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## **Successful Application of NEC High Availability Cluster Product to a Telecom Exchange 2003 System**

### **E-mail Systems for SMEs: Current Needs and Solutions**

E-mail systems are a vital communication tool for modern enterprises. Data indicates that over 30% of internet traffic is related to e-mail. Enterprise e-mail systems not only raise a company's profile, but bring financial benefits as well.

This document is about a cutting edge mobile phone wireless positioning/real time navigation company that has already built partnerships with wireless service providers around the world. The company provides a diverse range of GPS services under the motto "A world leader at the cutting edge of mobile GPS".

### **Needs Analysis:**

This telecom company's exchange system faced four major problems:

1. Hardware malfunctions: single points of failure and particularly frequent disk drive failures
2. Complex system maintenance: frequent needs for upgrades, patches, and other repairs
3. E-mail system malfunctions: difficulty diagnosing e-mail system problems that obstructed normal use
4. Long disaster recovery times: recovery took at least a day, severely disrupting normal e-mail usage

The company decided to buy a high performance/price ratio software suite to solve these problems, and, after a rigorous search, decided on NEC's high availability EXPRESSCLUSTER software.

## NEC High Availability Cluster Middleware EXPRESSCLUSTER X1.0 Mirror Version

To prevent single point failures and ensure stable operation, NEC has released its new generation of easy to use high availability software EXPRESSCLUSTER X1.0, which monitors software and hardware of all clustered servers, and, whenever an error is detected, switches to a working server, to achieve 24/7/365 uninterrupted uptime. EXPRESSCLUSTER X1.0 mirror products also automatically synchronize data to ensure consistency. (For details, please visit <http://www.nec-as.com.cn/>.)

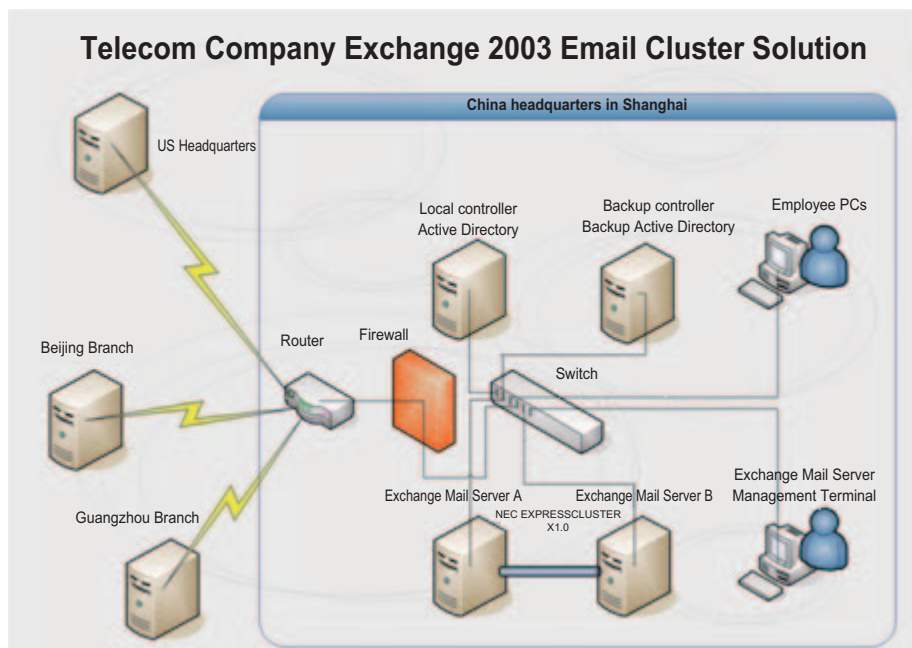
### System Design and Construction

The company's global headquarters is in the U.S., and the Chinese headquarters is in Shanghai, with branches in Beijing and Guangzhou, and domestic e-mail is managed in Shanghai. It's a circuitous, multinational corporate environment. By implementing the NEC EXPRESSCLUSTER X1.0 dual server mirrored solution, the difficulties related to the following were overcome:

1. Multiregional environment
2. Centralized management of numerous email archives
3. Frequent disk I/O (read/write) consuming system resources and affecting system performance

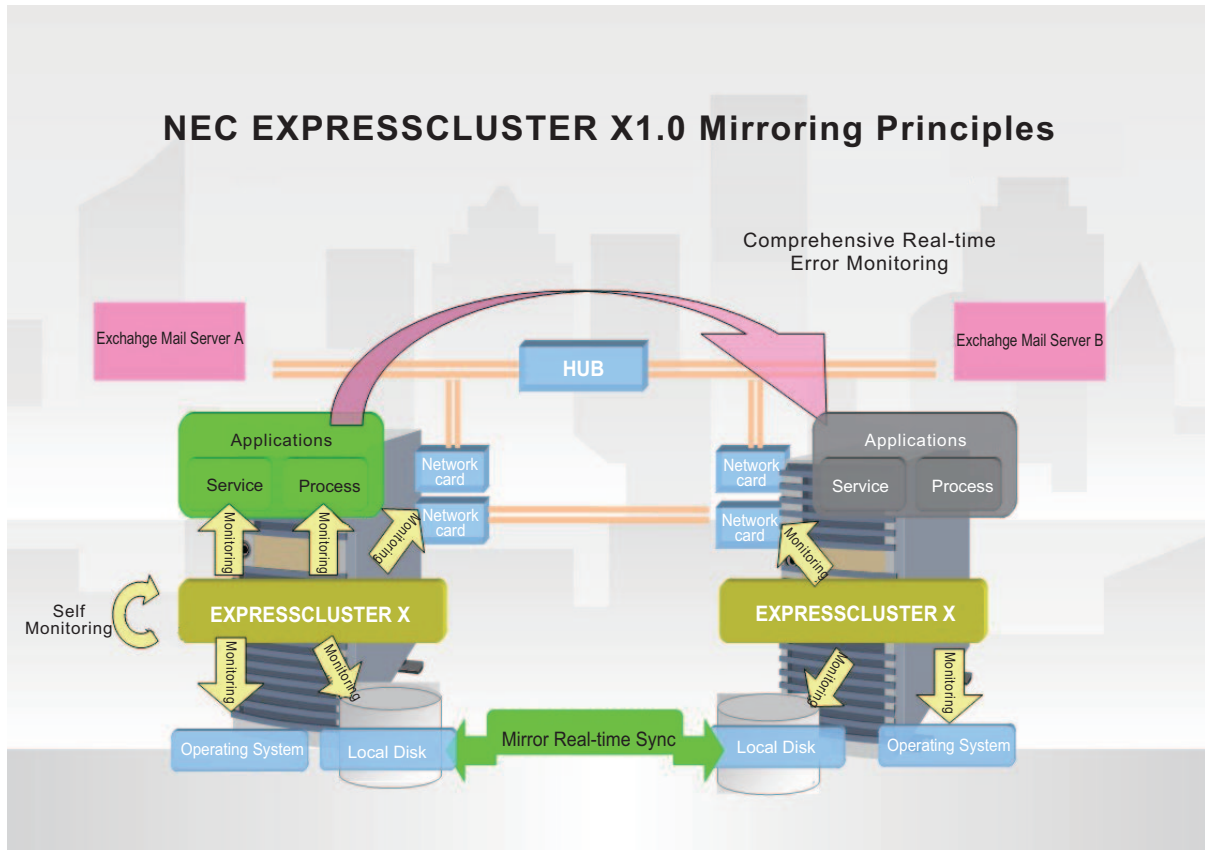
Based on specific customer e-mail server requirements, the following system was created:

#### 1. Network Topology Diagram:



The **NEC EXPRESSCLUSTER X1.0 dual server – mirrored** cluster solution provides real time hot backup and mirrored storage of data on different servers to prevent single points of failure and increase security and availability while providing centralized account management.

EXPRESSCLUSTER X 1.0 Mirroring Principles Diagram:



With mirrored architecture, servers can be located in different areas, and need not be directly connected with wires.

## 2. Network Equipment Table

➤ Hardware

Equipment	Model	Quantity
Server	NEC Express5800	3
Network Card	Intel 1000PRO	2 per server

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 ➤ Software

Operating System	Windows Server 2003 32-bit corporate edition
HA Software	EXPRESSCLUSTER X 1.0 for Windows 32-bit host  EXPRESSCLUSTER X Replicator 1.0 for Windows (32-bit)  Provide mirroring. Comes standard with high speed differential synchronization, which supports real time and asynchronous synchronization.
Application	Exchange Server 2003 32-bit

### 3. NEC EXPRESSCLUSTER Features

- Easy maintenance, with a standardized B/S based GUI, tree-type file system, and clear and easy to understand structure. Java based technology supports remote management and operation to make managers' jobs easier.
- Monitors server status and automatically switches if there is a malfunction
- Monitors e-mail server status and automatically switches if there is a stoppage or other irregularity
- Monitors network status and automatically switches if there is a malfunction
- Monitors disk status and automatically switches if there is an irregularity.
- Fast differential data synchronization only updates sections that are different, greatly decreasing synchronization volume and increasing speed and safety.
- Error reports: As soon as one of the above errors is detected, managers are notified via email to facilitate a rapid response.
- Support for remote mirroring: Asynchronous mirror replication supports single link low bandwidth environments, ensuring high quality mirroring.

#### Customer Evaluation:

The company's IT director Mr. Feng says, "NEC's EXPRESSCLUSTER has been a huge success in our company. It has stabilized our e-mail system, reduced our workload, and helped ensure the successful delivery of the 10,000+ e-mails that come in and out of the company each day. NEC's product support is particularly outstanding. The technicians from the EXPRESSCLUSTER support center provide friendly, meticulous service that helps us communicate with our customers more smoothly. We are extremely grateful for this piece of middleware."