Disaster-Proof Applications and Data

ExpressCluster® X WAN Edition
Unified HA/DR solution for fast, automated remote recovery of critical applications and data in physical and virtualized environments in cloud or on-premise data centers.

At a Glance

- Automated remote disaster recovery solution for physical and virtualized systems
- Continuous application monitoring and fast recovery over WAN
- Flexible synchronous and asynchronous data mirroring across WAN
- Unified disaster recovery management for multiple application systems
- Support for standard application, OS, virtualization hypervisor, and hardware for low TCO

Overview

NEC’s ExpressCluster® X WAN is an integrated application and data disaster recovery software optimized for Windows® and Linux® physical and virtual application systems. It offers continuous monitoring and fast recovery of application services, as well as real-time data mirroring and recovery, in various network environments—even low bandwidth and high latency wide area networks (WAN) over long distances.

Designed to minimize disruption of critical business services in the event of hardware, software, network and site outages, ExpressCluster X WAN provides application and file system independent data mirroring. Users are able to easily choose between synchronous and asynchronous data mirroring modes to meet a wide range of data protection and recovery needs, while efficient FastSync® data synchronization updates changed data.

Virtualization has helped organizations achieve new highs in resource optimization, even for business critical applications. However, virtualized on-premise or cloud systems often provide limited control of performance and availability due to extensive sharing of compute, storage, and network resources. As a result, avoiding downtime or data loss is an even greater priority. ExpressCluster X WAN can flexibly support such production virtual systems to mitigate the downtime risks.

The emergence of cloud infrastructure services is enabling a lower cost option for remote disaster recovery location and infrastructure. The built-in support of both physical and virtual infrastructure makes ExpressCluster X WAN ideal for automated disaster recovery from physical production systems to virtual standby systems running on low cost cloud infrastructure.

Solution

Integrated Disaster Recovery Solution

As the ultimate integrated disaster recovery solution, NEC’s ExpressCluster X WAN provides continuous protection of critical applications and data with near-instant recovery across WANs. Built on NEC’s award-winning and field-proven technology, it has helped customers worldwide maintain critical system continuity for over a decade. Unlike other solutions, NEC’s ExpressCluster X WAN dramatically simplifies the recovery process and reduces maintenance and operational costs.

ExpressCluster X WAN offers an easy-to-use, web-based management console accessible from standard browsers. With remote management capabilities that streamline the deployment and management of disaster recovery solutions, ExpressCluster helps to reduce the total cost of ownership (TCO) while greatly improving critical application and data availability and accessibility.
Virtual and cloud environments are often based on infrastructure that is more restrictive than traditional on-premise physical environments. ExpressCluster X WAN provides protection for virtually all standard applications and associated data without requiring source code changes or custom versions. The simplicity and flexibility of ExpressCluster make it well-suited for virtual and cloud environments.

ExpressCluster is flexible enough to support environments that range from physical data centers to cloud services settings, and can be used to protect applications from cloud to cloud. In virtualized and cloud environments, ExpressCluster can quickly restore cloud standby servers and storage, which lowers the cost of remote disaster recovery, reduces the impact of failures, and enables faster deployment of a high availability solution.

ExpressCluster X WAN ensures maximum system continuity through continuous application monitoring and data mirroring between primary and standby systems, which enables fast automated failure detection and recovery with little or no loss of stored data.

During the recovery process, ExpressCluster X WAN can assign the virtual host identity to the standby system. As a result, large numbers of client systems can transparently re-establish access to target applications without the time-consuming manual reconfiguration typically required to connect to a different host identity. Advanced virtual host identity management features, such as support for multiple server names across different sites throughout the WAN, maximize usability for client systems and users.

All application processes and resources, including mirrored data, are activated on the standby system so business critical applications and data are recovered within minutes instead of hours or days. Once the failed system is repaired, the system can be restored automatically to normal operating state without manual intervention. Administrators can also customize tasks, including system startup, shutdown and restart, based on business requirements.

Using synchronous mirroring technology, ExpressCluster X WAN ensures that no data committed to the mirrored disk on the primary system is lost achieving an effective Recovery Point Objective (RPO) of 0. If a failure occurs, users and applications can readily access an up-to-date copy of data on the standby system.

Asynchronous data mirroring differs from synchronous data mirroring by only waiting for the data write operations to complete to the mirrored disk on the primary system, but not the standby system. Instead, data write operations to the standby system are first queued then performed on a best-effort basis depending on system and network conditions. As such, less demanding network requirements come at the risk that some data will be lost if the primary system fails before the queued write operations to the standby system can be completed.

Unlike alternatives, ExpressCluster X WAN supports simultaneous use of synchronous and asynchronous data mirroring on different mirrored disks in the same system to allow for optimized data protection levels and network utilization. Users can easily change between synchronous and asynchronous data mirroring across multi-vendor internal disks and storage arrays.

Regardless of the data mirroring method used, ExpressCluster X WAN provides optimized data mirroring performance with the FastSync® feature, which enables fast data resynchronization by tracking data changes on the active system while the inactive system is unavailable. When the inactive system becomes available again, it can be quickly resynchronized with the active system by mirroring only the changed data with compression option.
Unified Local and Remote Recovery Solution

ExpressCluster X WAN provides an advanced option for hybrid disk configuration support. This solution offers both local high availability and remote disaster recovery capabilities for the fastest possible system recovery for different types of failures using a single unified solution.

For local system failures, such as hardware or software failures on the primary system, ExpressCluster X WAN performs automated recovery to a local standby system at the same site with access to the same shared external storage system as the primary system. For site-wide failures, such as site network disruption or facility disasters, automated recovery will be performed to a remote standby system at the remote standby site with access to the mirrored data.

Easy Workload Migration

For planned downtime mitigation, ExpressCluster X WAN can be used to easily move application and data workloads between systems with minimal disruption and still allow planned maintenance on all systems to be performed with little or no restrictions. For virtual systems, ExpressCluster can even utilize the virtualization hypervisor to perform migration without any disruption. ExpressCluster X WAN can effectively eliminate the need to schedule extended planned downtime during off-business hours for maintenance purposes. Planned system downtime can be reduced from hours to minutes.

System Requirements

<table>
<thead>
<tr>
<th>Operating System*</th>
<th>CPU &amp; Memory</th>
<th>Disk &amp; Network Interface</th>
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<td>Microsoft® Windows Server®</td>
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Network Requirements

- The network infrastructure connecting all cluster servers must meet the following requirements:
- Cluster Interconnect Network
  - 1 IP network connecting the servers
  - For synchronous disk mirroring, maximum network roundtrip latency between servers of 70ms or less
  - For asynchronous disk mirroring, maximum network roundtrip latency must be low enough to support sustained disk data write rate
  - For synchronous disk mirroring, minimum available bandwidth of 1.5Mbps or more
  - For asynchronous disk mirroring, minimum available bandwidth must be high enough to support sustained disk data change rate
- Cluster Public Network
  - One IP network connecting the servers

Available Options

- Database Server Agent
  - Proactively monitors proper functional state of database servers and initiates recovery in case of malfunction.
- Internet Server Agent
  - Proactively monitors proper functional state of web and email servers and initiates recovery in case of malfunction.
- Hybrid Disk Option
  - Enable recovery to local standby server with shared disk protection and recovery to remote standby server with mirrored disk protection.
- Alert Service Option
  - Enables SMTP email alert notification for specific events, (e.g., failover and resource failure) selected by user configuration.

Some features may not be available on all operating environments.

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