SoleraTec™ Surveillance Video Vault™ provides exceptional video surveillance data capture, management, and storage in a complete solution powered by exceptional Fujitsu products. Video surveillance has become critical for many environments and this Fujitsu powered solution provides finance companies, transit authorities, police departments, educational institutions and others with the robust efficient foundation they can trust.
Surveillance Video with Scaled Solutions

Many organizations have a need for an integrated professional video surveillance solution that can scale as the requirements change. Fujitsu hardware, combined with the SoleraTec Phoenix RSM™ video management software, provides the ideal solution to the challenges of handling large quantities of video data that surveillance requires. The live-view feature provides staff members with an immediate video view of the covered areas, while the original video is preserved for the long-term requirements that are often imposed by regulatory agencies. This provides for detailed investigations should there be a dispute or crime discovered. By retaining the detailed original data, while providing low resolution live viewing, the solution delivers high customer value with significant risk reduction.

Fujitsu products provide the foundation for effective use of the SoleraTec Phoenix RSM surveillance management solution software. This is a highly reliable, scalable solution available without the complexity of competing solutions.

SoleraTec Phoenix RSM™

Phoenix RSM by SoleraTec provides an advanced surveillance video and storage management software suite that delivers ultra-fast search and video playback. It supports live viewing and forensics-based software that provides complete surveillance video management. The Phoenix RSM video management system seamlessly integrates all components from the camera, to any number of storage devices. It supports extensive camera compatibility, as it can connect and configure any Real Time Streaming Protocol (RTSP)-enabled IP camera. In addition, it has an unlimited live video matrix, with the ability to view 36 channels per display simultaneously.

The Phoenix RSM solution manages unaltered high resolution original video and creates low resolution companion video (a small fraction of the original size), and then implements storage policies to replicate and migrate the video to and from a storage device, with no data loss. It manages a multi-tiered solution, meaning that it has a scalable architecture and can manage multiple storage devices. With the low resolution companion video, archives are active and available when the video is located online, near-line, or offline. There is no cumbersome process of video backup and restore that traditional single-tiered systems are forced to use.

Fujitsu Servers PRIMERGY®

The FUJITSU PRIMERGY® RX2530 M1 server has been chosen for this solution. As a 1U rack server it delivers high performance, expandability, and energy efficiency. High performance is ensured by using Intel® Xeon® E5-2690v3 processors (either one or two). The FUJITSU PRIMERGY RX2530 M1 server supports up to 768GB memory, with the specific amount chosen for the size of video surveillance solution configured. Either 4 x 1Gbps Ethernet ports or 2 x 10Gbps Ethernet ports are available for connection of the camera network. Two 8Gbps Fibre Channel ports are used to connect to the Fujitsu ETERNUS® Storage Array. The Fujitsu Cool-safe® Advanced Thermal Design enables higher ambient temperatures coupled with the power supply units operating with 96% energy efficiency, leads to lower costs in power and cooling within the data center.

Fujitsu ETERNUS® Storage Arrays

The Fujitsu ETERNUS DX100 S3 Storage Array has been chosen for the smaller solution configurations, while the ETERNUS DX200 S3 Storage Array has been chosen for the larger solutions. The storage capacity is determined by the number of cameras and the retention...
White paper Surveillance Video Vault Powered by Fujitsu

policy required by the application. The ETERNUS Storage Arrays provide a wide selection of drive arrangements, types, and sizes. For the video surveillance solution, extremely high data rates are not required, so large capacity Nearline SAS drives in either 4TB or 6TB sizes provide a very effective balance between capacity, performance, and cost. When the retention policies indicate that the data must be available on-line for an extended period of time, large Nearline drives configured in RAID6 double protection groups are available to provide economical ready-access storage.

Both the ETERNUS DX100 S3 and DX200 S3 Storage Arrays are provided with dual controllers for redundancy to ensure storage availability in the event that a component failure occurs.

Tested System Configurations

In this white paper we describe a tested configuration used to support up to 200 cameras of mixed resolution. However, a design for any number of cameras and retention period can be quoted by your sales representative.

The tested configuration contained the following components:

1. RX2530 M1 PRIMERGY Server
   a. 1 x Intel® Xeon® E5-2690v3
   b. 16GB Memory
   c. 2 x 10Gb Ethernet ports
   d. 2 x FC ports

2. ETERNUS DX200 S3 Storage Array
   a. 8 x RAID6(4+2) 4TB Nearline SAS disk drives
   b. 114TiB User Space
   c. 4 x FC ports

The configuration is shown below in Figure 1:

![Configuration servicing up to 200 Cameras with 25 days of retention](image)

Figure 1 – Tested Configuration Options for 200 Cameras

The 200 cameras of mixed resolution generated 400Mb/s network traffic, which was easily handled by the 2 x 10Gb Ethernet ports in the configuration. The ingest rate of the cameras generated 50MB/s traffic to the storage array; again, this was easily handled by the RAID Groups on the storage array.

The Phoenix software was configured with a single vault with the following settings:

1. 20 x drives configured to handle ingest of the cameras
2. 20 x media of 5.5TB to contain the camera data
3. All media configured on a single file system
4. Hard link enabled for ingest of video
5. Vault is purged at 95%

Testing of this configuration provided 25 days of retention for the cameras.

The storage performance is shown in the following charts:

![Figure 2 – Disk Performance](image1.png)

![Figure 3 – Storage Throughput](image2.png)

As we can see from the disk busy rates, there is plenty of room for growth with the current 200 cameras in the configuration. Additionally, the ETERNUS DX200 S3 allows growth in the number of disks which would increase the retention period of the data.
Conclusions

In conclusion, we can see that the combination of the Fujitsu hardware and the Phoenix software makes a logical choice for a scalable video surveillance solution. This tested solution can easily be resized to meet any organizations requirements for number of cameras and retention period for the camera data.

The Fujitsu ETERNUS DX product family is the perfect choice for customers looking for a flexible storage solution that adapts as the business needs change. The powerful performance of the ETERNUS DX hardware architecture, with unified block and file data access, ensures efficient storage consolidation while delivering the desired performance.

Fujitsu offers innovative advanced software functions through the uniform ETERNUS SF management software which reduces the total cost of ownership, simplifies monitoring and management, and helps achieve business continuity. These functions include:

1. Automated Quality of Service Management, which allows maintaining stringent Service Level Agreements.
2. Thin Provisioning with zero space reclamation
3. Automated Storage Tiering which simplifies storage management.

The Fujitsu ETERNUS DX storage arrays are the better alternative for storage solutions. ETERNUS DX – The Business-Centric Storage.

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<table>
<thead>
<tr>
<th>ETERNUS DX Online Storage Family</th>
<th>ETERNUS DX60 S3</th>
<th>ETERNUS DX100 S3</th>
<th>ETERNUS DX200 S3</th>
<th>ETERNUS DX500 S3</th>
<th>ETERNUS DX600 S3</th>
<th>ETERNUS DX8900 S3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Architecture</strong></td>
<td>Flexible and seamless family design with uniform storage management</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>Segment</strong></td>
<td>Entry-level</td>
<td>Scalable unified entry-level and midrange systems</td>
<td>High-end</td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>Maximum Storage Capacity</strong></td>
<td>288 TB</td>
<td>864 TB</td>
<td>1,584 TB</td>
<td>3,168 TB</td>
<td>6,336 TB</td>
<td>13,824 TB</td>
</tr>
<tr>
<td><strong>Maximum Disk Drives</strong></td>
<td>96</td>
<td>144</td>
<td>264</td>
<td>528</td>
<td>1,056</td>
<td>4,608</td>
</tr>
<tr>
<td><strong>Storage Controllers</strong></td>
<td>1 or 2</td>
<td>1 or 2</td>
<td>1 or 2</td>
<td>2</td>
<td>2</td>
<td>2-24</td>
</tr>
<tr>
<td><strong>Maximum Cache Memory</strong></td>
<td>4 GB</td>
<td>8 GB (Block)</td>
<td>16 GB (Block)</td>
<td>32 GB (Unified)</td>
<td>64 GB (Block)</td>
<td>128 GB (Block)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>16 GB (Unified)</td>
<td>32 GB (Unified)</td>
<td>64 GB (Block)</td>
<td>96 GB (Unified)</td>
<td>192 GB (Unified)</td>
</tr>
<tr>
<td><strong>Second-level Cache</strong> (Extreme Cache)</td>
<td>800 GB</td>
<td>800 GB</td>
<td>5.6 TB</td>
<td>5.6 TB</td>
<td>67.2 TB</td>
<td></td>
</tr>
<tr>
<td><strong>Host Interface Type</strong></td>
<td>4/8 Gbit/s FC</td>
<td>16 Gbit/s FC</td>
<td>16 Gbit/s FC</td>
<td>16 Gbit/s FC</td>
<td>16 Gbit/s FC</td>
<td>16 Gbit/s FC</td>
</tr>
<tr>
<td></td>
<td>1/10 Gbit/s iSCSI</td>
<td>10 Gbit/s FCoE</td>
<td>10 Gbit/s FCoE</td>
<td>10 Gbit/s FCoE</td>
<td>10 Gbit/s FCoE</td>
<td>10 Gbit/s FCoE</td>
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<td></td>
<td>1/10 Gbit/s Ethernet</td>
<td>1/10 Gbit/s Ethernet</td>
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<td>1/10 Gbit/s Ethernet</td>
<td>1/10 Gbit/s Ethernet</td>
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<tr>
<td><strong>Storage Management</strong></td>
<td>ETERNUS SF Software Suite</td>
<td></td>
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<tr>
<td><strong>Quality of Service</strong></td>
<td>I/O Control</td>
<td>Automated management of service level agreements (SLA management)</td>
<td></td>
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<tr>
<td><strong>Expandability</strong></td>
<td>Extensive scalability with seamless upgrade options</td>
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<tr>
<td><strong>Efficiency</strong></td>
<td>Thin Provisioning with zero space reclamation</td>
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<tr>
<td><strong>Replication</strong></td>
<td>Remote Equivalent Copy (REC)</td>
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<tr>
<td><strong>Data Integrity</strong></td>
<td>Reliability/RAID protection with Block Check Codes</td>
<td></td>
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<tr>
<td><strong>Encryption</strong></td>
<td>Based on system controller and/or self-encrypting disk drives</td>
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<tr>
<td><strong>Redundancy</strong></td>
<td>Dual controllers and redundant components</td>
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<tr>
<td><strong>Virtualization</strong></td>
<td>VMware Virtual Volumes (VVOL) support</td>
<td></td>
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</tbody>
</table>

Figure 4 - ETERNUS DX Online Storage Family
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About Fujitsu Americas
Fujitsu America, Inc. is the parent and/or management company of a group of Fujitsu-owned companies operating in North, Central and South America and Caribbean, dedicated to delivering the full range of Fujitsu products, solutions and services in ICT to our customers in the Western Hemisphere. These companies are collectively referred to as Fujitsu Americas. Fujitsu enables clients to meet their business objectives through integrated offerings and solutions, including consulting, systems integration, managed services, outsourcing and cloud services for infrastructure, platforms and applications; data center and field services; and server, storage, software and mobile/tablet technologies. For more information, please visit: http://solutions.us.fujitsu.com/ and http://twitter.com/fujitsuamerica

About SoleraTec
SoleraTec is a leading developer of archive, storage, and video lifecycle management products. SoleraTec leverages a heritage of over 15 years to deliver quality, innovation, and technological advancement that has established it as one of the premier data protection solution providers in the industry. SoleraTec works through OEMs, dealers, and system integrators to deliver complete video asset protection solutions. The company was established in 1997 by a team of industry veterans with experience deploying data protection, HSM, and storage lifecycle management solutions to some of the largest companies around the world. For more information, please visit www.SoleraTec.com.

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