Video Recording Manager

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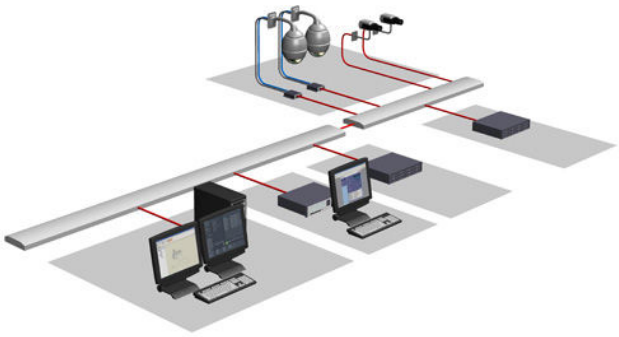


- Distributed storage and configurable load balancing
- iSCSI disk array failover for extra reliability
- Used with all Bosch video-over-IP cameras and encoders
- Configuration support for all Bosch disk arrays (DSA E-Series and DIVAR IP systems)
- Integration of 3rd party cameras (ONVIF, RTSP, JPEG)

Video Recording Manager by Bosch provides a distributed network video recorder solution, eliminating the need for dedicated network video recorders (NVRs) and signaling the second generation of IP network video recording. The software supports iSCSI-based storage systems and Bosch video-over-IP devices (IP cameras and IP video encoders).
Video Recording Manager provides load balancing and failover for the iSCSI storage system and makes it easy to add additional iSCSI storage systems later on.
Video Recording Manager introduces the concept of a storage virtualization layer. This abstraction layer enables the software to manage all of the individual disk arrays in the entire system as various “virtual” pools of storage, which are intelligently allocated as needed.
Video Recording Manager eliminates the need for classic NVRs and their associated server hardware, operating systems, and anti-virus software, as well as the ongoing software patches and updates these systems require.
This new NVR technology makes installation, operation, and maintenance much easier while reducing the total cost of ownership.

System overview

Video Recording Manager comprises:
- VRM Server including VRM Monitor
- Configuration Manager
- Video Streaming Gateway (VSG)

The central recording management service (VRM Server) runs as a service on Microsoft Windows platforms. Bosch recommends running the software on a dedicated server/hardware platform.
Video Recording Manager offers system-wide recording, monitoring, and management of Bosch iSCSI storage, video encoders, and cameras.
Video Recording Manager software supports Bosch H.264, H.265, and MPEG-4 IP video devices including all Bosch encoders and cameras.
With the Video Streaming Gateway component it also supports 3rd party cameras supporting either ONVIF, RTSP or JPEG protocol.
Supported storage subsystems include the Bosch iSCSI-based disk array systems DSA E-Series and DIVAR IP. The iSCSI disk arrays can be attached anywhere on a standard IP network.

Optimal performance
Video Recording Manager offers a high-performance, flexible, scalable, and a highly reliable iSCSI storage management solution.
Optimized performance is obtained by the use of intelligent addressing on a block level, which also allows for load balancing of the video recording to all available storage blocks located on any storage array in the system.

Load balancing is provided with respect to the bandwidth and the number of iSCSI connections and is configurable per IP address (iSCSI target).

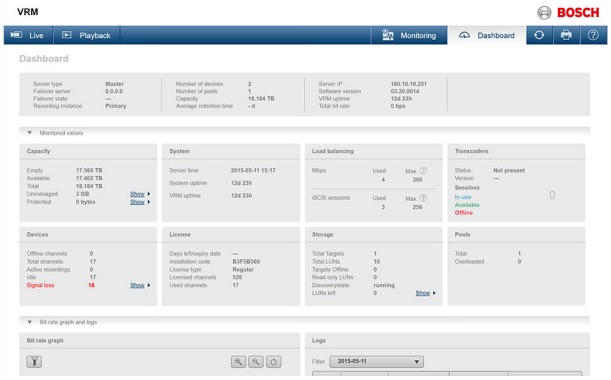
Logical virtualization
The Video Recording Manager virtualization layer allows the scalability of storage beyond the physical limits of a single storage subsystem. This logical abstraction layer means that each camera can use any storage space it actually needs, rather than an allocated, arbitrary, discrete chunk ahead of time. Adjust retention times of video data as required.

Fast recording and retrieval
Video Recording Manager provides fast and flexible retrieval via a search database of recordings and metadata. Metadata is a form of data that describes other data such as events, ATM/POS information, and video content analysis data. The metadata is recorded with the video data and provides a fast and efficient way for the search engine, in the playback client, to quickly locate specified video clips. The database also keeps track of the location of recording blocks. If this database is lost, Video Recording Manager can recreate the database by reading the stored metadata, thus providing a self-healing capability.

Distributed storage
Video Recording Manager not only provides for redundant management of metadata, it also introduces a significant enhancement of overall reliability and availability. By providing redundancy for storage provisioning and a failover design for the central recording management service, there is no single point of failure. In addition, unlike classic NVR systems, Video Recording Manager scales without requiring additional PCs. This greatly reduces the risk of system failures.

Functions

VRM Server
VRM Server, with the central recording management service, maintains a database containing the recording source information and a list of associated iSCSI drives. The central monitoring includes a web-based user interface for status monitoring. This provides system status overview, recording status information, as well as for live view and recording preview for single cameras.



Configuration Manager
The Configuration Manager software allows for central configuration of the network storage subsystems, recordings (including schedules), data rate, frame rate, stream, and privileges, as well as for managing user accounts.
For more information about Configuration Manager, see the product specific documentation.

Playback client
For replay use Bosch Video Management System and Video Client. The software is available at: www.boschsecurity.com
For more information about Bosch Video Management System and Video Client, see the product specific documentation.

Integration of 3rd party cameras
Video Recording Manager with its component Video Streaming Gateway offers the option to integrate cameras that support ONVIF, standard RTSP or JPEG protocols. Video Streaming Gateway is intended for live viewing and Video Recording Manager iSCSI based recording of cameras in low bandwidth environments or of 3rd party cameras supporting one of the above mentioned protocols.
Video Recording Manager includes support for the dynamic transcoding functionality for low bandwidth connectivity of playback clients (such as iPads).
It also supports iSCSI storage pools. A storage pool is a container for one or more iSCSI storage systems that share the same load balancing properties. The encoders / IP cameras that are assigned to these iSCSI storage systems in a storage pool, are recorded with these common load balancing settings.

Backup of data through Video Recording Manager
The backup functionality to export larger amounts of data has been moved to the Video Recording Manager eXport Wizard application. eXport Wizard for disk- and tape-based backup is a stand-alone application. The playback of exported data is possible without a Video Recording Manager environment and is currently supported by Archive Player only.

Design recommendations
Video Recording Manager only supports the following recording preferences:

- Automatic
  In this mode Video Recording Manager automatically uses the storage properties bandwidth and iSCSI connectivity to equally distribute the load within the Video Recording Manager system. This mode may be configured in a redundant or in a capacity oriented (no explicit redundancy) setup.
- Failover
  Manual assignment of a primary and an optional secondary iSCSI target. The primary and the optional secondary target must be located in one storage pool.

Notes:
- The recording preferences are a property of the storage pool and not of the camera/encoder.
- Other modes are not supported anymore. During upgrade from < VRM 3.0 the old modes are migrated. Mixed configurations are not supported and have to be manually reconfigured.
- The Automatic Network Replenishment (ANR) functionality has moved into the new cameras and the new camera firmware (v5.60 or higher).
- IP addresses of devices can be fixed or assigned by DHCP-server.

Installation/configuration notes

Video Recording Manager components

Video Recording Manager consists of the following components which may be installed on separate systems:
- VRM Server (central recording management service) with web interface for VRM Monitor
- Configuration Manager
- Video Streaming Gateway

VRM Monitor

- Displays overall system status information, including uptime, bit rate, and retention times.
- Provides status information on recordings and storage.
- Displays live view and recording previews for a single camera.

Configuration Manager

- Allows configuration of the iSCSI storage subsystems Bosch DSA E-Series (NetApp Storage Systems) and Bosch DIVAR IP and DLA systems (Bosch OEM disk arrays).
- Allows configuration of recording parameters, including schedules, data rates, frame rates, streams, and privileges.
- Allows management of users and groups with privileges and roles.
- Allows configuration of load balancing parameters (bandwidth and iSCSI connections) per disk array (IP address).

Notice

One Video Recording Manager supports:
- 2048 channels
- 2 PB storage (net capacity)
- 40 disk arrays (recommended)
- 120 iSCSI targets max (120 iSCSI targets are a hard limit)

When planning for larger environments we strongly recommend using large sized disk arrays instead of a large number of small disk arrays (vertical scaling instead of horizontal scaling). For systems with more than 40 disk arrays, please contact a Bosch Design Engineer. iSCSI based storage systems not qualified by Bosch are not supported.

Technical specifications

System requirements VRM Server	
Supported operating systems	Windows Server 2008 R2 (Standard Edition, 64-bit), Windows Storage Server 2008 R2 (Standard Edition, 64-bit), Windows Server 2012 R2, Windows Storage Server 2012 R2, Windows Server 2016, Windows Storage Server 2016; support for Hyper-V and VMWare Virtualization
CPU	Six-Core Intel Xeon Processor E5-2620v3 (2.4 GHz, 6-core, 15 MB, 85 W)
RAM	8 GB or more
Graphics card	VGA or SVGA-compatible
Network adapter	1 Gbps
Installation	Windows administrator rights
Recommended Bosch server hardware	DL380 Gen10 Management Server (MHW-S380RA-SC)

System requirements VRM Monitor	
Browser	Google Chrome 30 or higher, Mozilla Firefox 25 or higher, Internet Explorer 10 or higher, Safari 7 or higher
Network adapter	1 Gbps

System requirements Configuration Manager	
Supported operating systems	Windows 7 (64-bit), Windows 8.1 (64-bit), Windows 10 (64-bit), Windows Server 2012 R2 (64-bit), Windows Server 2016 (64-bit)
CPU	Dual Core, 3.0 GHz or better

System requirements Configuration Manager	
RAM	2 GB or more
Graphics card	VGA or SVGA-compatible
Network adapter	1 Gbps
Software	Microsoft .NET 4.5
Installation	Windows administrator rights

Ordering information

MVM-BVRM-016 Base Package incl. 16 cameras single-pac
Video Recording Manager base package with a 16-camera license single-pack. VRM 2.0 licenses can be used.
Order number **MVM-BVRM-016**

MVM-SVRM-BAK Failover VRM License
Video Recording Manager Failover license. VRM 2.0 licenses can be used.
Order number **MVM-SVRM-BAK**

MVM-XVRM-016 16 camera Upgrade License
Video Recording Manager upgrade license.
For 16 cameras.
Order number **MVM-XVRM-016**

MVM-XVRM-032 32 camera Upgrade License
Video Recording Manager upgrade license.
For 32 cameras.
Order number **MVM-XVRM-032**

MVM-XVRM-064 64 camera Upgrade License
Video Recording Manager upgrade license.
For 64 cameras.
Order number **MVM-XVRM-064**

MVM-XVRM-128 128 camera Upgrade License
Video Recording Manager upgrade license.
For 128 cameras.
Order number **MVM-XVRM-128**

MVM-XVRM-256 256 camera Upgrade License
Video Recording Manager upgrade license.
For 256 cameras.
Order number **MVM-XVRM-256**

MVM-XVRM-512 512 camera Upgrade License
Video Recording Manager upgrade license.
For 512 cameras.
Order number **MVM-XVRM-512**

MVM-XVRM-1024 1024 camera Upgrade License
Video Recording Manager upgrade license.
For 1024 cameras.
Order number **MVM-XVRM-1024**

MVM-XVRM-2048 2048 camera Upgrade License
Video Recording Manager upgrade license.
For 2048 cameras.
Order number **MVM-XVRM-2048**

Accessories

MHW-S380RA-SC Bosch Standard Application Server
High-performance standard application management server.
American English
Order number **MHW-S380RA-SC**

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