

# Dell EMC Storage with FLIR Latitude

## Surveillance

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## Sizing Guide

### Abstract

The purpose of this guide is to help you understand the benefits of using a Dell EMC storage solution with FLIR Latitude for video surveillance that includes both hardware and software elements. Use this guide to determine the requirements for a successful FLIR Latitude installation with Dell EMC storage.

Dell EMC Solutions



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# CHAPTER 1

## Introduction

This chapter provides information on the purpose and scope of this solution:

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- [Scope](#).....6
- [Key objectives](#).....7

## Solution overview

FLIR provides video management software (VMS) for video surveillance that is scalable and efficiently supports systems of any size. The VMS incorporates forensic-quality imaging and user-friendly operations that consist of dedicated, web-based, and mobile client software.

This solution is ideally coupled with Dell EMC Unity block storage. These options provide the customer with exceptional performance and reliability creating a successful implementation.

The purpose of this guide is to help you understand the benefits of using a Dell EMC storage solution with FLIR Latitude for video surveillance that includes both hardware and software elements. Use this guide to determine the requirements for a successful FLIR Latitude installation with Dell EMC storage.

## Scope

This guide is intended for use by internal Dell EMC sales and pre-sales personnel, and qualified Dell EMC and FLIR partners.

The guidelines presented are for storage platform positioning and system sizing. The sizing recommendations are based on performance and storage protocol conclusions derived from Dell EMC testing.

The guidelines for sizing this video storage solution describe the use of the following storage platforms:

- Dell EMC Unity

These guidelines include the following design considerations:

- Architectural overview of FLIR Latitude
- Dell EMC storage considerations for FLIR Latitude
- Result summaries for the tests carried out by Dell EMC engineers in a VMware ESXi virtualized and physical (bare metal) infrastructure

Use this guide to determine the best practices for the following:

- Number of FLIR Archivers
- Storage using Fibre Channel (FC) and Internet SCSI (iSCSI) on Unity systems
- Load factors related to the use of Dell EMC storage arrays in the customer's solution

**Note:** All performance data contained in this report was obtained in a rigorously controlled environment. Network topology and system environment variables can have significant impact on performance and stability. Follow the best practices as outlined in the *Dell EMC Storage with FLIR Latitude: Configuration Guide* regarding network and storage array configuration. Server and network hardware can also affect performance. Performance varies depending on the specific hardware and software, and might be different from what is outlined here. Performance results will be similar if your environment uses similar hardware and network topology.

## Key objectives

The configurations documented in this guide are based on tests conducted in the Dell EMC Surveillance Lab and actual production implementations.

These are the key objectives of this solution:

- Measure the sizing needs for specific system requirements so that an implementation can be correctly sized and the appropriate Dell EMC products can be matched to a customer's requirements.
- Calculate maximum bandwidths.
- Recommend disk drive types.
- Confirm the previous test results with lab controlled failures, such as disk rebuilds, and network path failures.



# CHAPTER 2

## Solution components

This chapter provides information about storage options for video and audio data:

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- [Storage protocols](#)..... 10
- [FLIR Latitude](#)..... 10

## Dell EMC storage

Dell EMC storage arrays are ideal for storing video and audio data.

This guide describes the tests for the following storage arrays:

- Unity arrays

For our testing, we used both single and dual storage processors for the full range of Unity storage arrays.

## Storage protocols

Dell EMC uses standard file protocols to enable users and applications to access data that is consolidated on a Dell EMC storage solution.

This guide provides information about these network protocols:

- FC
- iSCSI

## FLIR Latitude

FLIR Latitude is a network-based video monitoring and recording system, which is composed of servers and clients, as well as encoders and decoders, that are connected over a network.

Usually, the system resides on a dedicated network, rather than a corporate network. FLIR recommends that you always consult a network administrator before installing Latitude. A FLIR Latitude installation can consist of a single server or multiple servers in a hierarchical structure. You can further distribute the FLIR Latitude Windows services that provide the primary server functionality to additional Windows servers.

You can configure Latitude installations to handle a few cameras to thousands of cameras.

The following table describes the primary Latitude services.

**Table 1** Latitude primary services

Service	Description
Directory	The main server application that is required by the service to provide a centralized catalog for the other Latitude services and applications on the system. From the Directory, applications can review connections, establish connections, and receive centralized configuration information.
Archiver	Latitude records video through the recorder service. The recorder provides dynamic discovery and status polling of units and processes and stores (archives) all video and multimedia streams to storage. "Archiving" is the term used for storing video.

**Table 1** Latitude primary services (continued)

Service	Description
Event Distributor (EDB)	EDB server provides rule-based distribution of events, actions, and messages using Microsoft SQL Server database and Recording of all the event types that are selected by the administrator for logging.
Control Center	Control Center enables you to view live, archived, and exported video and audio, side-by-side. Provides synchronized playback and Advanced Workspace Mode control.

The Gateway, EDB, and Directory services may be installed on the same Windows 32-bit or 64-bit system. In our tests, we installed these services on a single virtualized host running Windows Server 2012 64-bit.

## Releases tested

The following table lists the FLIR Latitude releases used for our tests.

**Table 2** FLIR Latitude releases

VMS	Release
FLIR Latitude	8.0.X.61XX



# CHAPTER 3

## Configured components

This chapter provides information about the components configured in this solution:

- [Dell EMC Surveillance Lab test environment](#)..... 14
- [Dell EMC Unity and Dell EMC SC series](#)..... 14

## Dell EMC Surveillance Lab test environment

The Dell EMC Surveillance Lab is constantly being upgraded to the most recent software releases.

In order to test this solution, the Dell EMC Surveillance Lab was configured as follows:

Virtualized environment:

- 8 vCPUs
- 8 GB memory
- Network adapter type: VMXNET3 (10 GbE)
- Isolated VLAN for storage (if not FC)

Physical/Baremetal minimum environment:

- 8 Cores
- 32 GB memory

Network environment:

- Network adapter type: 10 GbE
- Camera user VLAN
- Storage VLAN

All storage and server tests are conducted using 10 GbE NICs unless otherwise noted. Watermarking and motion detection require additional vCPU and memory.

For all the tests, the virtual CPU (vCPU), memory, and network were configured according to FLIR best practices. The VMware vSphere configuration was in accordance with the VMware Compatibility Guide ([www.vmware.com/resources/compatibility/search.php](http://www.vmware.com/resources/compatibility/search.php)). Microsoft MPIO is recommended for use with Unity arrays.

The Dell EMC Surveillance Lab's host hardware met and exceeded the minimum system requirements for an ESXi/ESX installation. The FLIR Archiver VM was running on an ESXi 6.5 host using Dell EMC PowerEdge servers. For more information about VM configuration, see the General recommendations for storage and sizing section of the *Using EMC VNX storage with VMWare vSphere* guide.

## Dell EMC Unity and Dell EMC SC series

Dell EMC Unity and Dell EMC SC series storage arrays are ideal for recording and managing terabytes of video from distributed locations. This section describes best practices for configuring a Unity or SC series storage system for this solution.

The Unity and SC series arrays are designed for midtier to enterprise storage environments, are ideal for distributed environments, and can scale to handle large petabyte (PB) environments with block-only requirements at central locations.

# CHAPTER 4

## Sizing the solution

This chapter provides information to enable you to quickly determine the correct storage array based on your customer's bandwidth requirements:

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## Dell EMC Unity

We conducted validation tests to determine how FLIR Latitude works with Unity storage arrays.

Our testing found the best bandwidth to be 27 MB/s on a VM Archiver. The tests included an overall read bandwidth of 20 percent. Maximum per Archiver bandwidth may vary based on the configuration of the Archiver server used. All testing was conducted using the iSCSI protocol.

Test results are based on a conservative model to ensure that the constant-bandwidth video traffic is unaffected during a single storage pool (SP) maintenance cycle, disk rebuild, or similar performance-intensive event.

All test results are based on multiple servers writing to a Unity storage array.

Extrapolated based on Dell EMC Surveillance Lab test results.

**Table 3** Dell EMC Unity storage array bandwidth (BW) results

Array	Latitude	RAID	Disks	No. of Archivers	Bandwidth (MB/s)		Maximum (RAW)
					Per Archiver	Array iSCSI	
Unity300 <sup>a</sup>	8.0.X.61XX	6	64	8	27	225	2.34 PB
			104	12	27	338	
Unity400 <sup>a</sup>	8.0.X.61XX	6	64	12	27	270	3.9 PB
			104	18	27	405	
			240	40	27	901	
Unity500	8.0.X.61XX	6	64	12	27	324	7.8 PB
			104	18	27	486	
			240 <sup>a</sup>	40	27	1080	
			500 <sup>a</sup>	84	27	2268	
Unity600 <sup>a</sup>	8.0.X.61XX	6	64	12	27	372	9.7 PB
			104	18	27	558	
			240	40	27	1242	
			500	84	27	2608	

a. Extrapolated based on Dell EMC Surveillance Lab test results.

# CHAPTER 5

## Testing and validation

This chapter describes the testing used to validate this solution.

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- [Test parameters](#)..... 18
- [Storage bandwidth and configuration test](#)..... 18

## Test objectives

Many factors must be considered when designing your solution.

The Dell EMC Surveillance Lab tests focus on storage-related factors with the following objectives:

- Determine the bandwidth for various Dell EMC storage arrays using FC and iSCSI.
- Determine the best configuration parameters for Unity storage options.
- Determine best video storage performance requirements for use with:
  - Unity storage arrays
- Determine the maximum bandwidth with multiple Archivers.
- Determine all factors with a lab-controlled failure, such as rebuilding disks, or network path failures.

## Test parameters

All test parameters and scenarios reflect standard production behavior for FLIR Latitude under storage-intensive conditions, including typical storage functions and failures. We followed best practices for recovery and break-fix issues for normal situations that might arise in a standard production environment.

We used the following parameters to perform the tests:

- The IP network (Layer 2) is a flat, high-availability network with plenty of capacity, which enabled us to focus on the products we were testing.
- All tests assumed uniform distribution of bandwidth from the FLIR Archiver.

## Storage bandwidth and configuration test

The storage bandwidth test evaluated video storage and applications with a number of different Dell EMC storage systems. Additional tests evaluated ESXi host hardware in relationship to vCPU settings and the resulting bandwidths.

### About this task

During these tests, we configured FLIR Latitude using FLIR Latitude's best practices. We operated FLIR Latitude within the recommended bandwidth, camera count, and other FLIR maximum requirements.

### Procedure

1. Configured video storage for a Dell EMC storage system.
2. Set up camera simulators (traffic generators) to produce a traffic load to each FLIR Archiver at the recommended bandwidth.
3. Evaluated the network and video storage to ensure an error-free environment at the induced bandwidth.
4. Introduced storage device errors including:
  - Disk failures and rebuilds on Unity arrays
  - Use of only one Unity storage processor
  - NIC failures with active/active and active/passive configurations

5. Captured the storage system and host statistics.
6. Based on the test results:
  - If no issues were detected, incremented the bandwidth.
  - If issues were detected, decreased the bandwidth.

This procedure was repeated until the maximum error-free bandwidth was determined.



# CHAPTER 6

## Conclusion

This chapter summarizes the testing for this solution:

- [Summary](#) .....22

## Summary

We performed comprehensive testing with FLIR Latitude on Dell EMC Unity arrays. Depending on a customer's requirements, you can use Dell EMC Unity storage systems with FLIR Latitude for this solution. The FLIR architecture and product suite enables scaling from a few cameras up to tens of thousands of cameras with this solution.

### Dell EMC Unity arrays

The use of storage pools to create LUNs within the Dell EMC Unity arrays greatly simplifies the configuration and increases the performance when compared to traditional block-level storage. Either iSCSI or FC can be implemented. FC performs better than iSCSI.