APC APPLICATION NOTE #135

InfraStruXure® Central Surveillance: Performance Tuning and Remote Storage

Abstract

Due to the amount of data that is generated by InfraStruXure Central Surveillance, it may be very useful to properly plan your surveillance deployments. You can use the information included in this document to determine approximately how much data will be generated by your surveillance-licensed appliances and to tune the performance of your NetBotz appliance cameras to minimize their impact on your network. This document also provides information on how you can configure your appliance to use network attached storage (NAS) to store surveillance data remotely until it is needed by InfraStruXure Central, thereby minimizing network traffic and optimizing the efficiency of your InfraStruXure Central deployment.

Optimizing Your InfraStruXure Central Surveillance

InfraStruXure Central Surveillance is a separately available, license key-based upgrade designed for use with InfraStruXure Central. Surveillance View enables you to easily tag, export, and view a summary of all surveillance event images that have been captured on a specified day or range of days. Surveillance events contain picture data that can be indexed and viewed as movie-like 'clips', enabling you to see the sequence of events that caused the surveillance event to occur. Due to the amount of data that in generated by InfraStruXure Central Surveillance it may be very important to properly plan your surveillance deployments.

Appliance camera settings and network traffic

Table 1 shows the approximate size of the image files that will be generated by the NetBotz Appliance camera at each of the supported resolutions as well as the maximum number of images that can be captured and generated each second at each of the supported resolutions. You can use this chart to estimate and plan for the amount of data that will be sent over your network based on the camera settings of your appliance. Note that the file sizes are presented as a range of potential values because the actual size of each file is highly dependant on the amount of detail that is contained in the image.

APC by Schneider Electric

Table 1 *– Approximate image file sizes based on camera resolution*

Camera resolution	Maximum images captured per second	Approximate image file size
160x120	30 frames per second	1.2KB – 5KB
320x240	30 frames per second	8KB – 12KB
640x480	30 frames per second	30KB – 51KB
800x600	10 frames per second	50KB – 73KB
1024x768	10 frames per second	70KB – 114KB
1280x1024	10 frames per second	100KB – 175KB

Clearly, appliances that are configured to send camera images along with alert data or are used for surveillance purposes can generate a significant amount of network traffic, especially if the appliance camera is configured to generate high-resolution images at a high frame rate. Of course, how much of an impact this data would have on a network is largely dependent on current network bandwidth utilization, the number of appliances and cameras that are deployed across your network and the amount of activity that is captured and transmitted across the network by the appliances. Most customers find that a maximum frame rate of 5 frames per second is more than adequate for most applications.

Storing Surveillance Data On Your NetBotz Appliances

If you require higher frame rates and resolutions but also are concerned about network bandwidth consumption, NetBotz 500 appliances running BotzWare 2.6 or later can use their External Storage functionality to store surveillance data on a NAS or on an Extended Storage System until it is requested by the InfraStruXure Central server. Information about clips that are stored remotely is available from the Surveillance Clip View dialog, but the audio and video data content is not transferred from the appliance to the InfraStruXure Central server until the administrator elects to do so. This feature greatly enhances the scalability of your surveillance solution, and can be very useful when using surveillance of slower networks. By limiting the surveillance data transfers to only those surveillance clips that are specifically selected for use by the InfraStruXure Central administrator you can greatly reduce the amount of data transmitted across your network without limiting the amount of surveillance and monitoring data that is collected by your NetBotz appliances.

For example, assuming that your InfraStruXure Central server is configured to gather surveillance data from a series of remote locations (such as classrooms at multiple campuses, or a series of bank branches), and that there is limited bandwidth available between the server and the remote monitoring appliances deployed to those locations. Configuring the

remote appliances to continually gather and transfer the large amount of audio and video data contained in surveillance clips using such limited network resources could easily swamp the network connections between these locations, potentially interfering with other critical network-based activities. However, if the NetBotz appliances that are deployed at the remote locations are configured to store their surveillance data on a NAS system at the same location, you can greatly reduce network traffic. In this case, only general information about any surveillance events that occur is transmitted to the InfraStruXure Central server. The data transmitted only includes information such as location and time at which the event occurred, duration of the event, and the number of frames of video that were captured by the camera during the event. All of the audio and video data that is associated with the event remains stored locally on the NAS device until it is selected by the InfraStruXure Central administrator. This way, the large data transfers only occur when the InfraStruXure Central user decides it is necessary to do so, and only the data associated with surveillance clips that are currently of interest is transferred.

Configuring NetBotz appliances to use external storage

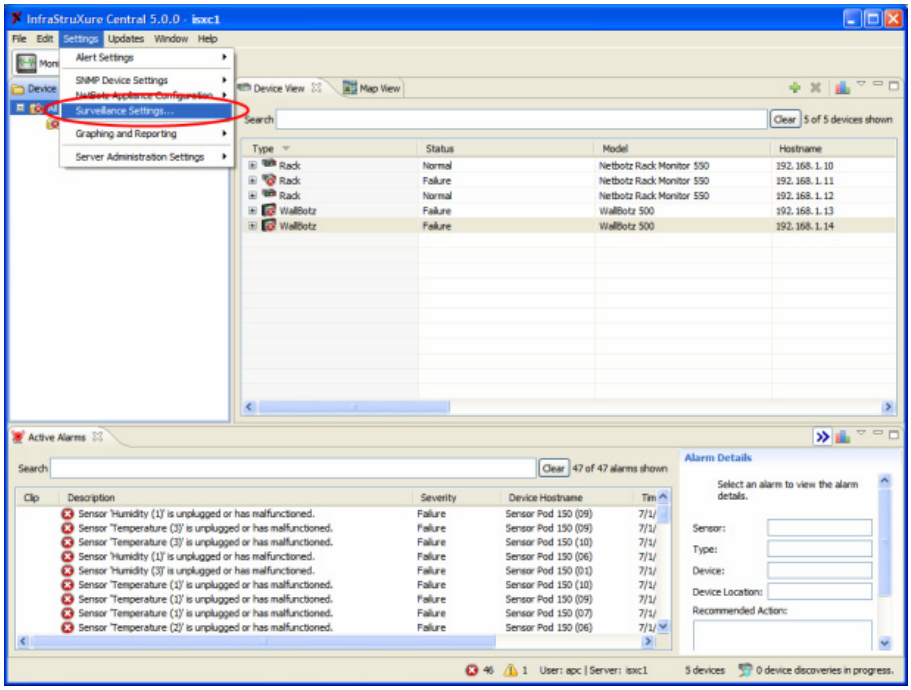
Before you can configure InfraStruXure Central to store surveillance data on remote NetBotz appliances, you must first configure the NetBotz appliances to store data on either an Extended Storage System (NetBotz 500 appliance only) or a network attached Windows or NFS share.

- To configure a NetBotz 500 to use an Extended Storage System, you must connect the Extended Storage System to one of the NetBotz 500 USB ports. Then, open the NetBotz Advanced View application, and use the License Keys task to activate the External Storage task, using the license key you received when you purchased the Extended Storage System. Then, use the External Storage task to format the Extended Storage System drive for use.
- To configure a NetBotz 500 or NetBotz 420 to use a NAS device (a Windows share or an NFS mount), first ensure that the NetBotz appliance is running BotzWare 2.6 or later. Then, open the NetBotz Advanced View application, and use the External Storage task to configure the appliance to use the NAS device as extended storage.

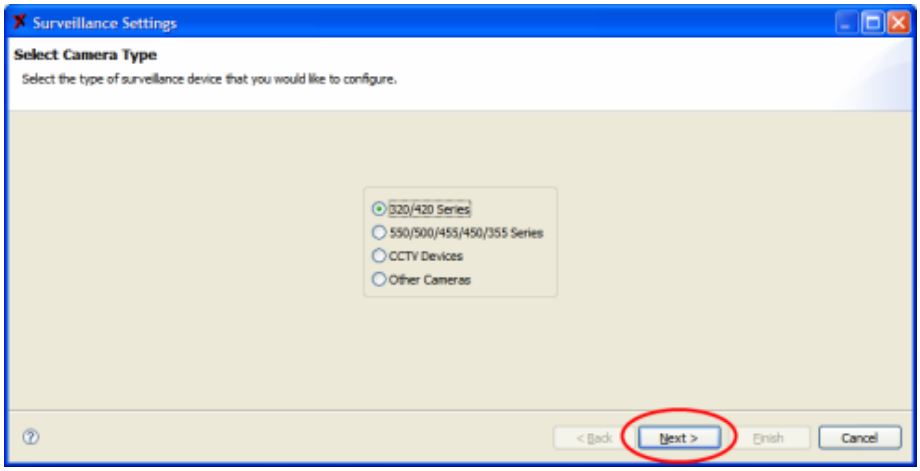
Once your appliance is configured to store data on an Extended Storage System or NAS device it will be able to store up to 5000 unique data objects (such as alerts and picture clips). Note that sensor readings do not count against the maximum number of objects stored.

Configuring InfraStruXure Central Surveillance to store clips on remote devices

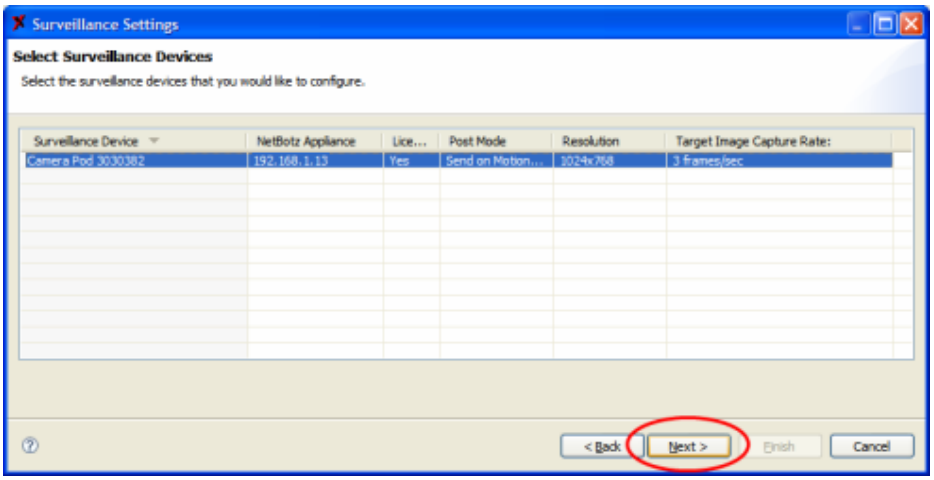
Once your remote NetBotz appliances are configured to store data using an Extended Storage System or a NAS device you can configure surveillance to store surveillance clip data on the remote device until it is requested for use in the Surveillance Clip View. To enable this feature, click the Surveillance Settings menu item:



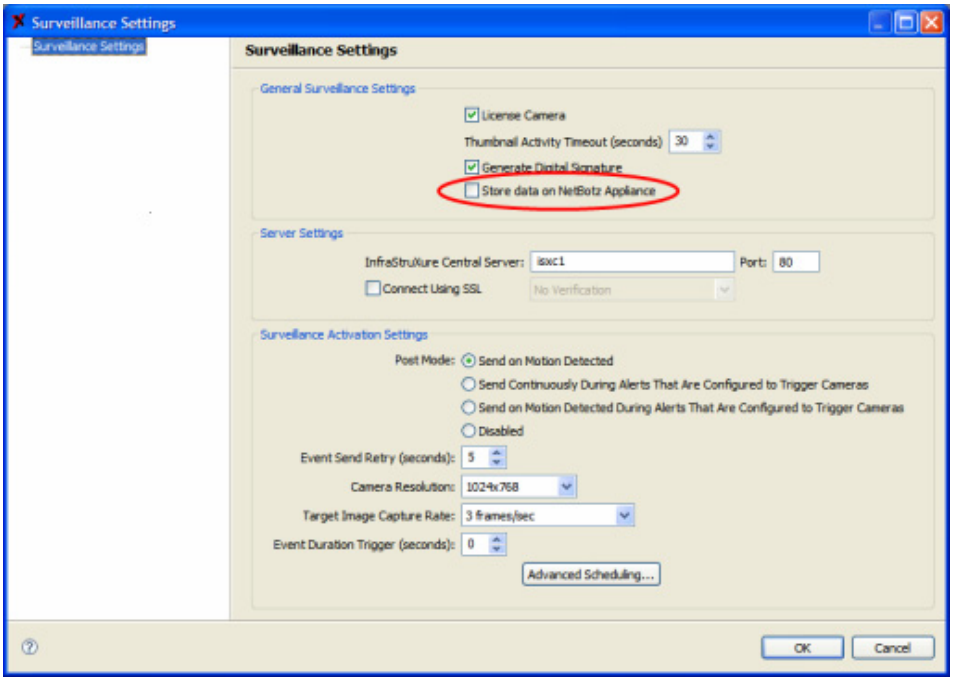
Next, select the camera type you'd like to change and click **Next**.



Then, select one or more appliances from the list of appliances that are currently licensed for surveillance and click **Next**.



Finally, on the Settings dialog, check the **Store data on NetBotz appliance** checkbox and then click **OK**. Note that the **Store data on NetBotz appliance** checkbox appears in this interface *only* if the appliances are already configured to use an Extended Storage System or a NAS device to store data.



When surveillance clips are stored on the NetBotz appliance using a NAS device or Extended Storage System they are still available for selection from the Clip View dialog. To immediately view surveillance clips that are stored on a remote management device, simply double-click on the clip to transfer the data to your InfraStruXure Central server.