PROMISE®
TECHNOLOGY, INC.

Surveillance Design Tool

User Guide

Version 1.0

Contents

Introduction

The PROMISE Surveillance Project Design Tool helps to simplify planning a video surveillance network. The project design tool is useful for project planners, administrators, contractors, or anyone charged with the task of creation and deployment of a surveillance network. The focus of the design tool is on the storage subsystems and the recording server hardware required for storing and managing video data, and processing live video streams using the most popular video management software platforms used in large scale surveillance.

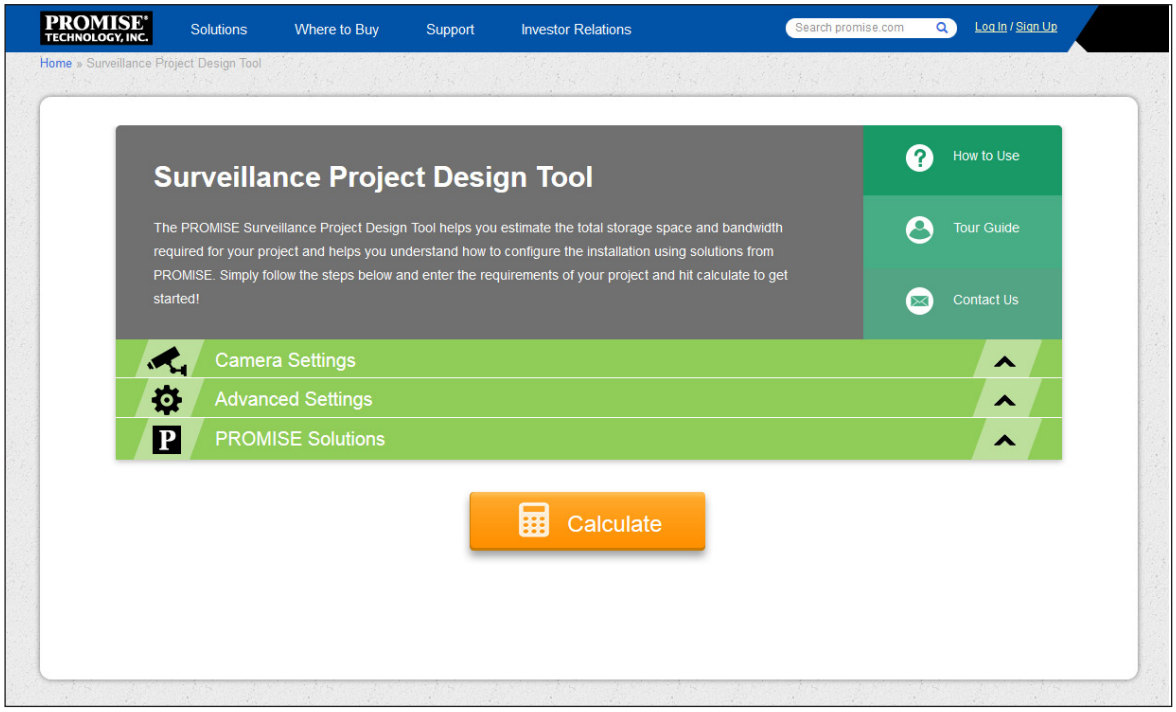
To use the project design tool, simply enter some basic information such as the number of cameras to be used and the length of time video data is required to be archived, then a recommendation for a topology is created.

To view the **PROMISE Surveillance Project Design Tool** online, go to this link:

http://www.promise.com/Promotion/Surveillance-Project-Design-Tool

The home menu should look like this:

Surveillance Solution Surveillance Design Tool home menu

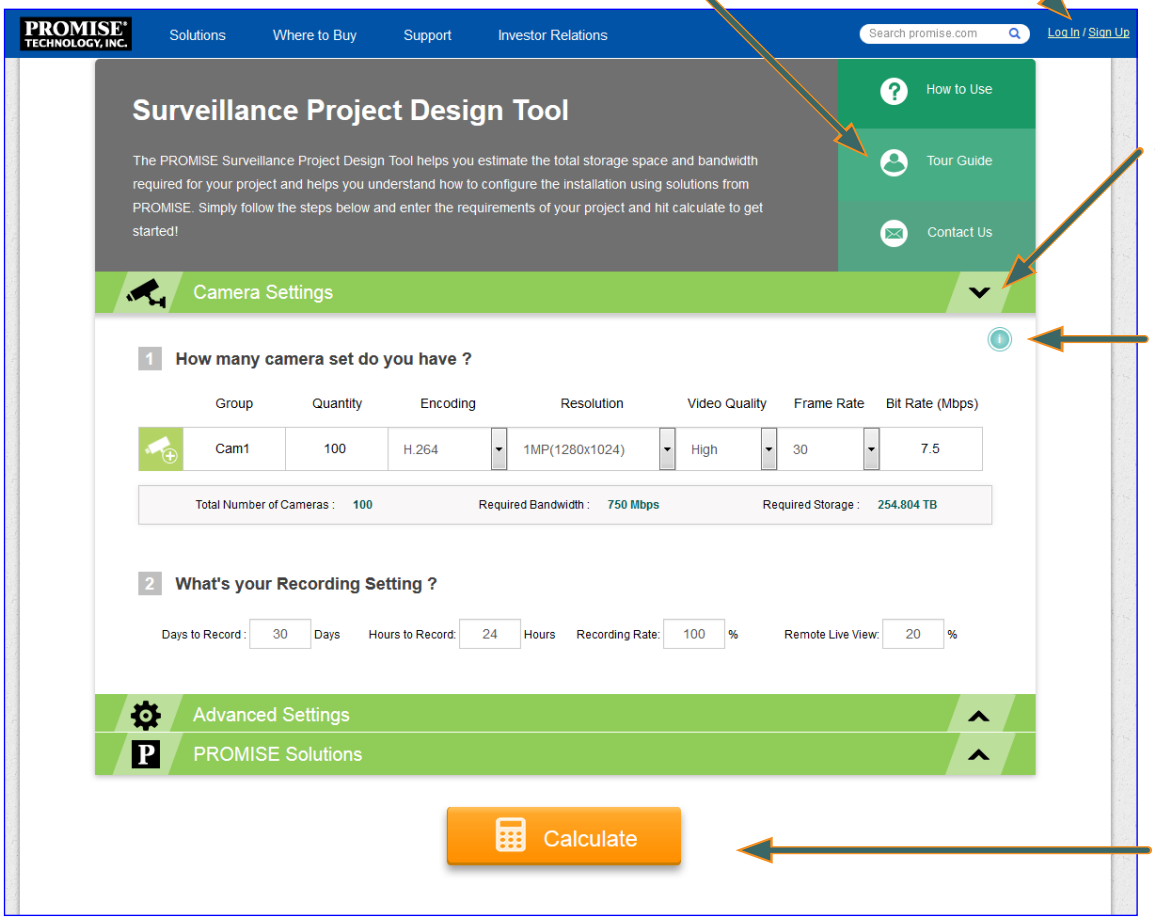


Navigating the User interface

The Surveillance Project Design Tool is easy to navigate and use. All the menus needed to produce the recommendation are located in the front page of the user interface. See below for a quick introduction.

Click here for a brief overview of the steps to complete the topology recommendation

Log In / Sign Up
Use your personal PROMISE account, or set one up.



Expand / Collapse settings menu

Click here to view an explanation of the various settings in the menu

Click to view the recommended topology once all the settings have been entered

Note

Please sign in with your personal PROMISE account in order to fully utilize all the features of the design tool. If you have not set up an account, please do so by clicking on the Sign Up link in the upper right corner of the menu.

Information needed

Some basic information about the surveillance network is needed to produce a recommended topology. Ideally you will have specific **Camera Settings** (encoding, resolution, video quality, frame rate, bit rate) and **Recording Setting** (how much recording is stored and how long the data is retained). Then you will use this information to produce a suggested topology. The Camera Settings and Recording Setting can be customized for different groups of cameras, or *camera sets*.

Don't be concerned if you have not determined all the settings mentioned above. One of the purposes of the tool is to allow comparisons to be made using different combinations of camera settings and camera sets, in order to better understand where some cost savings might be realized. By grouping cameras according to need and tweeking settings for each group accordingly, the required storage recording server hardware can be minimized. For example, some areas might not require 24-hour high resolution recording. So you can create a camera set for this area using camera settings that will be less taxing on recording and storage hardware such as lower resolution, lower frame rate, fewer hours per day, etc. The point is to let you determine the right quantity and combination of hardware needed to get the job done, without piling on unnecessary costs.

Other features include a choice of VMS platforms and **High Availability Settings**. The most commonly used VMS platforms are included in the project deign tool. Differences in how live video streams and data recording are managed on the available VMS can also impact the quantity and combination of hardware that appears in the recommended topology.

Please see the relevant sections that follow for a more detailed explanation of the settings. It is a good idea to check the user documentation of the Video Management Software you plan to use to see if there are any recommended settings or if there are any limitations as far as what settings are supported.

Using the Project Design Tool

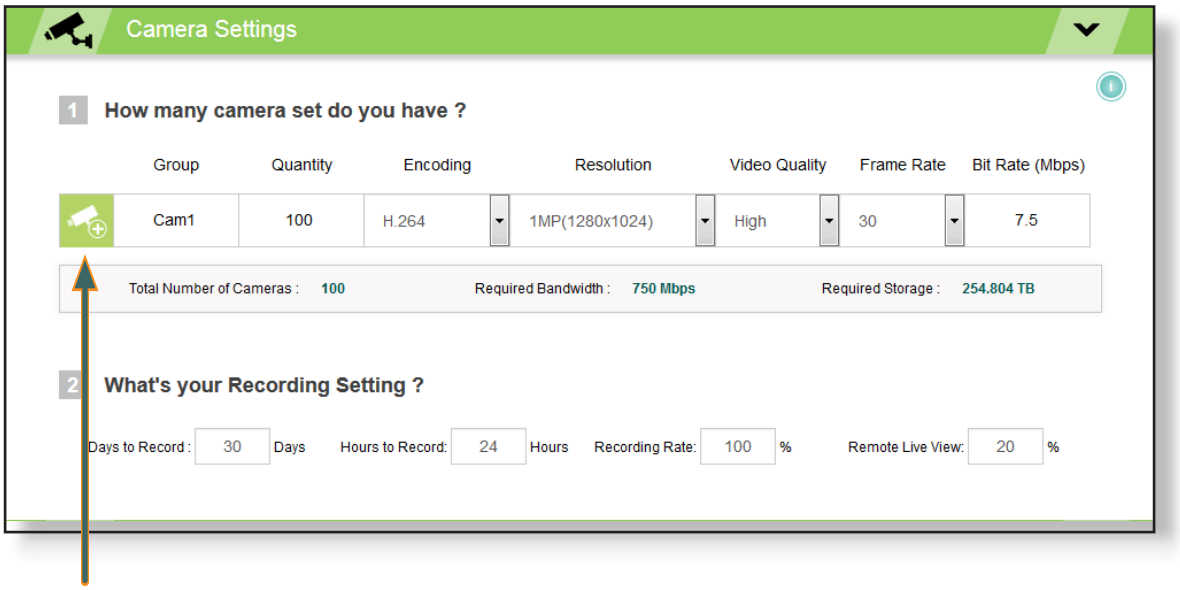
To begin using the Surveillance Project Design Tool, expand the uppermost menu, ***Camera Settings***, enter the information for each camera set as completely as you can, then proceed to the next menu down, ***Advanced Settings***, choose the VMS to use, and, if applicable, enable the *High Density* option. Next, use the ***PROMISE Solutions*** menu to choose to allow the Design Tool to automatically choose a package of PROMISE Vess line RAID storage and NVR storage appliance hardware, or to specify the PROMISE hardware models you prefer to include in the final recommendation. Finally, click on the **Calculate** button to produce the recommended topology.

Follow the instructions for the input menus in the sections that follow below.

Camera Settings

The amount of storage needed and topology is effected by the camera settings. Different encoding, higher resolution and video quality settings can significantly increase the recording server count and storage capacity required. Use this menu to create camera groups and assign the same settings to the entire group. You create up to ten camera sets per topology. To add a new camera set, click on the camera icon with the plus (+) sign, a new row of settings appears below.

Camera Settings menu (default settings)



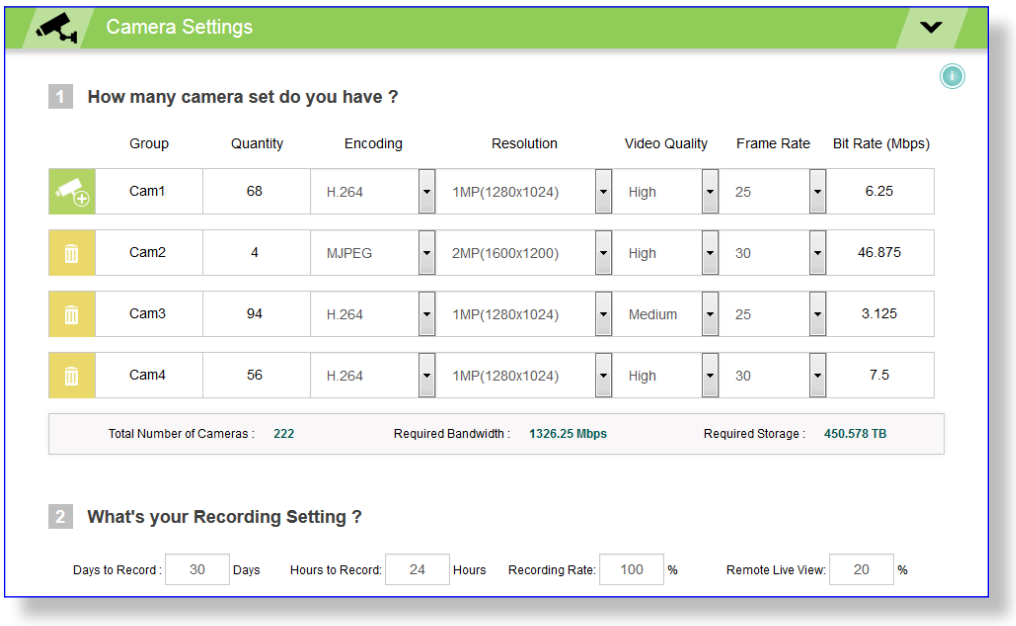
Click icon to add new camera set

See the table below for descriptions of the first part of the menu inputs *How many camera groups do you have?* For part 2, *What's your Recording Setting?* see the next section.

Camera Settings part 1

Setting	Description
Encoding	Select the type of video encoding. Supported encoding include H.264, Motion JPG (MJPEG) and MPEG4. These are the most common formats used in surveillance applications and are supported by most VMS. It is recommended to choose the codec supported, recommended or suggested in the VMS you will use.
Resolution	There are hundreds of different resolutions supported by different cameras. The design tool provides a list of commonly used resolutions. If the specific resolution you want is not listed, choose one that is closest .
Video Quality	PROMISE Surveillance Design Tool provides three levels of video quality, *High*, *Medium* and *Low* (also called *Fine*, *Normal* and *Low* in vendor documentation). Video quality of the camera is determined by compression ratio. Select the quality of video. Higher quality indicated better picture quality and bigger data size.
Frame Rate	This is also known as Frame Per Second (FPS). It is an important setting for surveillance video input. Most surveillance cameras support frame rates between 1 and 30 frames per second. The amount of data storage needed increases with the increase in FPS value. The higher frame rate might be used for example, where automobile traffic in motion is recorded. If the frame rate is too low, some needed detail might be missed if the car moves rapidly through the camera view. For other circumstances, where object are not moving fast, a lower frame rate works just fine.
Bitrate	All video settings listed above combine to generate a video data stream. A common measure for the video data stream is the bitrate. The bitrate or bandwidth of any given camera can vary and depends on circumstances of what is recorded and details of how it is recorded. The PROMISE Surveillance Design Tool provides an approximate suggested bitrate for the given video setting. Some VMS allow the user to set the bitrate to preserve bandwidth. If you plan on setting this in the VMS, use the same value you will use in the VMS. Also, see user documentation from the camera manufacturers for information on how to accurately estimate bitrate.

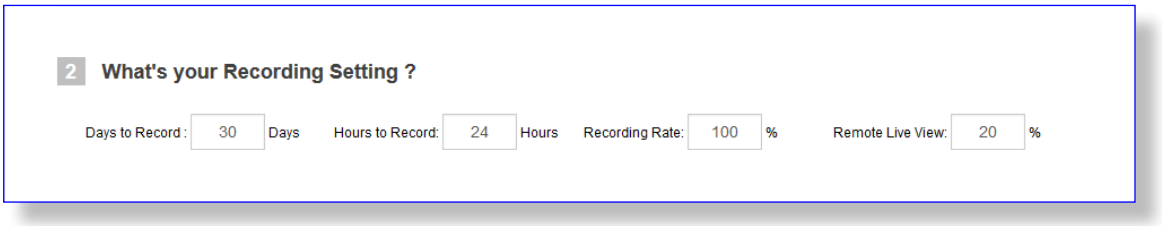
Camera Settings menu example



Recording Settings

The second part of the Camera Settings menu is used to determine how much the cameras are going to be used. Enter settings to the best of your estimation, then proceed to the next menu, ***Advanced Settings***. See the table below for descriptions of the settings.

Recording Setting menu (default settings)



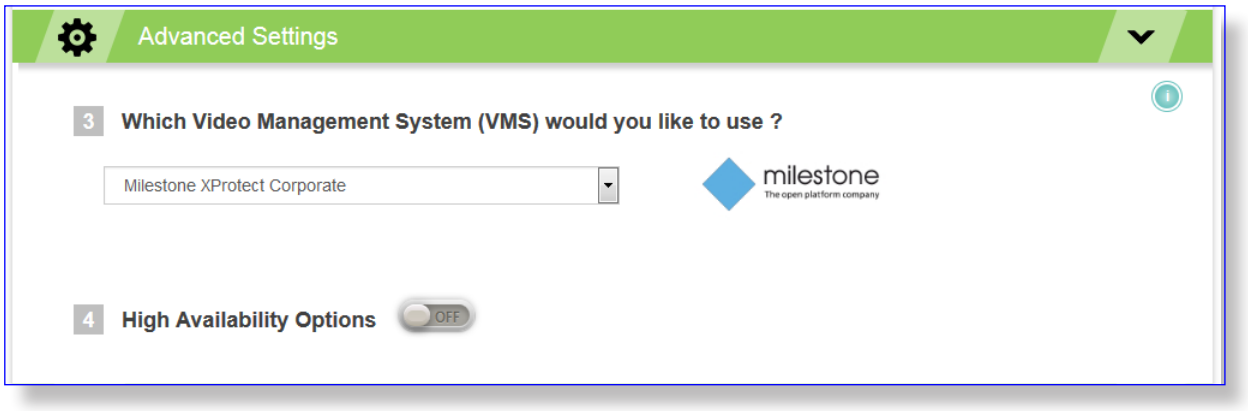
Camera Settings part 2 (Recording Setting)

Setting	Description
Hours to Record	This is the number of hours recording per day on averaged across all cameras. This is a major feature of VMS used to manage and control recording for the cameras. If cameras or camera groups will be operating on different schedules, determine the average number of hours to record and enter that value. Default value of this setting is 24 hours.
Days to Record	This is the number of days the user wants to keep recorded data, before the video is overwritten by new recording. This setting is a major factor in determining overall storage space requirement. Default value of this setting is 30 days.
Recording Rate	Recording Rate is a feature based on motion detection capabilities provided by many advance cameras and in VMS. Moving objects trigger recording, and no recording happens if the motion detector is not triggered. The amount of recording varies tremendously depending on the circumstances of the environment. Default value of this setting is 100%.
Remote Live view	For surveillance installations live streams are available for viewing in real time, and playback of the recorded videos occurs as required. The number of live views and playbacks vary between installations; i.e., a casino might want to view each camera all the time, while drive way cameras might not require constant human watch. This is the most difficult value of the record settings to accurately determine, but try to guess as close as possible. Default value of this setting is 20%.

Advanced Settings

The Advanced Settings menu is used to determine what VMS you are going to use, and to enable the *High Availability* option according to your preference.

Advanced Settings (default)



Choose the VMS platform you will use from the pull-down menu. The available VMS options are:

- Milestone XProtect Corporate
- Axxonsoft AxxonNext
- SeeTec Cayuga Infinity X

Enable High Availability option

To implement High Availability for a surveillance network means building redundancy and robustness into the plan. For storage and recording servers, this typically involves duplication of the RAID controllers on the storage and a backup recording server acting in a failover capacity. You also have the option of using failover for the management server for some of the VMS options.

You must be logged in to enable the High Availability option. To enable, click on the toggle switch icon so it displays the *ON* position. To disable, click the icon to display the *OFF* position.

See blow for menu example and settings descriptions.

High Availability options

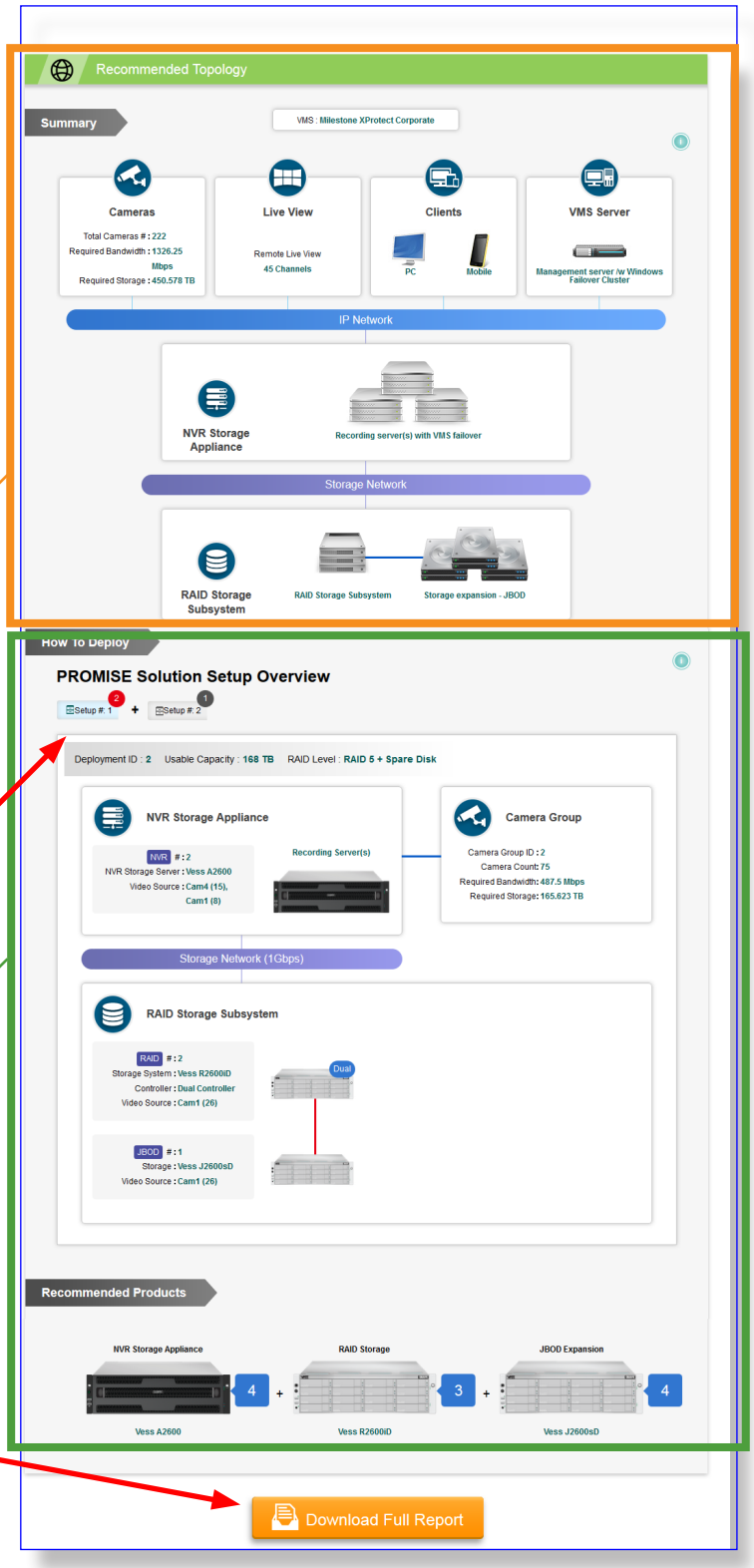
Setting	Description
Management Server Failover	Some VMS include the option to embed the management server in the Vess NVR Storage Appliance. For these VMS offerings, you can choose to include failover for the management server.
NVR Storage Appliance Failover	This is a VMS supported feature. In the event that any of the recording server in an array of recording servers fail, the standby server takes over the operation.
RAID Storage Subsystem Mode	This is used to determine the operation mode of dual-controller storage subsystems. Vess R2000 and Vtrak Ex30 are dual controller storage subsystems. Both of the controllers can be used as *Active-Active* or as *Active-Standby*. Default value is *Active-Standby* mode, for it is a failsafe mode.

Calculate

Based on user and default inputs, the Surveillance Design Tool calculates overall requirement. That includes total storage requirement, total bandwidth requirement, power budget requirements, total rack space requirement, etc.

The summery and recommendations are listed in a new display, **Recommended Topology**.

Sample Topology - Setup #1



Summary of topology components

Click on ***Setup*** buttons to view different solution setups.

PROMISE Solution Setup Overview

Click here to create and download a PDF version of this same Recommended Topology

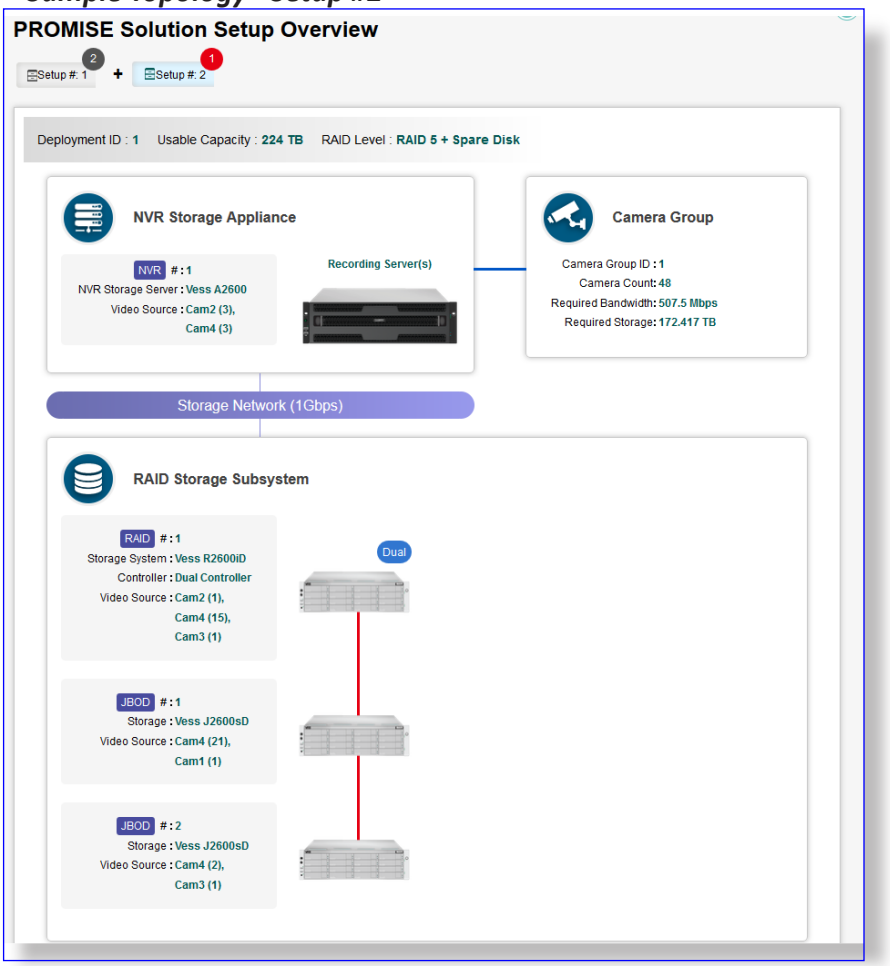
Note

Note: Suggested topology is strictly a best practice guideline, not the only solution.

Recommended Topology

There are 3 sections in this topics, *Summary*, *How to Deploy* the and the PROMISE *Solutions* recommended.

Sample Topology - Setup #2



Summary

This is the summary of the recommended components and topology.

Installation components include, camera input, live view and playback clients, management setup and recording and archiving infrastructure.

Solution Setup Overview

Solution setup describes detailed interconnection of suggested topology.

Recommended Products

List of recommended PROMISE solution products.

Download Full Report

Click the button to download full report of PROMISE Surveillance Planner calculations and recommendations. The report includes the same information listed in the web page summary, plus an **Input Summary** at the top of the report. See the description below.

Definitions of terms in the Summary

The *Summary* of the Recommended Topology at the top of the web page, or on page 2 of the downloaded PDF report, summarizes the layers of the topology recommendations. Definitions of key terms used in the overview are listed below.

VMS Servers

Video Management Software or VMS platforms are highly differentiated and have different requirements for NVR and storage systems. Different VMS platforms can be hosted in one or many servers and provide a narrow range of function or perform many roles simultaneously.

If the VMS Server block appears in the summary block diagram, this means the VMS can support a large scale surveillance project. Otherwise the VMS is for small surveillance system.

NVR Server

The Network Video Recording (NVR) Server is responsible for managing recording and playback of video data streams on a network. Some VMS platforms allow an NVR server to transmit a Live-View stream to client systems. Each NVR server has a limit on the number of cameras it can support. PROMISE Vess A Series NVR appliances include an embedded NVR server capable of fulfilling this key role.

Storage Subsystem

A Storage Subsystem is used to provide addition storage capacity when the native storage of the NVR appliance is not adequate to meet the storage requirement of a deployment. A Storage Subsystem utilizes RAID storage for redundancy, operates on either a Fibre Channel or iSCSI interface with the NVR appliance, and can be scaled up for additional capacity using attached JBOD systems.

Input Cameras

Cameras are obviously an extremely important element in a surveillance system. There is tremendous variation in the capabilities, features and quality of different cameras. The abilities of each camera need to be taken into account when determining where and when different camera types are operated. For example, some cameras are better suited to low light environments, while other cameras are better for areas of high activity, or can cover larger areas.

VMS Clients

VMS platforms typically support a client tool used for system management, watching a live video stream and for playback of stored video. VMS Client software often run on multiple operating systems such as Windows, iOS and Android.

Definitions of terms in the Setup Overview

The *PROMISE Solution Setup Overview* displays details of each NVR appliance and RAID storage subsystem deployment. Definitions of key terms used in the overview are listed below.

Video Settings

These are the video stream configuration settings for individual cameras. Camera settings mainly affect the amount of video data storage capacity needed. Cameras with the same configuration settings are categorized together in the same set.

Camera Group

A Camera Group is used to assign individual cameras into groups that are associated with a particular NVR deployment. For example: Camera Group 1 belongs to NVR 1, Camera Group 2 to NVR 2, and so on. A Camera Group can be made up of cameras with different Video Settings.

Deployment

A deployment consists of one NVR appliance, or one NVR failover cluster of two appliances for the HA option. Each deployment represents storage for the video stream of a single Camera Group. Each deployment can consist of one or more NVR appliance, with additional storage capacity depending on the requirement. Additional storage capacity will be one RAID storage subsystem, and JBOD units if needed.

Setup

A Setup describes the number or NVR appliances and storage devices needed for a deployment. Two or more deployments can have identical Setups, that is, each deployment is made up of the same number and type of devices. When identical Setups are created in the PROMISE Solution Setup Overview they are displayed as a single Setup, and listing the number of deployments using the same Setup.

Video Stream Source

This is a list of all cameras assigned to an NVR appliance or NVR cluster for video stream data storage. Cameras are listed by the number individual cameras that share the same video stream configuration settings. For example, “7 from Config1” means there are seven cameras with “Config1” Video Settings.

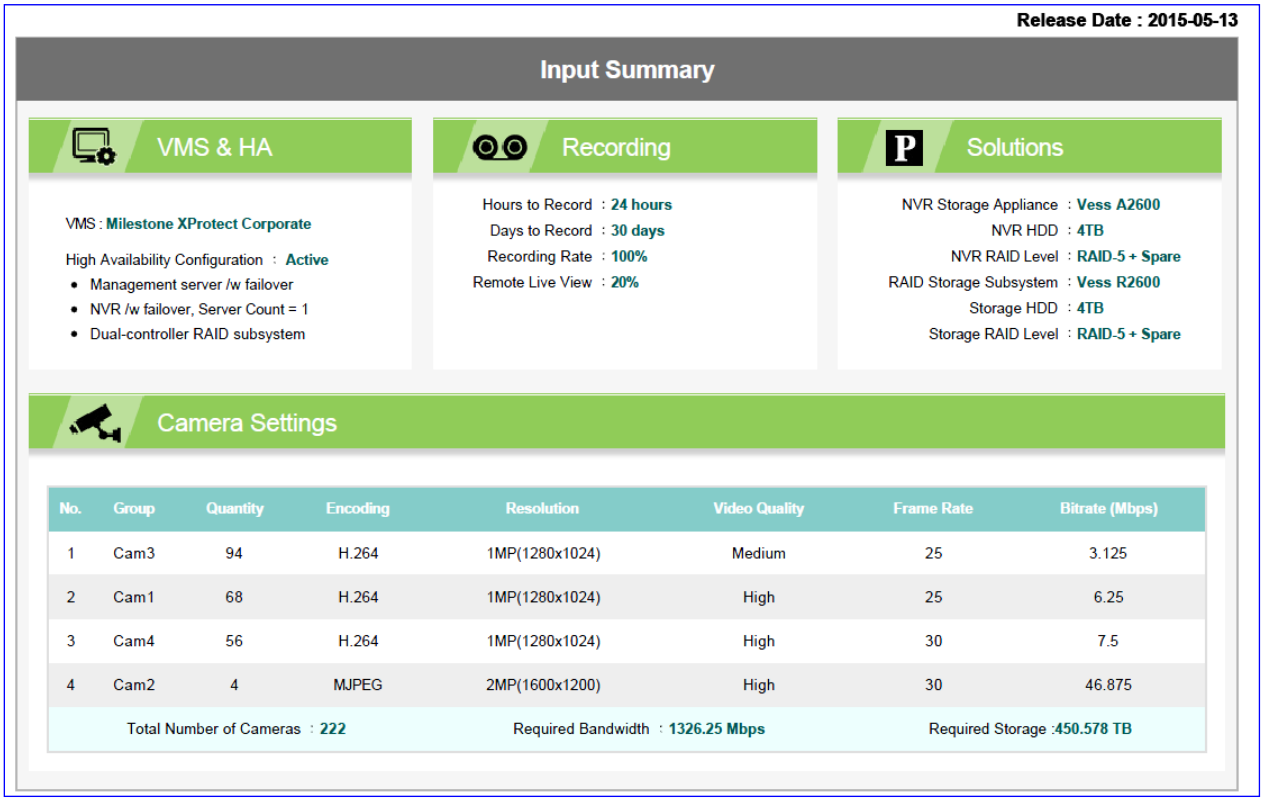
Dual

If the word “Dual” appears in the top-right corner, this indicates that the users has selected the HA Option for the RAID Storage Subsystem.

Description of Full Report (PDF download)

The PDF file or files you can download contains the same information as that presented in the web page, except it includes an additional section at the top, ***Input Summary***, and another section at the end with tables describing ***Camera Recording Distribution***. The Input Summary let's you see the user inputs at a glance, including VMS & HA settings, Recording settings, PROMISE Storage Products and camera settings.

Input Summary sample in downloaded 'Full Report' file



Release Date : 2015-05-13

Input Summary

VMS & HA

VMS : **Milestone XProtect Corporate**

High Availability Configuration : **Active**

- Management server /w failover
- NVR /w failover, Server Count = 1
- Dual-controller RAID subsystem

Recording

Hours to Record : **24 hours**
Days to Record : **30 days**
Recording Rate : **100%**
Remote Live View : **20%**

Solutions

NVR Storage Appliance : **Vess A2600**
NVR HDD : **4TB**
NVR RAID Level : **RAID-5 + Spare**
RAID Storage Subsystem : **Vess R2600**
Storage HDD : **4TB**
Storage RAID Level : **RAID-5 + Spare**

Camera Settings

No.	Group	Quantity	Encoding	Resolution	Video Quality	Frame Rate	Bitrate (Mbps)
1	Cam3	94	H.264	1MP(1280x1024)	Medium	25	3.125
2	Cam1	68	H.264	1MP(1280x1024)	High	25	6.25
3	Cam4	56	H.264	1MP(1280x1024)	High	30	7.5
4	Cam2	4	MJPEG	2MP(1600x1200)	High	30	46.875

Total Number of Cameras : **222** Required Bandwidth : **1326.25 Mbps** Required Storage :**450.578 TB**

Use the Camera Assignment tables to quickly evaluate bandwidth and storage costs and see each Video Stream Source and its associated NVR appliance.

Camera Recording Distribution tables sample in downloaded 'Full Report' file

Camera Recording Distribution

Deployment ID : 1

Function	Models	Max. Usable Capacity	Video Sources	Required Bandwidth	Required Storage
NVR	Vess A2600	56 TB + Spare	3 from Cam2	140.625 Mbps	47.776 TB
			3 from Cam4	22.5 Mbps	7.644 TB
RAID	Vess R2600iD	56 TB + Spare	1 from Cam2	46.875 Mbps	15.925 TB
			15 from Cam4	112.5 Mbps	38.221 TB
			1 from Cam3	3.125 Mbps	1.062 TB
JBOD #1	Vess J2600sD	56 TB + Spare	21 from Cam4	157.5 Mbps	53.509 TB
			1 from Cam1	6.25 Mbps	2.123 TB
JBOD #2	Vess J2600sD	56 TB + Spare	2 from Cam4	15 Mbps	5.096 TB
			1 from Cam3	3.125 Mbps	1.062 TB
RAID5 + Spare Disk		224 TB	Total : 48	507.5 Mbps	172.417 TB

Deployment ID : 2

Function	Models	Max. Usable Capacity	Video Sources	Required Bandwidth	Required Storage
NVR	Vess A2600	56 TB + Spare	15 from Cam4	112.5 Mbps	38.221 TB
			8 from Cam1	50 Mbps	16.987 TB
RAID	Vess R2600iD	56 TB + Spare	26 from Cam1	162.5 Mbps	55.208 TB
JBOD #1	Vess J2600sD	56 TB + Spare	26 from Cam1	162.5 Mbps	55.208 TB
RAID5 + Spare Disk		168 TB	Total : 75	487.5 Mbps	165.623 TB

Deployment ID : 3

Function	Models	Max. Usable Capacity	Video Sources	Required Bandwidth	Required Storage
NVR	Vess A2600	56 TB + Spare	7 from Cam1	43.75 Mbps	14.864 TB
			38 from Cam3	118.75 Mbps	40.344 TB
RAID	Vess R2600iD	56 TB + Spare	52 from Cam3	162.5 Mbps	55.208 TB
JBOD #1	Vess J2600sD	56 TB + Spare	2 from Cam3	6.25 Mbps	2.123 TB
RAID5 + Spare Disk		168 TB	Total : 99	331.25 Mbps	112.538 TB

Note

- The deployment ID should be the same as the Camera Group ID, i.e. Camera Group 1 belongs to NVR 1, Camera Group 2 to NVR 2, and so on.
- Deployments using an identical device count and device type (NVR, RAID Storage, JBOD are the same) should have the same Setup ID.

Contact PROMISE

If you have any questions or would like to speak to a representative about PROMISE Surveillance Solutions or other products and services, go to http://www.promise.com/us/ContactUs/ for contact details.