HP NonStop Servers
Beyond the Basics

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NonStop Education & Training

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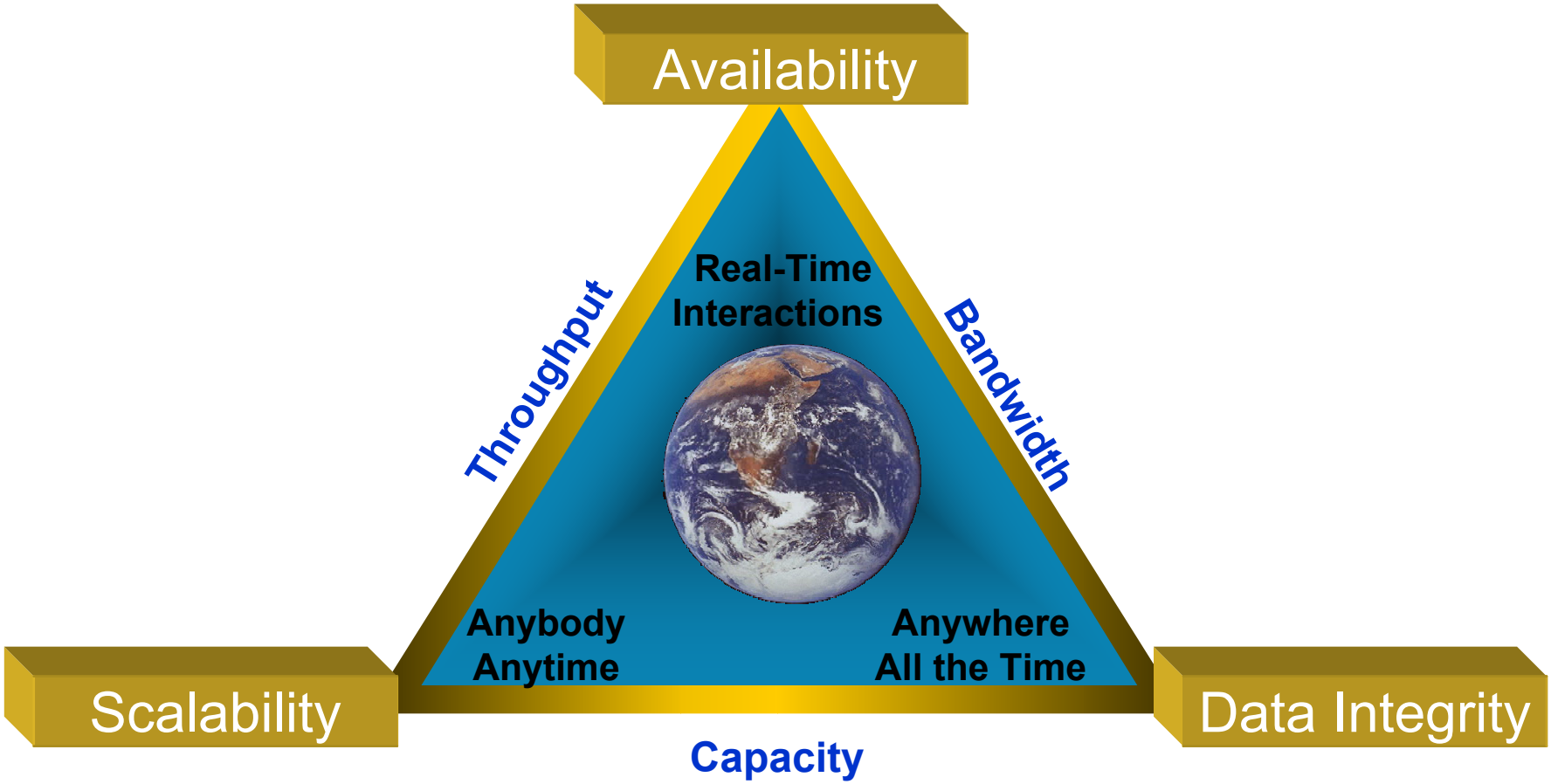
OLTP and Internet Transaction Processing Business Requirements



HP NonStop Servers

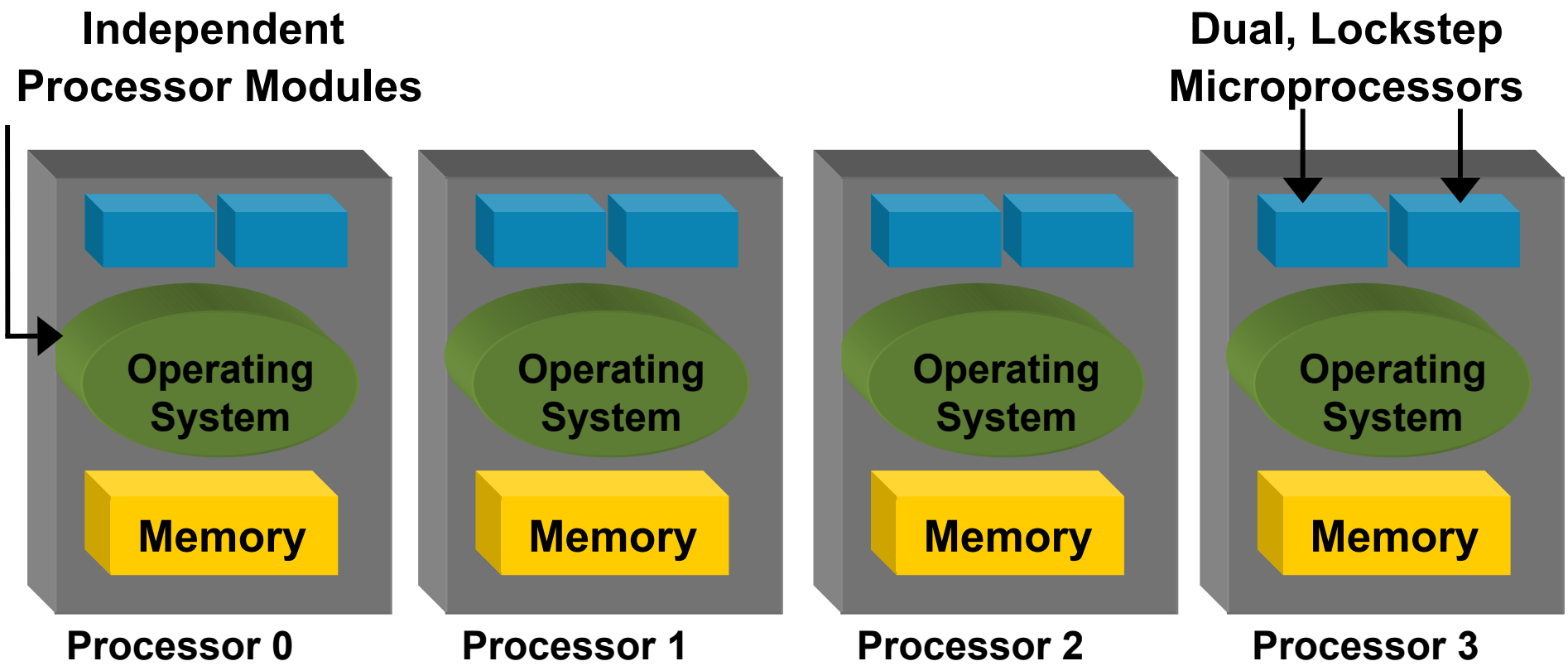
Tandem NonStop Himalaya K-Series

HP NonStop S-Series

Replication and Fault Tolerance

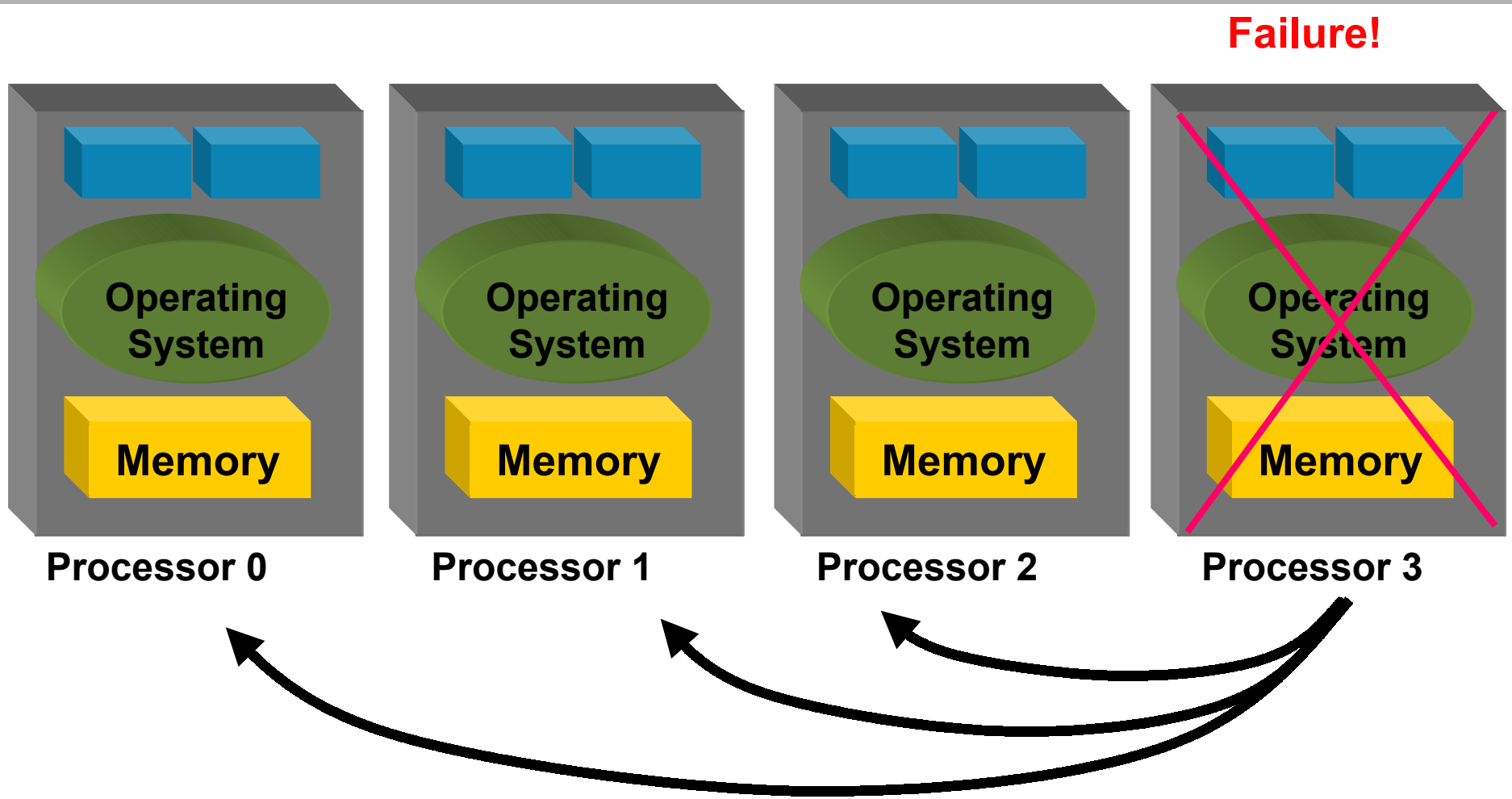
- Why replicate components?
  - Continuous availability
    - “Single point of failure”
  - Performance
    - “Bottlenecks”
  - To act as a hot backup (Not!)

An HP NonStop Server Is a Collection of Independent Processors



- Expandable from 2 to 16 Processor Modules Per Node
- “Shared Nothing” Architecture
- “Network in a Box”

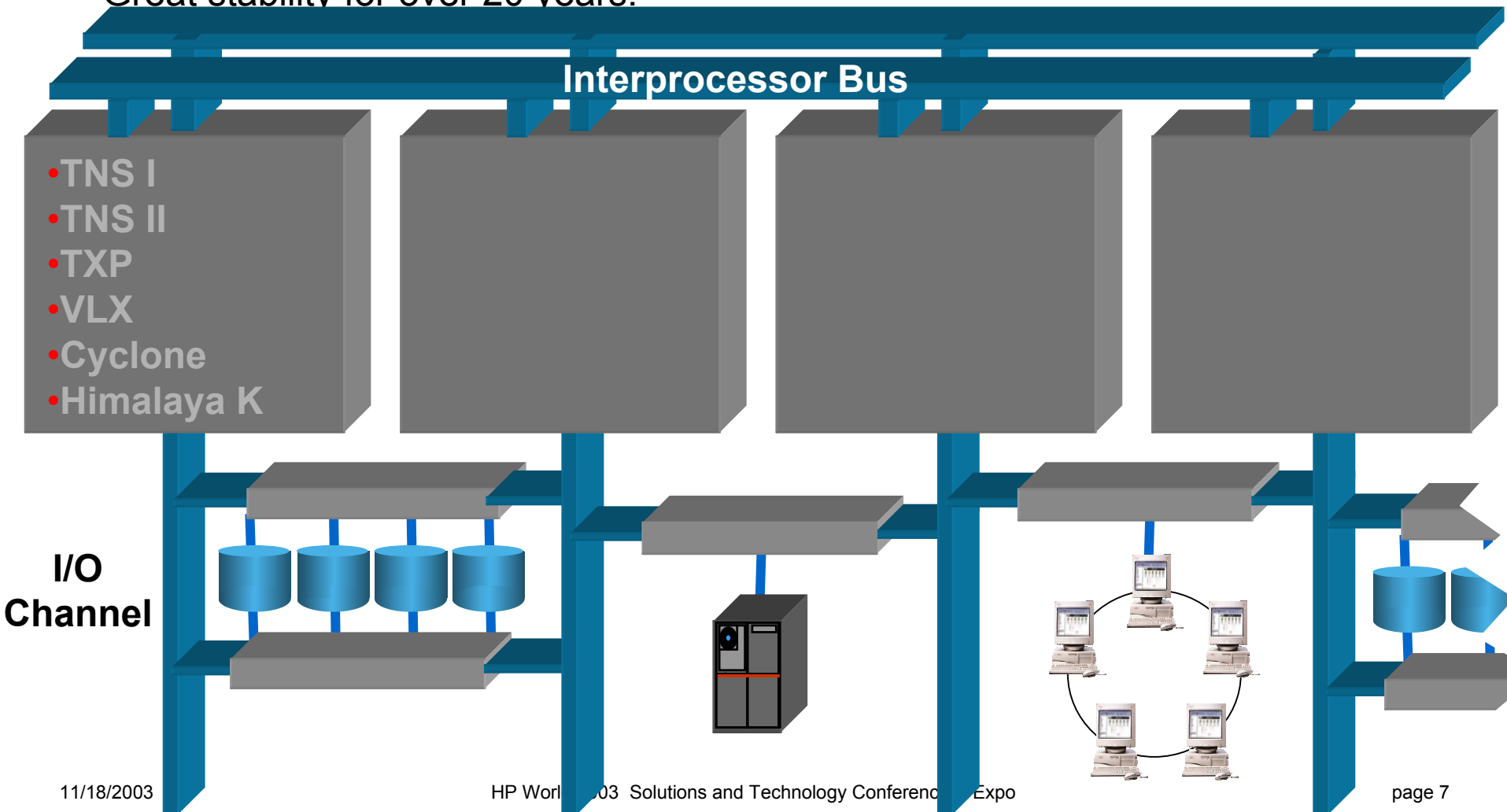
Basic Design Goal — No Single Point of Failure



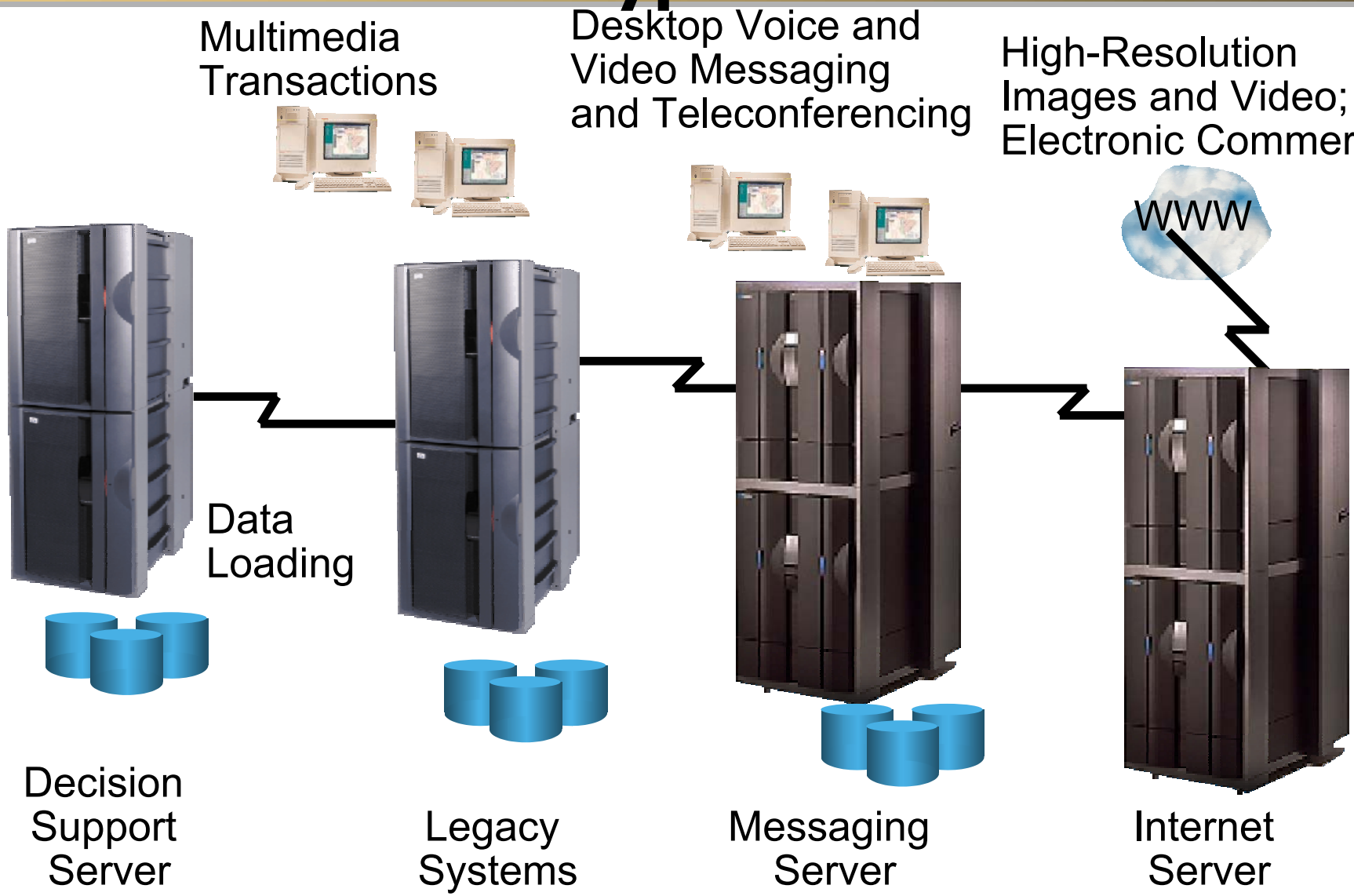
Remaining processors assume workload and continue to run without restart!

Traditional "K-Series" Architecture

- Limited bandwidth in several ways
- Perfect for the "small" transactions
- Great stability for over 20 years!

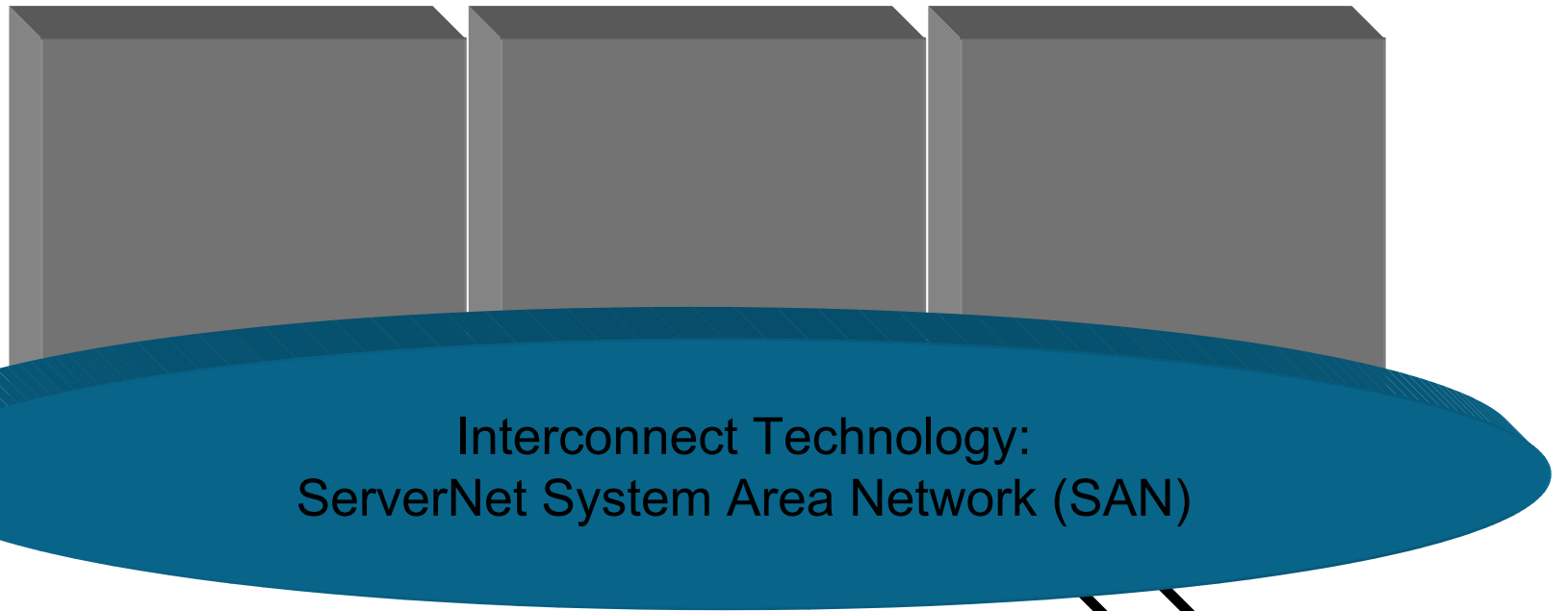


Trends in Business Computing: New Transaction Types

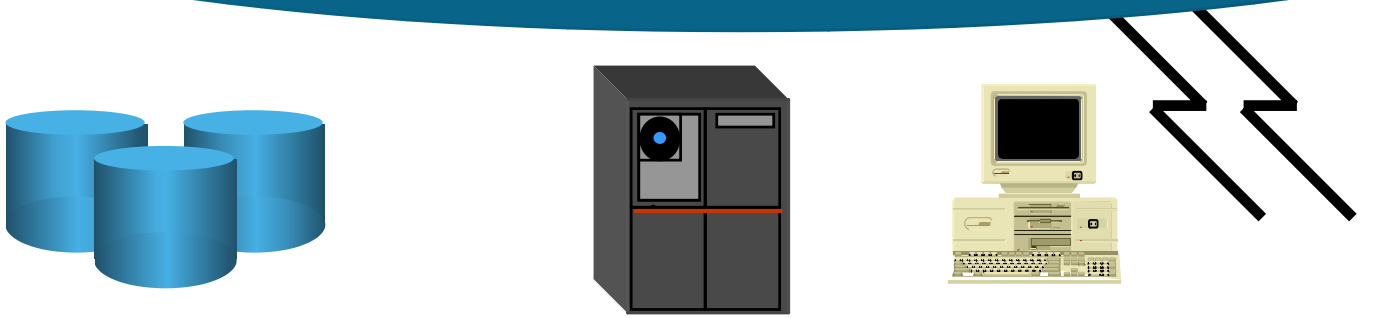


Advances in Computing Technology

Processors:
RISC, Multiprocessing, and Clustering



Interconnect Technology:
ServerNet System Area Network (SAN)

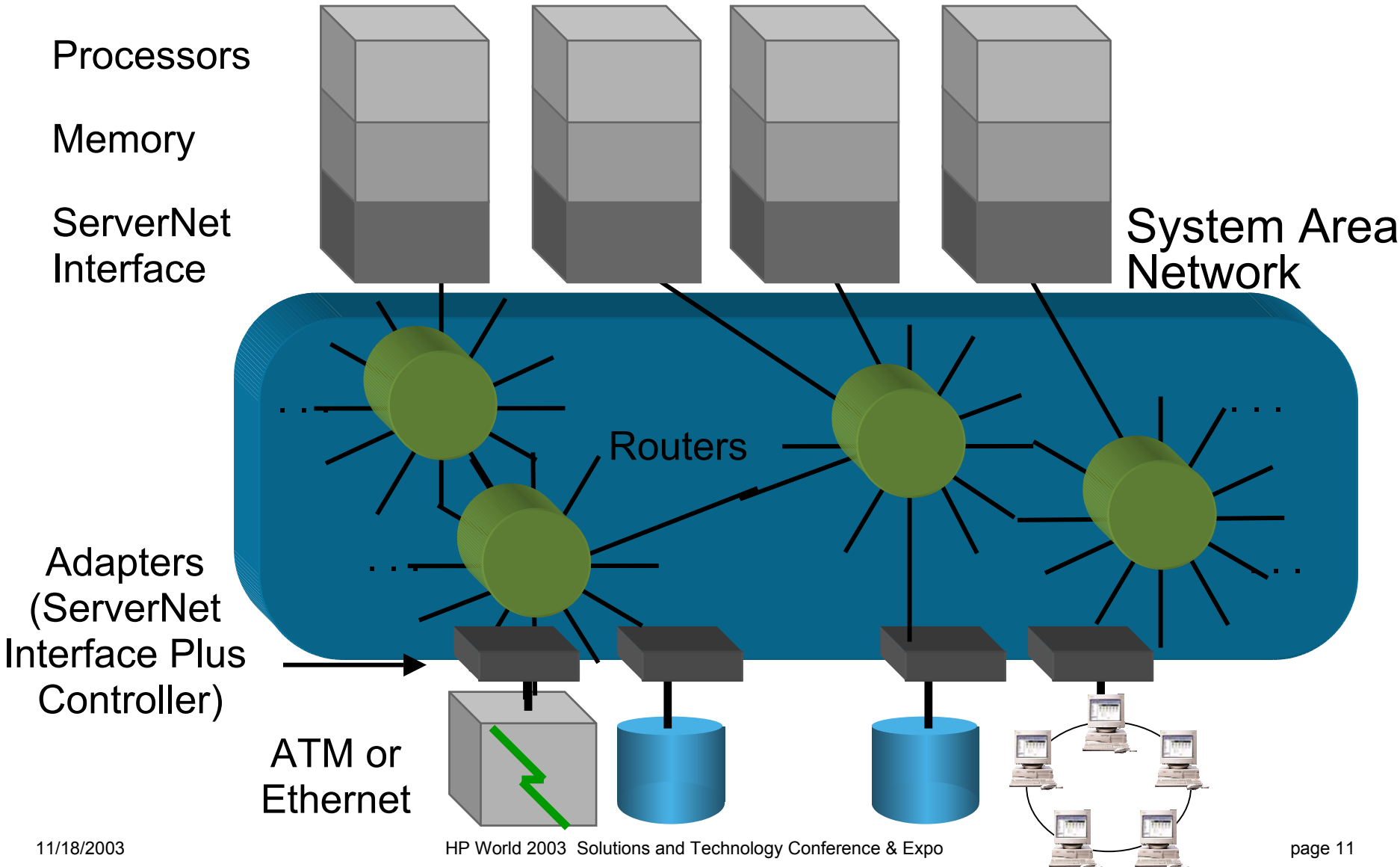


Peripheral Devices

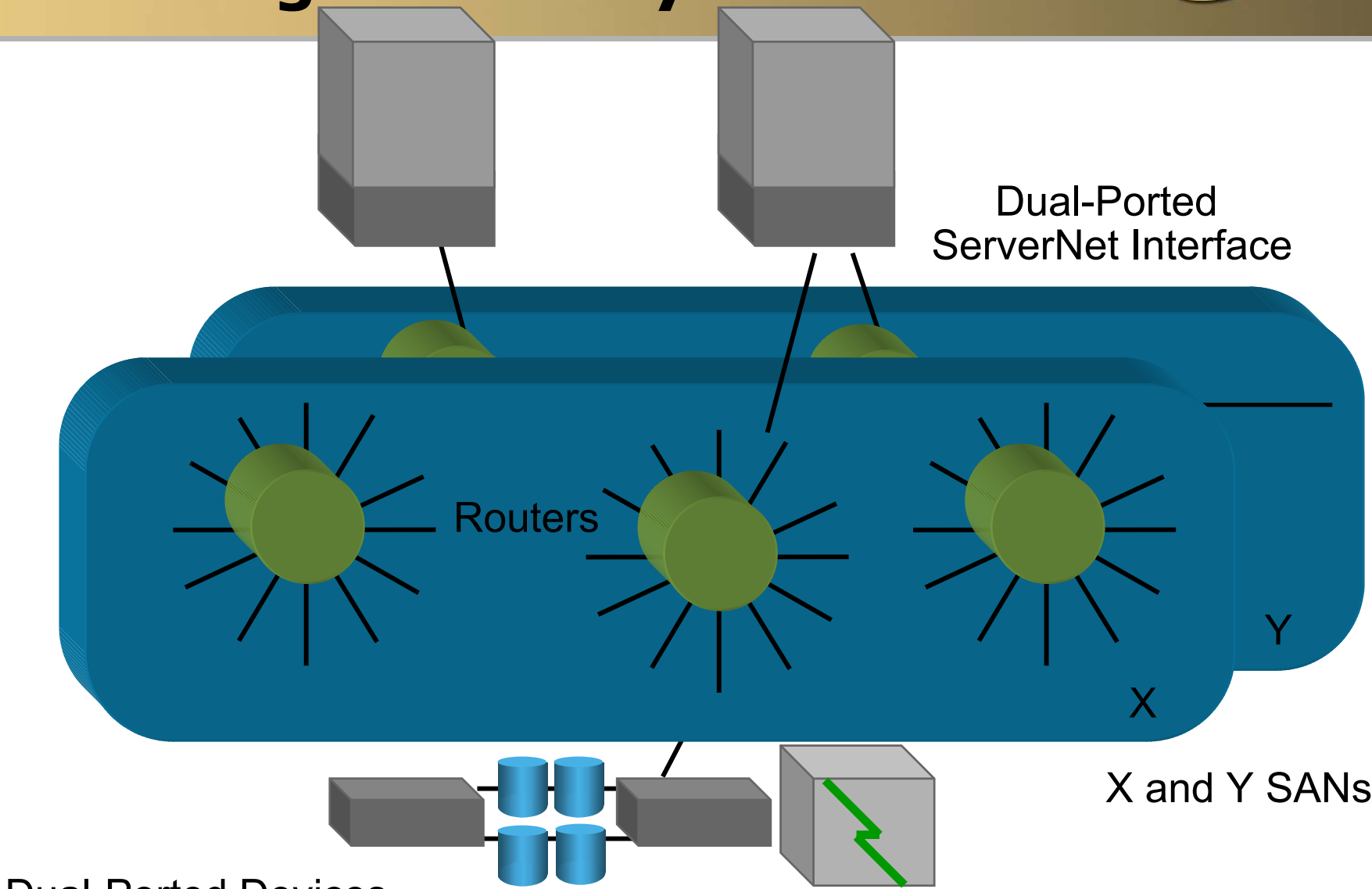
HP NonStop S-Series Servers

- HP NonStop S7x0
- HP NonStop S7x00
- HP NonStop S7x000 and S86000
- All designed for:
  - Availability
  - Data integrity
  - Performance
  - Compatibility

Processors Communicate Through the ServerNet System Area Network (SAN)



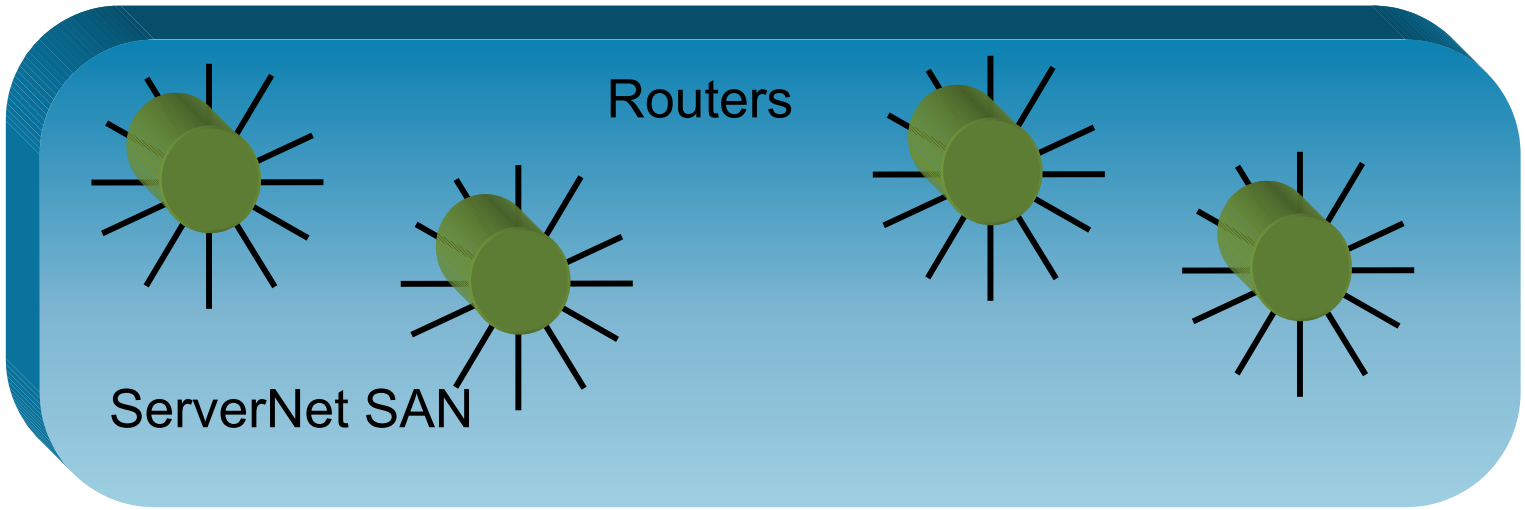
Ensuring Reliability



Ensuring Scalability and Flexibility

Add processors as needed

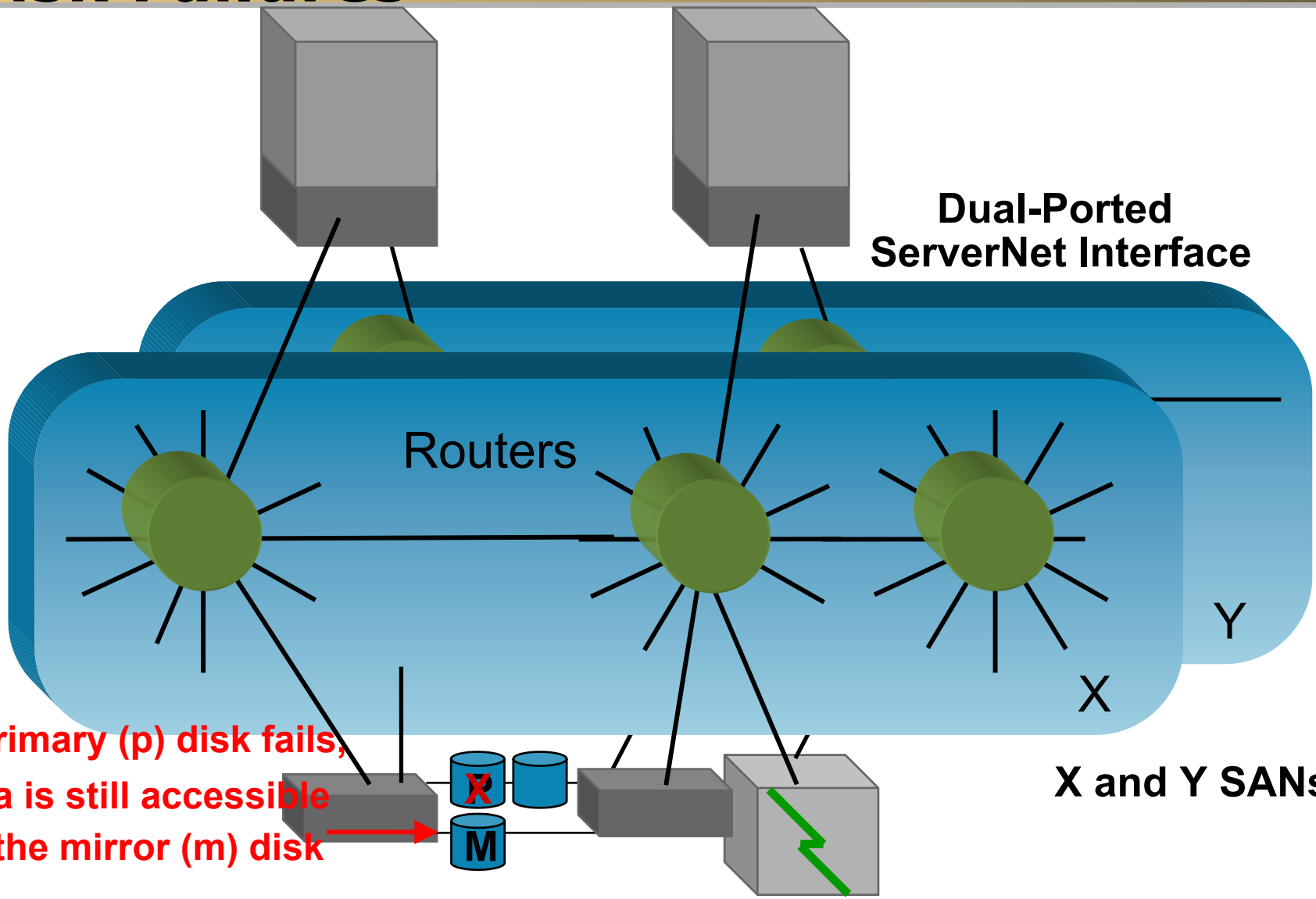
Add WAN/LAN communications as needed



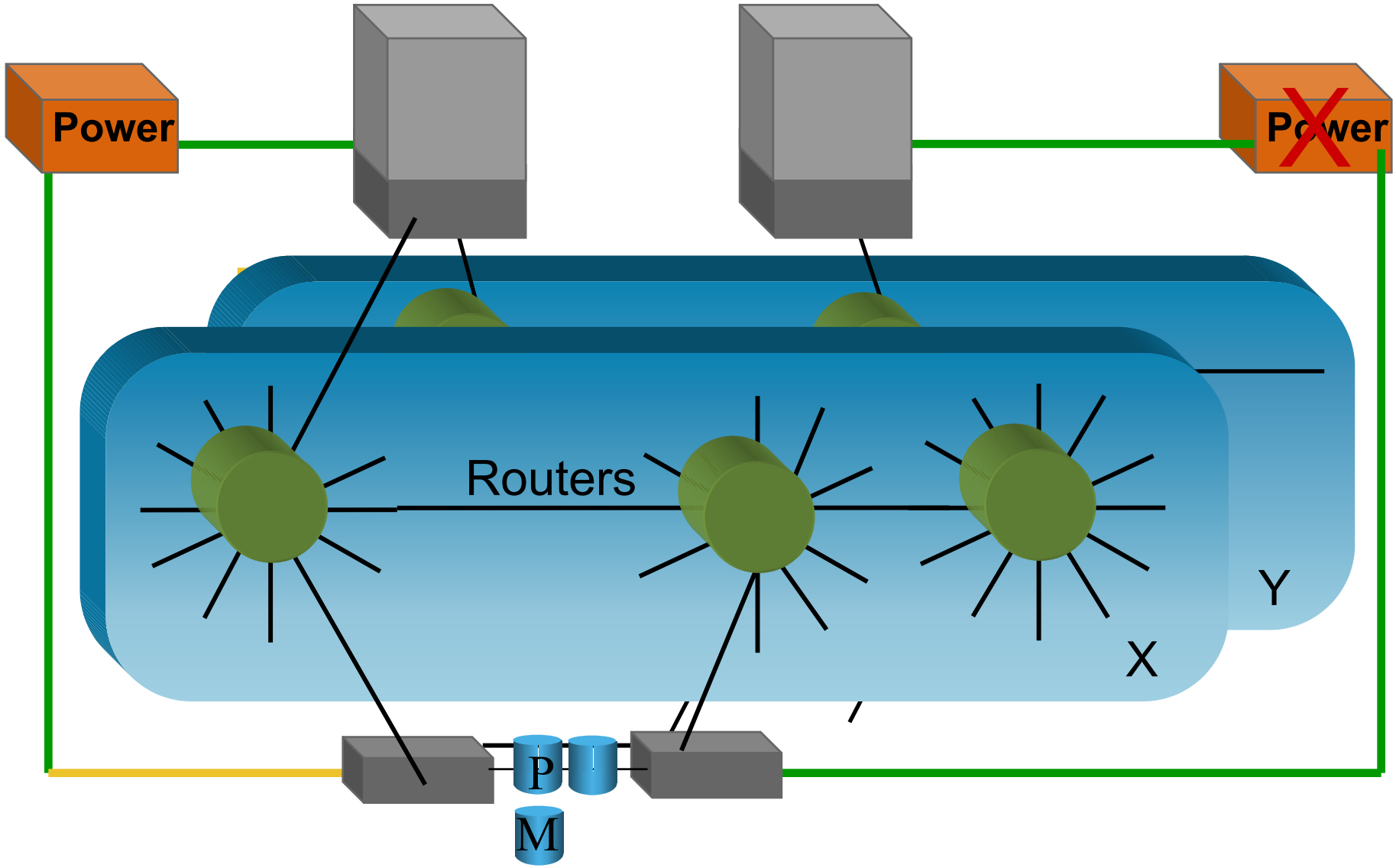
Add storage as needed

Add routers as needed

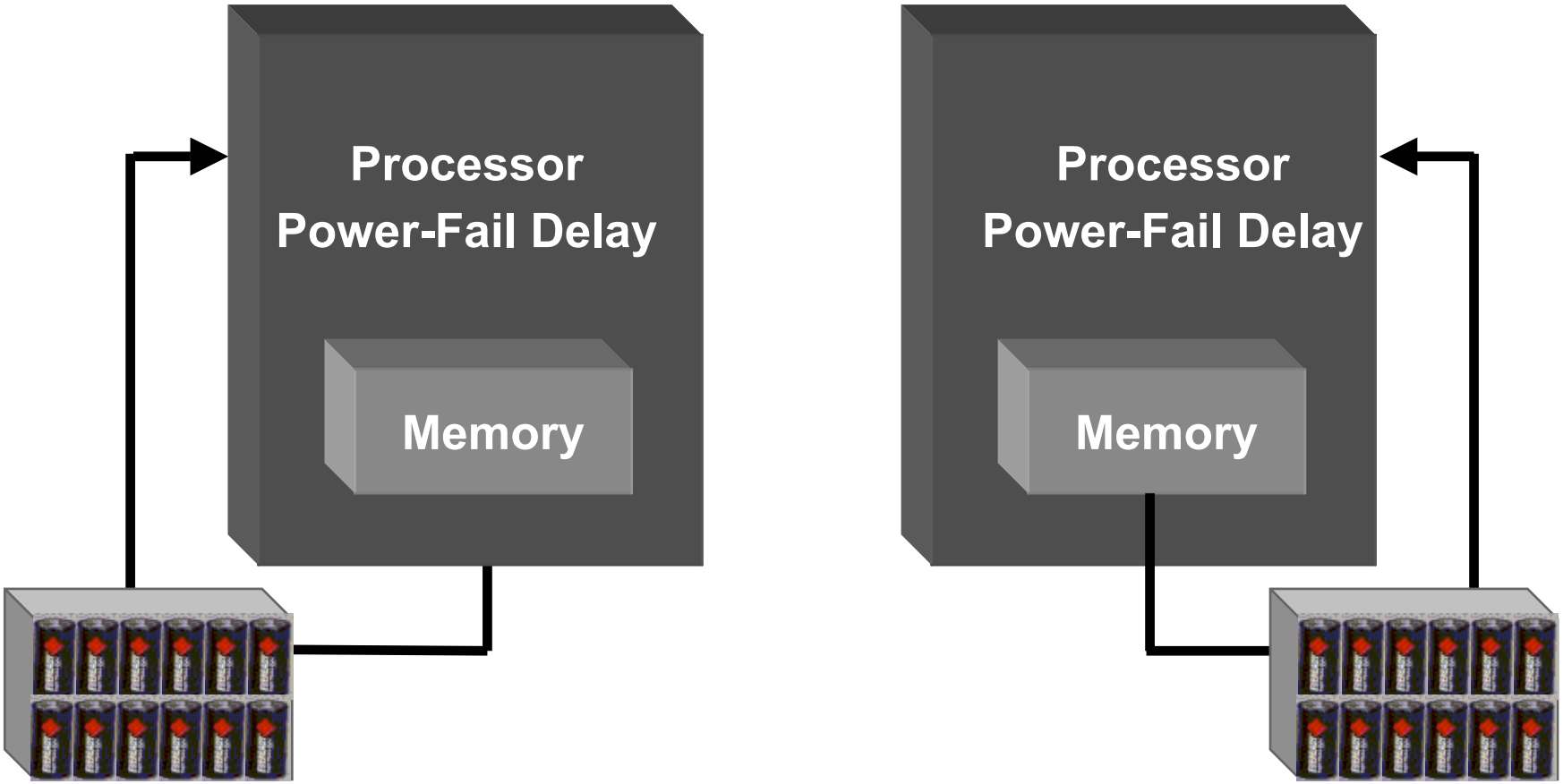
Disks Can Be Mirrored to Provide Protection Against Disk Failures



Multiple Power Supplies and Online Repair Minimize the Impact of Power Supply Failures



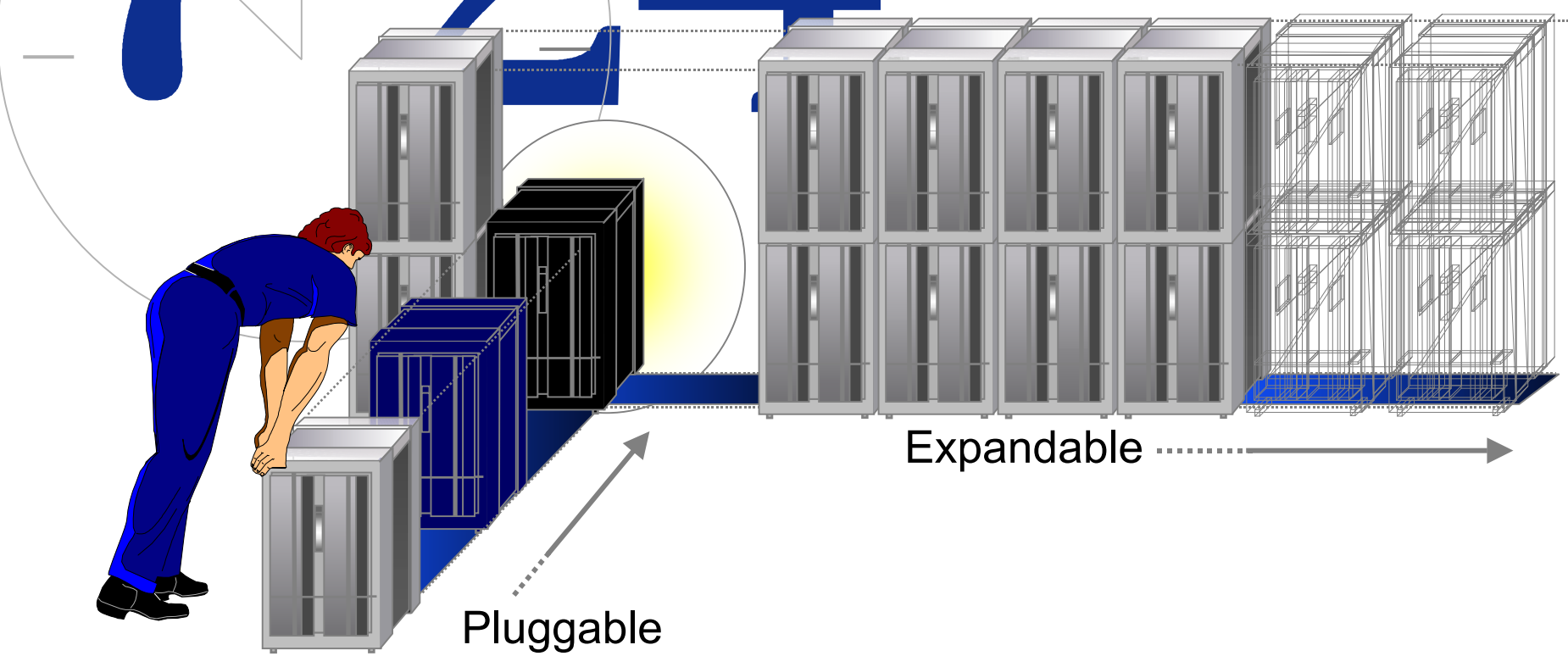
Batteries Preserve Memory Contents During Power Outages



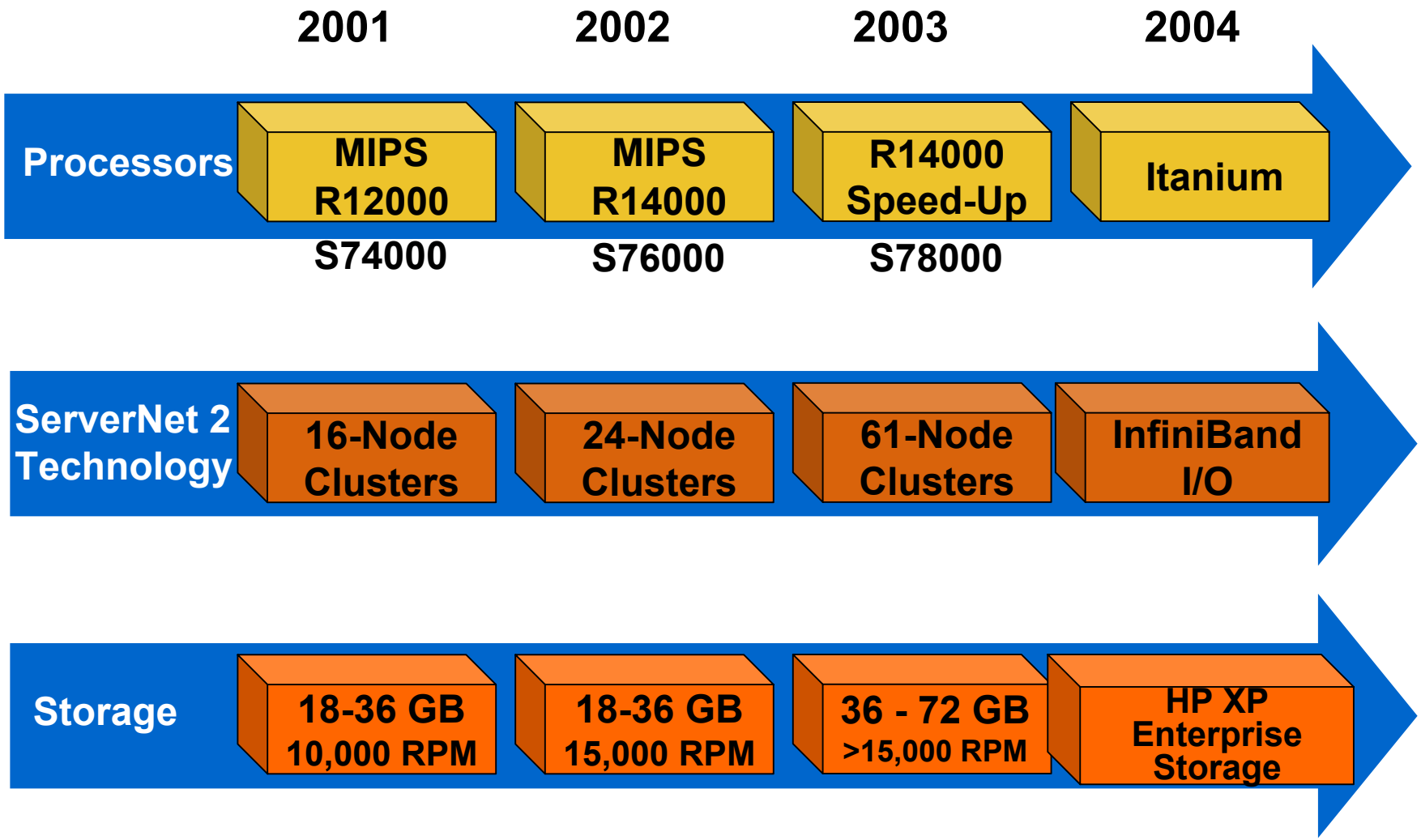
Online, Flexible Configuration
Just Plug It In — No Downtime

7 24

- Physical growth from building-block modules
- Also available for rack mounting



HP NonStop S-Series High End Product Roadmap



The NonStop Kernel Operating System

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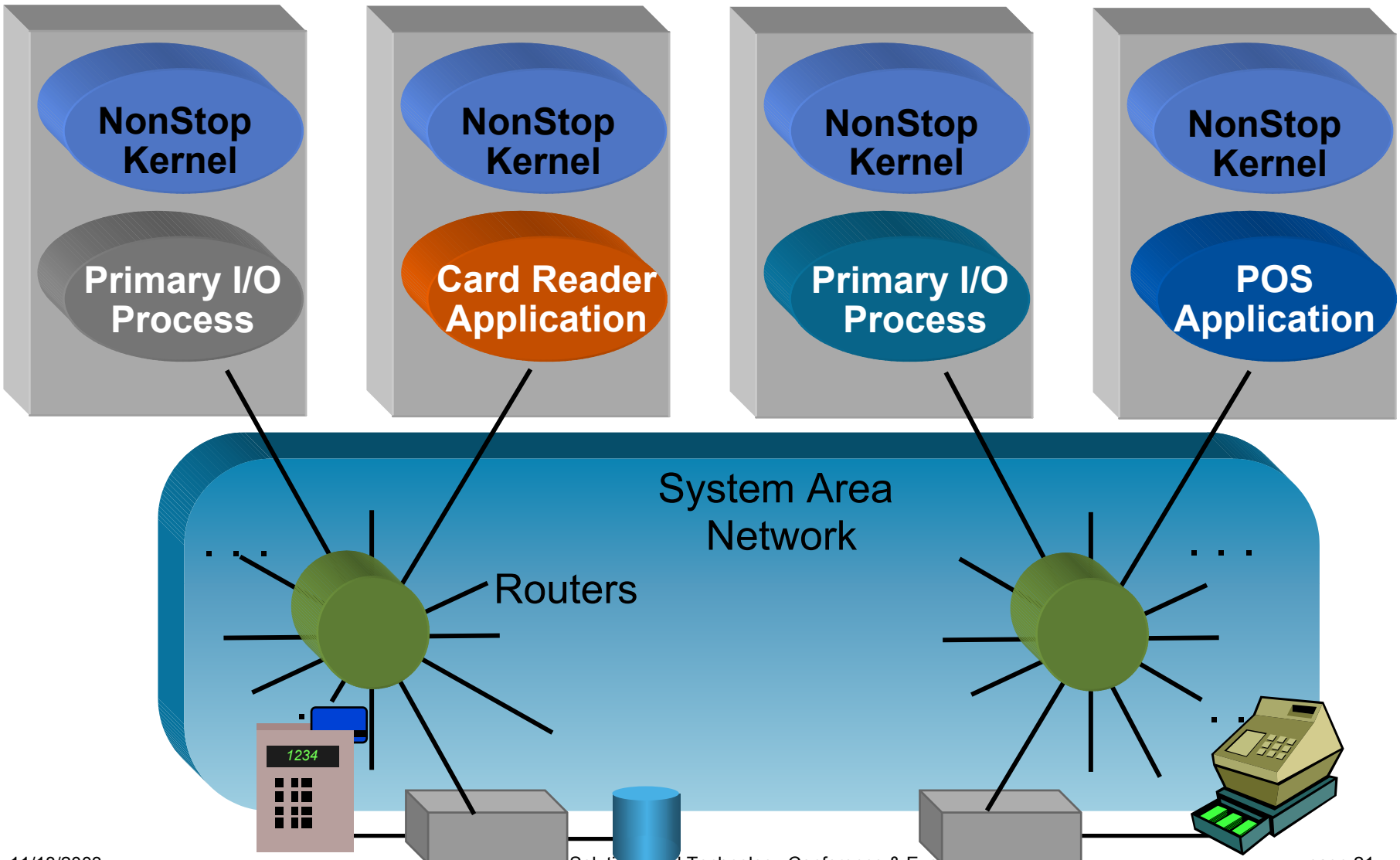
Scalability & Flexibility

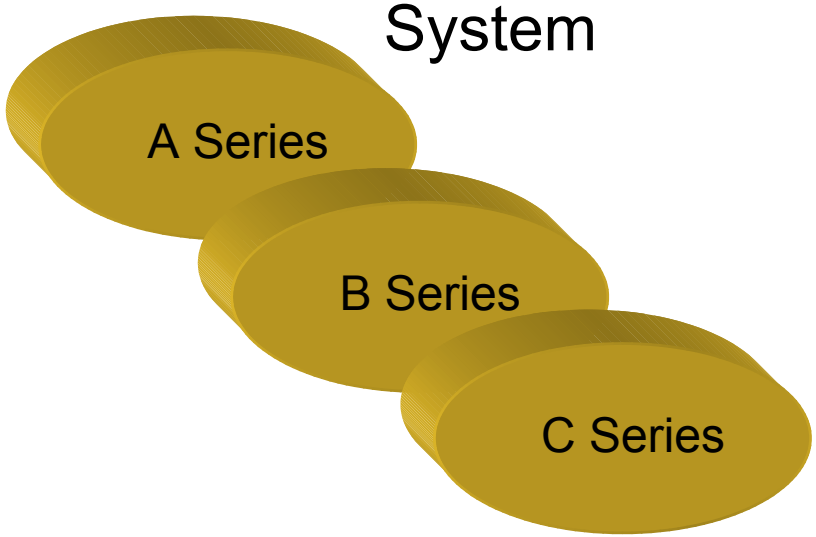
- Applications written for the first Tandem NonStop System in 1976 often run today without modification on a HP NonStop S76000/S86000 system.
  - Performance benefits might be achieved by recompiling, but usually this is not a requirement.
  - Applications written in the language of the operating system (TAL) might require re-coding.

Server Processors and Processes Communicate via Messages



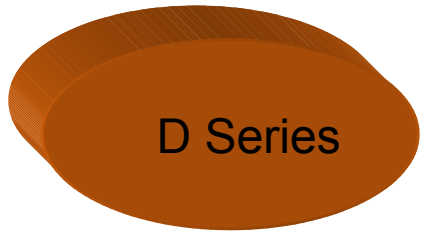
The Advent of the NonStop Kernel

Guardian Operating System



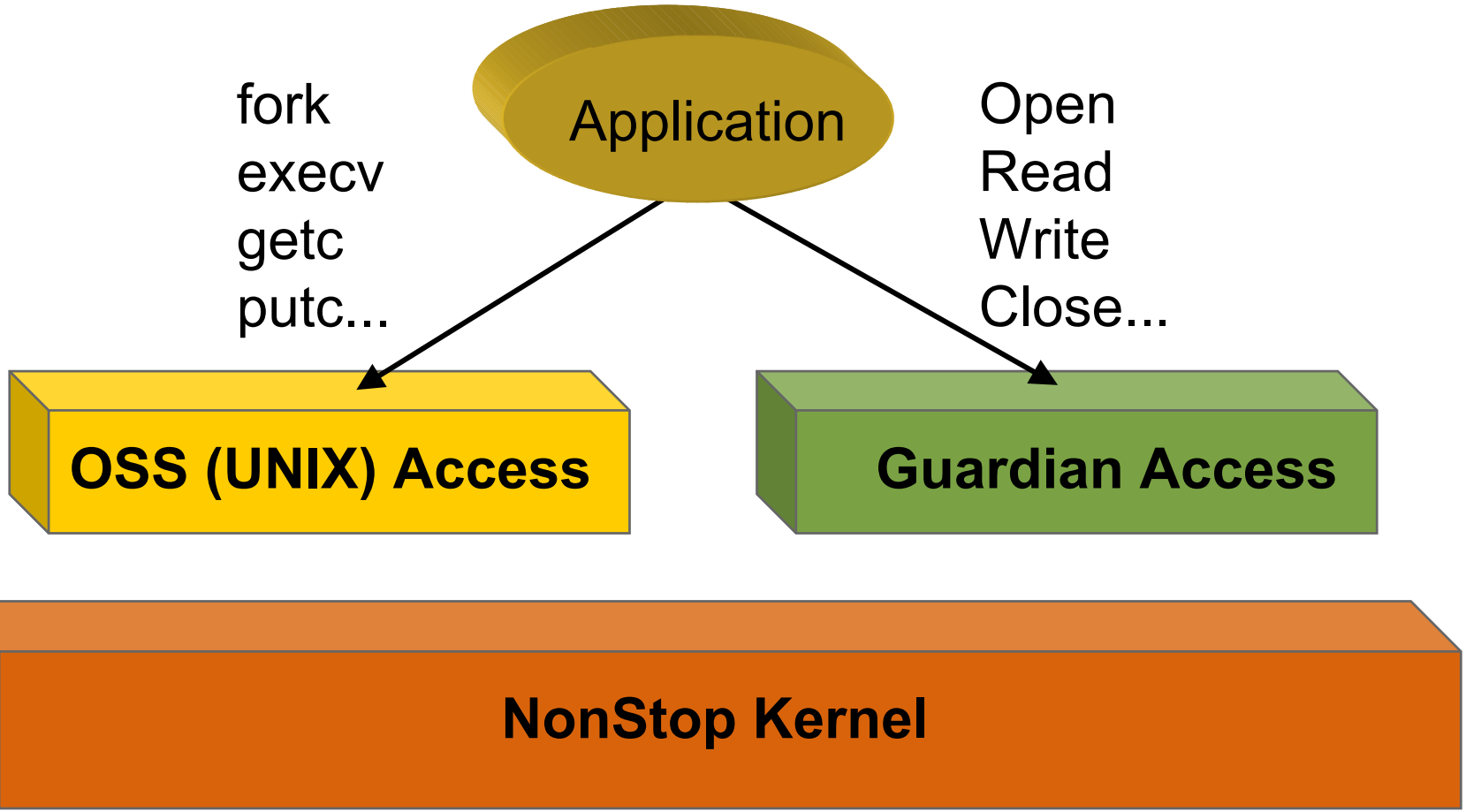
- Major release every 2–3 years; Minor releases every 6 months
  - Interim Product Modifications (IPMs)
  - New products
  - Product enhancements

The NonStop Kernel Operating System



- Expansion of system capacity
  - More processes
- RISC
- UNIX system support

Open System Services (OSS) System Access



HP NonStop Architecture

- HP NonStop server architecture
  - A unique server design

Open Systems, Reliability, Scalability

- HP NonStop server application software support
  - A standard server design

HP NonStop Servers

Software Environment

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Remember The "Infrastructure Box"?

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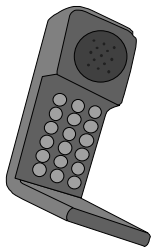
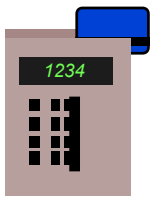
Input Flexibility





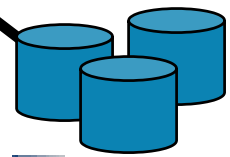
The Piece in the Middle

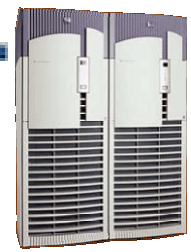
- Distributed Data
- Open Access
- Client/Server
- Communications
- Security

Output Flexibility

UNIX and Windows NT

IBM





DEC

HP

Focus on the Software Component

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Input Flexibility

14,000 Brokers and Users

2,000,000 ATMs

25,000,000 Subscribers

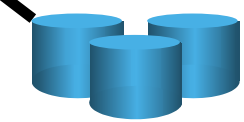
The Piece in the Middle

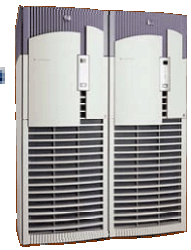
- Flexible and Open
- Client/Server
- Multi-User
- Secure
- Fault Tolerant

Output Flexibility

UNIX and Windows NT

IBM

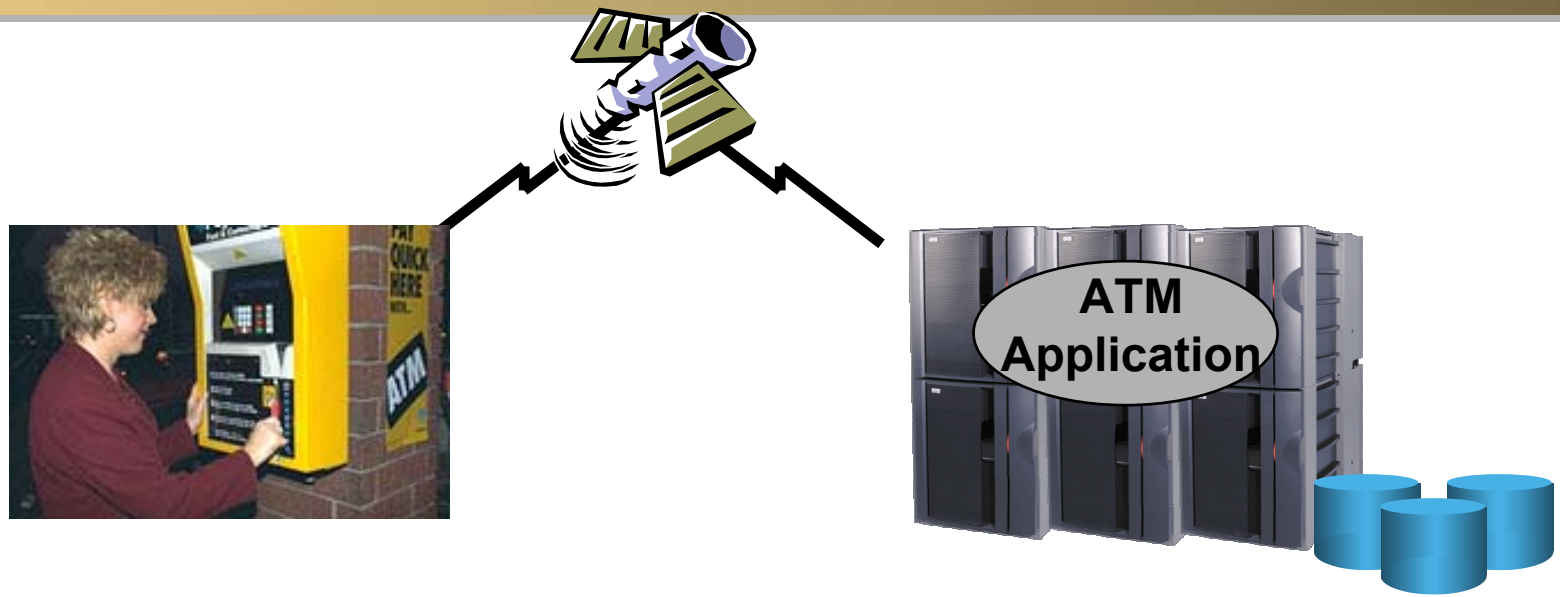




HP

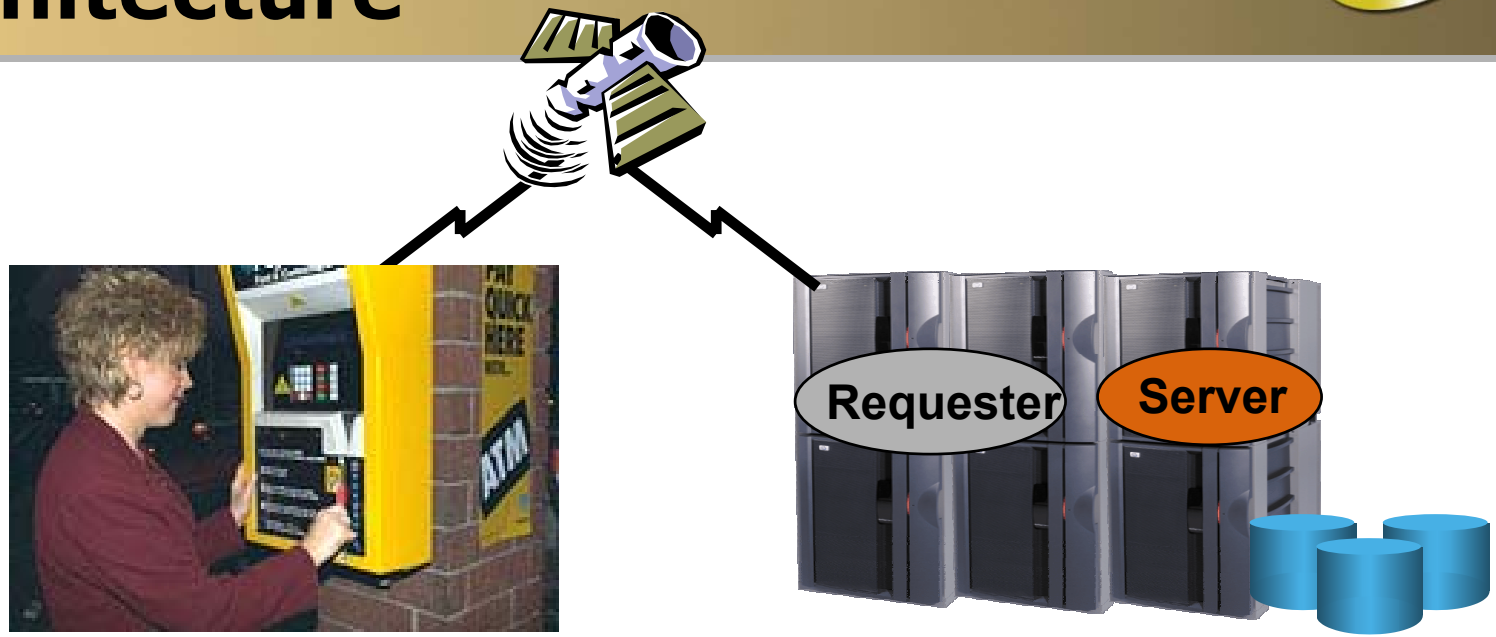
DEC

Software Example



- ATM application logic:
- 1. Display a screen to the user
- 2. Accept the transaction
- 3. Process the transaction
- 4 Issue a reply ($$)!
- 5. Start over

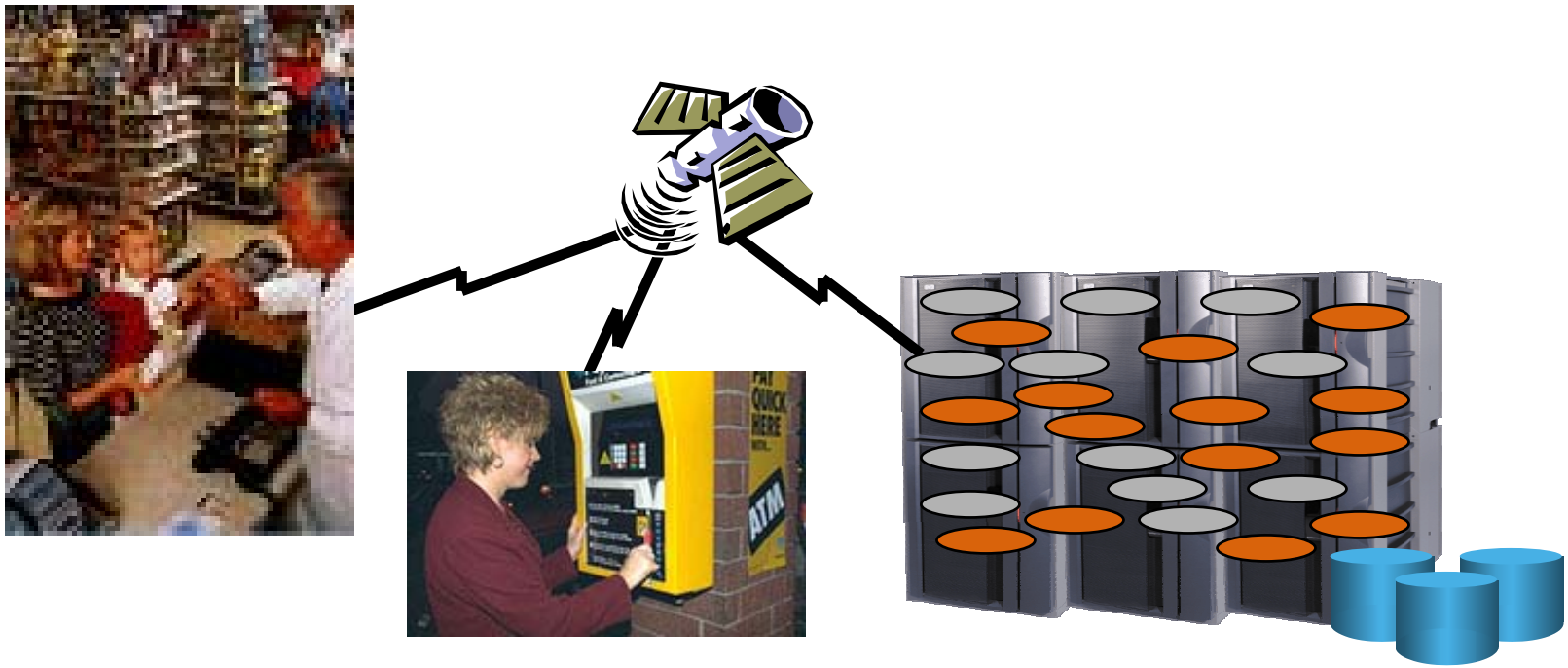
The Requester-Server Architecture



- ATM application logic, requester:
- 1. Display a screen to the user
- 2. Accept the transaction
- 5. Process the reply
- 7. Start Over

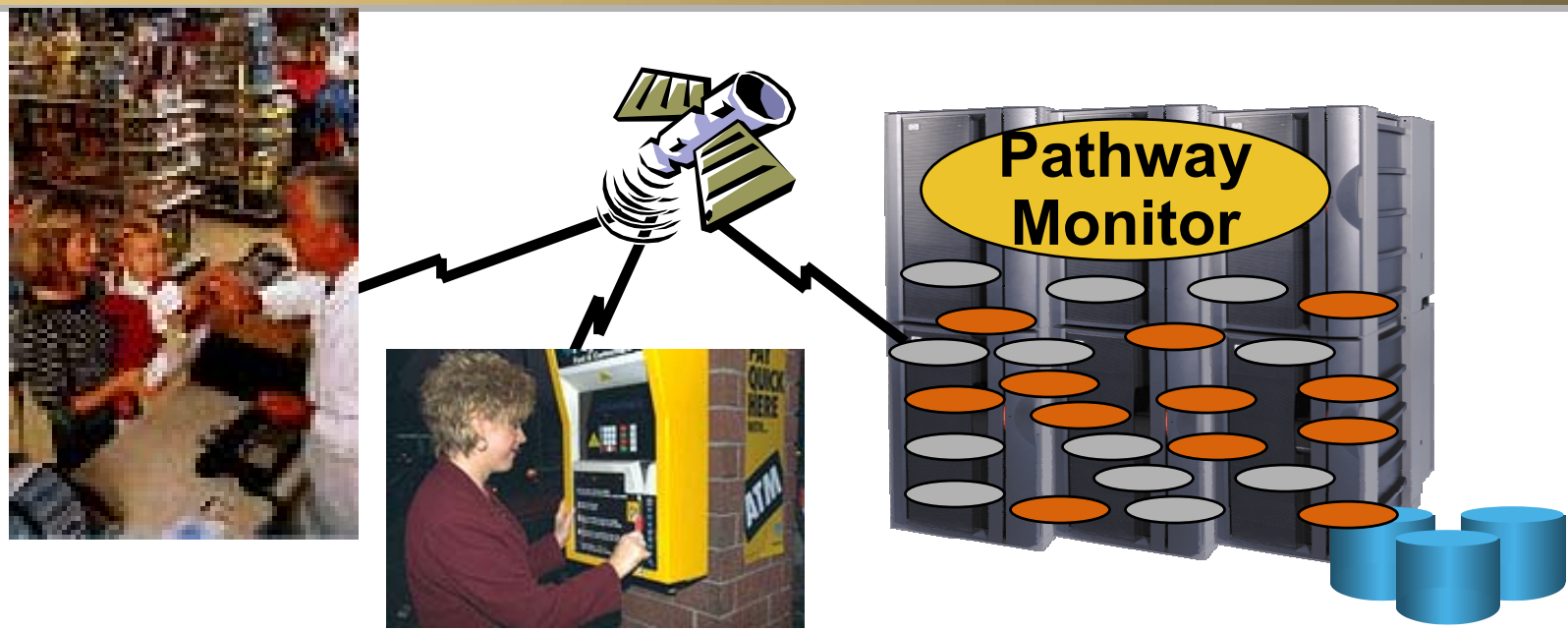
- ATM application logic, server:
- 3. Process the transaction
- 4. Issue a reply ($$)!
- 6. Start over

The Requester-Server Challenge



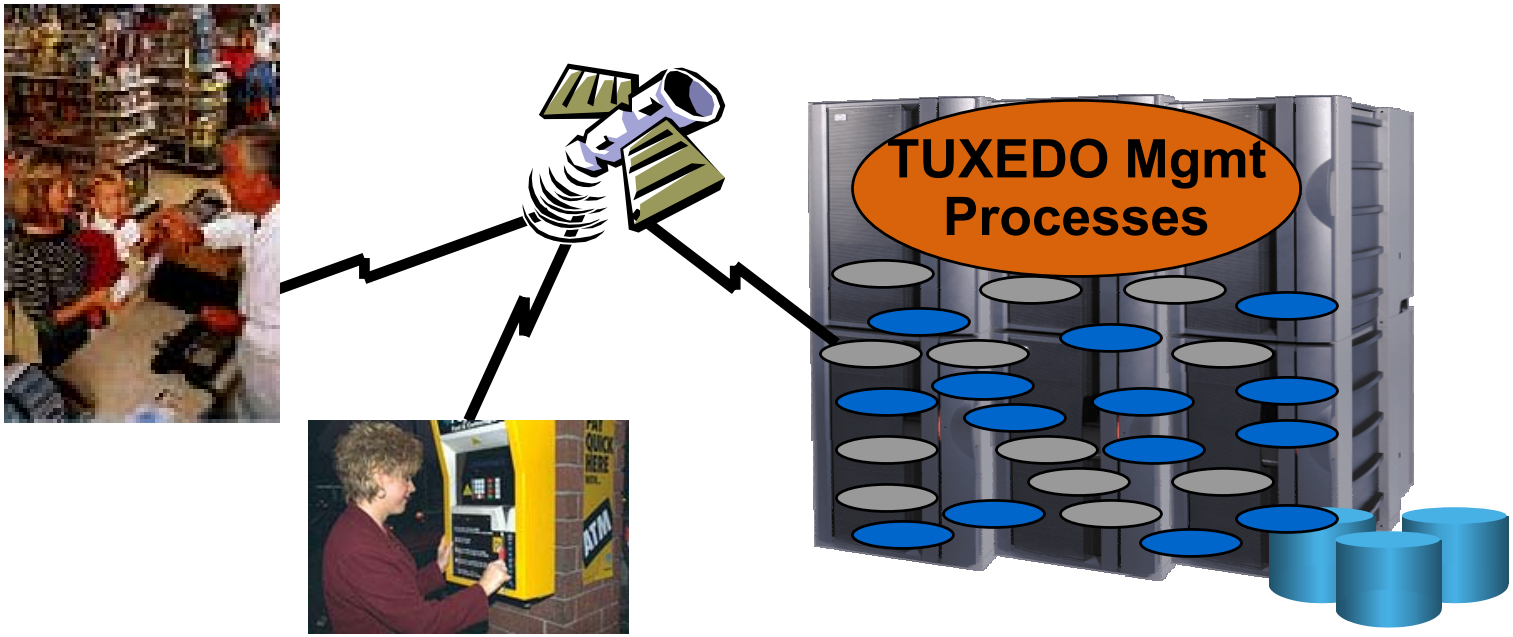
- Management
  - Thousands of very complex “requesters”
  - Many thousands of servers
  - Load balancing
  - Availability

The Pathway Solution



- Management
  - Thousands of very complex “requesters”
  - Many thousands of servers
  - Load balancing
  - Availability
- Pathway TP Monitor
  - Terminal control process
  - Pathway monitor
  - Load balancing
  - Availability

The NonStop TUXEDO Solution

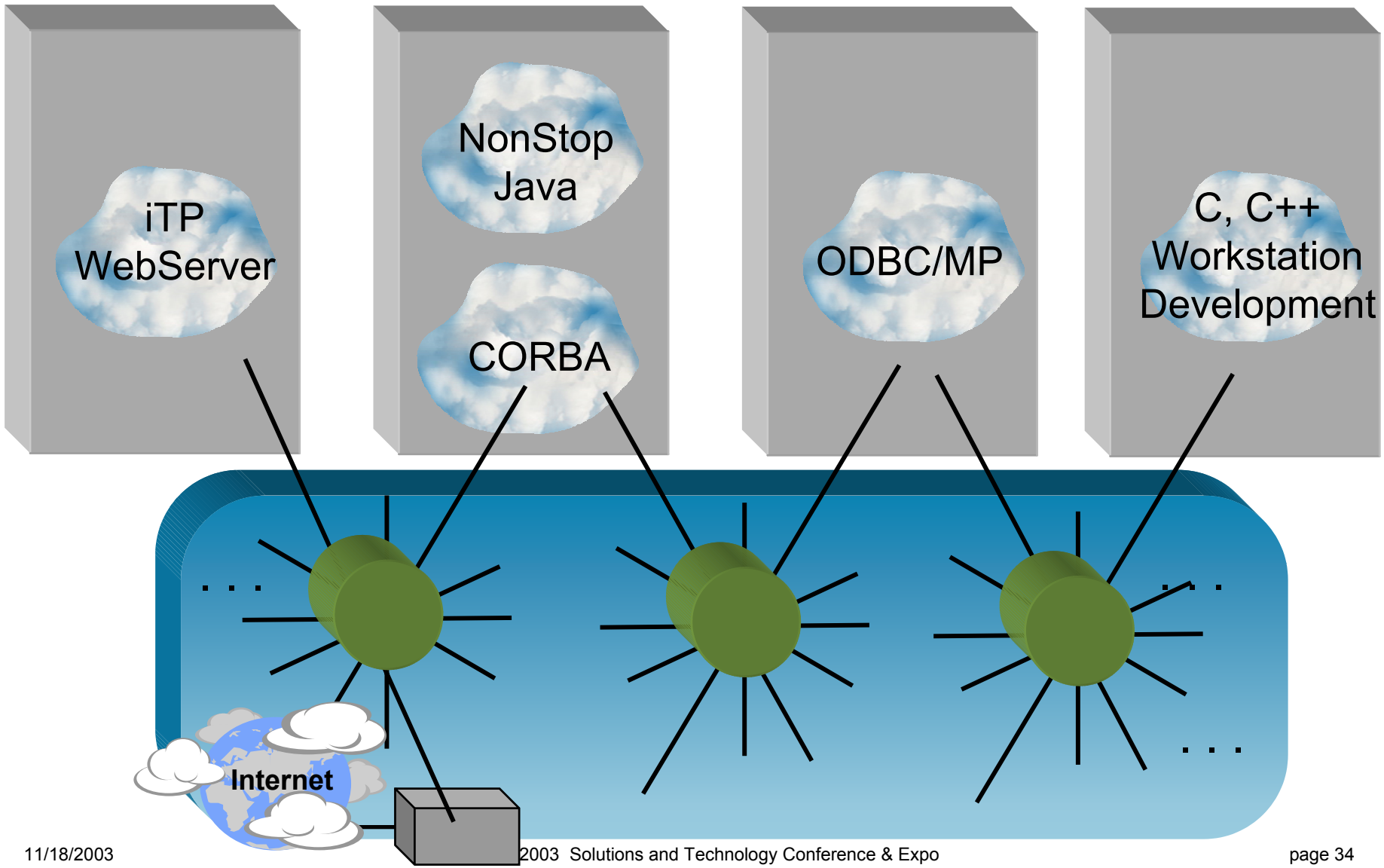


- Management
  - Thousands of very complex “requesters”
  - Many thousands of servers
  - Load balancing
  - Availability
- NonStop TUXEDO
  - Industry-standard environment
  - Application portability
  - Skills portability
  - Transaction independence

Internet Strategy for HP NonStop Servers

- Mission: Provide a Web server environment for HP NonStop servers
  - Internet-enable NonStop server application server capabilities
  - Open up new opportunities in NonStop e-business
- Strategy
  - Provide comprehensive, modern Web services (Java, search engines, and scripting)
  - Deliver robust Web services with NonStop server fundamentals of availability, data integrity (security), scalability, and flexibility (manageability)
  - Connect to popular NonStop server application tools for seamless back-end application integration (Pathway, NonStop SQL, NonStop Java Server, NonStop TUXEDO, and TMF)

Internet Strategy for HP NonStop Servers



The Complete Software Solution

Input Flexibility

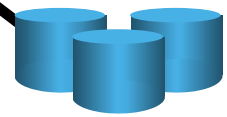
- 9,000 Brokers
- 2,000,000 ATMs
- 25,000,000 Subscribers

The Piece in the Middle

- Flexible and Open
- Web-based
- Secure
- Fault Tolerant

Output Flexibility

UNIX and Windows NT



IBM

HP

DEC

Database and Data Integrity

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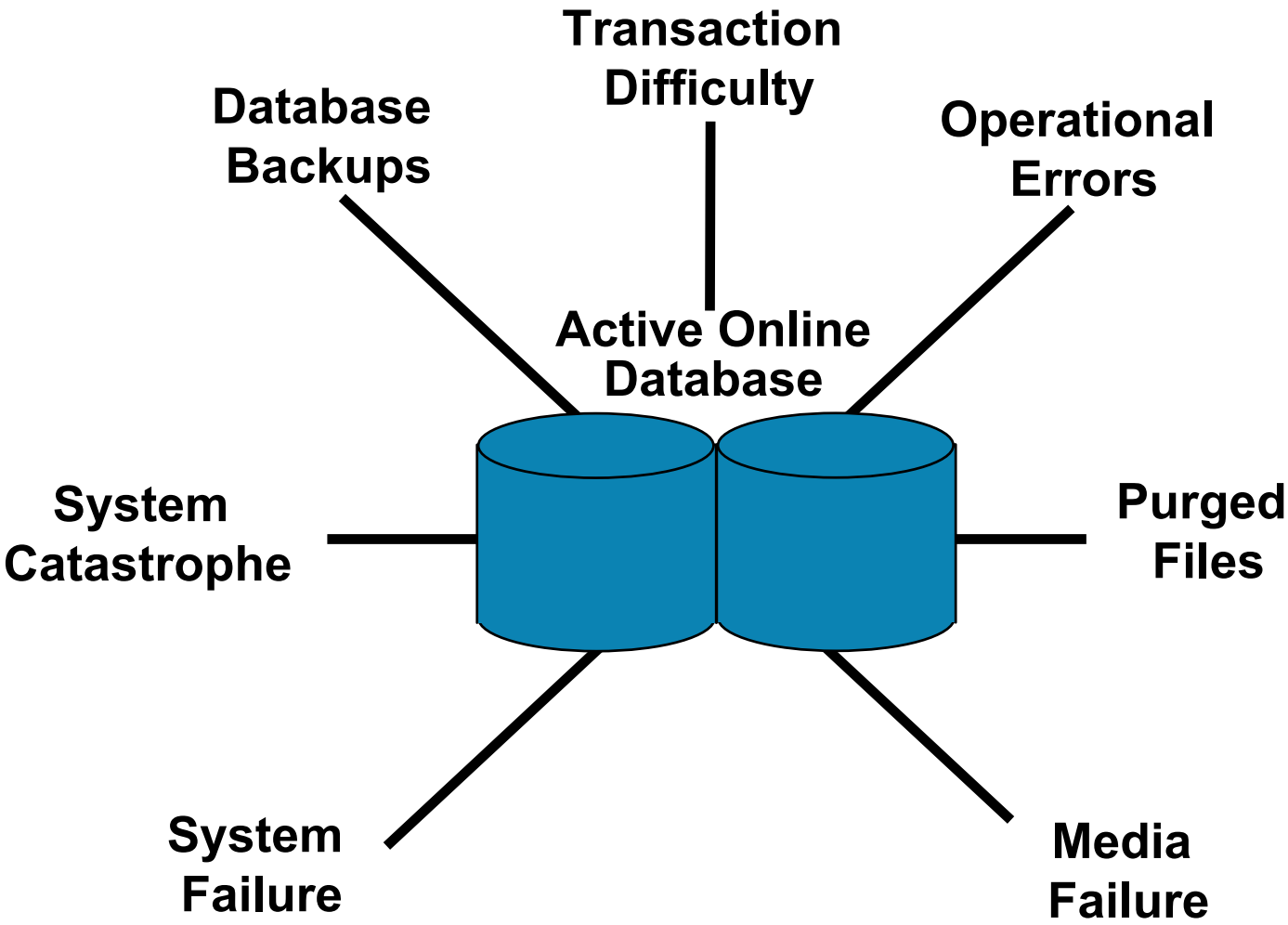
HP NonStop Server Fundamentals — Online Transaction Processing

- Online Database Access:
  - Inserts
  - Updates
  - Deletions
  - Queries

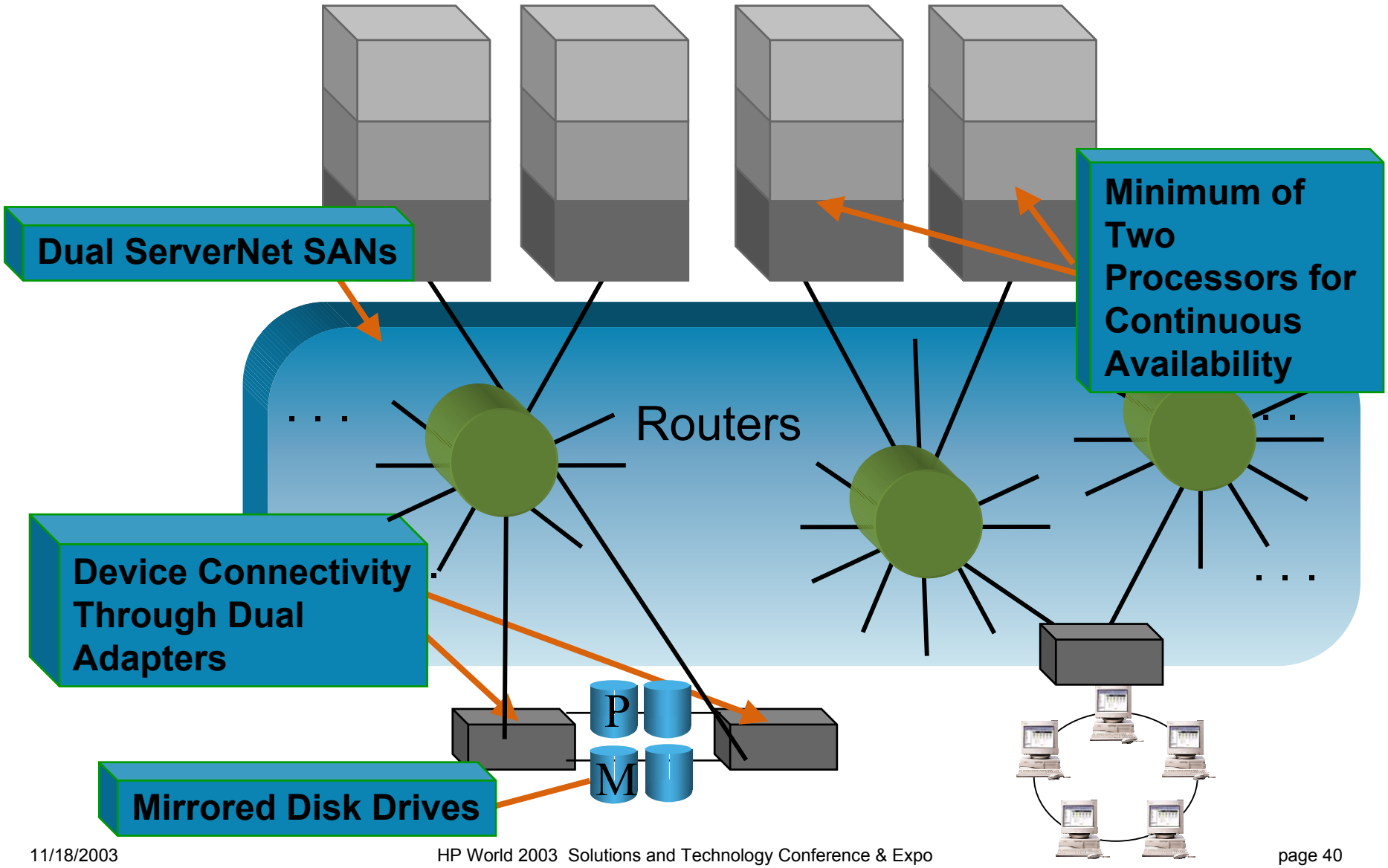
NonStop SQL: Online Database Manager

- High-performance, massively parallel SQL DB (Grows to 100+ TB)
  - Linear scalability
  - Mixed workloads of simultaneous transactions and queries
  - Special features for very large data warehouse applications and operational data stores
- Industry-leading parallel query capabilities
  - Parallelizes query execution
  - Completely automatic, no hints required
- Industry-leading availability
  - Integrated system and software fault-tolerant middleware
  - Online: backup, index creation, data load, repartition, add column, reorganization, and so on
  - Data integrity: single log/system image, doubly linked lists, sector checksums

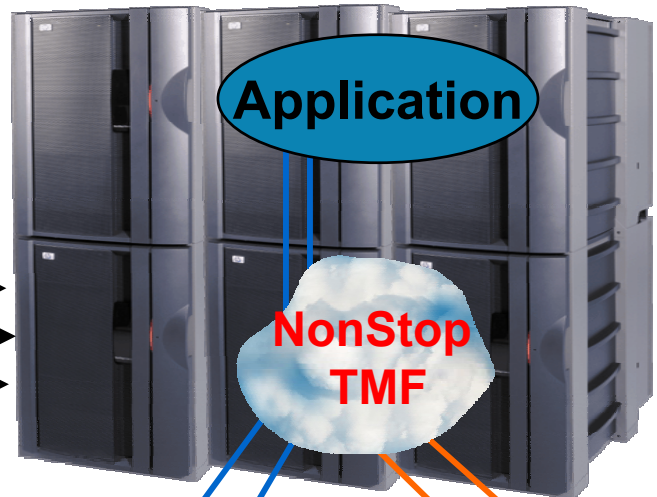
Threats to an Online Database



HP NonStop Server Hardware Support



NonStop TMF Software Support

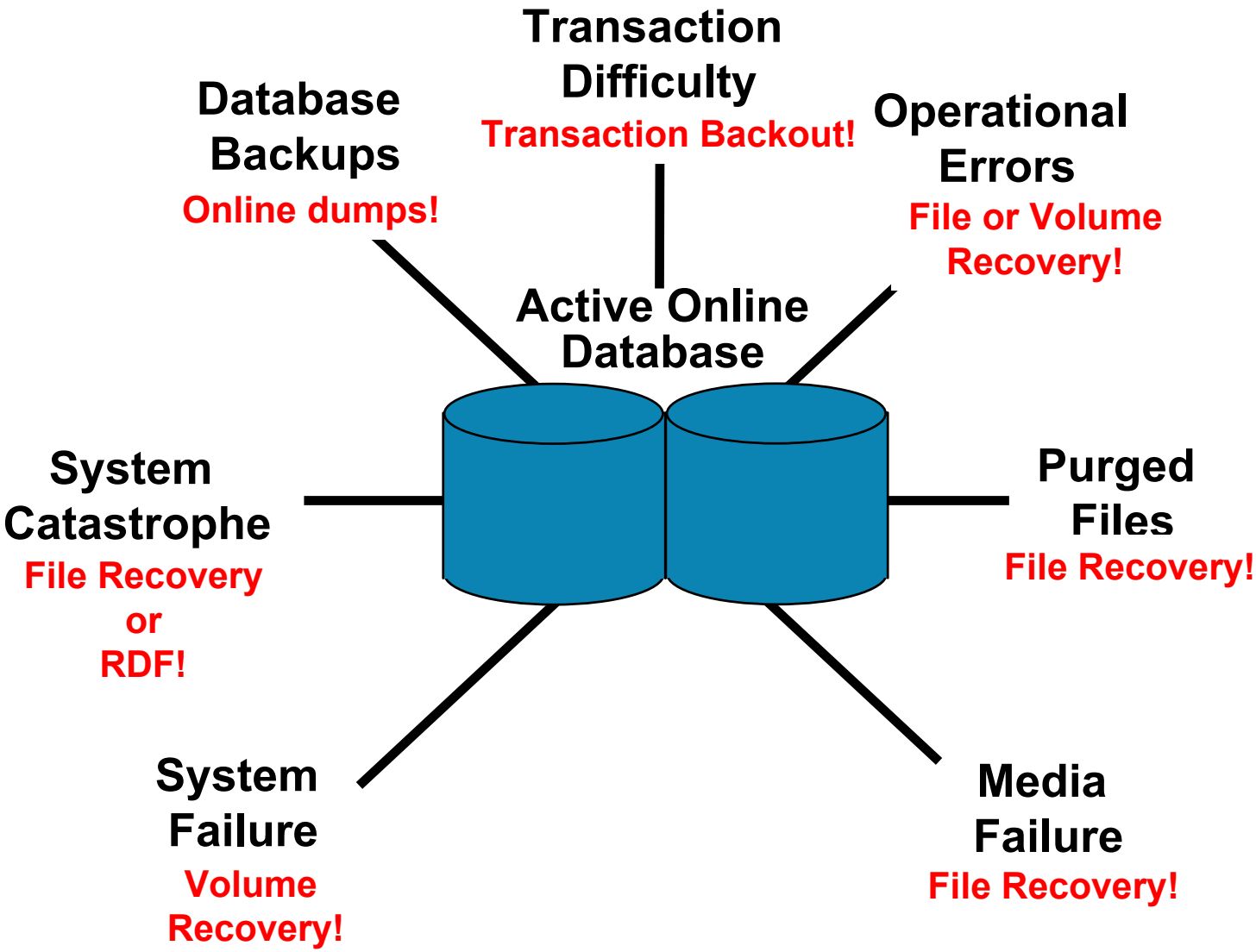


Database Changes

Online Database

Audit Trails

~~Threats~~ to TMF Protects an Online Database



Remote Duplicate Database Facility

Satellite
Leased Line
Fiber Optic
Public Data
Networks
and so forth

Online Database

Audit Trails

- or -

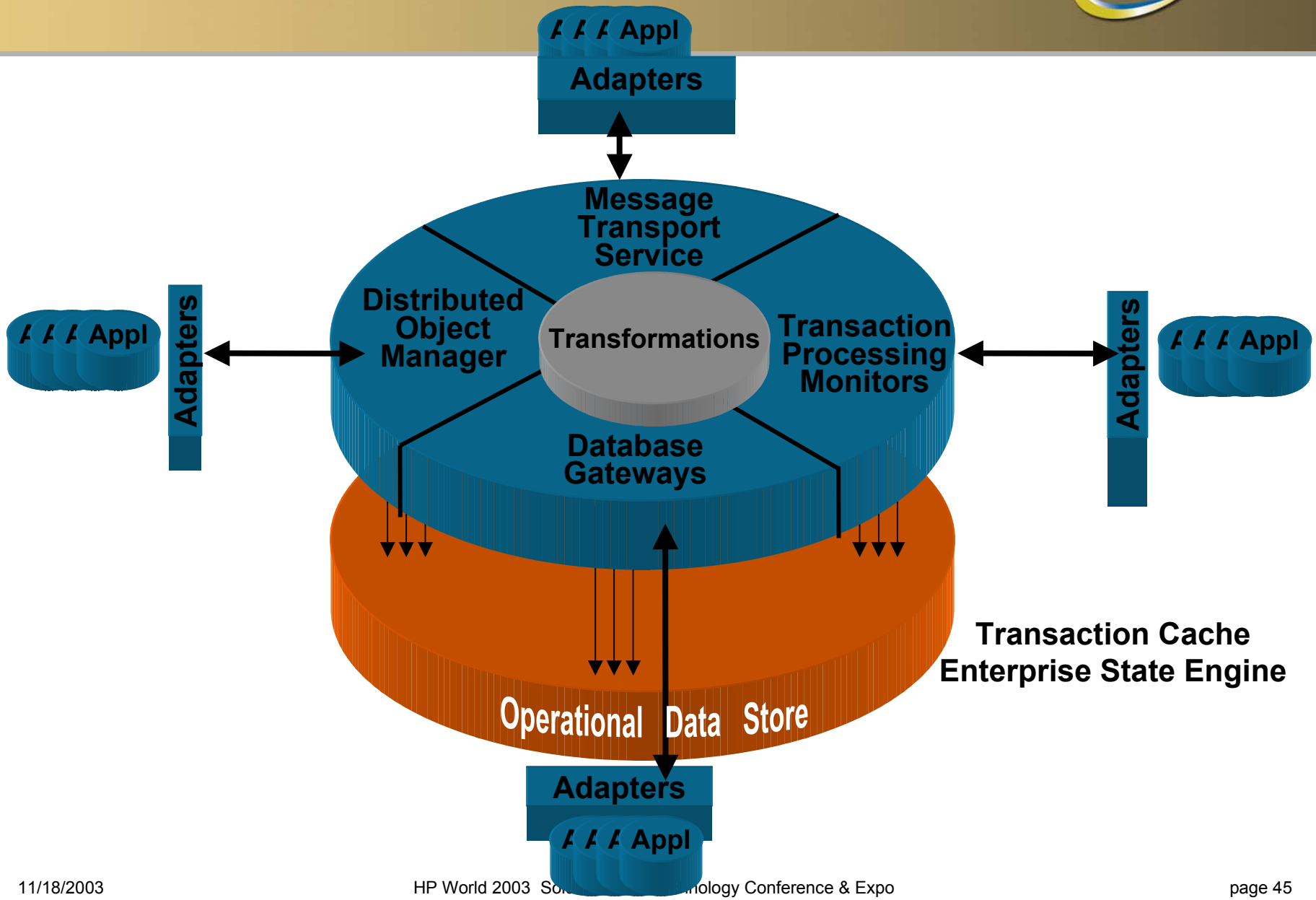
Backup Database

Flexible Configuration:

- 1:1
- Ring
- Multibackups
- Multisite: 1 backup
- And so forth

Zero Latency Enterprise Project Overview

The Zero Latency Engine

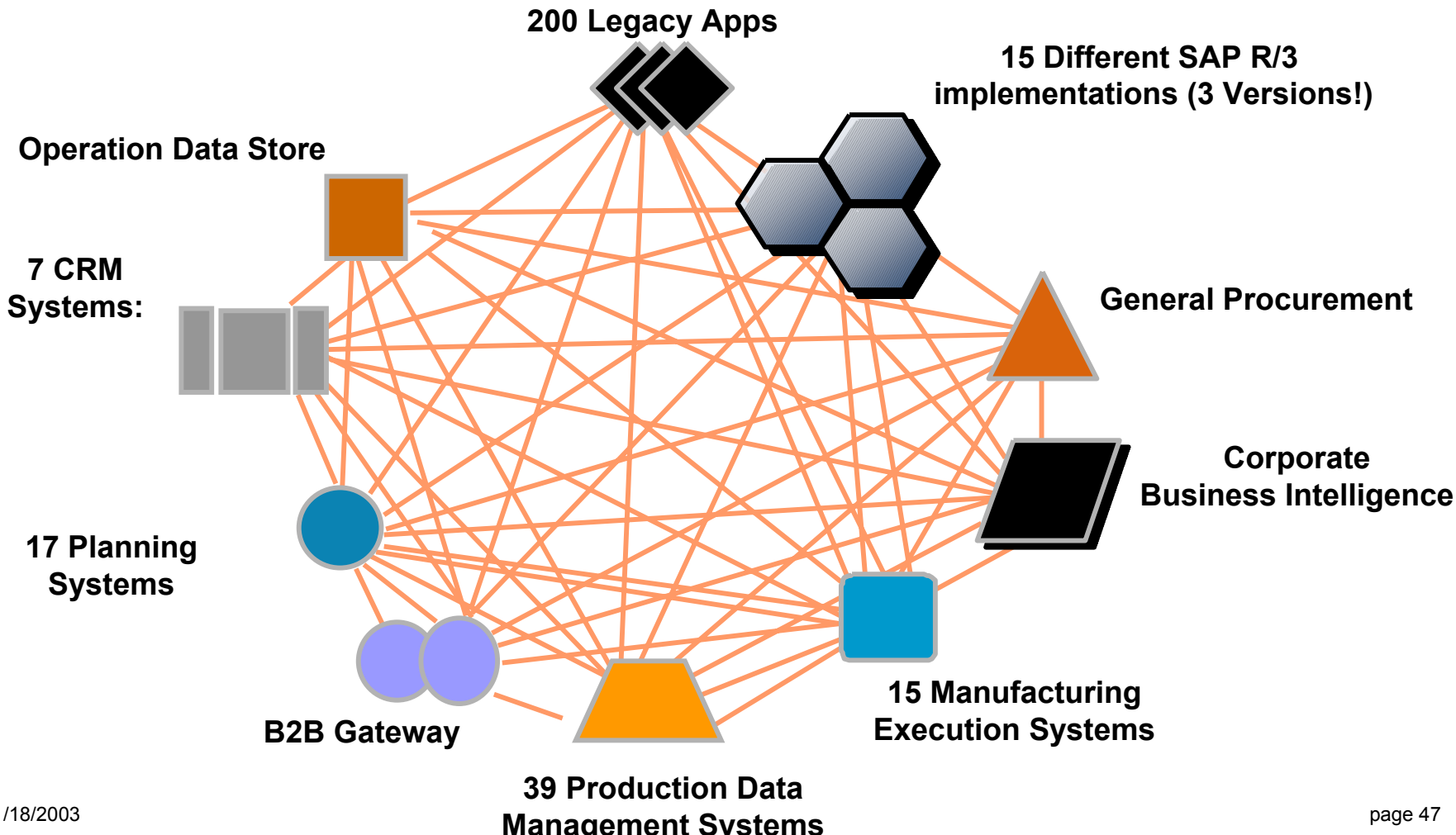


Zero Latency Enterprise Benchmark

- "The elimination of the time lapse that occurs after information is received at one point [in the organization] and before it is used at another."

How is HP Using ZLE? Supply Chain Integration

- "Today's integration between these solutions has been a patchwork of point-to-point interfaces, operation data stores, EDI, and all the SAP integration methods."
- This represents only the Compaq Classic supply chain portfolio!

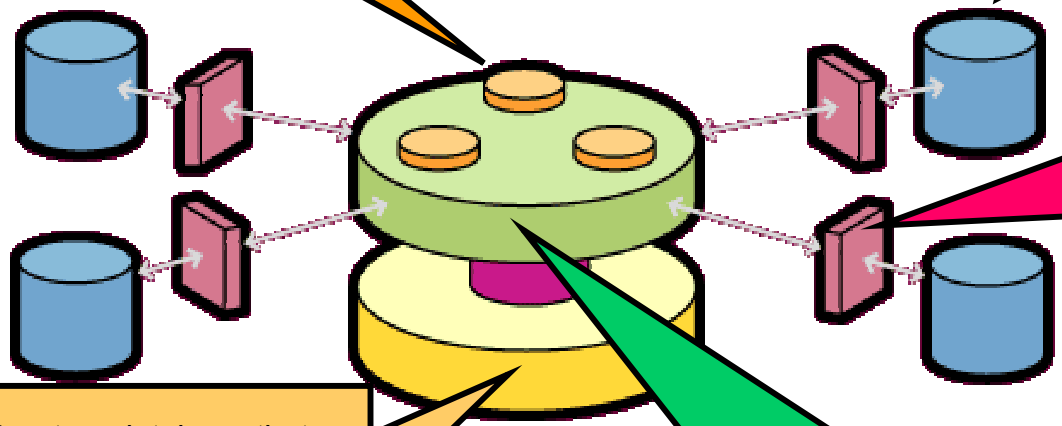


HP ZLE current implementation

specialized ZLE applications
Applications such as supply chain exception management , ATP, and supply chain visibility reside on top of the ZLE core to use the real-time data provided by other applications.

enterprise applications
Identify key legacy applications and data and etc.

adapters
software. to integrate those applications and data to your Enterprise Application



SQL DBMS – Create a database that stores, maintains and delivers the information to the appropriate applications. This database single Operational Data Store, eliminates the need to maintain multiple data stores in the organization.

EAI (middleware) Existing software merges applications and data from different systems. This allows HP to eliminate writing custom interfaces between applications.

As a result, the HP NonStop™ integration hub provides a single, consolidated, and up-to-the-second view of all pertinent data from all the disparate applications it integrates.

Now the CEO can ask “How did we do today?”

The ZLE demo is waiting for you!

- 128-processor HP NonStop server
- Entire range of HP servers
- 256 GB of memory
- 111 TB of disk

Support and Information Services or

Where To Go for More Information

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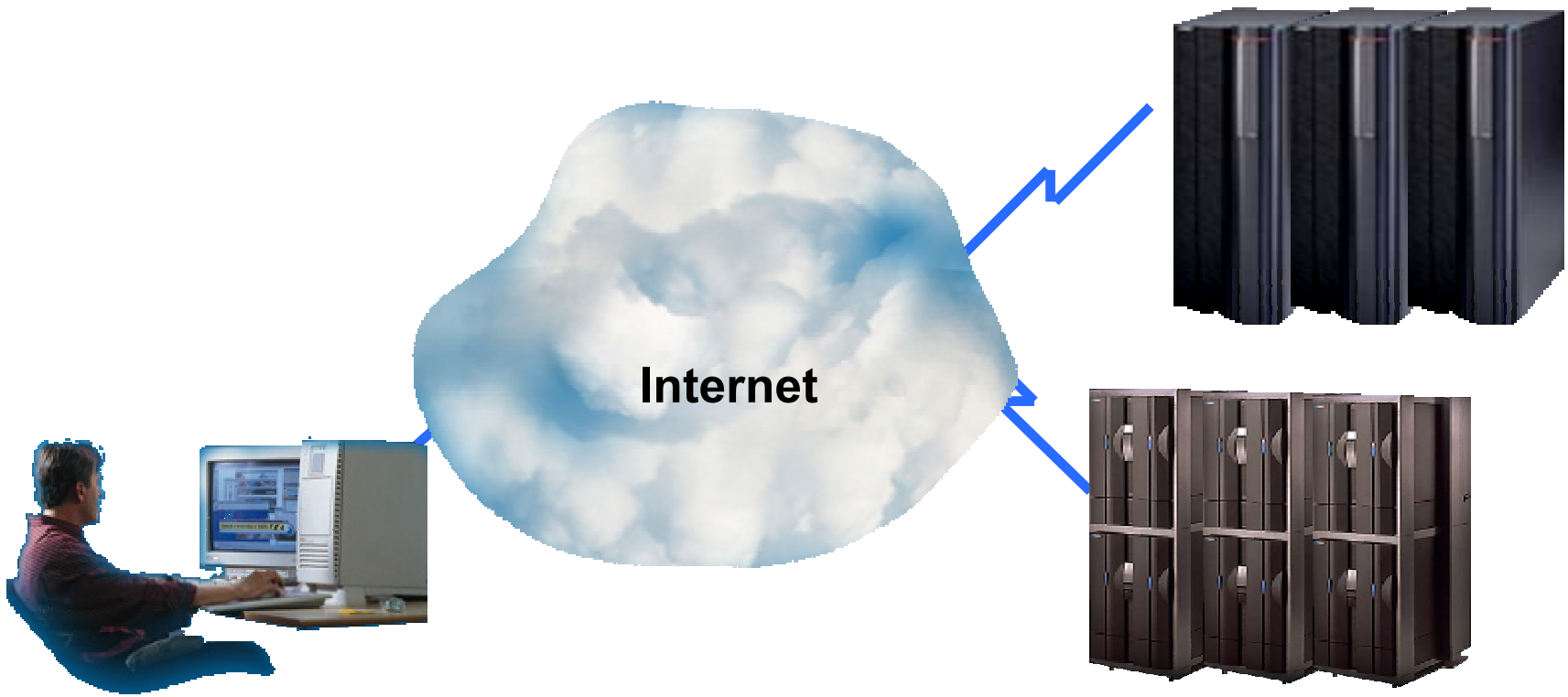
World Wide Web

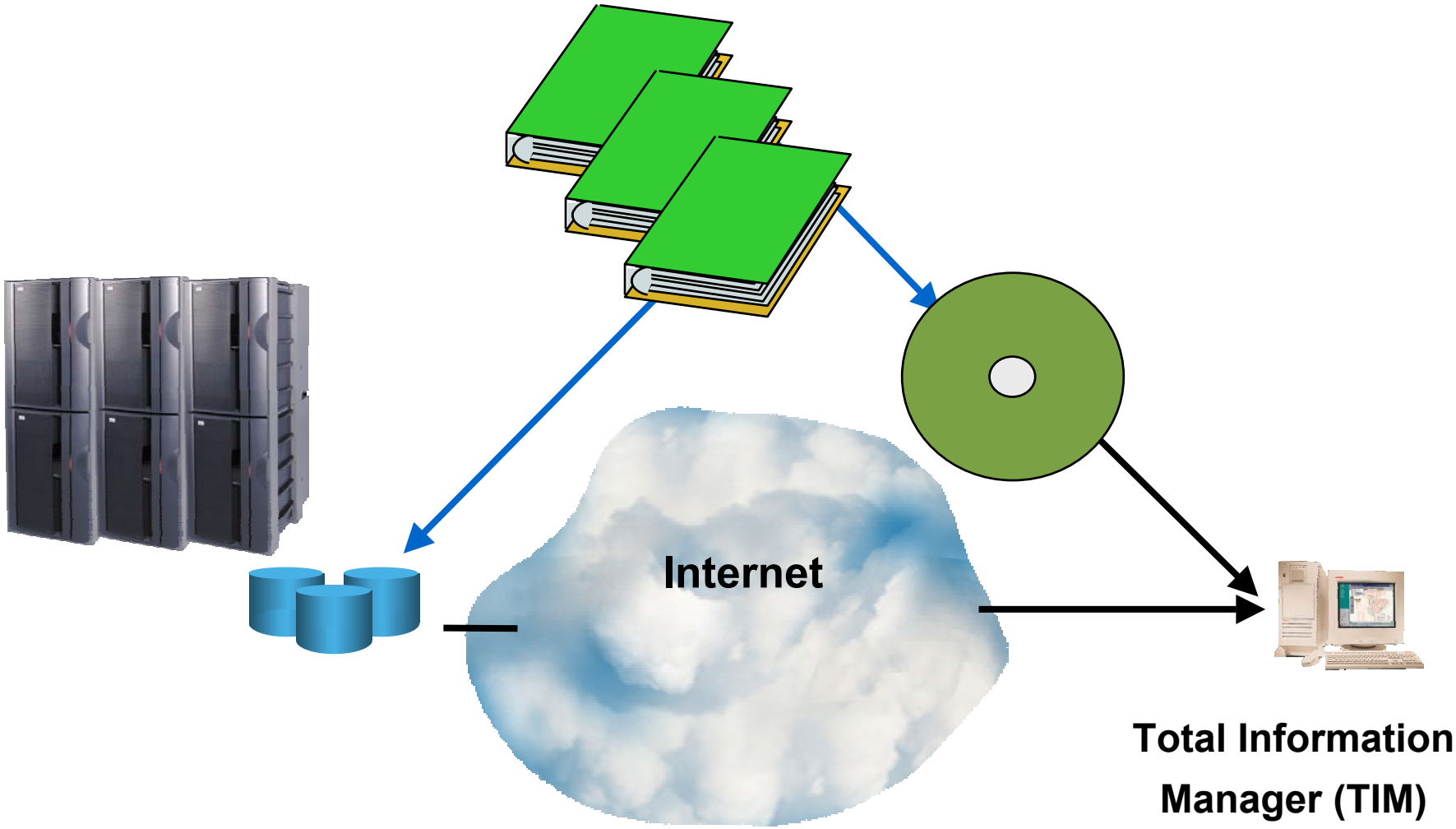
NonStop Enterprise Division Home Page:

http://nonstop.corp.hp.com/

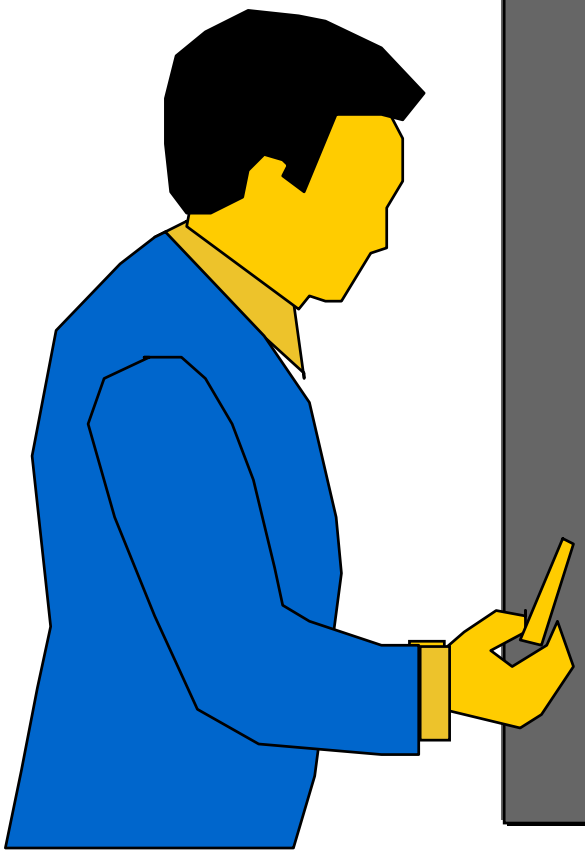


http://etc.qweb.cpqcorp.net/

Technical Reference Materials



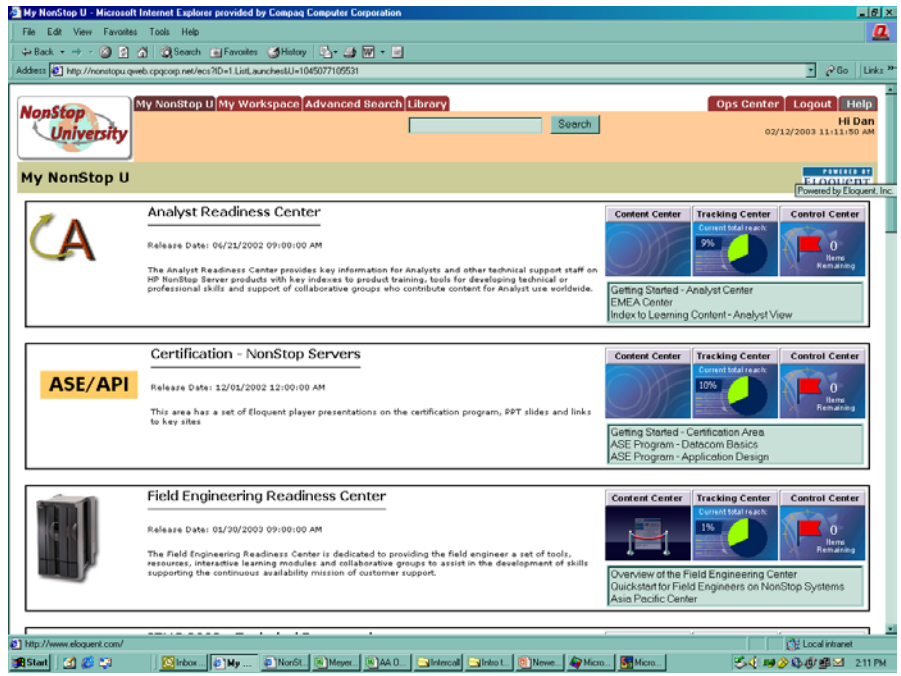
Education



- Instructor-led Training
- CBTs
- Self-study Training
- Web-based training
- Weekly conference calls
- Distribution Lists
- Technical Update Training Seminar CDs
- This presentation for your peers or customers!

Online Education – NonStop University

- http://nonstopu.qweb.cpqcorp.net/ecs
  - Use your corporate login
    - Analyst Readiness Center
    - Certification – NonStop Servers
    - Field Engineering Readiness Center
    - ITUG Technical Presentations
    - NED Initiatives
    - NonStop Conference Calls
    - Quickstart – NonStop Servers
    - Sales Readiness Center
    - Transfers of Information
    - LOTs more!



Where to go for More Information

- The online version of this presentation:
  - http://nonstopu.qweb.cpqcorp.net/ecs
  - (Select “Quickstart – NonStop Servers”)
- NonStop Systems Concepts CBT
  - 800-621-9198
- Concepts & Facilities
- Contact me:
  - Porter@HP.Com
  - (724)-584-2003

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