

NEC ExpressCluster Introduction



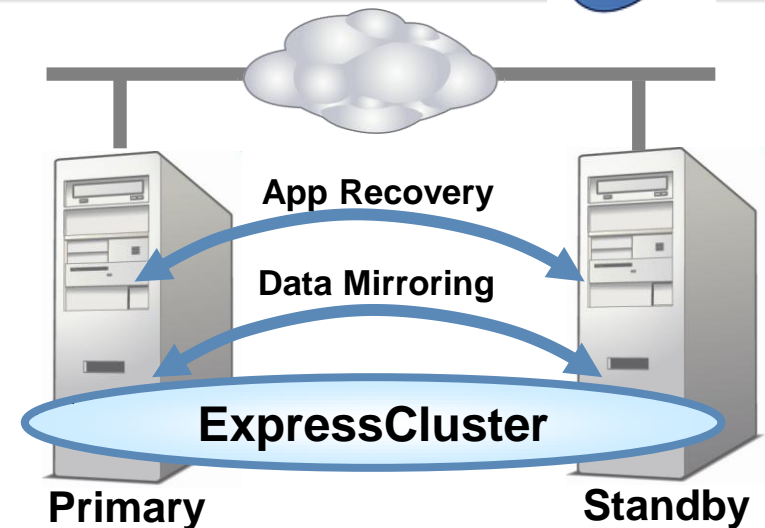
EXPRESSCLUSTER®

The Ultimate Application And Data Recovery Solution

www.ExpressCluster.com



Software for no-click fully automated recovery of critical application and data systems from hardware, software and site failures to avoid serious business disruption and damage



Key Benefits

- **Maximized Business Continuity and Resilience**
- **Minimized Revenue and Productivity Loss**
- **Prevention of Reputation and Brand Damage**
- **Assurance of Industry Regulatory Compliance**

Key Features

- **Fully Automated Local or Remote Recovery within Minutes of Failure**
- **Integrated Application and Data Protection and Recovery**
- **No Shared Storage or Domain Infrastructure Required**
- **Support Virtual and Physical Systems in Cloud and On-Premise**

System Continuity Concepts

*ExpressCluster
target market*

**Business Critical
Applications and Data
Recovery**

Wks Days Hrs **Mins** Secs **Secs** **Mins** Hrs Days Wks

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**Failure
Point**

Recovery Point

Recovery Time

- **Recovery Point Objective (RPO)** – Point in time to which applications data must be recovered to resume business transactions

*How far back from **Failure Point** must system state be recovered?*

- **Recovery Time Objective (RTO)** – Maximum elapsed time required to complete recovery of application data

*How long from **Failure Point** does it take to recover system?*

OUTAGE IMPACT = RTO + RPO

Market Demand Drivers

Rising Business Impact of Downtime

Hourly Downtime Cost

Brokerage Operations	\$6.5M
Credit Card / Sales Authorization	\$2.6M
Pay-Per-View Television	\$150K
Home Shopping Television	\$113K
Home Catalog	\$90K
Airline Reservations	\$90K

Service Disruption



Customer Frustration



Lost Revenue/Profit



Increased System Failure Risks Gartner Dataquest, 2007

- More Commodity Hardware (disk, power supply, adapters)
- More Complex Software (memory leak, OS panic)
- Application/Server Consolidation & Virtualization

Natural and Man-made Disasters

- Terrorism/Sabotage
- Network Disruption
- Earthquakes



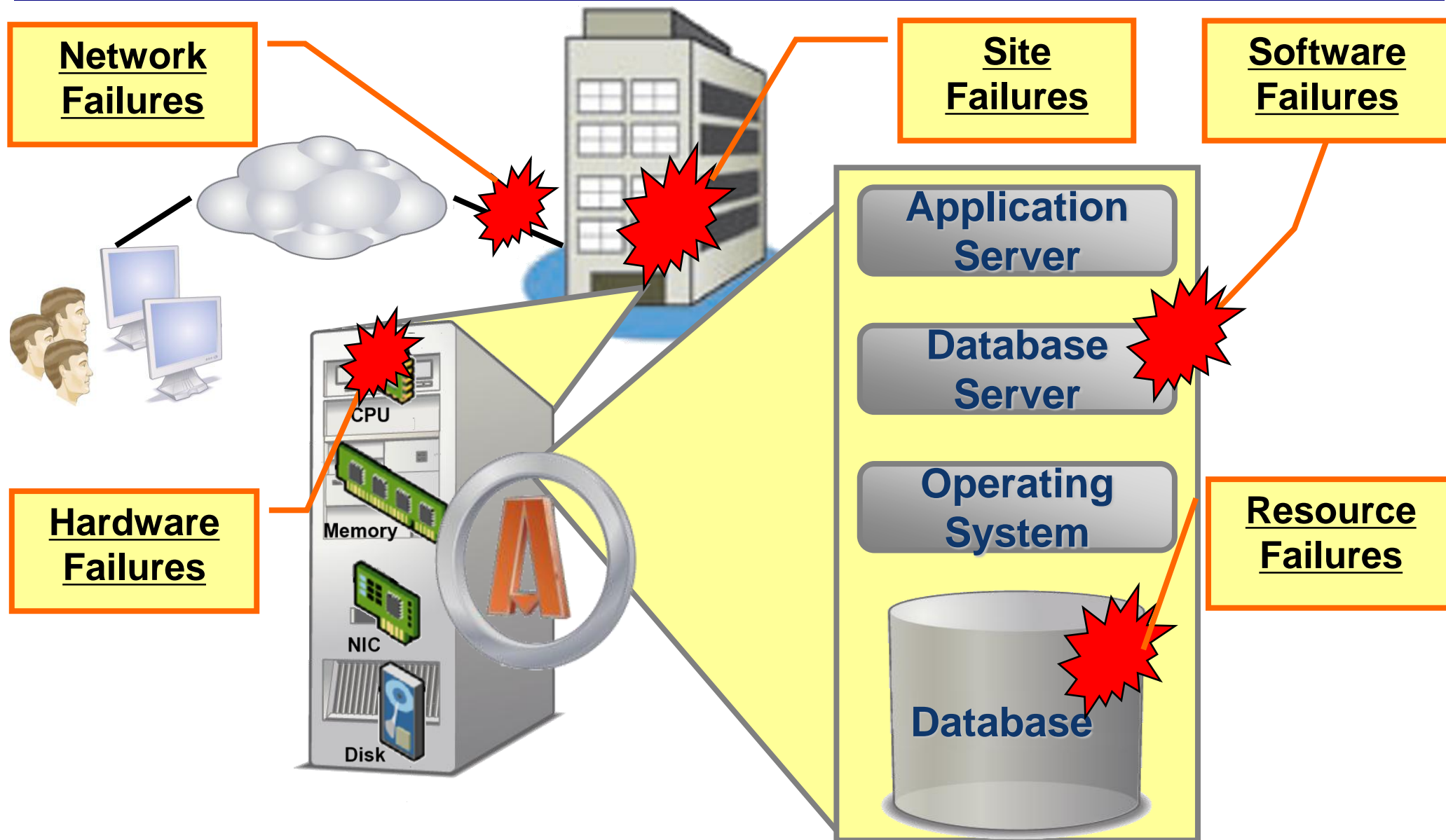
Regulatory Compliance

- HIPAA & Sarbanes-Oxley

SEC Interagency Paper (File No. S7-32-02) calls for organizations to have a 200- to 300-mile separation between primary and backup sites

Application System Continuity Challenges

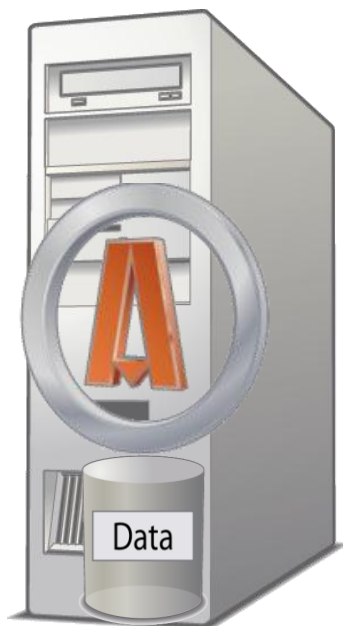
Many Potential Points of Failure



Comprehensive Application System Continuity

Typical Application System

- Many SPOF's
- Slow App Recovery (hours/days) with Data Loss
- High Business Disruption Risk



Comprehensive Continuity Software

- Protects App and Data
- Automated App Recovery without Data Loss
- Simplified Deployment and Management



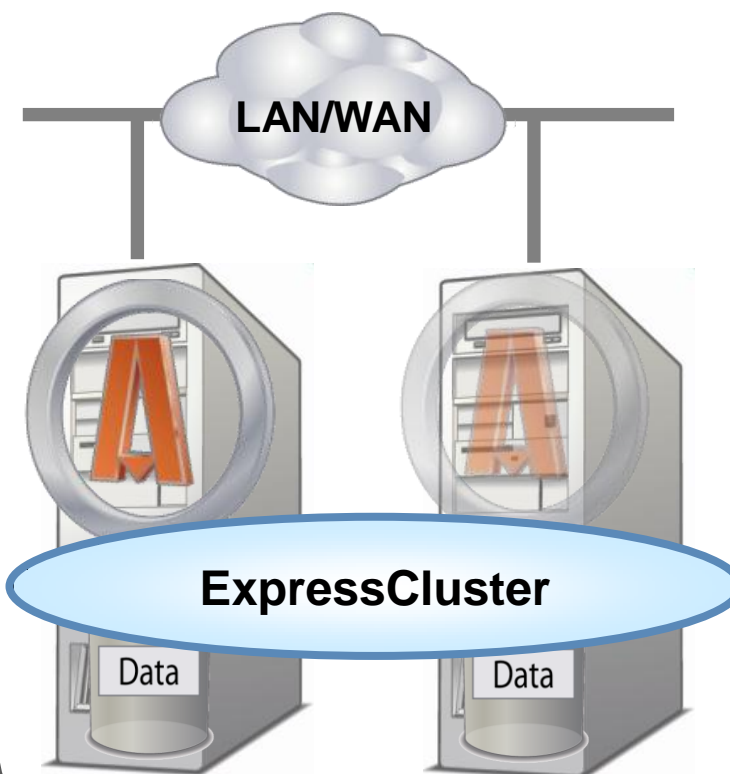
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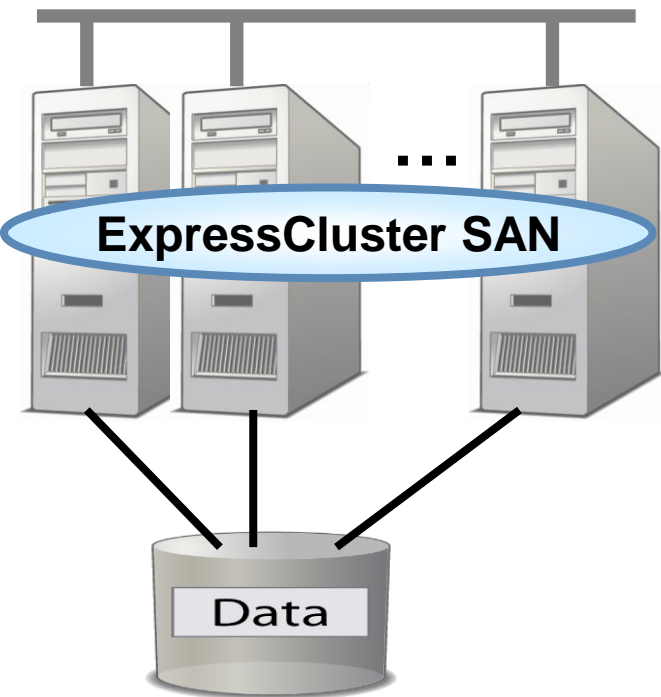
Highly Resilient Application System

- Eliminates SPOF's
- Fast App Recovery (minutes) with No Data Loss
- Minimized Business Disruption Risk



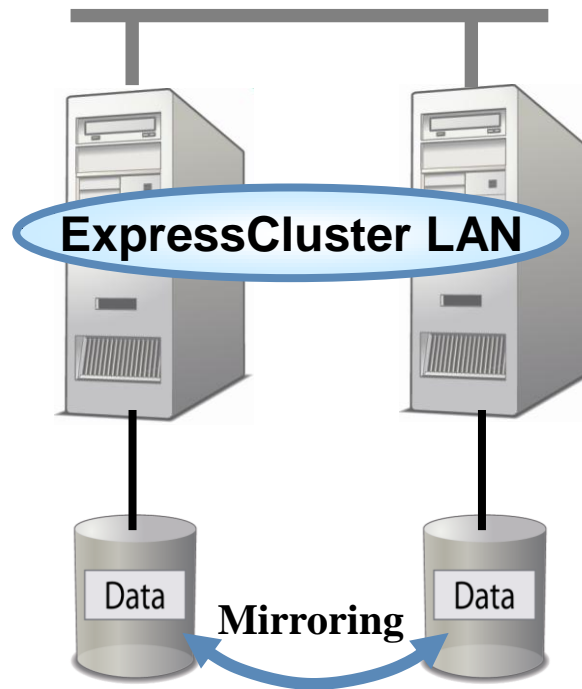
Core ExpressCluster Product Line

ExpressCluster SAN



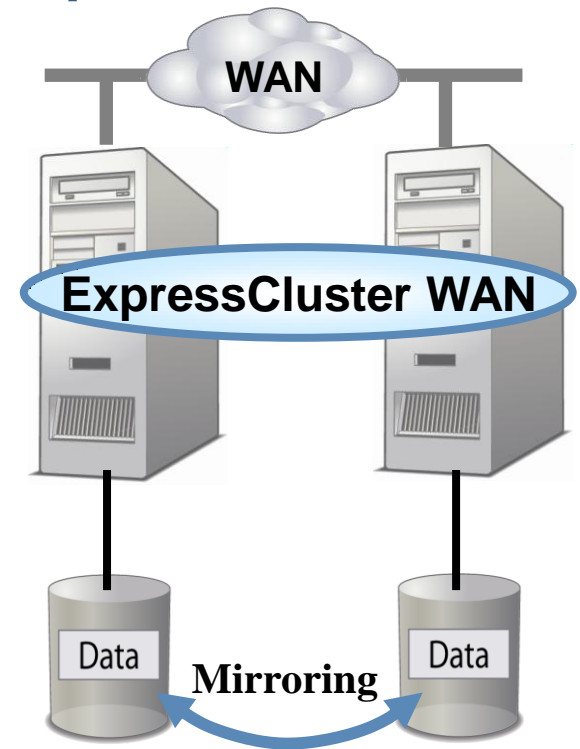
- **Shared-Disk LAN Cluster**
 - Local HA recovery with shared data storage
 - JBOD/SAN/NAS shared storage support
 - Scalable data center high availability solution

ExpressCluster LAN



- **Mirrored-Disk LAN Cluster**
 - Local HA recovery with mirrored data storage
 - Synchronous data mirroring over LAN
 - Low cost departmental high availability solution

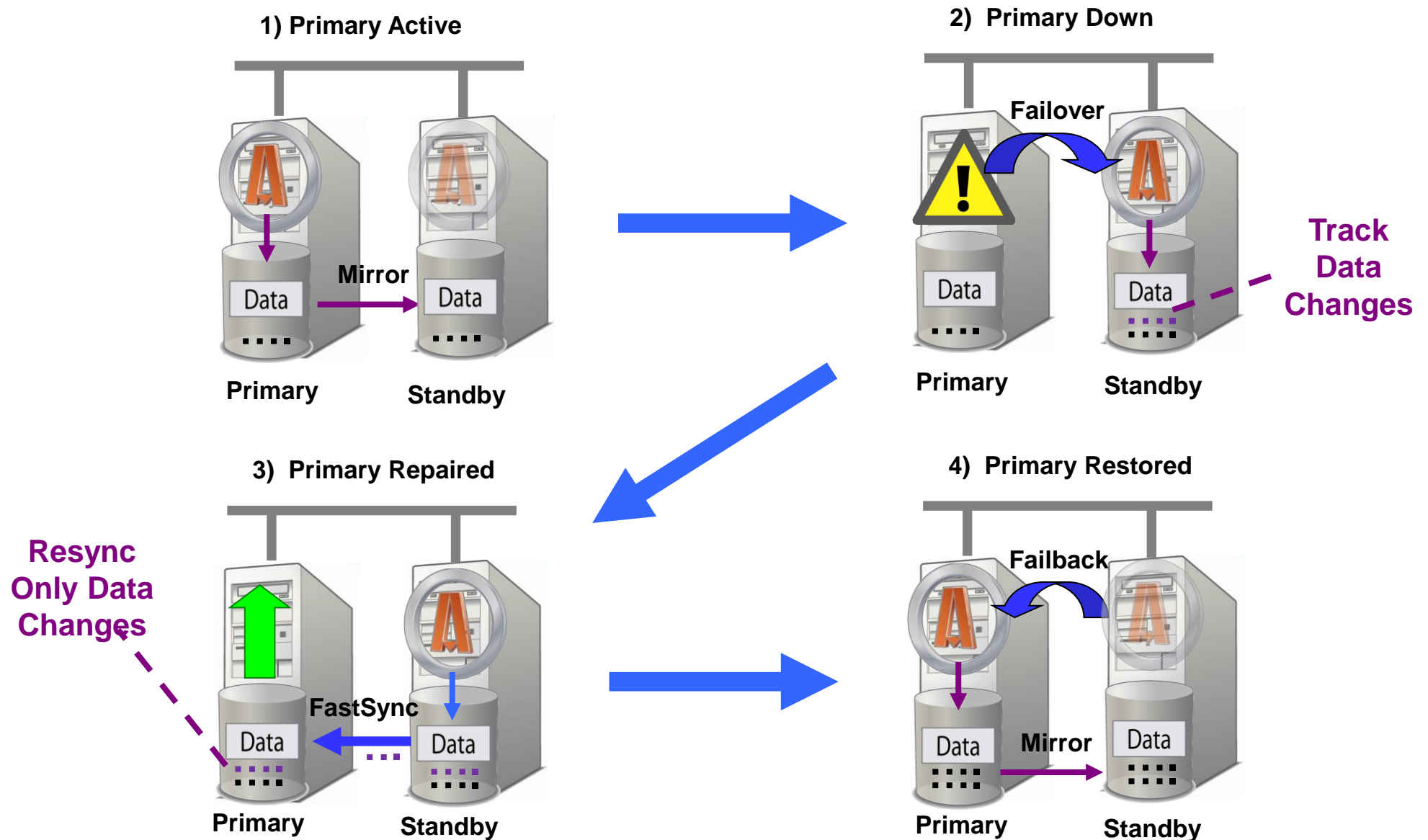
ExpressCluster WAN



- **Mirrored-Disk WAN Cluster**
 - Remote DR with mirrored data storage
 - Synchronous and asynchronous data mirroring over WAN
 - Comprehensive disaster recovery solution

Minimize Unplanned Downtime

Fast Automatic Recovery From HW, SW and Site Failures

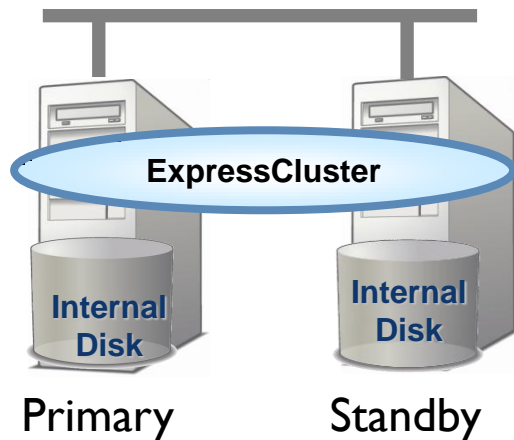


Simplified Infrastructure and Reduced Failure Risks

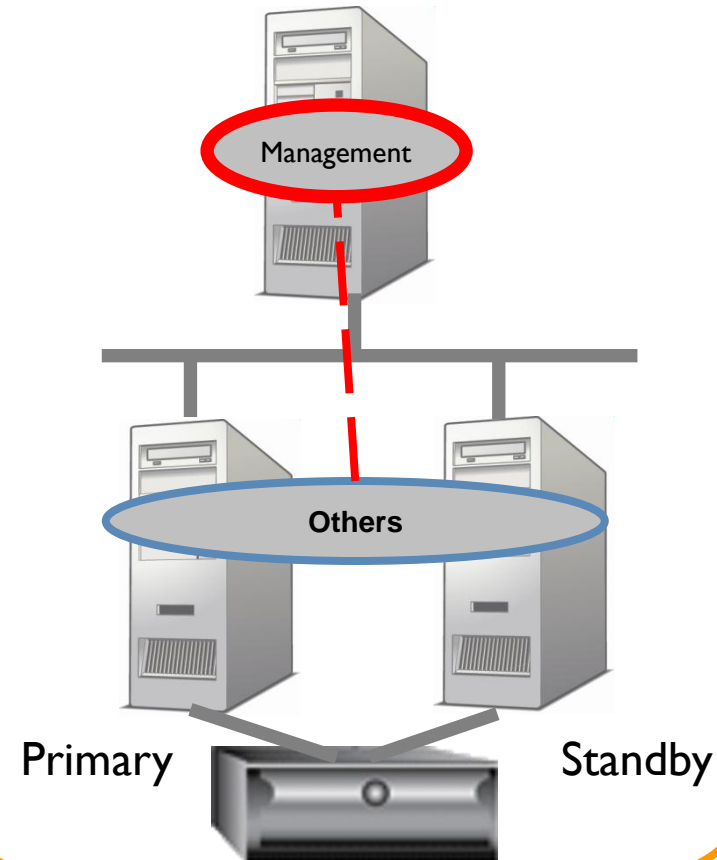
Minimum Infrastructure Requirements and Dependencies

Extra Management Complexity and Single Point of Failure

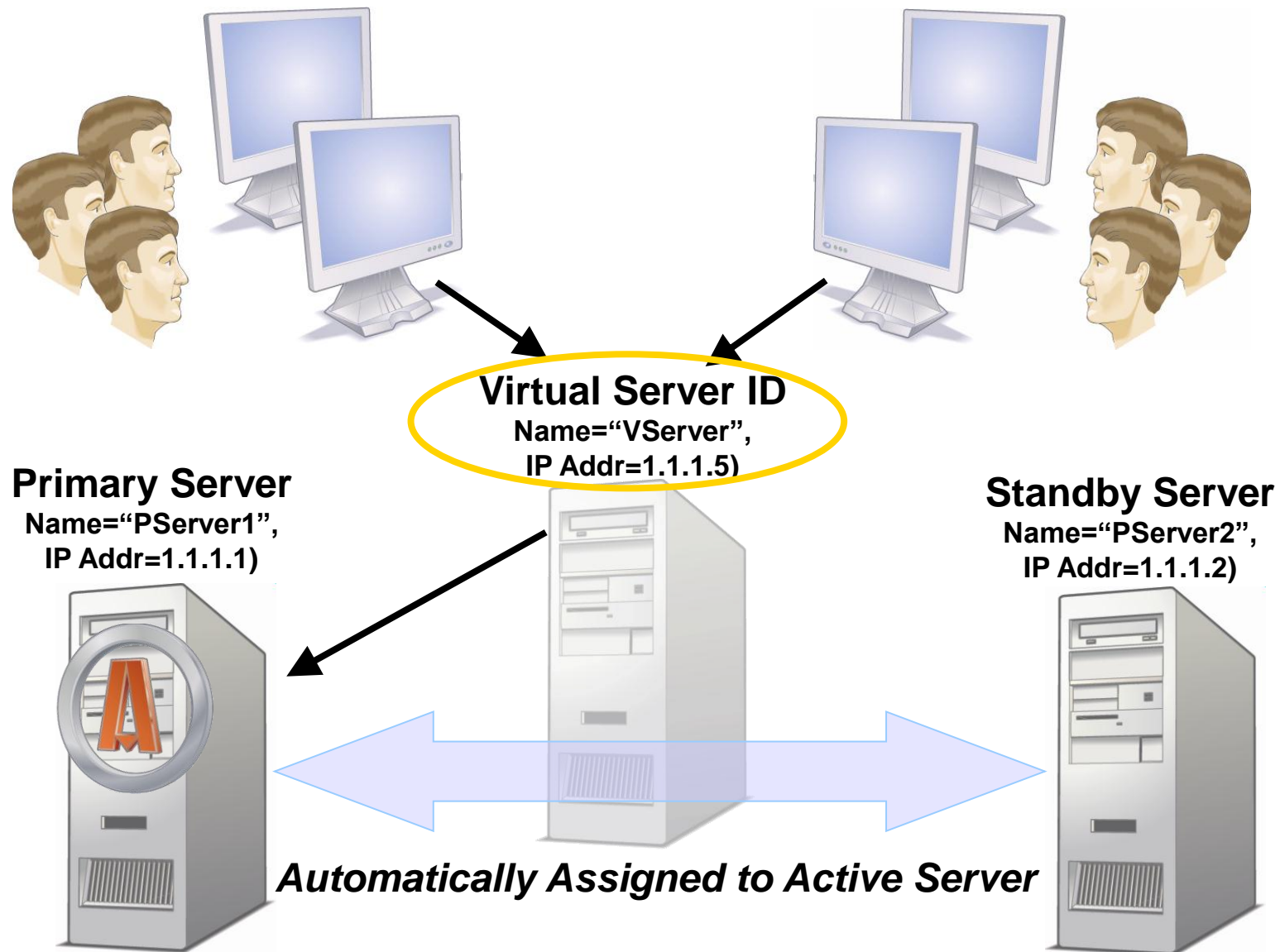
ExpressCluster



Others

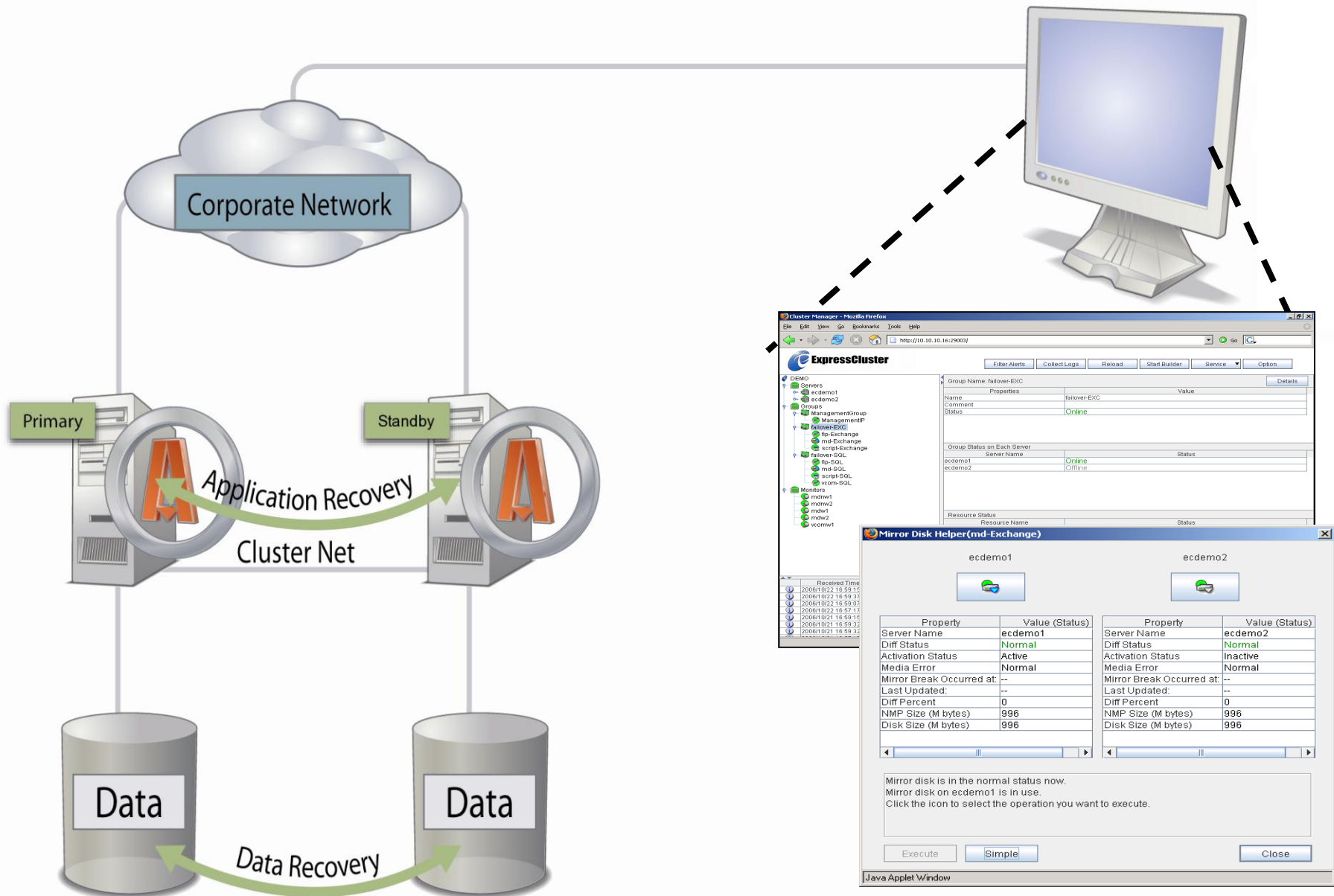


Eliminates Client System Reconfiguration



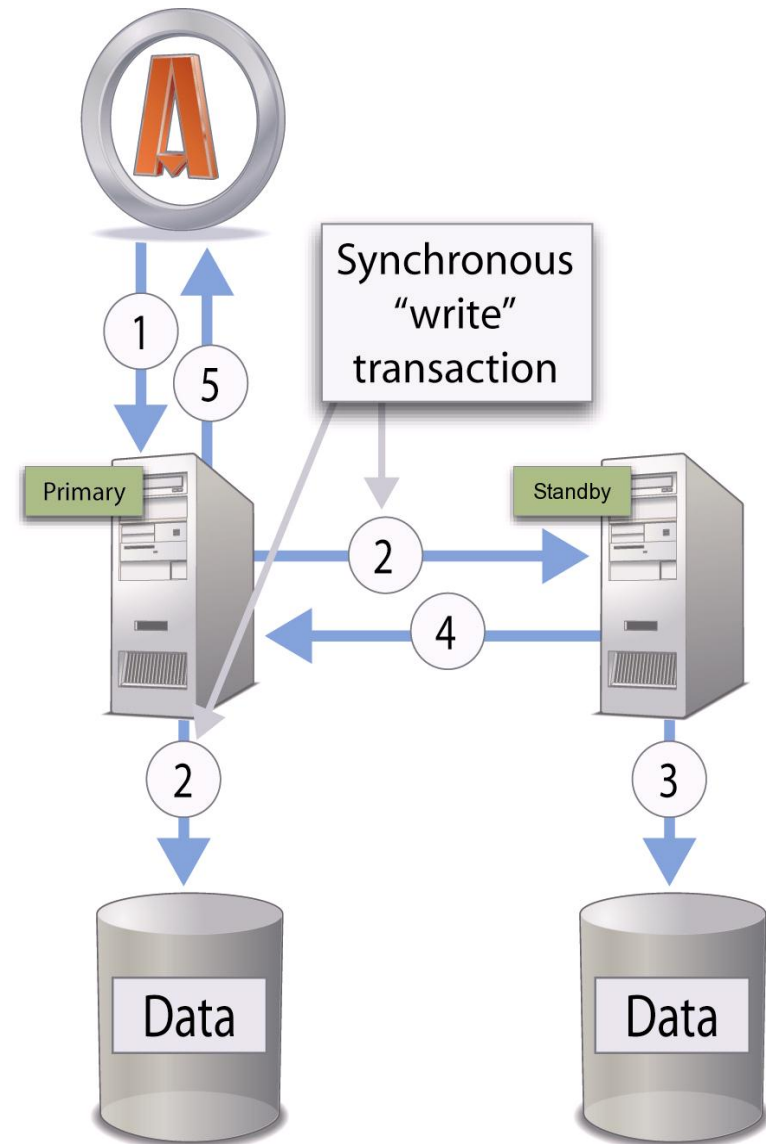
Integrated Application and Data Recovery

Minimized Deployment and Operational Costs



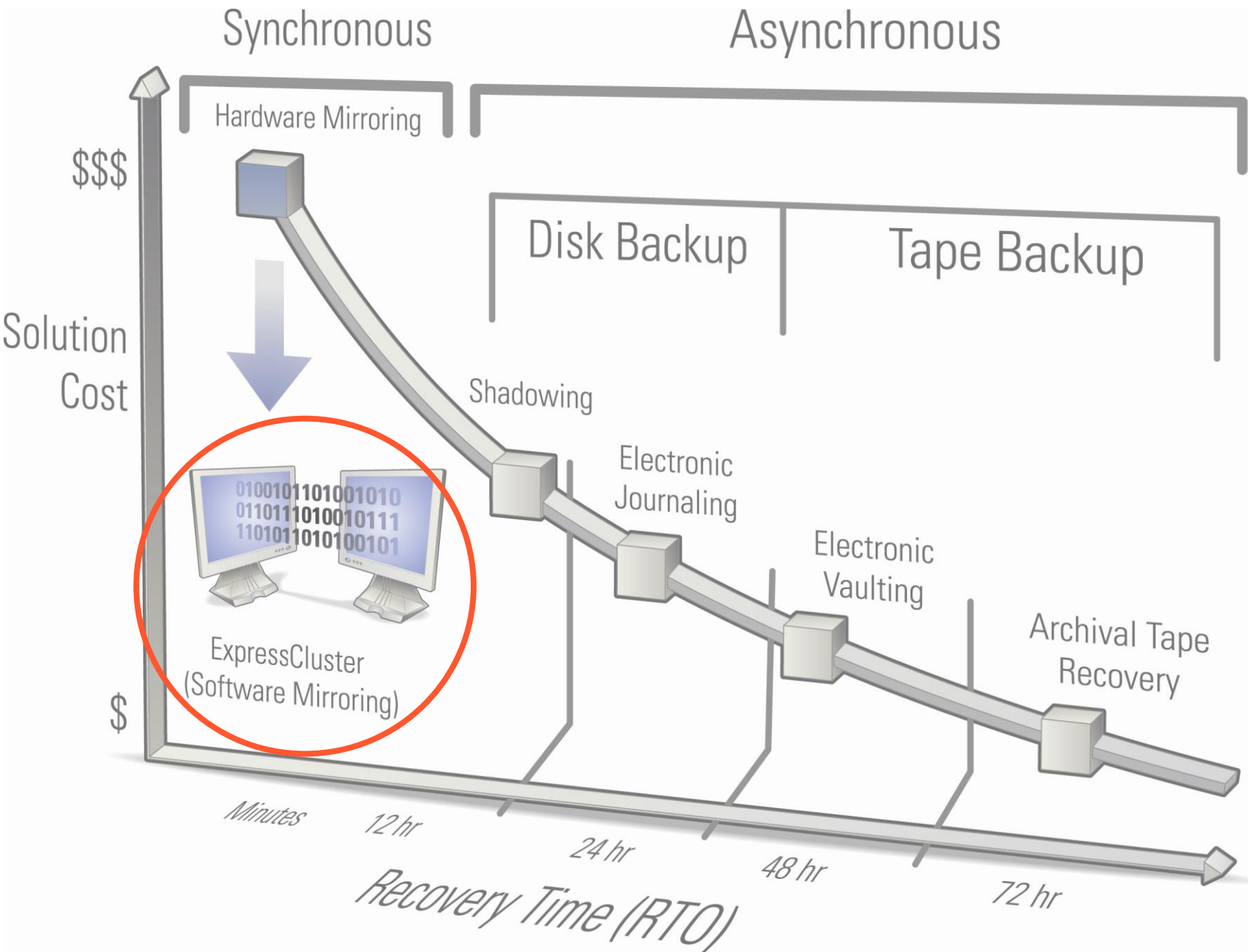
Full Data Protection in LAN and WAN Environment

- 1) Primary receives a “write” request from App
- 2) Primary writes data to disk and forwards write data to Standby.
- 3) Standby writes data to its own disk.
- 4) Standby sends the result to Primary.
- 5) Primary receives the result from Standby and returns the result of the “write” back App.



Superior Data Protection Value




WAN/LAN






ExpressCluster Summary

Integrated Application System Continuity Solution




Superior Performance

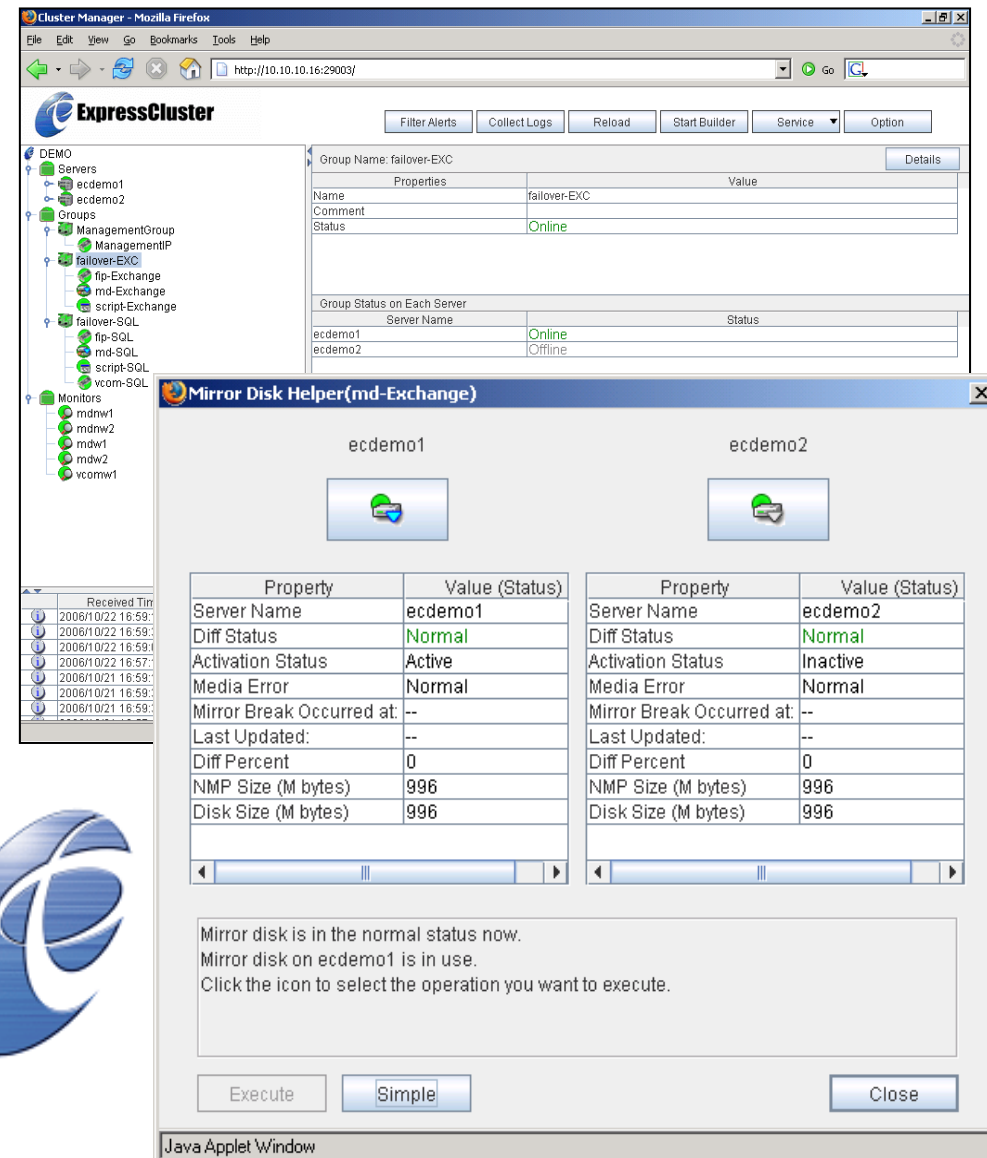
-  Fast and automated system recovery
-  Quick and easy recovery testing
-  Real-time data mirroring and change tracking for fast resynchronization

Superior Usability

-  Unified management of all protected applications and data stores
-  Transparent recovery requires no client reconfiguration
-  Hypervisor and system management integration

Superior Cost of Ownership

-  Standard OS/applications support
-  Low bandwidth network support
-  Active/active configurations support



Cluster Manager - Mozilla Firefox

ExpressCluster

Group Name: failover-EXC

Properties	Value
Name	failover-EXC
Comment	
Status	Online

Server Name	Status
ecdemo1	Online
ecdemo2	Offline

Mirror Disk Helper(md-Exchange)

Property	Value (Status)
Server Name	ecdemo1
Diff Status	Normal
Activation Status	Active
Media Error	Normal
Mirror Break Occurred at:	--
Last Updated:	--
Diff Percent	0
NMP Size (M bytes)	996
Disk Size (M bytes)	996

Property	Value (Status)
Server Name	ecdemo2
Diff Status	Normal
Activation Status	Inactive
Media Error	Normal
Mirror Break Occurred at:	--
Last Updated:	--
Diff Percent	0
NMP Size (M bytes)	996
Disk Size (M bytes)	996

Mirror disk is in the normal status now.
Mirror disk on ecdemo1 is in use.
Click the icon to select the operation you want to execute.

Execute Simple Close

Java Applet Window

Case Study (Disaster Recovery) 1/2

US Government Agency SmartCard Access Control System

- Large space: 3.5 million square feet in Manhattan
- Far reaching: 35 federal agencies
- High volume: 13,000 employees and contractors

Critical Problems

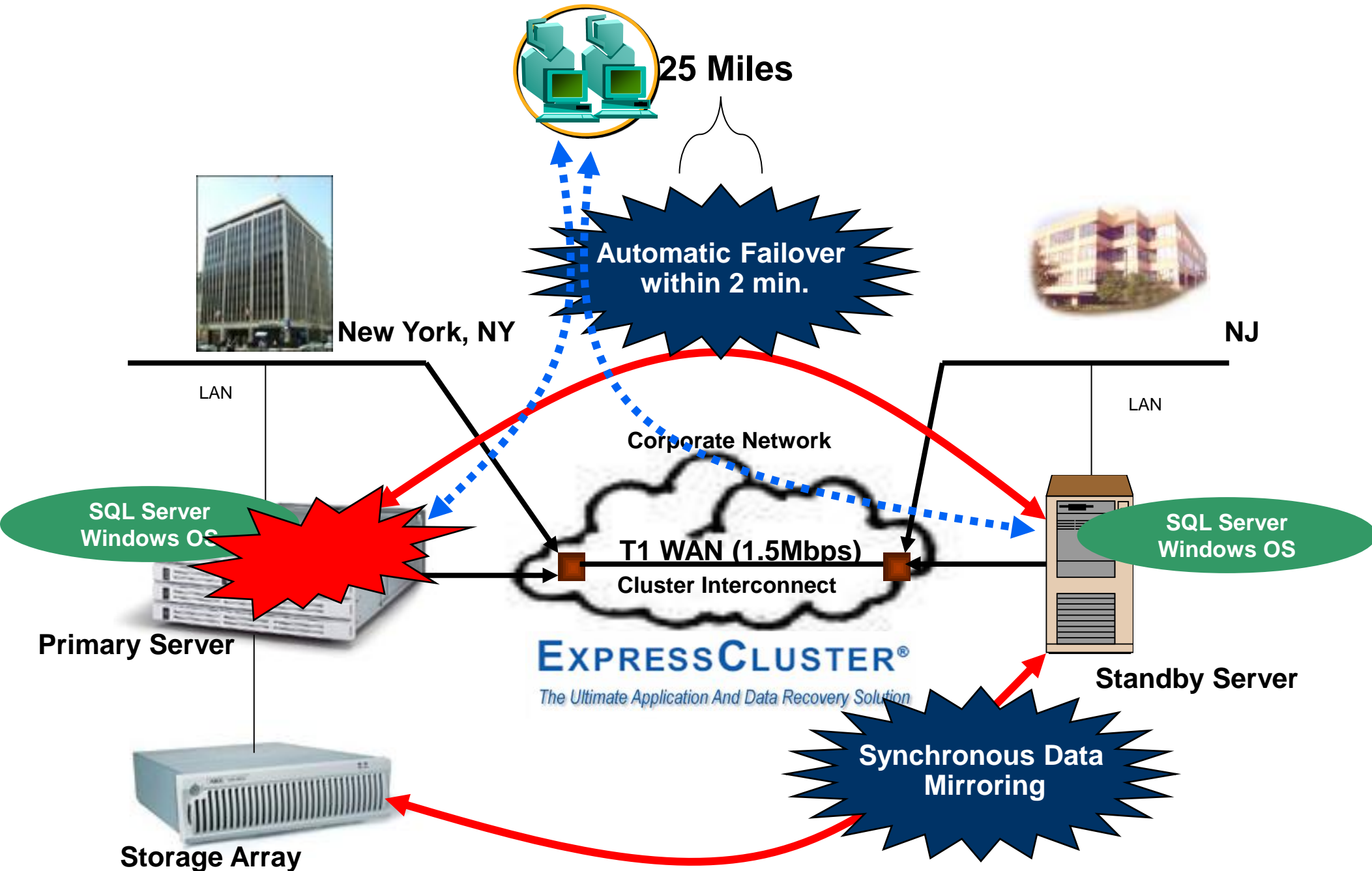
- The post-9/11 world requires enhanced access control security – fast disaster recovery is essential to ensure access control continuity
- Continuous monitoring and preservation of access event records are absolutely necessary for real-time and post-disaster analysis

Solution

- NEC ExpressCluster WAN
- 2-way Intel® Xeon® Servers
- Security Mgmt Application



Case Study (Disaster Recovery) 2/2



Thank You !