Data Integrity

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Real Life

- Disk drive failure
- Controller/Node failure
- User Errors
Methods

- Do Not Trust Storage
  - Verify all data at each level (disk, controller, cluster)
  - Keep Multiple Copies of Data
- Cross Node Protection
  - Do NOT Trust your self either
- Node Based Storage Management
  - Segment/Isolate into Failure Units
  - Improved Recovery
  - Higher Availability
- Fast Recovery from failures
  - Attempt to repair transient errors
  - Use the full capabilities of the system during recovery
  - Design FRUs with recovery time in mind
Data Protection Architecture

Federated Scale-Out Clustered Storage Platform

- Network Access Layer – QoS, Transparent Failover
- Cluster Membership – Quorum, Add, Remove, Fail
- Cross Node Data Striping
  Error Correction N+M w/Virtual Spares

Disk Management
  Allocation
  Disk Error Rec

Isilon. Proven Leader in Scale-out NAS