SVP600
SICK Visualization Platform

Visualization software for performance monitoring of ALIS, OPS, VMS, RFID and ICR Systems

SICK
Sensor Intelligence.

Software Versions

Software/ Tool	Function	Version
SVP600	SICK Visualization Platform	From V2.10
SOPAS-ET	Configuration software (Windows-based)	From V2.32

Latest manual version

For the latest version of this manual (PDF), see www.sick.com.

Contents

1. Overview

1.1   What is SVP (SICK Visualization Platform)?

See the difference — achieve higher control of your data collection processes to maximize productivity in your distribution center.

SVP is a powerful information and camera image management platform used for performance monitoring with SICK's data collection systems in receiving and sortation applications. Evaluate package and label conditions and monitor system performance anywhere on a network, including operational data, statistics, and images in real time.

- Dashboard for displaying current activities and system performance
- Database search function for accessing and analyzing key system information
- Image archive management for easy access to package visuals and data
- Network-wide image monitoring for quick and easy object viewing

The SICK Visualization Platform is a client/server application that provides a rich 'dashboard' for monitoring SICK automation systems.

Primary Functions

- **Dashboard** – What is happening right now!?
  SVP provides real-time feedback about system activity and performance

- **Information capture & analysis solution** – What more can the system data tell me?
  All system data is stored in a searchable database. SVP provides simple yet powerful access to key system information.

- **Image Archive Management solution**
  Camera images of all packages are just a 'click' away. Simply click on package information and the image pops up.

- **Powerful Client/Server platform**
  SVP provides system access from anywhere on the network.
  Remote image viewing from anywhere on the network.

Primary components

- **Dashboard Client -** The client application is Adobe Flash/AIR based. SVP is built as a desktop application that has full network access. To install the SVP dashboard it is necessary to first have the AIR environment loaded on the target PC

- **Application Server** - SVP connects to a JAVA based application server identified as the App Server. This server runs in the background and provides the following functionality:
  - Collects the data via an XML file from the camera tunnel controller and stores it in a MySQL database.
  - Provides data to all clients upon request.
  - It can be located where it makes sense on the network

  The SVP client connects to this server using two different protocols:
  RTMP – Typically port 1935 is used for the RTMP connection.
  Http – Typically port 5080 is used for the Http protocol.

- **Image Server** – The image archive is driven by an ftp server and a set of utilities that allows the user to view and manage images. This can be done real time within the current sort or the user can 'go back in time' to view images from previous sorts. Both the ftp server and utilities are Java based.
- **Dashboard 'Skin'** – The SVP Dashboard is an intuitive interface that allows the user to quickly search, view and export data obtained from the barcode scanning system. The 'skin' of the client are those features that make up the background design.

1.2   System Requirements – Supported Operating Systems

- Windows Server 2003
- Windows XP Professional Service Pack 2 or Service Pack 3
- Windows Vista
- Windows Server 2008
- Windows 7 Professional

If you install SVP-Components on a system which has restrictive user rights (e.g. Windows Vista, Windows 7 or Windows Server 2008) it's recommended to install the components not under "C:\Program Files\...". But you can install in any other folder without access restrictions like "C:\sick\svp".

1.3   System Requirements – Minimum/Recommended Hardware

	Minimum:	*Recommended:*
RAM	2 GB	4 GB
Drive	250 GB	1 TB
Processor	Dual-Core	Quad-Core
Screen resolution	1024 x 768	1280 x 1024
Supported browsers	Internet Explorer 6+ Mozilla Firefox 3.6+ Google Chrome 8+	

2. Installation

This chapter describes the installation and the initial setup of SVP components and it's prerequisites.

After going step by step through this document it should be able to start the SVP Application Server and the SVP Dashboard and see, if connected, incoming data of one ore more tunnels.

Please note that on every operating system administration rights are required for an installation of any software.

Note:

If you install SVP components on a system which has restrictive user rights (e.g. Windows Vista, Windows 7 or Windows Server 2008) it's recommended to install the components not under "C:\Program Files\". But you can install in any other folder without access restrictions like "C:\sick\svp".

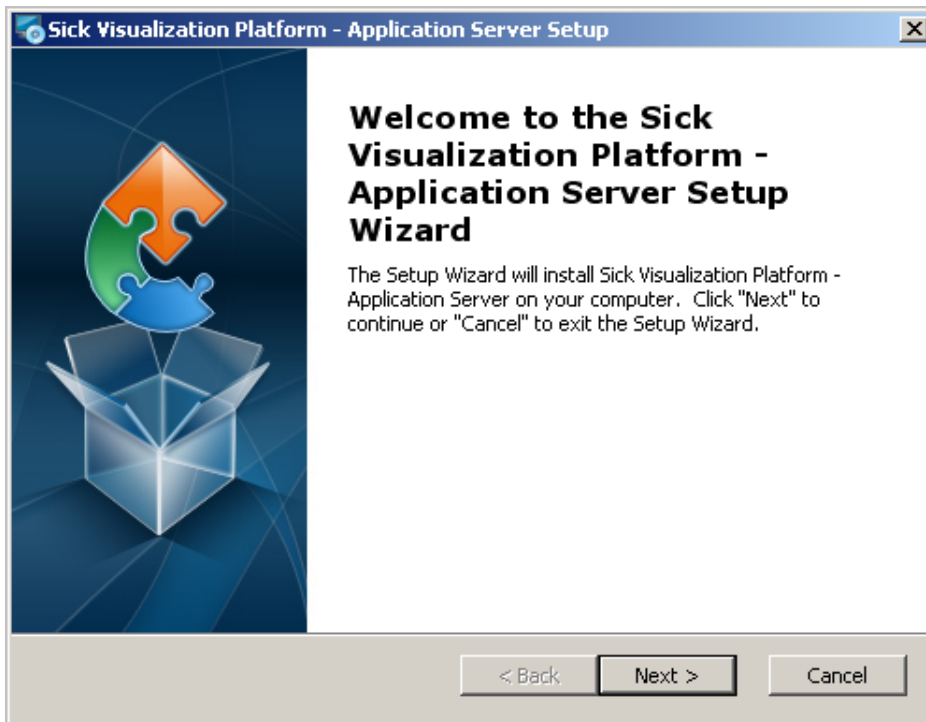## 2.1   SVP Server Prerequisites

→ Execute the file **setup.exe**

At start of installation there is a check done whether the needed prerequisites are already installed or have to be installed. So this part of the installation may depend on the machine where SVP is going to be installed.
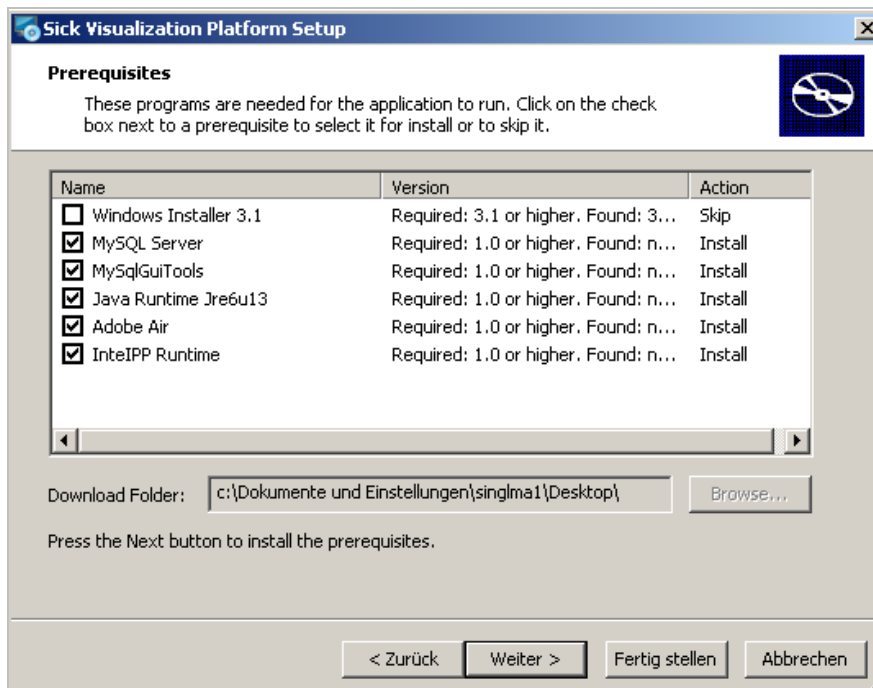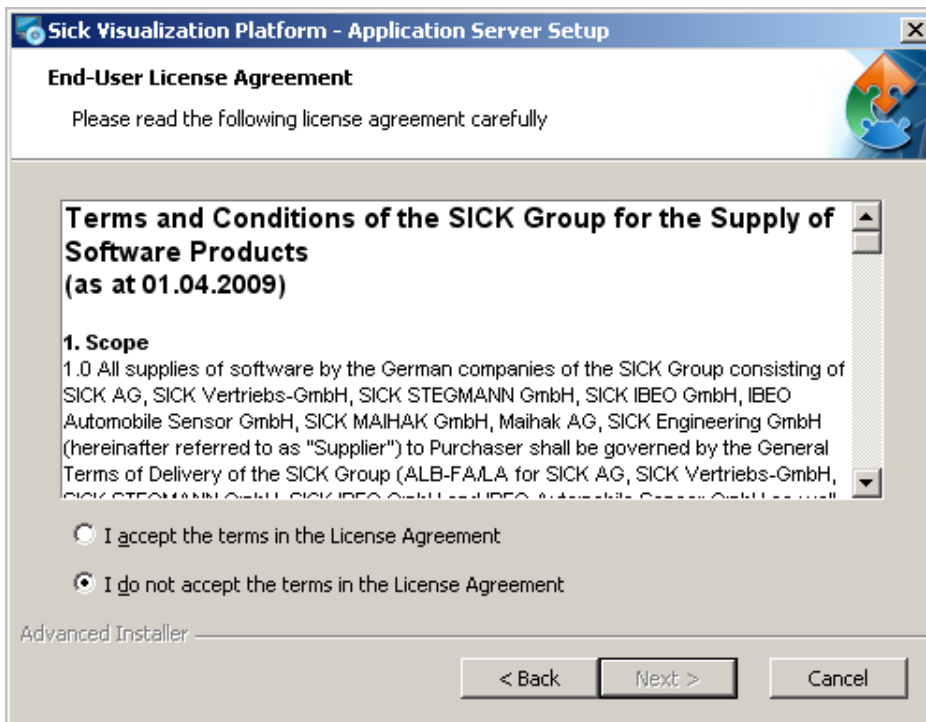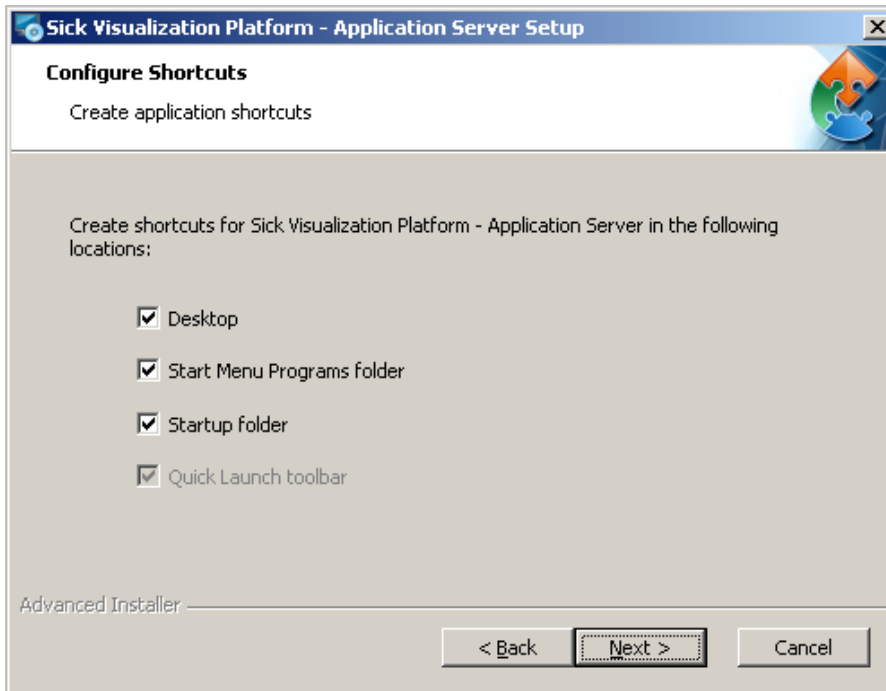
2.2 SVP Server Installation

→ Click on "**Next**" button to continue.

→ Check "**I accept the terms in the License Agreement**" and click on "**Next**"-button
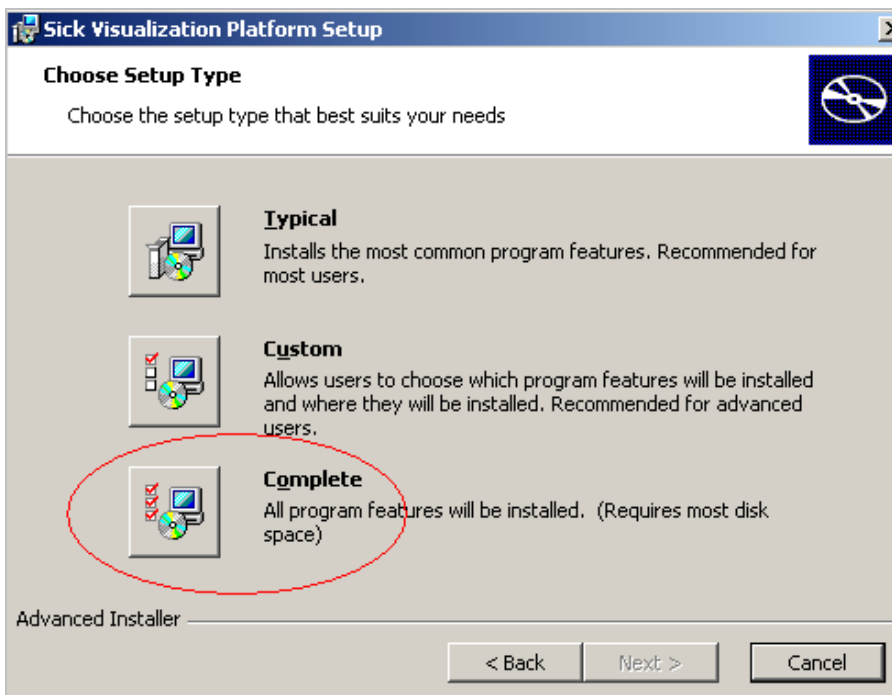
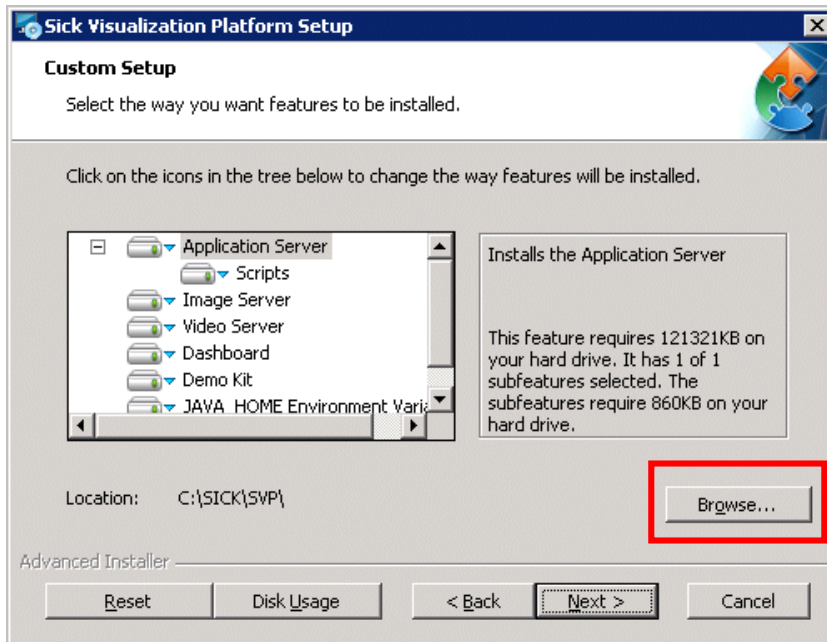→ Select the appropriate **shortcuts** start the SVP-Application server

→ Select **Custom** if you want to install SVP in any other folder than "C:\Program Files". This is recommended for operating systems with restrictive user rights like Windows 7.

→ Click on "**Complete**" button to continue with standard folder structure.
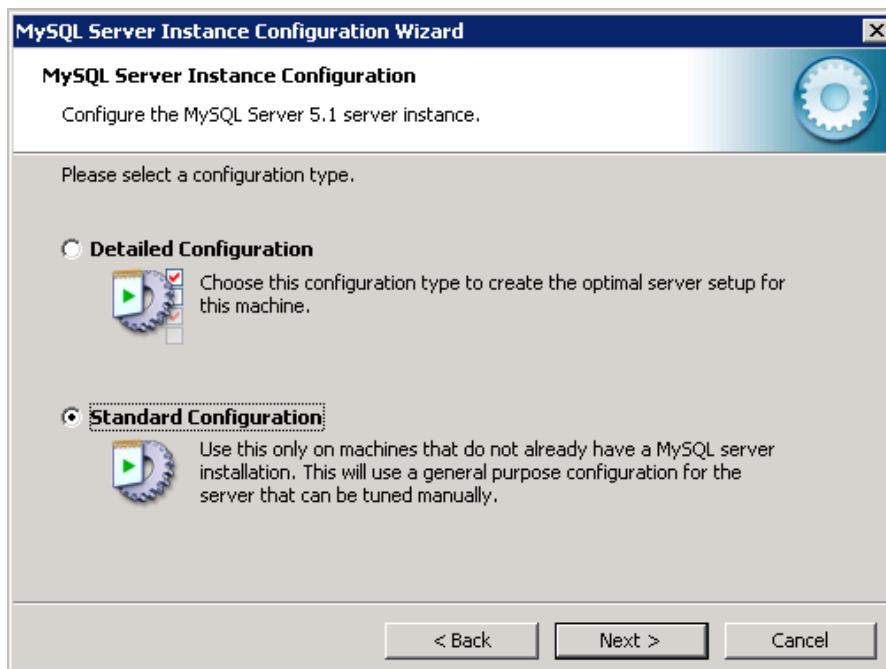
→ To change install path click on "Browse".

If there is no MySQL service installed on your system, the MySQL Server Instance Config Wizard will pop up to configure your MySQL Server.

→ Select the "**Standard Configuration**". Click on "**Next**" button to continue.

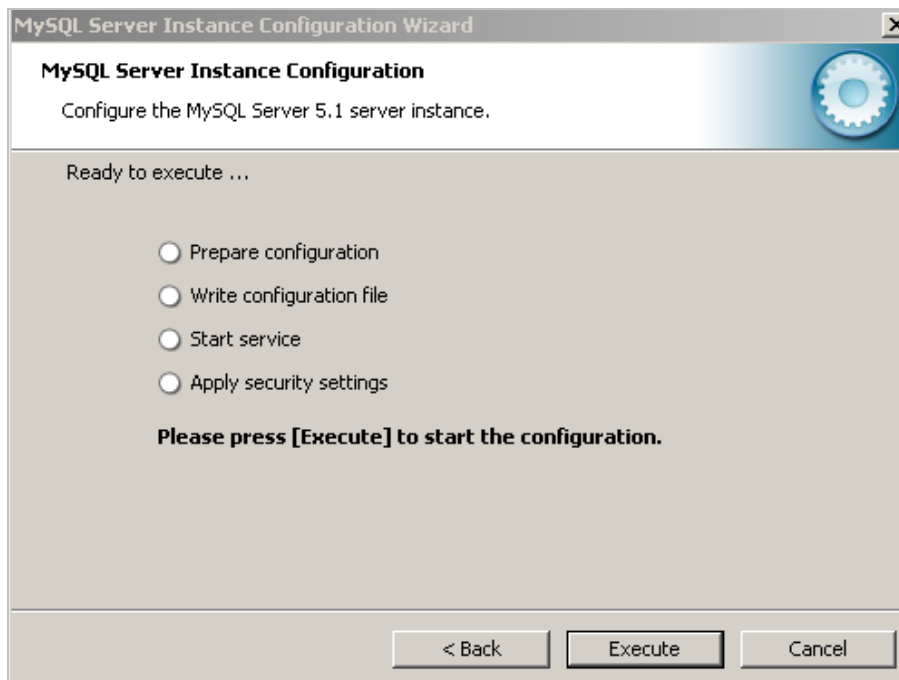Confirm the following dialog with it's default settings.

→ Enter the "**sicksick**" password into the "**New root password:**" and "**Confirm:**" text boxes.

→ Check the "**Enable root access from remote machines**" check box.

→ Make sure the "**Create an Anonymous Account**" check box is unchecked.

→ Click on "**Next**" button to continue.

→ Click on "**Execute**" to configure the MySQL-Server

Important hint:

In the installation directory of the MySQL-Server you can optimize your database by editing the file **my.ini**.

It's strongly recommended to increase the size of the buffer pool adapted to the machine where the database is running. We recommend using a least 1GByte.

```
innodb_buffer_pool_size=1G
```

→ Click on "**Finish**" to close the wizard.

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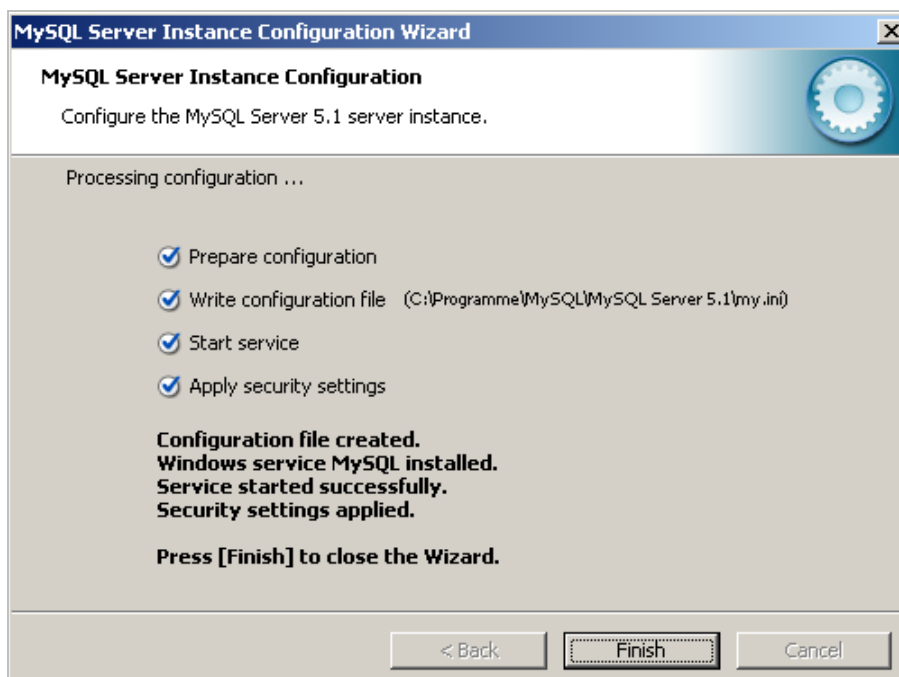
Before the installation is completed you should select to create the initial database schema for the SVP-Server by clicking on "**Initialize SVP Server**".

✒ **Please note that creating o new schema deletes eventually existing data of the SVP-Server. If you want to keep these data on the server please double check when the server starts that there appear no compatibility issues in the server console window.**
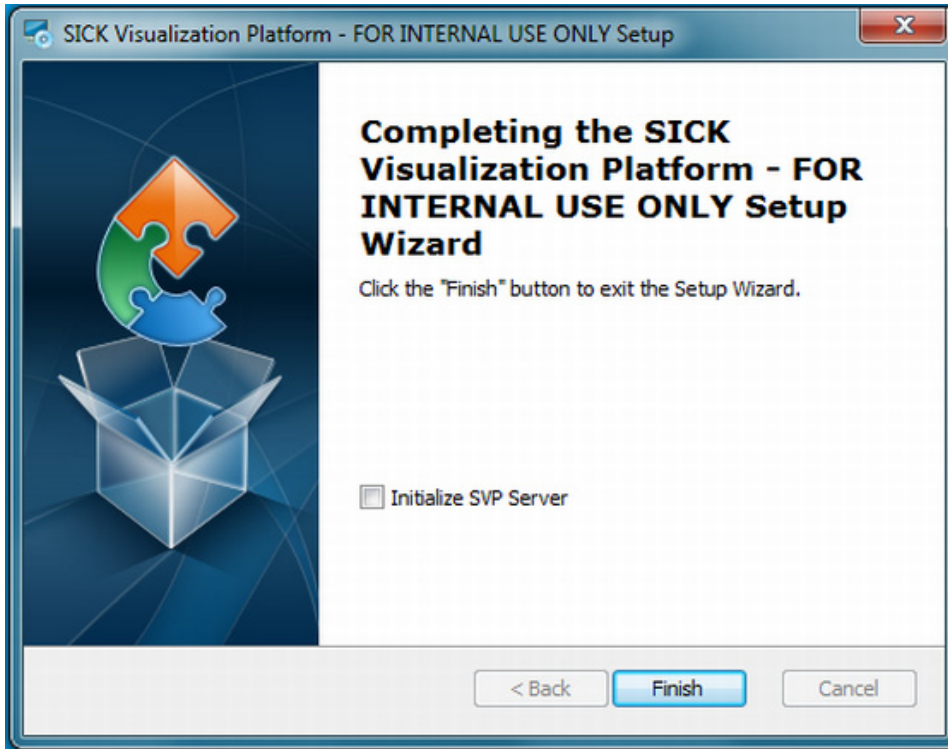
→ Complete the installation by clicking on "**Finish**".

2.3   SVP Server startup

→ Start the SVP-Application-Server from your desktop or by using the start menu:
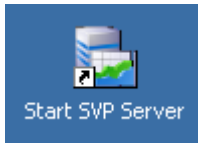
Note: If you get the error message "JAVA_HOME" environment variable not set! …" you need to set this environment variable according to where you have installed the Java Runtime Environment (e.g. C:\Program Files\Java\jre6).

2.4   SVP Dashboard – FLASH version

The easiest way is to use SVP-Dashboard with in the browser (FLASH-Version). If you use this version you need not to install the SVP-Dashboard. Just enter the URL of the SVP-Application-Server into your browser (e.g. http://127.0.0.1:5080 for localhost) and you will be forwarded to the dashboard. The dashboard flash will then be downloaded immediately.
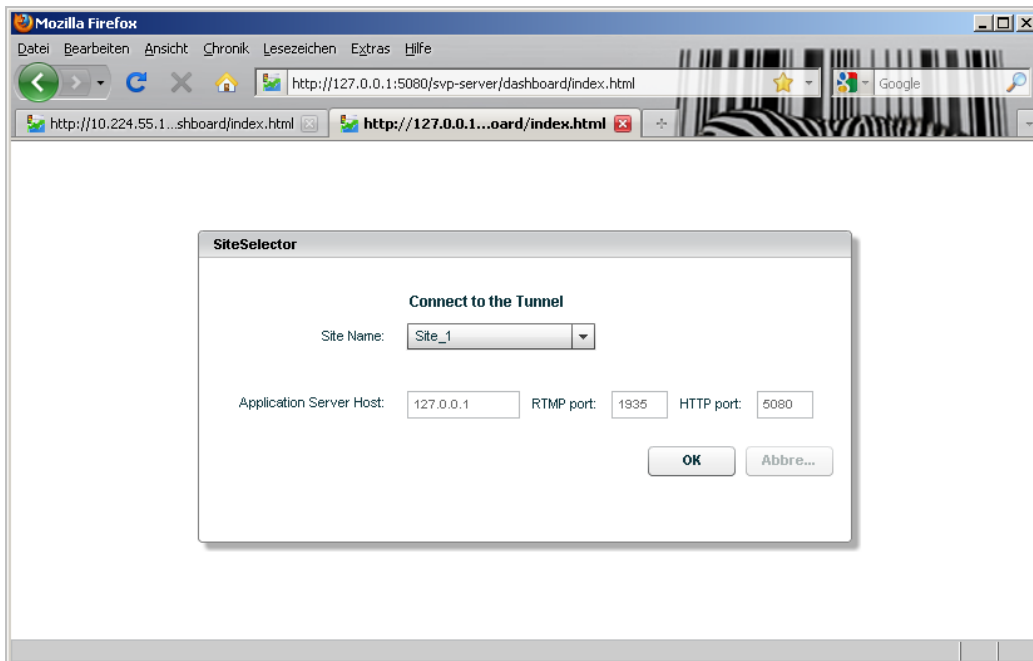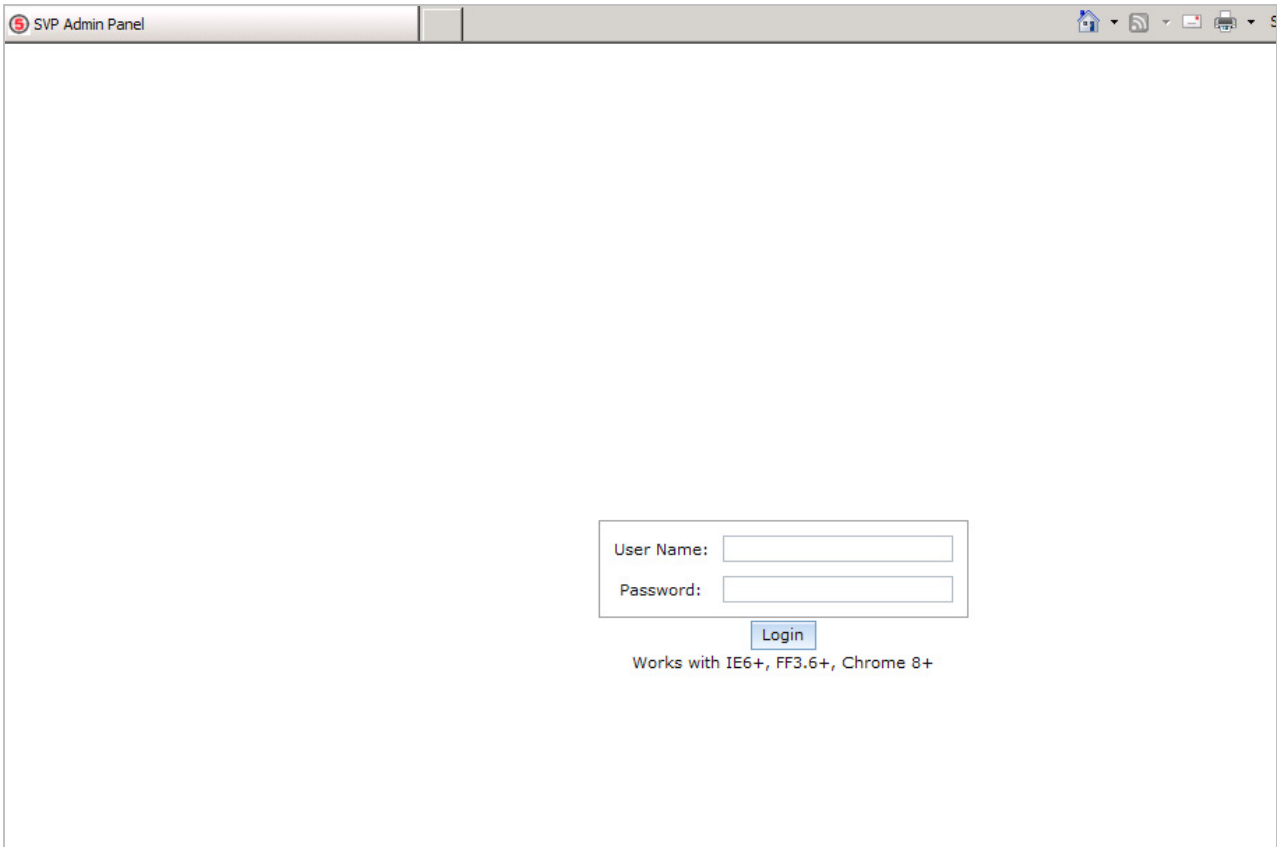
3. SVP Configuration

3.1 Startup Admin Panel

→ Start the Admin Panel by entering your IP address followed by the port number and "/adminpanel"
http://127.0.0.1:5080/adminpanel.

→ Login with user name "service" and password "servicelevel"

3.2   Cleanup settings

In this tab all storage related settings can be done. Typically the default settings do not need to be changed. In case of image storage it might be required to adjust the settings to the used server hardware.

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3.3   Conditions settings

Once the MSC800 is connected to SVP the evaluation conditions in the Admin Panel are synchronized with the conditions used at the MSC800.

In this tab it can be selected how the conditions are used at SVP.

- Filter: if this checkbox is enabled the condition can be used to filter results
- Eval: if this checkbox is enabled SVP makes additional evaluations
- Display: if this checkbox is enabled the condition is shown in the activity tab
- Warning: if this condition is true the package is shown in yellow (e.g. LFT) color

3.4   Server settings

Here the basic server settings can be adjusted.

- Host name: please enter the IP address of the server
- Site name: here the name of the hub/site can be defined
- OSC Server Port
- Http Server Port
- Socket Server Port
- Socket Server Timeout

3.5   Statistics settings

At the statistics page it can be decided which counters and conditions are visualized in the system per-formance window. Basically there are 5 positions available

- Above conveyor 1:   typically total no. of objects (Total)
- Above conveyor 2   typically parcel per hour (PPH)
- Above conveyor 3   optional field for 3rd performance figure
- Primary: most important performance figure
- Secondary   second important performance figure

Here the above described positions can be seen.
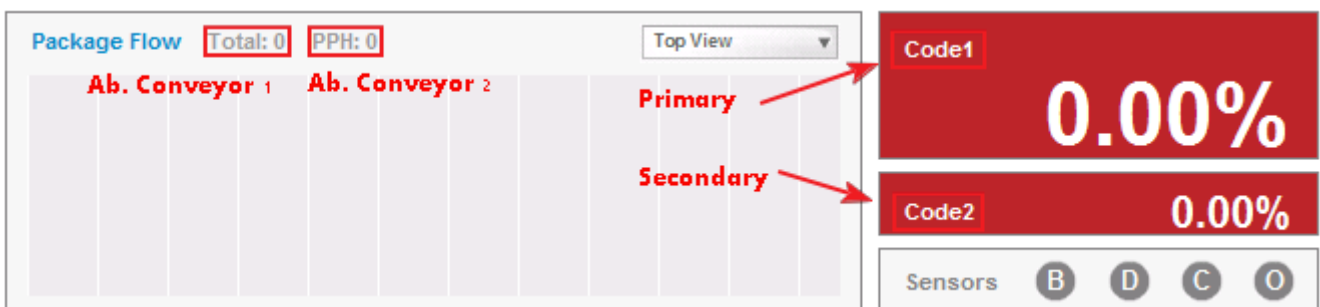
In addition to the definition of the used figures here it is also possible to define the threshold to create warning events or error events.

3.6   Topology settings

At the topology page systems can be created, deleted and modified. By definition of tunnel groups it is possible to cluster the systems according to the given conditions (e.g. pre-sorter, main-sorters, …).

When new groups and tunnels are defined the save and update buttons have to be clicked afterwards.

All devices connected to the tunnel have to be adjusted:

- Device No. (CAN bus ID)
- Device Name
- Device Group
- Device Position
- Device Model
- User Id (for ftp connection)
- Password (for ftp connection)
- Fullsize directory (for ftp connection)
- ROI directory (for ftp connection)
- IP Address

4. Configuration of MSC800 and ICR890

This chapter describes the configuration possibilities of the SVP-Components and the connected devices (MSC800, ICR890 and VMS) which work together with SVP.

4.1 MSC800 settings

- The minimum firmware version of the MSC800 is **V2.65**.
- The minimum required login level is "**Service**" to have access to all parameters.

Evaluation Conditions

→ Page: Parameter → Data Processing → Evaluation Conditions

The conditions shown in the following picture are just sample conditions. Please keep in mind that the names of the conditions parameterized in the MSC800 must match the conditions listed in the statistic configuration of SVP.
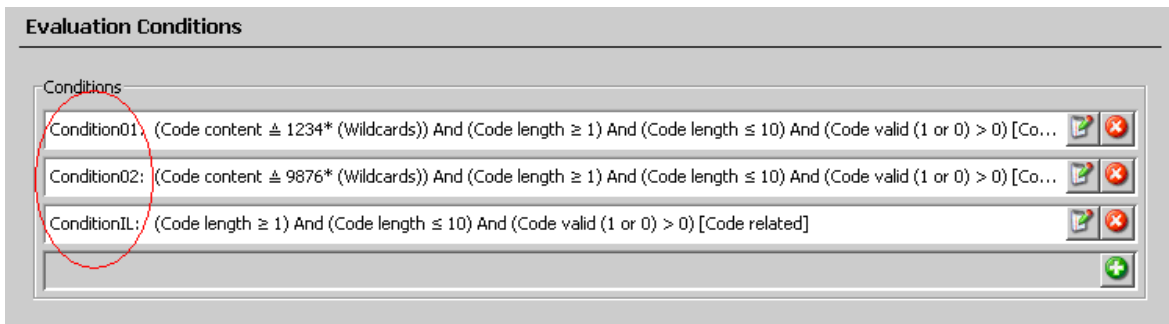
Image Request

→ Page: Parameter → Data Processing → Image Request

Image Request must be enabled. Select "**On every Trigger**" or "**On NoRead**" depending on your application requirements.
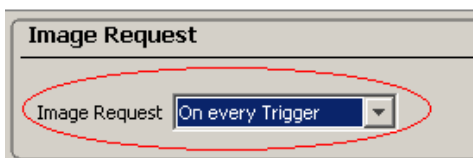
Image Request

Image naming must be enabled. The file name must include the variable device name (DEVN) and the variable SVP-Filename (SFP) separated by an underscore.
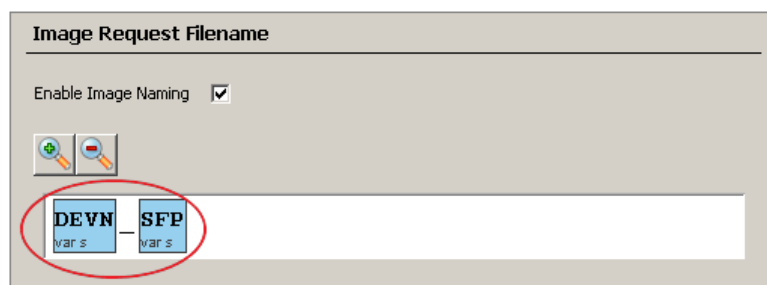
Device Name

→ Page: Parameter → Network / interfaces / IOs

The Device name MUST MATCH the tunnel name defined in the tunnel configuration file. The Device name MUST NOT contain underscores/blanks.

SVP Interface

→ Page: Parameter → Network / interfaces / IO's → Ethernet → RDT / SVP Interface

→ Set "Ethernet to Client

→ Set "IP-Port" to 2008

→ Define the "Server Address" to the IP-address of your SVP-Application-Server.

Heartbeat settings

→ Page: Parameter → Network / interfaces / IOs → Protocol → XML Diagnostic (SVP)

→ Deactivate Restart interval on sending

4.2   ICR890 settings

▪ The minimum required login level is "**Service**" to have access to all parameters.

Image Output

→ Set "Image Filename" to external, because it's defined by the MSC800.

→ Set "JPG/BMP Output" to Controlled by Master

→ Set "Image Format" to JPEG

JPEG/BMP Output (Master Output)

Controlled by Master   FTP Type   FTP Client 1

Image Format   JPEG   XML Diagnostic Output ☑

JPEG Quality   25   %

FTP

→ Page: Parameter → Network / interfaces / IOs → GBit Ethernet → GBit FTP

The "Username" must match the <userid> of the <device> in the tunnel configuration file.

The "Password" must match the <password> of the <device> in the tunnel configuration file.

Common FTP Client Settings

Number of Active Clients   1

Username   TOP

Password   sick

Define the "Server Address" to the IP-address of your SVP-Image-Server.

Define the "IP-Port" to the IP-port of your SVP-Image-Server (default is 2021).

FTP Client 1

Server Address   10 . 224 . 50 . 1   IP-Port   2021

Activate Streaming Output   ☐

Activate alternative Server   ☐

Device Name

→ Page: ICR890 → Parameter → Network / interfaces / IOs

The "Device name" must match the <name> of the <device> in the appropriate tunnel configuration file.

Network options

Device ID   1   Device name   CamTOP

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VMS Configuration

The minimum required login level is "Service" to have access to all parameters.

→ Page: VMDX20_XX00 → Data processing → Unit / scale values

Select the appropriate Unit-System which matches to the customer settings and/or the settings of the statistic configuration file (e.g. Statistic.xml)
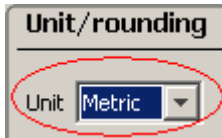
5. IP Camera Integration (option)

This document describes the configuration possibilities of the MSC800 and the Network-Camera P1343 so that this camera can be used for image storage in SVP.

To assign the images to the appropriate objects, SVP requires that the images in the image database have got a unique while name which is equivalent to the filename of an image sent by an ICR890. See also the chapter "**SVP Configuration**" which describes the format of this filename.

5.1   MSC800 Configuration
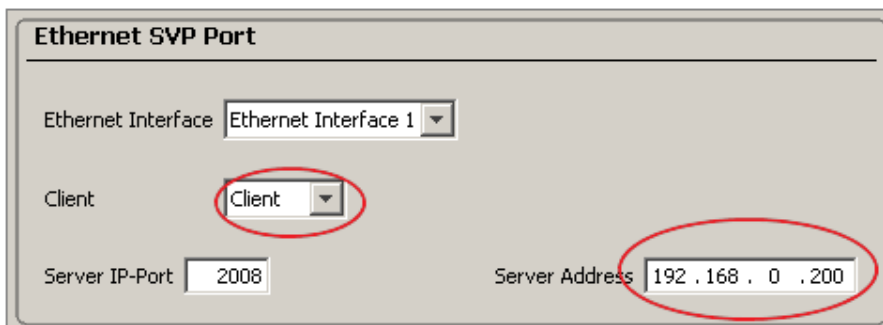
This chapter describes the configuration of the MSC800 which is needed so that SVP-Image-Server gets the images and also can assign a unique filename like images which were sent by a SICK-Camera (e.g. ICR890).

- For configuration of the devices SOPAS-ET version 2.32 or any newer one is recommended.
- The minimum required login level is "**Service**" to have access to all parameters.
- The minimum firmware version of MSC800 is **V2.65**.

Ethernet SVP Port

→ Page: Parameter → Network / interfaces / IOs → Ethernet → RDT / SVP Interface

As described first of all the Ethernet SVP Port needs to be defined as Client and the Server-Address of the SVP-Application-Server must also be adapted.

Ethernet Aux2 Port

→ Page: Parameter → Network / interfaces / IOs → Ethernet → Aux Interface

The Port "Ethernet Aux2" must act as an FTP-Client. So the Server IP-Port and the Server Address of the SVP-Image-Server needs to be defined. Furthermore, Username and Password are needed.

The Protocol / Output Format must be set to SVP Ext. IP Camera Protocol.

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These settings allow the MSC800 to publish the filename of the image to the SVP-Image-Server.

ATTENTION:

Username and Password must also match to the SVP Configuration.

External IP Camera Protocol Settings

→ Page: Parameter → Network / interfaces / IOs → Protocol → XML Diagnostic (SVP)

As described in the container below, Output Format #4 is used for the Image Filename of the protocol. SVP Ext. IP Camera Protocol.

If needed, you can also change the Trigger Edge from Leading Edge to Trailing Edge.

Output Format #4

→ Page: Parameter → Data Processing → Output Format

Define this Output Format as described below. At the end you can define either TRUE or FALSE.

- TRUE means that the images should be stored.
- FALSE means that the images are not stored.

This TRUE or FALSE setting so can also be generated by an Evaluation-Condition. So you can define a NoRead-Storage.
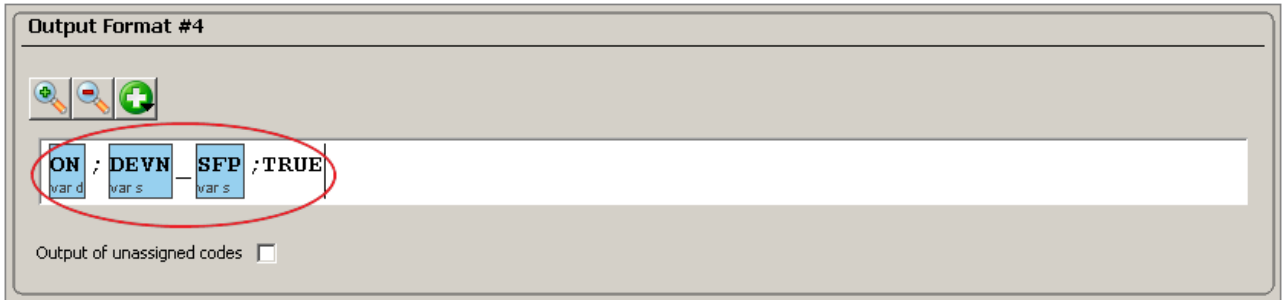
Auxiliary object trigger

→ Page: Parameter → Reading Configuration → Object Trigger Control

The Auxiliary object trigger needs to be enabled and has to be adjusted to the camera position.
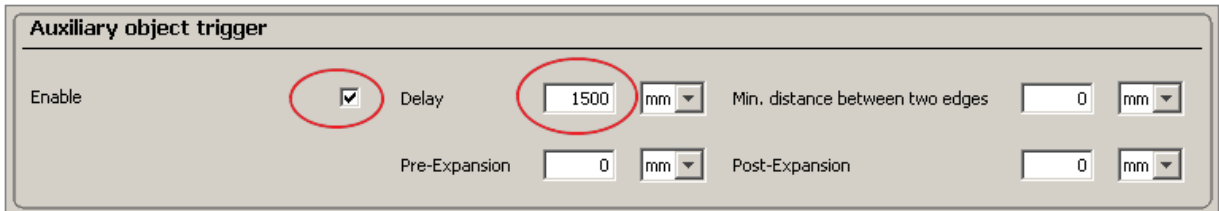
The output which is connected to the opto-coupler has to be set to "Auxiliary object trigger"

Network options

→ Page: MSC800 → Parameter → Network / interfaces / IOs

Please note the Device name MUST NOT include underscores.
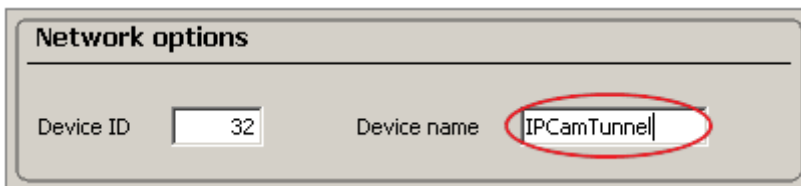
5.2   Wiring of IP camera

There is an installation kit for MSC800 available that contains the 12V DC power supply, opto-coupler and cable kit to connect the network camera to the MSC800.
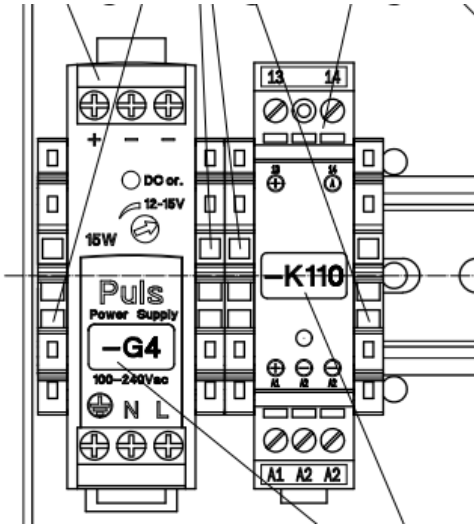
The camera has to be wired as follows:
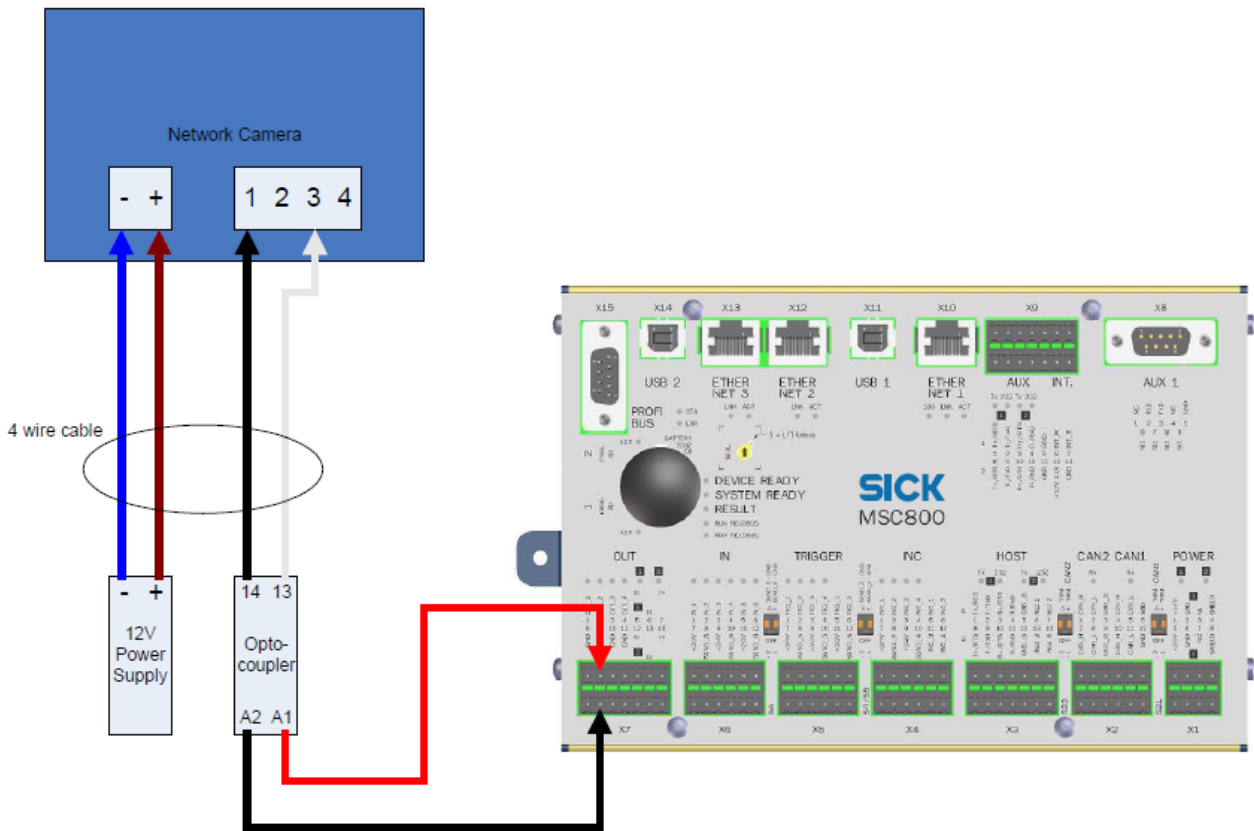
The output which is connected to the opto-coupler has to be set to "Auxiliary object trigger" ($\rightarrow$ see also chapter 5.1).

5.3   Network Camera Configuration

This chapter describes the settings of the network camera which are needed so that SVP-Image-Server gets the images and also can assign a unique filename like images which where sent by a SICK-Camera (e.g. ICR890).

Basic TCP/IP Settings

→ Define an IP address for the camera. Please note that each dialog must be confirmed by pushing the Save button.
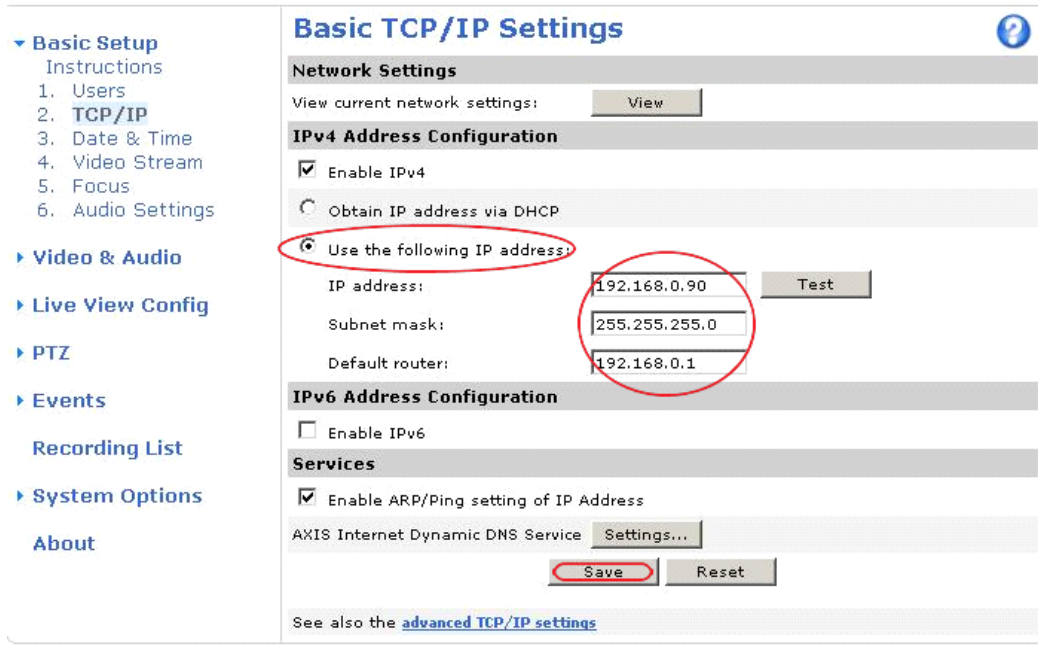
Data & Time Settings

→ Select "Synchronize with computer time" if you don't have an "NTP-Server" in your system.
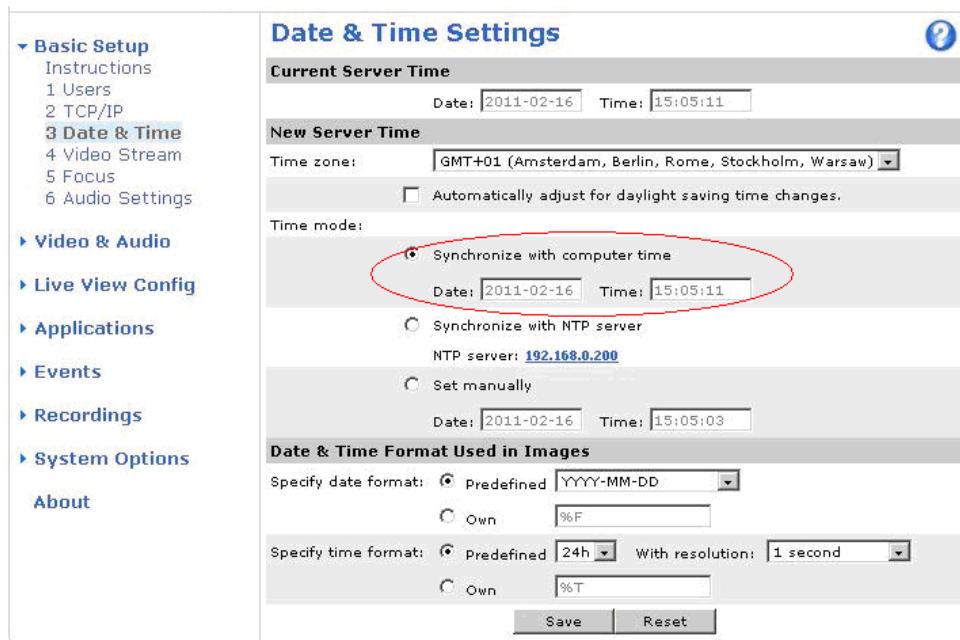
Event Server Setup

→ Go to Events -> Event Servers and click on "Add FTP...".

Here you can define the name of the **FTP Server**. Furthermore, the **Network address** and the **Port number** need to be defined according you the machine where the SVP-Image-Server is running.

ATTENTION:

User name and Password (default sicksick) must also match to the SVP Configuration.

Triggered Event Type Setup

→ Go to Events -> Event Types and click on "Add triggered...".

Select Priority High and select Triggered by Input ports. Input 1 must be set to Active. When triggered, the Stream should be saved with and Image frequency of 10. Furthermore, Continue image upoad must be activated with an Upload for 0.05 seconds.

Select Type must be set to FTP and SVPImageServer must be used as the Primary Upload server.

The Base file name must be set to *TunnelName_%Y%m%d_%H%M%S0%f_#s.jpg*. Select Over-write/Use own file format.

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Triggered Event Type Setup   ❓

General

Name: TriggerIn

Priority: High ▾

Set min time interval between triggers: 00:00:00 (max 23:59:59)

Respond to Trigger...

◉ Always

○ Only during time frame   ☑ Sun ☑ Mon ☑ Tue ☑ Wed ☑ Thu ☑ Fri ☑ Sat

                              Start time: 00:00   Duration: 24:00   (max 168:00 hours)

○ Never (event type disabled)

Triggered by...

Input ports ▾

Input 1
Active ▾

When Triggered...

☑ Save stream

    Image frequency   10   frame(s) per second(s) ▾

    ☐ Include pre-trigger buffer   0   second(s) ▾

    ☐ Include post-trigger buffer 0   second(s) ▾

    ☑ Continue image upload (unbuffered)

        ◉ Upload for 0.05   second(s) ▾

        ○ Upload as long as the trigger is active

    Select type: FTP ▾

    Upload to FTP server

        Primary   SVPImageServer ▾

        Secondary   ------------- ▾

        *Create folder: [   ]

        *Base file name: IPCamTunnel_%Y%m%d_%H%M

        *See help for more information

            ○ Add date/time suffix

            ○ Add sequence number suffix (no maximum value)

            ○ Add sequence number suffix up to   0 and then start ov

            ◉ Overwrite/Use own file format See help for more information.

        Use stream profile (only JPEG):   ---------- ▾

☐ Activate output port

☐ Send email notification

☐ Send HTTP notification

☐ Send TCP notification

☐ Play audio clip

              OK   Cancel

Attention:
Field doesn't show
complete name,
please see filename
above

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Video Stream Settings

→ Here you can define to rotate the image 180 degree. Furthermore you can select to include date and time as text overlays in the images.

Exposure Settings

→ Here you can adjust the shutter and exposure control settings to the surrounding conditions.

6. Image Archiving (option)

Image storage is a very broad subject that needs to be fully understood before deciding upon a solution to implement. There are many questions that need to be answered that will provide key information when designing an image storage solution, some of which are:

What are you going to do with the image? Package condition verification, barcode label analysis, Video Coding, OCR?

This determines the image resolution size you want to store

- How long do you want to save the image?
- This impacts storage server requirements
- Where do you want to store the image?

This will determine network infrastructure and server requirements. The table below details the image storage capability of the server PC with 750 GB for a large package with dimensions of 36" L x 28" W x 30" H.

Image Resolution Size	File Size per camera		Total File Size per package	Total Storage Requirement/day (20,000 packages/day)	Estimated Number of days of Storage	Image resolution suitable for
	Top	Side (x4)				
JPEG 60%	~ 4MB	~5.0MB	~ 24MB	~480GB	~1.75	OCR quality images
JPEG 30%	~1.0MB	~2.0MB	~9MB	~180GB	~4.2	Visual barcode analysis quality
thumbnail	~50K	~65k	~180KB	~4GB	~150+	Gross assessments of package condition

Notes regarding Image storage chart:

- Based on a maximum package size of (36" L x 28" W x 30" H) so this represents worse case. With a normal production flow, the user should expect slightly higher number of storage days.
- Estimated 20,000 packages per day
- Estimated number of days includes the 'current' day. For example, compressed JPEG – 30% offers approx 4.2 days worth of image saving of the maximum product size image. The practical storage amount is 3.7 days plus the current day requirement of storage space.
- Images are cleaned up automatically using a FIFO methodology.

7. Functional Description

7.1 Dashboard Console for Real Time Process Monitoring

A real-time dashboard console provides both a quick view of current activity and performance as well as detailed information about system performance. It is the default view for the user.
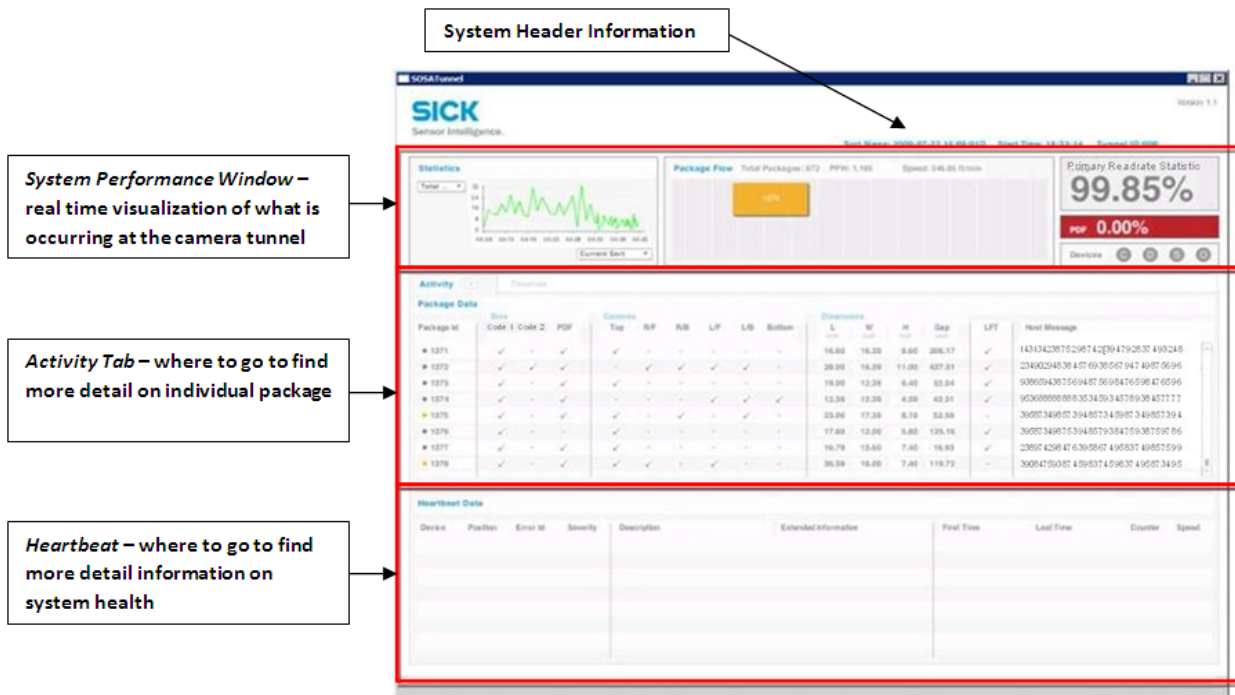
Dashboard Header Information

Located along the top right corner of the SVP screen the header information includes the following:

- Tunnel ID: The Tunnel ID field indicates the specific tunnel the user is looking at. In applications where multiple tunnels are being utilized the user can quickly see which tunnel is being viewed by looking at the Tunnel ID field. Tunnel ID's are identified by the customer prior to the system install.

- Sort Name: The Sort Name display shows the sort that is currently active. The default format for the sort name is: Month Date Year Time Ex: May 12 2010 09:59:36
  Sort name can be customized by customer in advance of the system install.

System Performance Window

This section of the SVP client provides real time visualization of the activity, performance and health of the barcode scanning system. This window has three views:

- Statistics
- Package Flow
- Performance and Health

Statistics - Setting threshold limits

Performance thresholds can be set such that the user can see quickly if a desired performance limit is not being met. In the statistics window shown in figure this is identified as the yellow and red lines. At this time, threshold limits need to be configured by SICK.

Statistics - Tool Tip Function

Another feature of the Statistics box is the tool tip cursor. When rolling the cursor over the graph line, a pop-up provides the specific statistic for that particular moment. Time is given in hours: minutes: seconds, and the value is given as a percentage. With this tool the user can run through a multitude of statistical data at various points within the current sort.

Statistics - Package Flow Window

The second view in the *System Performance* section is the *Package Flow* window, located to the right of the *Statistics* box. This is a real time visualization of packages passing through the camera tunnel. The window represents packages on a conveyor. Package position, gap, and skew angle are all reflected in the visualization. Over time as the user understands how their normal package flow is depicted in this window, they can use this understanding to visualize anomalies with the package flow that could be impacting scanning or sortation performance. For example, if the package flow is to be justified to one side and oriented, it can easily be seen if this criteria is met.

The user can view the package flow from a top view or a side view angle. Side view angle is particularly helpful when the scanning system does not have a dimension system that provides SVP with accurate package dimensions.
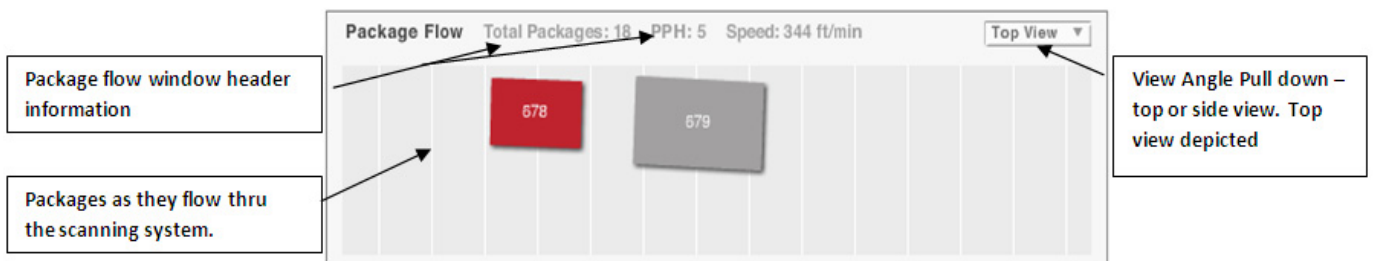
The *Package Flow* window contains header information helpful to the user. The default header information is:

- Total packages (from start of sort)
- Parts per hour (PPH)
- Speed of the conveyor in m/s
- Other features of *Package Flow* Window
  - **Item ID** - located on the package for identification purposes
  - **Pause** - the user can pause the package flow by moving the mouse pointer over the conveyor. This is useful when trying to point to a specific package
  - **Color coded packages based on evaluation condition** - Packages are color coded so that the user can identify if certain conditions are not being met by a package. Default color codes are:
    Green – Successful barcode read
    Red – No read

Package Detail and Image Viewing

From the *Package Flow* view the user can open the *Package Detail* window by 'clicking' on the item with the mouse. Once clicked, a pop-up window appears as shown below.
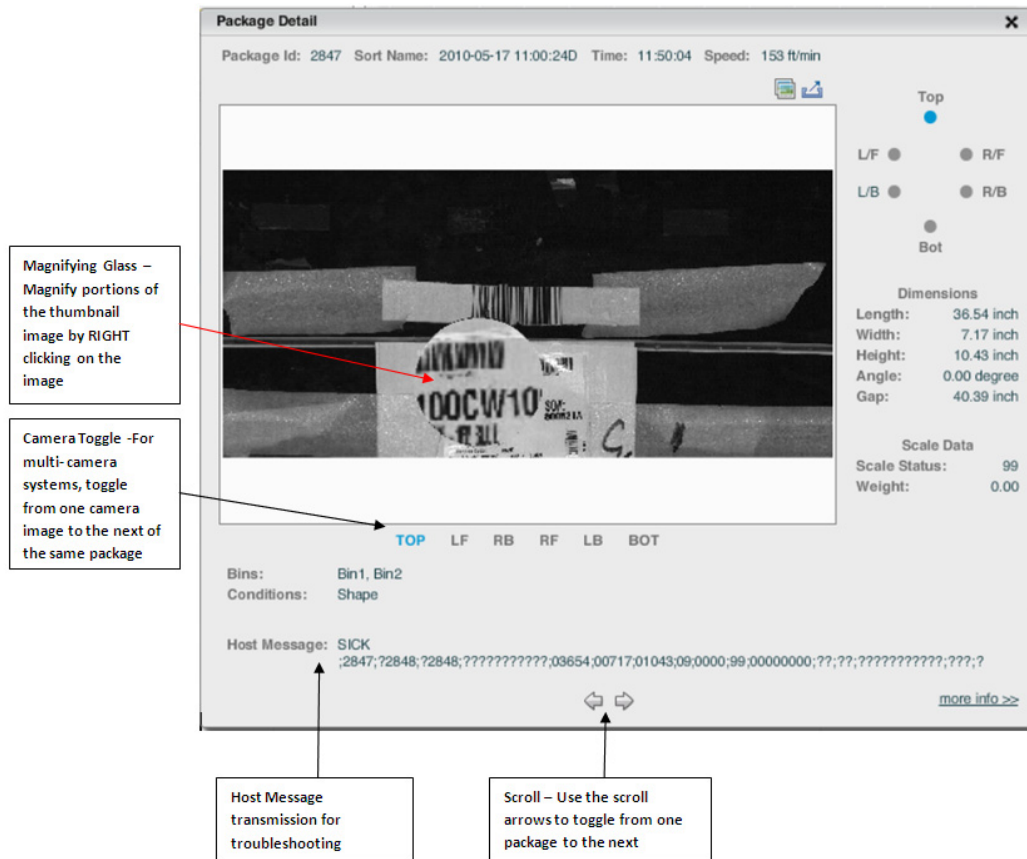
Notes about the different resolution images available in the Package Detail viewer

- **Thumbnail image**
  This is a low resolution image that can help the user identify gross anomalies with the package. Examples include:
  - Is there a label? Or more than one label?
  - Is there one package or two?
  - Is the package damaged?
  - It is unlikely that a full barcode label quality analysis can be done from this image.
  Thumbnail images are small in size so they can be stored for longer periods of time if storage capacity is limited.

- **Full resolution image**
  The larger resolution JPEG that is available after clicking the thumbnail is a high quality image that should be satisfactory to perform a thorough analysis to determine why a barcode was not readable. As these are larger in size compared to the thumbnail, they can be stored for shorter periods of time when storage capacity is limited.

Performance and Health

The last view in the *System Performance* window is used to identify the performance and health status of the barcode scanning system. This area is divided into three sections:

- **Primary Performance Metric**
  Easily visible measure of the primary metric to be measured. In most cases, this metric will be read rate on valid labels.

- **Secondary Metric**
  Easily visible measure of the secondary metric to be measured.

- **Sensors –** Visual indicator of the health status of the major components of the barcode scanning system.

Features of the Performance & Health window

Color coded performance threshold levels, consistent with the settings in the Statistics View, can be set for primary and secondary metrics. Color codes reflect the following:

- GREY – performance is meeting desired level
- YELLOW – Below performance expectation.
- RED – Significantly below expectation

At this time threshold levels need to be configured by SICK.

Sensors

This area provides the visualization of the health status of the major components of the barcode scanning system. There are four indicator lights in the window. Each of the indicator lights reflects the overall health of the components for a specific functionality of the system. Placing the mouse pointer over one of the indicator lights will provide health status of each of the components with that functional system.

The following is the indicator light definition:

 - reflects the health of all barcode reading devices on the system. This could be ICR890 cameras or CLV laser scanners.

 - reflects the health of the system dimensioning system. In addition to providing accurate dimensions of the package, this system is used to focus the ICR890 camera.

 - reflects the health of the system controller.

 - reflects the health status for any other devices on the system. This could be a stack light, safety curtain or an OEM piece of equipment such as a weigh scale.

The indicator lights change color to reflect changes in health status.

- Green – System health is as expected
- Yellow – Warning, system should be monitored more frequently. System performance could be impacted
- Red –Severe problem. System performance will be significantly impacted.

For more detailed health and troubleshooting information, the user will go to the **HEARTBEAT** section of the dashboard. This area will be discussed in more detail later in this document.

7.2   Dashboard View tabs

Individual view tabs provide visibility to the primary functions within SVP: Activity, Timeline, Charts, Queries and Reports. Each tab is described in detail below.

7.3   Activity Window

The Activity window is a tab located in the center of the client dashboard. This is where the user can find additional information on packages as they run through the system.

As the package moves through the scanning system, it gets visually represented in the *Package Flow* window as described in the above sections. At the same time, there is an entry that is displayed in the Activity list. The Activity section presents package information in a grid format. As more packages go through the scanning system, more entries get added to the Activity list. The list has a buffer of 300 entries. Once the buffer is filled, the entries are removed from the list in a FIFO manner.

The following information is provided in the Activity list for each entry:

- **Package ID** - the same ID as is found on the item as it moves thru the Package Flow visualization.
- **Bins** – key barcode categories are identified as 'bins'. If the barcode scanner reads a code from one of the bins listed, a check mark is inserted. The user can then easily identify what code was on that package.
- **Barcode** – This section lists all of the barcode reading components that constitutes the scanning system. If one of the components reads a barcode, a checkmark is inserted. The user can quickly see what component decoded the barcode.
- **Dimensions** – The package dimensions and product gap for the respective package are listed in this section. If for some reason dimensions are not available then zeros are used. The default unit of measure is millimeter.
- **Host Message** – A snippet of the host message appears in this section. To view the entire Host message, the user needs to pull up the Package Detail window for that package.

Other features of the Activity section

- **Pause Button** – this button is used to stop the buffer for the purposes of looking more closely at an item or series of items. The user will find this useful as packages do move quickly thru the Activity buffer.
- **Scroll Bar** – the scroll bar is used to access the remaining entries in the Activity list that do not fit in the space provided.
- **Color Coded Entries** – As in the *Package Flow* window, entries for packages that do not meet certain evaluation conditions are color coded for easy identification.

Other options are available and should be discussed with SICK.

Package Detail **Availability** – As with the *Package Flow* window, the *Package Detail* pop-up is just one click away. Click on the entry and the Package Detail window appears. The user has the very same access to both thumbnail and higher resolution images, XML file and other pertinent information specific to that package.

Heartbeat - The Heartbeat section, located at the bottom of the Dashboard Client, is where the user goes to find additional details on the health of the system. The heartbeat section is again laid out in a grid format.

The information available in this section includes:

- **Device** – identification of the device that has an error
- **Position** – Specific location of the suspect device.
- **Error ID** – Specific error code being reported by the device
- **Severity** – impact to system performance. Severity levels are:
  - o **Info** – Be advised of an event. Non critical. Performance not necessarily impacted.
  - o **Warning** – system should be monitored more frequently. System performance could be impacted
  - o **Error** – issues requires attention. System performance impacted
- **Description** – Short description of the error
- **Extended information** – Further definition of the error
- **First time occurred** – specific time error was first reported
- **Last time occurred** – last occurrence of error reported.
- **Counter** – Number of times error occurred in this instance.
- **Speed** – of the conveyor.
- Feature of the Heartbeat section
- **Information Pop-up Links** – Many of the error codes have links available. Clicking on the link will bring up a pop-up with more information of the specific event.

7.4   Timeline Window

The *TIMELINE* is where the user goes to connect to the information and image archive tools within SVP. Timeline is where the user initiates searches of the SVP database and image archive to collect data on

specific evaluation conditions. This allows the user to efficiently manage all of the information within the database and image archive to identify the specific information required at the time.

The *Timeline* is a tab located next to the Activity tab on the client dashboard. Clicking on the Timeline Tab will bring this section to the forefront. Note that when you toggle from *Activity* to *Timeline* and back, the System Performance Window at the top of the dashboard never changes. This allows the user to always be able to visualize what is happening to the system right now.

Components of the TIMELINE

- **Sort Name** - Dropdown used to select the sort to be analyzed
- **Statistic Type** – Dropdown used to select the statistic to be analyzed. This dropdown list contains the same statistical categories as in the System Performance Window area. Note not all statistic types are available for all barcode scanning systems
- **Evaluation Condition** – Dropdown used to select the condition that the selected statistic type is to be analyzed against. Note not all evaluation conditions are available for all barcode scanning systems
- **Reverse** – Checkbox, located to the right of the Evaluation Condition dropdown, used to evaluate the opposite of the evaluation condition selected. For example, if the evaluation condition OVERSIZE package is selected, all packages that didn't meet a defined package size would be identified. By then checking the reverse box, all packages that were not oversized would be identified.
- **Timeline Sort Graph** - A graphical view of the selected statistic over the full sort selected. If you are working with the current sort, only the time period available is displayed.
- **Timeline Slider -** The slider is a tool used with the Timeline Sort Graph to focus in on a specific period of time within the sort. By moving the slider over a section of the graph, it focuses the database search to just that period of time. The slider is flexible in that the time interval can be just a few minutes or for the entire sort. Using the arrows at the bottom of the slider allows the user to widen or narrow the time window.

Features of the Timeline Graph and Slider

- **Performance Thresholds** – can be viewed from the graph to compare the statistic being analyzed to a predetermined performance requirement. See the yellow line in the figure above
- **Flexible Time Intervals** – use the arrow keys at the bottom of the slider to widen or narrow the time period to be analyzed. The user can analyze just a few minutes or the entire sort
- **Time Interval Labels** – located at the top of the slider, this details the time interval being analyzed.
- **Average Value** – Located below the Statistic Type dropdown menu, this provides the sort average value of the statistical type being analyzed.
- **Tool Tip Function** – Similar to the Statistics section in the System Performance Window, the user can use the mouse pointer to rollover a point in the graph to determine the specific time and value at that point. Time is given in hours: minutes: seconds, and the actual value is provided. With this tool the user can run through a multitude of statistical data at various points within the current sort.

- **Timeline Slider Graph** – Located below the Timeline Sort Graph and Slider, this section provides a graphical view of just the Timeline Slider interval allowing the user to get more granularity into the time interval being investigated.

- **Package Data** – Located at the bottom of the Timeline tab, the Package Data view provides the results of the timeline search. The results are displayed in the same format as the Activity tab. The results of the timeline search are all of the packages that went through the barcode scanning system in the time frame depicted that met the evaluation conditions identified.

- **Heartbeat Data** – Located next to the Package Data tab is the Heartbeat Data tab. This is where the user goes to review health information on the barcode system during the time of the desired search.

- **Query Status Box** – Located at the bottom of the Timeline page, this is where the user goes to determine the status of the query that was initiated. Information available in this section:
  - Query Status – indicate at what stage the query is at
  - Total packages per sort – indicates the total packages the sort selected
  - Packages per time interval – number of packages in the interval being analyzed
  - Packages matched Condition – identifies the number of packages that met the evaluation condition

Sequence of Events for Timeline Search:

- User selects the appropriate sort from the Sort Name dropdown menu.

- User selects a statistic type to analyze

- User selects an evaluation condition to analyze

- User moves the Timeline Slider to the time frame to be analyzed

- Query is processed

- Summary query results are reported in the Query Status section at the bottom of the page.

- Individual package data entries that met the evaluation conditions selected are listed in the Package Data section. This will represent all of the packages that went through the barcode scanning system in the desired time frame that met the appropriate evaluation condition.

- User can then click on the Package Data entry for any given package to get to package details and thumbnail & high resolution images.

- User can go to the Heartbeat tab to analyze this information to determine if a change in health status for the barcode scanning system impacted performance.

- User can export all packages or a subset.

SICK Visualization Platform

7.5   Chart Window

The Charts tab is used to create all kind of diagrams and statistics. The following diagram types can be selected:

- Long-term read rate
- Detailed read rate
- Long-term read rate exclusive
- Hourly read rate exclusive
- Detailed read rate exclusive
- Histogram multiple read
- Histogram trigger length
- Histogram trigger gap
- Histogram label position
- Histogram read rate exclusive

The above listed diagrams can be created for a selectable time range. The selection can be done based on sorts or based on time periods. In addition further parameters can be selected like restriction to specific devices or conditions.

```
Chart Parameters:

Start Time:  *  05/03/2011 10:47    ▦
End Time:    *  05/04/2011 10:47    ▦
Device:      *  All devices      ▼
Condition:   *  All conditions   ▼
                    Execute
```

7.6   Queries Window

Query is used to perform specific lookups of the database. Currently the following queries are available:

- Search Barcode
- Search No-Reads
- Search Dimensions
- Search Multiread-Limits
- Search Multiple Reads

For all queries the sort, start and end time can be selected. Depending on the selected query further search pattern or search limits have to be entered.

7.7   Reports Window

The Reports tab is used to create all kind of reports. There are 2 reports that are run every day:

- ReadRate Summary   daily summary of read rate per sort
- Notification Summary: only if notifications are used

Furthermore the user can run an exclusive read report for a selected time frame. On the report status frame the current status is shown to the user.

All reports are stored and can be exported as csv or zip file.

8. Troubleshooting

8.1 FAQ

SVP Server startup error "JAVA_HOME environment variable not set"

If you get the error message "JAVA_HOME" environment variable not set! …" you need to set this environment variable according to where you have installed the Java Runtime Environment (e.g. C:\Program Files\Java\jre6).

8.2 SICK Support

If you cannot correct the error using the above measures, please contact your local SICK office or subsidiary.

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