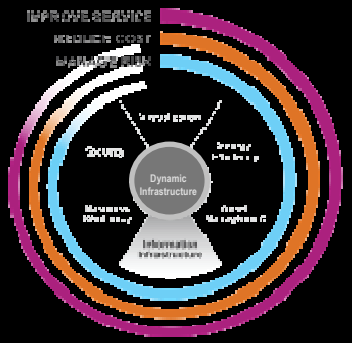
IBM



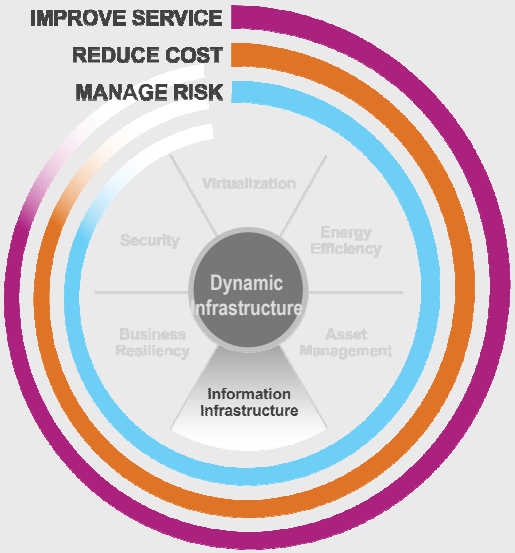
Smart Healthcare over the Cloud

Ray Wu 吳岱侑

Aug. 19th, 2010

Information Imperatives in Healthcare and Life Sciences

IBM Dynamic Infrastructure

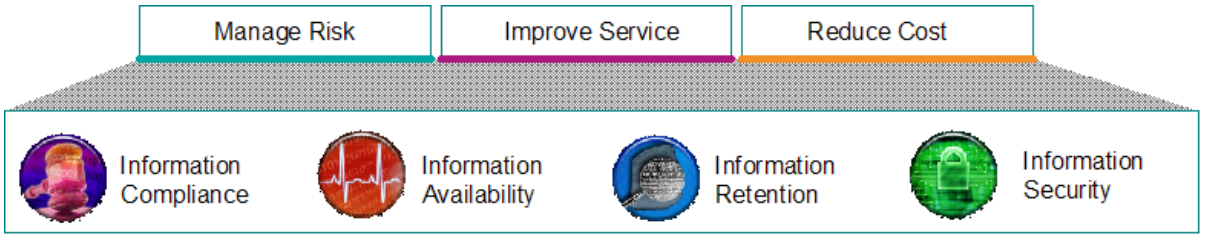


•Automated

•Virtualized

•Cost Effective

Information Infrastructure in Healthcare



- **Improve Service → Improve Patient Outcomes**
  - Enable fast, efficient and secure sharing of patient and clinical information across regions
  - Link disparate clinics and hospitals into integrated delivery networks
- **Reduce Cost → Eliminate HW & Simplify Operations**
  - Minimizing non value added administration and management activities
  - Enable enterprise optimization of storage across sites, storage tiers and clinical applications
  - Enhancing enterprise systems performance, uptime and reliability
- **Manage Risk → Manage Compliance & Risk**
  - Reduce organizational risk to unplanned events
  - Protect critical data for its lifetime in support of patient care and regulatory compliance

Cloud – A Common Definition

"An Elastically Scalable, Virtualized System That Is Rapidly Provisioned With Flexible Pricing Models"

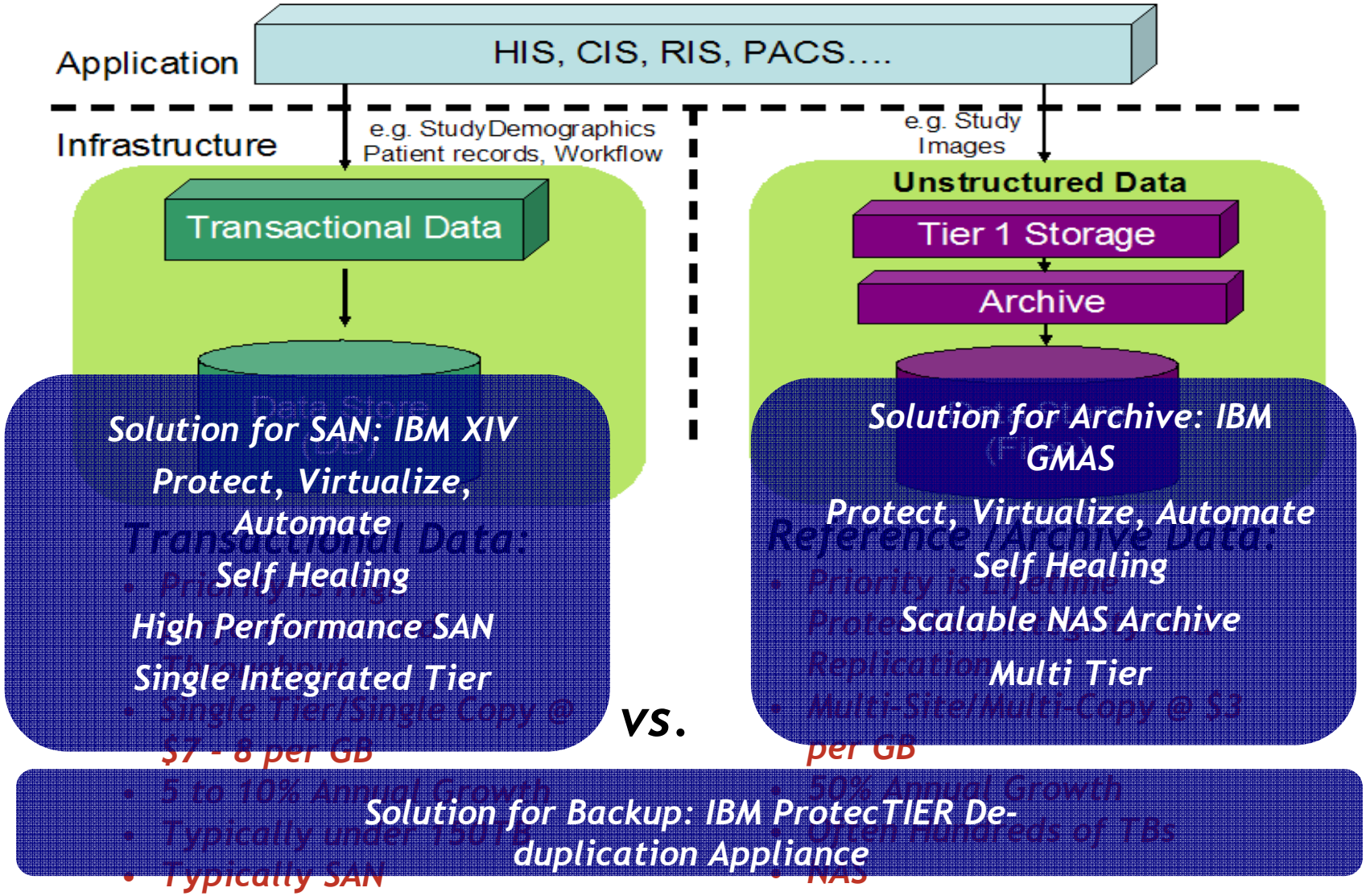
Common Attribute	Details
Flexible pricing	-by-consumption and T services more flexible
Elastic scaling	the demand
Rapid provision	ally et standards
Advanced virtualizatio	ork and applications ovide an implementation ucture
Standardized offerings	*Uniform offerings readily available from a services catalog on a metered basis*

Expectation on IT

Faster
Simpler
Cheaper

Enhanced user experience, remotely accessible via internet

IBM has end-to-end Storage solutions for the Healthcare Enterprise



IBM XIV Storage System – Scalable Block Cloud

Virtualization

-Massive parallelism

Automation

-Self-tune, self-heal, self-manage

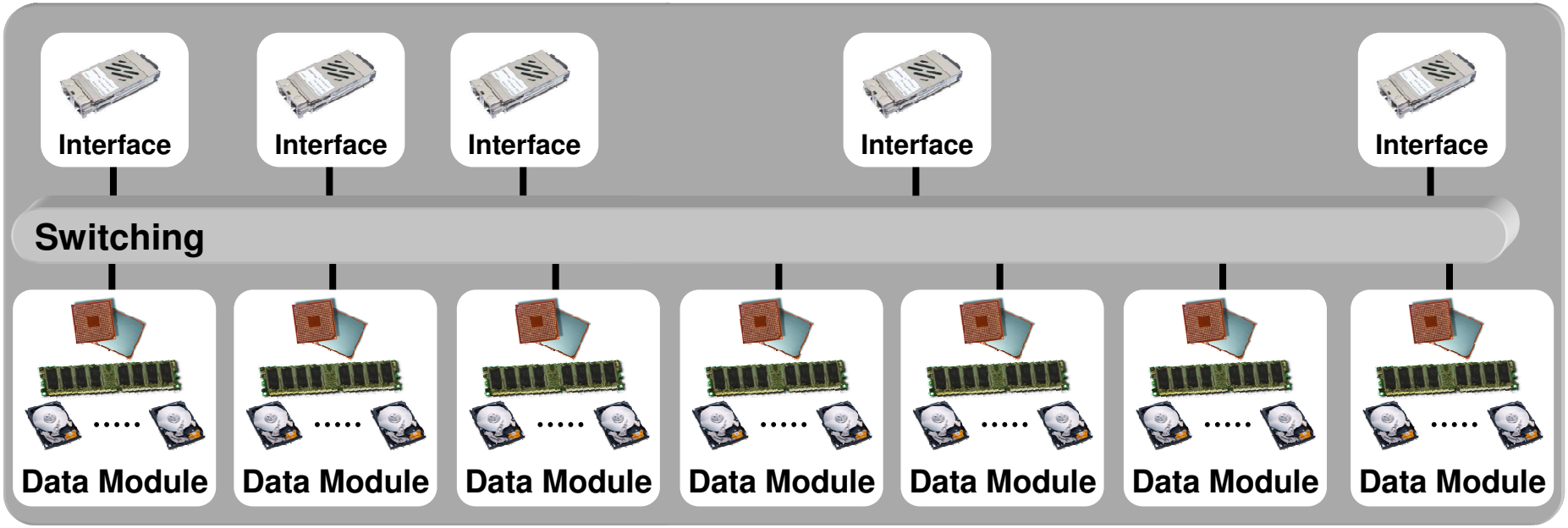
Scalability

-Increase compute power & capacity

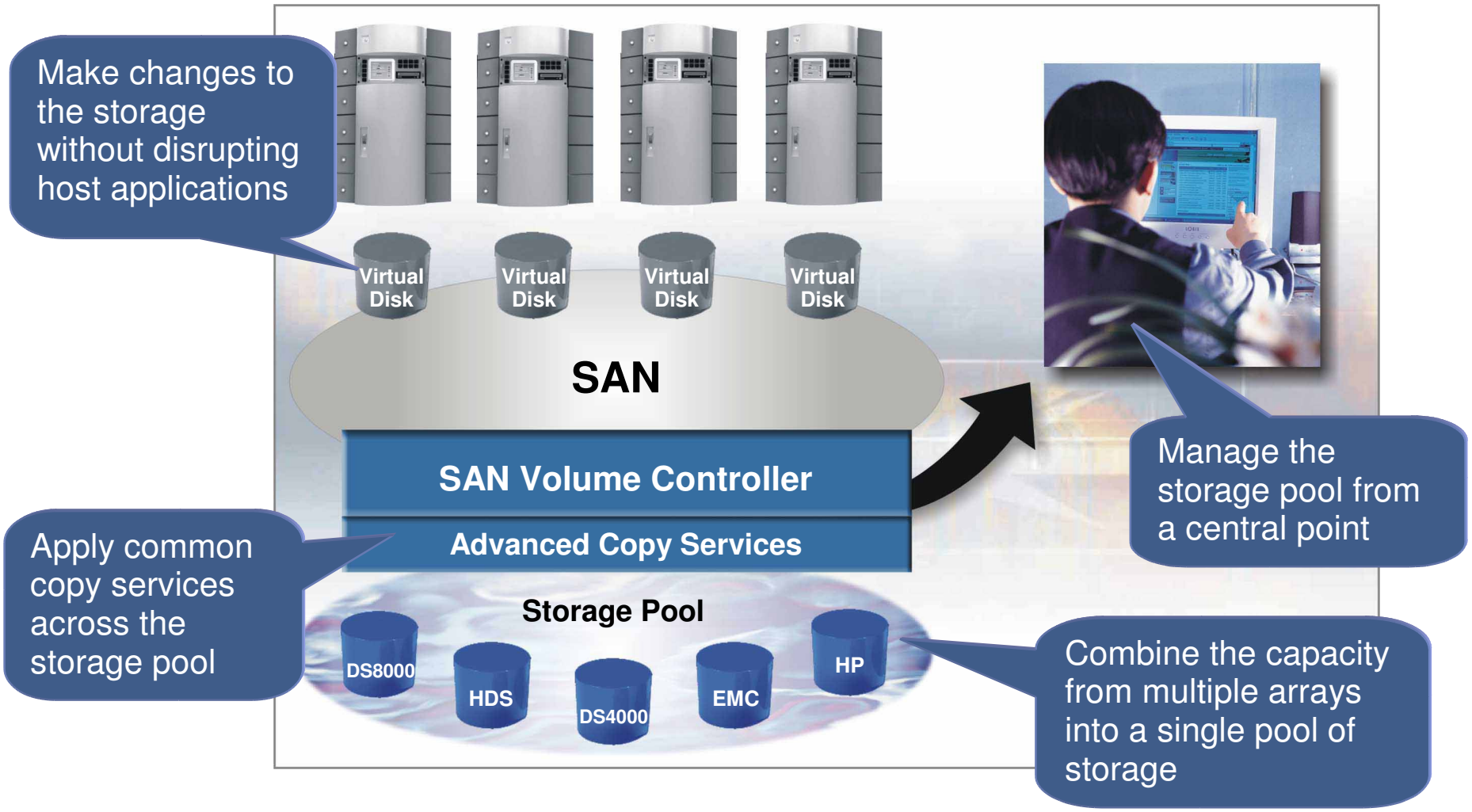
Simplicity in Management

High Performance

Scale Out



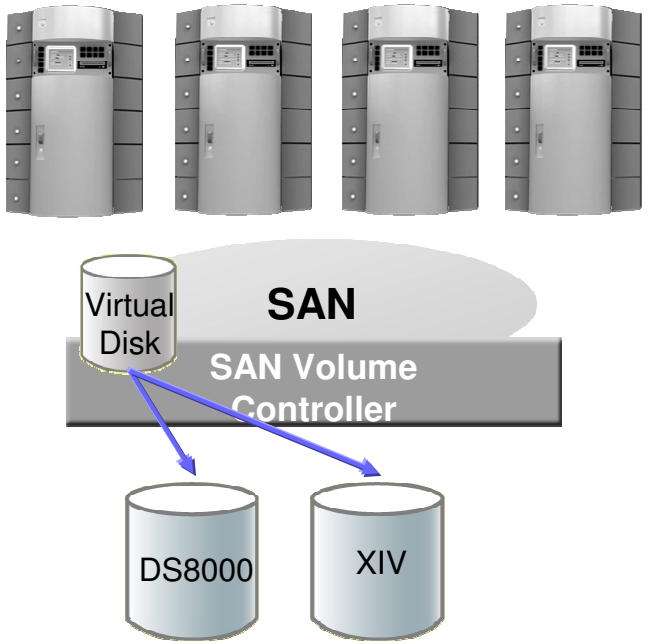
IBM System Storage SAN Volume Controller



Business Continuity with SAN Volume Controller

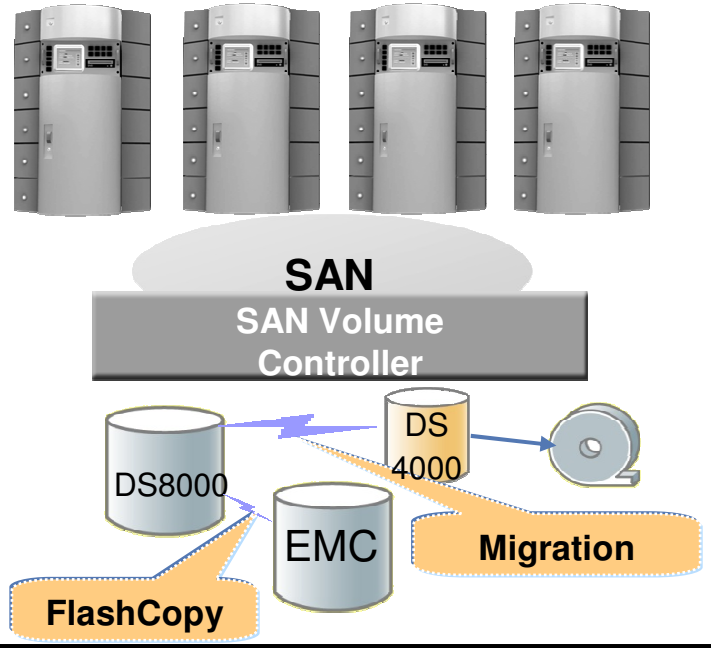
Storage HA

- SVC stores two copies of a virtual disk, usually on separate disk systems
- If disk supporting one copy fails, SVC provides continuous data access by using other copy
- Copies can be split for testing/dev use

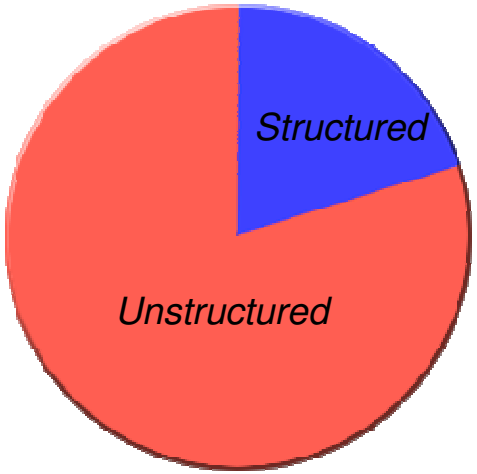


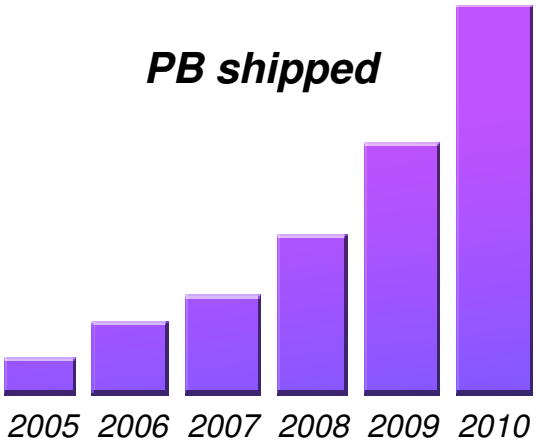
Lifecycle Management

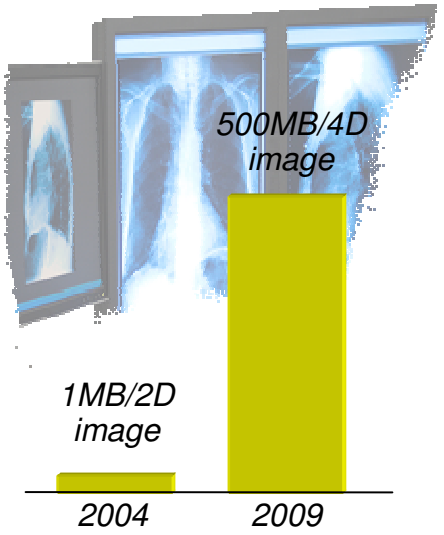
- Ability to move data between arrays without disruption
- Apply Copy Services from any to any
- Match the cost of storage to the business value of the data



Archiving Data Growth Statistics in Healthcare → A top problem for CFO's, CIOs and IT Managers







Up to 80% of data is reference data/fixed content (email, video, images)

Storage capacity shipments are growing at 54% a year

Example: Medical images will take up 30% of the world's storage

Requirements summary for Healthcare fixed content archives

- *Massive and growing data volumes*
- *Information Lifecycle Management*
- *Common Enterprise Storage System*
- *Protect Patient Data and Records*
- *Data Outlives Hardware and Media*
- *Eliminate of Storage Silos and Promote Cooperation*
- *Critical nature of application reliability*
- *Address all cost components – 80% of archive cost is operations*

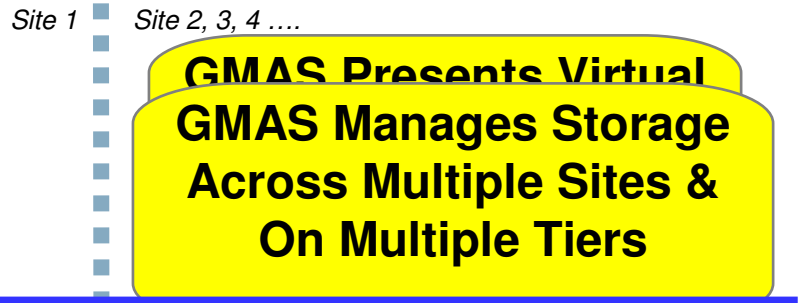
Any archive solution chosen should address each of these key requirements

IBM Grid Medical Archive Solution Key Features

GMAS protects data, simplifies administration and significantly lowers TCO

1. **Protects Data for Life:**
   - **Digital signatures, Proactive Checking, No Data Loss**
2. **Enterprise Solution:**
   - **All sites (LAN/WAN), All applications**
   - **All Storage Tiers**
3. **Improves Availability and Uptime of Applications:**
   - **Real time failover, automated rebuild, self healing**
   - **No downtime, changes transparent to applications**
4. **Automates Storage Administration:**
   - **ILM, Data Replication**
   - **Upgrades & Data Migrations**
   - **Less than 10% of an FTE to manage**

A new approach: "Siloed" Archive Infrastructure vs. IBM's Grid Medical Archive Solution

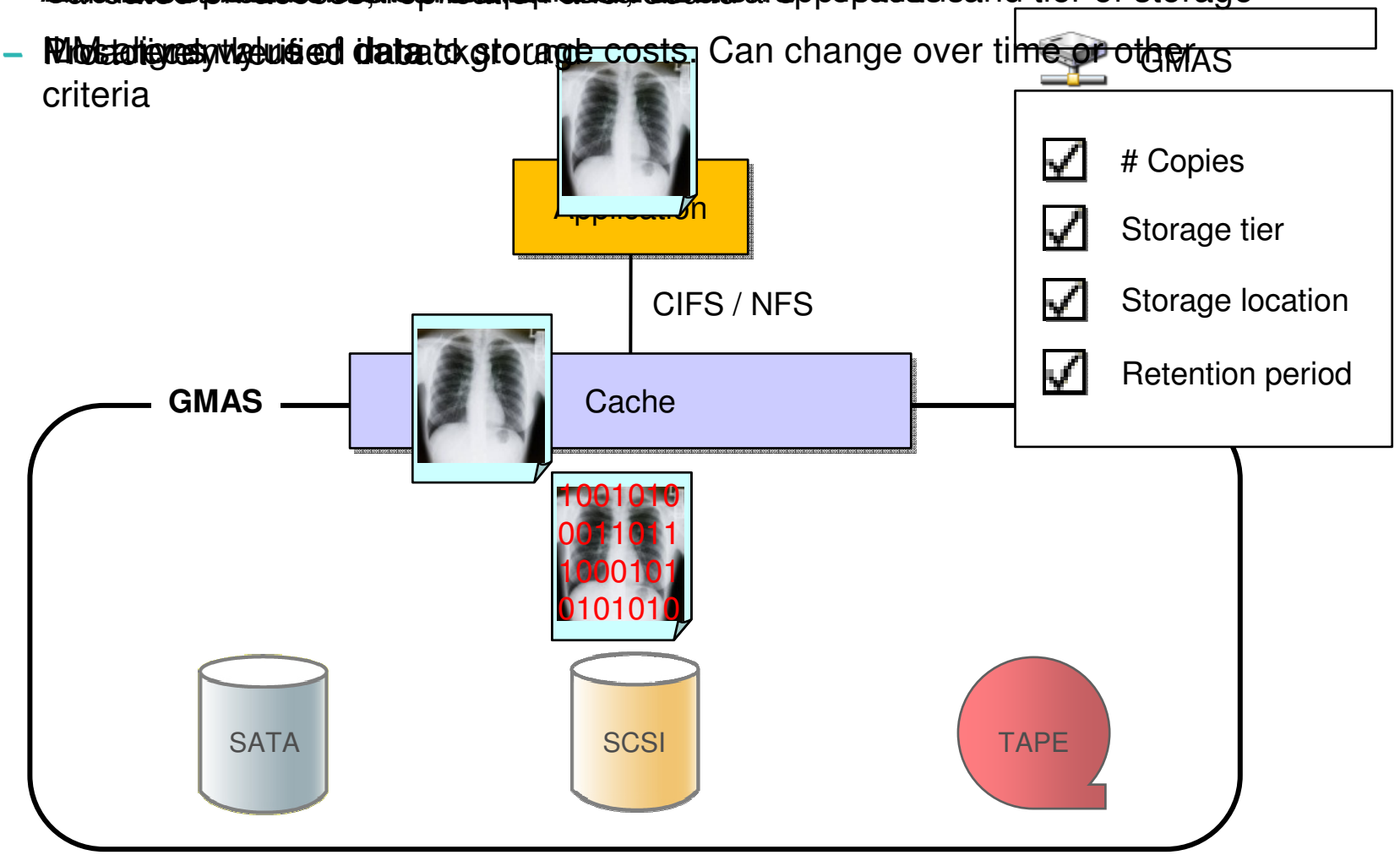


IBM's Grid Medical Archive Solution:

An enterprise wide 'virtualized' storage platform that optimizes storage usage across all applications, customer sites and storage tiers

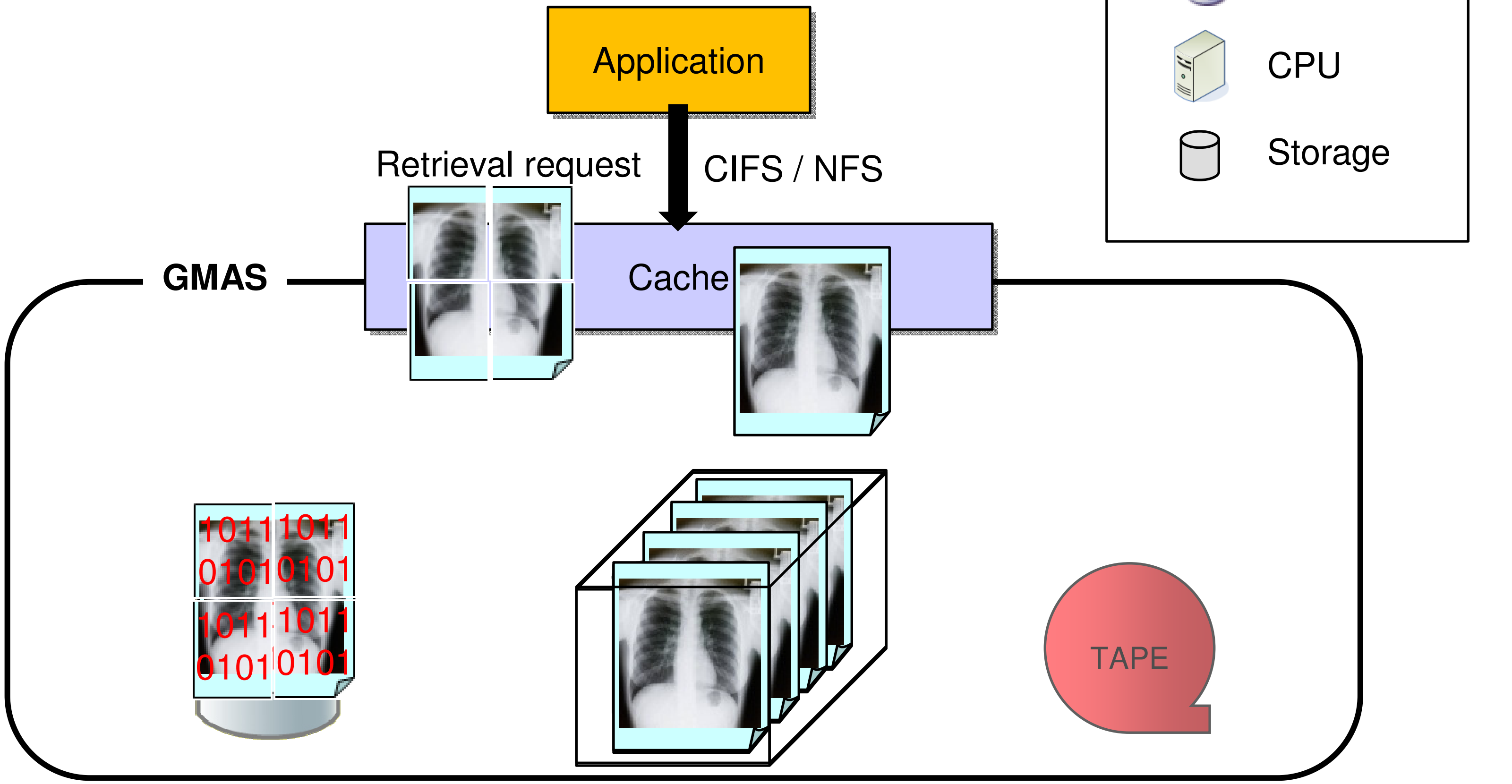
How GMAS Works: Storing and Protecting Data

- Data is [illegible] by IBM GMAS
  - [illegible] and tier of storage
  - [illegible] storage costs. Can change over time or other criteria

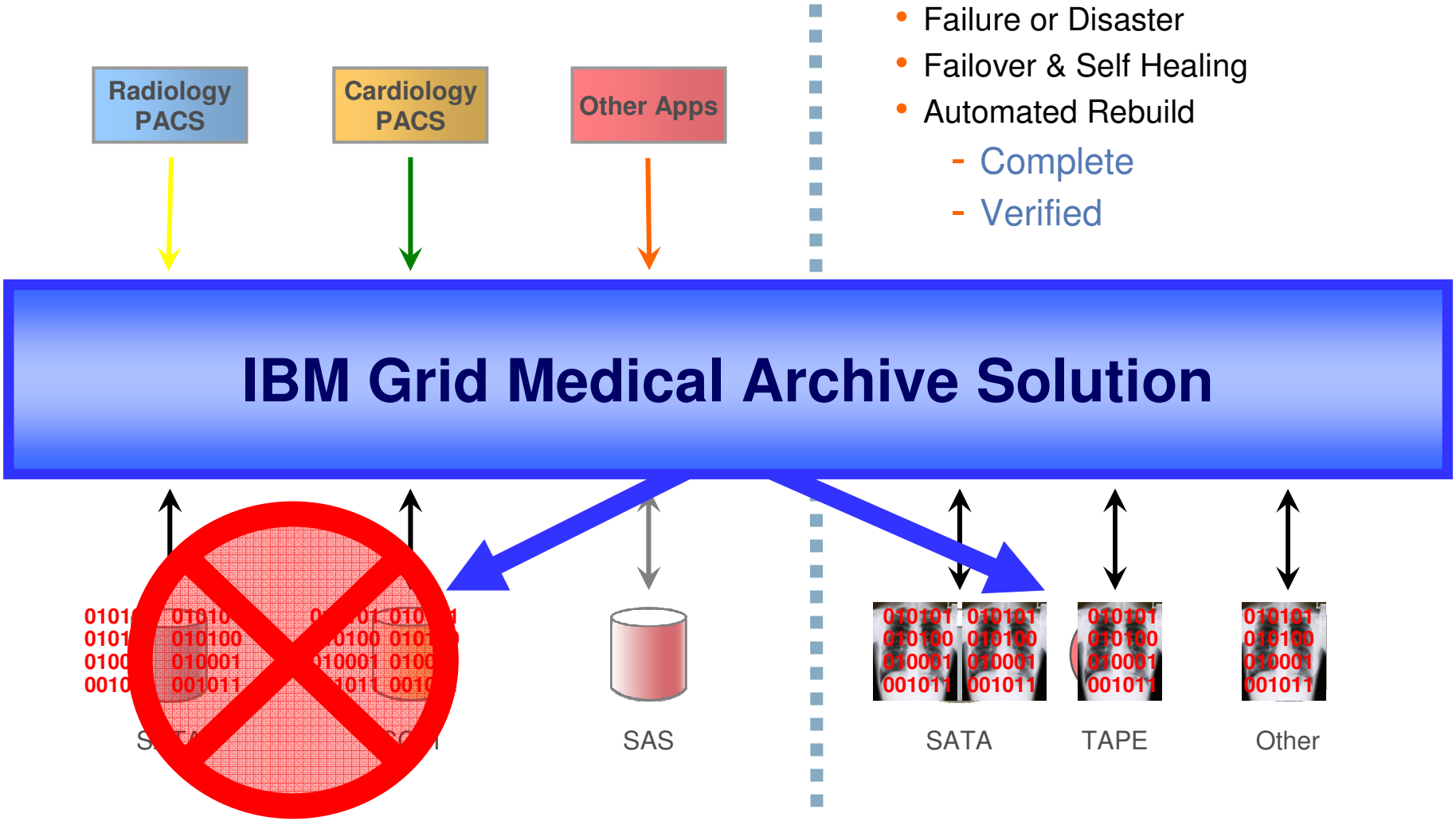


How GMAS Works: Data Retrieval

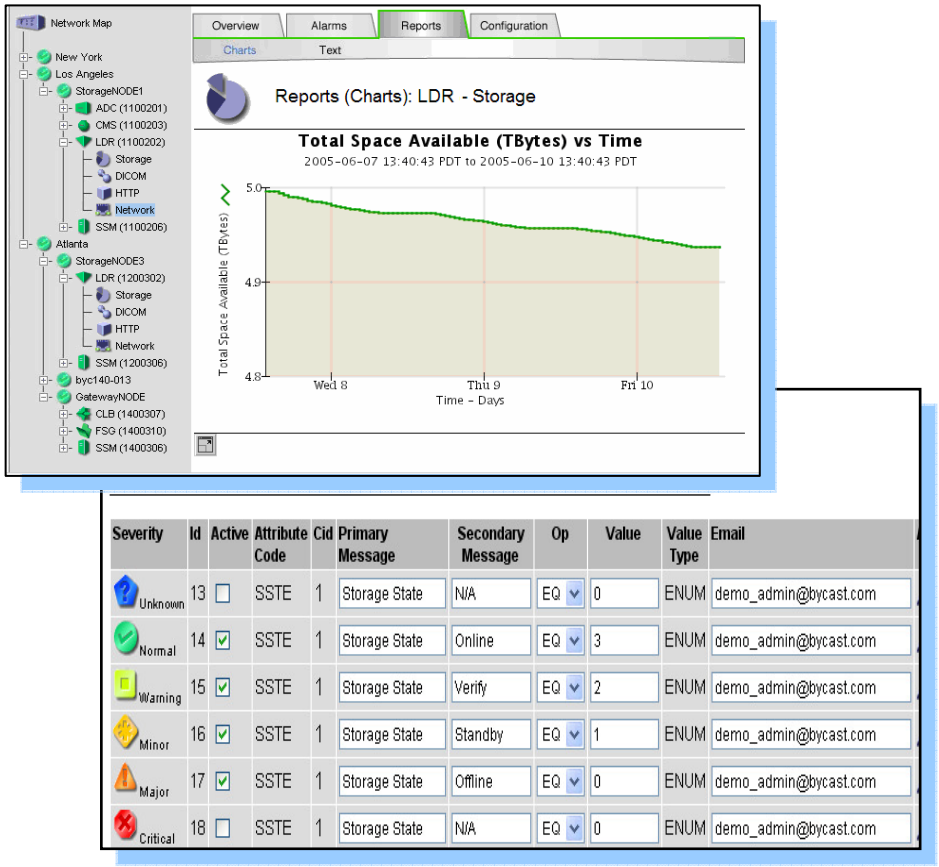
- **Data Transparency: Actions Performed by IBM GMAS**
  - Open standard file system interface (e.g. CIFS/NFS)
  - ... applications
  - ... data set
  - ... subsequent requests



Eliminates Error Prone Recovery: Real Time Failover and Automated Data Recovery

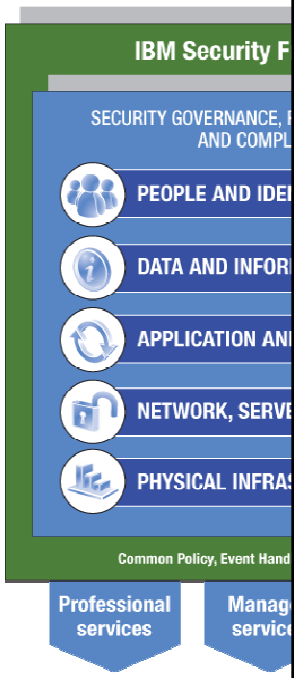


Lowers Administrative Costs



- Storage Management: Less than 10% of an FTE
- Centralized web-based administration
  - Proactive monitoring
  - Fault detection & alerts
  - Enterprise wide view of storage resources
- Proactive planning
  - Real time metrics measure resource utilization
  - Real time and historical reports determine trends

Critical Security Controls For Clouds



scription
o enterprise resources has been e right time
ular protection of both unstructured
-existing encryption investments by t of encryption keys
y and integrity of the software
emergency and out-of-band and in such a manner as to prevent
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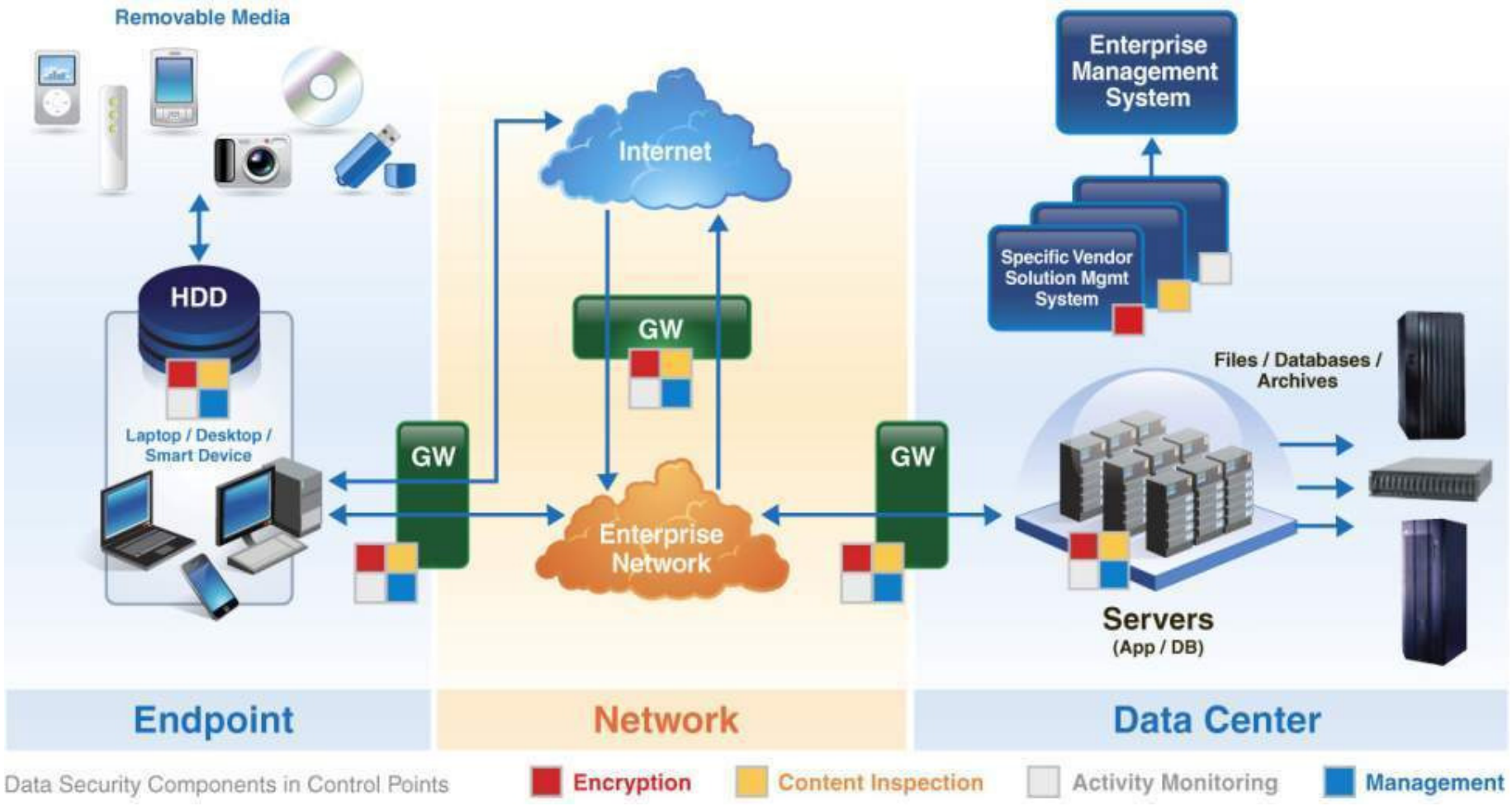
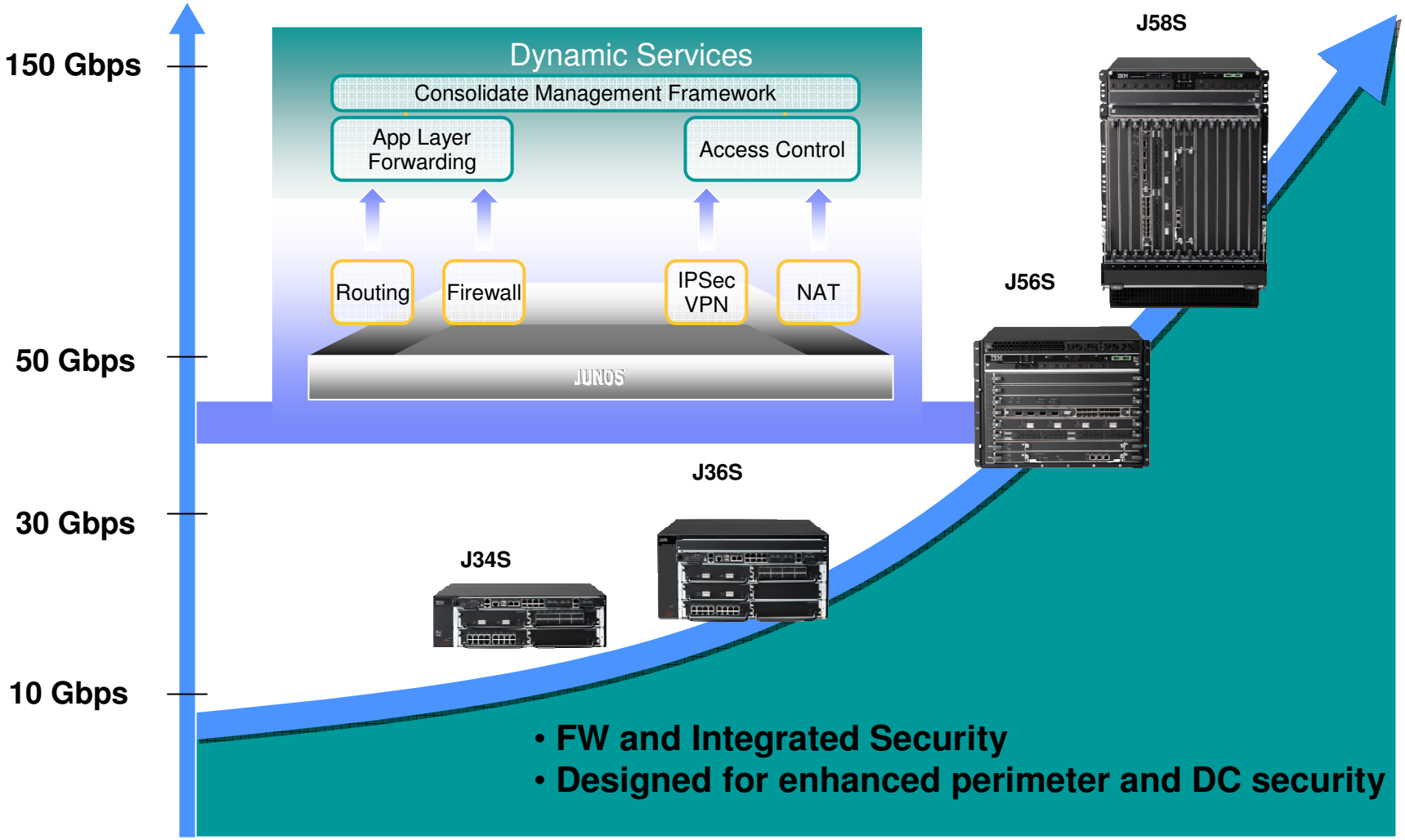
ice Desk designed to assure ddressed in a timely manner. ond to an emergency
monitor and report security and

IT Security Requires Protection Across the Entire Enterprise *From Data Center to Endpoint and Every Point in Between*

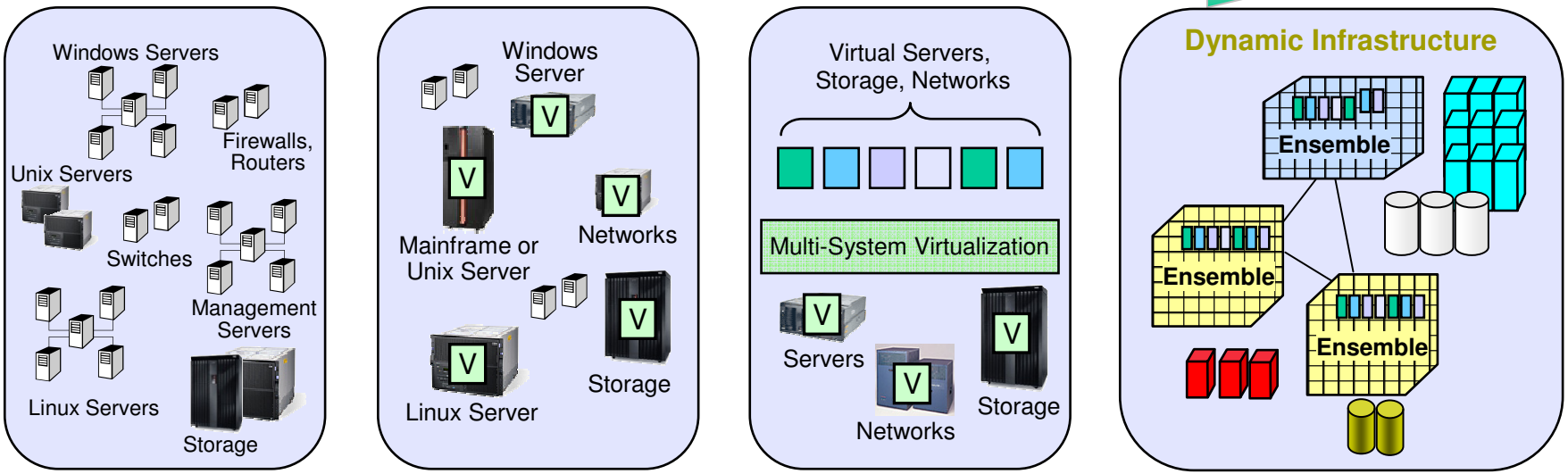


IBM j-type s-series Enterprise Security Portfolio



Ensembles: Building Blocks for Cloud Infrastructure

Scale-Out Sprawl → **Physical Consolidation** → **Abstraction and Pooling** → **Service Orientation, Cloud Services, Ensembles, …**



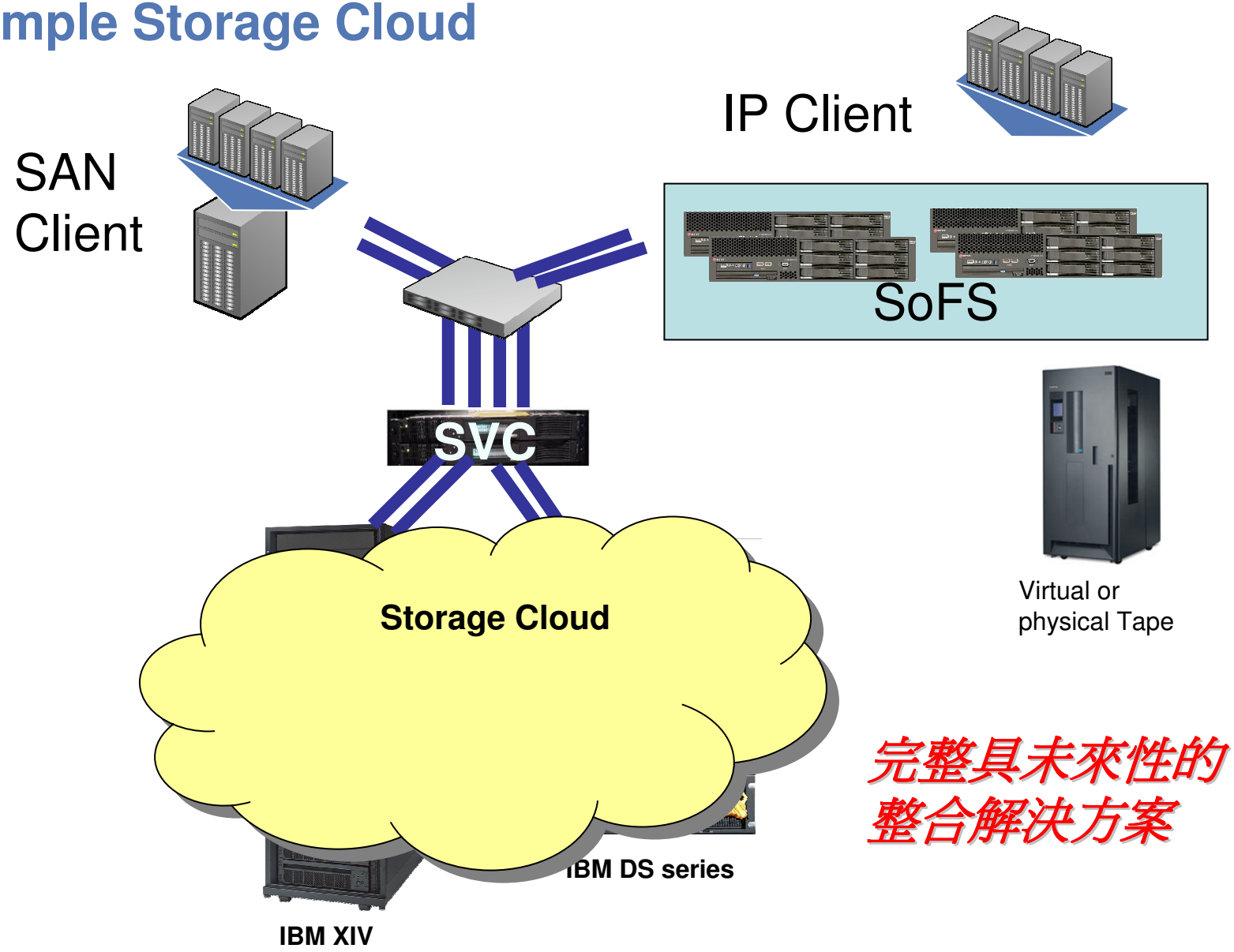
Ensembles designed to provide …

- IT Simplification – simplify configuration & management
- Agility – rapid deployment, self service …
- Resiliency – availability, disaster recovery …
- Security – trusted computing
- Workload Management – increase utilization across the pool
- Storage – capacity management, availability, backup
- Efficient infrastructure – better energy efficiency, higher utilization levels …

Ensembles designed to simplify deployment of …

- Test and development
- Service oriented architecture
- Software as a service
- Information as a service
- Utility computing services
- Hosted client services
- Virtual worlds
- IT consolidation

Example Storage Cloud



完整具未來性的
整合解決方案

{Date}

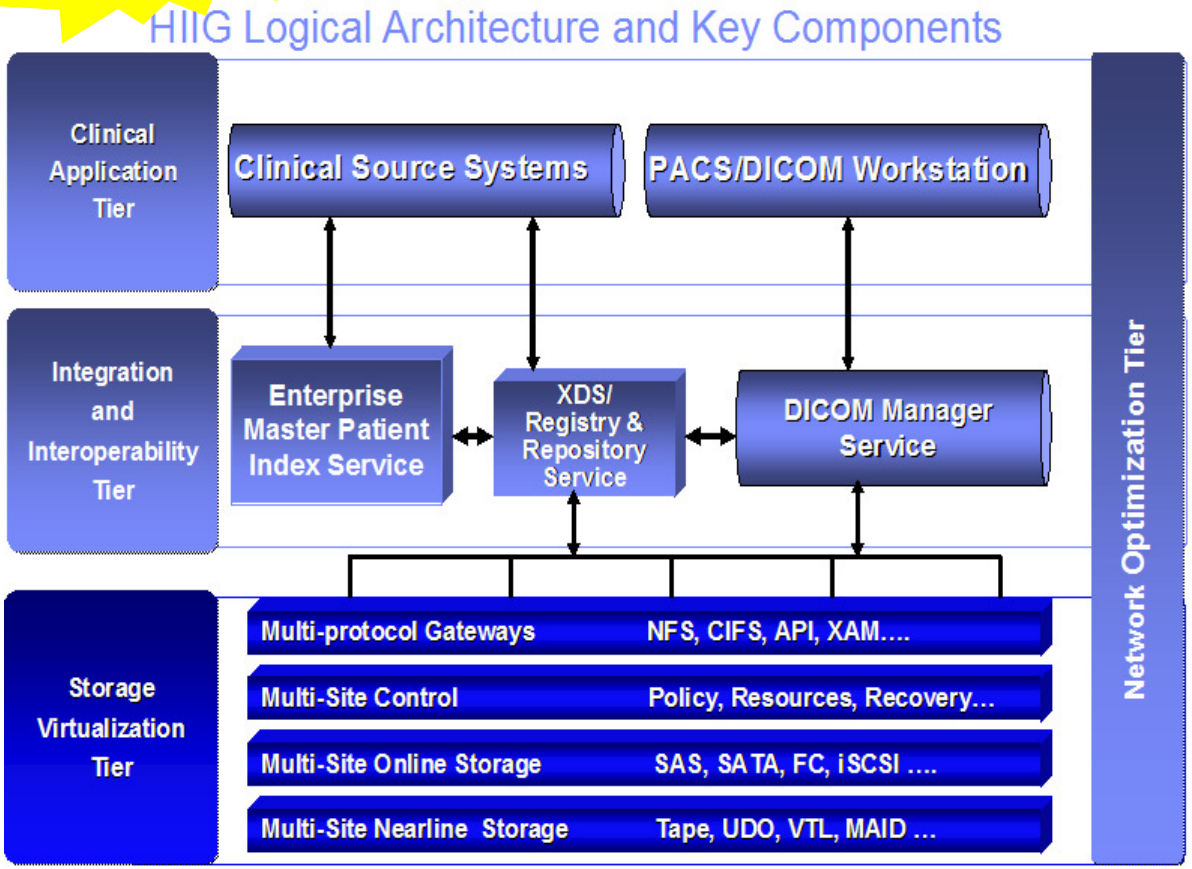
“智慧的地球”是IBM提出的理念不是IBM的專屬私產，
它屬於每一個地球人
“智慧的地球”生命力的源泉來自每個人的參與和行動
資訊技術只是其中一員

謝謝各位參與！

Healthcare Image and Information Grid

For Regional & Medium/Large Clients

Available Now!



What is HIIG? An Open Standards based solution that delivers integrated imaging and patient information in a timely fashion at the point of care.

What makes up HIIG? IBM GMAS and IBM HIE XDS Assets with Master Patient Index functionality Provided by Initiate, Network Optimization provided by Cisco and Image Management provided by IBM Business Partners. ***HIIG is primed and supported by IBM.***

Who needs HIIG? Large /Regional Healthcare and governments clients looking to establish an enterprise region wide imaging archive.

Spectrum Health Video:
http://www.youtube.com/watch?v=EfP8i2yKL6M

GMAS Customer Example

Challenge

- Exponential PACS Growth outpacing existing two-tier storage architecture – SAN too costly, tape retrieval too slow for clinicians
- Establish 2nd tier storage strategy to provide reliable disk-based performance at much lower cost
- Improve data access by eliminating downtime and delivering automated DR protection
- Protect patient data from corruption

Solution:

- IBM GMAS all spinning disk solution using IBM System x Servers, IBM DS3200 SATA and Grid Access Mgr SW
- Grid spans 2 data centers and 9 facilities
- GMAS to support McKesson enterprise PACS application and other applications
- McKesson - GMAS as a fully qualified Cache 2 solution for HMI

SPECTRUM HEALTH

Business Benefits:

- **100% uptime: grid split across 2 sites without interruption**
- **Automated remote-location data replication and synchronization**
- **High speed & reliable data access thru GMAS disk storage grid**
- **Significant improvement in data access performance**
- **Lower cost SATA storage in line with aging data**
- **Proactive Digital Signature checking ensures data integrity for life**
- **Enterprise platform: common architecture expanding for add'l imaging applications**
- **Last manual media migration has been performed**
- **Payback within ONE YEAR**

"We are looking at the level of service we can provide our customers in a whole new light based on what we have been able to do with GMAS"

-- Mark LaBelle, Spectrum Health