Private Storage Clouds for the Enterprise

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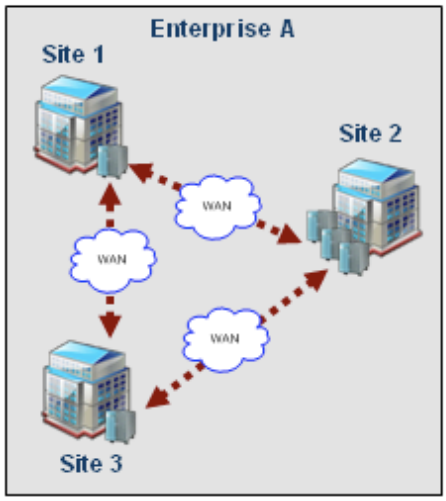
Private Storage Clouds for the Enterprise

- **What are Private Clouds and how are they different from Public Clouds**
- **Key Value Propositions for Cloud Storage**
- **How we build Private Clouds for Storage**
- **Sample Customers**

Public and Private Clouds

Public Clouds

Private Clouds



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Public and Private Clouds

Public Clouds

- Aggregation Model
- Saves money by outsourcing administration, leveraging economies of scale and shifting capex to opex
- Questions around QoS for performance, reliability and security.
- Examples: Amazon S3, Nirvanix, etc.

Private Clouds

- Peering Model
- Saves money by reducing administration costs, virtualizing silos, increasing storage efficiency
- Enterprise provides QoS for performance, reliability and security.
- Examples: EMC Atmos, Bycast StorageGRID, etc

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Storage Cloud Key Value Propositions

Consolidation, virtualization, automation, simplified administration, and resiliency address storage challenges

- Automated replication across multiple sites
- Automated data recovery

⇨ ✓ Eliminate backup/restore cost and complexity

- Resilience in presence of faults
- Automated failover for business continuity

⇨ ✓ Minimize downtime cost

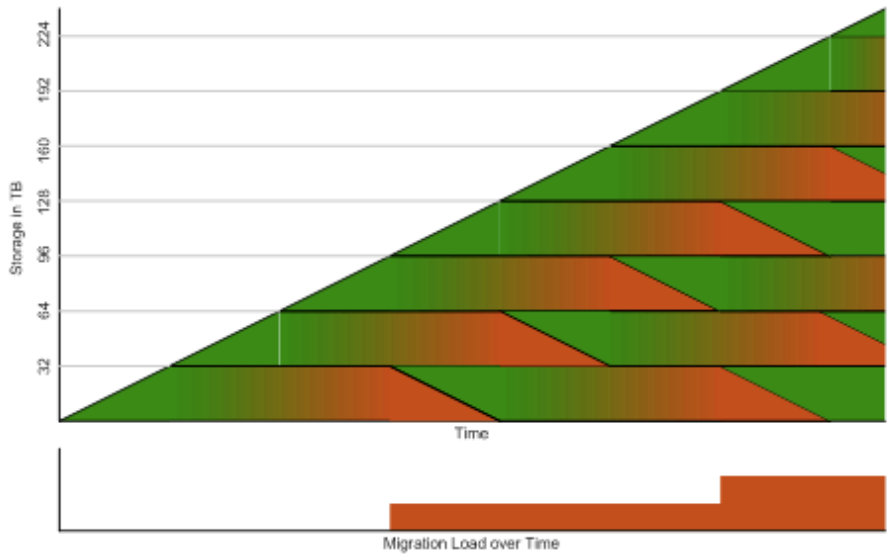
- Centralized management
- Automated management tasks

⇨ ✓ Reduce administration cost

Storage Cloud Key Value Propositions

- **Reduce Costs**
  - Provide a common and shared infrastructure for many storage consumers (reduces the costs of silos)
  - Federate storage resources across multiple sites
  - Provide access to stored data from multiple sites
  - Leverage data reduction, using compression and de-duplication
  - Place and moves objects over time to the storage technology that is cost-appropriate based on policies
  - Automate migration of data from storage devices that are obsolete or too expensive to retain
- **Reduce Risk**
  - Protect objects by keeping multiple replicas
  - Protect objects by verifying integrity
  - Protect objects at rest and in flight using encryption

Storage migration over time



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StorageGRID for Private Clouds

- **Bycast provides virtualization software that enables enterprises to create private clouds for storage**
- **Our software is OEMed by HP and IBM to power their MAS, GAM and GMAS products**
- **Turnkey solution, easy to install, manage and expand**
- **Our first production deployment went live 2002**
- **We now have over 250 deployments providing service to thousands of sites**
- **10+ PB under management, 10's of billions of objects under management**
- **Our Primary focus is in Healthcare, but we also have deployments in SSP, Media, Financial and other markets**

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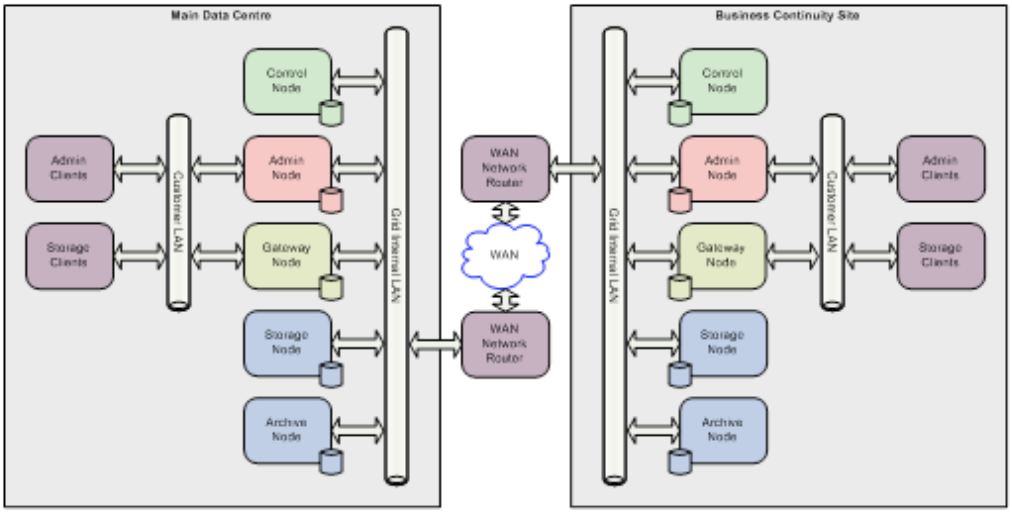
StorageGRID for Private Clouds

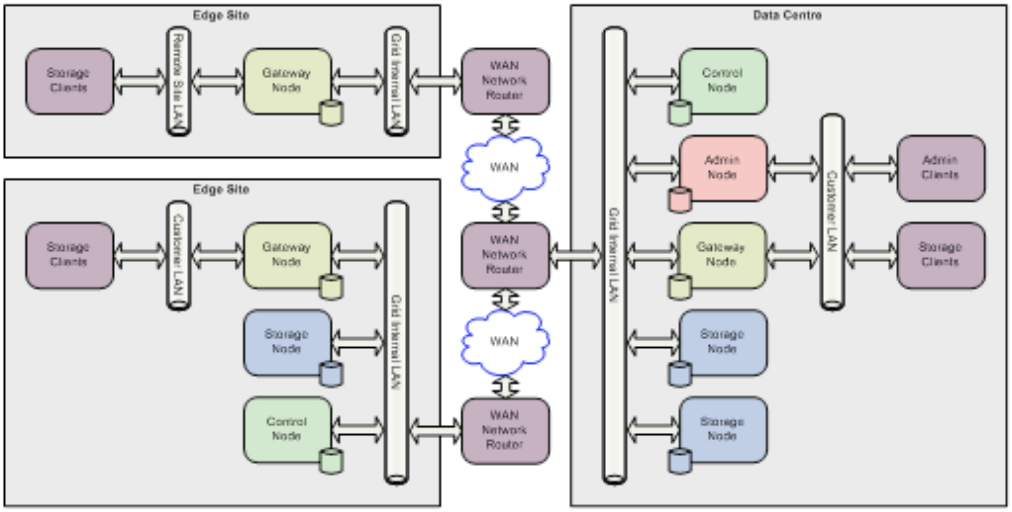
Our deployments consist of five software components:

- **Each storage nodes manages 10TB to 32TB worth of low-latency spinning disk (DAS, NAS, SAN, etc)**
- **Each archive node manages 10 to 256TB worth of high-latency storage (Tape, Optical, MAID, etc)**
- **Each control node manages 200 – 500 million objects**
- **Each gateway nodes manages 1 - 2 GB/s worth of clients connecting through NAS and API interfaces**
- **Each admin nodes manages up to 300 grid nodes**

StorageGRID for Private Clouds



StorageGRID for Private Clouds



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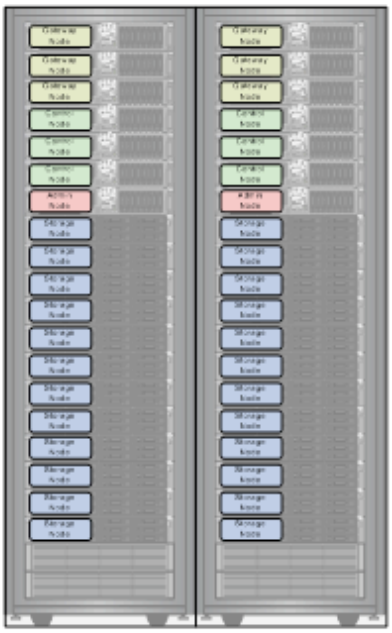
StorageGRID for Private Clouds



Typical Grid

- 2 40U Racks
- 120 TB Protected
- 240 TB Raw
- 400 Million Objects

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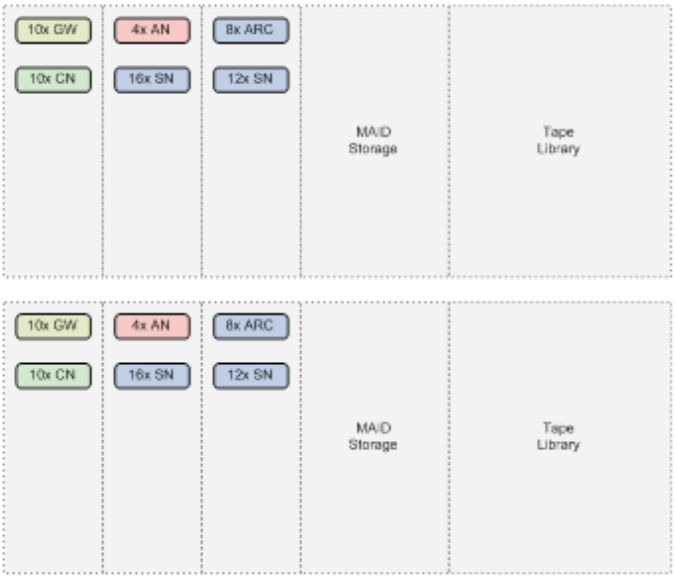
StorageGRID for Private Clouds



Larger Grid

- 14 40U Racks*
- 2.0 PB Protected
- 4.0 PB Raw
- 1 Billion Objects

* Rack Equivalent Units

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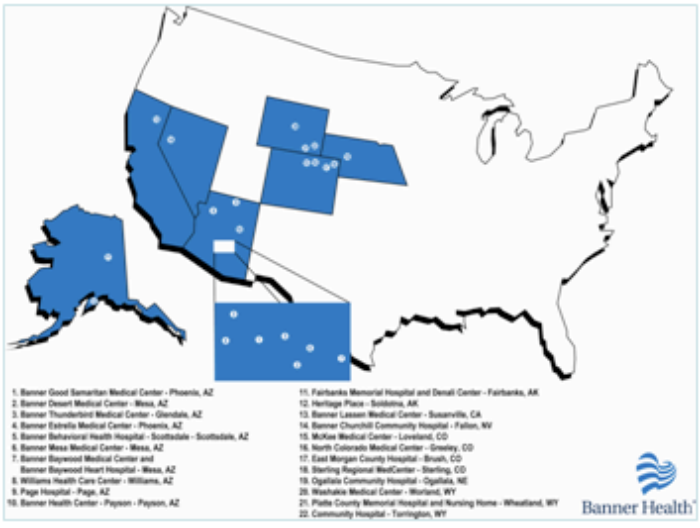
Example Customers

- **Large US Healthcare Provider**
- **Spans 14 facilities**
- **Primary Storage, BC & DR Peering**
- **½ PB of multi-tier disk, adding tape**
- **Over 400 million managed objects**
- **Both Clinical and Business storage partitions**



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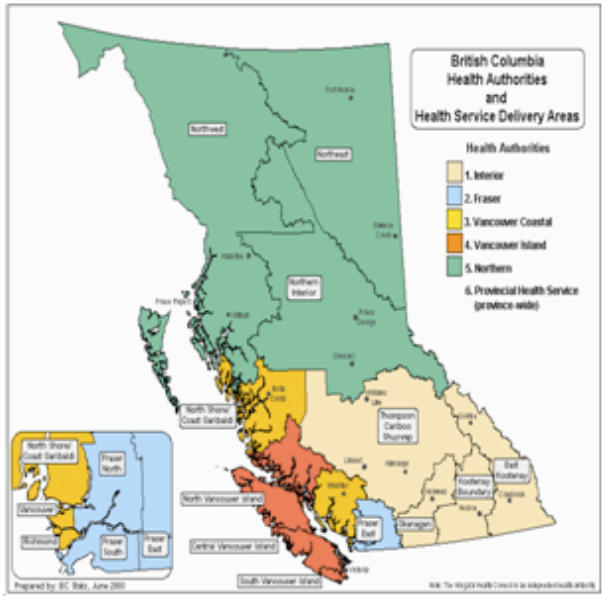
Example Customers

- **Canadian Provincial Health Care Provider**
- **Spans 74+ facilities**
- **Deep Archive, Primary Storage, Data Sharing**
- **1/4 PB of multi-tier disk**
- **Over 200 million managed objects**
- **Services shared to multiple government agencies**



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Questions?

And Thank You!

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