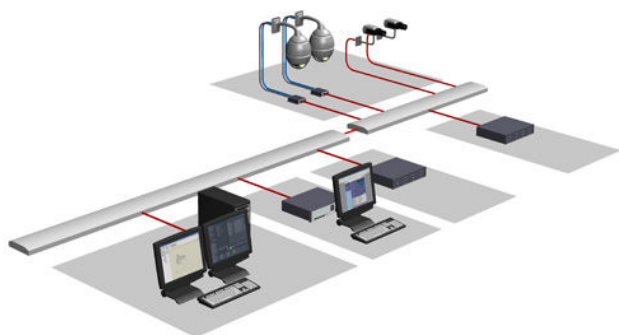


VRM Video Recording Manager

www.boschsecurity.com



BOSCH
Invented for life



- ▶ 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)

VRM 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. VRM supports iSCSI-based storage systems and Bosch video-over-IP devices (IP cameras and IP video encoders). VRM provides load balancing and failover for the iSCSI storage system and makes it easy to add additional iSCSI storage systems later on. VRM introduces the concept of a storage virtualization layer. This abstraction layer enables VRM to manage all of the individual disk arrays in the entire system as various “virtual” pools of storage, which are intelligently allocated as needed.

VRM 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

VRM Video Recording Manager comprises:

- Recording management service (VRM Server)
- Configuration Manager

- Video Streaming Gateway (VSG)

The central recording management service runs as a service on Microsoft Windows platforms. Bosch recommends running VRM Server on a dedicated server/hardware platform.

VRM offers system-wide recording, monitoring, and management of Bosch iSCSI storage, video encoders, and cameras.

VRM software supports Bosch H.264 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

VRM 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 VRM 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

VRM 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, VRM can recreate the database by reading the stored metadata, thus providing a self-healing capability.

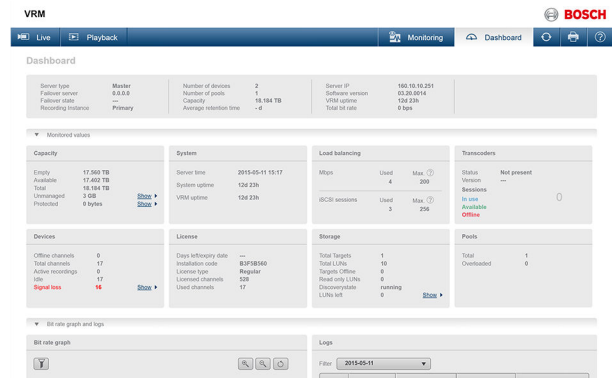
Distributed storage

VRM 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, VRM 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 Video Client version 1.7 or later. The software is available on the Bosch ST web site www.boschsecurity.com.

For more information about Video Client, see the product specific documentation.

Integration of 3rd party cameras

VRM 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 VRM iSCSI based recording of cameras in low bandwidth environments or of 3rd party cameras supporting one of the above mentioned protocols. VRM 3.20 includes support for the dynamic transcoding functionality for low bandwidth connectivity of playback clients (such as iPads). With VRM 3.20, iSCSI storage pools are supported. 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 VRM

The backup functionality to export larger amounts of data has been moved to the VRM 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 VRM environment and is currently supported by Archive Player only.

Design recommendations

VRM 3.20 only supports the following recording preferences:

- Automatic

In this mode VRM automatically uses the storage properties bandwidth and iSCSI connectivity to equally distribute the load within the VRM 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).
- ANR support has been removed from VRM 3.0 or later.
- IP addresses of devices can be fixed or assigned by DHCP-server.

Licensing

Existing VRM 2.0 licenses can be used.

Installation/configuration notes

VRM components

VRM 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)
 - 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).

Technical specifications

Bandwidth	1 Gbit network (recommended)
Supported languages	Arabic, Czech, English, German, Danish, Dutch, Finnish, French, Greek, Hungarian, Italian, Japanese, Korean, Norwegian, Portuguese, Polish, Russian, Spanish, Simplified Chinese, Swedish, Thai, Traditional Chinese and Turkish

VRM Server (running as a service)

Supported operating systems	Windows 7 Ultimate, Professional Edition, 32/64-bit versions Windows Server 2003 R2, Standard Edition, 32/64-bit versions Windows Server 2008 R2, Standard Edition with SP1, 64-bit versions Windows Storage Server 2008, Standard Edition with SP1, 64-bit versions Windows Storage Server 2012 and Windows Storage Server 2012 R2
-----------------------------	---

Hardware requirements	
CPU	Six-Core Intel Xeon Processor E5-2620 (2.0 GHz, 6-core, 15 MB, 95 W)
RAM	4 GB or more
Graphics card	VGA or SVGA-compatible
Network adapter	1 Gbps
Installation	Windows administrator rights
Recommended Bosch server hardware	DL380p Gen8 Management Server (MHW-S380R8-SC) DL380p Gen8 Management Server US (MHW-S380R8-SCUS)

VRM Monitor

Network adapter	1 Gbps
Software	DirectX 9.0c/MPEG Active X

Configuration Manager

Supported operating systems	Windows 7 Ultimate/Enterprise, 32/64-bit versions Windows Server 2008 R2, Standard Edition with SP1, 64-bit versions Windows Storage Server 2008, Standard Edition with SP1, 64-bit versions Windows 8
-----------------------------	---

Hardware requirements	
CPU	Intel Pentium (minimum 3.0 GHz) to Intel Core i3/i5/i7; Intel Xeon Dual Core, Quad Core and Six Core (X3 or E3 or E5 families)
RAM	2 GB or more
Graphics card	VGA or SVGA-compatible

Hardware requirements	
Network adapter	1 Gbps
Software	Microsoft .NET 4.5
Installation	Windows administrator rights

**Notice**

One VRM supports:
 2048 channels
 1 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.

Ordering information

VRM Base Package 16 cameras

Bosch VRM base package with a 16-camera license single-pack. VRM 2.0 licenses can be used.
 Order number **MVM-BVRM-016**

VRM Failover

Bosch VRM Failover license. VRM 2.0 licenses can be used.
 Order number **MVM-SVRM-BAK**

VRM Expansion License 16 cameras

16-camera upgrade license
 Order number **MVM-XVRM-016**

VRM Expansion License 32 cameras

32-camera upgrade license
 Order number **MVM-XVRM-032**

VRM Expansion License 64 cameras

64-camera upgrade license
 Order number **MVM-XVRM-064**

VRM Expansion License 128 cameras

128-camera upgrade license
 Order number **MVM-XVRM-128**

VRM Expansion License 256 cameras

256-camera upgrade license
 Order number **MVM-XVRM-256**

VRM Expansion License 512 cameras

512-camera upgrade license
 Order number **MVM-XVRM-512**

VRM Expansion License 1024 cameras

1024-camera upgrade license
 Order number **MVM-XVRM-1024**

VRM Expansion License 2048 cameras

2048-camera upgrade license
 Order number **MVM-XVRM-2048**

Accessories**DL380p Gen8 Management Server**

High-performance standard application server. British English
 Order number **MHW-S380R8-SC**

DL380p Gen8 Management Server US

High-performance standard application server, American English
 Order number **MHW-S380R8-SCUS**

Represented by:

Americas:

Bosch Security Systems, Inc.
130 Perinton Parkway
Fairport, New York, 14450, USA
Phone: +1 800 289 0096
Fax: +1 585 223 9180
security.sales@us.bosch.com
www.boschsecurity.us

Europe, Middle East, Africa:

Bosch Security Systems B.V.
P.O. Box 80002
5617 BA Eindhoven, The Netherlands
Phone: + 31 40 2577 284
Fax: +31 40 2577 330
emea.securitysystems@bosch.com
www.boschsecurity.com

Asia-Pacific:

Robert Bosch (SEA) Pte Ltd, Security
Systems
11 Bishan Street 21
Singapore 573943
Phone: +65 6571 2808
Fax: +65 6571 2699
apr.securitysystems@bosch.com
www.boschsecurity.asia

China:

Bosch (Shanghai) Security Systems Ltd.
203 Building, No. 333 Fuquan Road
North IBP
Changning District, Shanghai
200335 China
Phone +86 21 22181111
Fax: +86 21 22182398
www.boschsecurity.com.cn

America Latina:

Robert Bosch Ltda Security Systems Division
Via Anhanguera, Km 98
CEP 13065-900
Campinas, Sao Paulo, Brazil
Phone: +55 19 2103 2860
Fax: +55 19 2103 2862
latam.boschsecurity@bosch.com
www.boschsecurity.com