LA-UR-18-30875
Approved for public release; distribution is unlimited.

Title: Private Cloud

Author(s): Morgan, Keith
Wegmeyer, Kory Edward
Iverson, Ryan Daniel

Intended for: Recruitment trip to New Mexico Tech on November 16, 2018.

Issued: 2018-11-15


Los Alamos
NATIONAL LABORATORY
EST.1943

Private Cloud

Why Los Alamos implemented and continues to utilize a private cloud for on premises computing.

Keith Morgan, Ryan Iverson
and Kory Wegmeyer

11/16/2018

Infrastructure on Demand

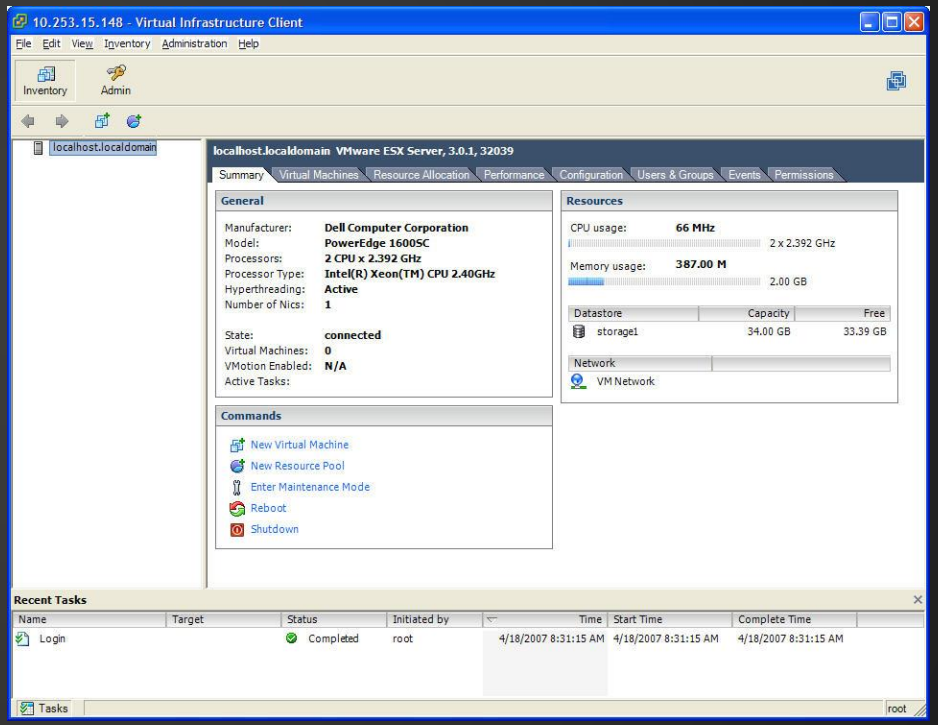
- “Private Cloud”
  - On premises compute and storage
  - Compute
    - Virtual Machines
  - Storage
    - Disks for the VMs
    - Application storage
  - Multi Datacenter design
    - COOP/DR

Why Virtualize?

- Better utilization of resources.
- Easy Hardware Refresh with no downtime.
- Move HW management away from OS admins.
- Automatic recovery in case of host failure.
- Full backups of VMs.
- Allows for easier DR/COOP

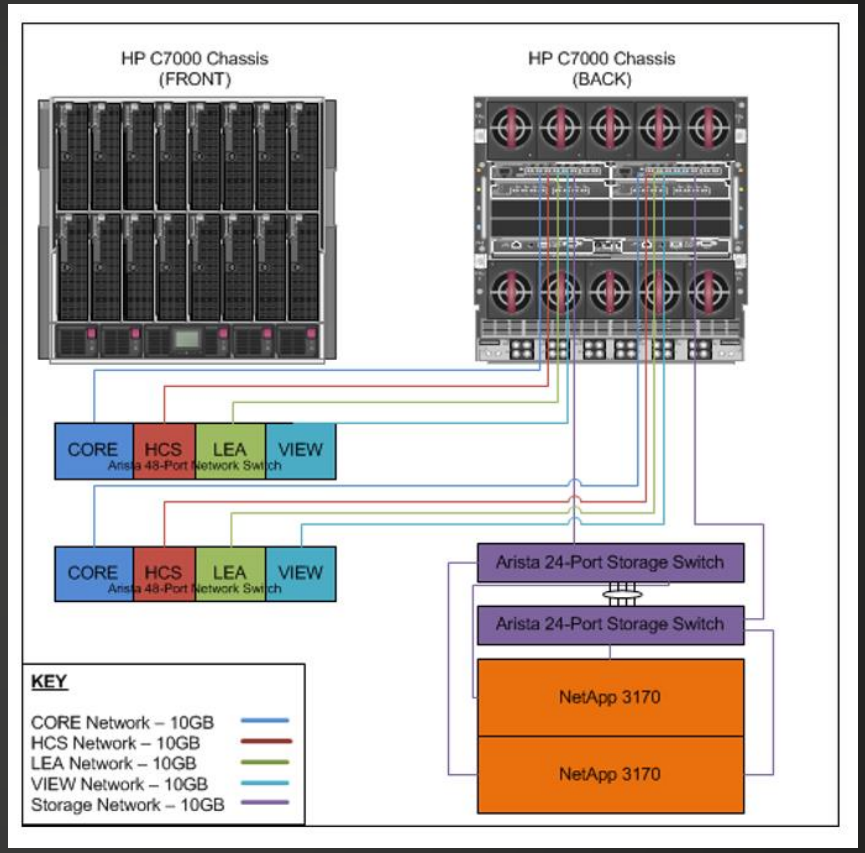
Brief History

- Version 1
  - 2007
- ESX 3.x
- HP DL585 rackmount servers
- HP EVA with FC LUNS
- User interface is a “thick” client



Brief History

- Version 2
  - Late 2010
- HP C7000 blade enclosures
- NetApp NFS Storage
- 10Gbps / Enclosure – Storage
- 10Gbps / Enclosure – VM Traffic
- Separate Network connections based on security plan
- Dedicated Public and Private Arista switches



IoD Today

- Version 2.5
  - vSphere 6.5
  - Consolidated Network Links
  - C7000/Blades
    - > 42 TB Memory
    - > 2600 Cores
  - NetApp SnapMirror Replication
  - Custom Work Intake API

IoD Tomorrow

- Version 3
- New HPE Synergy Compute
  - 81 TB Memory
  - 5200 Cores
- 120 Gbps / Rack - Storage
- 120 Gbps / Rack – VM Traffic

Thank you for your time.