



Bacula Konferenz 2012

Bacula als ein Bestandteil eines
ganzheitlichen System Managements

Dirk Herrmann
Senior Solution Architect, Red Hat

Agenda

- Bacula and Red Hat
- Bacula as part of holistic system management
 - Software Deployment & Configuration
 - Software Lifecycle Management
 - High Availability for Backup Services
 - Restore and Disaster Recovery
- Backup Challenges:
 - Virtualization, Cloud and Big Data
- Q&A



Red Hat – Bacula Partnership

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ÜBER RED HAT

PRODUKTE LÖSUNGEN SUPPORT SCHULUNGEN CONSULTING

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2012

2011

2010




✓ 2009


ISV-Partner-News: Bacula Systems und SEP

München

Germany, Oktober 6, 2009

Das Partnernetz von Red Hat ist in den letzten zwölf Monaten weltweit beträchtlich gewachsen. Insbesondere in der EMEA-Region war seit Januar 2009 eine Steigerung um 50 Prozent zu verzeichnen. Der Grund für dieses Wachstum im Red-Hat-Ecosystem ist, dass Kunden hochwertige Lösungen suchen,

Share   



Enterprise Data protection

Home Products Support Training Customers Company

Bacula Systems: A Red Hat Advanced ISV Partner



redhat.

ADVANCED
ISV PARTNER

By gaining pre-release access to upcoming versions of Red Hat Enterprise Linux through the Red Hat Ready program, Bacula Systems can ensure that its products can be tested and certified in a timely manner as they become available.


Bacula Systems also look forward to leveraging Red Hat's brand and expertise in the Linux market now that the certification further validates its position as the worlds leading Enterprise Open Source Backup and Restore solution.





Bacula Konferenz 2012 - Bacula als ein Bestandteil eines ganzheitlichen System Managements


Dirk Herrmann, Red Hat

Bacula – a part of RHEL

 **redhat.** | **CUSTOMER PORTAL**

Search 

Dirk Herrmann 

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Package Name	Summary
bacula-client	Bacula - The Network Backup Solution
bacula-common	Common Bacula utilities
bacula-console	Bacula management console
bacula-console-bat	Bacula bat console
bacula-debuginfo	Debug information for package bacula
bacula-director-common	Common Bacula Director files
bacula-director-mysql	Bacula Director with MySQL database support
bacula-director-postgresql	Bacula Director with PostgreSQL database support
bacula-director-sqlite	Bacula Director with sqlite database support
bacula-docs	Bacula documentation
bacula-storage-common	Common Bacula storage daemon files
bacula-storage-mysql	MySQL Bacula storage daemon files
bacula-storage-postgresql	Common Bacula storage daemon files
bacula-storage-sqlite	SQLite Bacula storage daemon files
bacula-traymonitor	Bacula monitor for the Gnome and KDE system tray

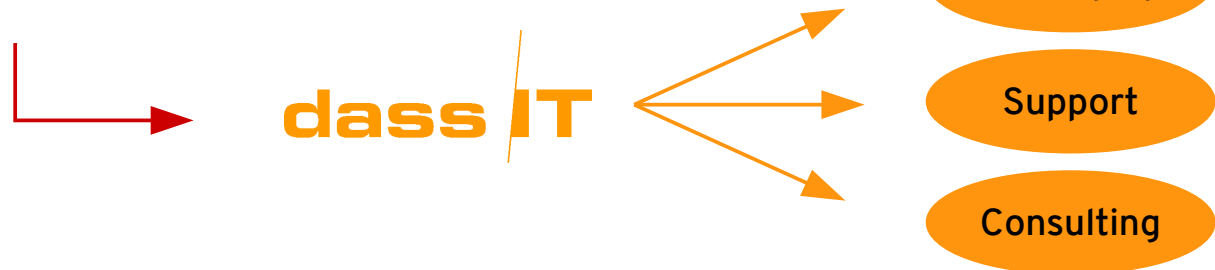
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Bacula, Red Hat and Partners



- Open Source
- Enterprise Version with Subscription Model
- Commercial Support
- Certification & ISV Ecosystem
- RHEL contains Bacula Software
- Partner Ecosystem



Bacula and Red Hat Solutions



**Products &
Solutions**

Backup & Restore



CLOUD

MIDDLEWARE

VIRTUALIZATION

OPERATING SYSTEM

STORAGE

- Backup Red Hat Products
- Backup Application Data
- Backup Customer Environment
- Backup Customer Data



Bacula and Red Hat Solutions



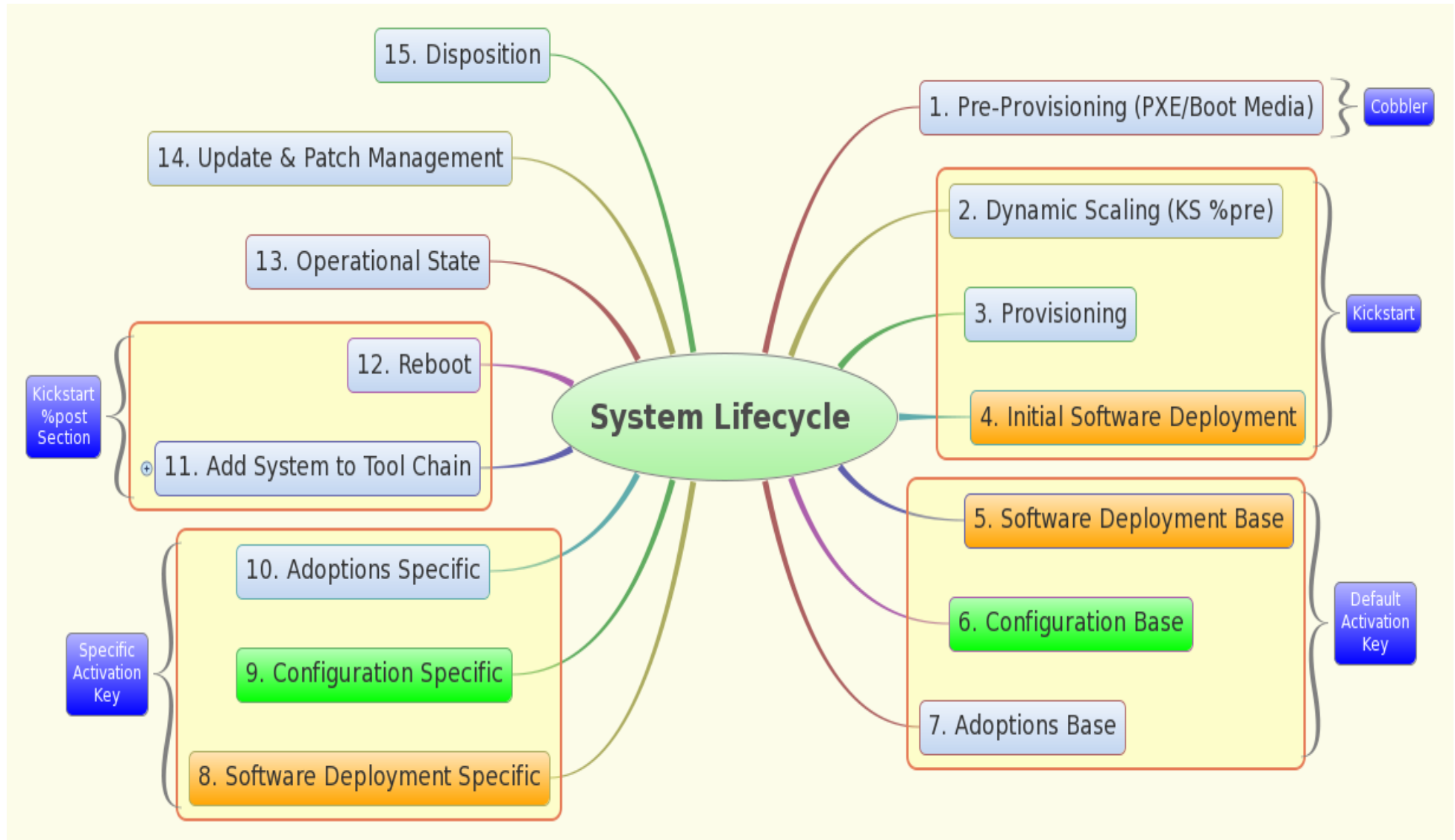
**Products &
Solutions**



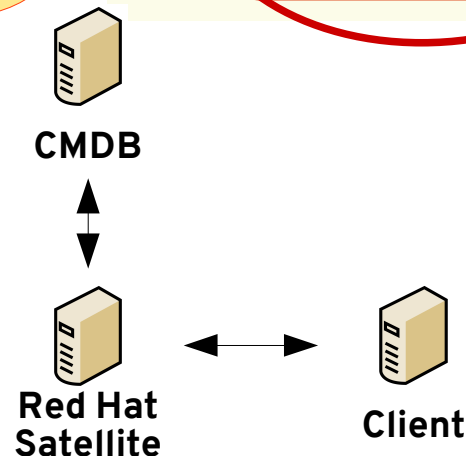
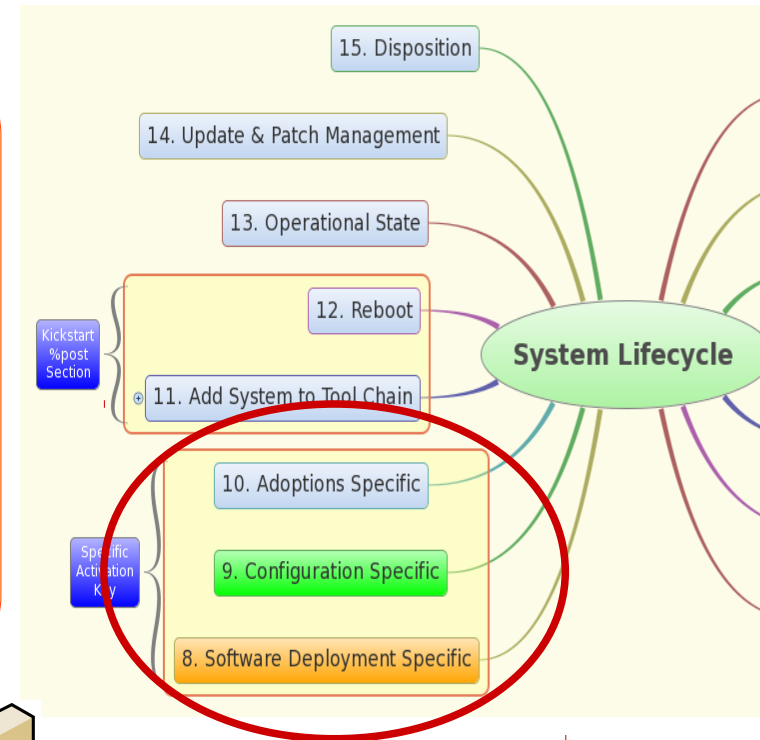
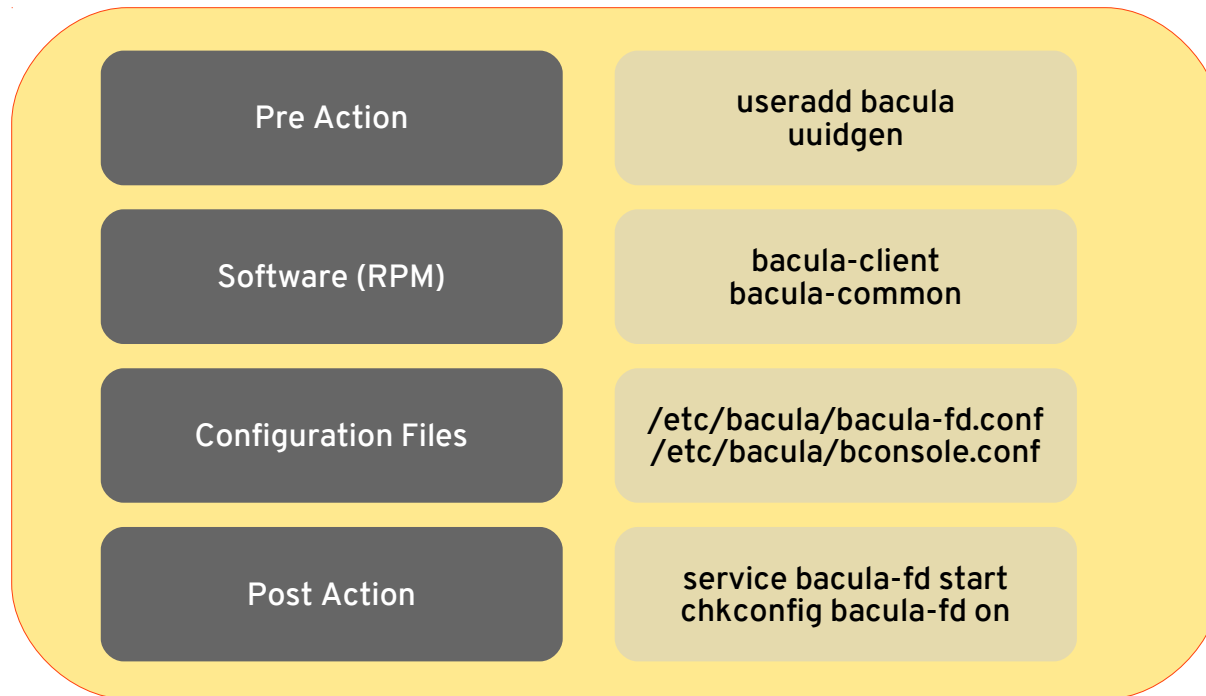
- Software Deployment & Configuration
- Software Lifecycle Management
- Zero Downtime Backup
- High Availability for Bacula Services
- Restore and Disaster Recovery
- Virtualization and Cloud
- Scale-Out Storage for Backup



Software Deployment & Configuration



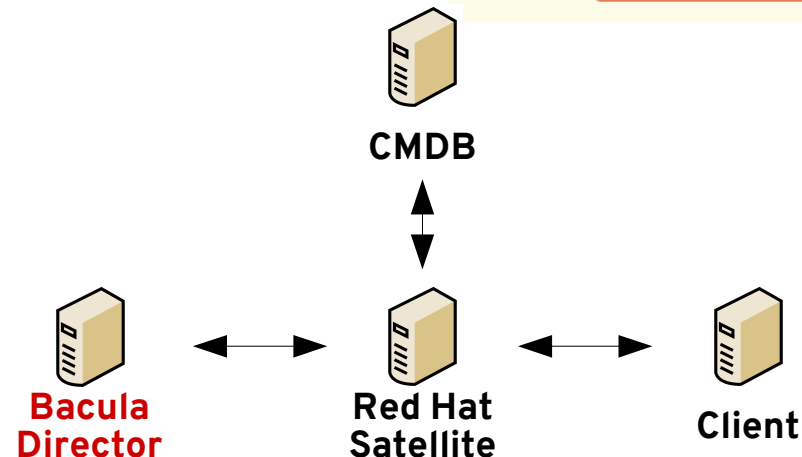
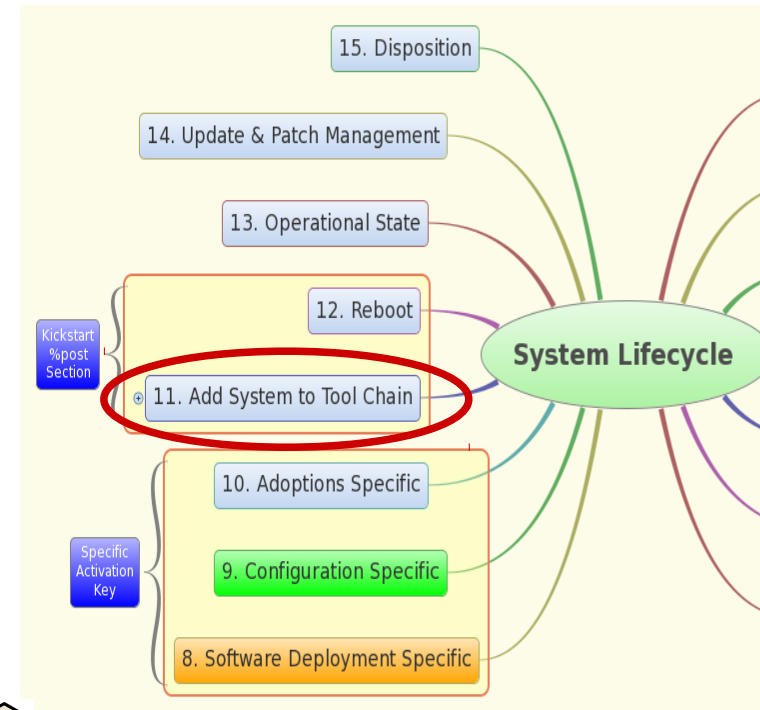
Software Deployment & Configuration



Software Deployment & Configuration

Adding the new host to your Bacula Director

```
#
# Define the main nightly save backup job
# By default, this job will back up to disk in /tmp
Job {
  Name = "rhelhost19"
  Type = Backup
  Client = rhelhost19-fd
  FileSet = "Full Set"
  Schedule = "WeeklyCycle"
  Storage = File
  Messages = Standard
  Pool = Default
  Write Bootstrap = "/home/bacula/bacula/working/rhelhost19.bsr"
}
# Client (File Services) to backup
Client {
  Name = rhelhost19-fd
  Address = rhelhost19
  FdPort = 9102
  Catalog = MyCatalog
  Password = "20dd1427-b1ed-4d6c-bbc8-7cd235d1e114"
  File Retention = 30d      # 30 days
  Job Retention = 180d     # six months
  AutoPrune = yes         # Prune expired Jobs/Files
}
```



Dynamic Config File Management

Configuration Channel Ranking overrides from general configuration settings to more specific configuration:

- pre defined {
- Stage specific / generic configuration
 - Virtualization type specific overrides
 - Location specific overrides
 - Application specific overrides
 - System specific overrides (locally managed)

generic



specific



Dynamic Config File Management

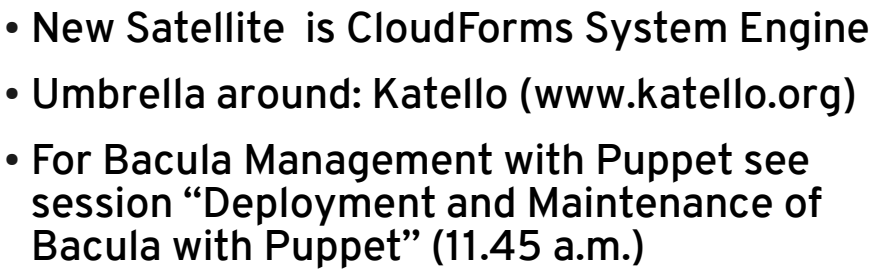
- Satellite supports macros, which are replaced with system-specific data at deploy time
- Pre-defined macros available:
 - SID, Profile Name, Description, Hostname, IP, ...

```
hostname={| rhn.system.hostname |}  
backup_ip={| rhn.system.net_interface.ip_address(eth0) |}
```

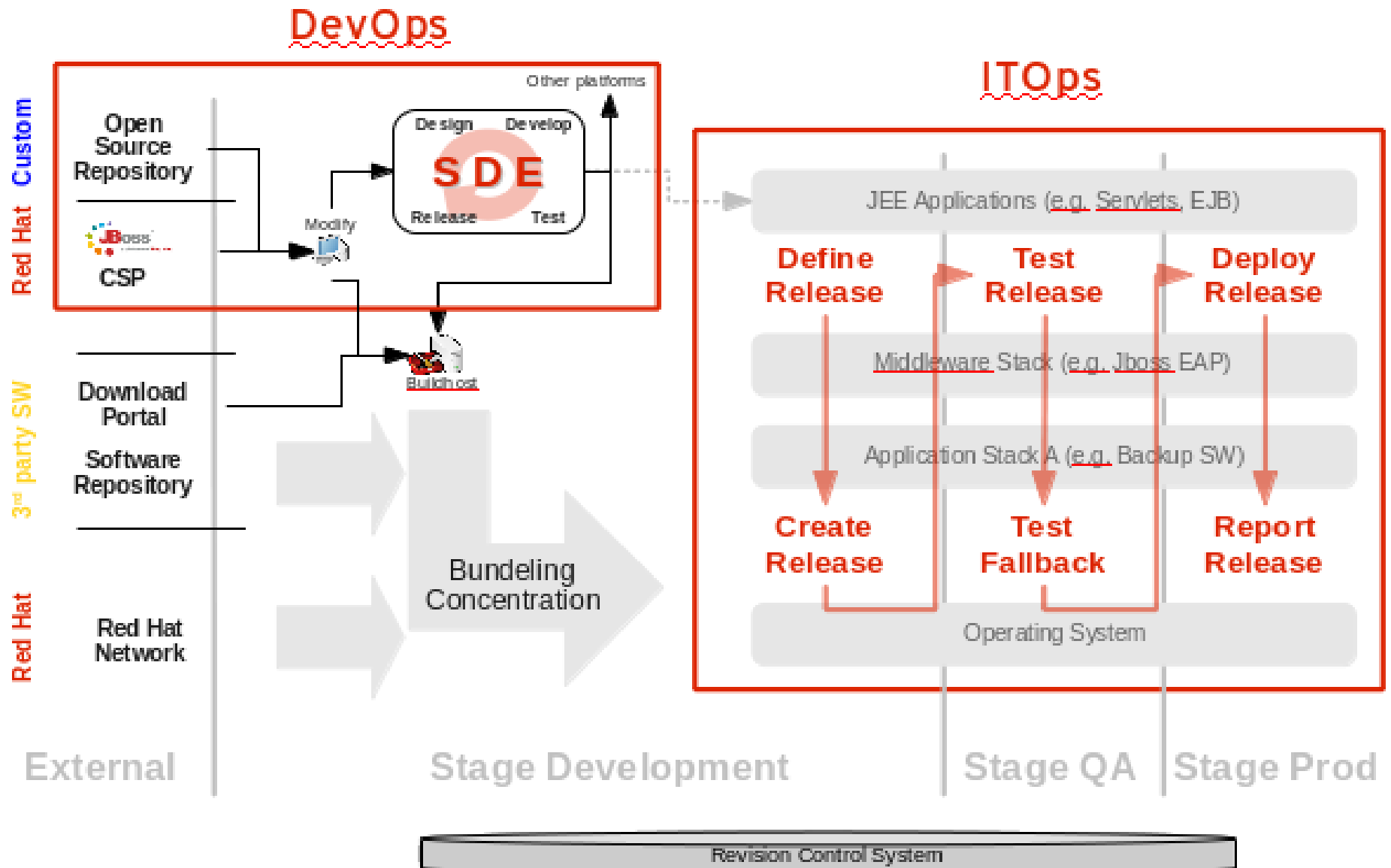
- Custom macros for system information set via the API

```
Director {  
  Name =      {| rhn.system.custom_info(baculadir) |}  
  Password = "  {| rhn.system.custom_info(baculapass) |}  
}
```

- **Limitation: Only whole files, no artefacts → Puppet**



Software Lifecycle Management



Backup Categorization

- System (OS + App)
 - Software
 - Configuration
- Application Data
- User Data
- Temporary Data



Backup Categorization

- System (OS + App)

- Software
- Configuration

← System Management

- Application Data

← Backup Engine

- User Data

← Backup Engine

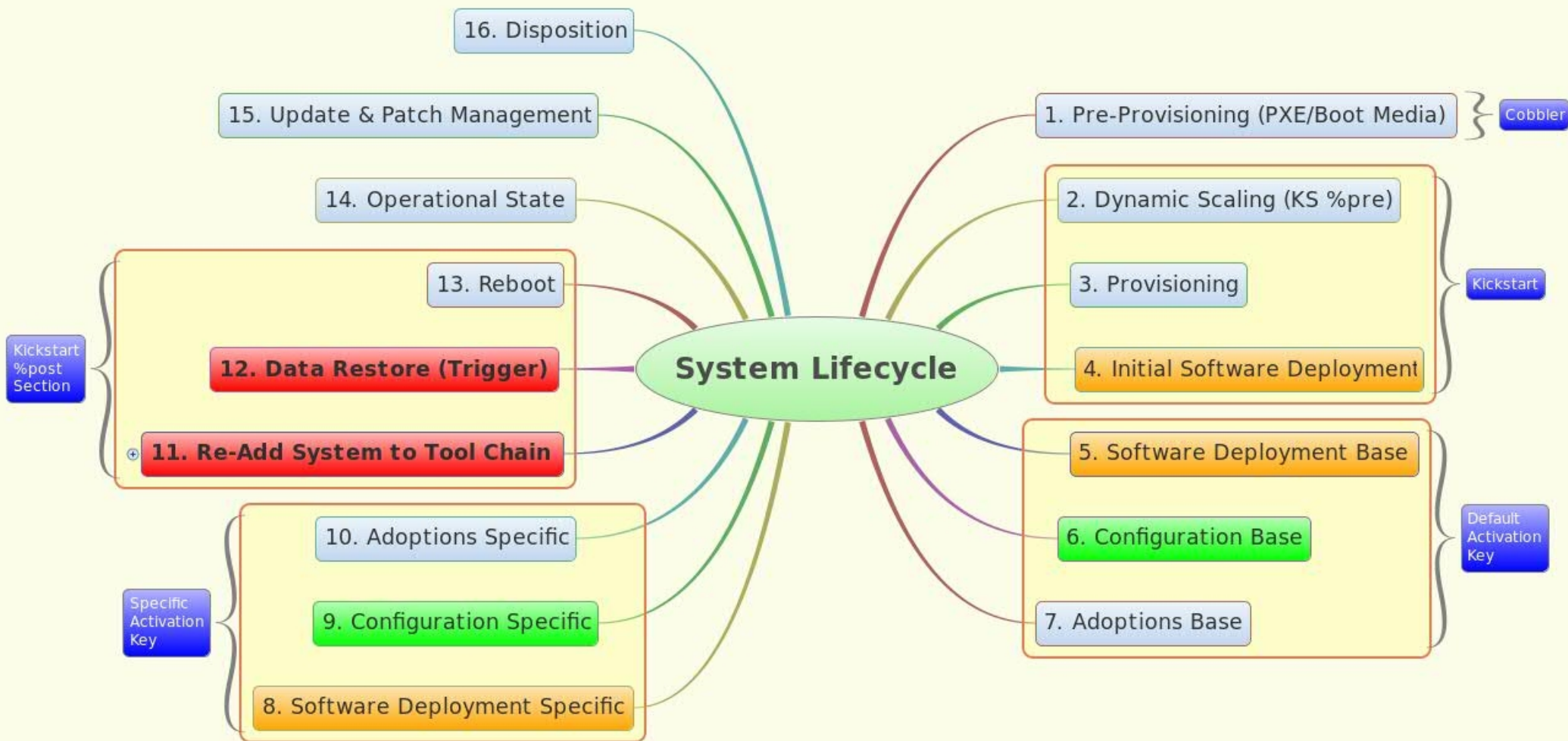
- Temporary Data

← Scale-out Storage

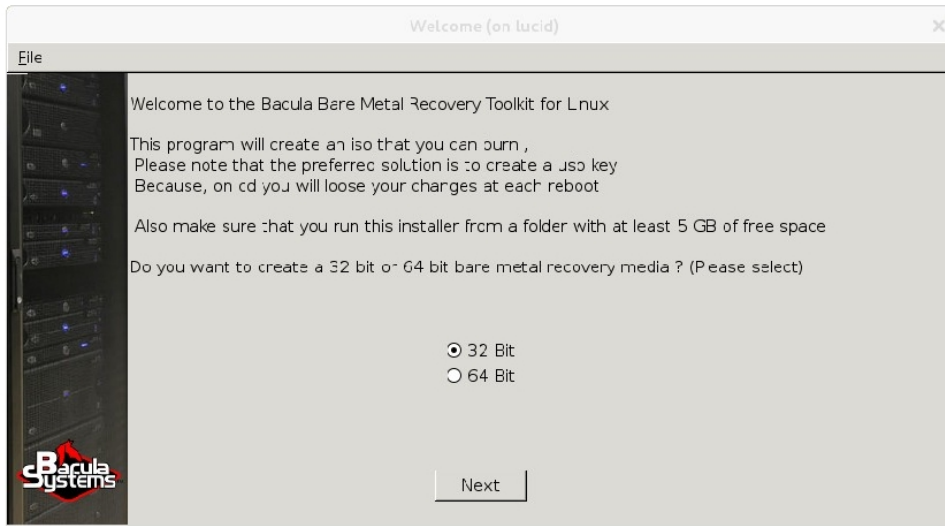
→ Isolation required ! ←



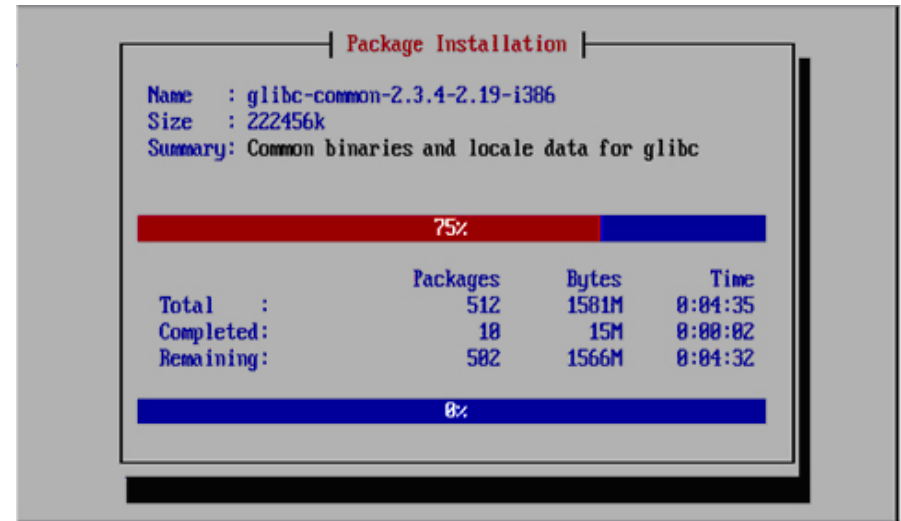
System Recovery



Bare Metal Recovery



Bacula Linux Bare Metal Recovery



Satellite & Kickstart Installation

- System Re-Provisioning is similar to initial provisioning
- Data Restore could be triggered as %post operation
- Load reduction for backup engine
- Parallel Recovery of Systems & Data



How Satellite supports DisRec

- Satellite can be used as **CMDB** including all information necessary for disaster recovery
- Adaptions **dynamically** possible (HW exchange / Virt)
- Reduce **load** of backup / restore infrastructure (software and configuration restore done by RHNS)
- **Trigger** to backup tool (data restore) possible
- **Undo** Changes (Snapshots and Rollbacks)
- **Rapid Re-Provisioning** (Disaster Recovery)
- DisRec plans could be **tested** (automatically)



High Availability Setup of Bacula

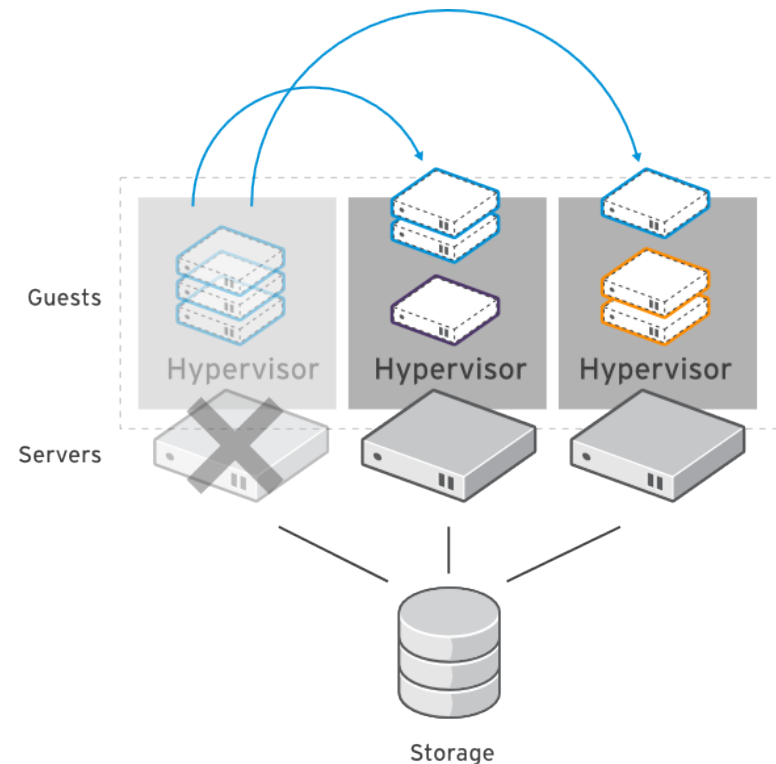
- Bacula Services:

Red Hat Cluster Suite

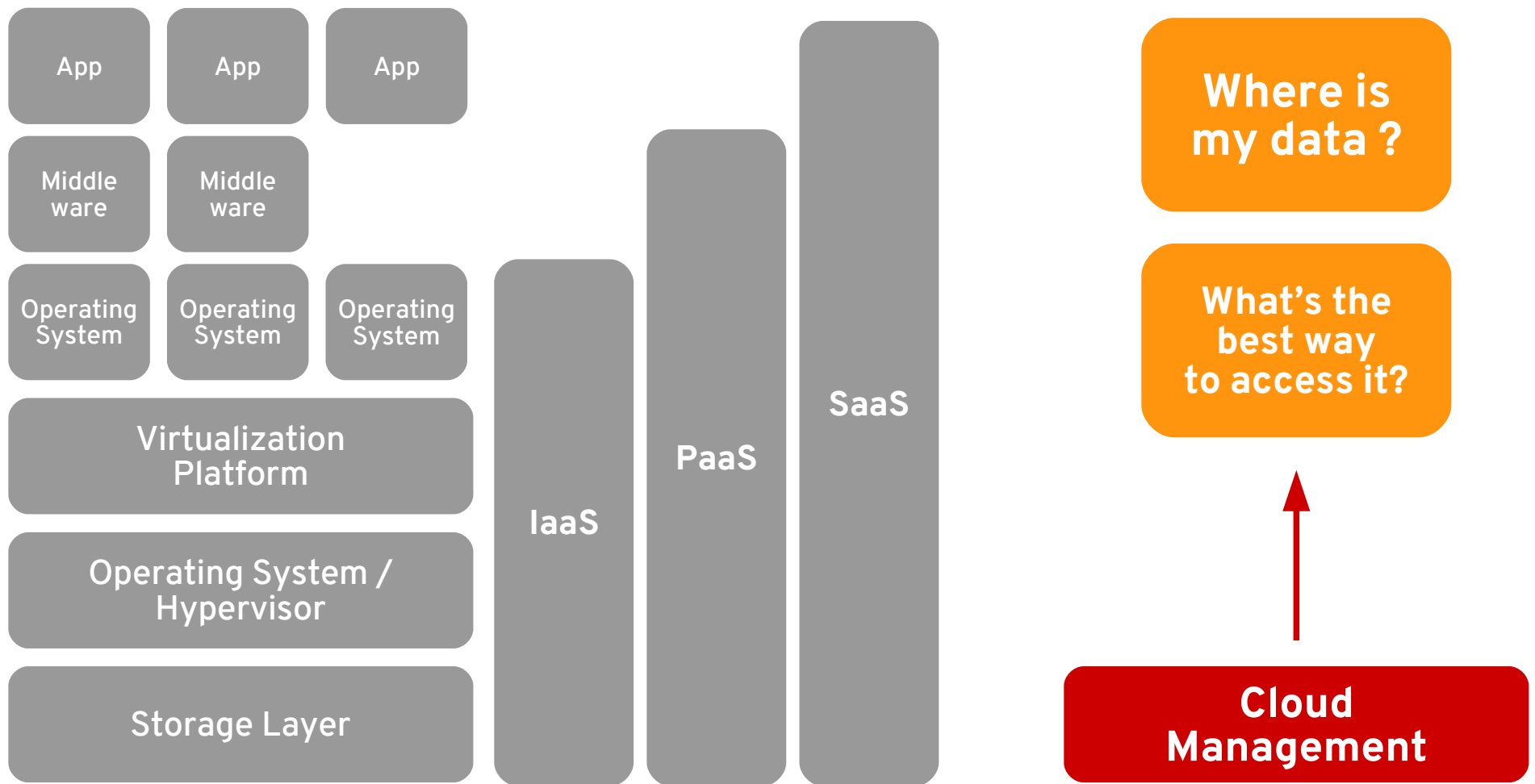
```
<rm>
  <failoverdomains>
    <failoverdomain name="bacula-nodes" restricted="1">
      <failoverdomainnode name="bacula-director1" priority="1"/>
      <failoverdomainnode name="bacula-director2" priority="2"/>
    </failoverdomain>
  </failoverdomains>
  <resources>
    <ip address="192.168.100.22" monitor_link="1"/>
    <lvm name="bacula_mysql_vg" vg_name="bacula_mysql" lv_name="" />
    <fs name="mysql_data" mountpoint="/var/lib/mysql" device="/dev/bacula_mysql/mysql_data" fstype="ext4"
1" self_fence="1" />
    <mysql name="bacula-mysql" />
  </resources>
  <service autostart="1" domain="priority-dbl" name="prod-db" recovery="relocate">
    <ip ref="192.168.100.22">
      <lvm ref="bacula_mysql_vg">
        <fs ref="mysql_data">
          <mysql ref="bacula-mysql">
            <script file="/etc/init.d/bacula-dir" name="bacula-dir"/>
            <script file="/etc/init.d/bacula-sd" name="bacula-sd"/>
            <script file="/etc/init.d/bacula-fd" name="bacula-fd"/>
          </mysql>
        </fs>
      </lvm>
    </ip>
  </service>
</rm>
```

- Bacula Systems:

Red Hat Enterprise
Virtualization (RHEV)



Cloud – Find your (way to) data



Backup Challenges

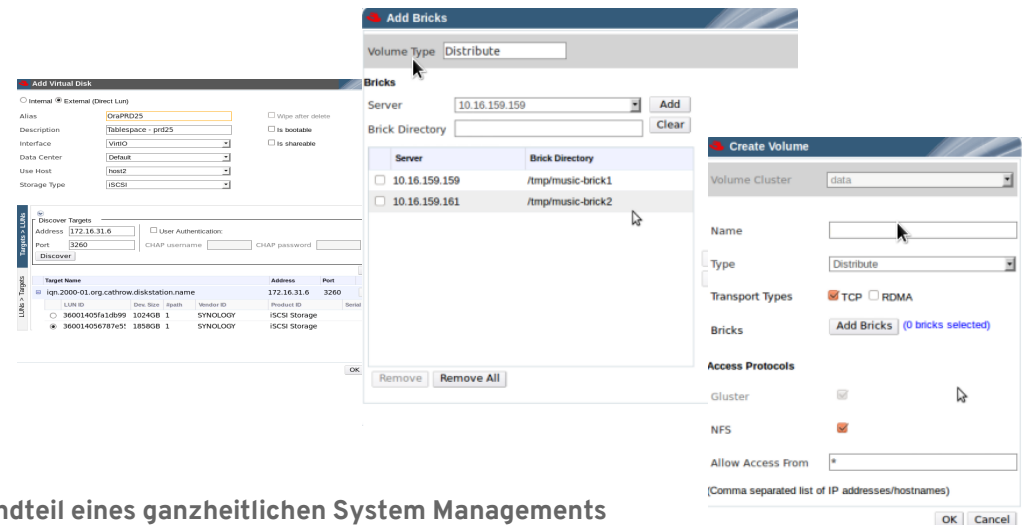
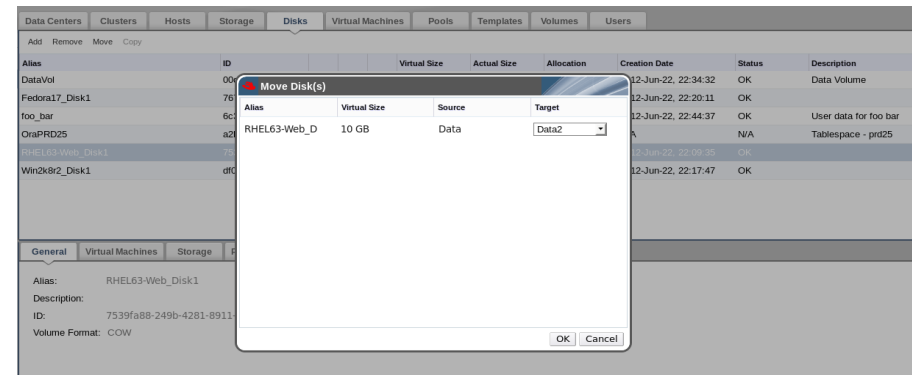
- Storage Centralization (Bottleneck)
- Multi-Layer Architectures (Virtualization)
- Hidden (Storage) Infrastructure (Cloud)
- Replicated and Distributed Storage
- Security and Data Protection
- “3 V’s of Big Data” - Volume, Velocity, Variety
- (In-Memory) NoSQL



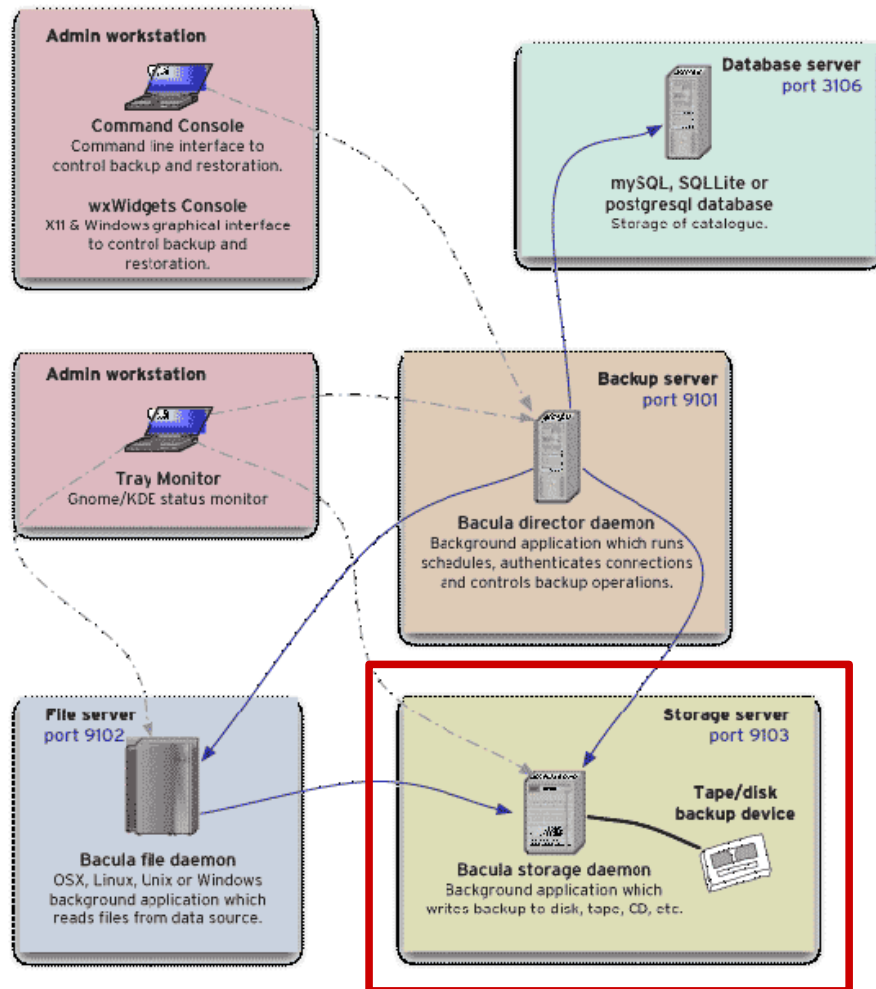
Backup Challenges – Virt Platform

- Storage Virtualization
- Storage Aggregation
- Mixed Storage
- Shared Disks
- Direct LUN Access
- Hot (Un)Plug Disk Images
- Storage (Live) Migration
- Live Snapshots
- Cloud Filesystems

Data Centers	Clusters	Hosts	Storage	Disks	Virtual Machines	Pools	Templates	Volumes	Users
Add Remove Move Copy									
Alias	ID	Virtual Size	Actual Size	Allocation	Creation Date	Status	Description		
DataVol	00c3267a-b652-403c	2 GB	2 GB	Preallocated	2012-Jun-22, 22:34:32	OK	Data Volume		
Fedora17_Disk1	7674bc61-00c8-48fa	10 GB	< 1 GB	Thin Provision	2012-Jun-22, 22:20:11	OK			
foo_bar	6c3faf6-60a1-4181-	2 GB	2 GB	Preallocated	2012-Jun-22, 22:44:37	OK	User data for foo bar		
OraPRD25	a2b8da36-fe31-40a9	LUN	1858 GB	1858 GB	N/A	N/A	Tablespace - prd25		
RHEL63-Web_Disk1	7539fa88-249b-4281	10 GB	< 1 GB	Thin Provision	2012-Jun-22, 22:09:35	OK			
Win2k8r2_Disk1	df0c2a33-6612-4522	12 GB	< 1 GB	Thin Provision	2012-Jun-22, 22:17:47	OK			



Scale-Out Storage for Backups



Bacula application interactions

Note that these applications may actually run on fewer machines than shown here. You could run everything on one machine if you only wanted to back up a local disk to a local tape or disk.

Port numbers are the defaults and can be changed.

Red Hat Storage (Gluster)



- Multi-Level Usage
- Multiple Access Protocols
- API and CLI
- High Performance
- Dynamic Scale-Out
- Async & Sync Replication
- Deduplication & Compression
- Backup Staging



Conclusions

- Data not centralized & static anymore
- New IT Trends are challenges but advantages, too
- Backup Management is an essential part of System Management (wider scope)
- Backup Configuration has to be agile as well
- Agile Backup Management needs integration and interfaces (API, CLI) based on open standards
- High volumes and multiple ways need deduplication



Q&A

