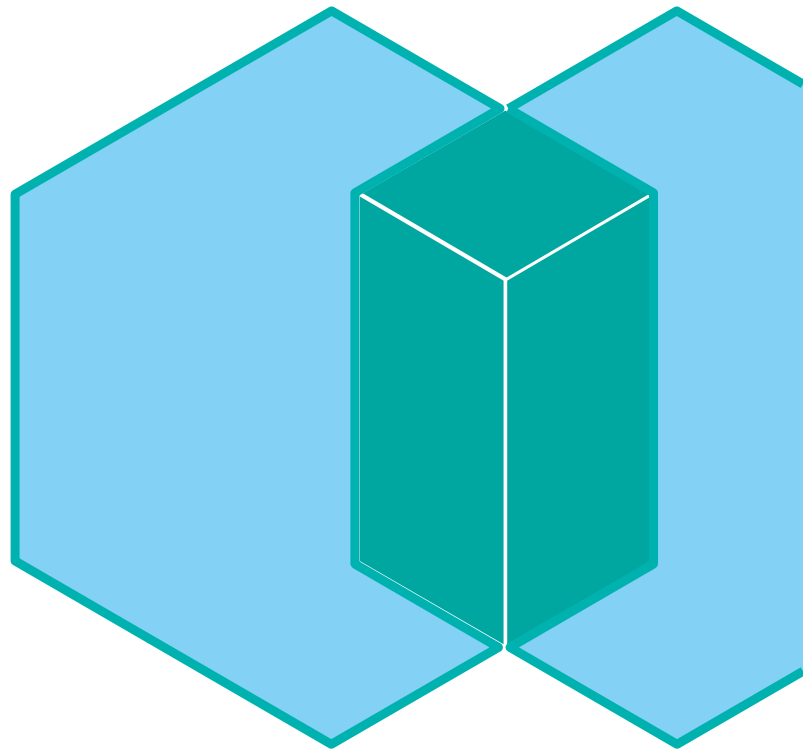




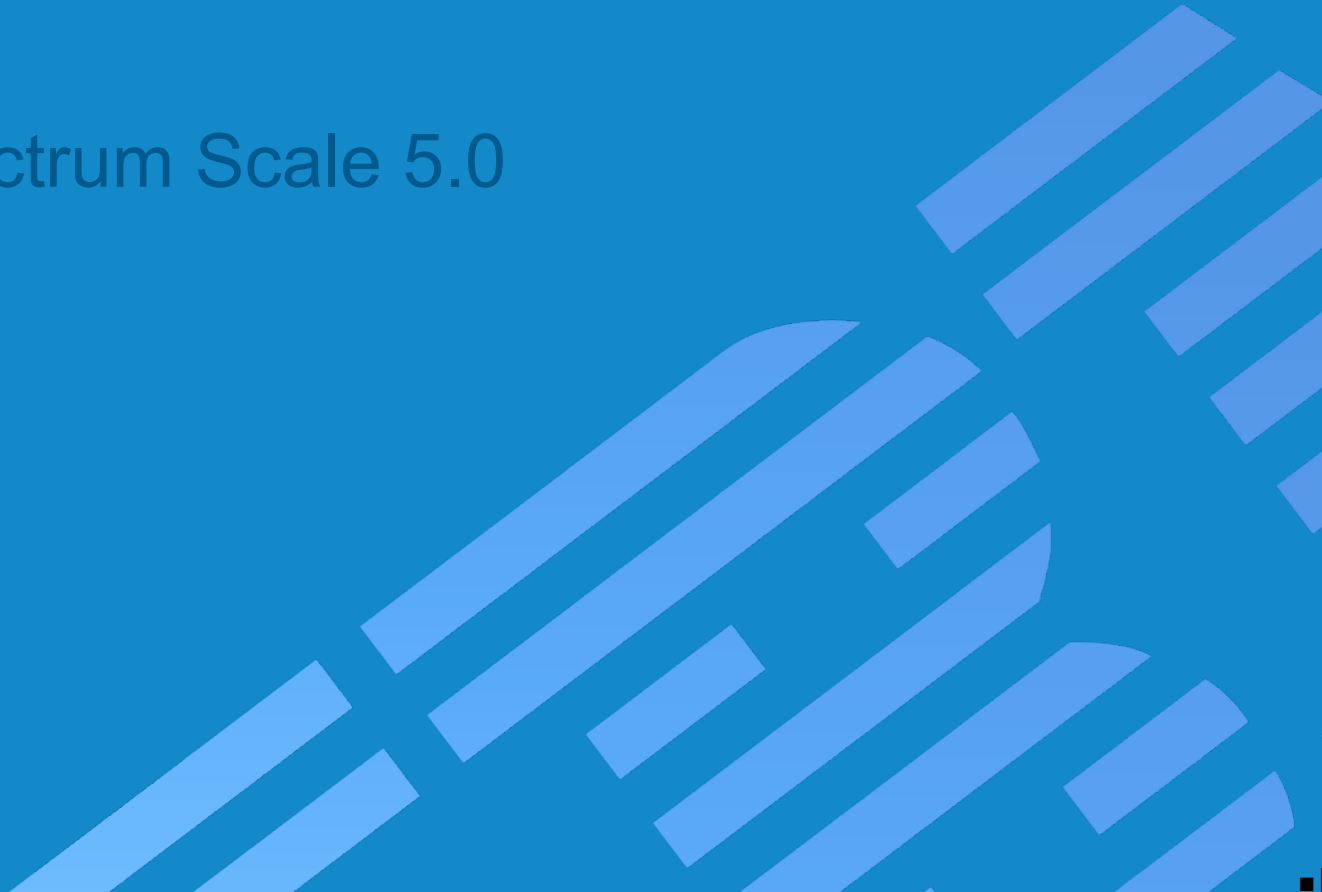
# Spectrum Scale v 5.0 highlights

CIUK, Manchester  
December 2017

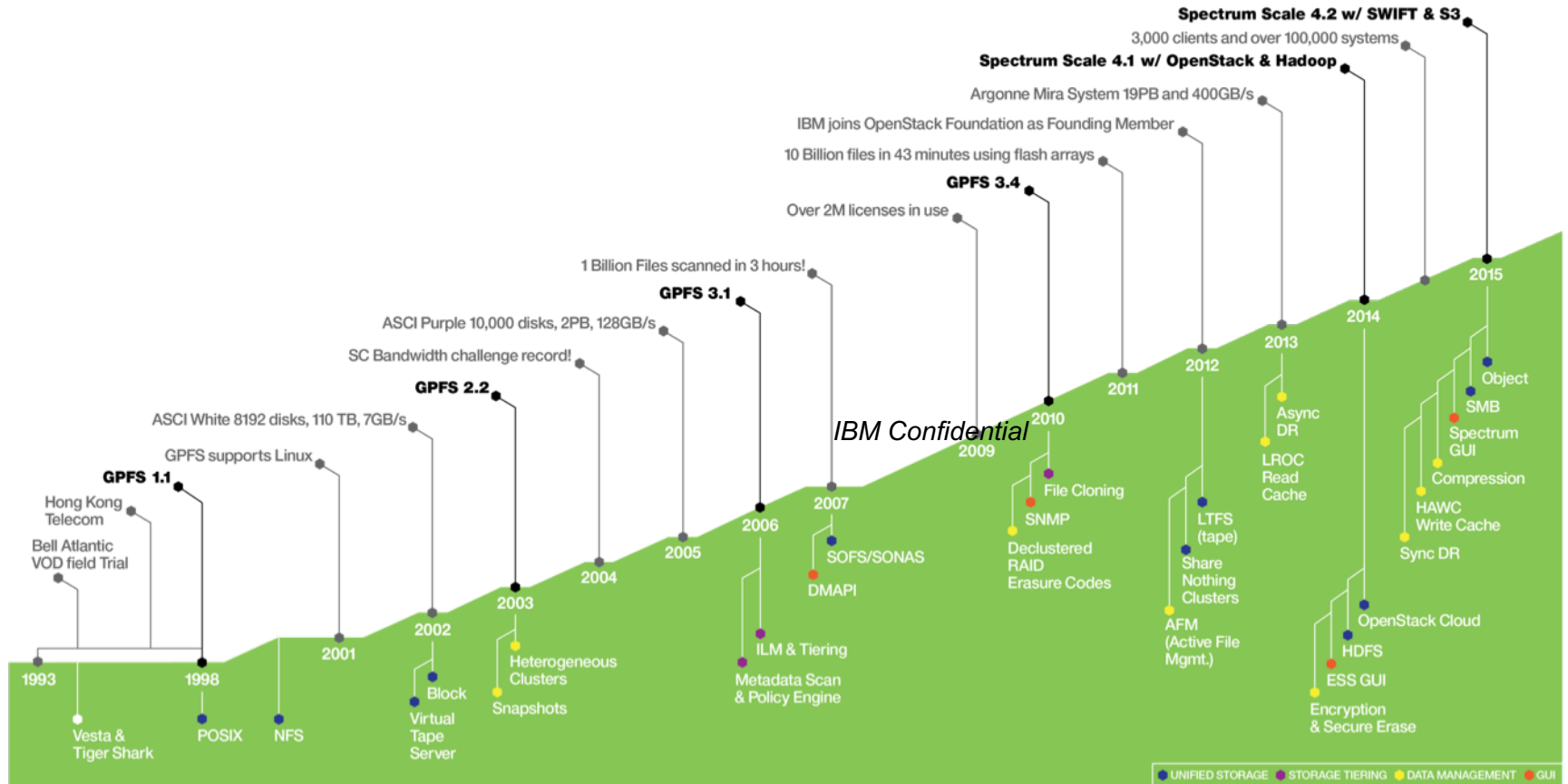
Dr. Daniel Kidger, IBM



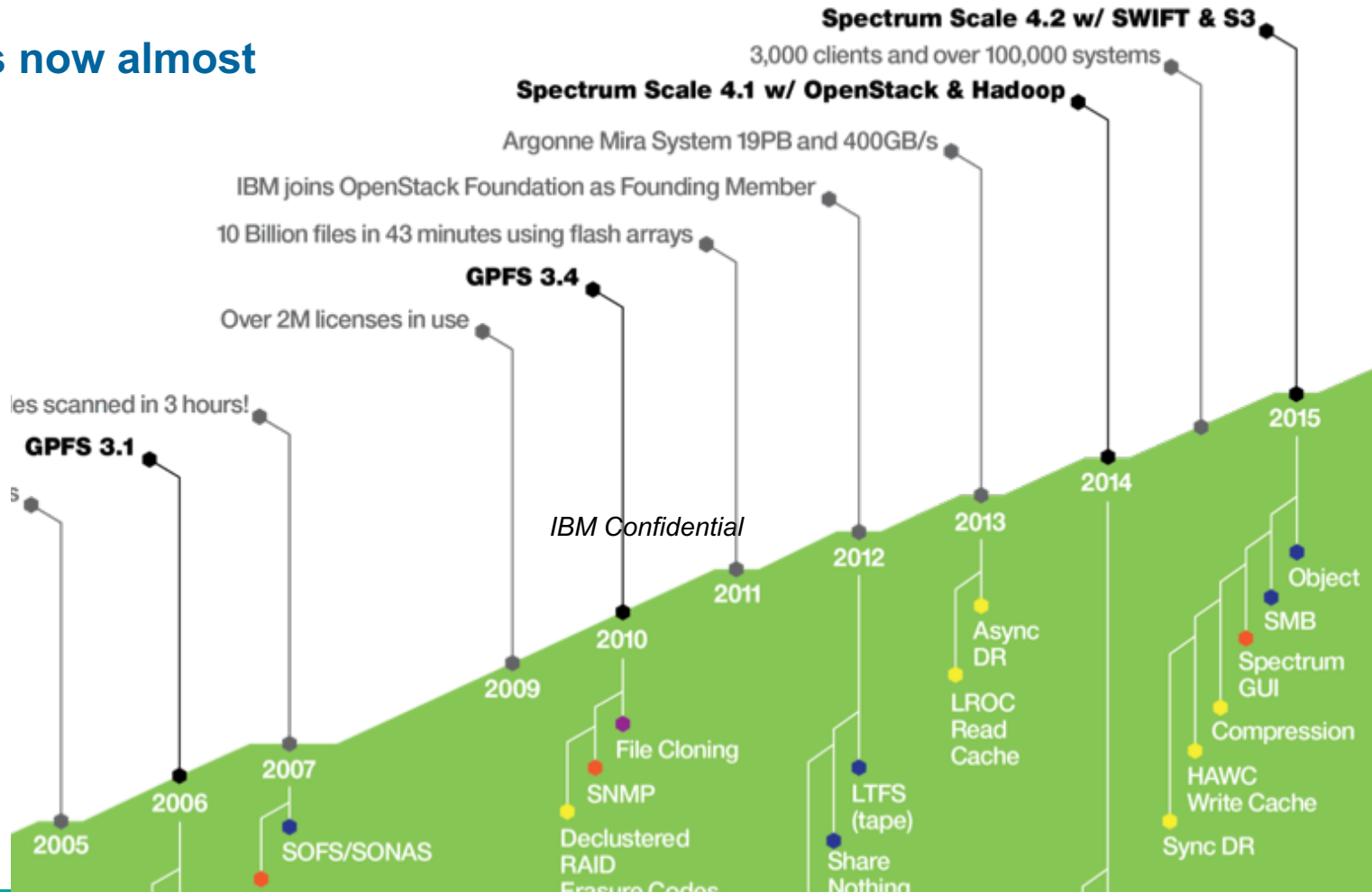
# New in IBM Spectrum Scale 5.0



# The History of Spectrum Scale



# Version 4.x is now almost 4 years old.



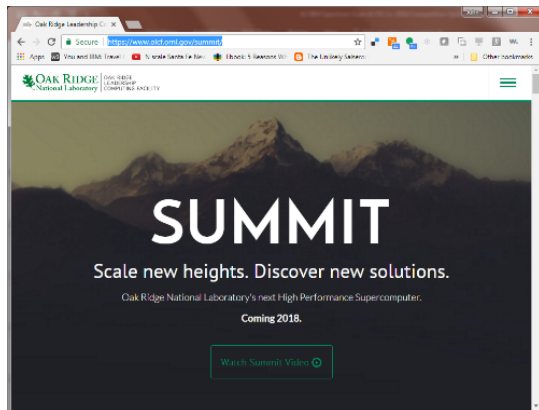
# So what else does the product need?



**CORAL**  
COLLABORATION  
OAK RIDGE • ARGONNE • LIVERMORE

## Imagine you need to deliver:

- 2.5 TB/sec single stream IOR as requested from ORNL
- 1 TB/sec 1MB sequential read/write as stated in CORAL RFP
- Single Node 16 GB/sec sequential read/write as requested from ORNL
- 50K creates/sec per shared directory as stated in CORAL RFP
- 2.6 Million 32K file creates/sec as requested from ORNL



▪ <https://www.olcf.ornl.gov/summit/>

**What innovations in storage would this require?**

## Lets cover the smaller changes first...

1. Support for NVMe
2. Compression feature has been optimized with support for LZ4
3. Enhanced usability for secure data at rest (encryption)
4. Dynamic modification of NFS exports
5. Ubuntu support for protocol nodes (NFS/SMB/Object)
6. Support for File Compression for AFM and AFM DR filesets
7. Expanded REST API for Performance data collection, threshold management, snap creation, addition/removal of nodes from cluster.
8. Certification with HortonWorks Data Platform 2.6
9. Upload diagnostic data to a PMR automatically, etc.
10. Encryption of data in motion

## Significant changes in 5.0

1. Separation of the sub-block size from the blocksize
  - New default blocksize is 4MB with (512of) 8KB sub-blocks (was 32of 128MB sub-block)
2. ESS: No longer needs to pre-allocate say 5% for Metadata
3. GUI extended to almost all features including AFM, TCT, etc.
  - So single 'pane-of-glass' like several competitors have.
4. TCT enhancements eg multi-cloud, support for Multi-cluster etc.
5. Support for TCT with direct access to the Object Store.
6. Lots of performance improvements, largely driven by CORAL eg 3-5x on metadata
7. Logging of every file access (with DME edition)
  - Audit logging, anti-virus. Uses LWE like TCT does.
8. Now available on Amazon AWS
  - As well as IBM Cloud (aka Softlayer)
9. No change in license model
  - Despite rumours of removal of per-socket licenses.

**Thank You.**

**IBM Storage & SDI**





# Please Note

IBM's statements regarding its plans, directions, and intent are subject to change or withdrawal without notice at IBM's sole discretion.

Information regarding potential future products is intended to outline our general product direction and it should not be relied on in making a purchasing decision.

The information mentioned regarding potential future products is not a commitment, promise, or legal obligation to deliver any material, code or functionality. Information about potential future products may not be incorporated into any contract. The development, release, and timing of any future features or functionality described for our products remains at our sole discretion.

# Improved security and compliance

## New File Audit Logging capability (Data Management Edition only)

- Track user accesses to filesystem and events
- Supported across all nodes and all protocols
- Parseable data stored in secure retention-protected fileset
- Events that can be captured are:
  - Open, Close, Destroy (Delete), Rename, Unlink, Remove Directory, Extended Attributed Change, Access Control List (ACL) change

## File-level immutability

- Independent KPMG certification anticipated

## Data security following removal of physical media

- Protected by on-disk encryption (*Data Management Edition only*)

## Protocols include encryption of data in motion

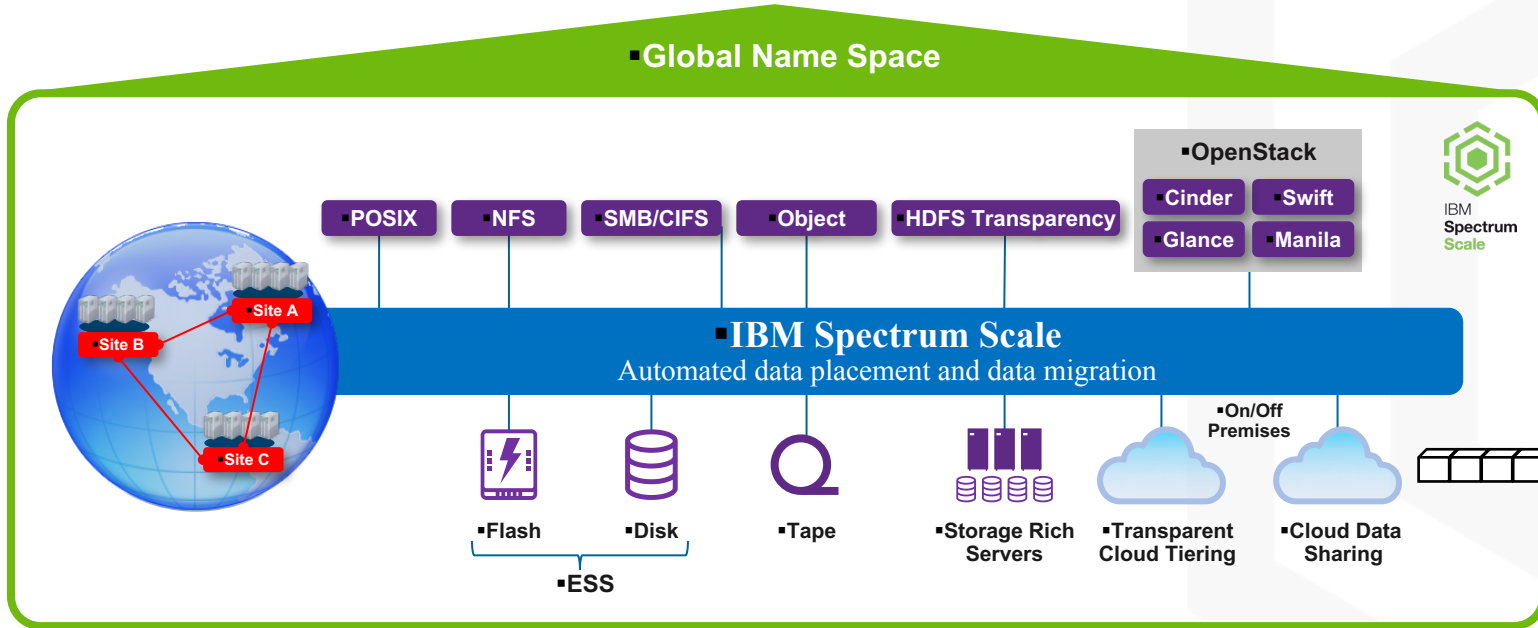


# IBM Spectrum Scale – flexible cognitive storage



▪ IBM Spectrum Scale

▪ IBM Elastic Storage Server



# IBM Spectrum Scale 5.0 Highlights



## **Simpler, more powerful system administration**

- Faster and easier out-of-the-box experience
  - Setup for optimal performance aided with 20+ parameters handled automatically
- Enhanced GUI features for many capabilities
  - Performance, capacity, network monitoring, AFM (multi-cluster management), Transparent Cloud Tiering, enhanced maintenance and support, including interaction with IBM remote support

▪ IBM  
Spectrum  
Scale

▪ IBM  
Elastic  
Storage  
Server

# IBM Spectrum Scale 5.0 Highlights



■ IBM  
Spectrum  
Scale

■ IBM  
Elastic  
Storage  
Server

## Improved security & compliance with integrated file audit logging

- New file audit logging tracks user access to filesystem and events, supported across all nodes and all protocols
  - Open, Close, Destroy (Delete), Rename, Unlink, Remove Directory, Extended Attributed Change, ACL change
- Parseable data stored in secure retention-protected fileset\*
- File-level immutability (independent KPMG certification will be done for Version 5.0)
- On-disk encryption provides data security for removal of physical media\*
- Encryption of data in motion

\*Data Management Edition only