Datalink

Building Next Generation Data Center

datalink

National and growing …

Headquarters (Minneapolis, MN)

National and global provider
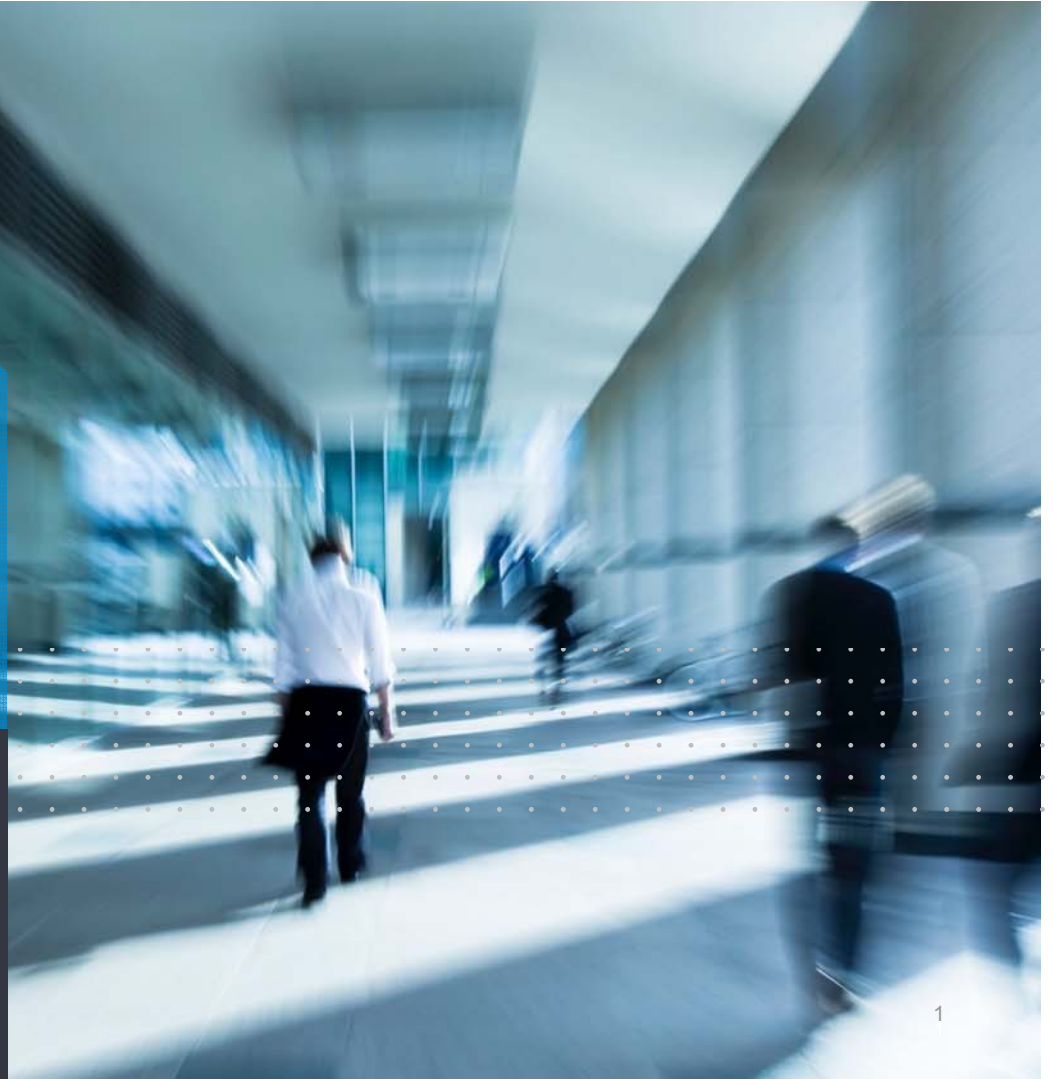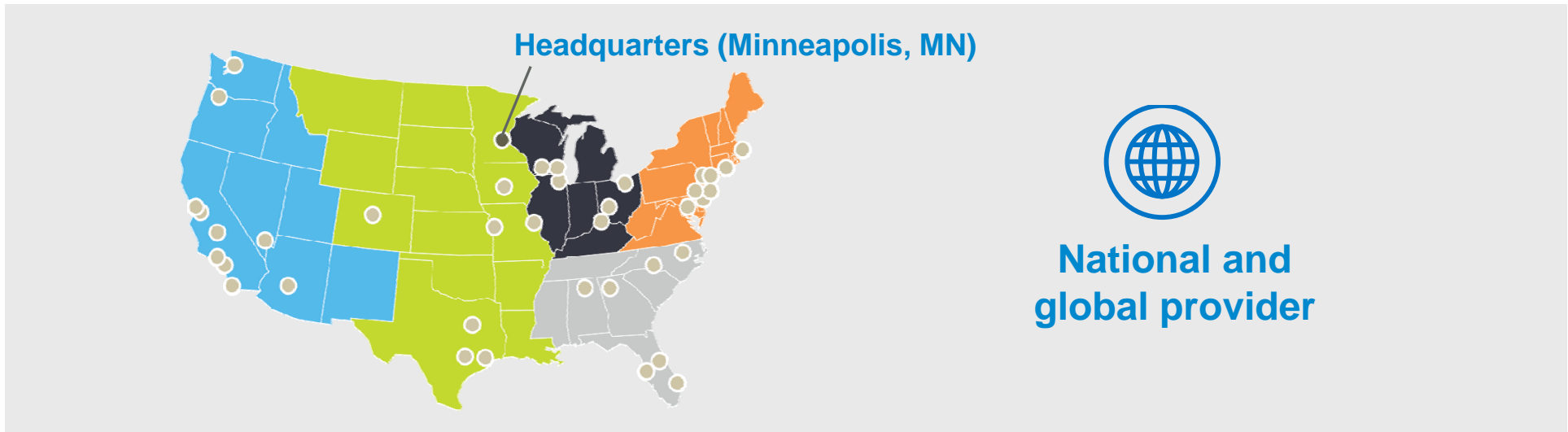
630+ **Team members:**
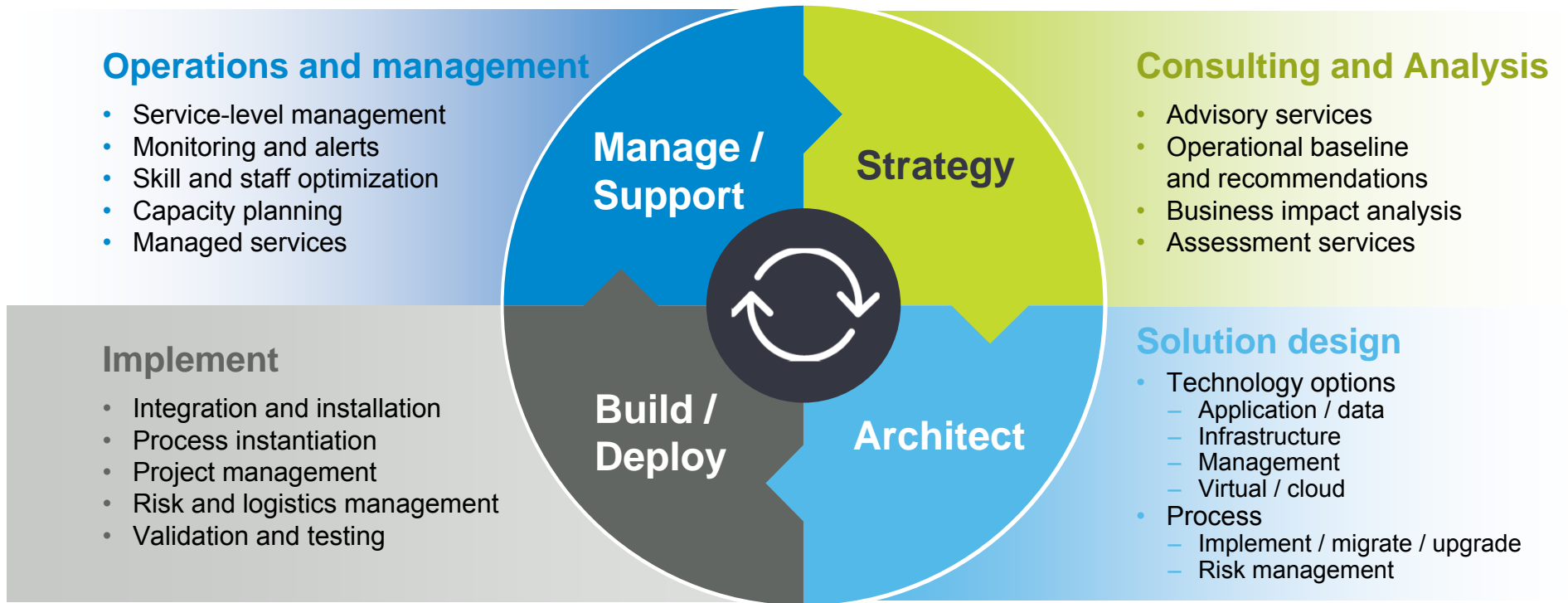
50%+ in consulting or technical role

120+ Account executives

**200+** Field engineers / architects

100+ Advanced Services consultants

85+ Customer support & managed services engineers

Solutions focused across IT lifecycle

Operations and management

- Service-level management
- Monitoring and alerts
- Skill and staff optimization
- Capacity planning
- Managed services

Consulting and Analysis

- Advisory services
- Operational baseline and recommendations
- Business impact analysis
- Assessment services

Implement

- Integration and installation
- Process instantiation
- Project management
- Risk and logistics management
- Validation and testing

Solution design

- Technology options
  - Application / data
  - Infrastructure
  - Management
  - Virtual / cloud
- Process
  - Implement / migrate / upgrade
  - Risk management

Manage / Support

Strategy

Build / Deploy

Architect

The rate of change is increasing

- Virtualization across server, network, and storage
- Software Defined Data Center
- Flash in storage/servers
- Converged infrastructure
- Cloud delivery models
- Mobile and the 3rd platform
- Big (fast) data
- Healthcare
    - Electronic records/EMR
    - Patient outcome
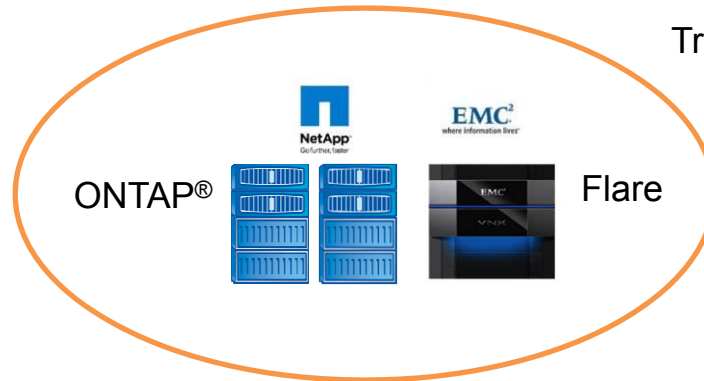   - Common information (VNA)
    - Clinical workstation
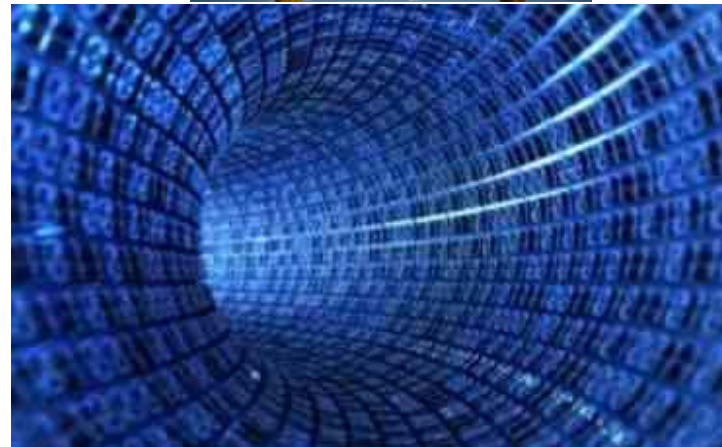
Enter the technology vortex

The storage world is changing

RAM

Traditional Storage

ONTAP®   Flare

Archive

2015

ONTAP®
RAM
FUSION-IO

WHIPTAIL

NUTANIX   simplivity

EF 550
FlashRay   XtremIO
PURESTORAGE

nimblestorage

Flash cache   NetApp   EMC²   FAST Cache
ONTAP®   where information lives   Flare
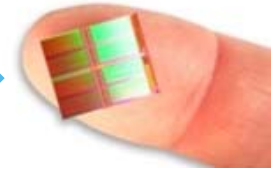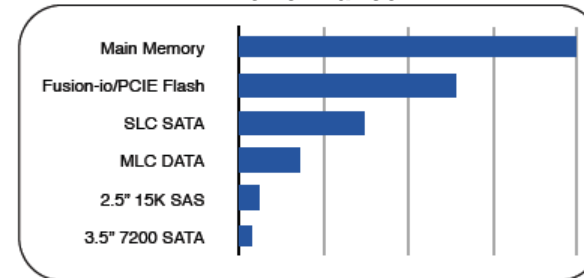Hybrid Agr   FAST VP

Cloud Storage

Unstructured Data
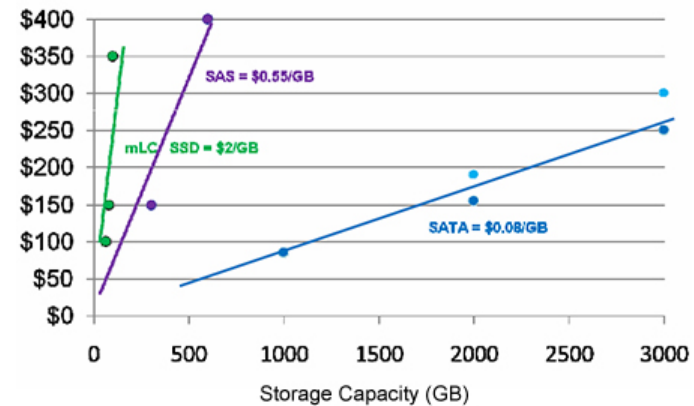
Flash changes everything

- DRAM 20ns
  - Expensive and non-persistent today
  - Limited to about 1TB in a server
- PCIe Flash 50µs (50,000ns)
  - Costly compared to SSD but persistent
  - Isolated to the server for availability and sharing
- SSD optimized all flash array 500µs (500,000ns)
  - Arrays optimized for performance
- SSD in non-optimized hybrid array 2ms (2,000,000ns)
  - Existing architectures retrofitted to support SSD
- HDD in a general purpose storage system 5ms+ (5,000,000ns)

The $/GB Days are Over . . .

Performance

Main Memory	
Fusion-io/PCIE Flash	
SLC SATA	
MLC DATA	
2.5" 15K SAS	
3.5" 7200 SATA	

Price Per Storage Capacity

SAS = $0.55/GB

mLC SSD = $2/GB

SATA = $0.08/GB

Storage Capacity (GB)
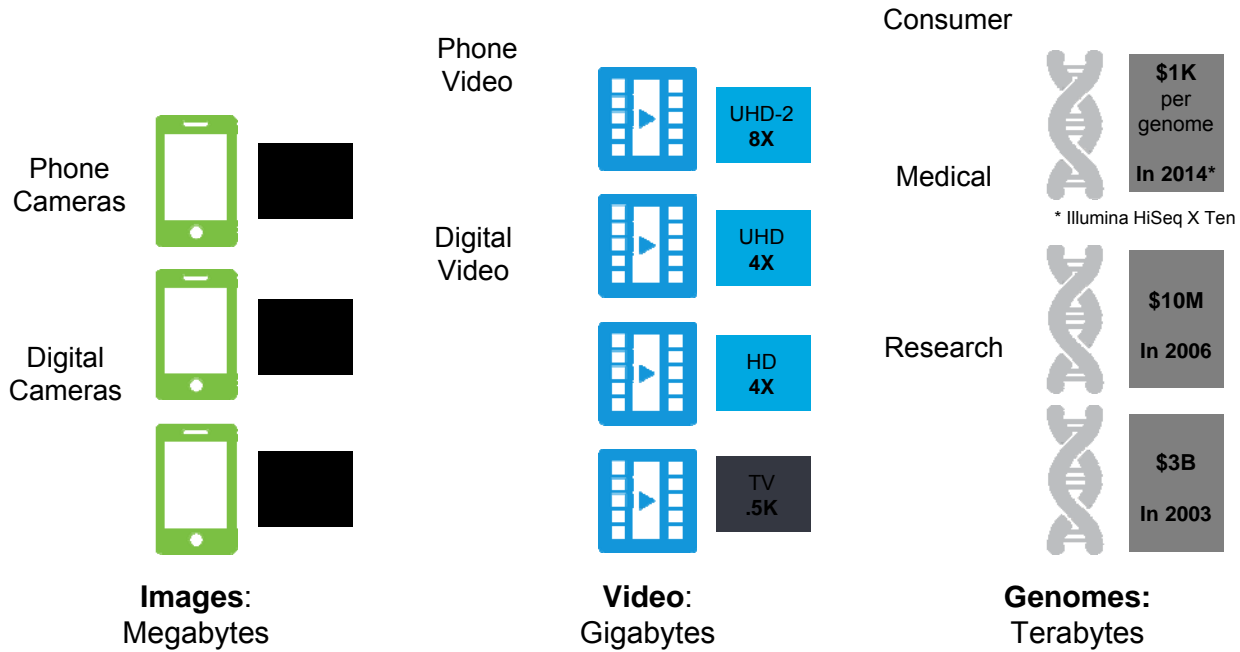
Always On EMR -

- Major Children's Hospital
  - Active-Active multi-site solutions
  - 5 nines reliability
  - "Highest performance solution"
- Midwest regional hospital system
  - Enterprise performance at Mid-Range price
  - Datalink tested and validated solution in labs
- Mid-Atlantic research and hospital system
  - Converged Infrastructure
  - Multiple clones
- Major metropolitan hospital system
  - Enterprise wide implementation

Data Storage Demand is Growth on Growth

Phone
Cameras

Digital
Cameras

Images:
Megabytes

Phone
Video

Digital
Video

UHD-2
8X

UHD
4X

HD
4X

TV
.5K

Video:
Gigabytes

Consumer

Medical

Research

Genomes

$1K
per
genome

In 2014*

* Illumina HiSeq X Ten

$10M

In 2006

$3B

In 2003

Genomes:
Terabytes

Very large scale out file systems

AutoBalance: Automated data balancing across nodes
Reduces costs, complexity and risks for scaling storage

- AutoBalance migrates content to new storage nodes while system is online and in production

- Requires NO manual intervention, NO reconfiguration, NO server or client mount point or application changes

Examples

- Clinic is the first and largest integrated, not-for-profit group practice in the world.

- Initial application – Genomic sequencing in research
    – Scale out storage solution to create Data Lake

- Now Clinic is looking to adopt:
    – StorageScape and Datalink services
        • Multiple PB of unstructured data
        • Not happy with usable space
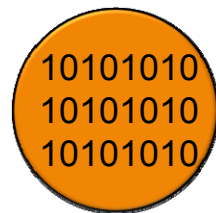   • Data does not dedup

Aspira

Rochester   Scottsdale

Object Storage Economics

How much data would you keep if you could afford to?

10101010
10101010
10101010

=

$

How much extra value can your organization obtain if you had more data?

Why Object Storage?

- Block storage doesn't share well
- File Systems don't scale well
  - File counts
  - Directory hierarchies
  - Replication challenges
  - Limited metadata
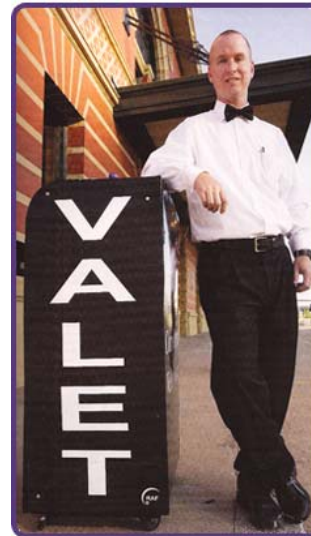 - Performance at capacity

  Overhead of file storage
  goes up as it gets bigger

Why Object Storage?

- Object Storage Solves Unstructured Data Problems
  - Far higher scale
  - No artificial structure
  - Simple replication
  - Rich metadata
  - Tight application control
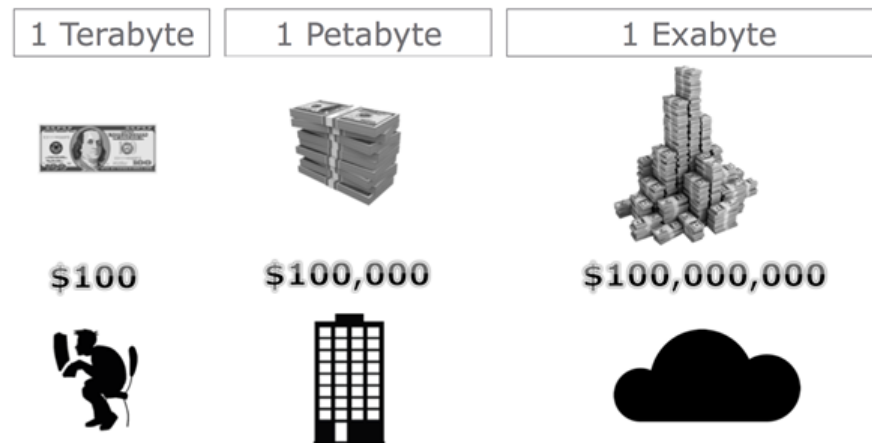 - Simple data management

    Overhead of object storage goes down as it gets bigger

Object Storage Economics

- As data grows, every penny counts

What is a dime worth?

1 Terabyte	1 Petabyte	1 Exabyte
$100	$100,000	$100,000,000

A few cents here or there turn into a lot of money with exponential growth of storage

A Growing Chasm Between Traditional IT and User Expectations

Internal IT

Agility

Cost Efficiency

Risk Management

Business Alignment

Speed

Transparency

Trusted / Control / Reliable / Secure

Desired Traits

Disruptive & Evolving Technology Landscape Will Make this Chasm Wider