Elastic Storage Server (ESS)
User Group Update

Doug Petteway – March 20, 2019

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Free! Introduction to IBM Elastic Storage Server and Spectrum Scale RAID

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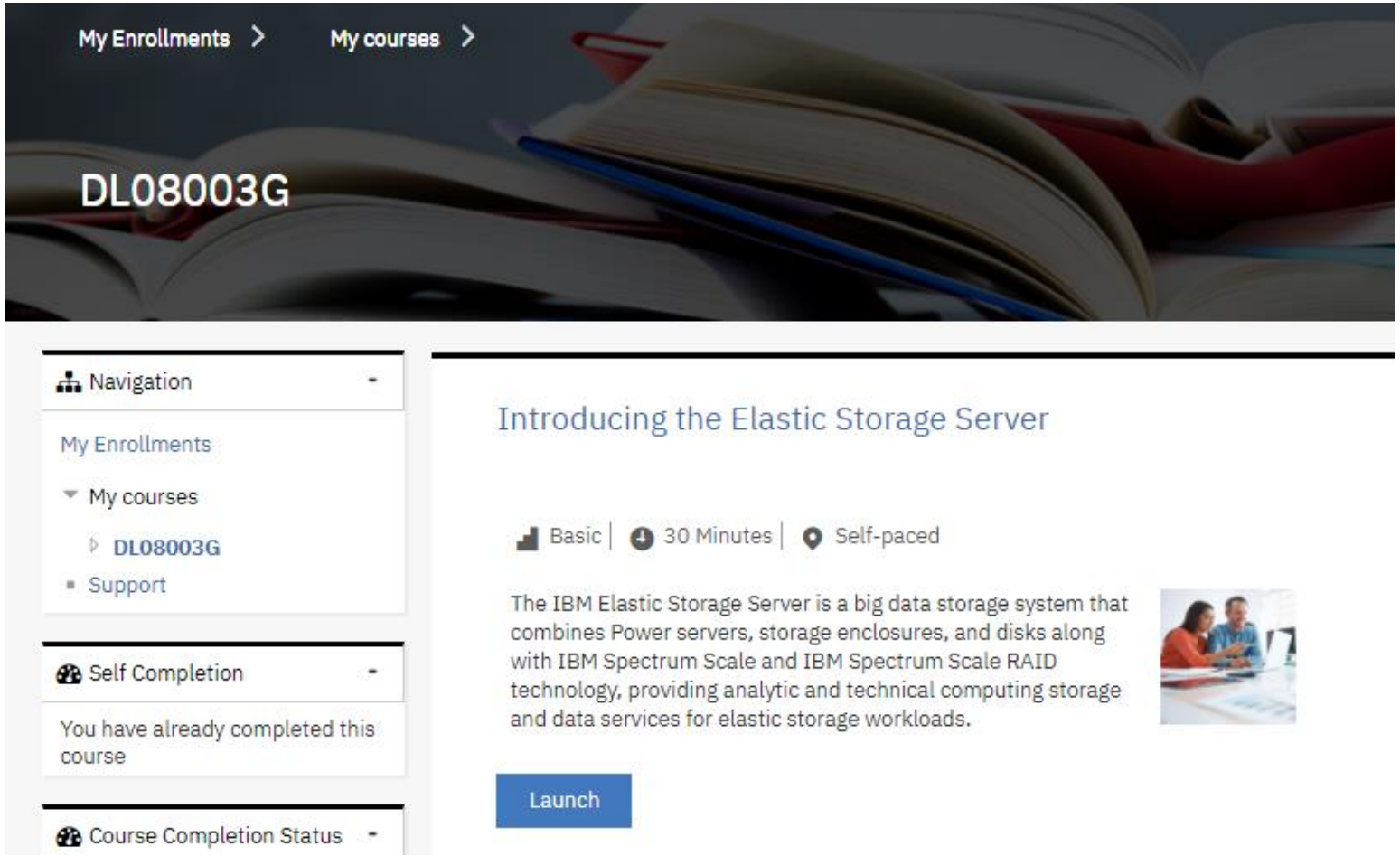

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Free! - IBM Elastic Storage Server and Spectrum Scale RAID - gssutils

https://www.onlinedigitallearning.com/course/view.php?id=3570 (Log on with your IBM ID)

gssutils simulation for SSR Tools sub-menu

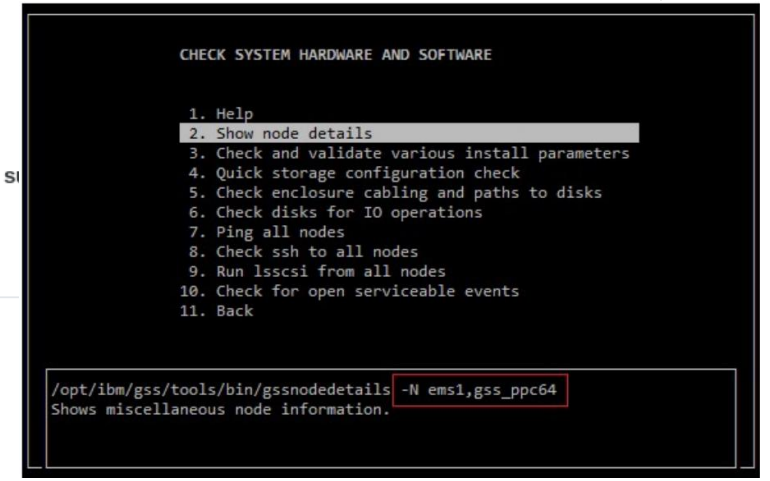
My Enrollments / My courses / DL08010G: SSR gssutils

About Simulation

This content is for installers or administrators for the IBM Elastic Storage Server.

You need 15 minutes or less to go through this content.

This simulation is for the **gssutils tool** that is pre-installed as part of the IBM Elastic Storage Server. The focus of this simulation is for the **SSR Tools s**
to use in order to verify the installation of an ESS.



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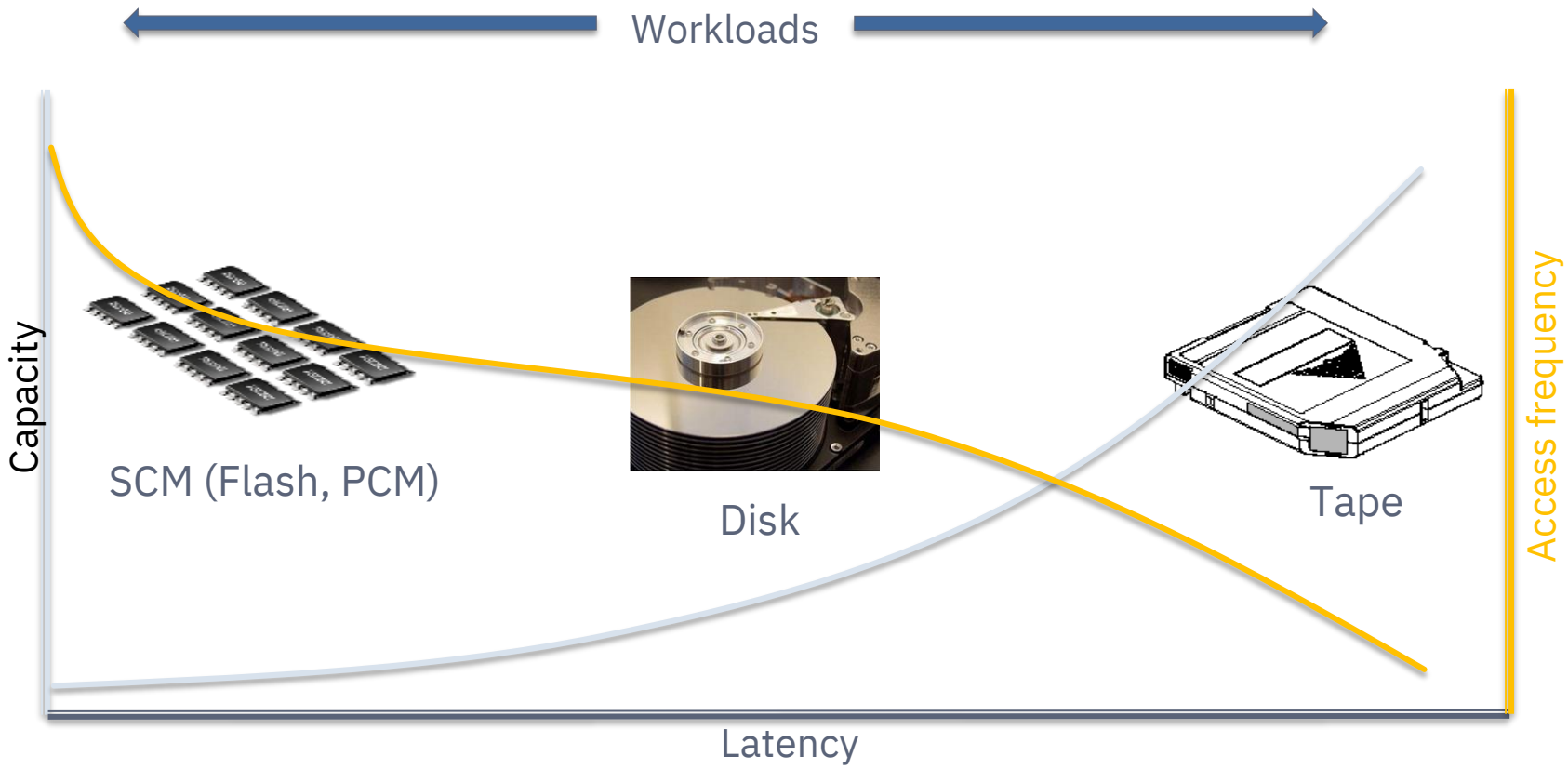
Storage Options



90% of data is never touched after 90 days

When data gets **COLD** move it to a low cost storage tier

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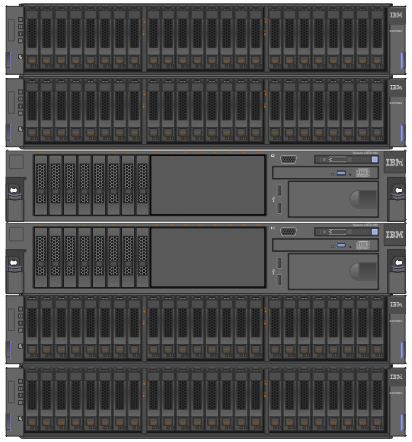
IBM Spectrum Scale with Elastic Storage Server Family

The IBM ESS Family

Field proven, highly efficient and super reliable

- Over *1000* ESS Installed
- Over *300* ESS customers
- Over *5,000* Spectrum Scale clients



Five 9's Reliability!

IBM is the World Leader in Software Defined Storage Environments

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IBM Elastic Storage Server (ESS)

Integrated scale-out data management for file and object data

Optimal building block for high-performance, scalable, reliable enterprise Spectrum Scale storage

- Faster data access with choice to scale-up or out
- Easy to deploy clusters with unified system GUI
- Simplified storage administration with IBM Spectrum Control integration

One solution for all your Spectrum Scale data needs

- Single repository of data with unified file and object support
- Anywhere access with multi-protocol support:
  NFS 4.0, SMB, OpenStack Swift, Cinder, and Manila
- Ideal for Big Data Analytics with full Hadoop transparency

Ready for business critical data

- Disaster recovery with synchronous or asynchronous replication
- Ensure reliability and fast rebuild times using Spectrum Scale RAID's dispersed data and erasure code
- Five 99999s of availability

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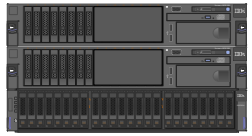
IBM Elastic Storage Server: Speed and Capacity

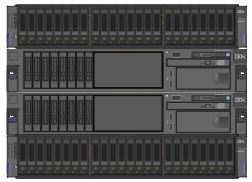
Speed

Model GS1S
24 SSD



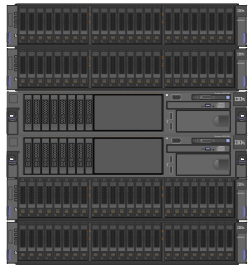
10+ GB/s

Model GS2S
48 SSD



20+ GB/s

Model GS4S
96 SSD



40 GB/s

Model GH12:
1 2U24 Enclosure SSD
2 5U84 Enclosure HDD
166 NL-SAS, 24 SSD

20+ GB/s*

Model GH14:
1 2U24 Enclosure SSD
4 5U84 Enclosure HDD
334 NL-SAS, 24 SSD

30+ GB/s*

Model GH24:
2 2U24 Enclosure SSD
4 5U84 Enclosure HDD
334 NL-SAS, 48 SSD

~40 GB/s*

Capacity

Model GL1S:
1 Enclosures, 9U
82 NL-SAS, 2 SSD

5+ GB/s

Model GL2S:
2 Enclosures, 12U
166 NL-SAS, 2 SSD

10+ GB/s

Model GL4S:
4 Enclosures, 20U
334 NL-SAS, 2 SSD

20+ GB/s

Model GL6S:
6 Enclosures, 28U
502 NL-SAS, 2 SSD

30+ GB/s

* Estimate of performance aggregated across SSD and HDD.
All estimates assume EDR Infiniband connections for read B/W

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IBM - Leading the AI Challenge

#1: June 2018 - IBM and U.S. Department of Energy (DoE) unveil **“Summit” the world’s most powerful and smartest AI scientific supercomputer**

– Located at Oak Ridge National Laboratory (ORNL)

– Record breaking Performance, Throughput and Density

#2: 4Q18 - IBM and DoE also unveiled **“Sierra” second only to Summit in scientific supercomputing**

– Located at Lawrence Livermore National Laboratory (LLNL)

Tomorrow: Quantum Computing from IBM will set a new standard for Future Computing

Today: IBM has built the Worlds Smartest and Most Powerful AI Supercomputer

Summit: world's smartest, most powerful AI supercomputer

OAK RIDGE National Laboratory

summit

And getting Faster

- 200 petaflops
for modeling & simulation
- 3.3 ExaOps
for data analytics and AI
- 2.5 TB/sec
single stream IOR
- 250 PB
HDD storage capacity

https://www.olcf.ornl.gov/summit/

- Storage subsystem: IBM Elastic Storage Server (ESS) & IBM Spectrum Scale V5
- Compute Servers: IBM Power9 AC922 with Nvidia Tesla GPUs

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IBM Elastic Storage Server 5.3.3 - GLxC models

Improved storage capacity and economy

New ESS GLxC models use denser enclosures to deliver up to
26% more capacity in 17% less rack space

Model	4U106 drawers	Drives	Max Raw capacity	Software licenses
GL1C	1	104	1.45 PB	104
GL2C	2	210	2.94 PB	210
GL4C	4	432	6.04 PB	432
GL6C	6	634	8.87 PB	634
GL8C	8	846	11.8 PB	846

>70GB/sec**
>8PB of storage
>789TB per Rack Unit
Ultra-dense storage

*Compared to GLxS models
**Final Benchmarks to be published

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Non-disruptive upgrades!

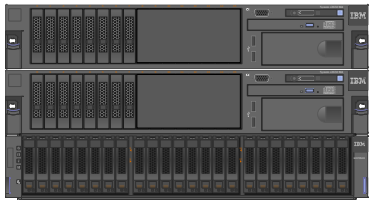
Simple expansion of Storage Capacity

- Spectrum Scale will automatically rebalance data in the background
- System automatically puts the new capacity to use
- No need to Archive & Restore data
- No System disruption*

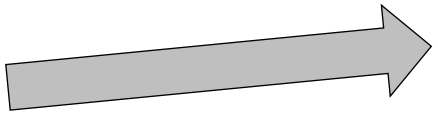
Non Disruptive Upgrades	
From	To
GS1S	GS2S
GS2S	GS4S
GL1S	GL2S
GL2S	GL4S
GL4S	GL6S

Example

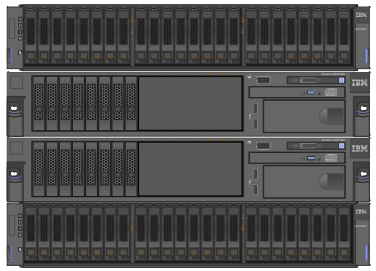
Model GS1S
With 24 SSDs



Install additional drawer with 24 SSDs



Model GS2S
With 48 SSDs



***Requires space available in the rack**

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