

RED HAT :: NASHVILLE :: 2006

SUMMIT

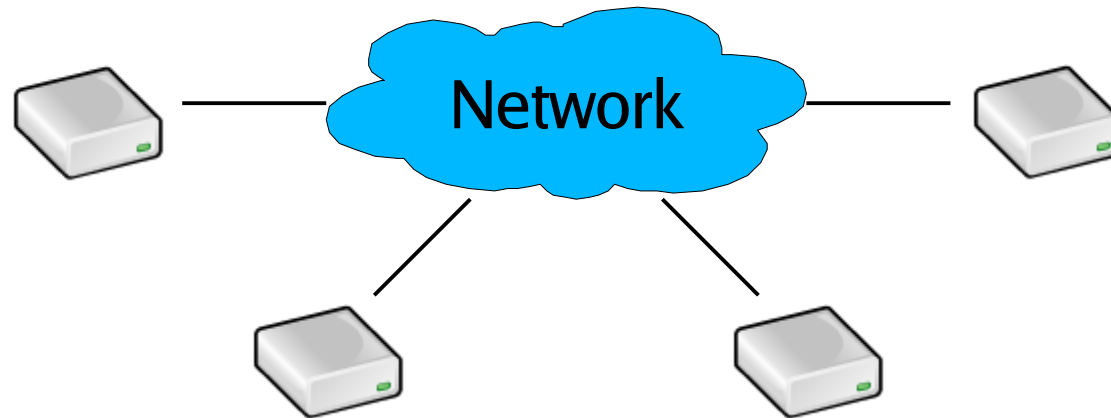


Reducing the costs of management with stateless Linux

Bill Nottingham

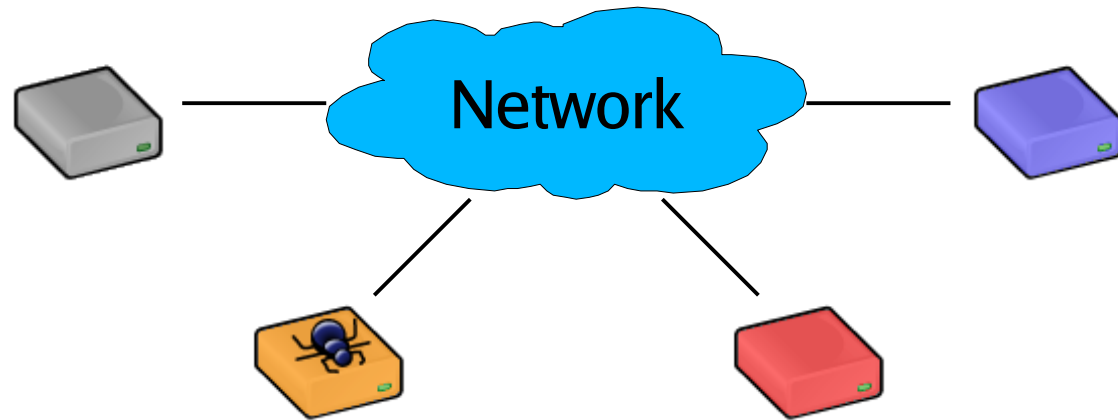
Problems with traditional management

Consider a typical deployment....



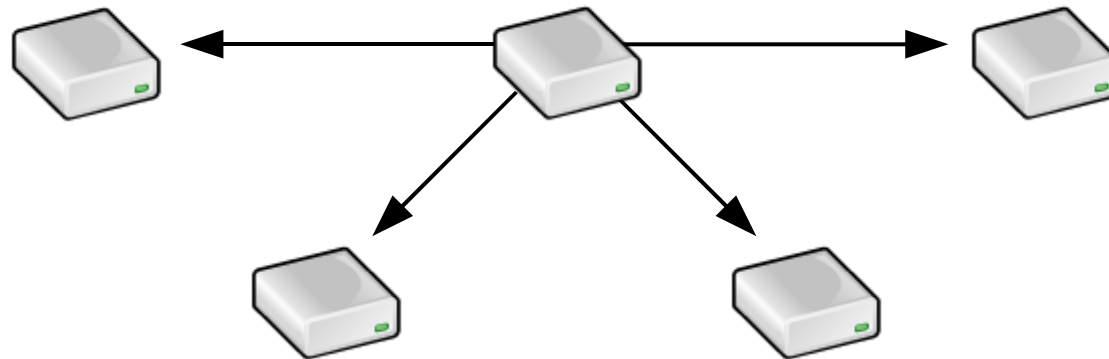
Problems with traditional management

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



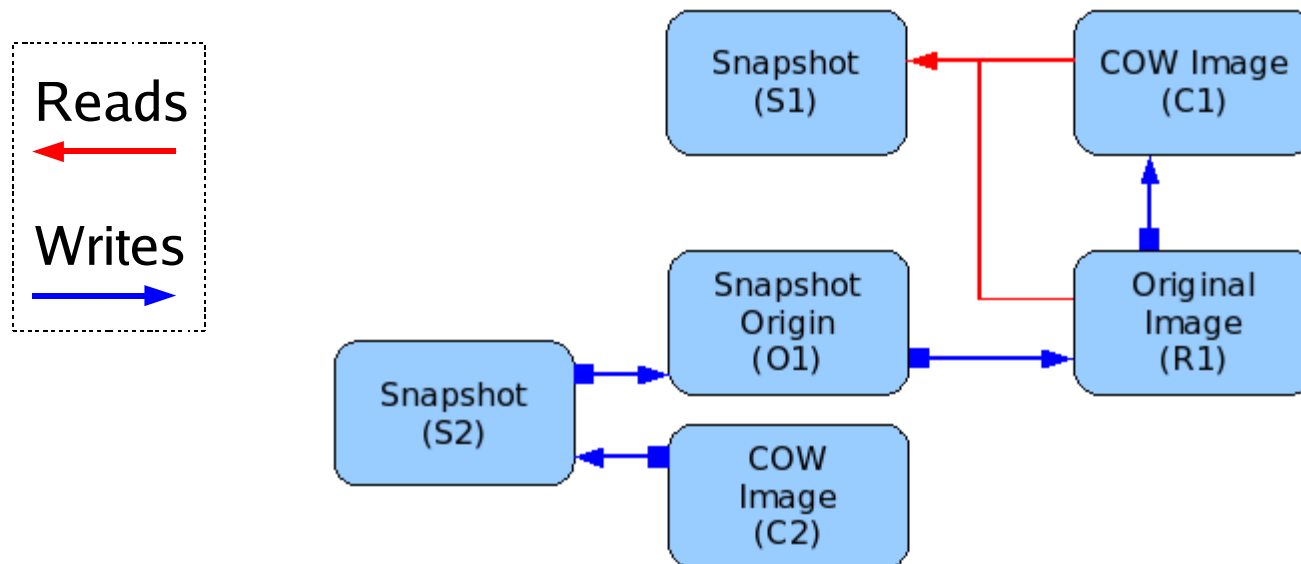
Running from a local file system

- 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>

