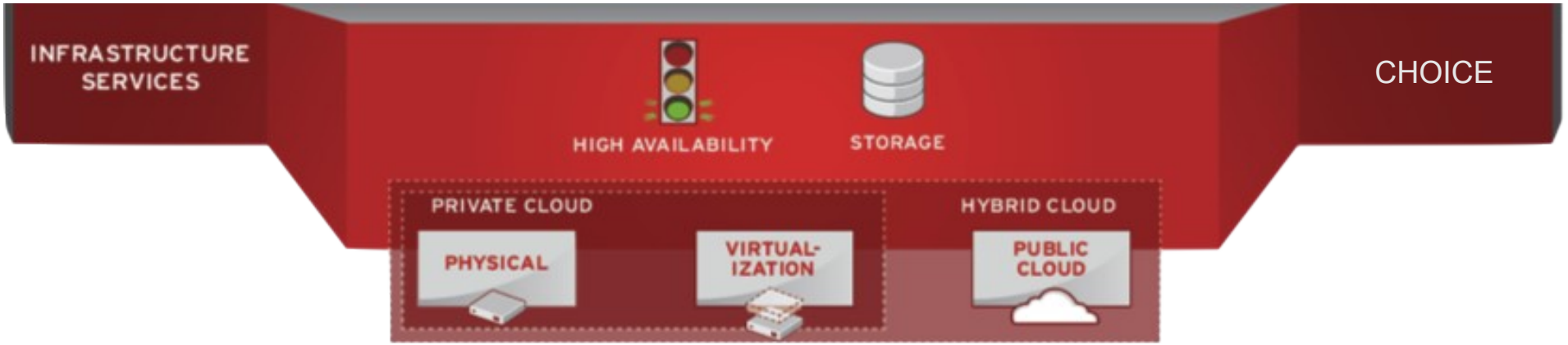
- Automatic restart on another hypervisor in event of failure
- Live migration to original host upon environmental restoration
- Resource specifications held constant through DR process (CPU, Memory, Storage, Network)



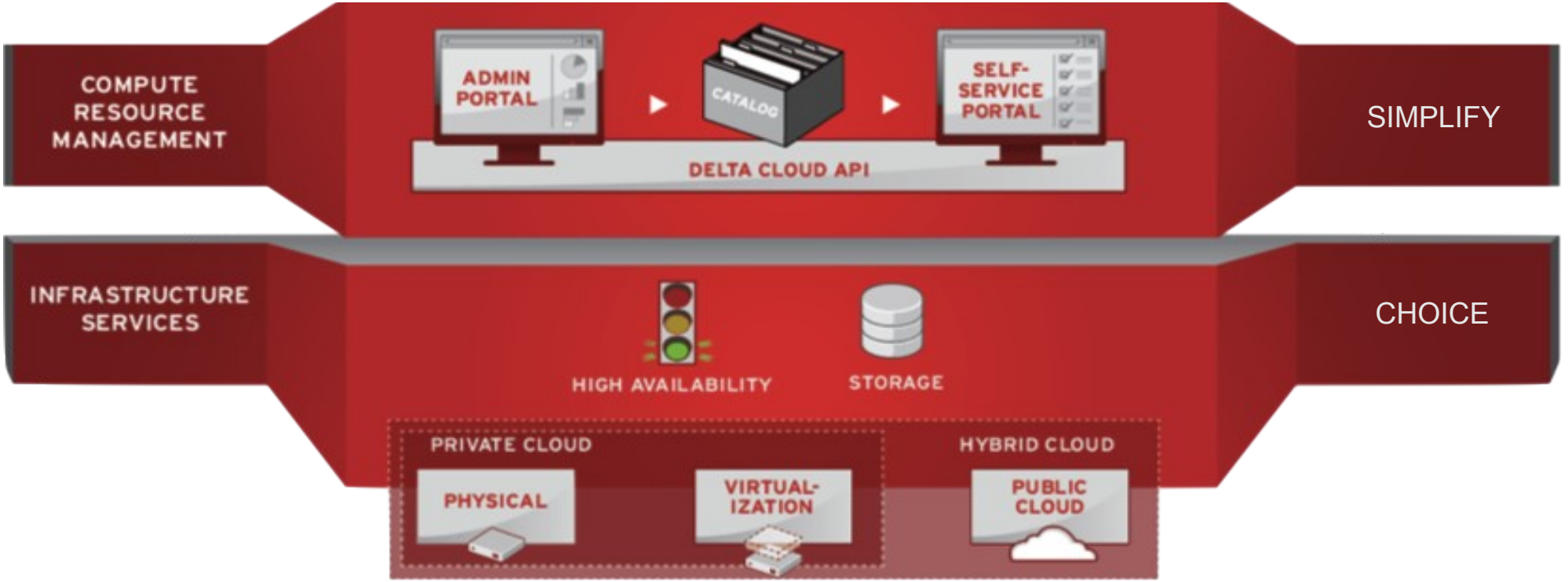
MADFW: Centralized Storage



- Storage pool managed by MADFW
- Hardware RAID
- Exposed as NAS



MADFW: Management Interfaces



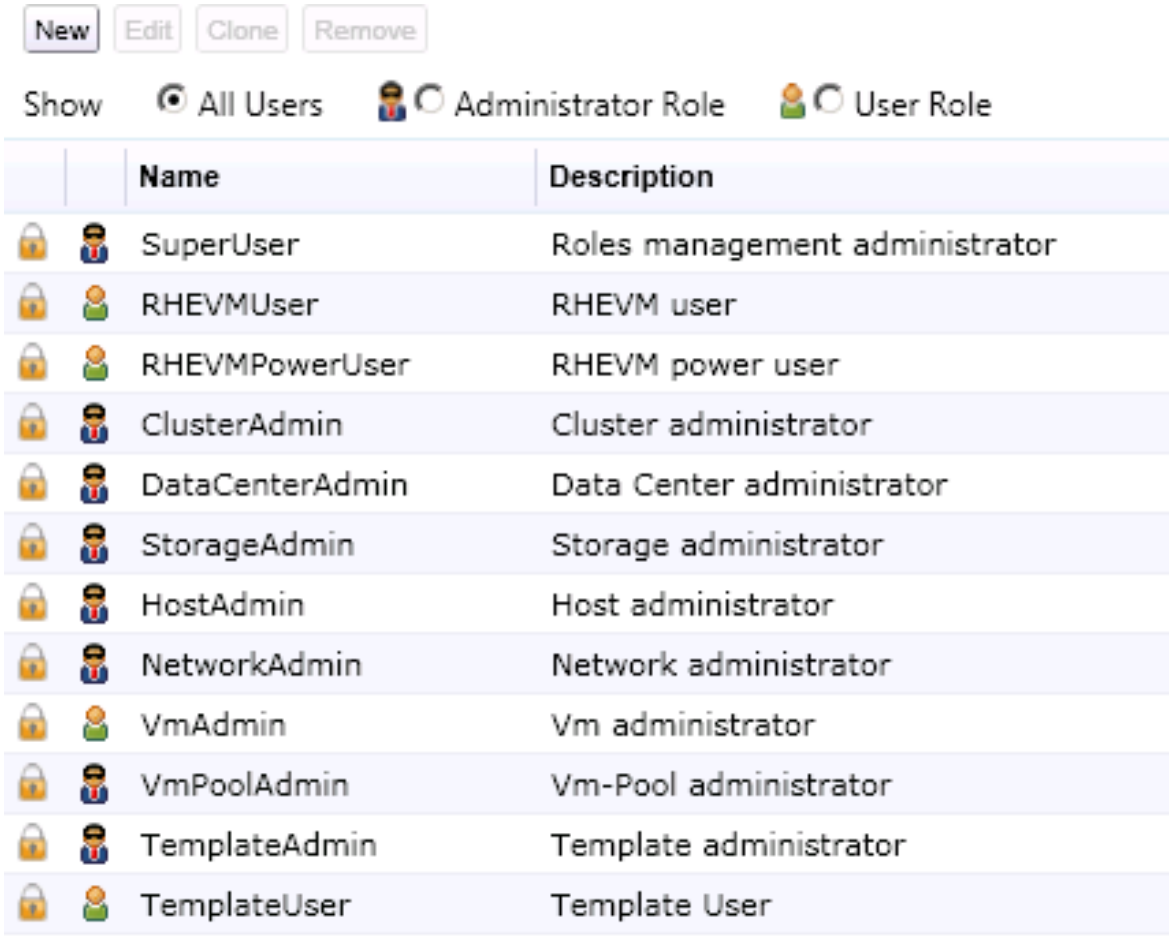
MADFW: Admin Portal

MADFW: Self Service Portal

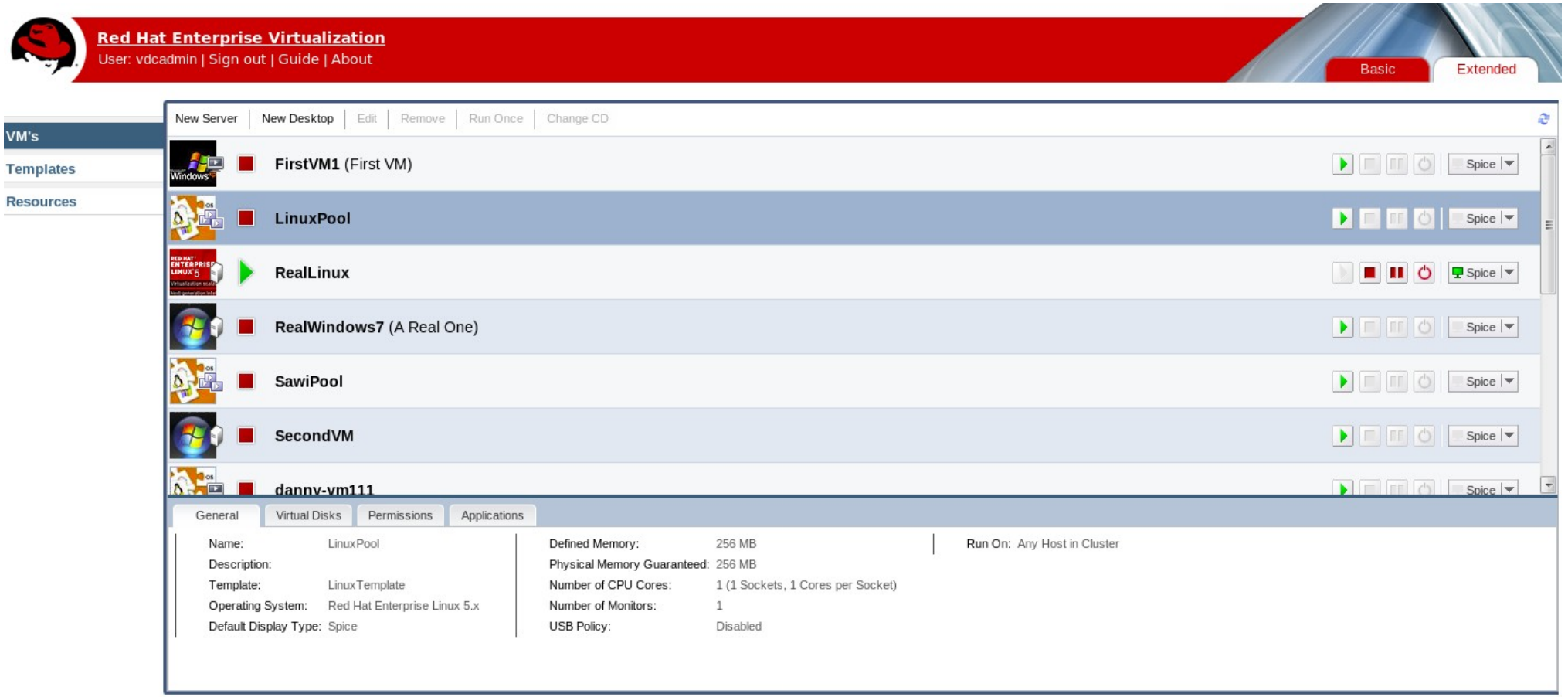
- Upon account creation, Tenants will be given a “pool” of resources
  - e.g. 50 vCPUs, 100GB RAM, 1TB disk
- Tenants have ability to utilize their resources as they see fit, managed through a WebGUI
  - Self-Service create and destroy VMs
  - Start/stop/modify
- Addition of resources (“pool growth”) will require a new ticket

MADFW: Self Service Portal

- Tenants can create Role-Based sub-accounts

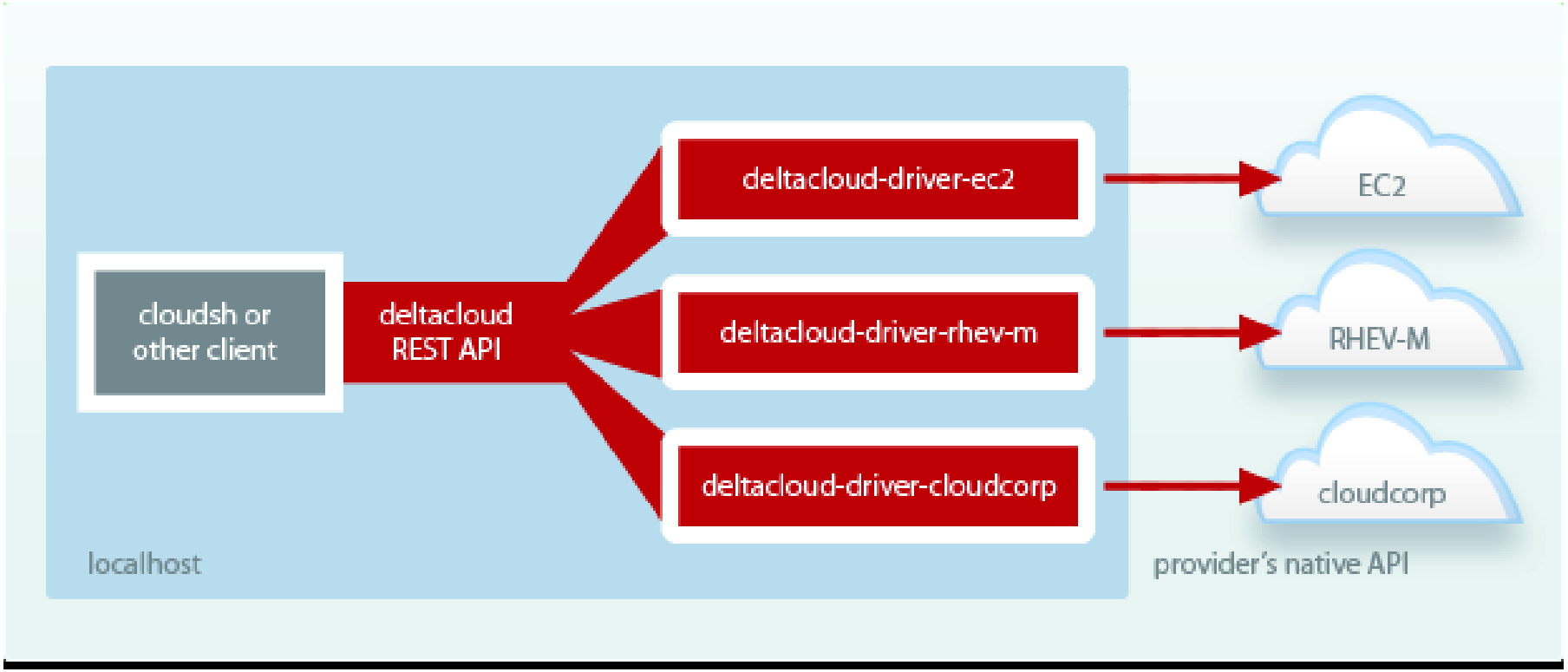


MADFW: Self Service Portal



MADFW: Reports Interface

MADFW: Management through APIs



A RESTful API for simple, any-platform access

MADFW: API Example

```
$ deltacloudd -l


Available drivers:
* condor
* vsphere
* opennebula
* eucalyptus
* rhevm
* sbc
* azure
* gogrid
* mock
* rackspace
* rimuhosting
* terremark
* ec2
```

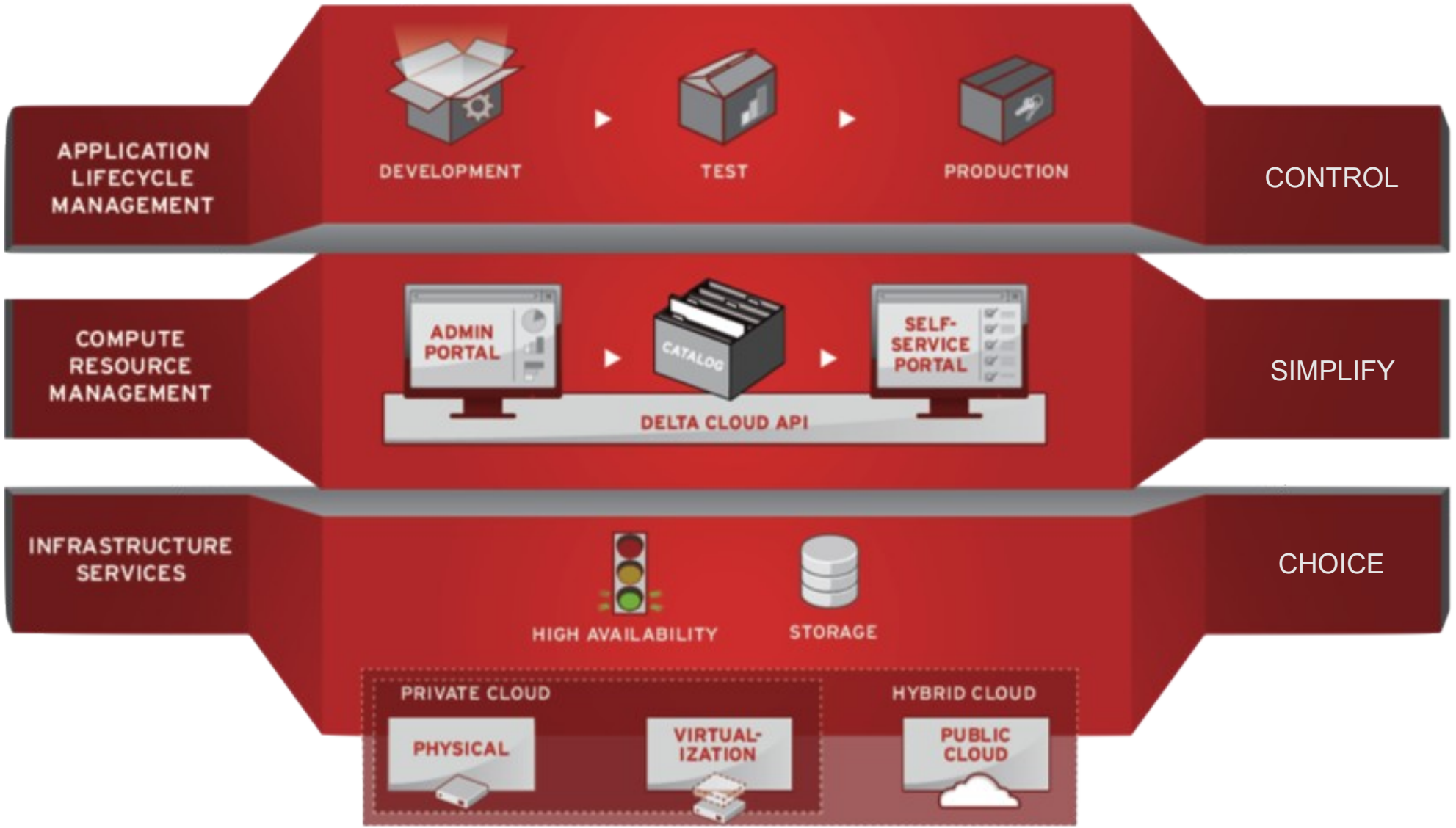
```
require 'deltacloud'


api_url      = 'http://madfw.example.com:5000/api'
api_name     = 'TK2PJCAN9R1HKG2FK24Z'
api_password =
'aLe27rZlRhlBcVoQbL4JsVtaNga12vEL9d9kS5CA'


client = DeltaCloud.new( api_name, api_password,
api_url )


# get a list of currently running instances (virtual
machines)
client.instances.each do |instance|
 puts instance.name
end
```

```
$ deltacloudd -i rhevm -P 10000 -r madfw.example.com
```


APPLICATION LIFECYCLE MANAGEMENT
DEVELOPMENT
TEST
PRODUCTION
CONTROL
COMPUTE RESOURCE MANAGEMENT
ADMIN PORTAL
CATALOG
SELF-SERVICE PORTAL
DELTA CLOUD API
SIMPLIFY
INFRASTRUCTURE SERVICES
HIGH AVAILABILITY
STORAGE
PRIVATE CLOUD
PHYSICAL
VIRTUAL-IZATION
HYBRID CLOUD
PUBLIC CLOUD
CHOICE

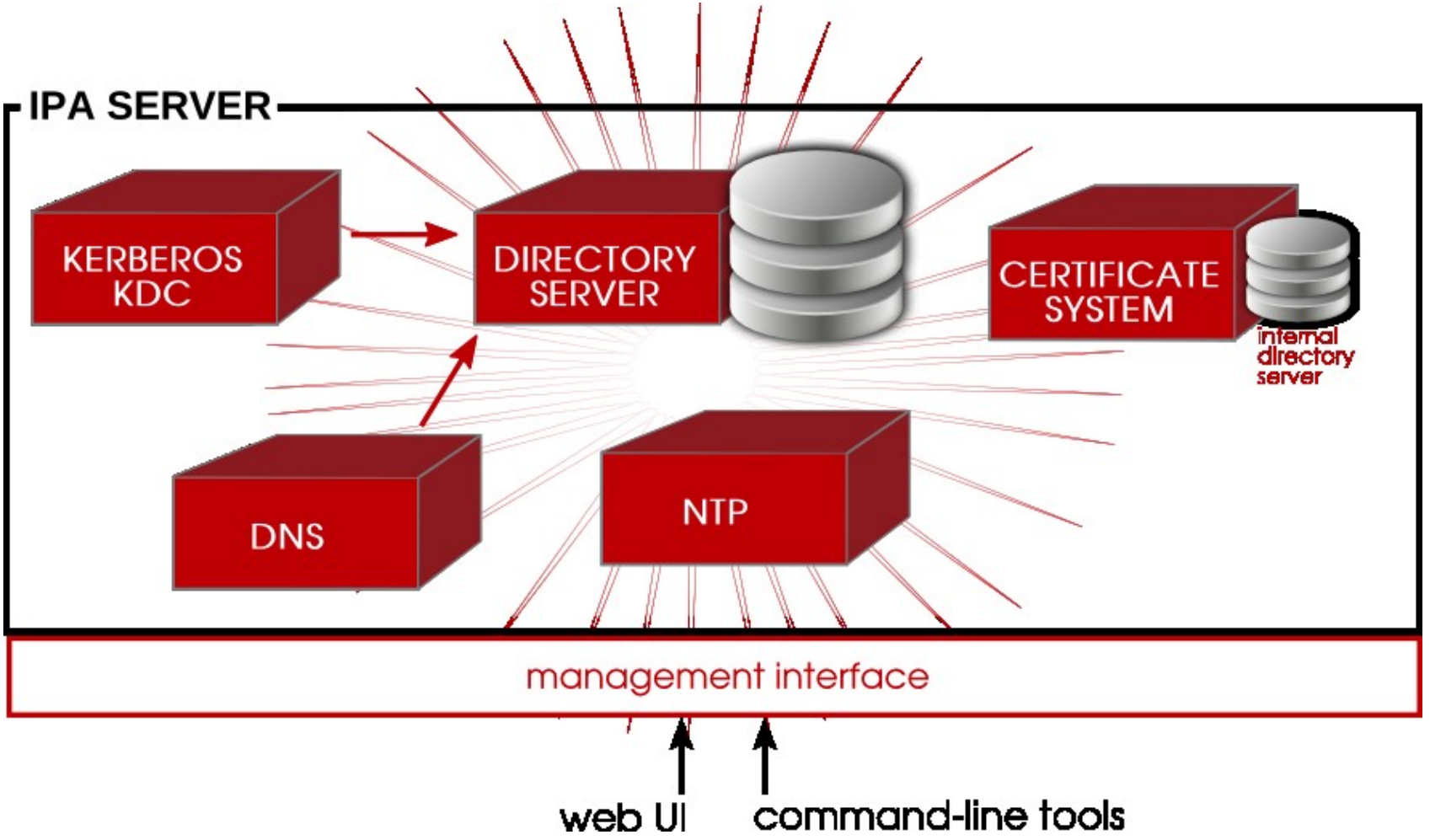
MADFW: Common Services

- System Management
- Identity Service
- Hardened RHEL Baselines

MADFW: System Management Service

- Software/Updates
  - Access to RHEL security updates, patches, new OS versions
  - Provides vehicle for IAVM/CVE patches
- Management
  - Manage groups of systems as one
  - Manage configuration files, not just binaries
  - Schedule updates to occur during maintenance windows
- Provisioning
  - Bare metal, Vms, or system cloning
  - Undo problematic changes with snapshots and rollback

MADFW: Identity Service



MADFW: Hardened RHEL Baselines

- Initial offering of hardened RHEL6 baselines
  - STIG, NIST 800-53
  - Common Criteria once announced (est. September)

- RHEL5 offered by mid-September
  - STIG, NIST 800-53, Common Criteria

MADFW: Limitations

- 10G network
- NAS storage (not block level through SAN)
- Limited Backup

MADFW Demo

MADFW Demo

- Demos
  - Workflow Overview
    - How to request MADFW access (TBD)
    - How to make a VM
  - Environment Interfaces
    - User Portal (start/stop/create)
    - System Management via RHN Satellite (Patching, Prov, Grouping, Custom Apps)

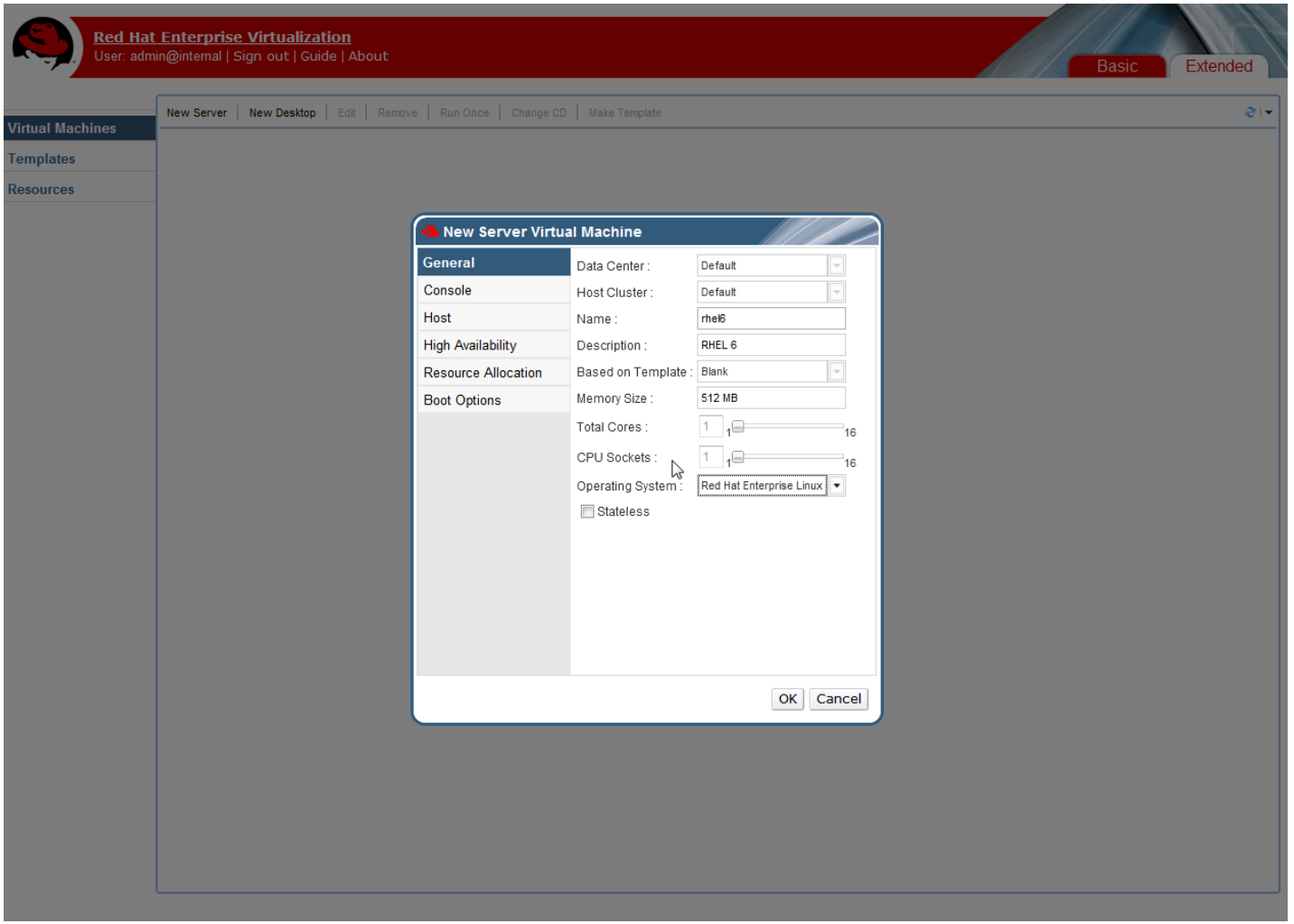
How to Make a Virtual Machine in RHEV Overview

- Login to RHEV User Portal (https://userportal.example.com:8443)
- Create a New Server
- Add Network and Disk to VM
- Begin installation

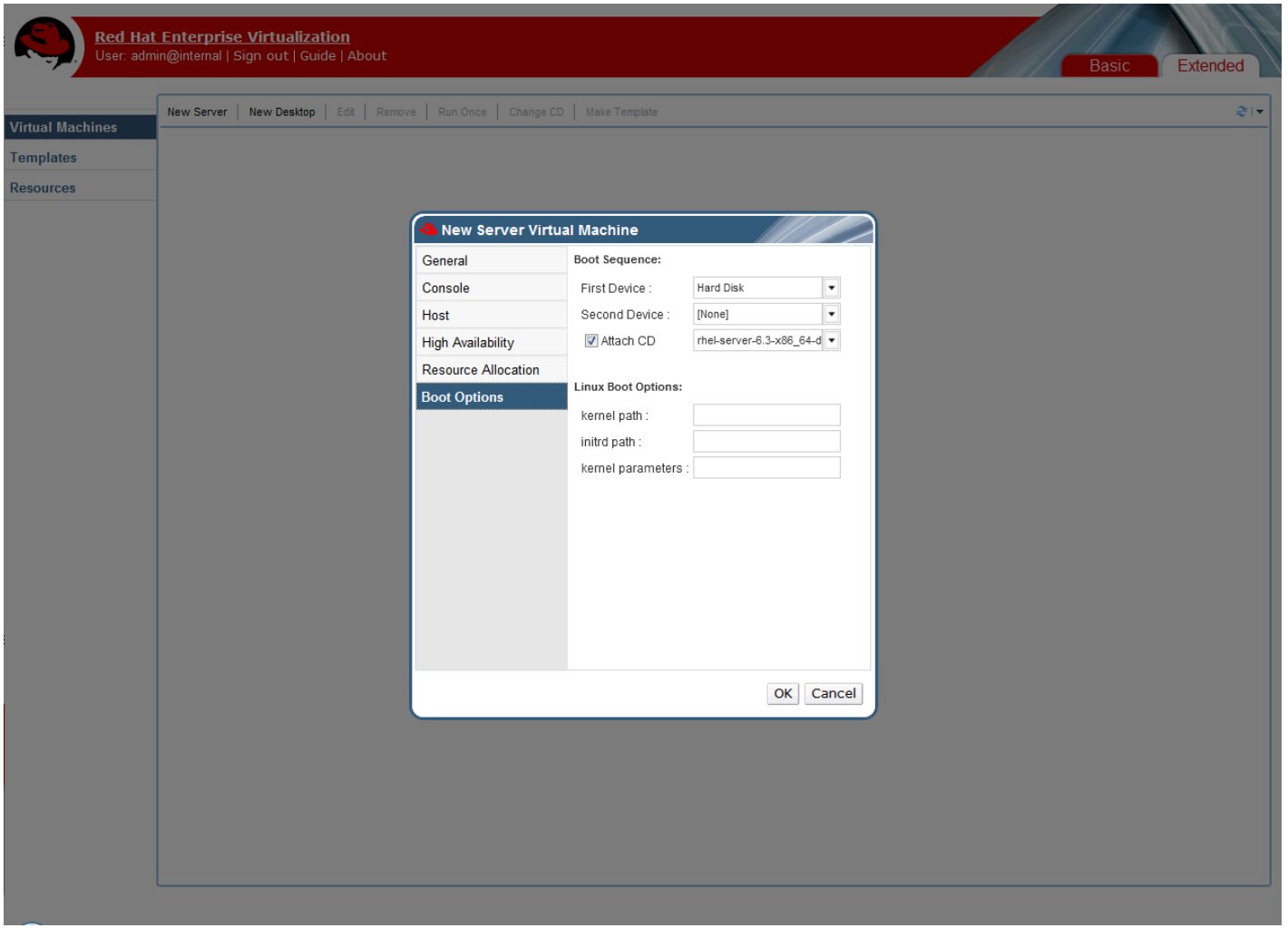
RHEV User Portal: Create a New Server

- Virtual Machines Menu, click “New Server”
- Fill out New Server Virtual Machine (if not stated below then use defaults)
- General
  - Name
  - Description
  - Template (If applicable)
  - Memory
  - CPU's
  - Operating System
- Boot Options
  - Second Device: CD-ROM
  - Select “Attach CD” and select version

New Server VM General Tab



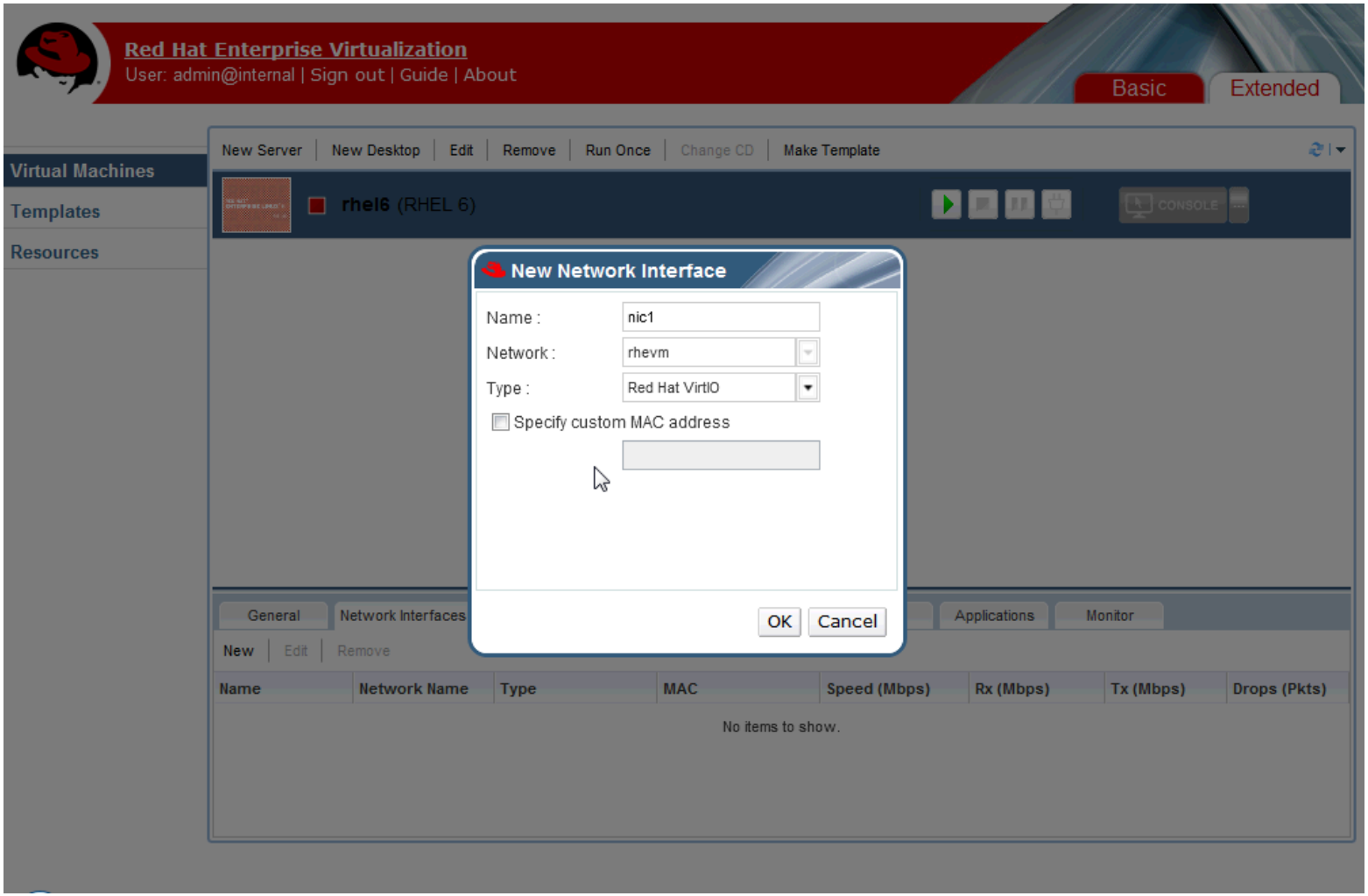
New Server VM Boot Options Tab



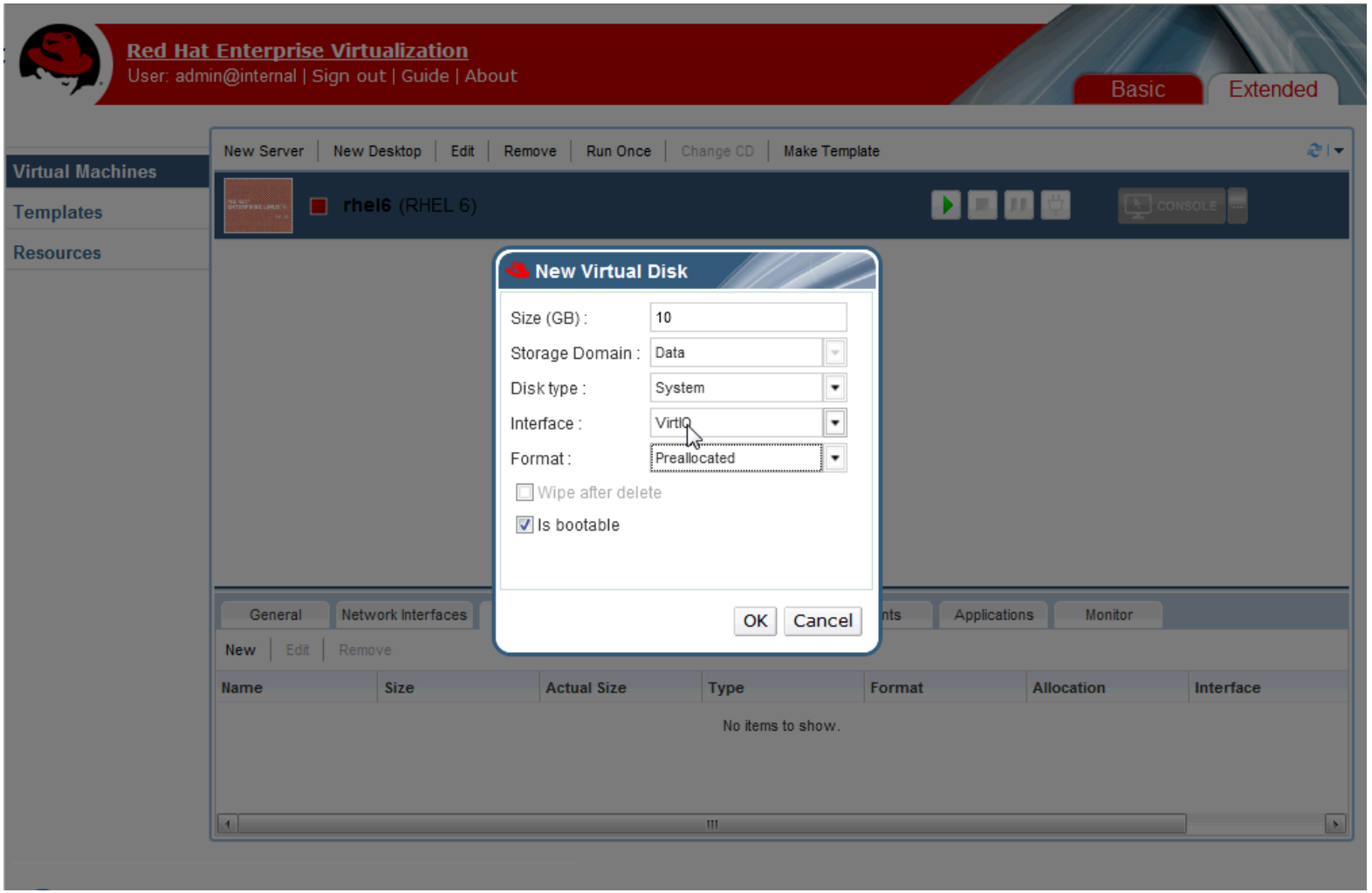
Add Network and Storage to VM

- Attach Network Interface Card
  - Select new VM, go to “Network Interfaces” Tab, click on “New”
  - Defaults are acceptable, select “OK”
- Attach Storage
  - Select new VM, go to “Virtual Disks” Tab, click on “New”
  - Input size of O/S disk
  - Use Defaults
  - Select “OK”
- Wait for disk to be created/initialized

New VM NIC Configuration



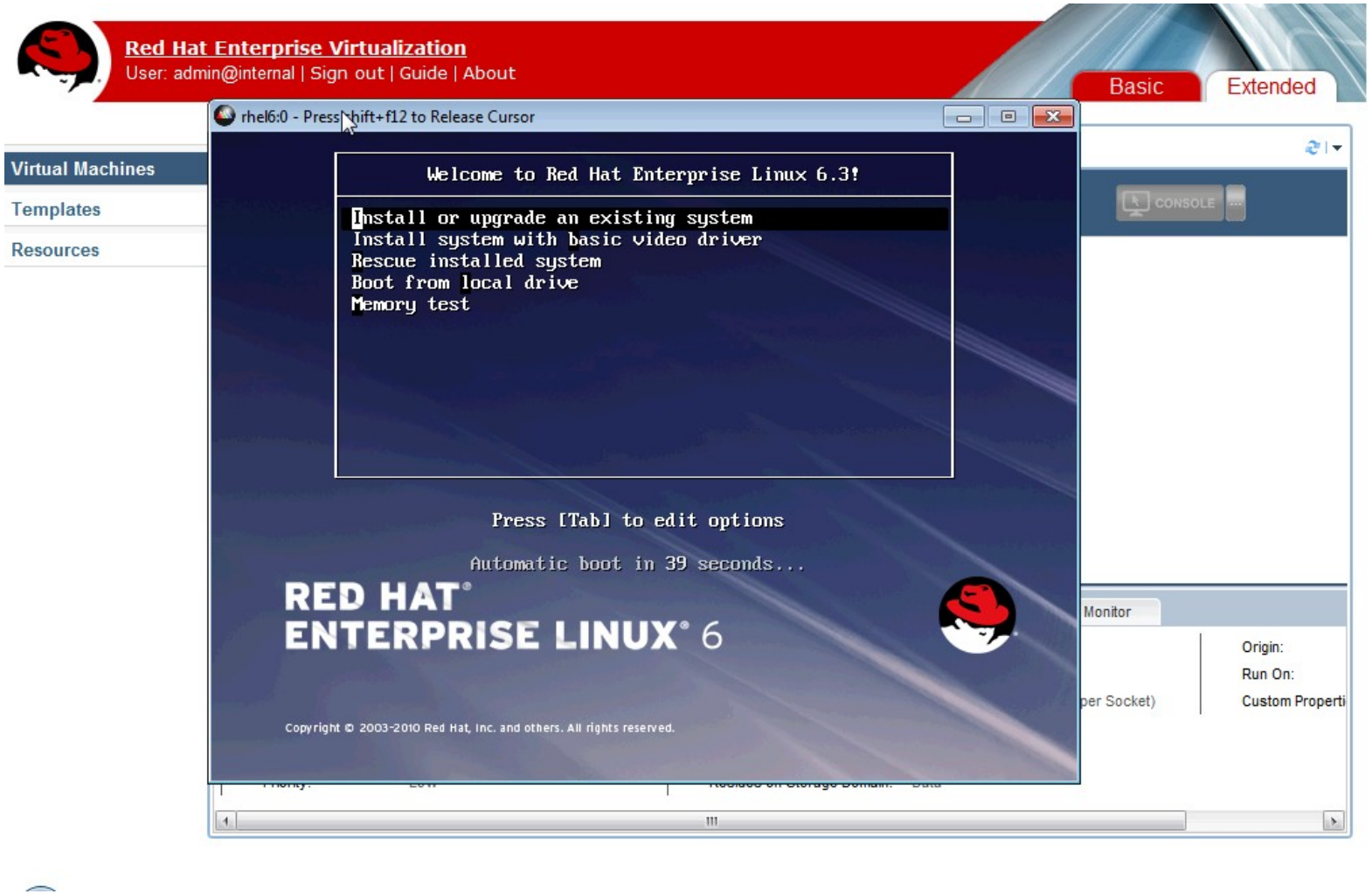
New VM Virtual Disk Configuration



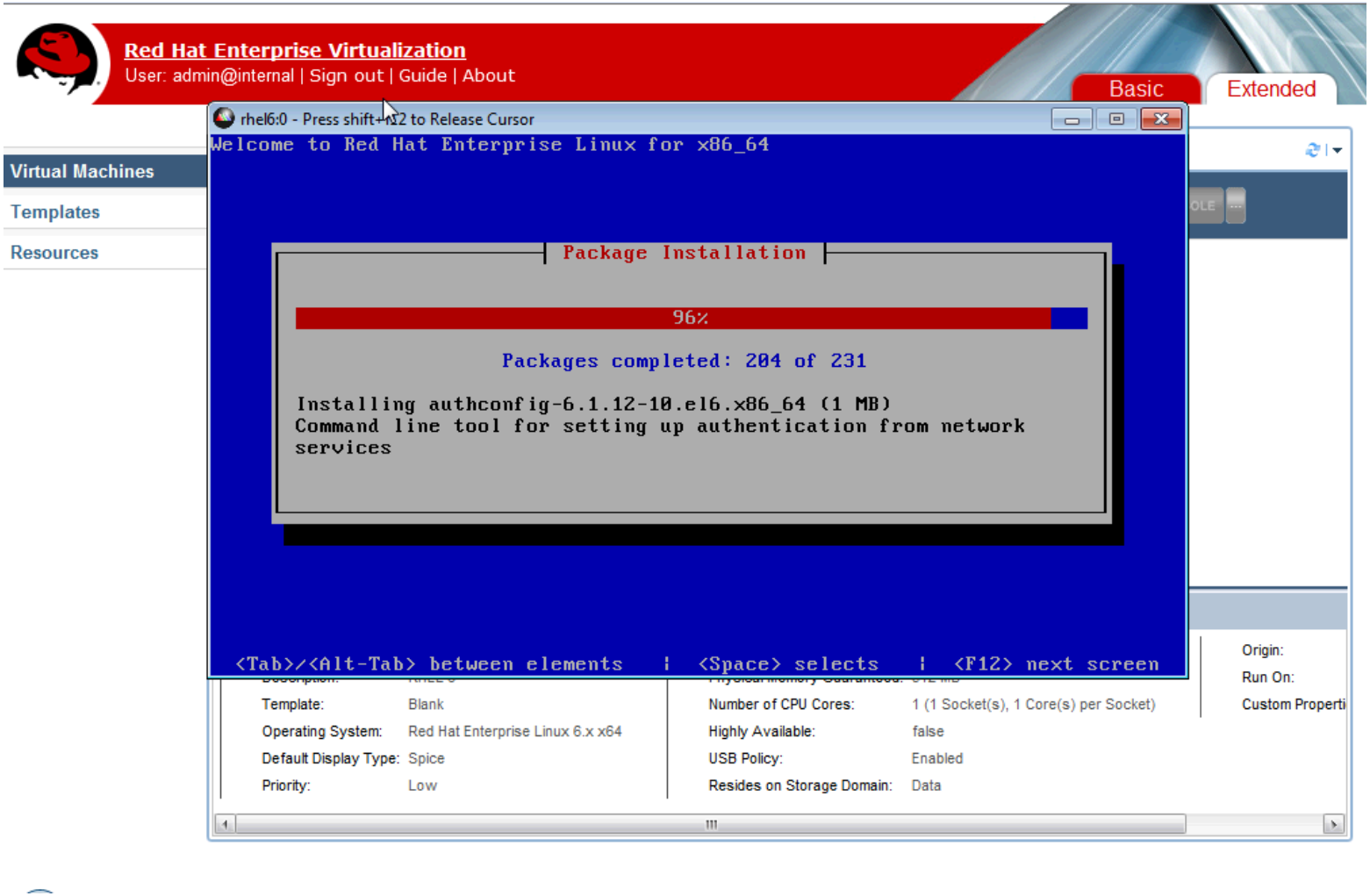
Open New VM

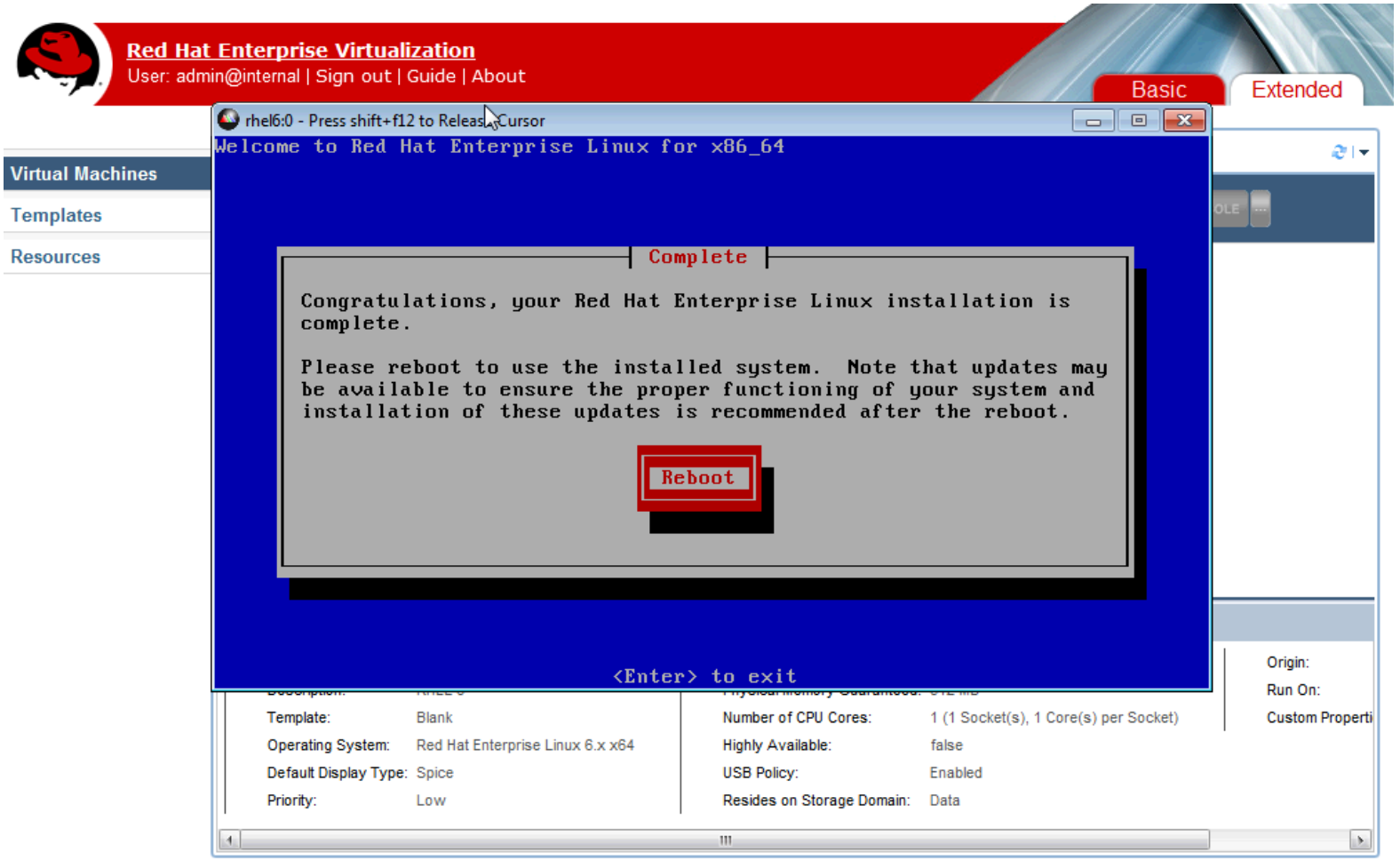
- Now that you have created a virtual machine in the power user portal, you can turn it on and connect to it.
  - Select rhel6 in the listing and click on “Play”, this will turn the VM on.
  - Click on the “Console” button to view the VM
  - A SPICE console window of the virtual machine displays. You can now use the virtual machine in the same way you would use a physical desktop.
    - You might have to install the SPICE app first
- The VM will boot to the CD ISO of RHEL 6 x86_64
- Begin normal installation

VM Installation via SPICE Console

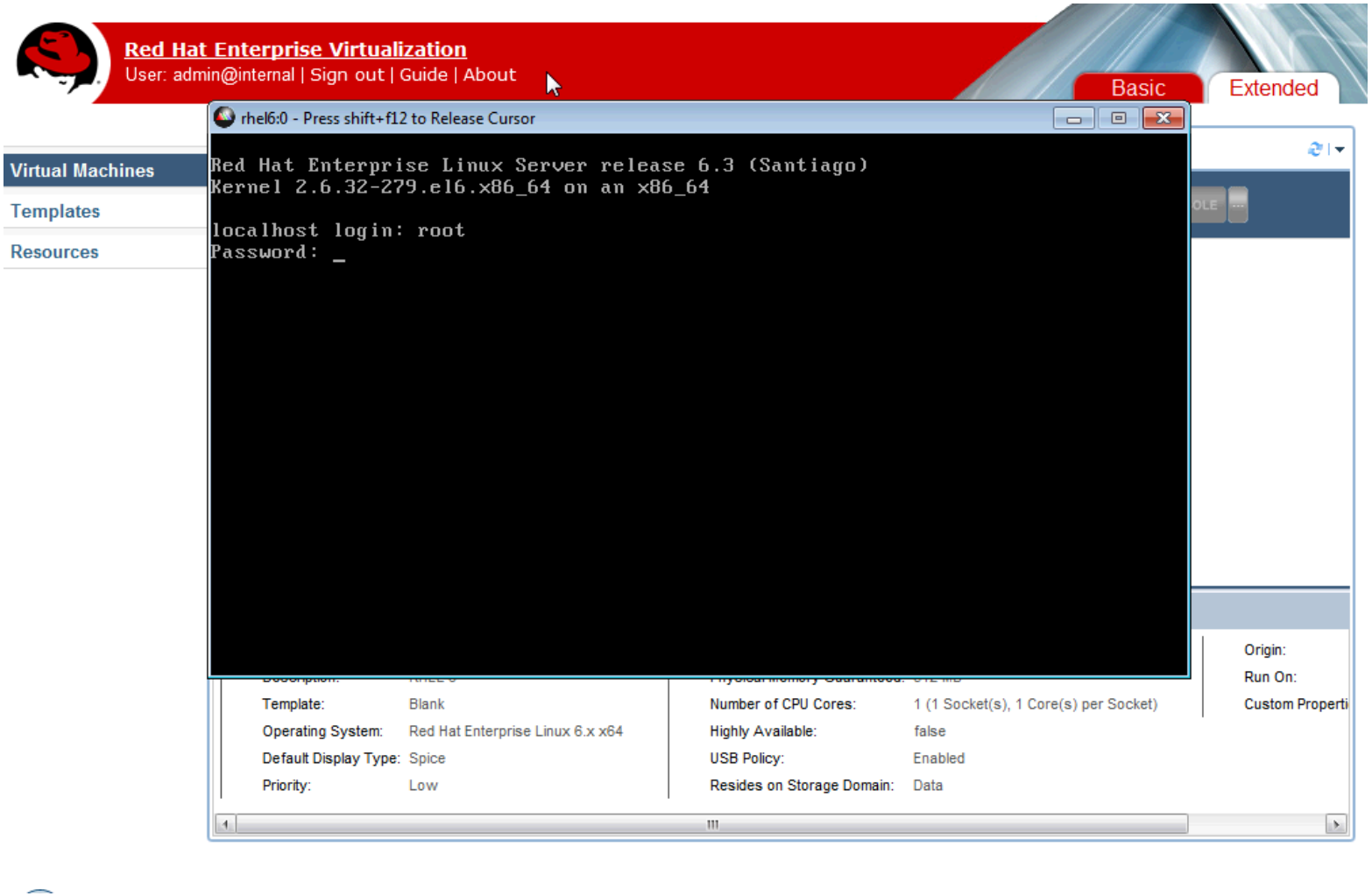


VM Installation




Red Hat Enterprise Virtualization
User: admin@internal | Sign out | Guide | About
Basic
Extended
Virtual Machines
Templates
Resources
rhel6:0 - Press shift+f12 to Release Cursor
Welcome to Red Hat Enterprise Linux for x86_64
Complete
Congratulations, your Red Hat Enterprise Linux installation is complete.
Please reboot to use the installed system. Note that updates may be available to ensure the proper functioning of your system and installation of these updates is recommended after the reboot.
Reboot
<Enter> to exit
Template: Blank
Operating System: Red Hat Enterprise Linux 6.x x64
Default Display Type: Spice
Priority: Low
Number of CPU Cores: 1 (1 Socket(s), 1 Core(s) per Socket)
Highly Available: false
USB Policy: Enabled
Resides on Storage Domain: Data
Origin:
Run On:
Custom Properti

VM Boot Screen



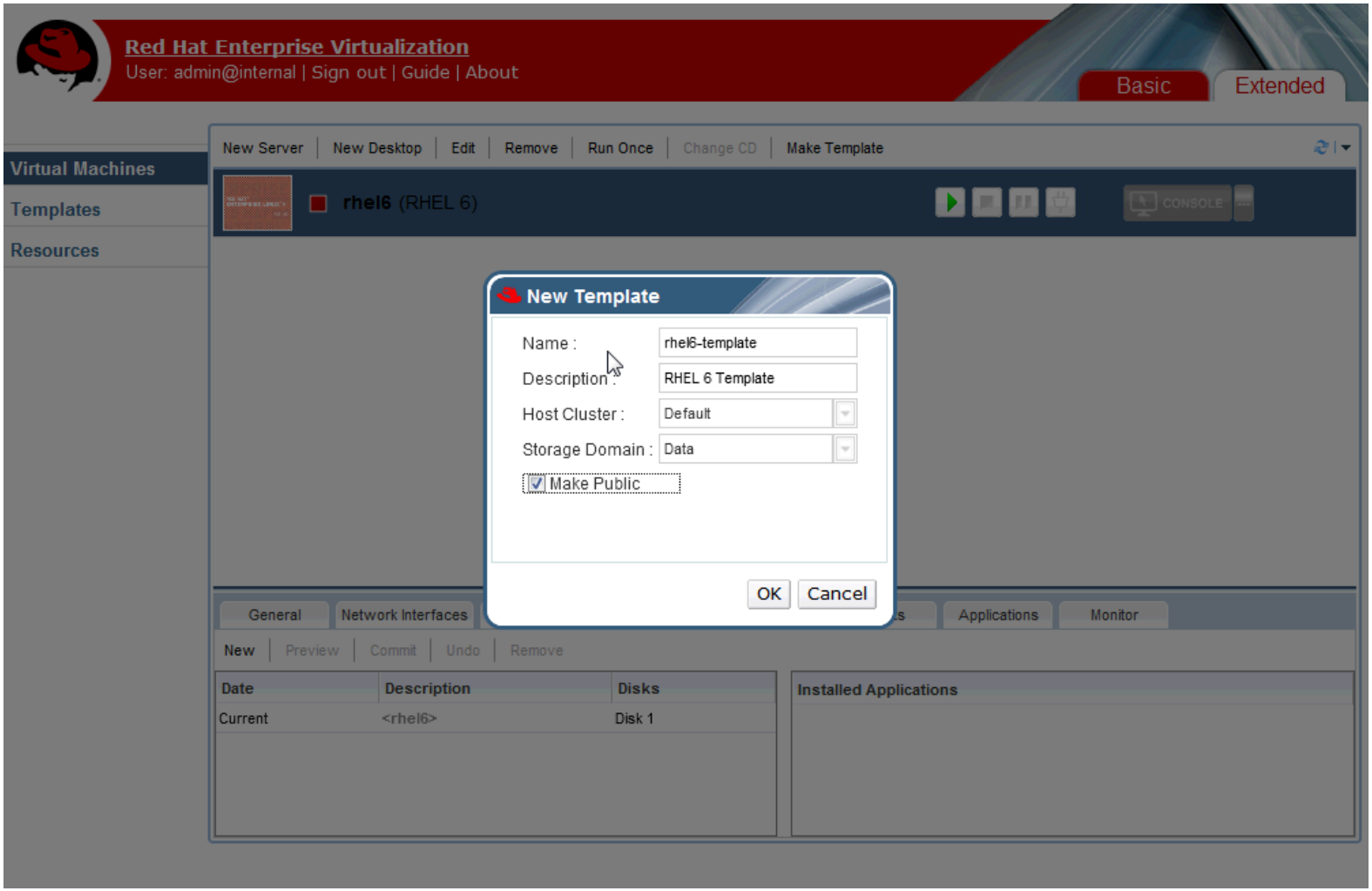
Templates

- What is a template
  - Templates are model virtual machines that are used as a convenient and efficient way to create new virtual machines of the same type and content. Templates provide a shortcut that reduces the time required to build virtual machines.
- Sealing a Linux Template
  - Templates that have been created for Linux virtual machines must be generalized (sealed) before use. This ensures that machine-specific settings are not propagated through the template.
  - Login to the virtual machine to be used as a template and flag the system for re-configuration by running the following command as root:
    - # touch /.unconfigured
  - Remove ssh host keys. Run:
    - # rm -rf /etc/ssh/ssh_host_*
  - Shut down the virtual machine. Run:
    - # poweroff
  - The Linux virtual machine has now been sealed, and can be used as a template for Linux virtual machines.

Build a Template

- Build Template
  - Select VM to template
  - Turn off VM
  - Click “Make Template”
    - Fill out Name and Description
    - Use other defaults
    - Click “OK”
- View templates under “Templates” Menu

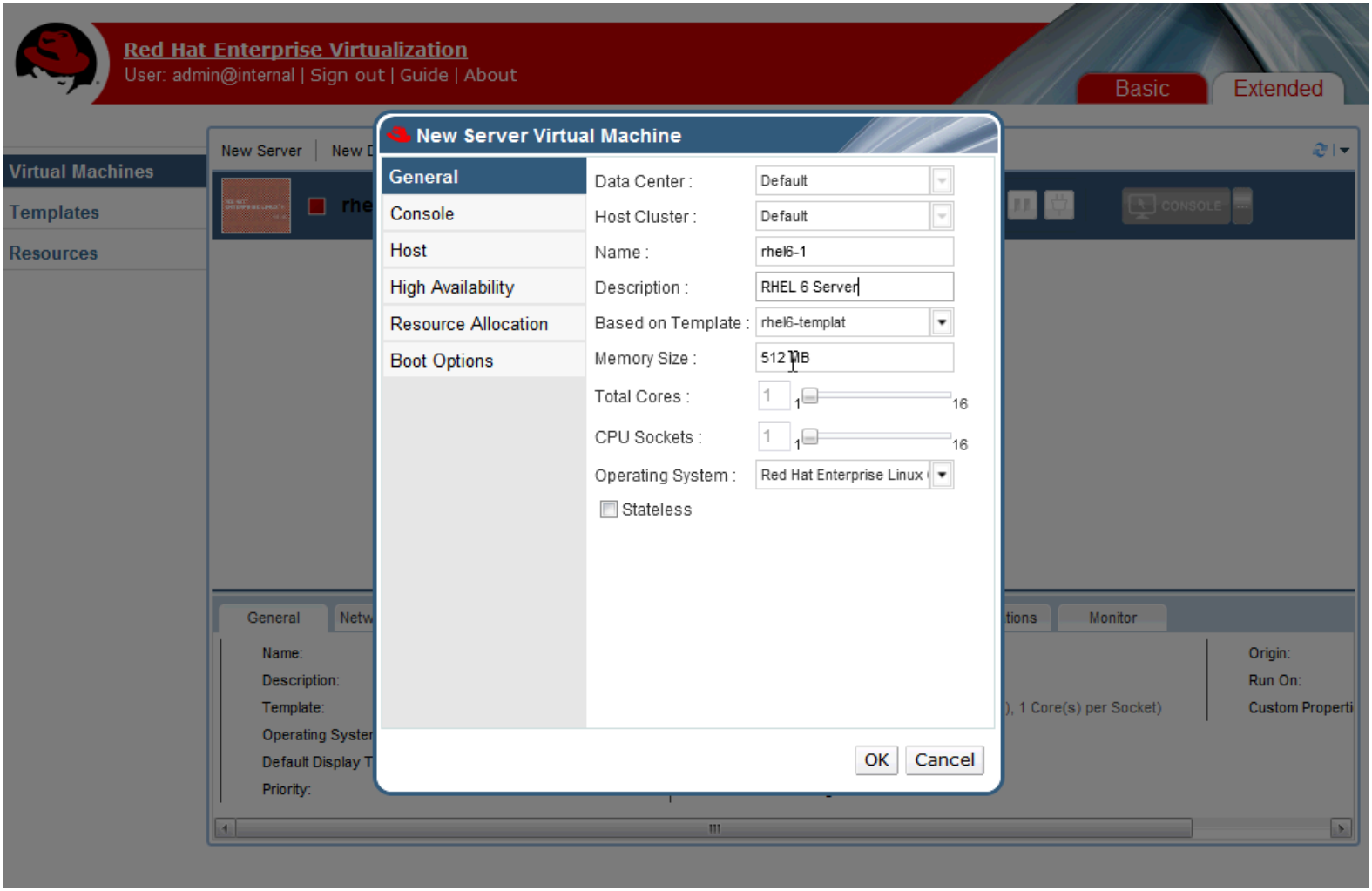
RHEL 6 Template Creation



Create New VM from Template

- Same steps as creating a VM but select the template to use
- General > Based on Template: rhel6-template

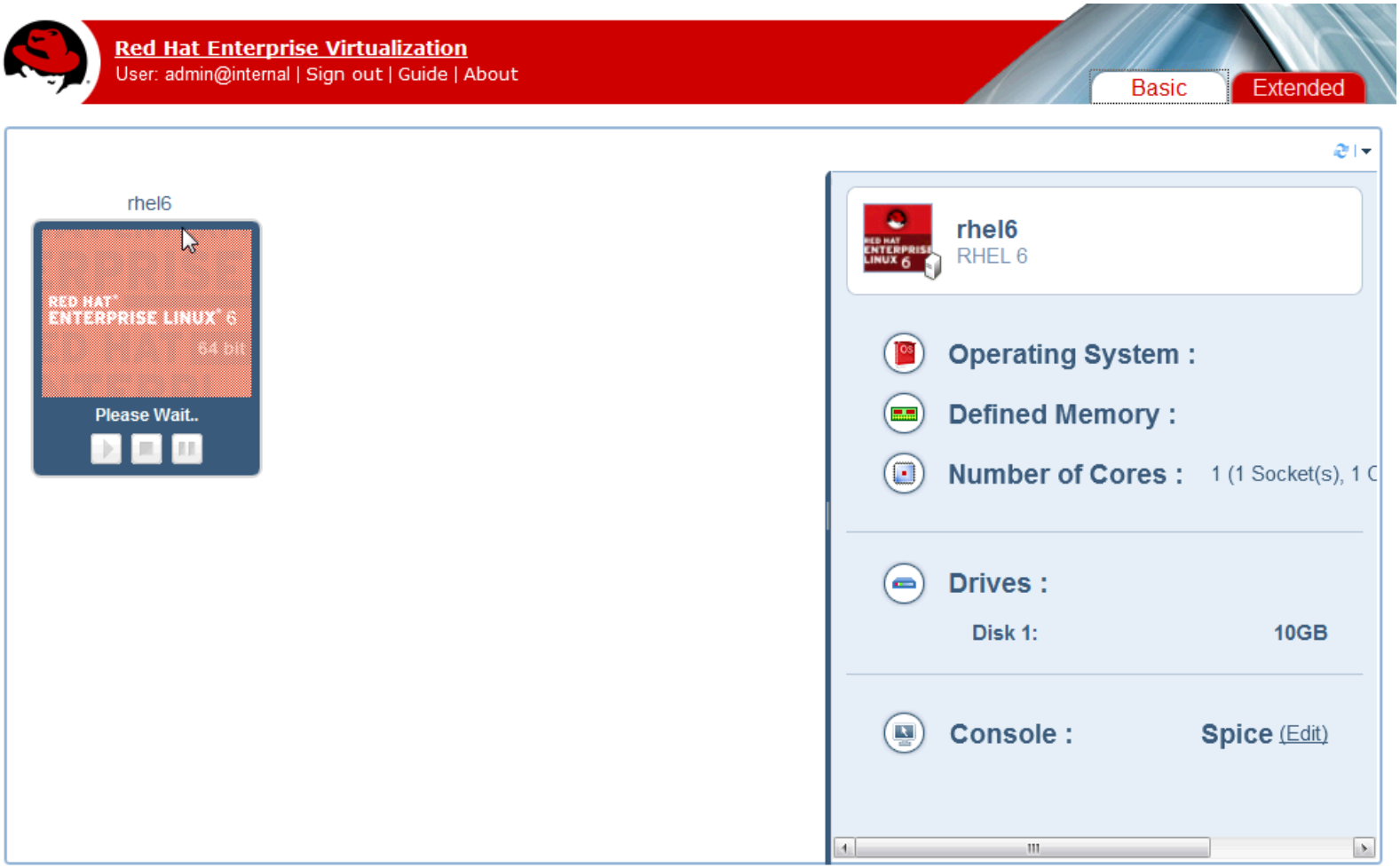
Create New VM from Template



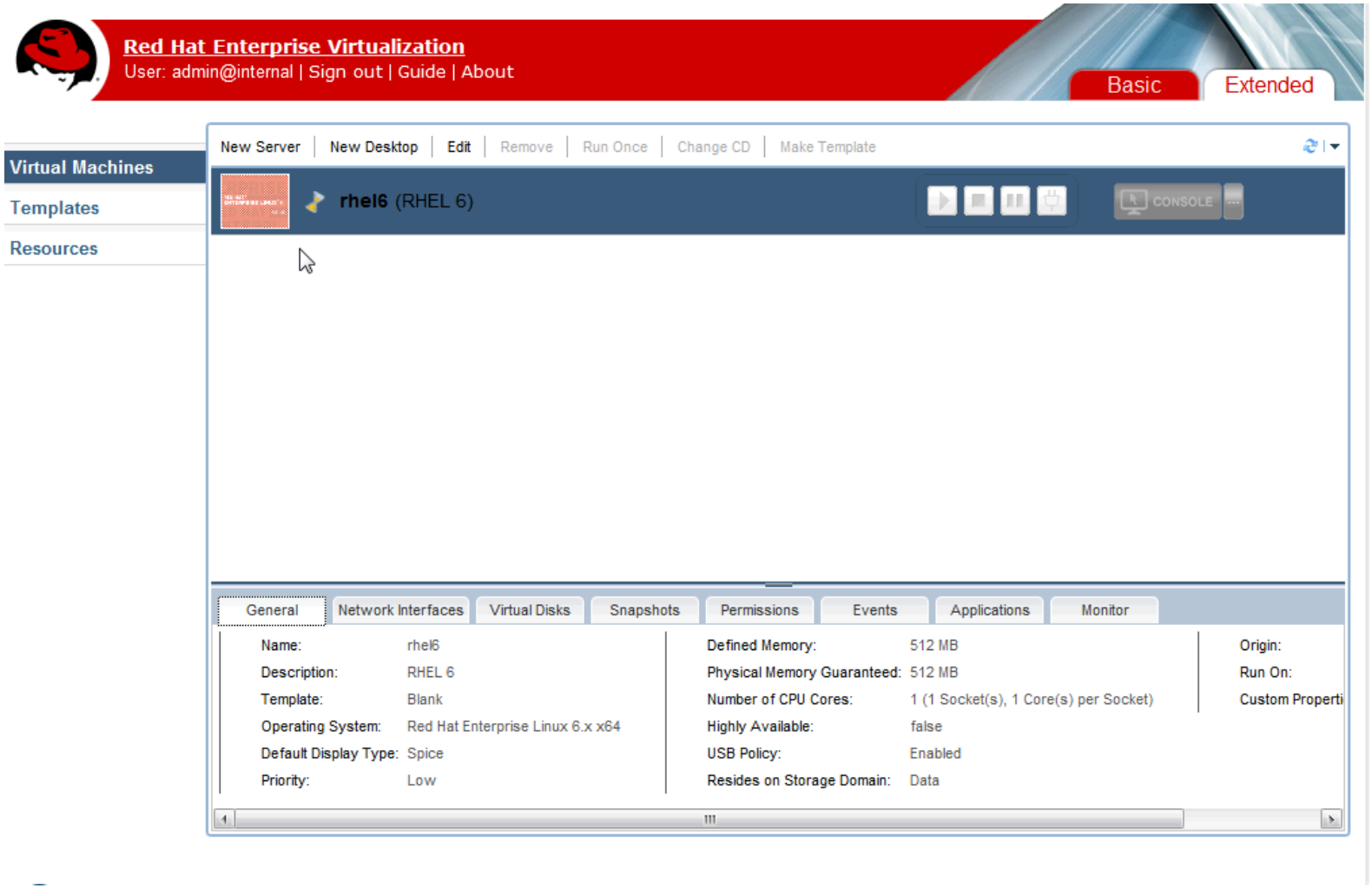
RHEV User Portal

- The User Portal Graphical Interface enables you to view and use all the virtual machines that are available to you.
- Two main views: Basic and Extended
- The screen consists of three areas: the title bar, a virtual machines area, and a details pane.
- Access to RHEV User Portal: https://server.example.com:8443/UserPortal

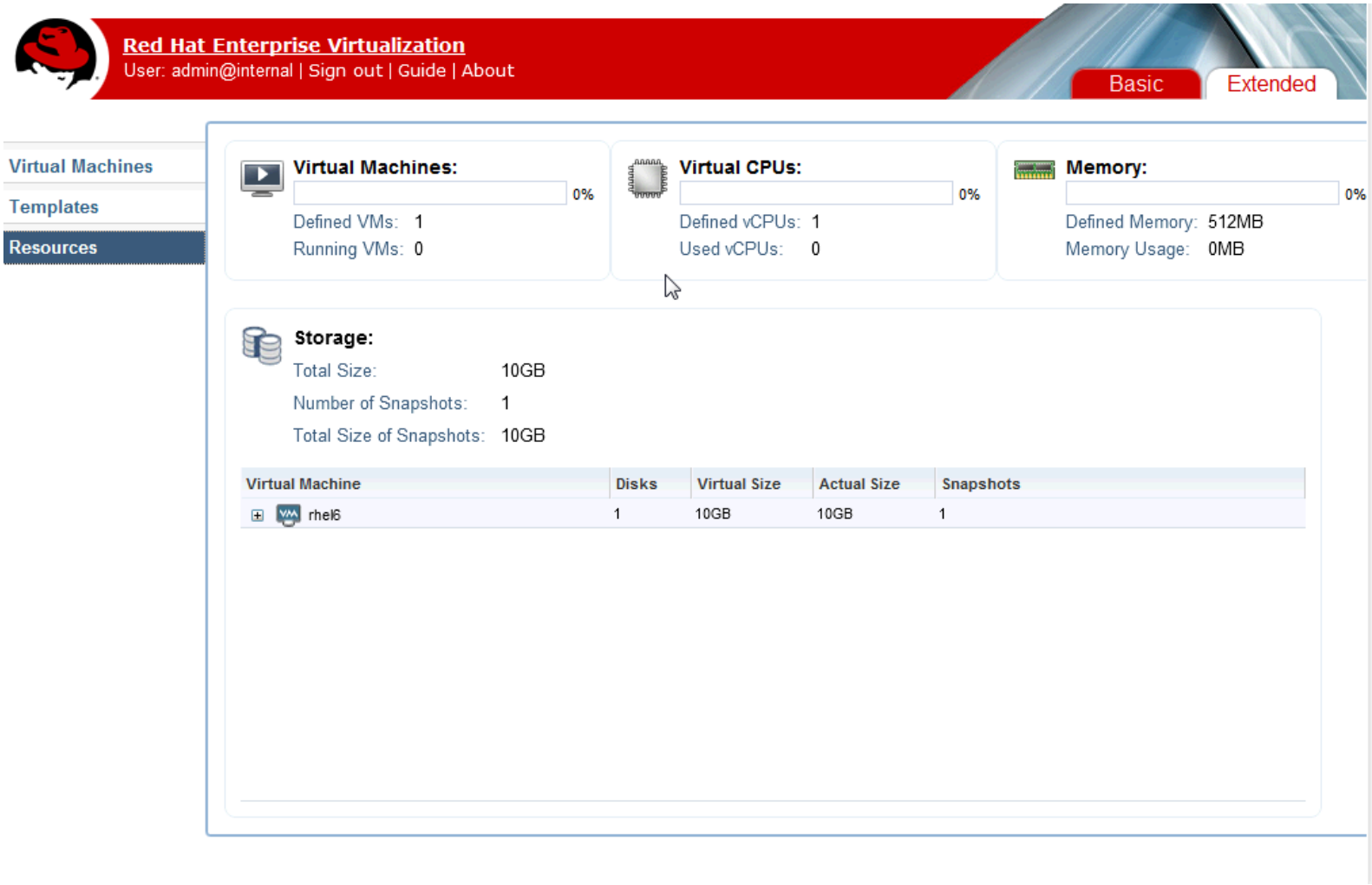
User Portal: Basic View



User Portal: Extended View



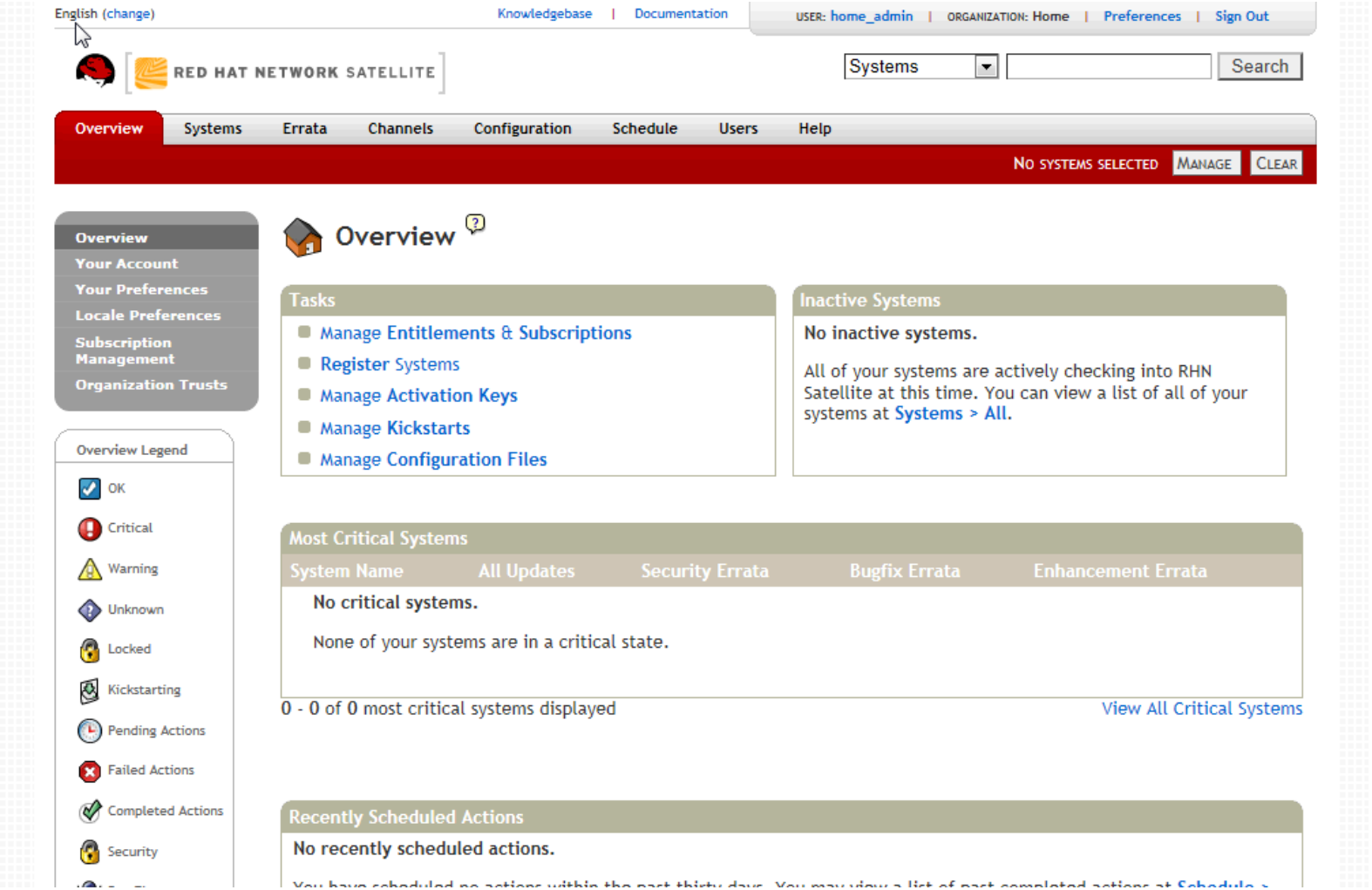
User Portal: Resources



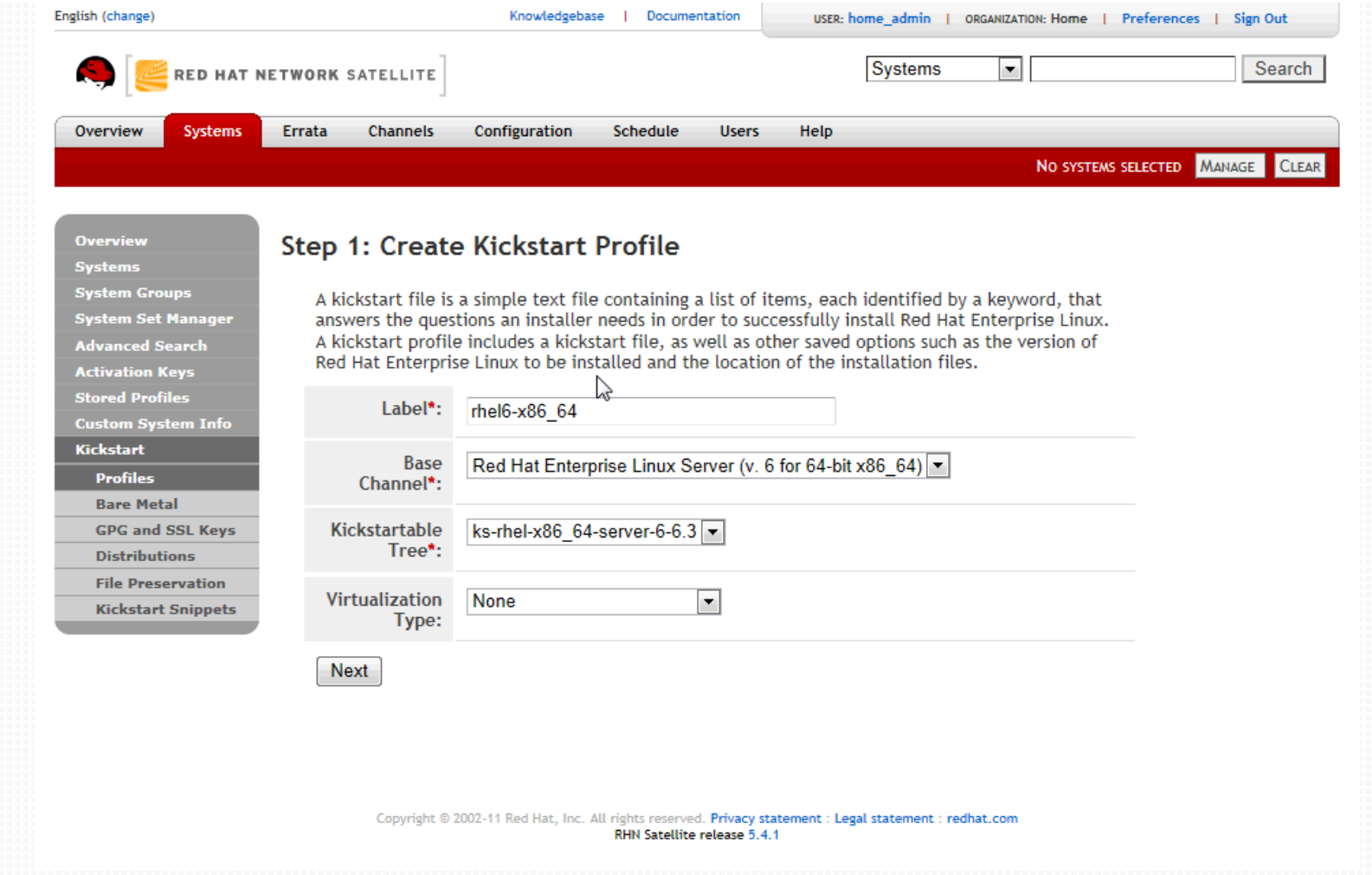
RHN Satellite

- RHN Satellite provides a solution to organizations requiring absolute control over and privacy of the maintenance and package deployment of their servers.
- It allows Red Hat Network customers the greatest flexibility and power in keeping servers secure and updated.

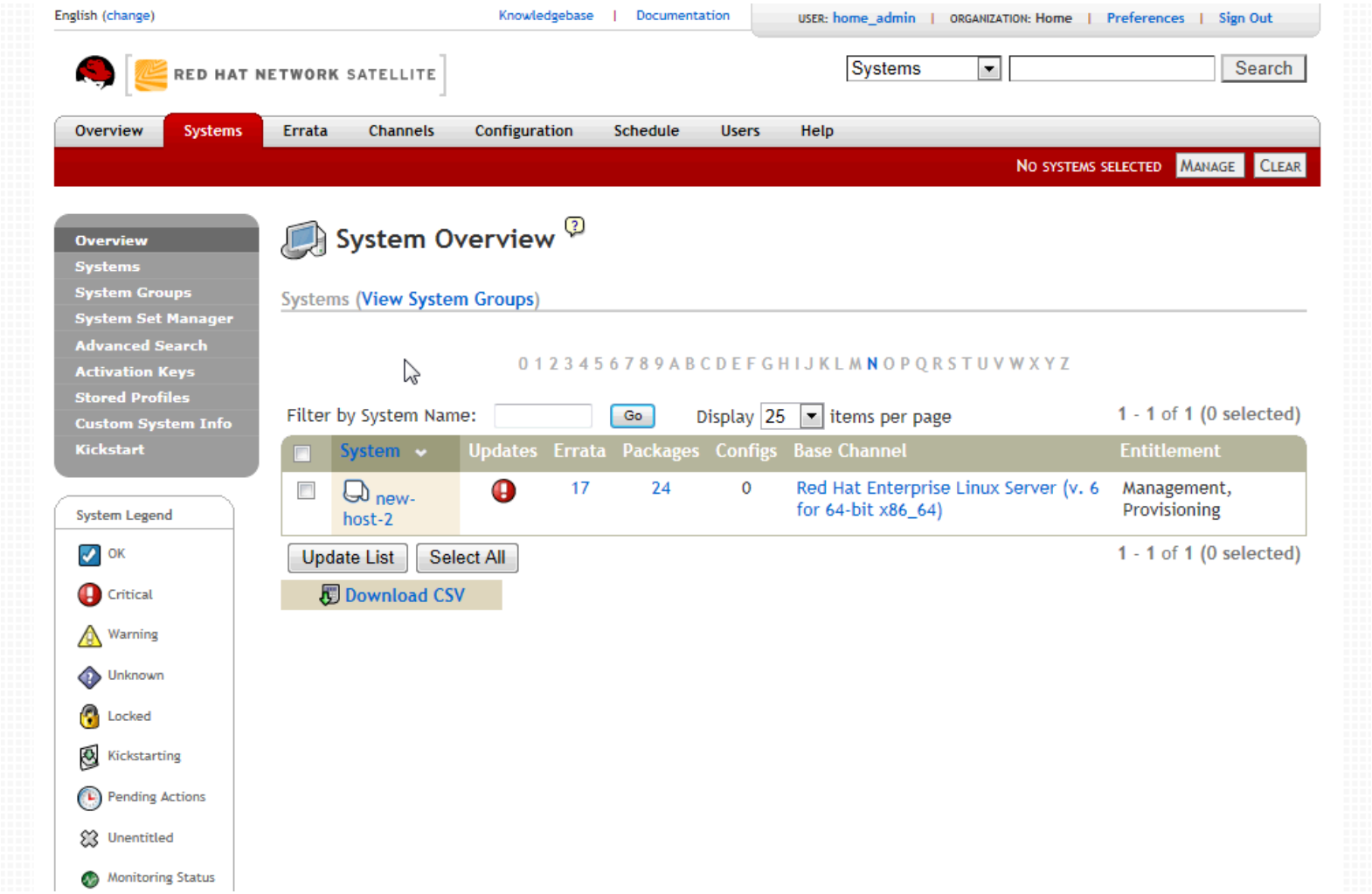
RHN Satellite Homepage



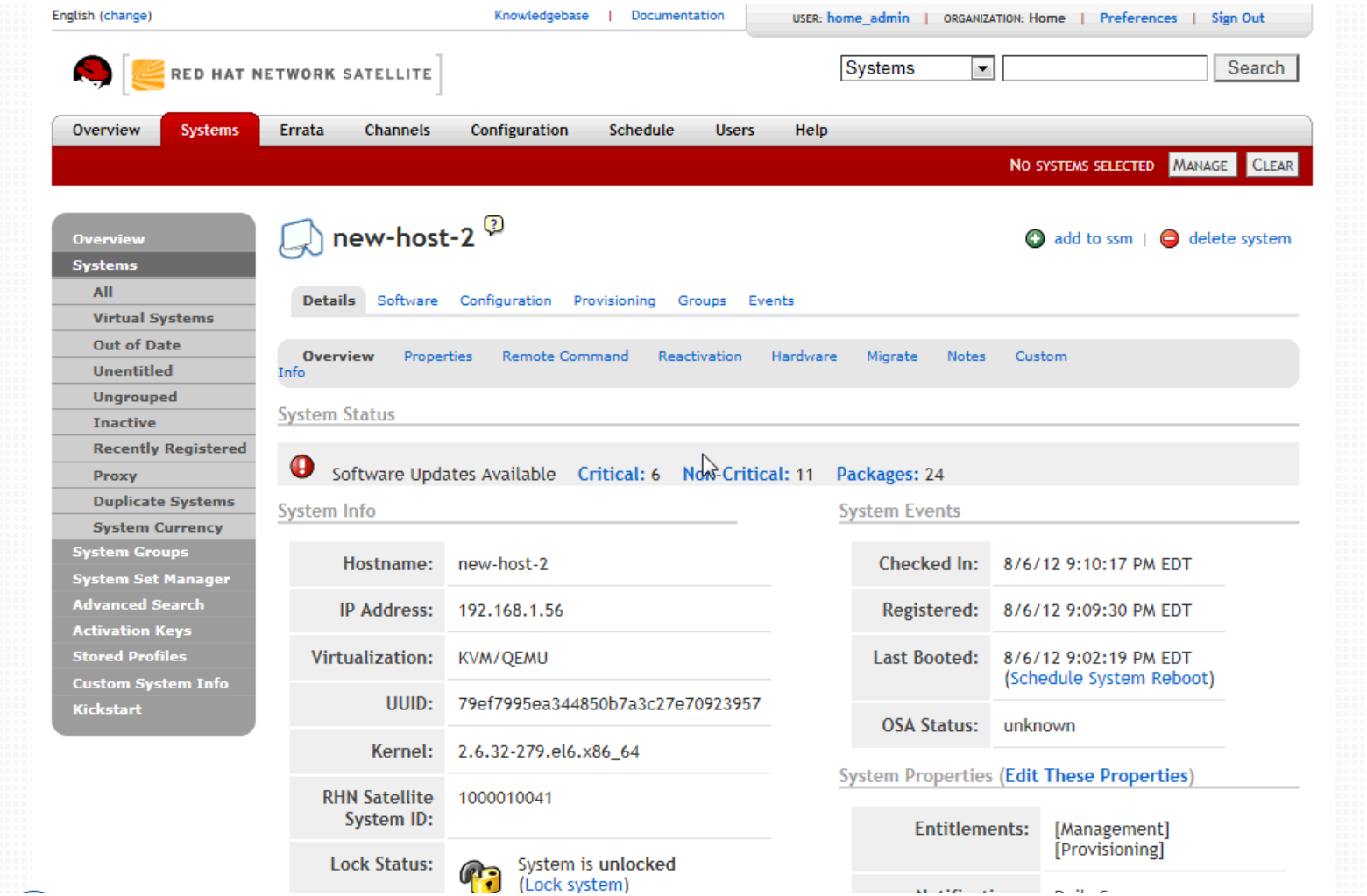
RHN Satellite: Kickstart Creation



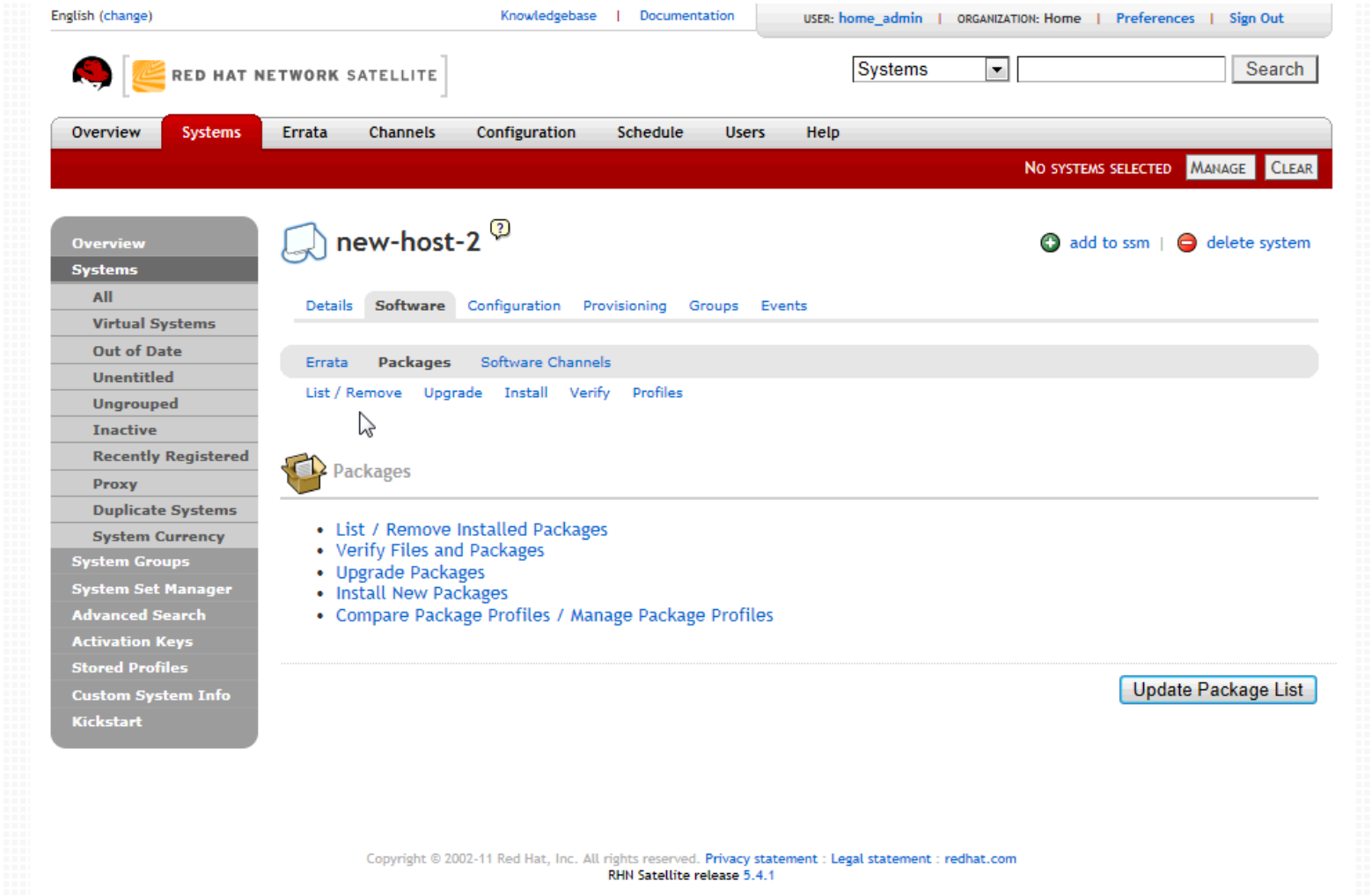
RHN Satellite: Systems



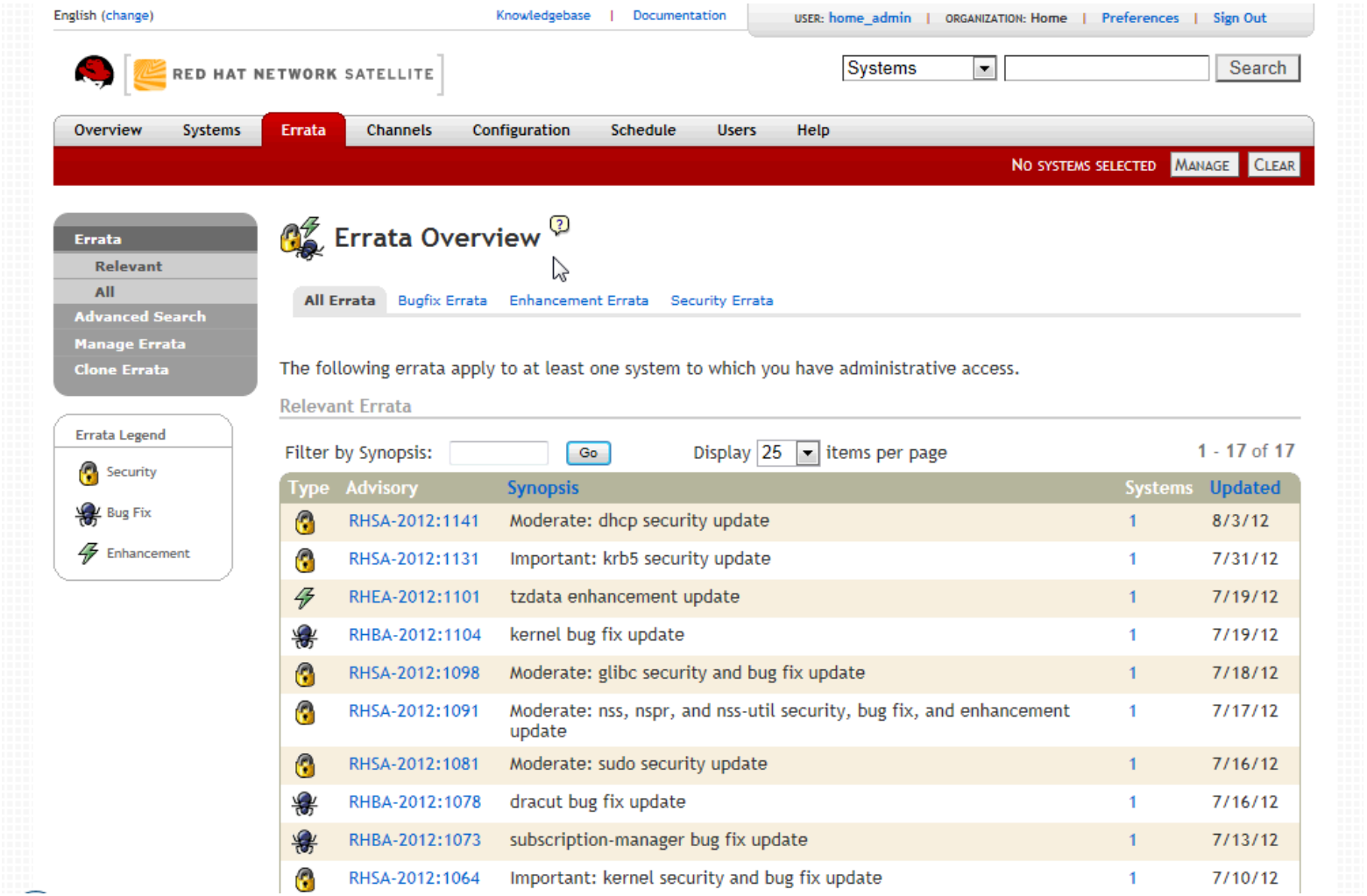
RHN Satellite: System Details



RHN Satellite: System Software Details

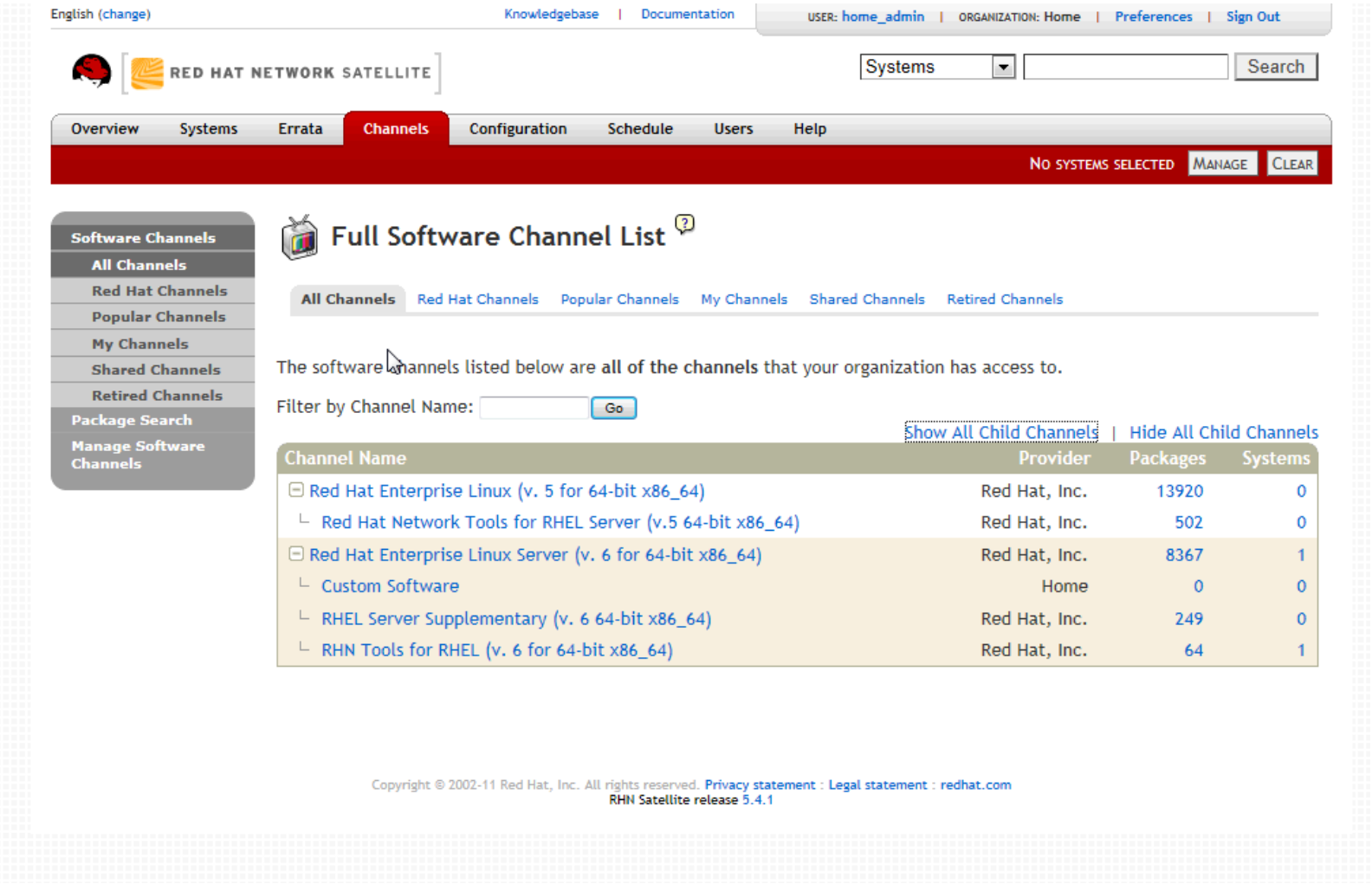


RHN Satellite: Errata



Type	Advisory	Synopsis	Systems	Updated
	RHSA-2012:1141	Moderate: dhcp security update	1	8/3/12
	RHSA-2012:1131	Important: krb5 security update	1	7/31/12
	RHEA-2012:1101	tzdata enhancement update	1	7/19/12
	RHBA-2012:1104	kernel bug fix update	1	7/19/12
	RHSA-2012:1098	Moderate: glibc security and bug fix update	1	7/18/12
	RHSA-2012:1091	Moderate: nss, nspr, and nss-util security, bug fix, and enhancement update	1	7/17/12
	RHSA-2012:1081	Moderate: sudo security update	1	7/16/12
	RHBA-2012:1078	dracut bug fix update	1	7/16/12
	RHBA-2012:1073	subscription-manager bug fix update	1	7/13/12
	RHSA-2012:1064	Important: kernel security and bug fix update	1	7/10/12

RHN Satellite: Software Channels



References

- RHEV Power User Portal Guide
  - http://docs.redhat.com/docs/en-US/Red_Hat_Enterprise_Virtualization/3.0/html/Power_User_Portal_Guide/index.html
- RHEV User Portal Guide
  - http://docs.redhat.com/docs/en-US/Red_Hat_Enterprise_Virtualization/3.0/html/User_Portal_Guide/index.html
- RHEL Installation Guide
  - http://docs.redhat.com/docs/en-US/Red_Hat_Enterprise_Linux/6/html/Installation_Guide/index.html
  -