Integrated Server / SAN Platform

For Energy-Efficient Video Surveillance Applications

ARCHITECTURAL & ENGINEERING SPECIFICATION

Introduction

The following specifications represent the baseline features necessary for a scale-out, flexible video surveillance platform that offers both NVR server and SAN shared storage functionality for optimal energy efficiency.

1. Required Server and SAN Storage Functionality

a. The hardware platform shall have the ability to run video management applications concurrently with shared storage on a common hardware platform whereby;
   i. Separate physical NVR servers are not required.
   ii. Separate physical failover NVR servers are not required.
   iii. Power and cooling for both server and storage functionality is contained within a common 2U platform.
   iv. Rack and floor space for both server and storage functionality is contained within a common 2U platform.
   v. Video management system applications running on each integrated platform shall have access to the combined capacity of the storage in all platforms that are clustered together.
   vi. Video management system applications running on each integrated platform shall have access to the combined bandwidth of the storage in all platforms that are clustered together.

b. The integrated NVR/SAN platform shall support automated video management system application recovery to reduce downtime.
   i. Both storage and server operations must be resilient to an appliance failure.
   ii. Failover of the server application must be automatic in the case of an appliance failure.

c. The integrated NVR/SAN platform shall support Windows Server 2003.

d. The platform shall support Microsoft Storage Server 2003 for optional NAS share access

2. Basic Storage configuration

a. Storage shall be addressable by multiple servers or hosts.

b. Storage shall be IP attached via Gigabit Ethernet using commonly available networking configurations and equipment.
c. Storage shall be SATA-based for cost effectiveness.
    i. Storage system shall support access for up to 128 Microsoft servers
d. Storage system shall be UL and CE certified.
e. Storage system shall conform to and be deployable in industry standard 19” rack configurations.
    i. Storage system shall support at least 12TB raw storage per 2U (3.5”) of vertical rack space.

3. Availability

a. Storage system shall support high availability with no single point of failure causing loss of data or interrupting access to data.
    i. Storage shall protect data for up to three simultaneous disk failures with no loss of data or loss of access to data.
    ii. Storage shall protect against loss of a storage appliance or controller with no loss of data or loss of access to data.
    iii. Storage shall protect against loss of a networking path between servers and storage, including network interface card, cables and switches, with the ability to dynamically reroute IO activity to an alternate network path.
b. Storage shall support dynamic replacement of hardware components without interrupting access to data.
    i. Storage shall support the ability to replace disk drives without the need to interrupt data access.
    ii. Storage shall support the ability to replace power supplies without the need to interrupt data access.
    iii. Storage shall support the ability to replace fan modules without the need to interrupt data access.
    iv. Storage shall support the ability to replace entire appliances without the need to interrupt data access.
    v. Storage shall support the ability to replace network switches without the need to interrupt data access.
c. Storage shall support dynamic management features to insure continuous data access.
    i. Storage shall be expandable by the addition of disk capacity without the need to interrupt data access.
    ii. Storage shall be expandable by the addition of processing capacity without the need to interrupt data access.
    iii. Storage shall be expandable by the addition of network bandwidth without the need to interrupt data access.
    iv. Storage shall support the ability to dynamically alter data protection options (RAID level) without the need to interrupt data access to the affected data.

d. Storage shall provide flexible, selectable data protection options.
    i. Storage shall provide RAID 6 data protection for critical data protection environments.
    ii. Storage shall provide RAID 5 data protection for storage-efficient protection.
    iii. Storage shall provide RAID 1 data protection for higher IO performance data protection.
    iv. Storage shall allow for a no-data-protection option (RAID 0) for non-critical, reproducible data.
    v. Data protection options shall be selectable and configurable on a volume-by-volume basis.
e. Storage system shall provide advanced data recovery methods to maximize data availability.
    i. Storage systems shall include dynamic sparing capability to allow immediate rebuilding of failed drives.

4. Scalability

a. Storage system shall be scalable in capacity, supporting a single volume growth to 144TB.
    i. Capacity shall be added to the system in modular increments of 12TB.
    ii. Capacity scaling shall be non-disruptive allowing new capacity to be dynamically added to the system without interrupting access to data.
    iii. Physical capacity added to the system shall be configurable into new volumes or added to existing defined volumes without the need to interrupt data access.
b. Storage I/O performance shall be scalable.
    i. Support up to 12 controllers; complete Active/Active.
    ii. Support up to 48GB controller memory (cache).
    iii. System shall support a minimum throughput of 200 Megabytes per second and 30,000 IOs per second.
    iv. System shall allow additional bandwidth and IO processing to be configured scaling to at least 24 Gigabits per second throughput and 360,000 IOs per second.
    v. Addition of I/O performance capability shall be non-disruptive and not require data access to be interrupted.
c. Storage system shall support multiple storage hosts without the requirement for additional host software license charges.
d. Storage system shall support future capacity expansion with newer technology.

5. Management

a. System shall provide an easy-to-use graphical management capability.
    i. System shall self-discover its hardware configuration.
    ii. System shall provide capacity and performance usage statistics.

b. System shall allow dynamic configuration of volumes.
   i. System shall allow volume attributes including RAID type and volume size to be dynamically alterable without interruption of data access.
   ii. System shall have the ability to prioritize data migration versus data access and to have that priority dynamically alterable before and during data migration.
c. System shall provide administrator security controls.
d. System shall include a scriptable Command Line Interface.
e. System shall include advanced maintenance and manageability features.
   i. System shall log configuration changes and system events.
   ii. System shall detect drive failures and graphically (via GUI) and physically (via lights) identify the failing drive.
   iii. System shall provide an audible alarm option.
   iv. System shall detect controller failures and graphically identify the failing controller.
   v. System shall conduct background disk data verification to insure maximum data availability.
   vi. System shall have the ability to prioritize data recovery versus data access and to have that priority dynamically alterable before or during data recovery.
   vii. System shall have the ability to prioritize recovery tasks by volume.
f. System shall include SNMP management support

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