

# Video Surveillance EMC Storage with NUUO Crystal

Version 1.0

## Functional Verification Guide

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# CHAPTER 1

## Introduction

This functional verification guide provides compatibility guidelines for EMC storage arrays and storage clusters.

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## Solution overview

Video surveillance is a highly competitive market, not only for Video Management Software (VMS) providers, but also for hardware and value-added companies such as EMC.

The purpose of this guide is to help you understand the benefits of using an EMC storage solution for video surveillance that includes both hardware and software elements.

Use this guide to determine the requirements for a successful NUUO Crystal Titan installation. Testing was conducted to confirm functional compatibility, but does not provide specific bandwidth or configuration information at this time.

## Scope

This guide provides results from a functional test that was conducted to ensure the compatibility of NUUO Crystal Titan with EMC storage. The test does not establish sizing guidelines, but this paper does include the results from a single server baseline test.

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

This guide provides guidelines for sizing NUUO Crystal Titan using EMC storage systems for video storage including:

- EMC VNX<sup>®</sup>

It includes the following design considerations:

- Architectural overview of NUUO Crystal Titan
- EMC storage considerations for NUUO Crystal Titan
- Result summaries for the tests carried out by EMC engineers

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### Note

All performance data contained in this report was obtained in a rigorously controlled environment. Performance varies depending on the specific hardware and software and might be different from what is outlined here.

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# CHAPTER 2

## Solution components

This section provides information about storage options for video and audio data.

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# NUUO Crystal

A NUUO Crystal installation can consist of a single video server or multiple servers in a peer structure. You can configure Crystal to manage a few cameras or thousands of cameras.

The following table describes the primary Crystal services.

**Table 1** Crystal primary services

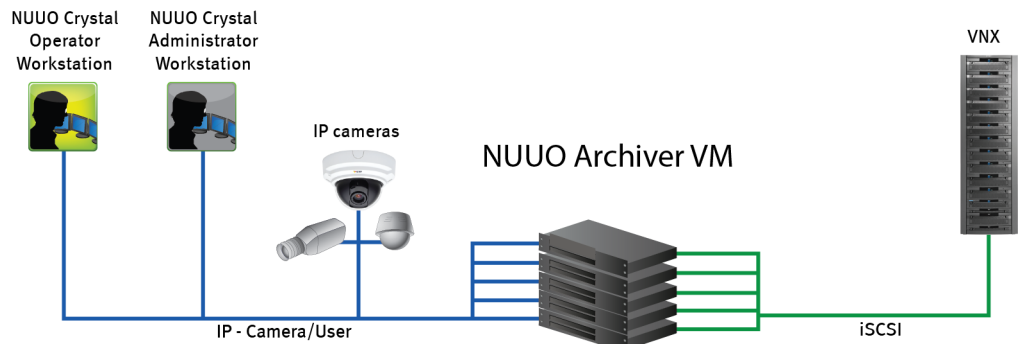
Service	Description
NUUO Crystal Management Server	Crystal Management Server allows the configuring and viewing of an unlimited number of devices, users, and licenses under one unified NuClient interface. The server also enables centralized device management and user management.
NUUO Crystal Recording Server	The Recording Server consists of File Ring and Volume Group. File Ring boosts recording throughput up to 250 Mbps for a single volume. The NUUO Volume Group mechanism manages volume load balance, which can further boost throughput and increase disk service life.
NUUO Crystal Metadata Server Plugin	The Metadata Plugin Pack enables fast and flexible integration of third party devices such as Access Control and Point of Sale (POS) by simply upgrading the plugin.
NUUO Crystal NuClient	NuClient allows users to access viewing functions such as View, multiple stream profiles, PTZ, NUUO Crystal™ layout manager, and fisheye dewarp
NUUO Crystal NuMatrix	NuMatrix is available at the enterprise license level. It enables you to create a video wall and it is the best solution for viewing an unlimited number of video displays.

## Design concepts

There are many design options for a NUUO Crystal implementation. NUUO offers many documents and materials that are related to design and implementation of NUUO Crystal. These design details are beyond the scope of this paper.

The following figure represents the basic configuration that was tested in our lab for this solution.

**Figure 1** NUUO Crystal architecture





## VNX unified storage platform

The VNX series is designed for a wide range of environments that include midtier through enterprise. VNX provides offerings that include file only, block only, and unified (block and file) implementations. The VNX series is managed through a simple and intuitive user interface called Unisphere. This single pane of glass integrates information from varied sources across multiple applications and environments into a single display to complete the unified experience.

The VNX series is EMC's next generation of midrange-to-enterprise products. VNX unifies EMC's file-based and block-based offerings into a single product that you can manage with one easy to use GUI. The VNX software environment offers significant advancements in efficiency, simplicity, and performance.

## EMC storage

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

This guide describes the tests for the following arrays:

- VNX arrays

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

## Storage protocols

EMC supports many storage protocols.

This guide provides information about the following network protocols:

- FC
- iSCSI



# CHAPTER 3

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## Test summary

The functional test determined ISCSI compatibility with VNX reviewing video using a single virtualized NUUO Crystal Titan Recorder.

The ESXi 5.5 host used 2 vCPUs and 4 GB of memory provided by a Cisco UCS B230-R2 server. The network was constructed using Cisco Nexus switches, and the Cisco UCS server and VNX 5600 used 10GbE NICs.

The test confirmed the following:

- A single Recorder writing to a VNX 5600 ISCSI LUN achieved 17.56 MB/s using 16 cameras, which included 5 MBps of review bandwidth.
- NUUO Crystal Titan can be used with ISCSI VNX storage.

### **NOTICE**

This test did not include failure and recovery scenarios, nor was there an attempt to fully load the VNX SP. Therefore, the information in this guide should only be used as a compatibility guide and not as a performance baseline for sizing purposes.

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