



INNOVATIONS

for the **CONTENT WAVE**

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Welcome

Tony Takazawa

Director, Global Investor Relations

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Disclaimer

This presentation contains "forward-looking statements" as defined under the Federal Securities Laws. Actual results could differ materially from those projected in the forward-looking statements as a result of certain risk factors, including but not limited to: (i) further adverse changes in general economic conditions; (ii) further delays or reductions in information technology spending; (iii) the company's ability to effectively manage operating costs and increase operating efficiencies; (iv) further declines in revenues; (v) insufficient, excess or obsolete inventory; (vi) competitive factors, including but not limited to pricing pressures; (vii) component quality and availability; (viii) rapid technological and market change and the transition to new products; (ix) the uncertainty of customer acceptance of new products; (x) the relative and varying rates of product price and component cost declines; (xi) the effects of war or acts of terrorism, including the effect on the economy generally, on particular industry segments, on transportation and communication systems and on the company's ability to manage logistics in such an environment, including receipt of components and distribution of products; (xii) the ability to attract and retain highly qualified employees; (xiii) the uneven pattern of quarterly sales; (xiv) fluctuating currency exchange rates; (xv) risks associated with strategic investments and acquisitions; (xvi) the Company's ability to execute on its plans; and (xvii) other one-time events and other important factors disclosed previously and from time to time in EMC's filings with the U.S. Securities and Exchange Commission.



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Agenda

- ✍ Joe Tucci, President and CEO
 - Innovations for the Content Wave
- ✍ Jim Rothnie, Senior Vice President and CTO
 - Centera Explained
- ✍ Joe Tucci
 - The Centera Opportunity
- ✍ Questions and Answers
- ✍ Partner Reception

Delivering the Unexpected

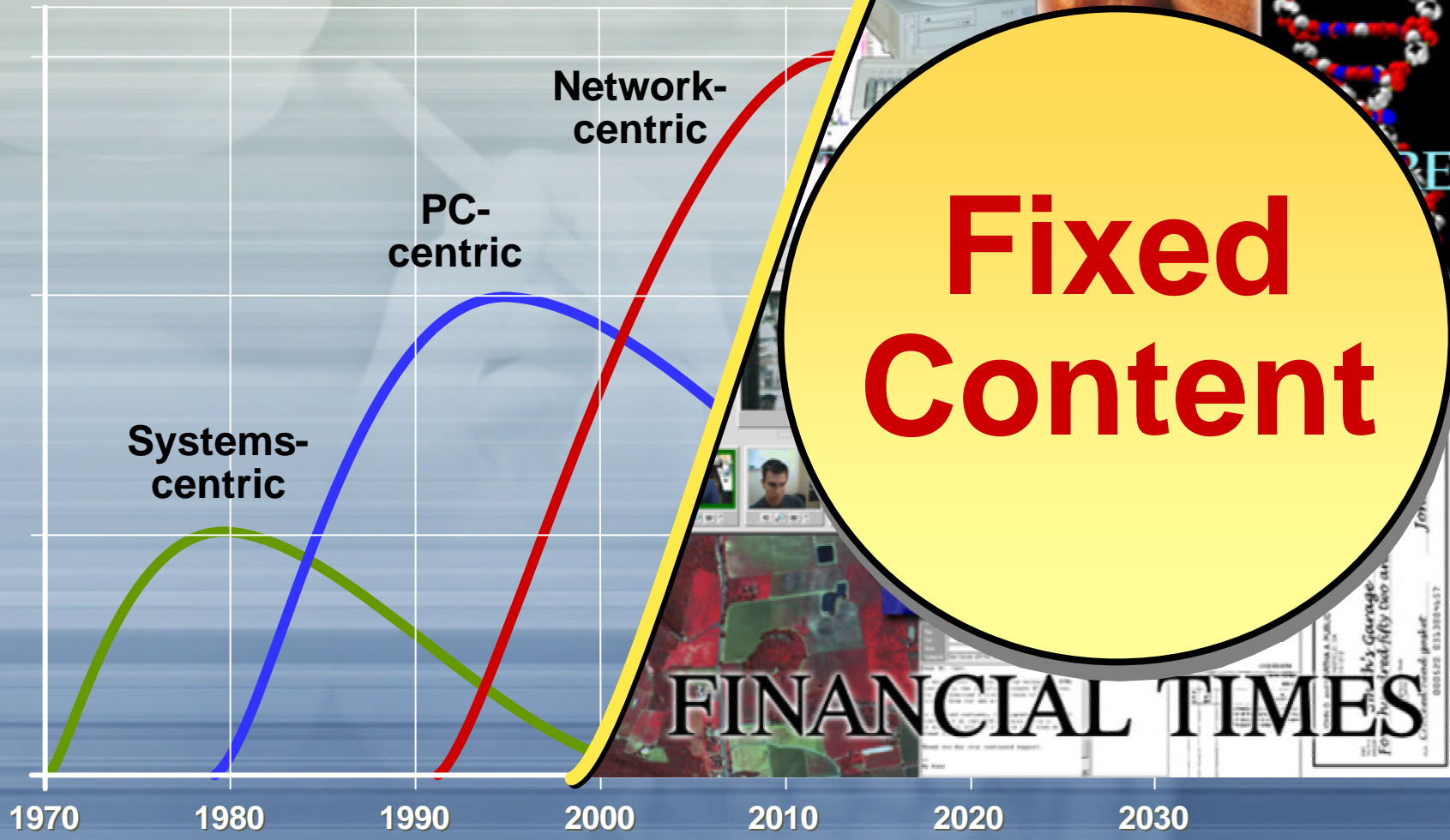
Joe Tucci

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New Storage Challenge: Petabytes of Content

Information Technology Waves



**Fixed
Content**

What is Fixed Content?

Unchanging Data Objects With Long-Term Value

X-rays

MRIs

CAT scans

Blueprints

Insurance photos

Contracts



Letters

Newspapers

Periodicals

Books

Marketing collateral

Check images

White papers

CAD/CAM originals

Email and attachments

MP3s

Movies

Recordings

Transcripts

Professional photos

Consumer photos

Educational videos

Surveillance videos

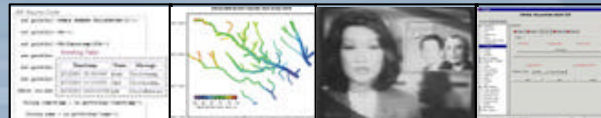
Seismic data

Astronomic data

Spreadsheets

Graphics

Source code



Training materials

Manuals



Genomic data

Proteomic data

Clinical trial results

Biometric data

Lab notebooks

Backups

Historical documents

Presentations

Monthly reports

Video conferences

Audio conferences

News clips

Sports videos

Government records

etc., etc., etc.



Introducing . . .

EMC²
where information lives



CENTERA

**New Storage Technology
for Fixed Content**

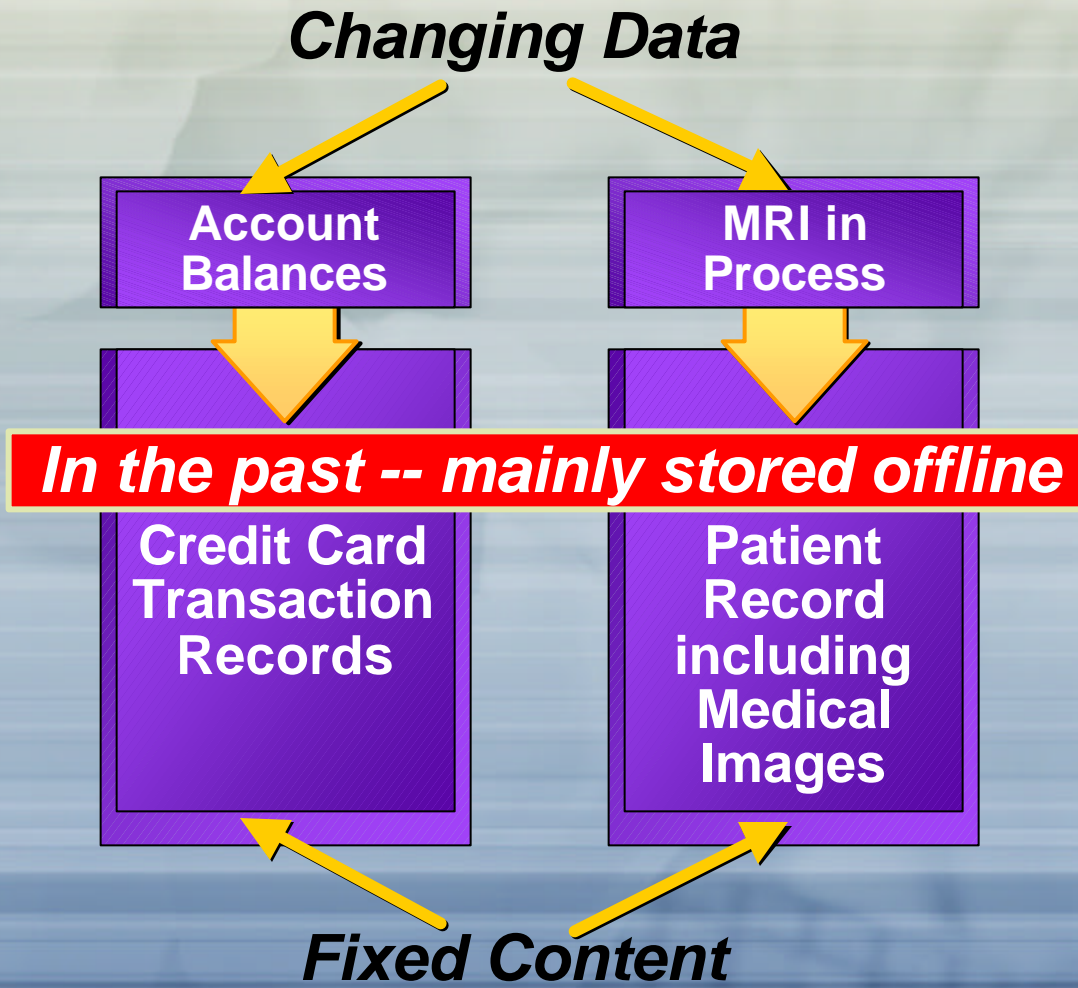
Centera™ Explained

Jim Rothnie

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Changing Data and Fixed Content



Powerful Forces are Moving Fixed Content Online

*Everything
Going
Digital*

*Everything
Being
Networked*

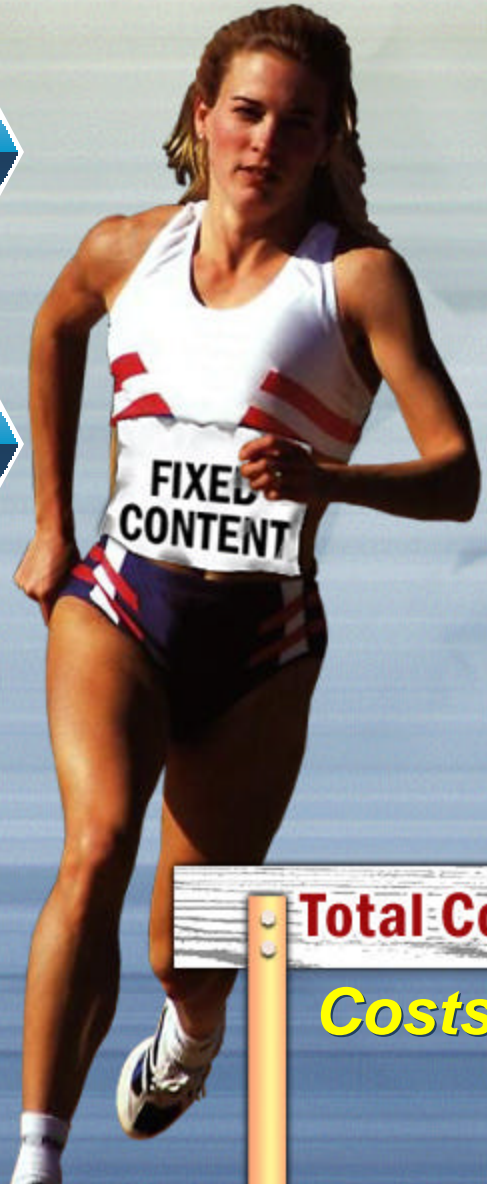


Total Cost of Ownership

Powerful Forces are Moving Fixed Content Online

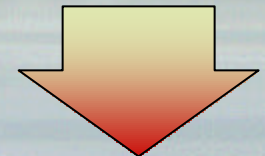
Everything Going Digital

Everything Being Networked

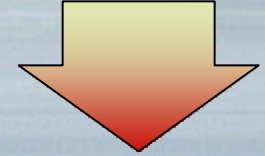


Over 50%
of Online
Data will be
Fixed Content
in 2005

'95: \$1.50/MB



'00: \$.30/MB



'05: <\$.01/MB

Total Cost of Ownership

Costs Plummeting

Storage System Requirements: Changing Data vs. Fixed Content

Changing Data

Lots of Data Objects

Very Active

Update Intensive

**Often a Brief Stage
(hours or days)**

Fixed Content

Vast Numbers of Objects

**Low Activity (per object):
very active in aggregate**

**Never Update Objects
(often prohibited)**

**Very Long Stage of Life
(years or decades)**

Storage System Requirements: Changing Data vs. Fixed Content

Changing Data

Key technology challenges center on performance and management

Fixed Content

Key technology challenges center on scale, longevity and management

New Category of Networked Information Storage: Content Addressed Storage (CAS)

	SAN	NAS	CAS
Typical Applications	OLTP, DW	CAD / CAM Collaboration	Content Management
Fixed or Updateable?	Updateable		Fixed
Key Technology Issue	Performance	Sharing updateable Files	Scale, longevity
Type of Address			
Type of Data Stored			

Introducing Centera: New Storage Technology for Fixed Content

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Key Centera Innovations:

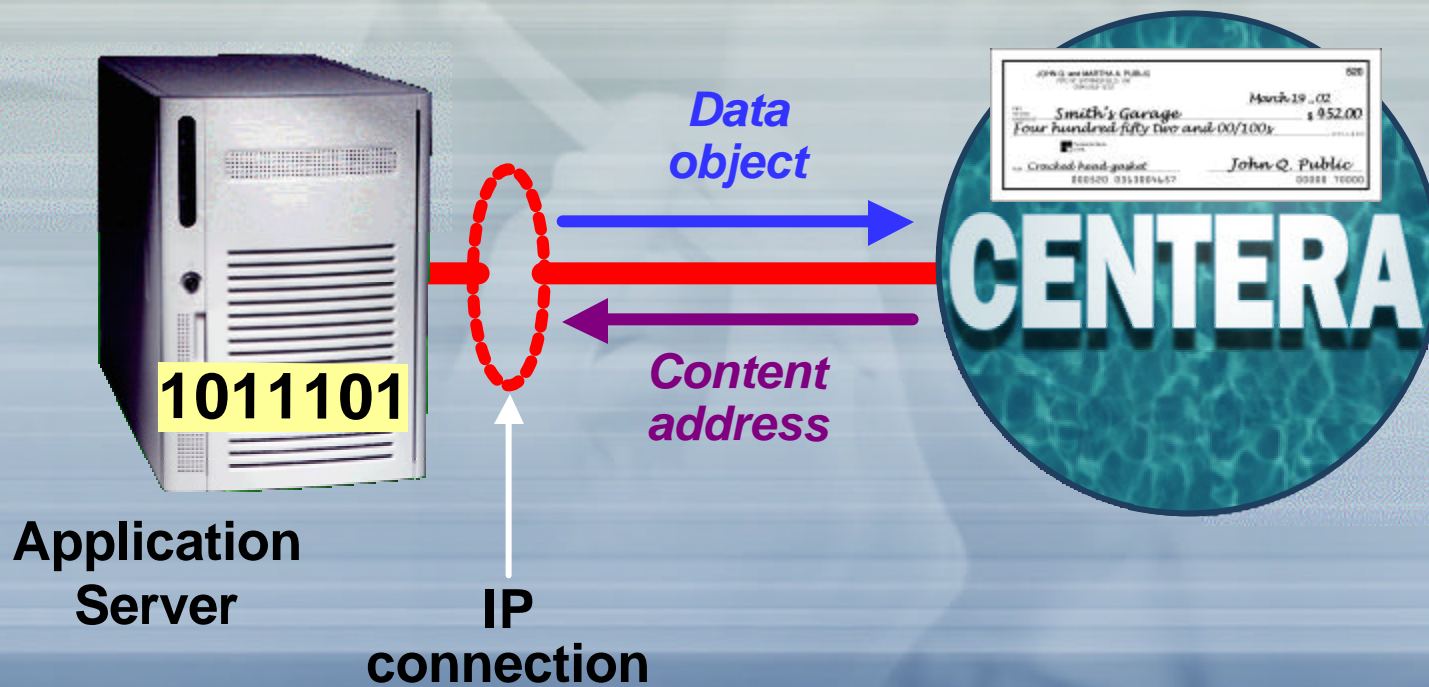
Content Addressing

Stored objects

RAIN implementation

Distributed Content

Content Addressing in Centera



Content Addressing



10001010

Content
Address
Algorithm



128-bit digital
fingerprint

Globally unique

Location-
independent



10111011

Content
Address
Algorithm



Key Benefits of Content Addressing



Data immutability:

Proof the data hasn't changed

Duplicate elimination:

Stores identical objects only once

Manageability:

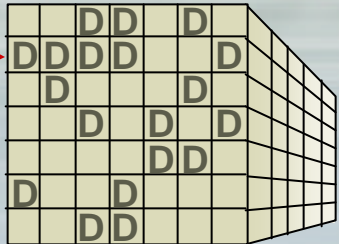
Quantum improvement for massive volumes of long-lasting fixed content

Content Addressing vs. Location Addressing

App System



Storage System



Complexity escalates as scale increases

Content Addressing



Complexity does not increase as scale increases

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**Data Immutability
Duplicate Elimination
Manageability**

CENTERA

Key Centera Innovations:

Content Addressing

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RAIN implementation

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New Category of Networked Information Storage: Content Addressed Storage (CAS)

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Type of Address	Location		Content
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Key Centera Innovations:

Content Addressing

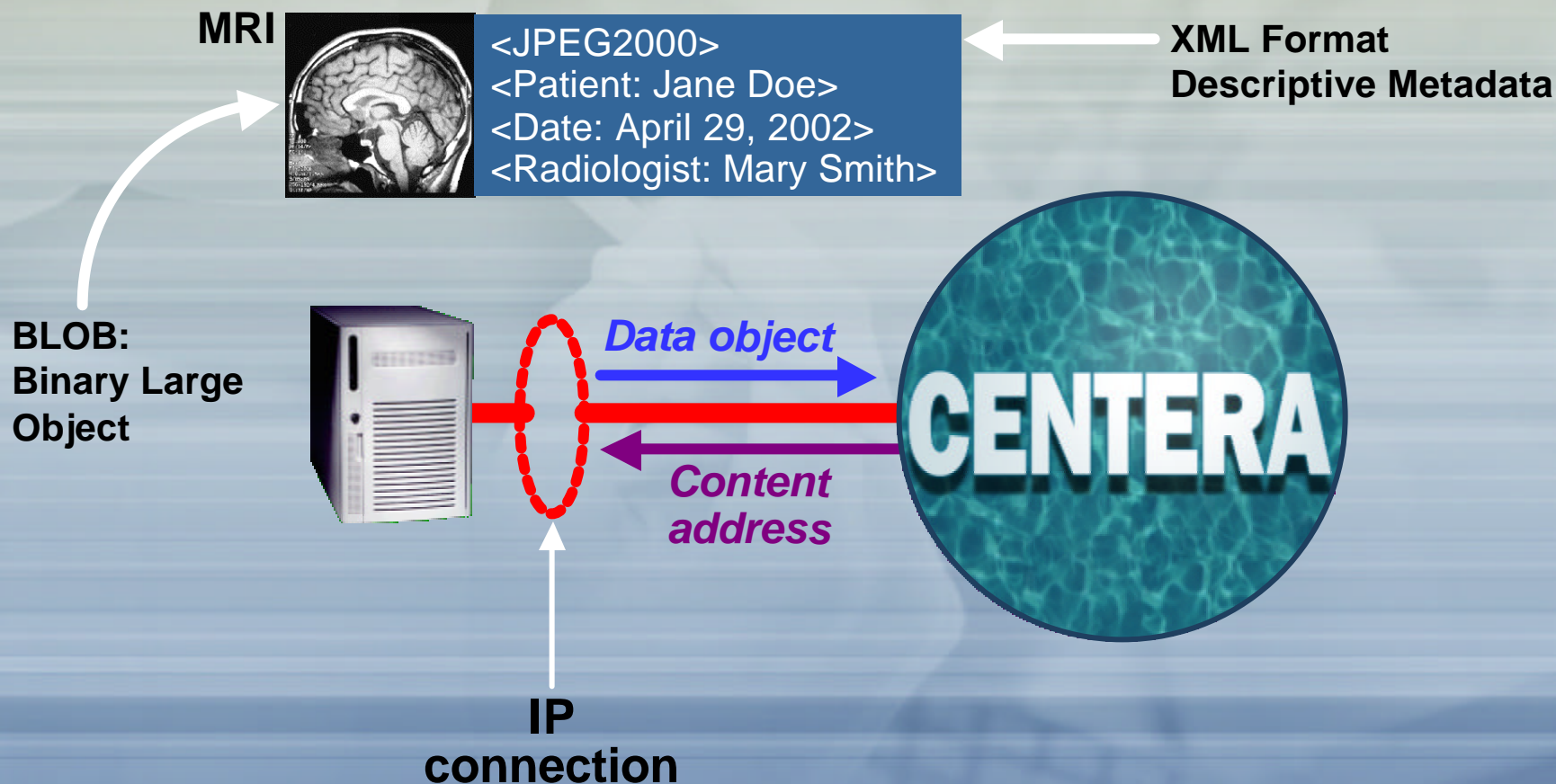
Stored objects

RAIN implementation

Distributed Content

Centera Stores and Retrieves Objects

-- Not Volumes or Files



New Category of Networked Information Storage: Content Addressed Storage (CAS)

	SAN	NAS	CAS
<i>Typical Applications</i>	OLTP, DW	CAD / CAM Collaboration	Content Management
<i>Fixed or Updateable?</i>	Updateable		Fixed
<i>Key Technology Issue</i>	Performance	Sharing updateable Files	Scale, longevity
<i>Type of Address</i>	Location		Content
<i>Type of Data Stored</i>	Volume	File	Object with metadata

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Key Centera Innovations:

Content Addressing

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Distributed Content

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Key Centera Innovations:

Content Addressing

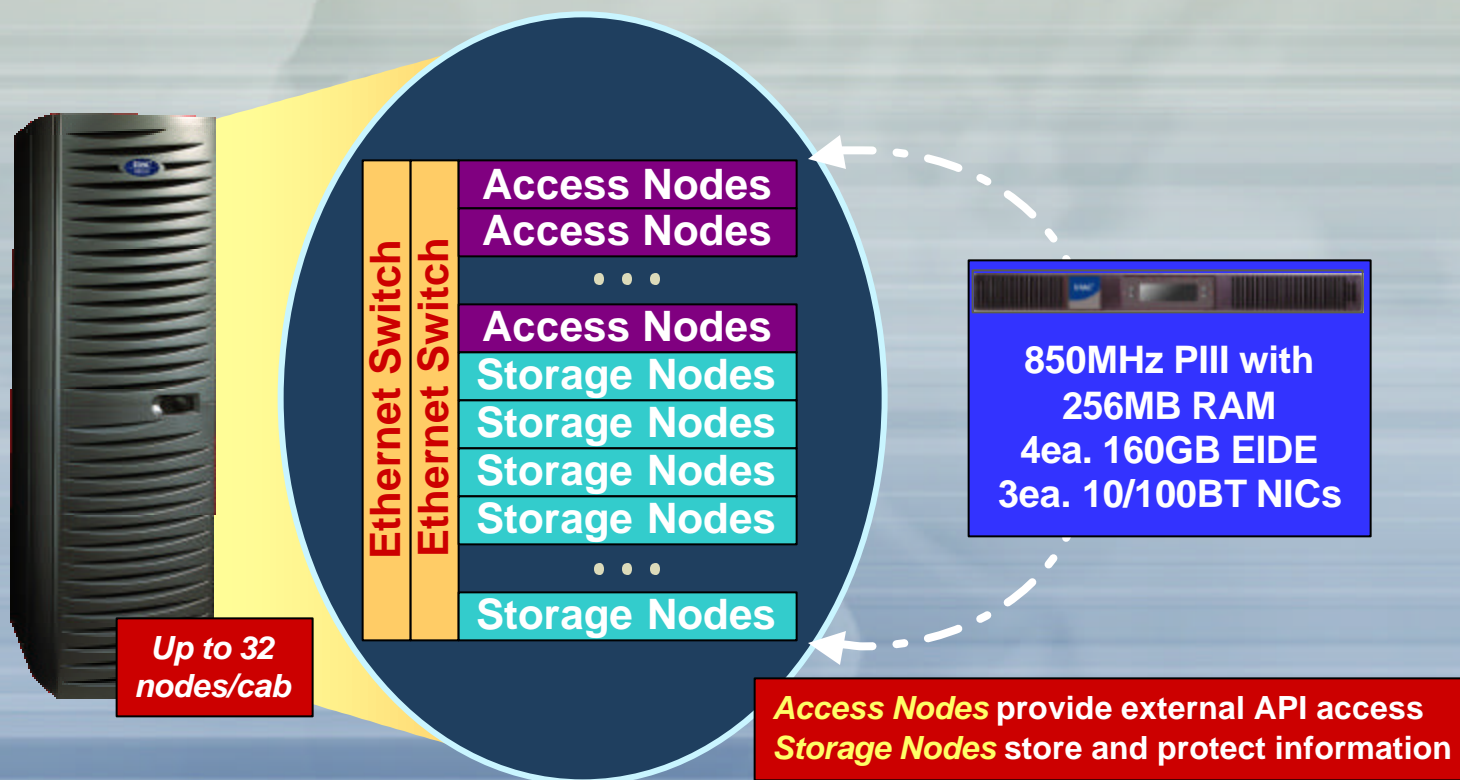
Stored objects

RAIN implementation

Distributed Content

Centera RAIN Storage Architecture

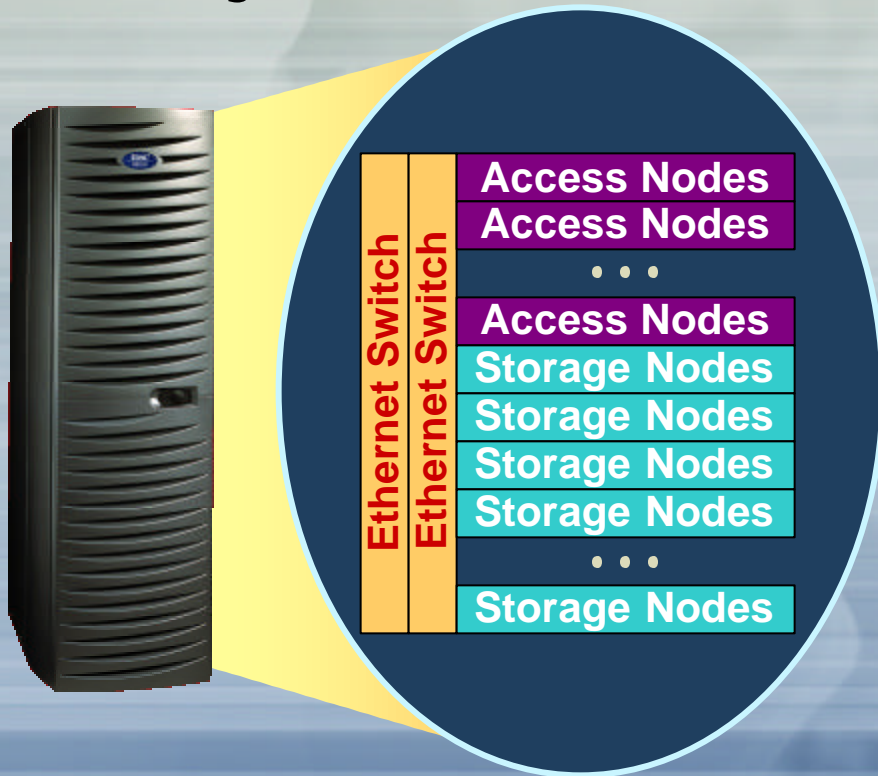
Redundant Array of Independent Nodes



Everything is Redundant

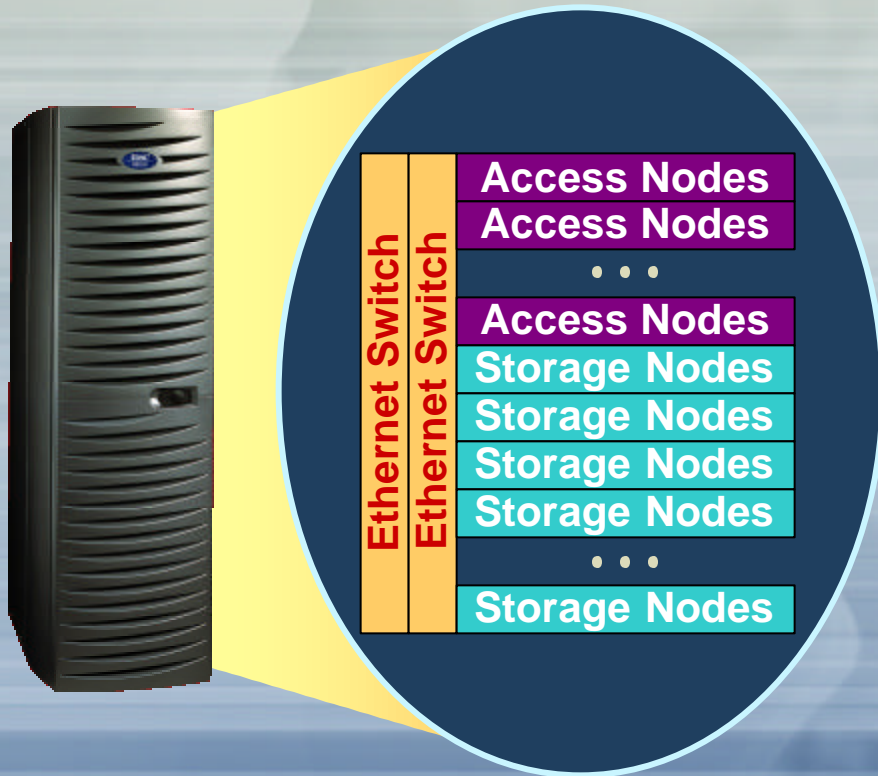
No Single Point of Failure

Data objects mirrored across nodes



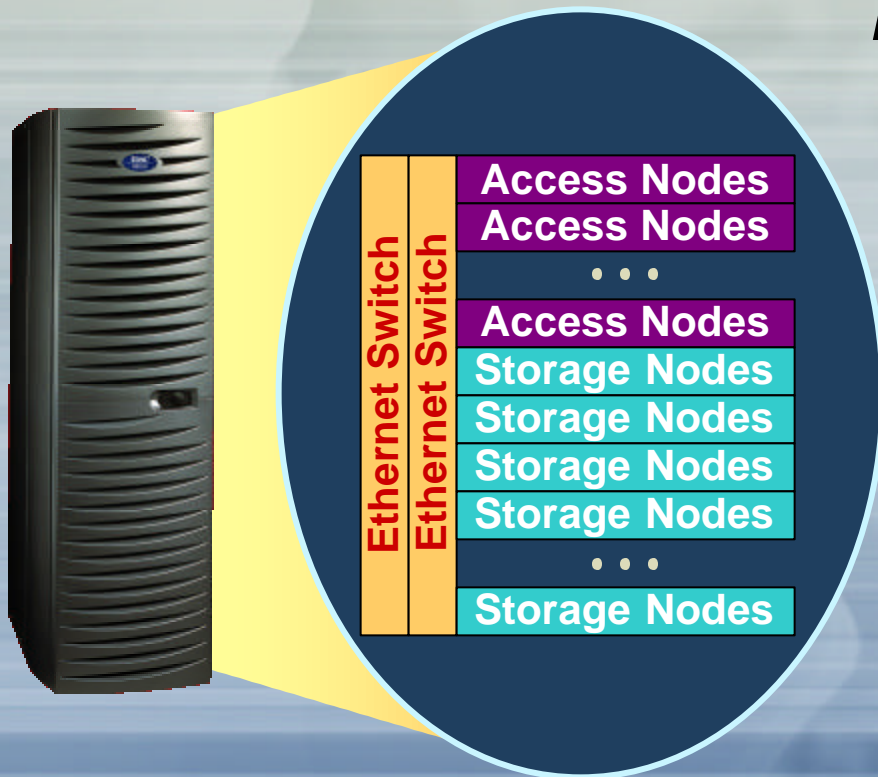
- ***Redundant:***
nodes
communications
power

Self-Managing



- **Self-configuring**
- **Self-diagnosis**
- **Self-healing**
- **Remote monitoring**

Unprecedented Scalability – Petabytes Plus

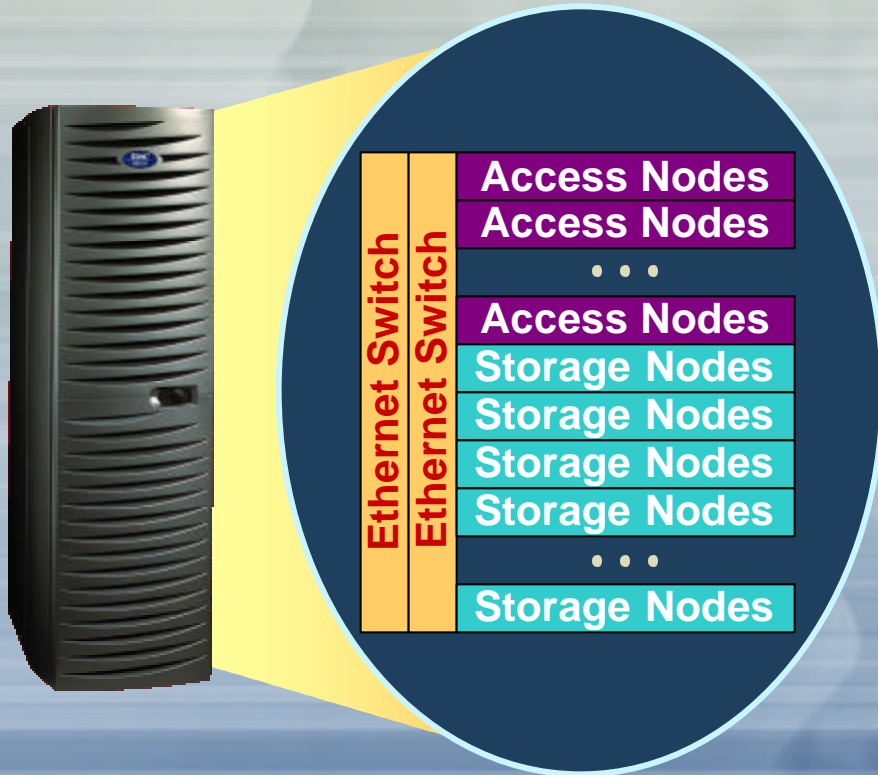


Hyper-scalable

- Up to 10TB mirrored capacity per rack
- Up to 160TB mirrored capacity per cluster
- Over 1PB mirrored capacity in Centera domain

Cost-Effective

Off-the-Shelf Hardware Economics Revolutionary Software-based Value-add



List Prices

Hardware:
16 node system
(10TB raw)
---\$100,000

Software:
16 node system
---\$110,000

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Key Centera Innovations:

Content Addressing

Stored objects

RAIN implementation

Distributed Content

**Redundant
Self-Managing
Hyper-Scalable
Cost Effective**

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Key Centera Innovations:

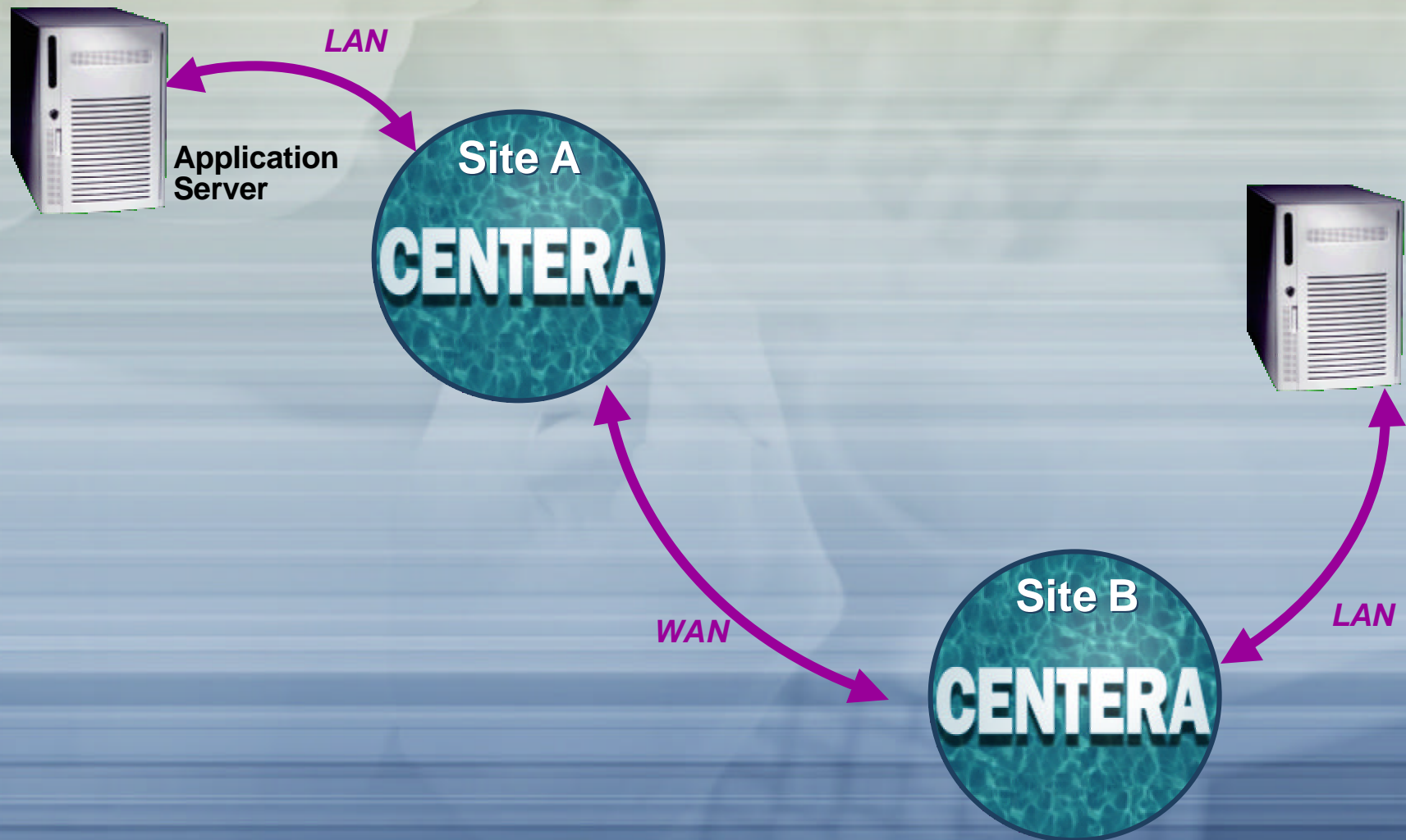
Content Addressing

Stored objects

RAIN implementation

Distributed Content

Distributed Content: For Disaster Recovery



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Key Centera Innovations:

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The Centera™ Opportunity

Joe Tucci

Centera Launch Partners



EMC ACQUIRES FILEPOOL

HOPKINTON, Mass. – April 11, 2001 - EMC Corporation (NYSE:EMC) today announced it has acquired FilePool NV, a venture-backed software development company based outside of Brussels, Belgium, in a cash transaction valued at less than \$50 million. FilePool is the sixth software acquisition EMC has made since January 2000.

David A. Donatelli, EMC's Senior Vice President of New Business Development, said, "Acquisitions such as FilePool position EMC for continued industry leadership in the burgeoning information storage market. FilePool helps expand EMC's enterprise software capabilities and intellectual capital."

Jan Van Riel, Founder
Kurt Van Looveren, GM Belgium Development Group

Addressable market opportunity in 2005

\$10+ Billion

The Market Leader Creates the Next Market

1991 EMC creates intelligent information storage

1994 EMC creates Storage Software

1995 EMC creates Open Storage

1998 EMC creates Networked Storage

2001 EMC delivers Open Storage Mgt.

**Today: EMC creates a new
Category of Storage**



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Recap



Fixed Content

vast majority of online information by 2005

Content Addressed Storage (CAS)

a new storage category

Centera™

the world's first CAS solution

EMC's Opportunity

large and projected to grow larger



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