Reducing the Costs of Management with Stateless Linux
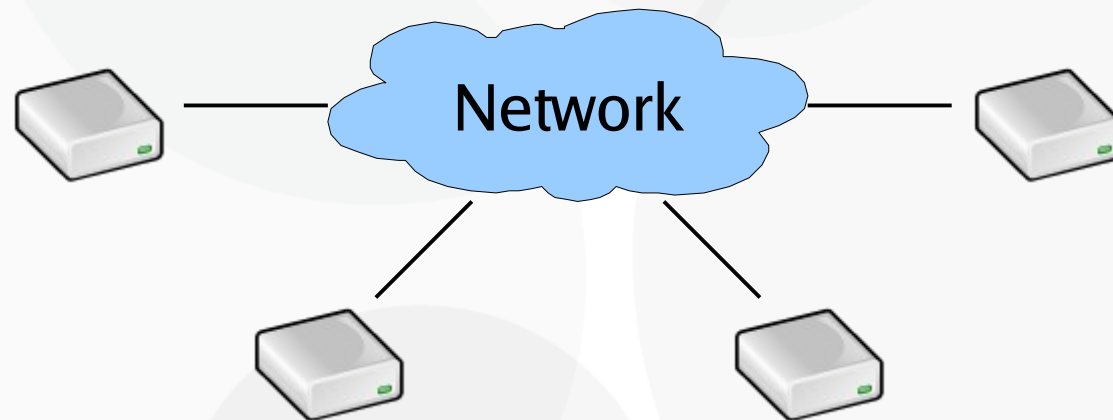
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hpillay@redhat.com
Manager, Partner Development
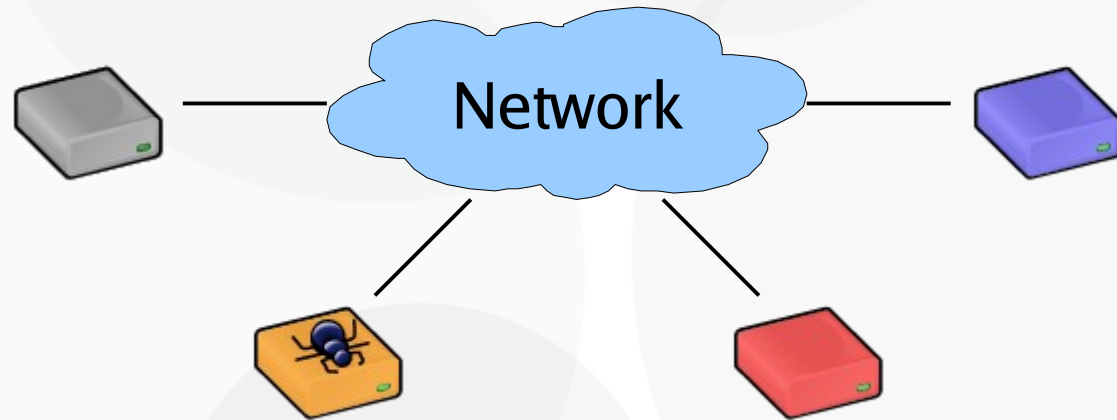Red Hat Asia Pacific

Problems with traditional management
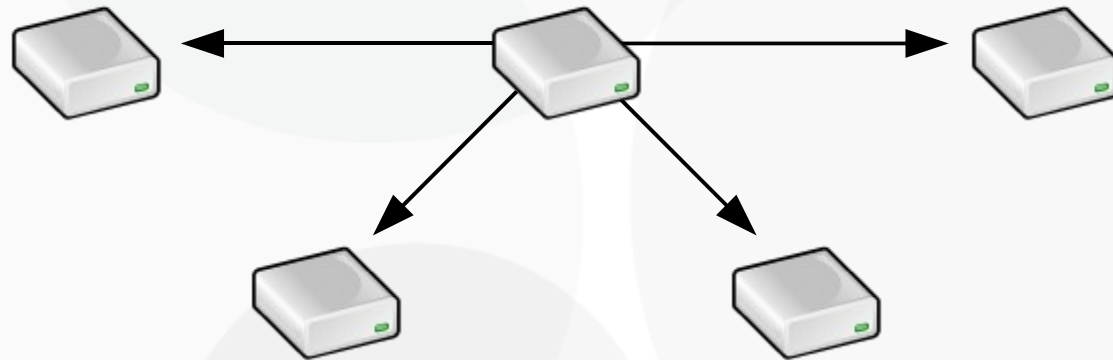
Consider a typical deployment....

Problems with traditional management

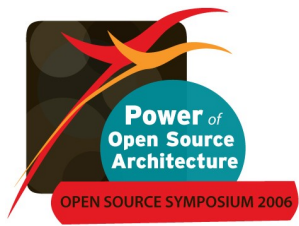Six months later...

The Stateless Linux model

- Image-based, not file-based
- All systems run off identical images

Benefits of Stateless Linux

- Enhanced security

- Ease of management of large deployments

- Ease of deploying new machines

- Hardware becomes disposable

- Updates are not done to the live system

Stateless design paradigms

- All system file systems are read-only

- All state is temporary

- System automatically adapts to the machine

Driving state out of the system

- Hardware autoconfiguration

- Preferences, not settings

- Configuration becomes part of the image

Usage cases

- Knowledge worker desktop

- Corporate fleet of laptops

- Virtual computation server

- Application server

- … and more

Deployment modes

- Running completely from the network

- Running from the network, with local caching

- Running from local storage

    - with network storage

    - with local storage

- Running as a virtual machine

Running from the network

- PXE and similar network boot technologies

- Root on NFS

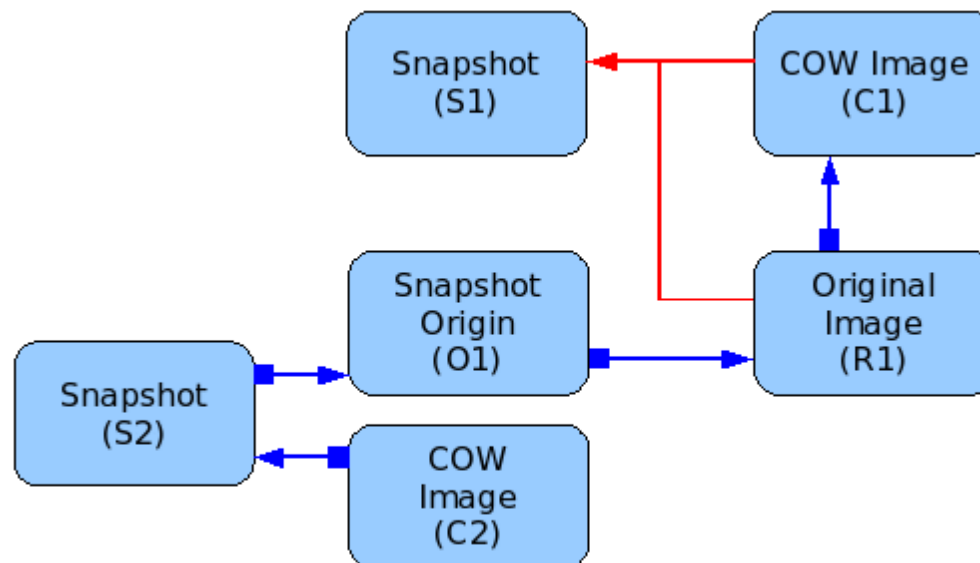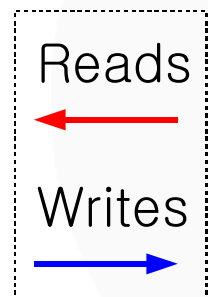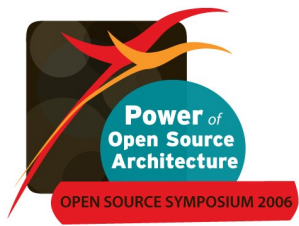- Root on NFS files via loopback

- iSCSI
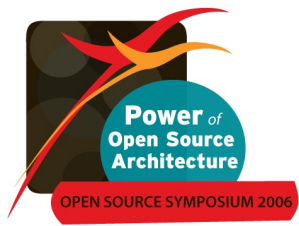
Running from a local file system

- Images are stored on central servers

- At boot, client checks for changes

- Changes are synced via device-mapper

- No changes are done to the live file system

Syncing of changes from a server

- Run from read-only snapshot S1
- Download image of changes from server
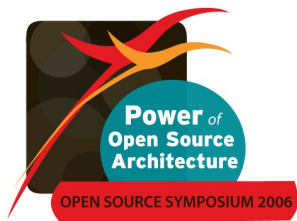- Merge into local storage

Management of stateless images

- Snapshot the image

- Boot or mount the image

- Make necessary changes

- Prepare the image

- Store changes as a copy-on-write device

Future ideas

- Integration with management infrastructures

- Integration with new provisioning

- Move application information to the network

For more info...

- Mailing list: stateless-list@redhat.com
- http://www.fedoraproject.org/wiki/StatelessLinux

Thank you!

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