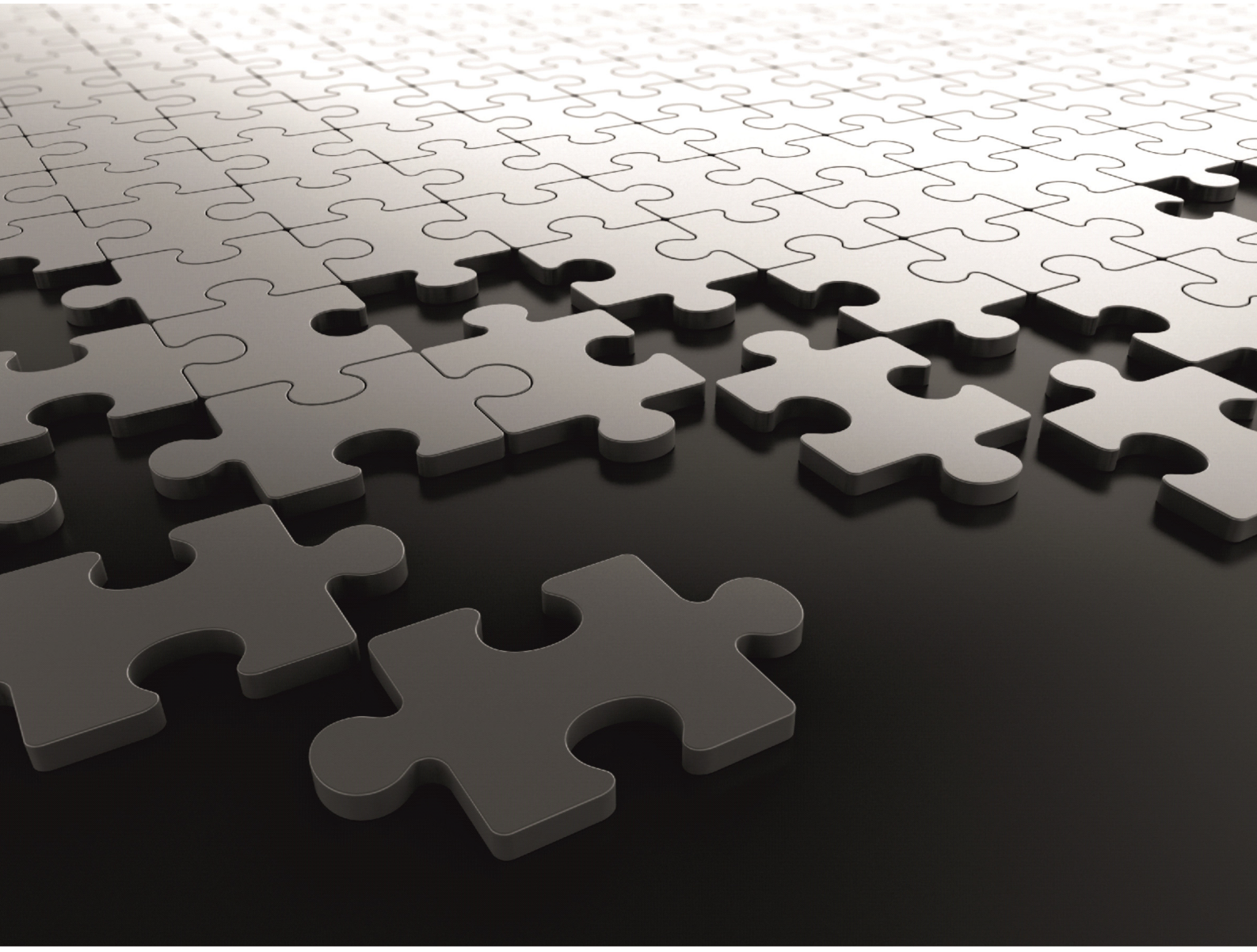
SATATYA SAMAS ONVIF Server
User Manual



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Matrix SATATYA SAMAS ONVIF Server

User Manual

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CHAPTER 1

Introduction

Welcome

Thank you for choosing the Matrix SATATYA SAMAS for Video Surveillance Solution. With the increase in security threats, the need to visually monitor and secure valuable assets and campus premises has become ever more important. There has been a growing need for centralized management of security systems and controls using remote surveillance systems. The feature rich **Matrix SATATYA SAMAS** aims to cater to this requirement.

SATATYA SAMAS is a smart video surveillance tool, packed with intelligent features and video analytics. The suite of applications provides comprehensive management and support with centralized monitoring and control. It also supports a large number of cameras and other video surveillance devices. The application is optimized to support different languages. It also supports UTF-8 characters, allowing the users to provide inputs in their local language using international keyboards. This makes it an ideal solution for worldwide usage.

The Matrix SATATYA SAMAS is a fully distributed solution, designed for large multi-site and multiple server installations requiring 24/7 surveillance. The solution offers centralized management of Management Server, Recording Server, Failover Server, ONVIF Server, Transcoding Server, IVA Server, Admin Client, Smart Client, Media Player (Backup Player), SATATYA devices, and Cameras in a distributed network.

Please read this document carefully before proceeding with the initial configuration of the Matrix SATATYA SAMAS. We are sure you will be able to make optimum use of this feature rich remote surveillance management system.

For details related to SATATYA SAMAS, download the following documents from the website: https:// www.matrixcomsec.com/support/ipvs-product-manuals/

- SATATYA SAMAS Installation Guide
- SATATYA SAMAS Admin Client Manual
- SATATYA SAMAS Smart Client Manual

About this System Manual

This is a document providing detailed information and instructions for installing, configuring, managing and using the Matrix SATATYA SAMAS ONVIF Server.

Intended Audience

This User Guide is aimed at:

- **System Engineers**, who will install, maintain and support the SATATYA SAMAS System. System Engineers are people who are responsible for configuring the SATATYA SAMAS System to meet the

requirements of the organization/users. It is assumed that they are experienced in the installation of SAMAS and its components and are familiar with the cabling of such systems. They are expected to be aware of how it works, and the various technical terms and functions associated with it. The SE must have undergone training in the installation and configuration of the SATATYA SAMAS System. No one, other than the System Engineers are permitted to make any alterations to the configuration of the SATATYA SAMAS System.

- **System Administrators**, who are persons who will monitor, manage and use the SATATYA SAMAS System after installation. Generally, an employee of the IT department in an organization or establishment is selected as the System Administrator. The System Administrators are not expected to setup and install the system hardware, but only the configuration of the system including its functionalities and features.

- **Users**, persons/organizations who will use the SATATYA system. They may be executives, include personnel of small and medium businesses, large enterprises, front desk and service staff of Hotels/ Motels, hospitals, and other commercial and public organizations/institutions.

Organization of this Document

This system manual covers the following topics:

- **Introduction**: gives an overview of this document, its purpose, intended audience, organization, terms and conventions used to present information and instructions.

- **Overview:** gives an overview of the ONVIF Standard, ONVIF Specifications and ONVIF Profile, ONVIF Server and ONVIF Clients.

- **Installing the Matrix ONVIF Server**: gives step-by-step instructions for preparing and installing the Matrix ONVIF Server.

- **Configuring**: configuring the ONVIF Server, ONVIF Users and Assigning cameras to the ONVIF Server.

- **Viewing the Video Streams / Live Streams**: provides details on accessing the Live Streams from Third Party ONVIF Clients or RTSP Media Clients.

- **Viewing Recorded Data /Playback:** provides details on accessing the Recorded Streams from Third Party ONVIF G Clients or RTSP Media Clients.

- **Maintenance**: provides the instructions on viewing the Event Logs, Online ONVIF Users, Checking the Status of the Server as well as the Users.

- **Supported Functions:** provides the list of the supported ONVIF functions of Profile G and Profile S.

How to Read this System Manual

This document is organized in a manner to help you get familiar with the SATATYA SAMAS ONVIF Server learn how to install it, connect it in various network topologies, connect the external devices/camera, accessing the cameras using the ONVIF Clients / RTSP Media Clients.

This Manual is presented in a manner that will help you find the information you need easily and quickly.

You may use the table of contents and the Index to navigate through this document to the relevant topic or information you want to look up.

- **Instructions**

  The instructions in this document are written in a step-by-step format, as follows. Each step, its outcome and indication/notification, wherever applicable, have been described.

- **Notices**

  The following symbols have been used for notices to draw your attention to important items.

  Important: *to indicate something that requires your special attention or to remind you of something you might need to do when you are using the system.*

  Caution: *to indicate an action or condition that is likely to result in malfunction or damage to the system or your property.*

  Warning: *to indicate a hazard or an action that will cause damage to the system and or cause bodily harm to the user.*

  Tip: *to indicate a helpful hint giving you an alternative way to operate the system or carry out a procedure, or use a feature more efficiently.*

Terminology used in this System Manual

The technical terms and Acronyms used in this Manual are standard terms, commonly used in the remote surveillance management industry. However, considering the broad group of intended users of this manual, wherever possible, use of jargon has been avoided.

The terms Matrix SATATYA SAMAS ONVIF Server and ONVIF Server are used interchangeably and refer to the **Matrix SATATYA SAMAS ONVIF Server**.

Smart Client / Media Client and Desk Client are used interchangeability and refer to **SATATYA SAMAS Smart Client**.

Technical Support

If you cannot find the answer to your question in this manual, we recommend you contact your system installer. Your installer is familiar with your system configuration and should be able to answer any of your questions.

Should you need additional information or technical assistance with the Matrix SATATYA SAMAS ONVIF Server or other Matrix products, contact our Technical Support Help desk, Monday to Saturday 9:00 AM to 6:00 PM (GMT +5:30) except company holidays.

Phone	+91 1800-258-7747
Internet	www.MatrixComSec.com
E-mail	Tech.Support@MatrixComSec.com

CHAPTER 2 *Overview*

ONVIF

ONVIF (the Open Network Video Interface Forum) is a global and open forum with the goal of facilitating the development and use of a global open standard for the interface of physical IP-based security products.The open standard enables interoperability of products from different manufacturers because they essentially speak the same language

Benefits of ONVIF Standards

- **Interoperability:** products from various manufacturers can be used in the same systems and “speak the same language”.
- **Flexibility:** end-users and integrators are not using any proprietary technology.
- **Future-proof:** standards ensure that there are interoperable products on the market, no matter what happens to individual companies.
- **Quality:** when a product conforms to a standard, the market knows what to expect from that product.

ONVIF Specifications

The ONVIF Core Specification aims to standardize the network interface (on the network layer) of network video products. It defines a network video communication framework based on relevant IETF and Web Services standards including security and IP configuration requirements. The following areas are covered by the Core Specification version 1.0:

- IP configuration
- Device discovery
- Device management
- Media configuration
- Real time viewing
- Event handling
- PTZ camera control
- Video analytics
- Security

ONVIF Profiles

Building on the ONVIF Core Specification, ONVIF profiles are subset specifications that ensure the interoperability of specific sets of features between conformant devices.

- **Profile S:** Addresses common functionalities of IP video systems, such as video and audio streaming, PTZ controls, and relay activation.
- **Profile C:** Addresses common functionalities of IP access control systems, such as door state and control, credential management, and event handling.
- **Profile G:** Addresses video storage, recording, search, and retrieval.
- **Profile Q:** Addresses device discovery and configuration, as well as the management of TLS certificates.
- **Profile A:** Functionality to retrieve information, status and events and to configure the Physical Access Control System (PACS) related entities such as access rules, credentials and schedules.
- **Profile T:** Support for video streaming features such as the use of H.264 and H.265 encoding formats, imaging settings, and alarm events such as motion and tampering detection.

For more information about the ONVIF standard, see the ONVIF® website (https://www.onvif.org/).

SATATYA SAMAS ONVIF Server

The SATATYA SAMAS ONVIF Server, uses ONVIF and acts as a bridge between SAMAS and 3rd Party ONVIF Clients. This enables easy exchange of video data as well as availability of Live / Playback streams.

The ONVIF Server plays a dual role:

- acts as a Client for the Management Server
- acts as a Server for the 3rd Party ONVIF Clients

The ONVIF Server is compliant with the parts of ONVIF Profile G and Profile S that provide access to live and recorded video:

- **Profile G**

  Profile G is designed for IP-based video systems. A Profile G device (e.g., an IP network camera or video encoder) is one that can record video data over an IP network or on the device itself. A Profile G client (e.g., a video management software) is one that can configure, request, and control recording of video data over an IP network from a Profile G conformant device.

  Provides support for video recording, storage, search, and retrieval. For more information, see ONVIF Profile G Specification (https://www.onvif.org/profiles/profile-g/).

- **Profile S**:

  Profile S is designed for IP-based video systems. A Profile S device (e.g., an IP network camera or video encoder) is one that can send video data over an IP network to a Profile S client. A Profile S client (e.g., a video management software) is one that can configure, request, and control video streaming over an IP network from a Profile S device.

  Provides support for streaming live video using the H.264 codec, audio streaming. For more information, see ONVIF Profile S Specification (https://www.onvif.org/profiles/profile-s/).

ONVIF Profiles support “get” functions that retrieve data, and “set” functions that configure settings. Each function is either mandatory, conditional, or optional. For security reasons, Matrix ONVIF Server supports only the

mandatory, conditional, and optional “get” functions that do the following:

- Request video
- Authenticate users
- Stream video
- Play recorded video

ONVIF Clients

ONVIF clients are computer appliances or software programs that use ONVIF Webservices. Examples of ONVIF clients are servers, media players, IP-based surveillance systems.

The Real Time Streaming Protocol (RTSP) is used to establish and control media sessions between two or more endpoints. The ONVIF Server uses ONVIF Profile S and RTSP to handle requests for video from an ONVIF client, and to stream video from an SATATYA SAMAS installation to the ONVIF client.

By default, communication between ONVIF clients and the SAMAS ONVIF Server uses the following ports:

- ONVIF port 580. ONVIF clients use this port to submit requests for video streams
- RTSP port 554. ONVIF Server uses this port to stream video to ONVIF clients

ONVIF clients can access the RTSP port on the ONVIF Server directly. For example, the VLC Media Player. To know more, refer to “Viewing Live Stream using the RTSP Media Client (VLC Player)” and “Viewing Playback using the VLC Media Player”.

You can use different ports, if required. If you change the port numbers, you must also update the RTSP stream for the ONVIF client URI. RTSP supports only the H.264 codec. Cameras must be able to stream video in the H.264 codec.

Live Streams and Playback can also be viewed using Third Party Clients. To know more refer to “Viewing Live Stream using the Third Party Client (ONVIF Device Manager)” and “Viewing Playback using the ONVIF G Clients”.

CHAPTER 3

Installation

Before you Install

System Requirements

Make sure the Management Server, Recording Server and License Server are installed in the same PC.

To know more about the components of SATATYA SAMAS and their installation, refer to the ***SATATYA SAMAS Installation Guide***.

If you are installing the Management Server and ONVIF Server in different PC, following specifications are required.

ONVIF Server

Hardware/Software	Minimum	Recommended
CPU	Intel Core i5	Intel Core i7 or higher
RAM	4 GB	8 GB
Network	1 Gbps	1 Gbps
Hard disk Space	10 GB free space	100 GB free space
Operating System	Windows10	Windows10 or above

System Pre-requisites

Make sure the following are installed in your computer before you begin with the installation:

- Microsoft .NET Framework 4.5 and above
- Windows Installer 3.1
- Microsoft SQL Server 2008 R2 SP2
- Microsoft Visual C++ 2015-2019 Redistributable - 14.24.28127
- Access DB Engine 14.0.6119.5000

For SAMAS V2R1 to V3R8, .NET framework 4.0 or higher is recommended and from V4R1 and later.NET Framework 4.5 and above is recommended.

To enhance security from SAMAS V6R1 and onwards, we have introduced data security for data at rest as well as in transit. Hence, if you are upgrading SAMAS to V6R1, then make sure all the components are also upgraded to the same version to ensure smooth functioning.

If you have already enabled SSL in the software version you have installed and you are upgrading the same to V6R1, then after the re-installation process completes, you will have to manually configure all the Server Managers in order to retain the SSL communication between different entities of SAMAS.

SATATYA SAMAS Installer Utility

The SATATYA SAMAS Software Installation setup can be downloaded from the Portal. The url of the portal is mentioned below:

ftp://matrixtelecomsolutions.com/SecurityProducts/SATATYA/SATATYA%20SAMAS/

In the Windows PC, double-click on **This PC** option on the desktop and paste the above link in the Location bar to access the setup.

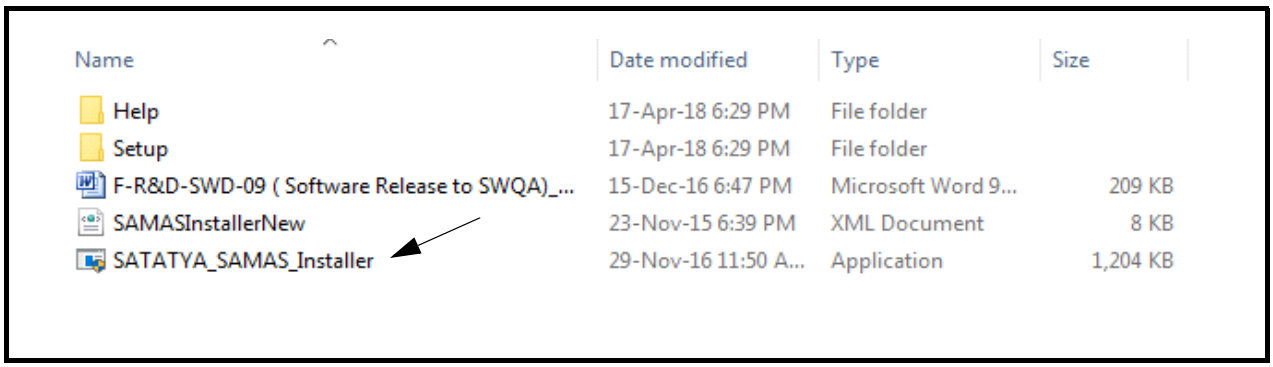
For credential assistance, contact Matrix Channel Partners or Matrix Support Team at Techcommunity@MatrixComSec.com

For the installation of the other Servers, refer to the ***SATATYA SAMAS Installation Guide.***

To install the ONVIF Server refer to the instructions given below:

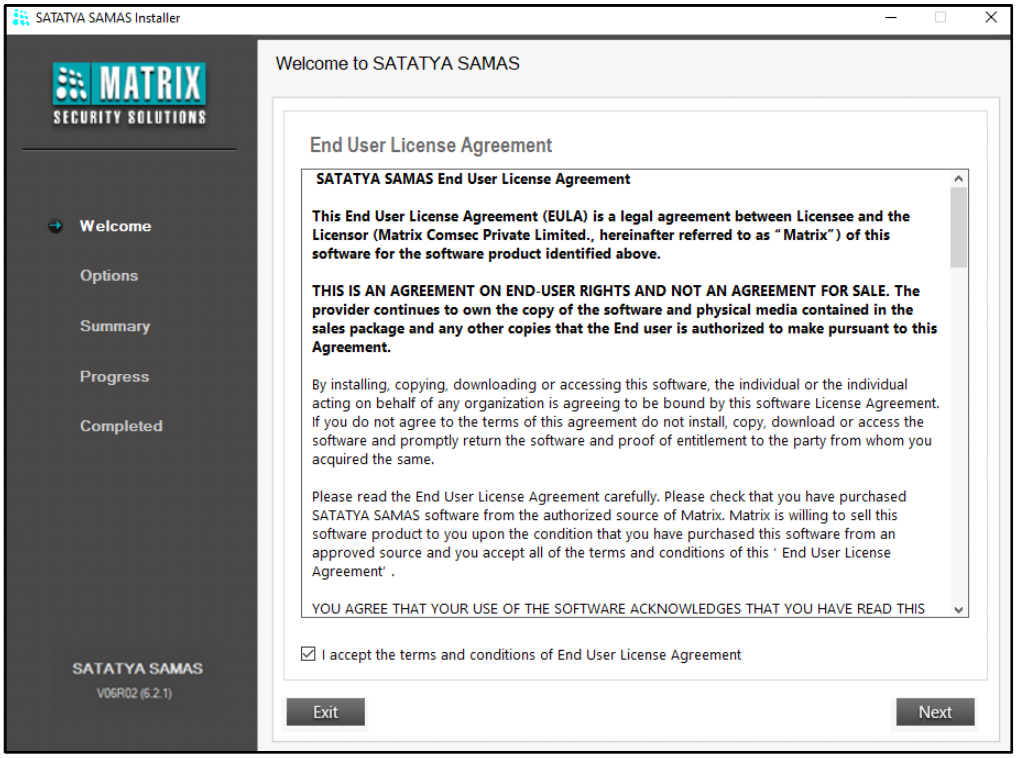
The steps to install the ONVIF Server mentioned below need to followed only if you have not installed the ONVIF Server during the first installation process.

1. Right-click on **SATATYA_SAMAS_Installer** and click **Run as administrator**.

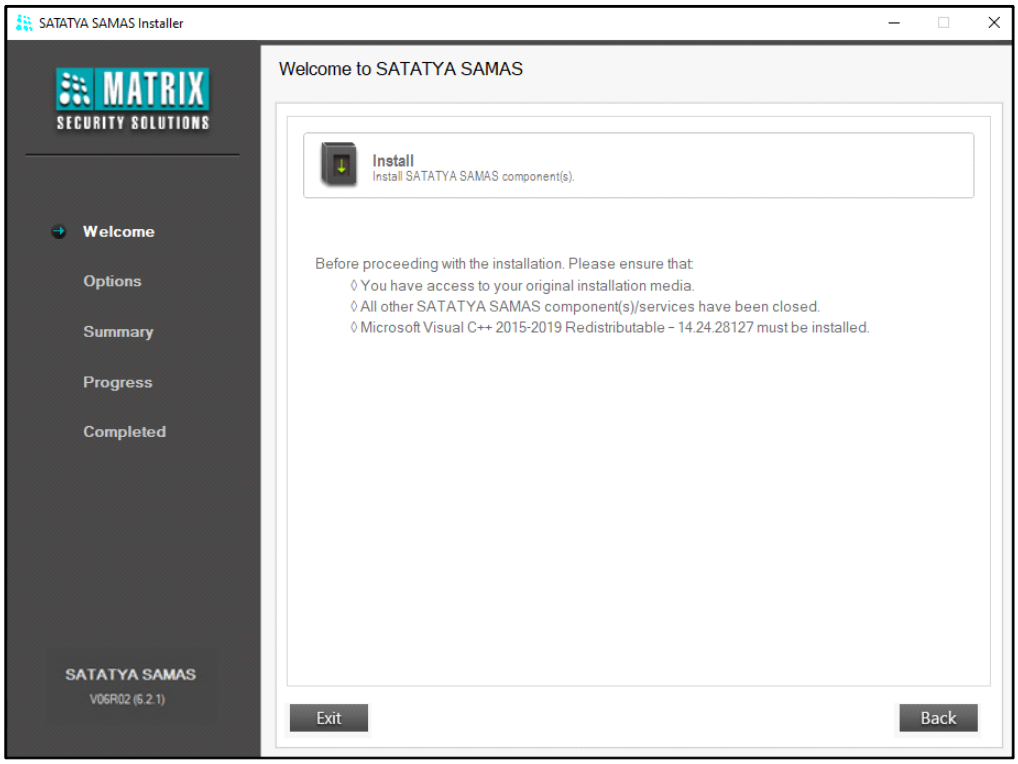


Administrator rights are required for installing the SATATYA setup.

2. The **License Agreement** screen appears as shown below. Select the check box to accept the terms and conditions and click **Next** to continue the installation process.



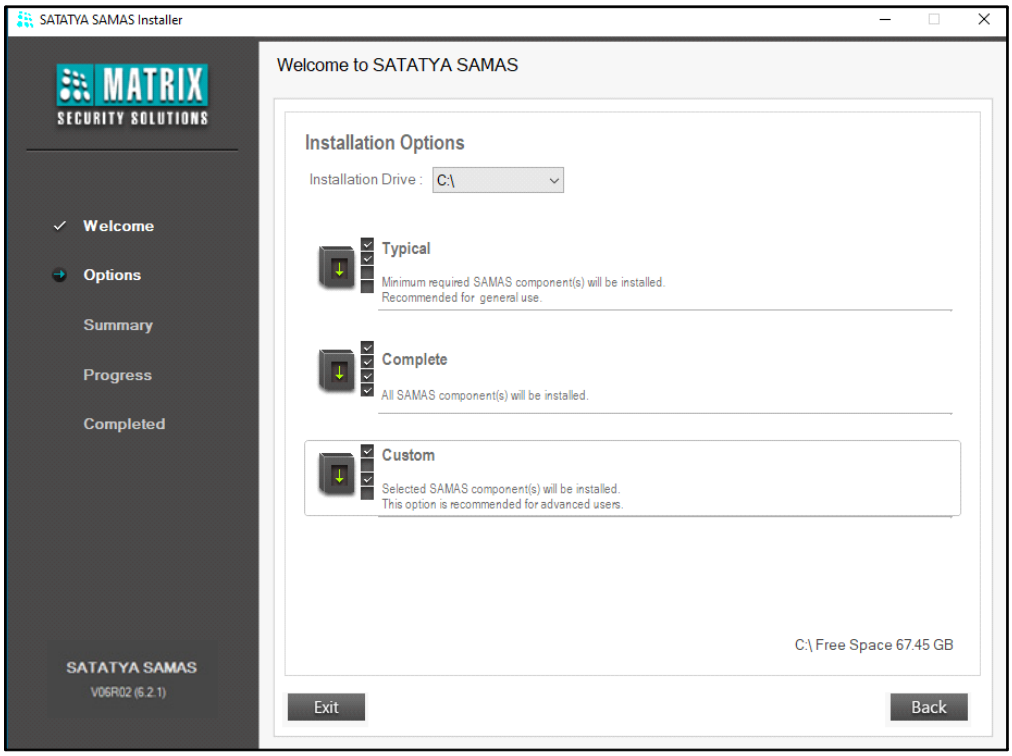
3. Click **Install** to initiate the installation process.



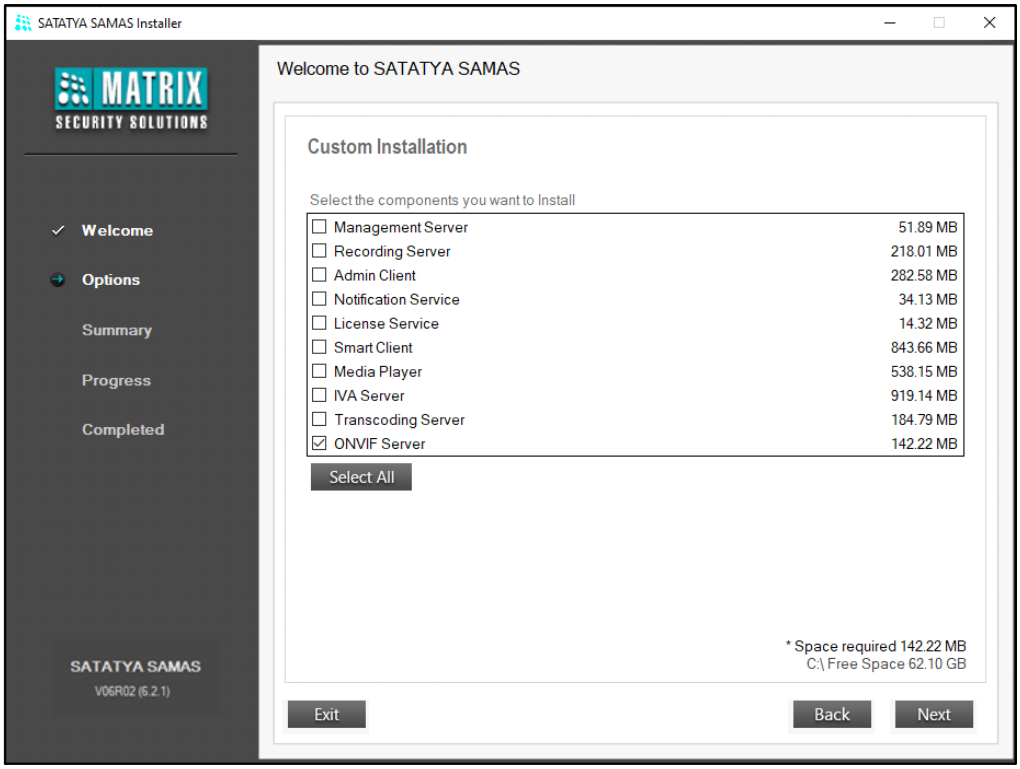
Custom Installation

4. Now select the **Installation Drive** from the drop-down list.

5. Select **Custom** from the **Installation Options**.

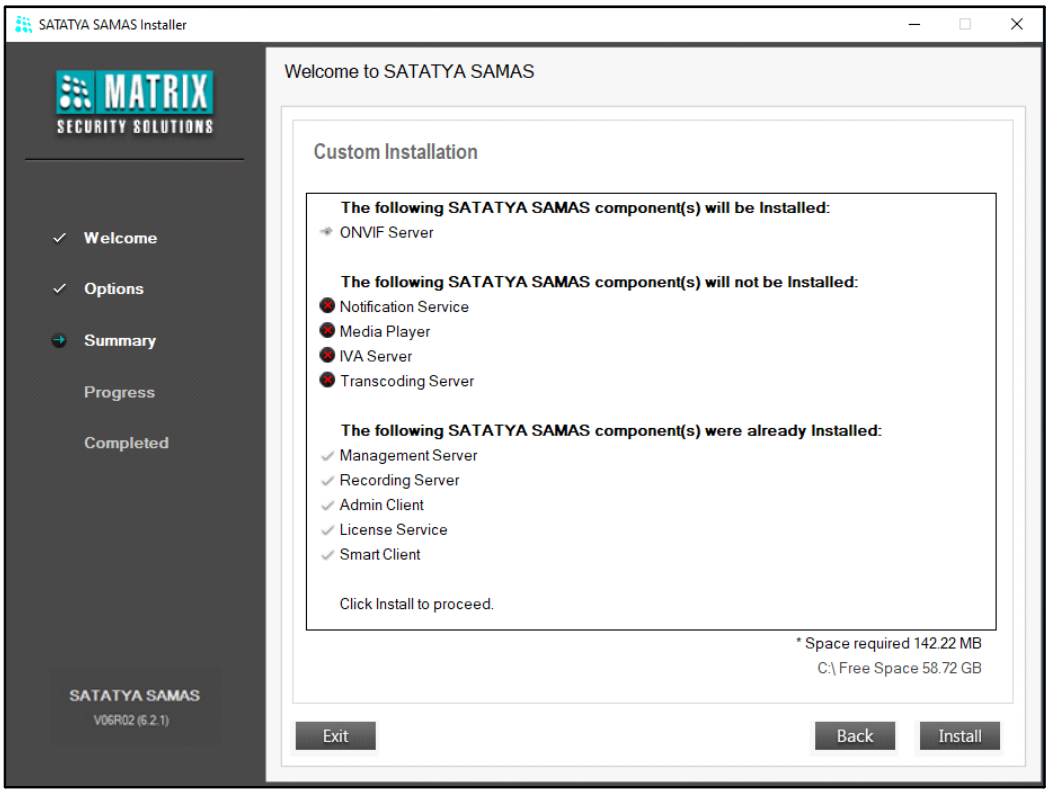


6. Select the **ONVIF Server** check box from the list to be installed. Click **Next** to continue.



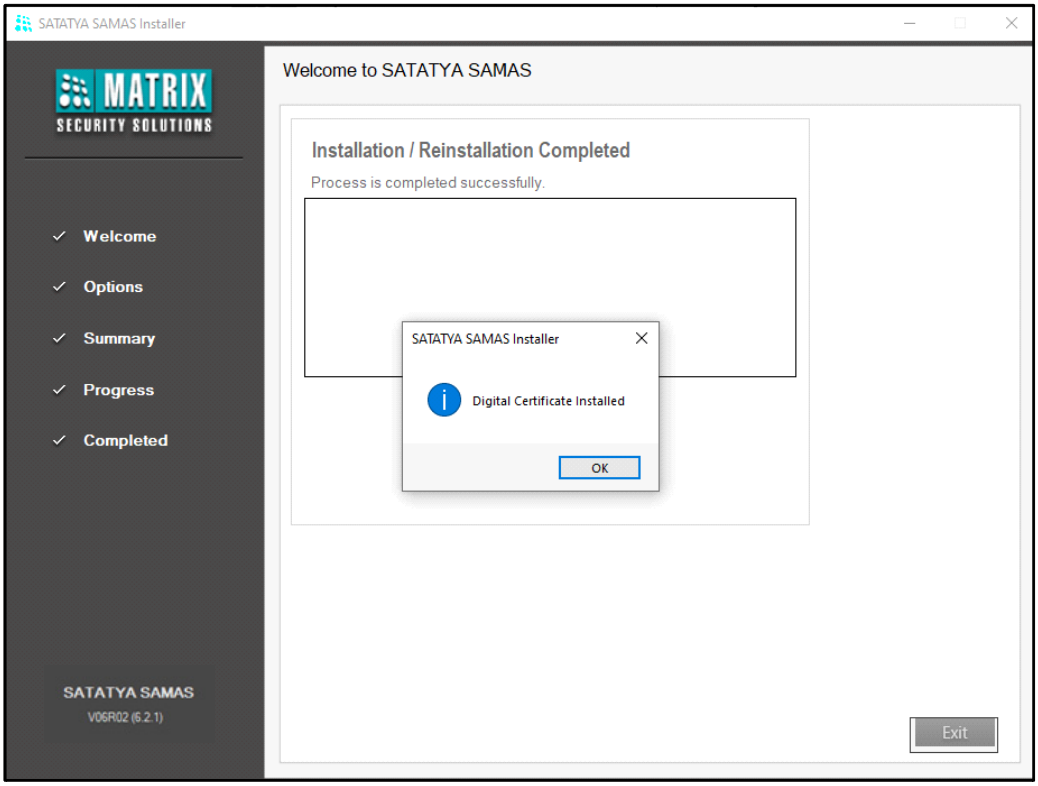
7. The list of the following will be displayed:

   - components that will be installed
   - components that are already installed
   - components that will not be installed



8. Click **Install**. The system will start installing the selected SAMAS components.

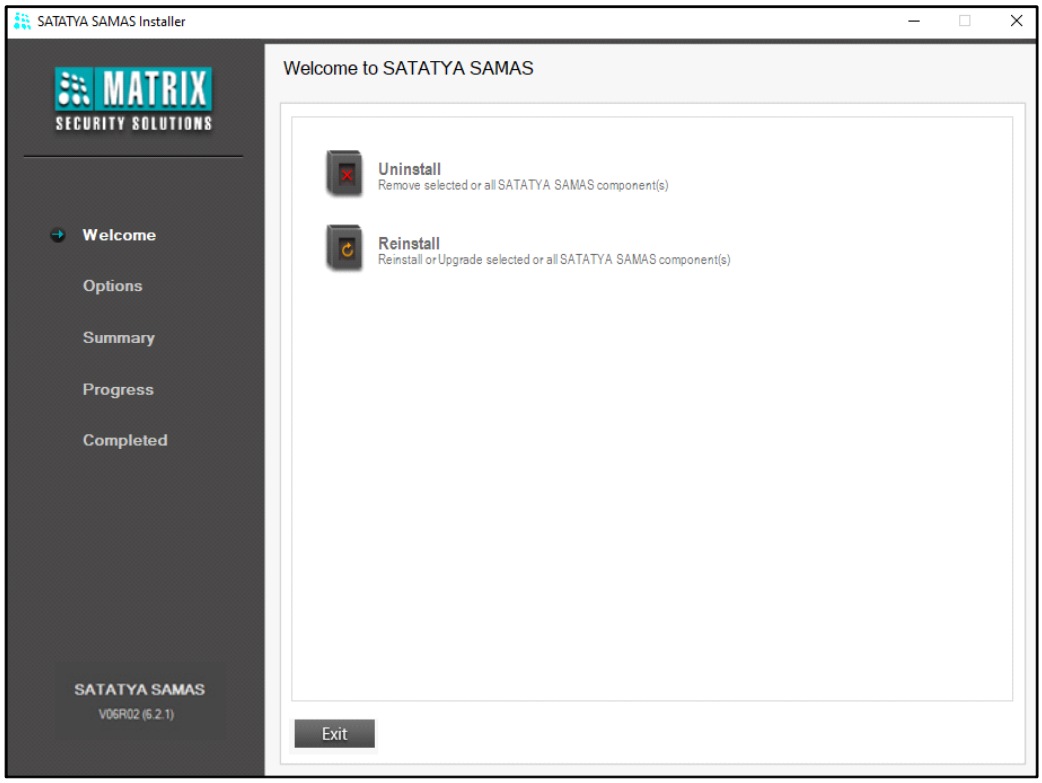
9. Click **Exit** to exit from the installation window



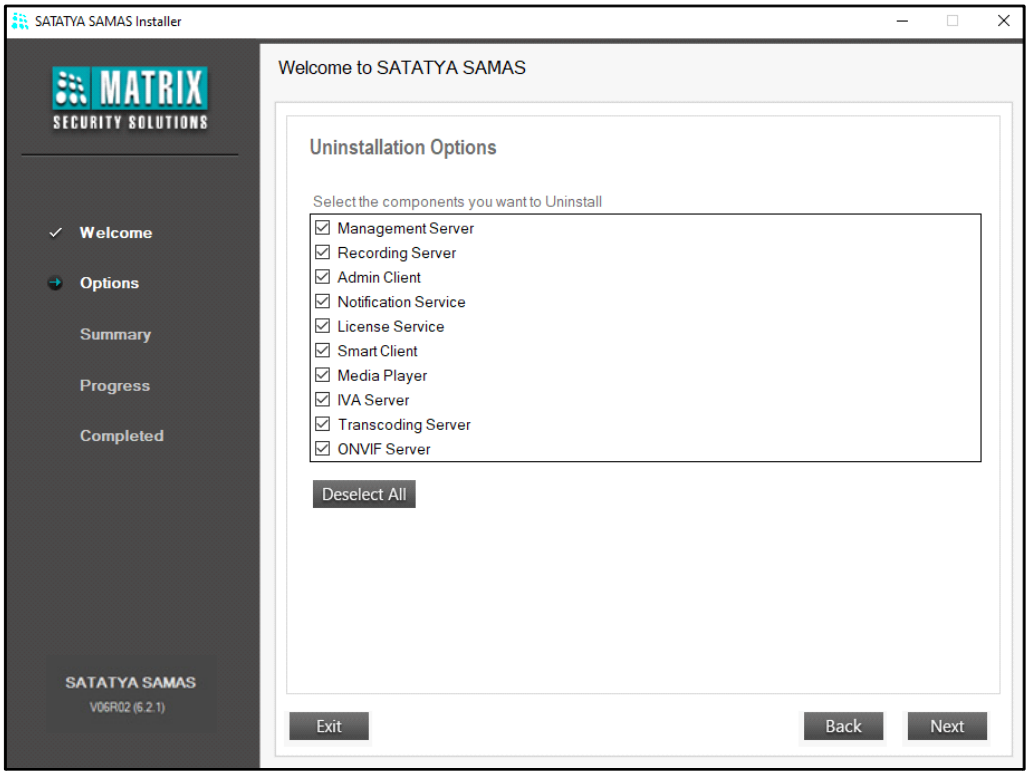
Uninstallation and Reinstallation

To Uninstall or Reinstall the SATATYA SAMAS components, click SATATYA_SAMAS_Installer. The setup window appears as shown below.

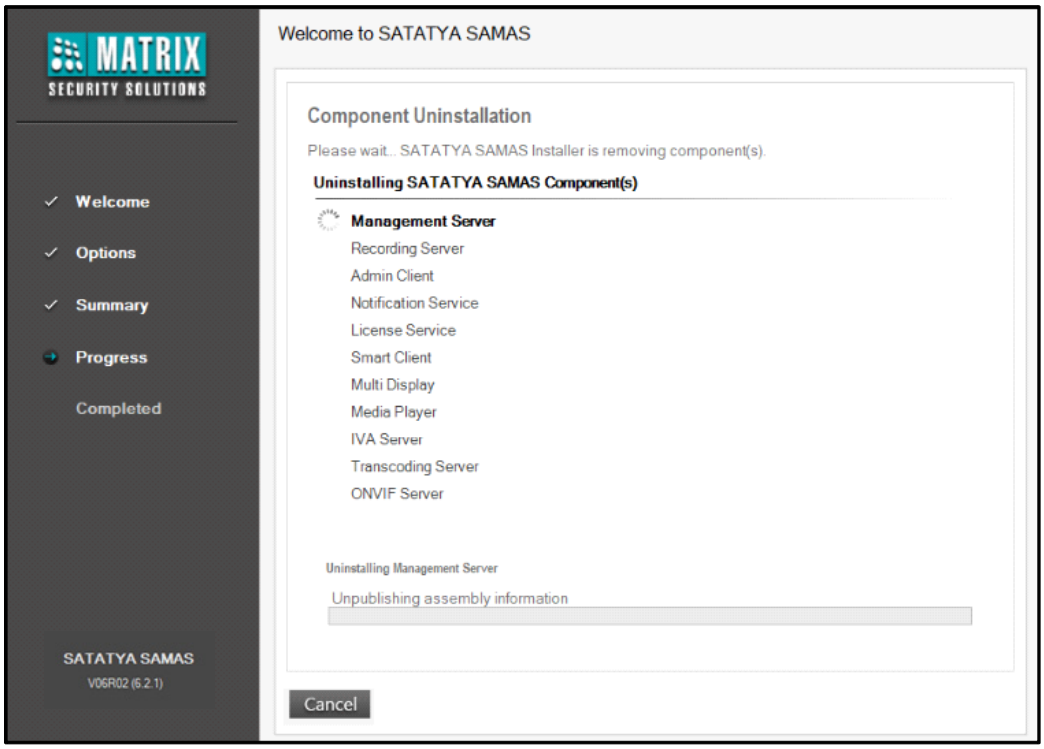
For successful uninstallation or reinstallation of SATATYA SAMAS, it is recommended that all the services are stopped before performing the task.



- To Uninstall the SAMAS components, Click **Uninstall**. Then select the check boxes of the desired components or click **Select All** to uninstall all the components.



- Click **Next** and then click **Uninstall**. The selected/all components will be uninstalled.



- Similarly, the desired components can be **re-installed** by selecting **Reinstall** option from the setup window.

Installing SAMAS Components at Different Sites

SATATYA SAMAS has a distributed architecture. Hence, different components of SAMAS may be required to be installed at different geographical locations based on monitoring requirement.

For example, an organization ABC has its head quarters in Delhi where the Management Server is set up and Recording Servers have been set up at Delhi, Mumbai and Ahmedabad. Now the Smart Client is to be installed only in Ahmedabad while the Admin Client has to be set up at the Administrator's station in Delhi. For such a situation, sending the Installation setup across to all these locations for individual installations can become tedious and time-consuming. This problem can be resolved using the SAMAS Downloader.

SAMAS Downloader

SAMAS Downloader is supported till Software Release V5R6 as well as from Software Release V6R2 and onwards.

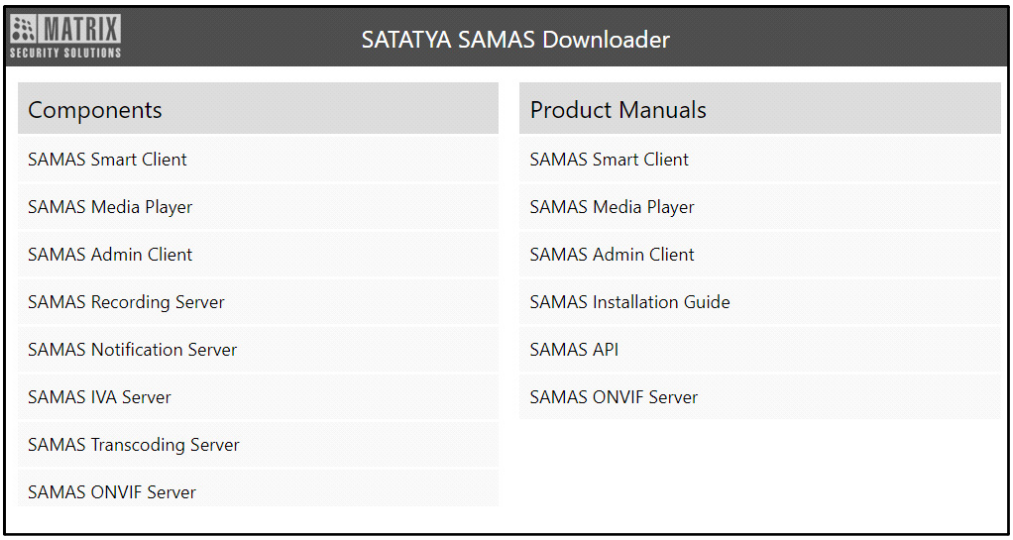
The SAMAS Downloader provides a simple solution for multi-site installations. It enables the users to download different components of SAMAS at diverse locations using a simple Web URL from any standard Web Browser.

On your Web Browser, enter the URL in the following format:

http://<Management Server IP Address>:<Admin Client_Port>/downloader.html

(e.g., "http://192.168.x.y:8711/downloader.html")

The SATATYA SAMAS Downloader appears.



Select a Component from the **Components** section to initiate the download and follow instructions to complete the installation. You can also download all Product Manuals if required.

Service Installation

Once the SAMAS setup installation is successfully completed, the administrator must perform the following steps to start the Management Server, before any other configurations are done.

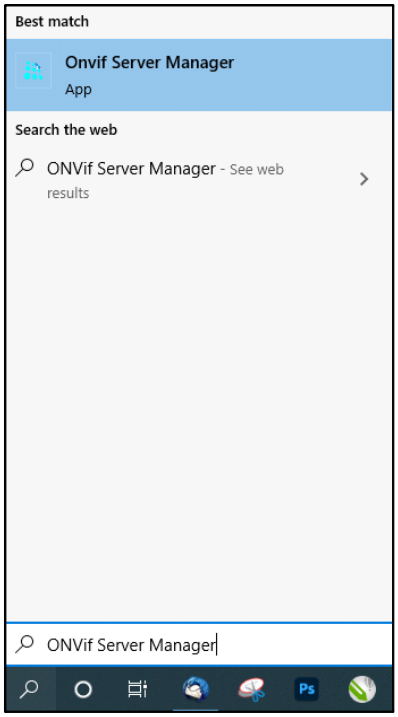
The Management Server, License Server and Database must be in the same network.

If Management Server is running on SSL Mode, then it is mandatory that all the other Servers and Clients are also configured to communicate on SSL Port of the Management Server.

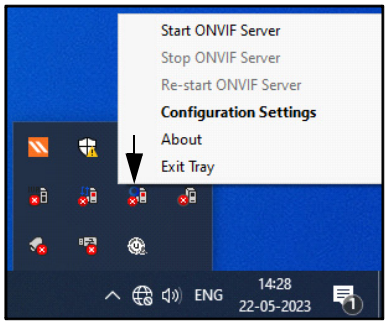
For configuring the other Servers, refer to the **SATATYA SAMAS Installation Guide.**

Configure ONVIF Server settings using the ONVIF Server Manager Utility

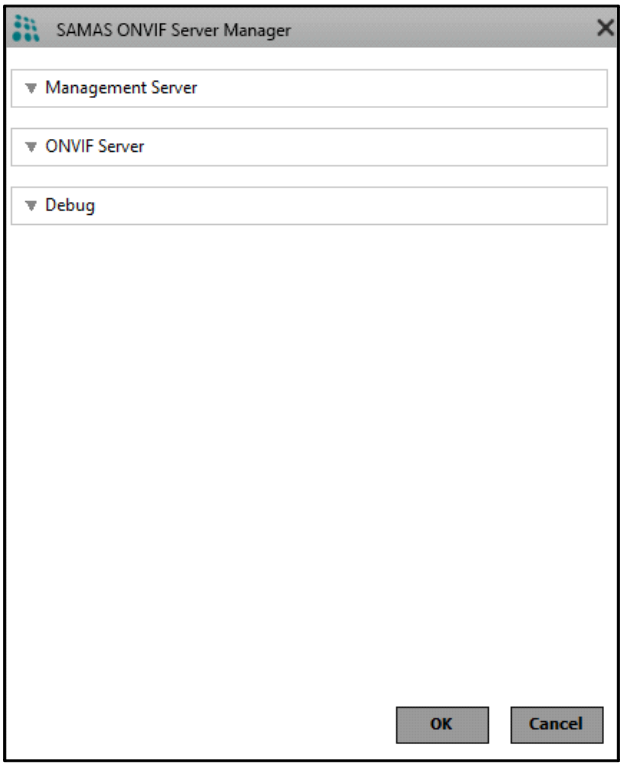
- Click your PC Search option and enter **ONVIF Server Manager**. Click the same.



- The ONVIF Server icon appears in the Tray. Right-click on the **ONVIF Server** icon.



- Select **Configuration Settings** and the **SAMAS ONVIF Server Manager** window appears.



It includes the configuration of Management Server, ONVIF Server and Debug. Click on the links below for the detailed explanation.

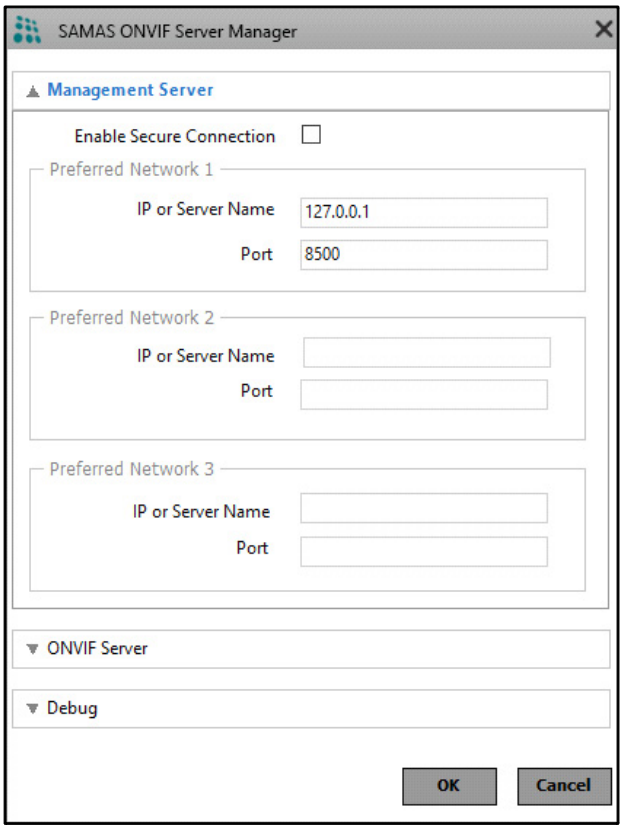
“Management Server”
“ONVIF Server”
“Debug”

Management Server

For the ONVIF Server to communicate with the Management Server (MS), a connection between them needs to be established by configuring the MS IP Address and Port in the ONVIF Manager. But it is not necessary that both the components are located in the same network (private), they may be located in two different networks (public).

Hence, SAMAS allows you to configure 3 Preferred Networks where you can add private network as well as public network of MS.

Click **Management Server** collapsible panel and configure the following parameters for Preferred Network 1 (PN1), Preferred Network 2(PN2) and Preferred Network 3 (PN3):



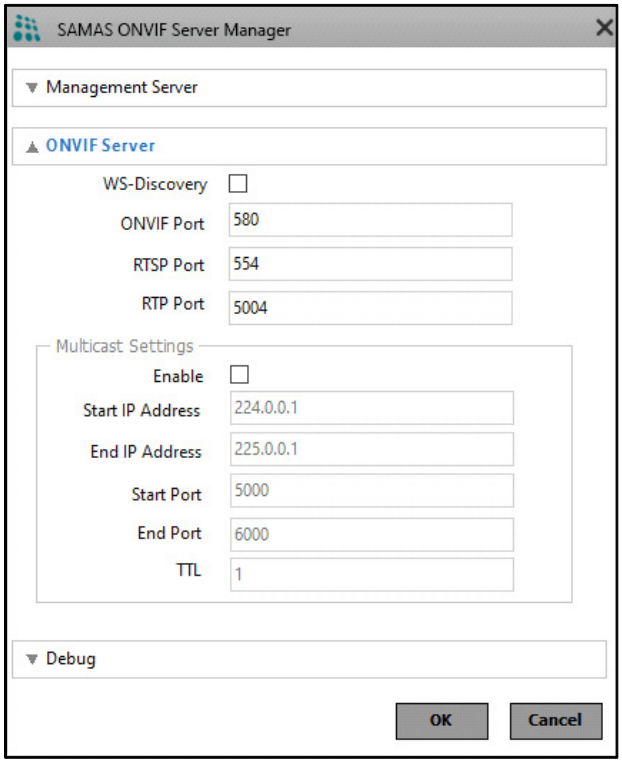
- **Enable Secure Connection**: Select the check box for ONVIF Server to communicate with the Management Sever securely.
- **IP Address or Server Name:** Enter either Private or Public IP Address of Management Server. You can also configure the Host Name, Domain Name or Server Name of ISP.
- **Port:** Enter either Private or Public Port.

Configure the network with the highest priority in Preferred Network 1.

Similarly, configure the parameters of **Preferred Network 2** (PN2)/ **Preferred Network 3** (PN3) as per your requirement.

ONVIF Server

Click on **ONVIF Server** collapsible panel and configure the following parameters:



- **WS-Discovery:** WS-Discovery (Web Services Dynamic Discovery) is a technical specification that defines a multi-cast discovery protocol to locate services on a local network. Select the check box to enable discovering of web-based services within the network automatically.
- **ONVIF Port:** Enter the ONVIF Port on which the ONVIF Client will send requests for video streams to the ONVIF Server.
- **RTSP Port:** Enter the RTSP Port. RTSP Clients will send the RTSP requests to ONVIF Server on this port.
- **RTP Port:** Enter the RTP Port to deliver audio and video over the Internet. This is the start port of RTP Port range.

Multicast Settings

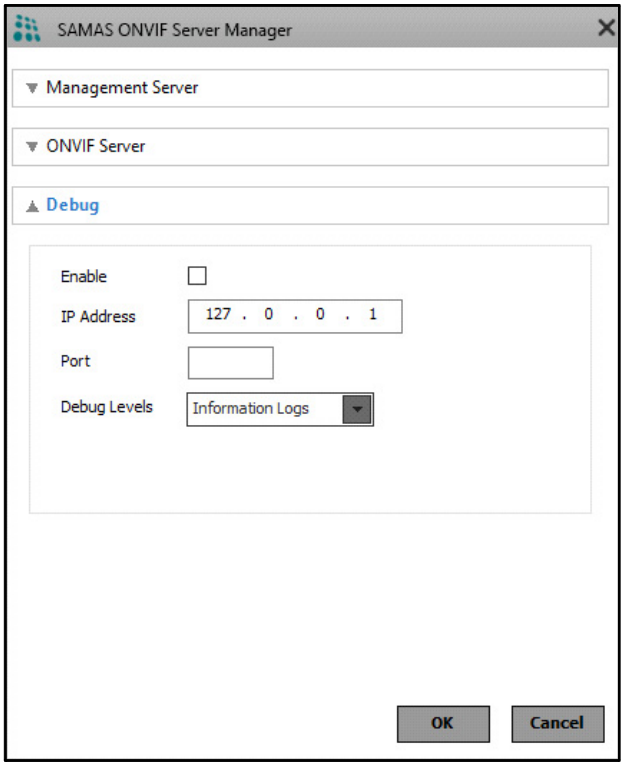
Multicasting helps optimize the network bandwidth consumption between the ONVIF Server and ONVIF Clients.

- **Enable:** Select the check box to enable Multicasting. If disabled, ONVIF will provide the stream to the RTSP Clients in Unicasting.
- **Start IP Address and End IP Address:** Enter the Start and End IP Address that is to be used for Multicasting. The Multicasting communication will be done within this range. IP Address Range 224.0.1.1 to 224.255.255.255 can be used for Multicasting within same subnet. For Cross Network Multicasting all other IP Addresses can be used.

- **Start Port and End Port:** Enter the Start and End Port that is to be used for Multicasting. The Multicasting communication will be done within this range.

- **TTL:** Set the Time-to-Live (TTL) value. This defines the number of sub-networks a packet will be allowed to cross and after this the packet will be dropped. For example, if it is set as 4, a packet will be allowed to cross 4 sub-networks and then the packet will be dropped.

Debug



- **Enable**: Select the check box to enable the debug.

- **IP Address**: Specify the IP Address of the Syslog Server.

- **Port**: Specify the port of the Syslog Server.

- **Debug Levels**: Select the desired level of debug — None, Information Logs or Detailed Logs.

- Click **OK** to save settings.

Now from the Tray, right-click on the **ONVIF Server** icon again and select **Start ONVIF Server** to start the server.

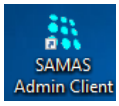
CHAPTER 4

Configuration

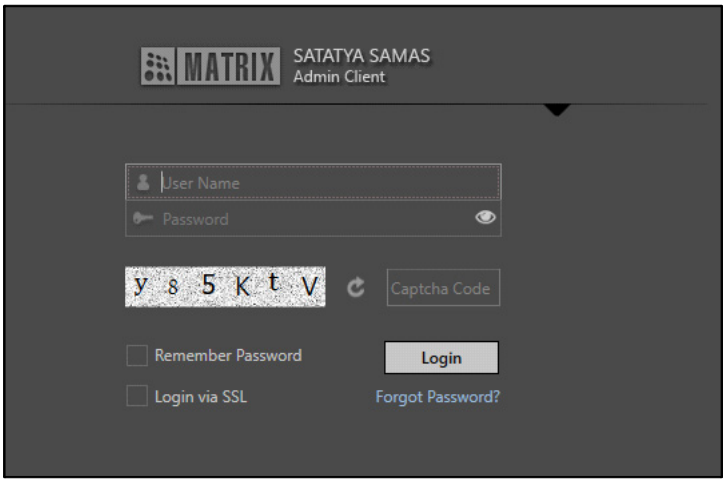
After installation has been done, you need to do the following Configurations:

- Activating and Configuring the ONVIF Server, refer “Activating the ONVIF Server” and “Configuring the ONVIF Server”.
- Assign camera to the ONVIF Server, refer “Assigning a Camera to the ONVIF Server”.
- Configure the ONVIF Users, refer “Configuring ONVIF Users”.

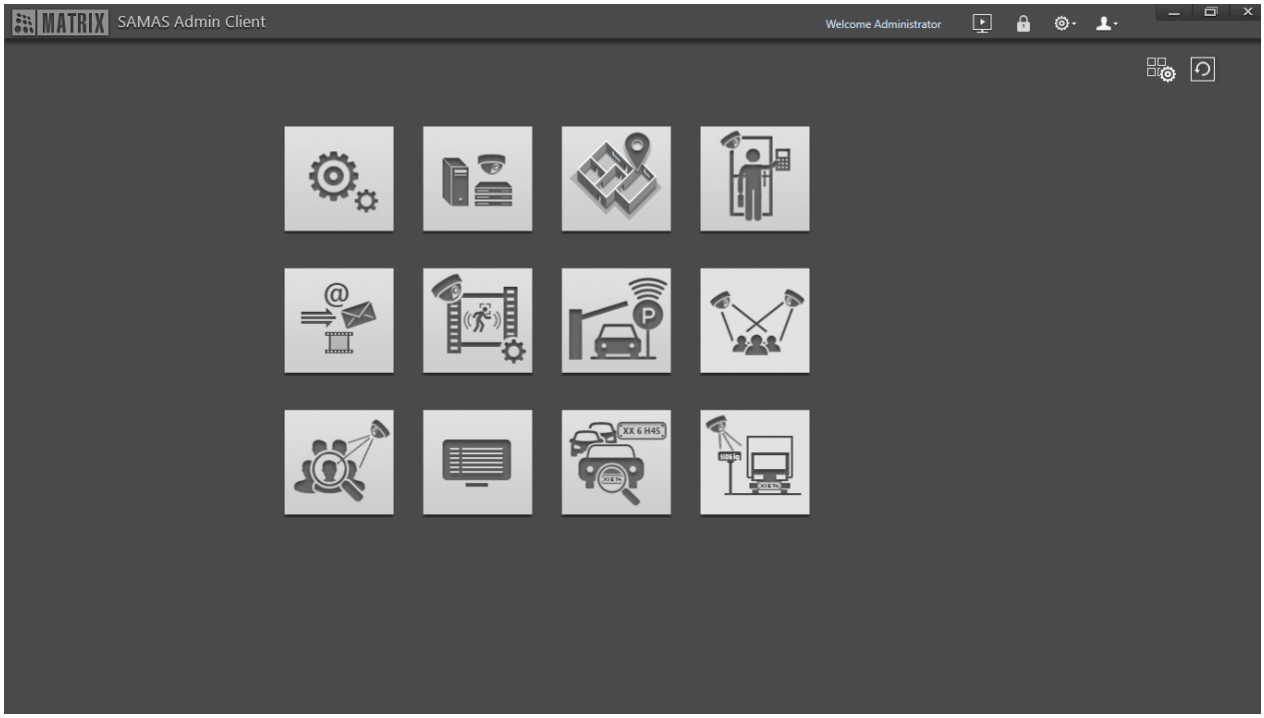
Activating the ONVIF Server

- Double-click the *Admin Client* shortcut icon 

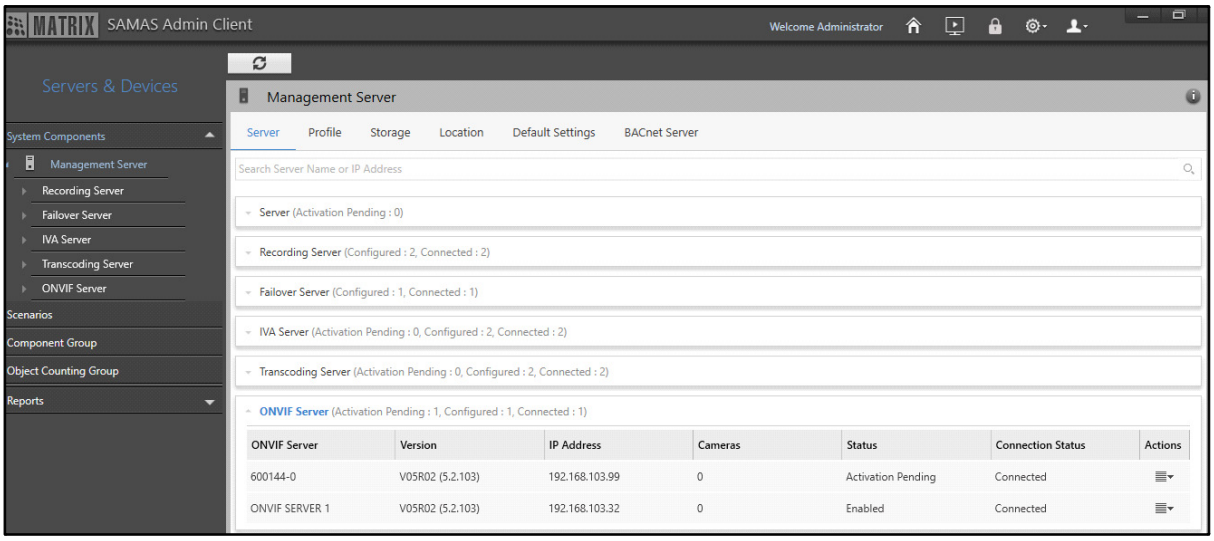
on your Windows desktop.
- The login page appears, enter the **User Name** and **Password**.



- Click **Login**. The **Home** page appears.



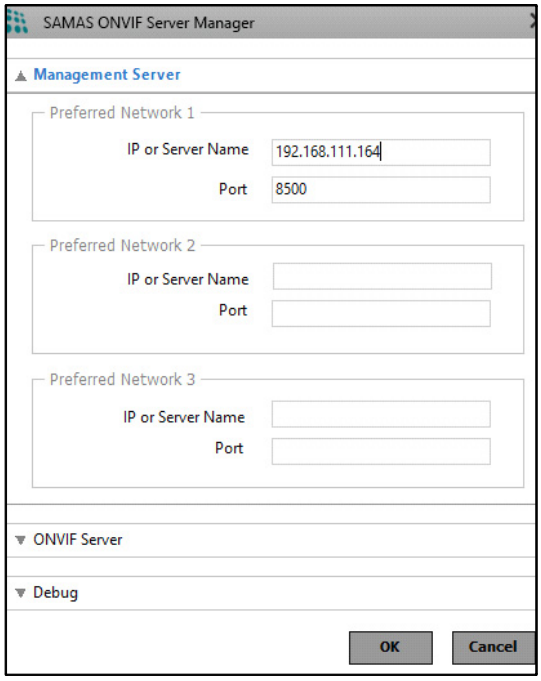
- Click **Servers & Devices** Module.
- Click **ONVIF Server**. The Server page contains all the servers awaiting activation as an ONVIF Server as shown in the screen below.



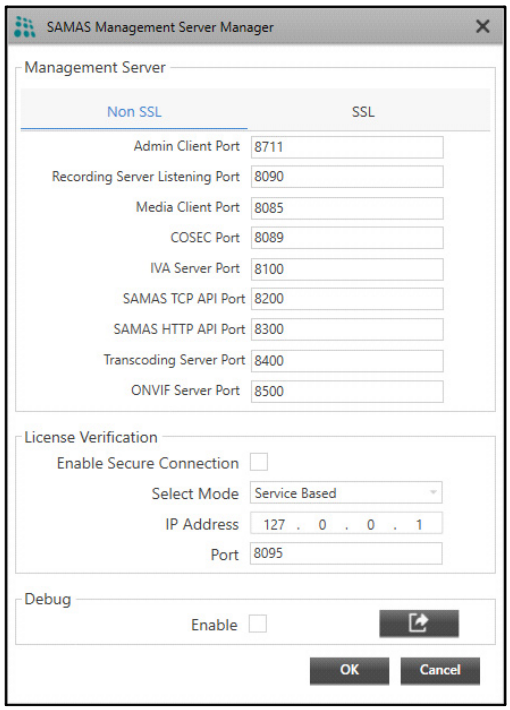
The names of the ONVIF Servers whose activation requests are pending are the names of the PC on which the respective Servers are installed. After Activation the names can be edited from their respective Profiles. Refer to Profile in ONVIF Server Configuration in the Admin Client Manual.

For example, the request from ONVIF Server (192.168.103.99) is sent to the MS IP (192.168.111.164). For this the IP Address (192.168.111.164) and Port (8500) of MS is specified in ONVIF Server Manager (192.168.103.99).

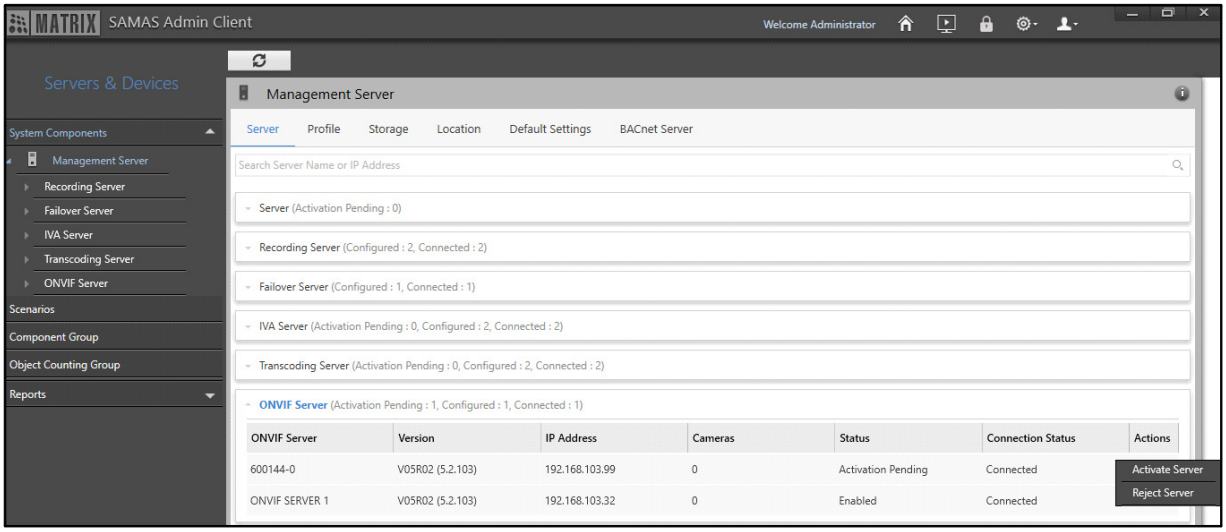
Settings in PC (192.168.103.99, ONVIF Server)



Settings in PC (192.168.111.164, MS)



- To activate the requesting ONVIF Server, click **Actions** and then click **Activate Server**.



- To reject a pending ONVIF Server, select **Reject Server**.
- Once an ONVIF Server has been activated, click **Actions** again to access the options — Disable Server, Remove Server or Update Configuration.

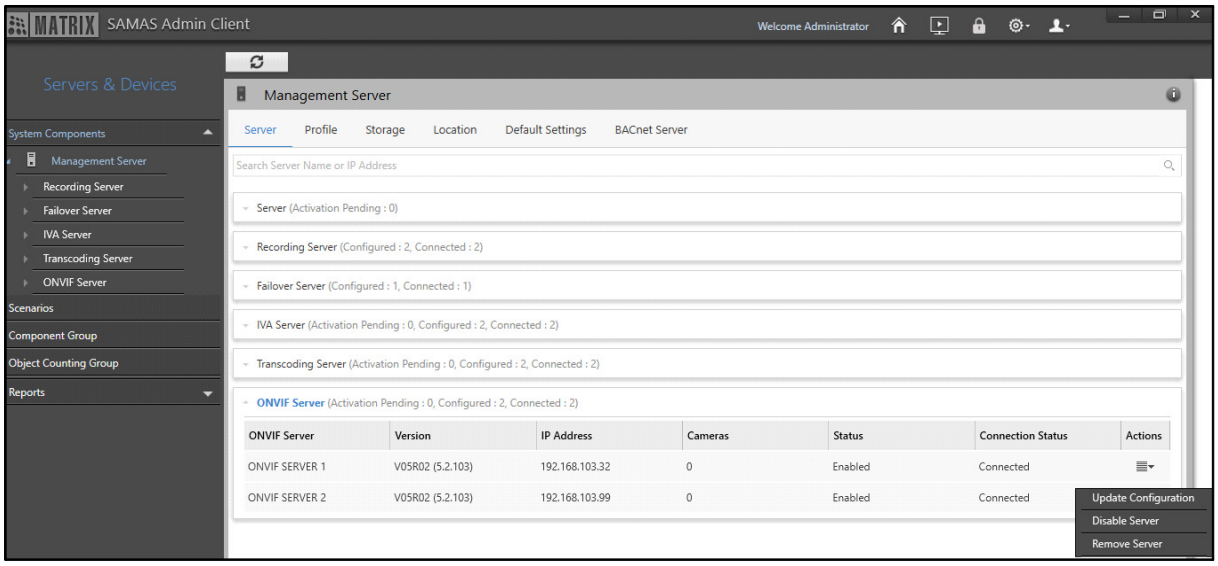
Server icon Representation

Icons	Description
Server status icons	
	ONVIF Server is Connected
	ONVIF Server is Disconnected
Server Version Mismatch icons	
	ONVIF Server version mismatch (Disconnected)
	ONVIF Server version mismatch (Disconnected)

Viewing the IP Address of the ONVIF Servers

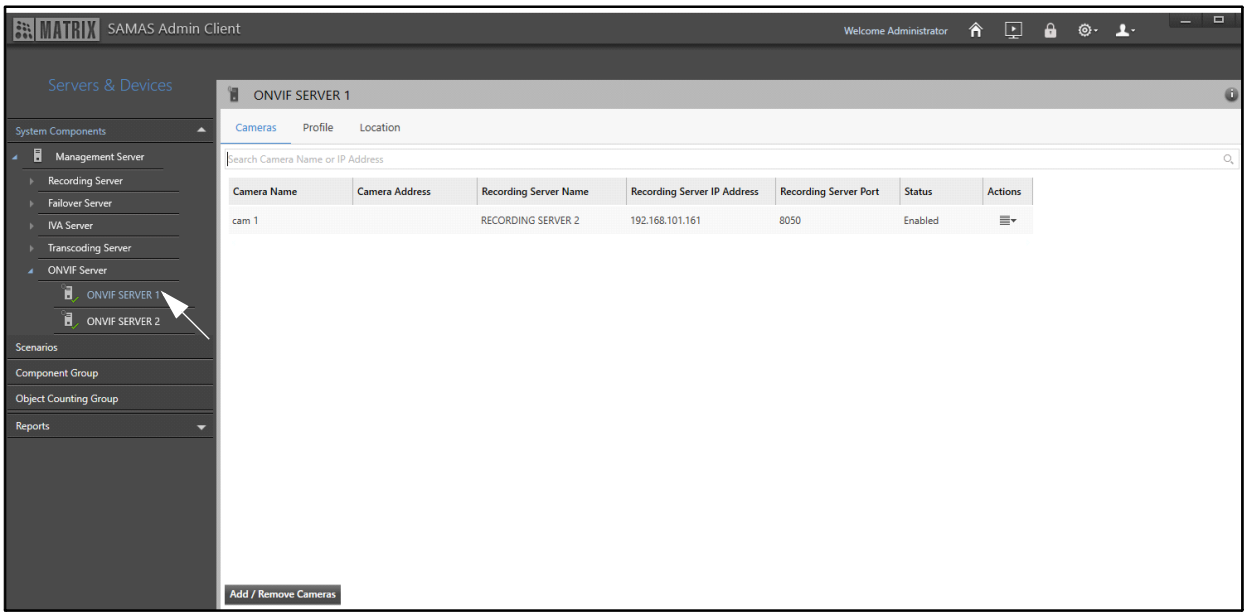
To view the IP Addresses of all the ONVIF Servers,

- Click **Servers & Devices** Module.
- Click **Management Server**. Click the **ONVIF Server** collapsible tab.

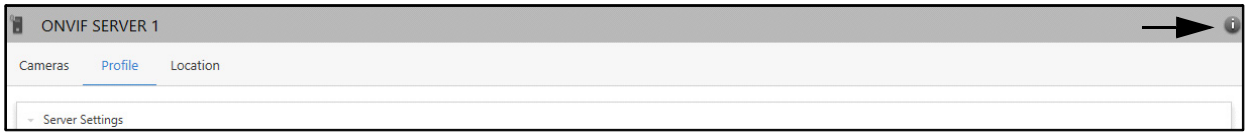


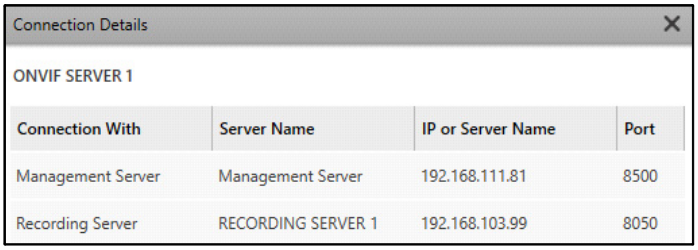
Configuring the ONVIF Server

- Click **Servers & Devices** Module.
- Click **ONVIF Server**. The ONVIF Server contains all the servers activated as ONVIF Servers along with their cameras.
- Select the desired ONVIF Server.



- To view the **Connection Details** of the ONVIF Server, click **Connection Details** at the top right corner of the ONVIF Server page. It displays the connection details of the ONVIF Server with the Management Server, Recording Server as well as Failover Server. It displays the following details — Connection With, Server Name, IP or Server Name and Port.





Each ONVIF Server consists of the following tabs:

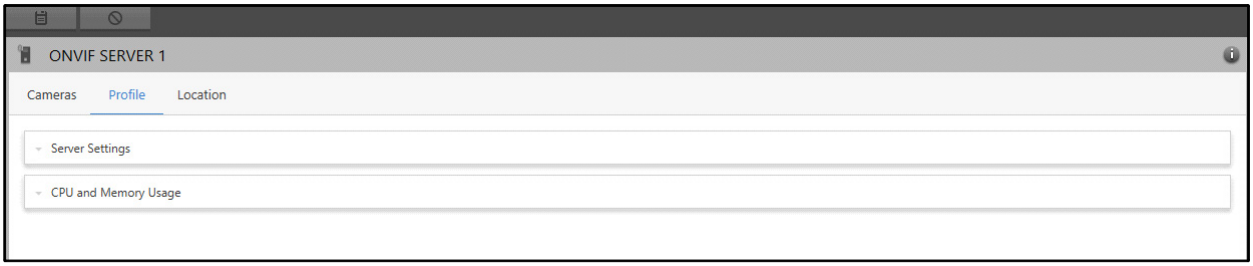
- Cameras refer to “Assigning a Camera to the ONVIF Server”
- “Profile”
- “Location”

Profile

This tab enables you to view and configure Server Settings and CPU and Memory Usage.

To configure Profile settings,

- Click the **Profile** tab.



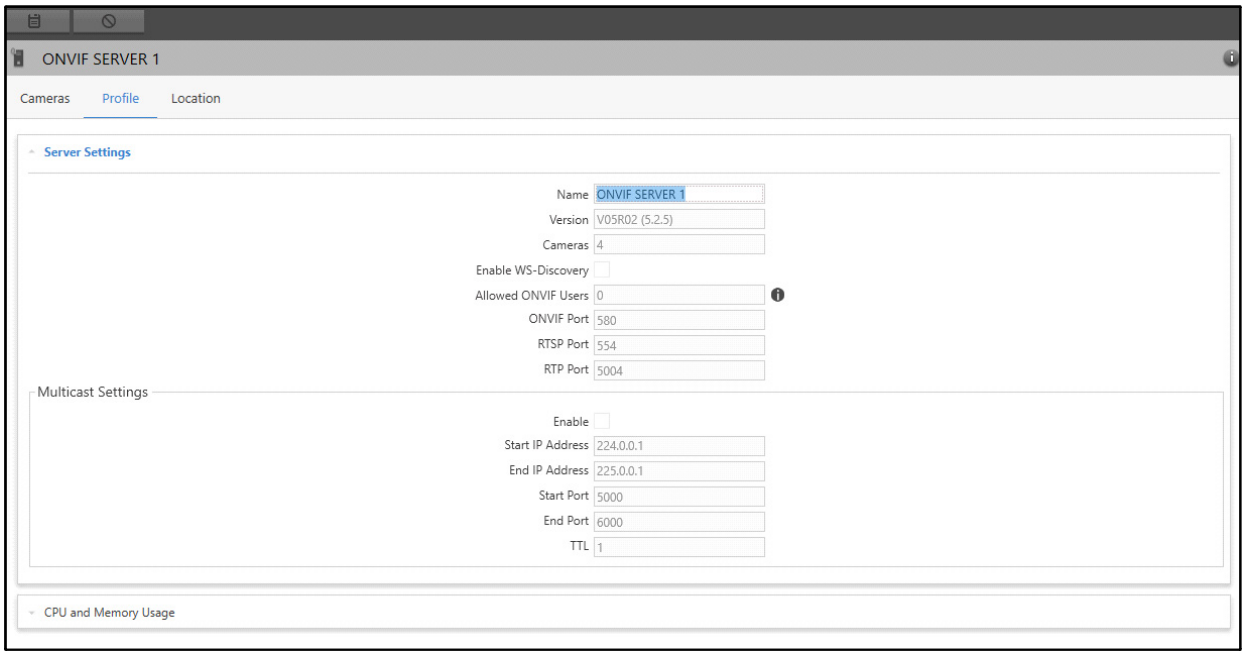
The Profile tab contains two collapsible panels — “Server Setting” and “CPU and Memory Usage”.

Server Setting

This panel displays the Server Settings of the ONVIF Server. You can edit and configure the ONVIF Server Name from this collapsible panel.

To view and edit the Server Settings,

- Click the **Server Settings** collapsible panel.



This panel displays the Server Settings and Multicast Settings. The Server Settings of the ONVIF Server display — Name, Version, Cameras, Enable WS-Discovery, Allowed ONVIF Users, ONVIF Port, RTSP Port and RTP Port. The Multicast Settings display — Start IP Address, End IP Address, Start Port, End Port and TTL.

You can configure the following parameters:

- **Name**: Specify a name for the ONVIF Server.
- **Enable WS-Discovery**: Select the check box, if you wish that the ONVIF Server should appear in the WS-Discovery made by Third Party ONVIF Clients.

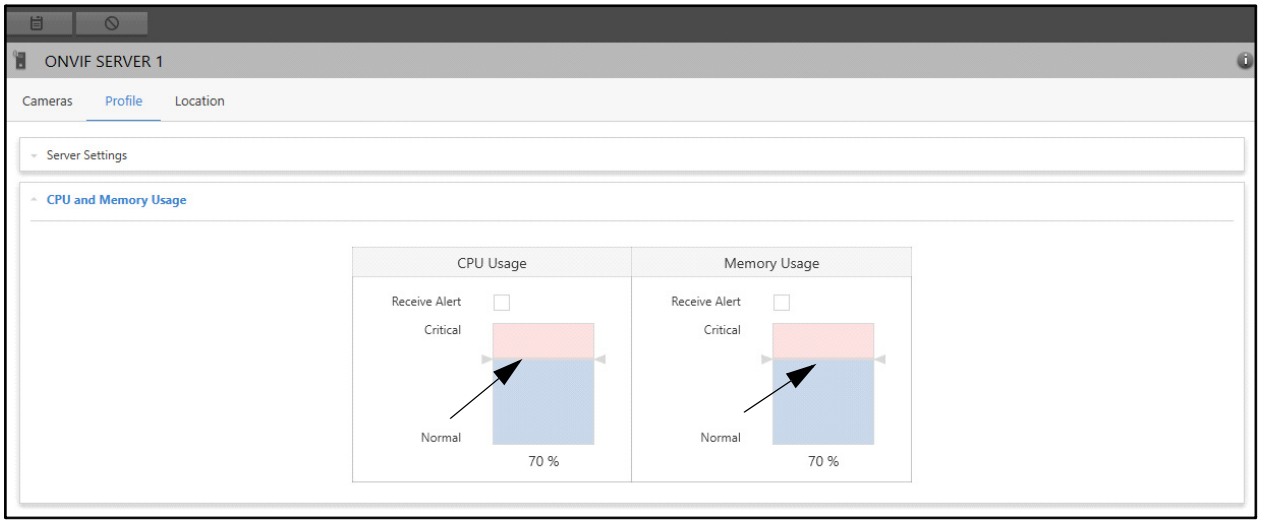
- Click **Save** to save the settings or click **Cancel** to discard.

CPU and Memory Usage

This panel allows you to configure the threshold value of CPU and Memory Usage and receive alerts when the ONVIF Server crosses these set values.

To configure the CPU and Memory Usage settings,

- Click the **CPU and Memory Usage** collapsible panel.



- **Receive Alert**: Select the Receive Alert check box under **CPU Usage** and **Memory Usage** to receive alerts when the ONFIV Server crosses the set threshold value.
- Set the **Critical** and **Normal** values for **CPU Usage** and **Memory Usage** by dragging the pointer or tapping on the empty area.

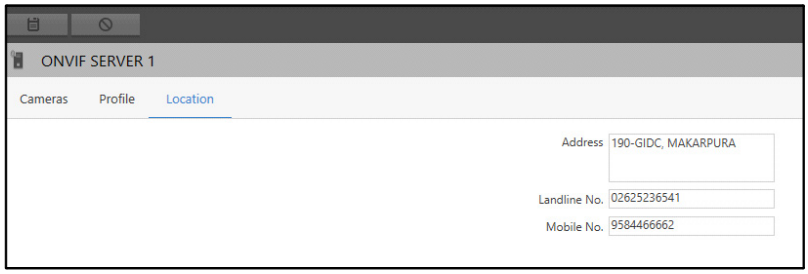
  For example: In the above screen the CPU Usage and Memory Usage thresholds are configured as 70%. Hence, you will receive an alert when the CPU usage or the memory usage goes beyond 70%, that is when it crosses the Critical limit as well as when it comes back to its Normal limit again.
- Click **Save** to save the settings or click **Cancel** to discard.

Location

This tab enables you to view and configure the location information of the ONVIF Server.

To configure the Location,

- Click the **Location** tab.



Configure the following parameters:

- **Address**: Specify the address where the ONVIF Server is located.
- **Landline Number**: Specify the Landline Number of the place where the ONVIF Server is located.
- **Mobile Number**: Specify the Mobile Number of the place where the ONVIF Server is located.

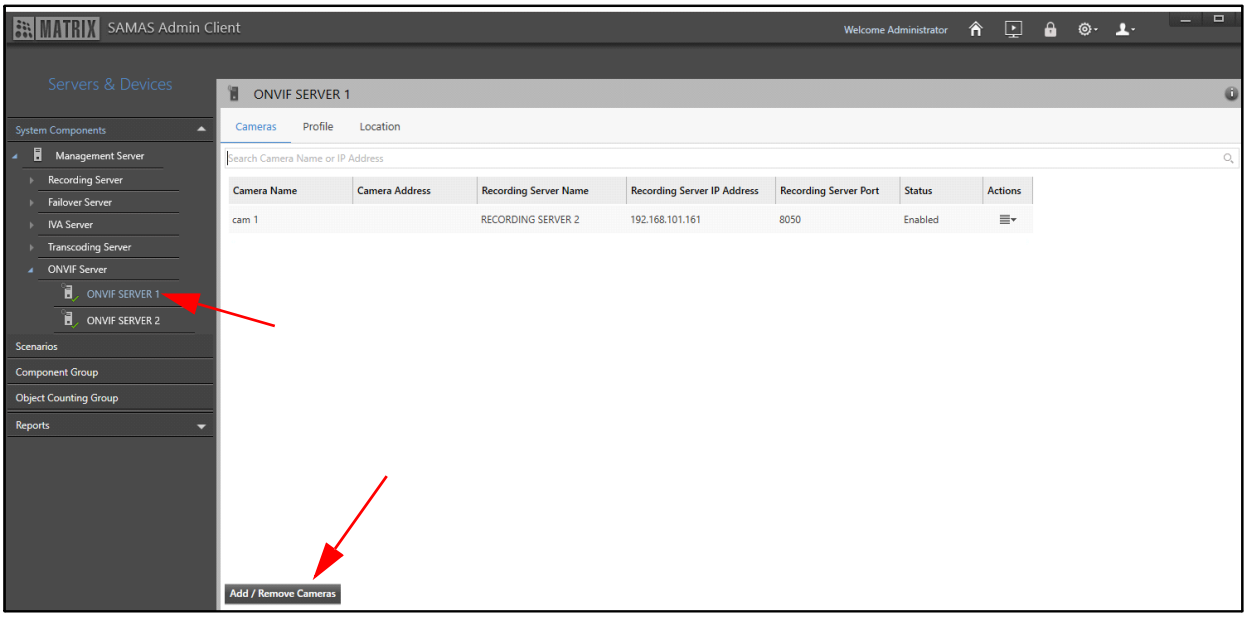
- Click **Save** to save the location details or **Cancel** to discard.

Assigning a Camera to the ONVIF Server

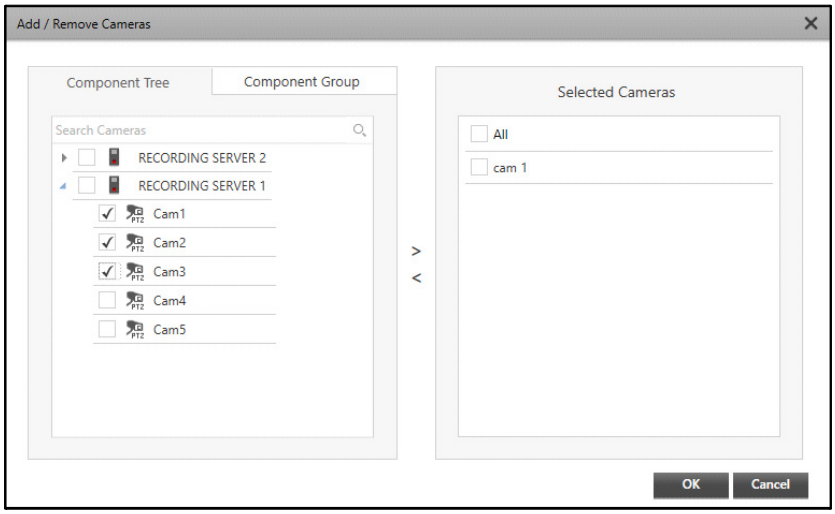
You need to assign cameras to the ONVIF Server, to be able to access Live View / Playback from Third Party ONVIF Clients.

To do so,

- Click **Servers & Devices** Module.
- Click **ONVIF Server** and click the **Camera** tab.



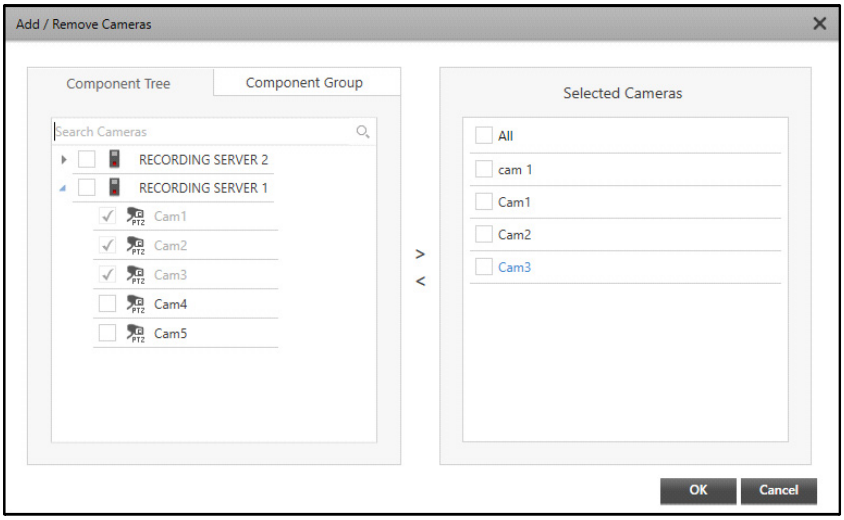
- Click **Add/ Remove Cameras**. The **Add/ Remove Cameras** pop-up appears.



- The list of cameras added to various configured Recording Servers appears under the **Component Tree** tab. The cameras added to different groups appear under the **Component Group** tab.Select the check boxes of the desired cameras you wish to add from the Component Tree or Component Group tabs.

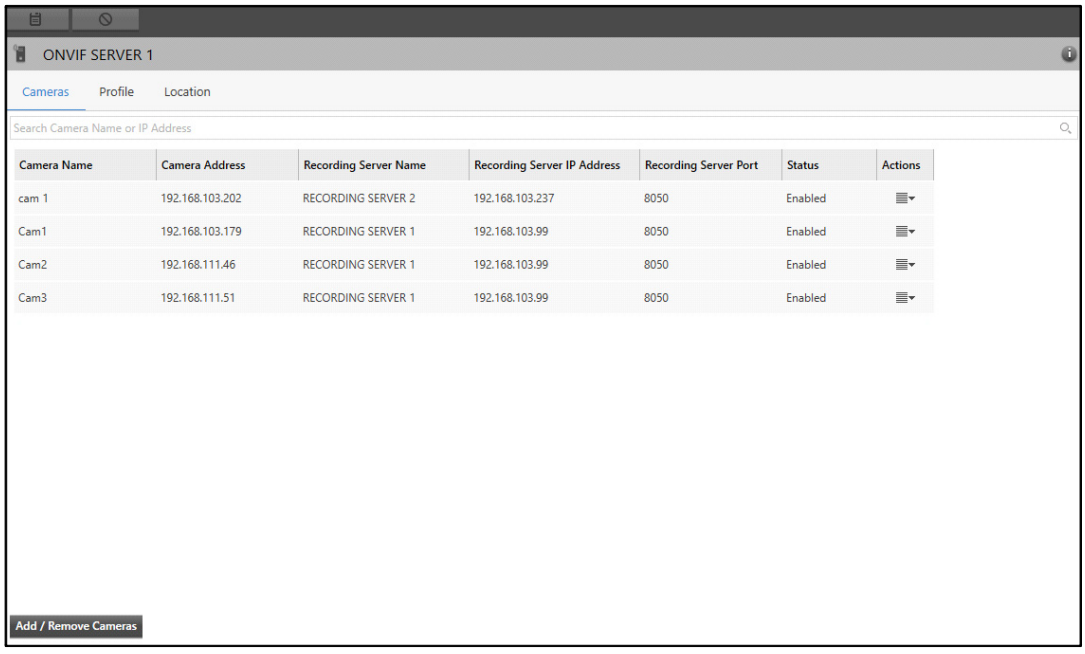
Click the right arrow button to add these cameras to the **Selected Cameras** list. You can also search for the desired cameras using the **Search Cameras** search bar.

To remove cameras, select the check boxes of the desired cameras you wish to remove from the Selected Cameras list. Click the left arrow button to remove the cameras from the Selected Cameras list.

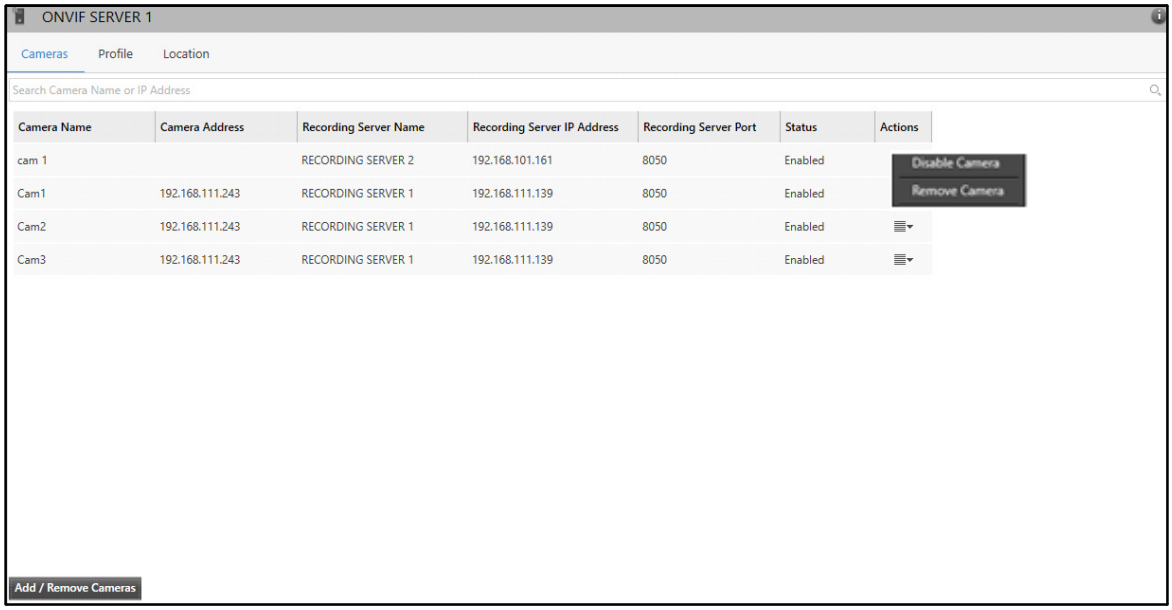


- Click **OK** to confirm or click **Cancel** to discard.

The added cameras appear in a list under the Cameras tab.



Under **Actions** , you can configure the following camera parameters — Disable Camera and Remove Camera.



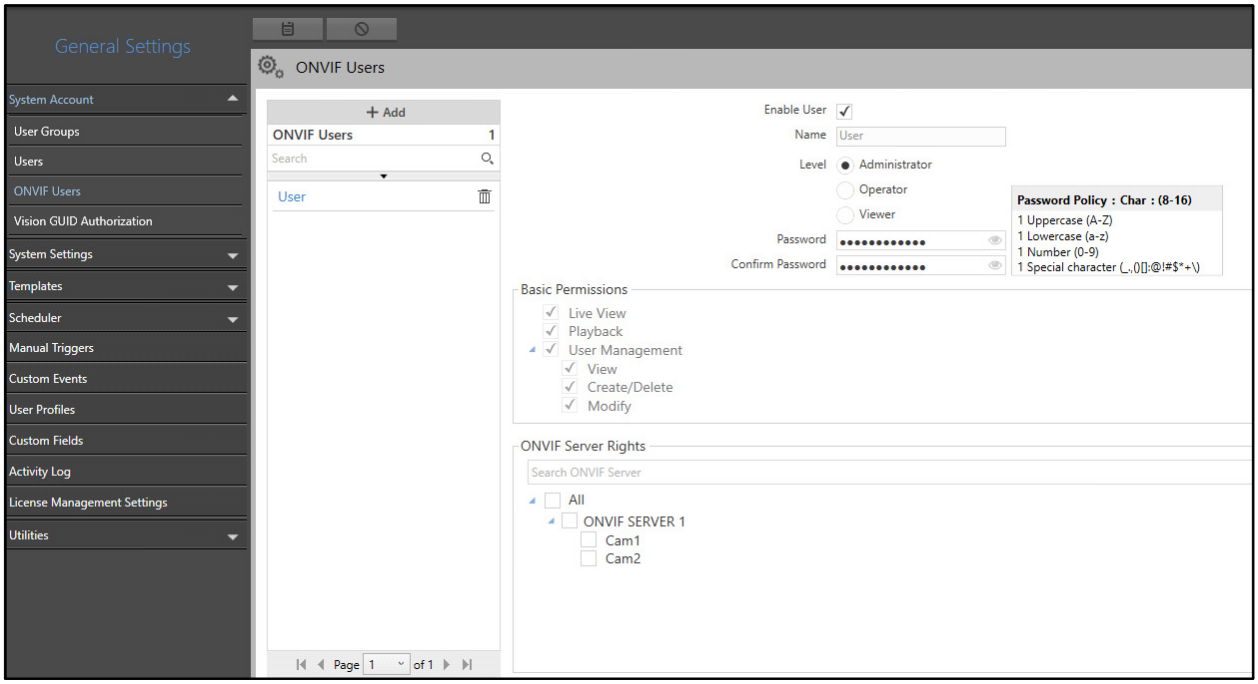
- **Disable Camera**: Selecting Disable Camera option will disable the camera. This will remove the camera from the list of ONVIF Server displayed on the left hand side. For enabling it again, click **Action** and select **Enable** Option.
- **Remove Camera**: Selecting Remove Camera will remove the camera from the ONVIF Server.

Configuring ONVIF Users

ONVIF Users can be created from either SAMAS or Third Party Clients. You can add maximum 99 ONVIF Users. You can add, edit or delete users.

To create ONVIF Users,

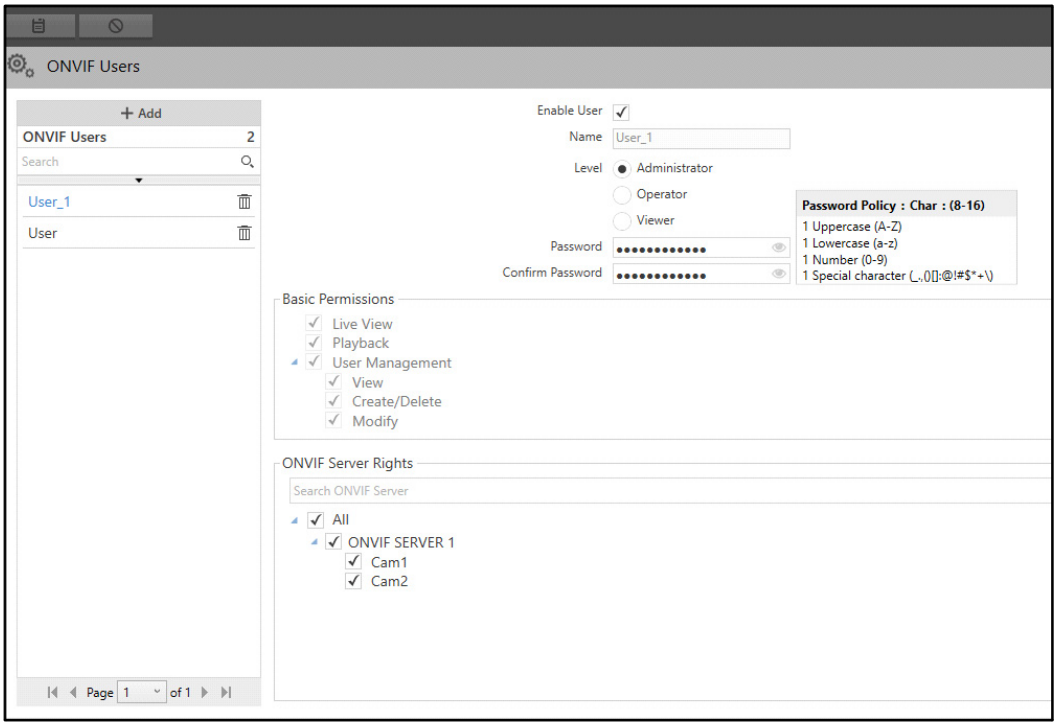
- Click **General Settings** Module **> System Account > ONVIF User** and the following screen appears.



- Click **Add** and enter the following details.
  - **Enable User**: Clear the check box to disable. By default it is enabled.
  - **Name:** Enter a name for the user.
  - **Level:** Select the level you wish to assign to the user — Administrator, Operator or Viewer. As per the option you select the **Basic Permissions** assigned to the user will differ.
  - **Password:** Enter the password.
  - **Confirm Password:** Re-enter the password to confirm.

    The Name and Password will be required when you wish to access the ONVIF Server from any ONVIF Client.
  - **Basic Permissions:** These will differ according to the **Level** you select.
  - **ONVIF Server Rights:** Select the ONVIF Servers and their devices for which you wish to give rights to the User.
- Click **Save**.

The users appear in the left pane under ONVIF Users.



- To delete, click the **Delete** icon of the respective user.
- To edit, click on the desired User Name, you can edit the details on the right.
- To view the details of the all the ONVIF Users, refer “ONVIF Users” (from Admin Client) and “ONVIF Users” (from Smart Client).

CHAPTER 5

Viewing Live Streams

ONVIF clients are computer appliances or software programs that use ONVIF Webservices. Examples of ONVIF clients are servers, media players, IP-based surveillance systems.

The Real Time Streaming Protocol (RTSP) is used to establish and control media sessions between two or more endpoints. The ONVIF Server uses ONVIF Profile S and RTSP to handle requests for video from an ONVIF client, and to stream video from an SATATYA SAMAS installation to the ONVIF client.

In this section we will explain how to view video streams using the Third Party Client (ONVIF Device Manager) as well as the RSTP Media Client (VLC Player)

Viewing Live Stream using the Third Party Client (ONVIF Device Manager)

ONVIF Device Manager is a open source software that is used to discover and view video from all cameras in the network that support ONVIF standards.

Here, we will describe how to install the ONVIF Device Manager and configure it to stream live video from the SATATYA SAMAS ONVIF Server.

Before you begin make sure you have the following information from your System Administrator:

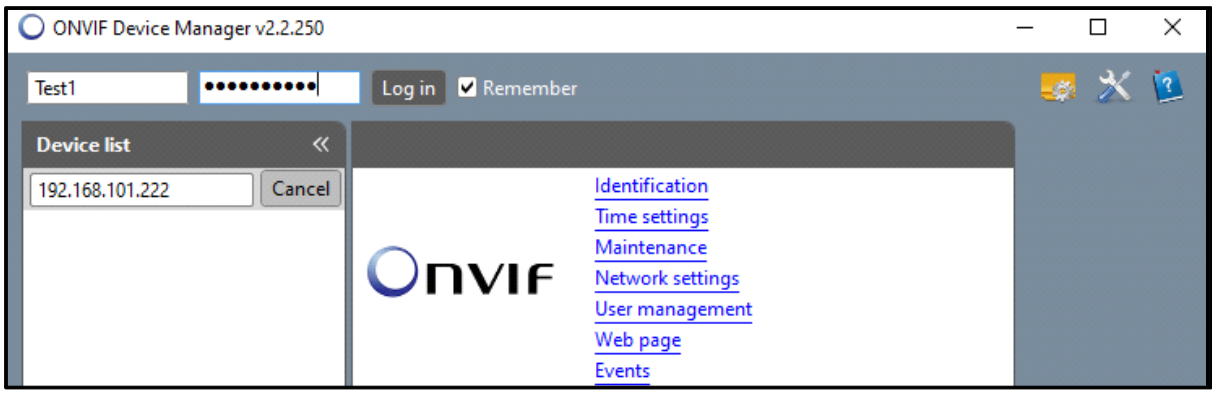
- ONVIF User Name and Password (make sure this user is assigned the Rights of the desired ONVIF Server/s and its cameras).
- The IP address of the ONVIF Server. Refer “Viewing the IP Address of the ONVIF Servers”.

Follow the steps given below to install the ONVIF Device Manager and view the live stream:

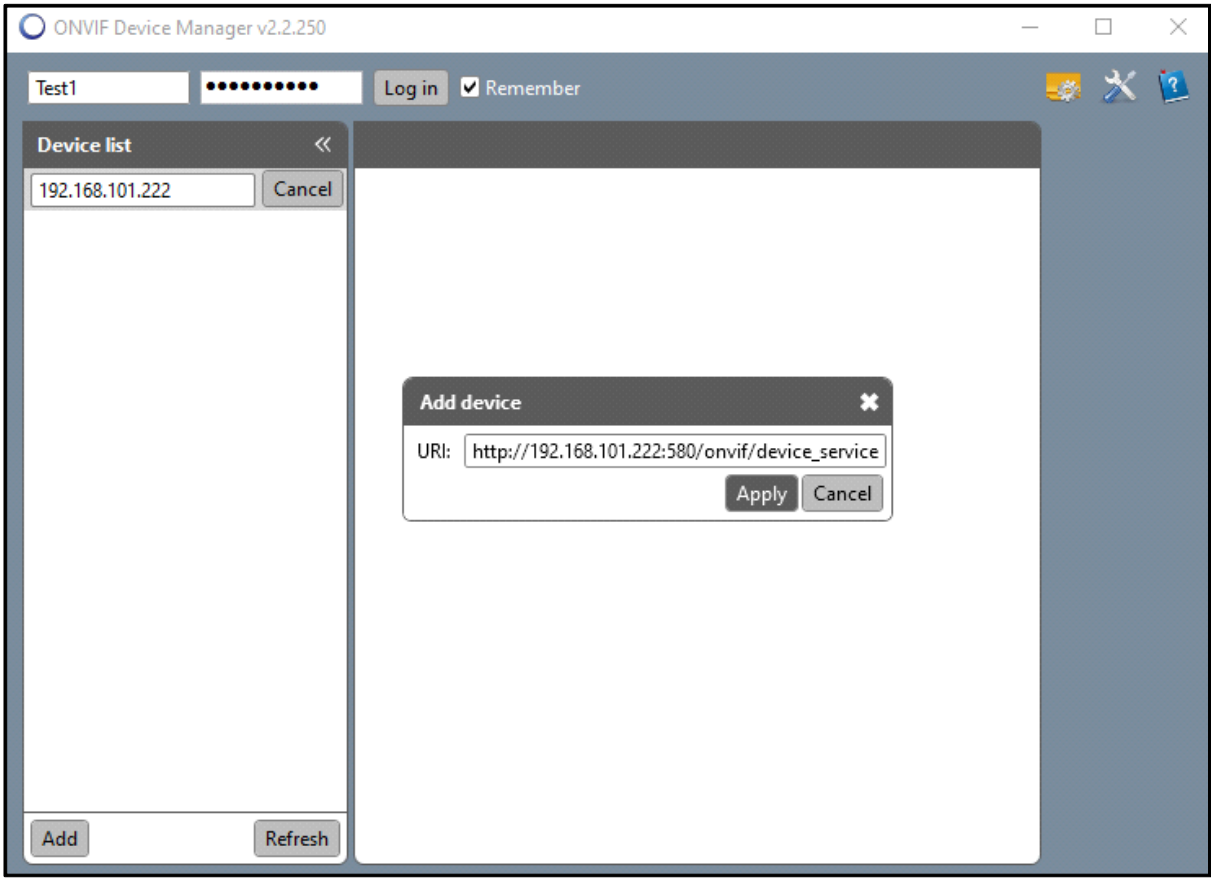
- Download the ONVIF Device Manager from the ONVIF Website - https://www.onvif.org/ site and then run the installer. You can install the ONVIF Device Manager on any computer.

- When the installation completes, an icon appears on the desktop. Double-click the icon to start the ONVIF Device Manager.

- When the ONVIF Device Manager starts, enter the ONVIF User Name and Password, you created in SAMAS Admin Client.

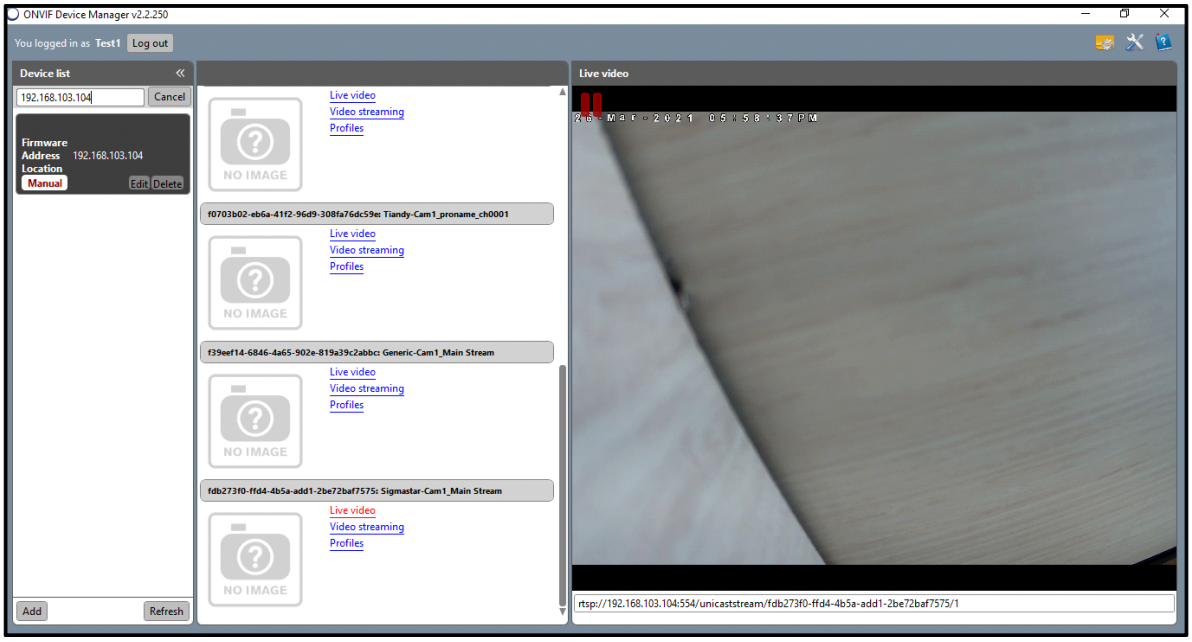


- Click **Login**.
- Click **Add**. The **Add Device** pop up appears.



- In the **URL**, enter the IP Address and Port of the ONVIF Server for example **http://192.168.101.222:580/onvif/device_service**
- Click **Apply**.
- The list of cameras assigned to the ONVIF Server appear.

- Click **Live View** of the desired camera.



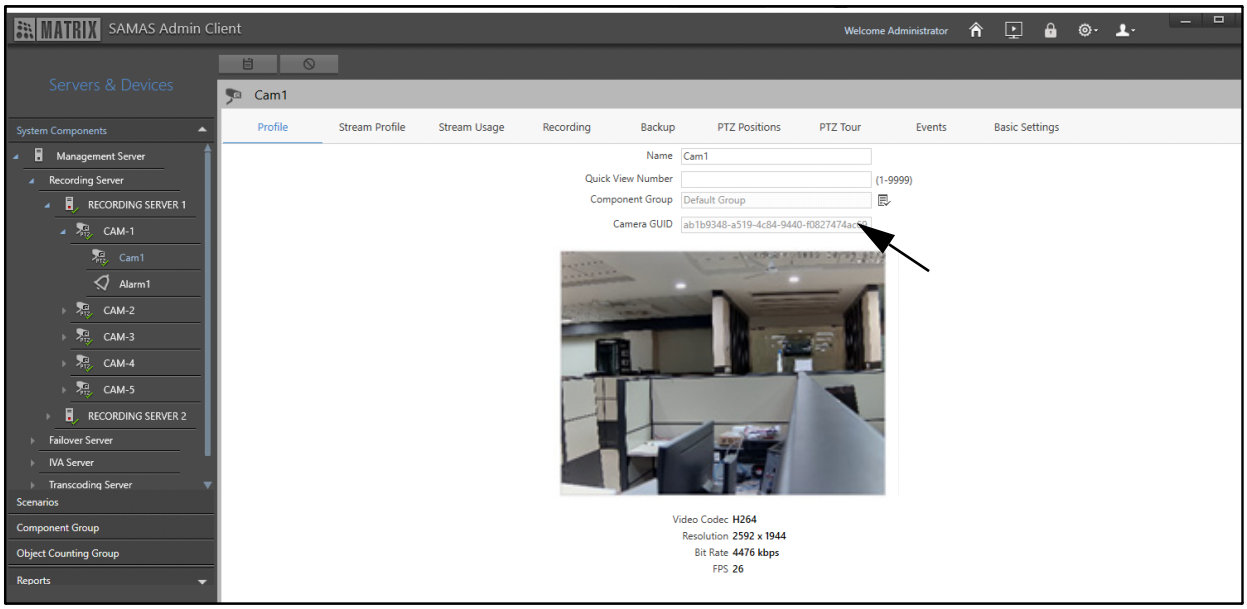
The ONVIF Device Manager does not support H.265 streams.

Viewing Live Stream using the RTSP Media Client (VLC Player)

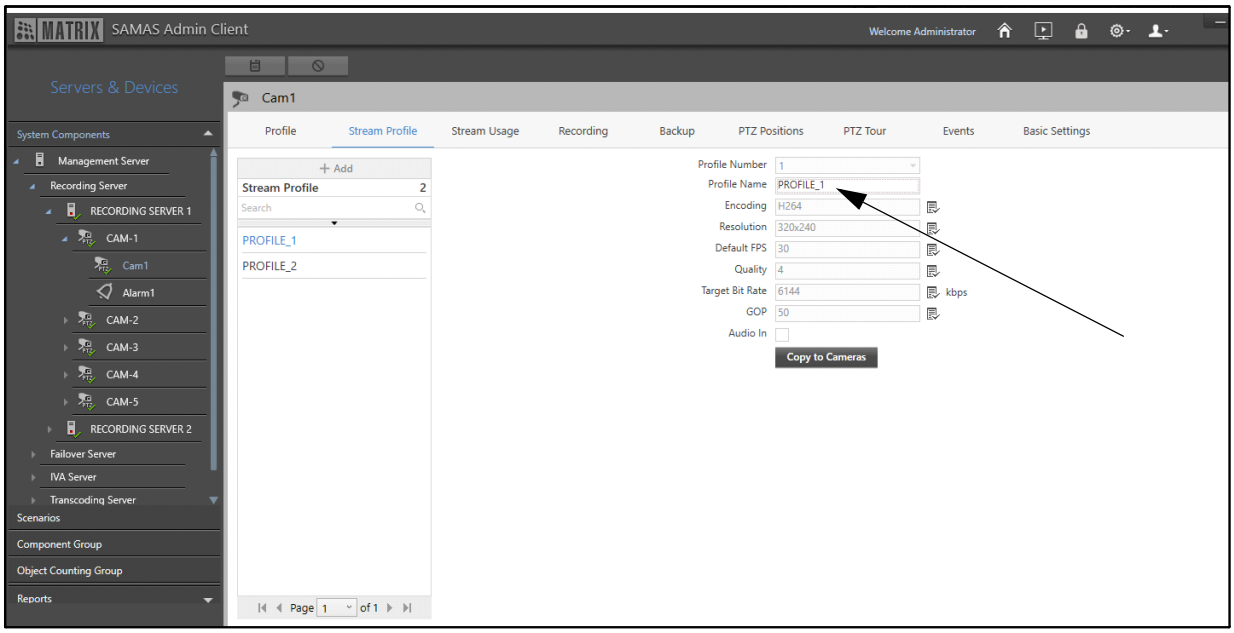
VLC Media Player is a free and open source cross platform multimedia player, that supports various streaming protocols including RTSP.

Before you begin make sure you have the following information from your System Administrator:

- ONVIF User Name and Password (make sure this user is assigned the Rights of the desired ONVIF Server/s and its cameras).
- The IP address of the ONVIF Server. Refer “Viewing the IP Address of the ONVIF Servers”.
- Camera GUID: The cameras may be connected directly or through a device. To view the Camera GUID, login into the Admin Client, click the desired **Server & Devices > Recording Server > Device > Camera > Profile.**



- **Profile Number**: The cameras may be connected directly or through a device. To view the Profile Number, login into the Admin Client, click the desired **Server & Devices > Recording Server > Device > Camera > Stream Profile.**



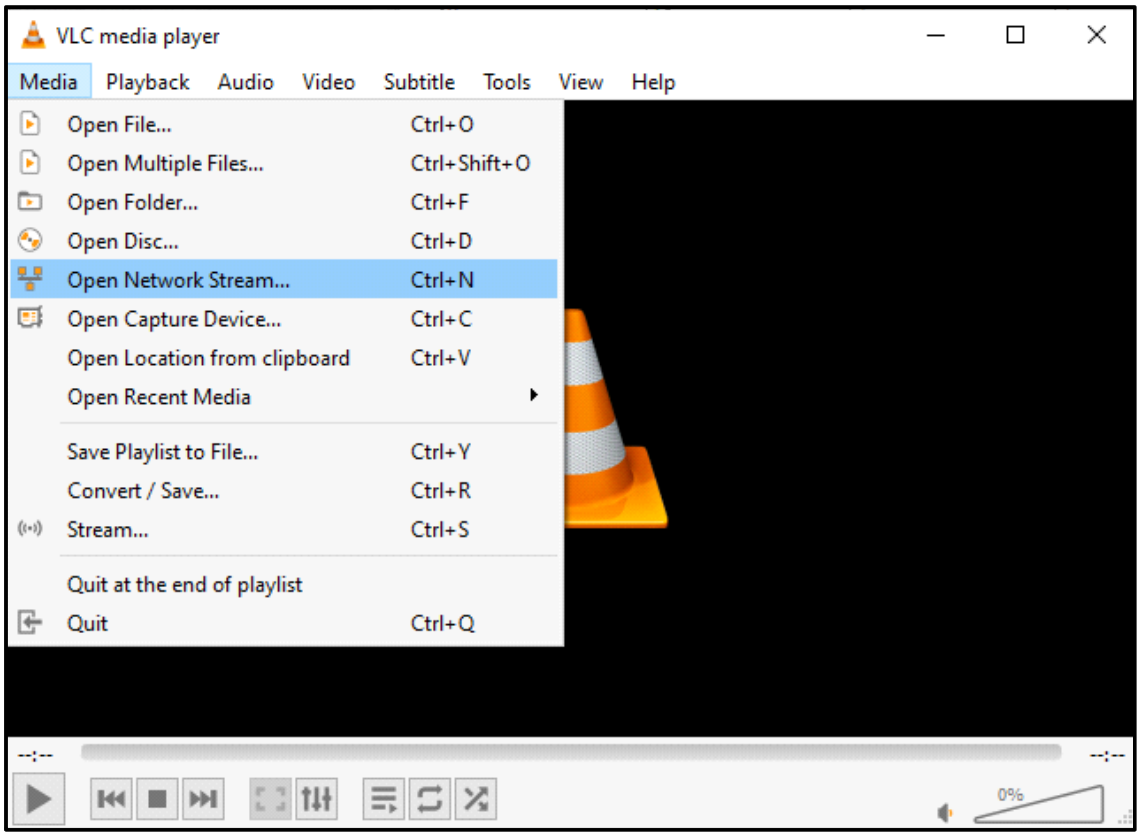
Cameras may be connected through the NVR. If you are using the Main Stream, enter Stream Profile as 1 and if you are using the Sub Stream, enter the Stream Profile as 2.

Follow the steps given below to install the VC Media Player and view the live stream:

- To download the VLC Media Player, visit https://www.videolan.org/vlc/, and then download the installer for the VLC media player.

- Run the installer, and follow the instructions to complete the installation.

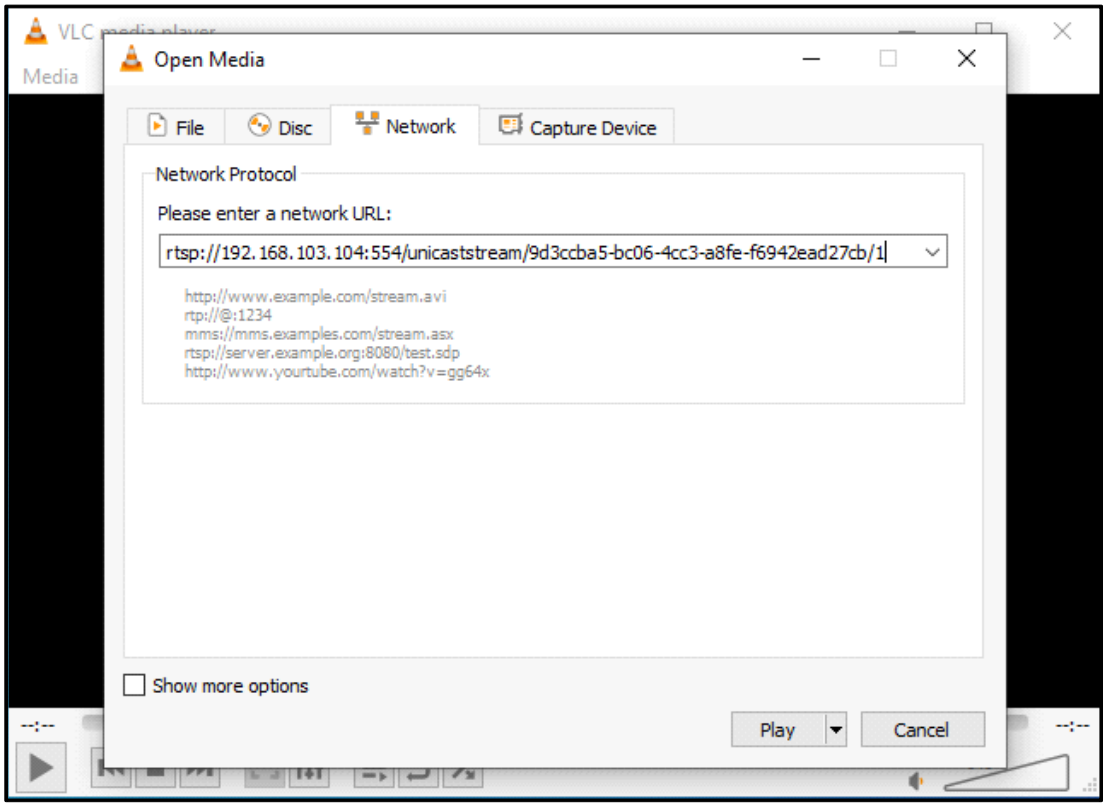
- Click the VLC media player application to open.
- On the toolbar, click **Media**, and select **Open Network Stream**.



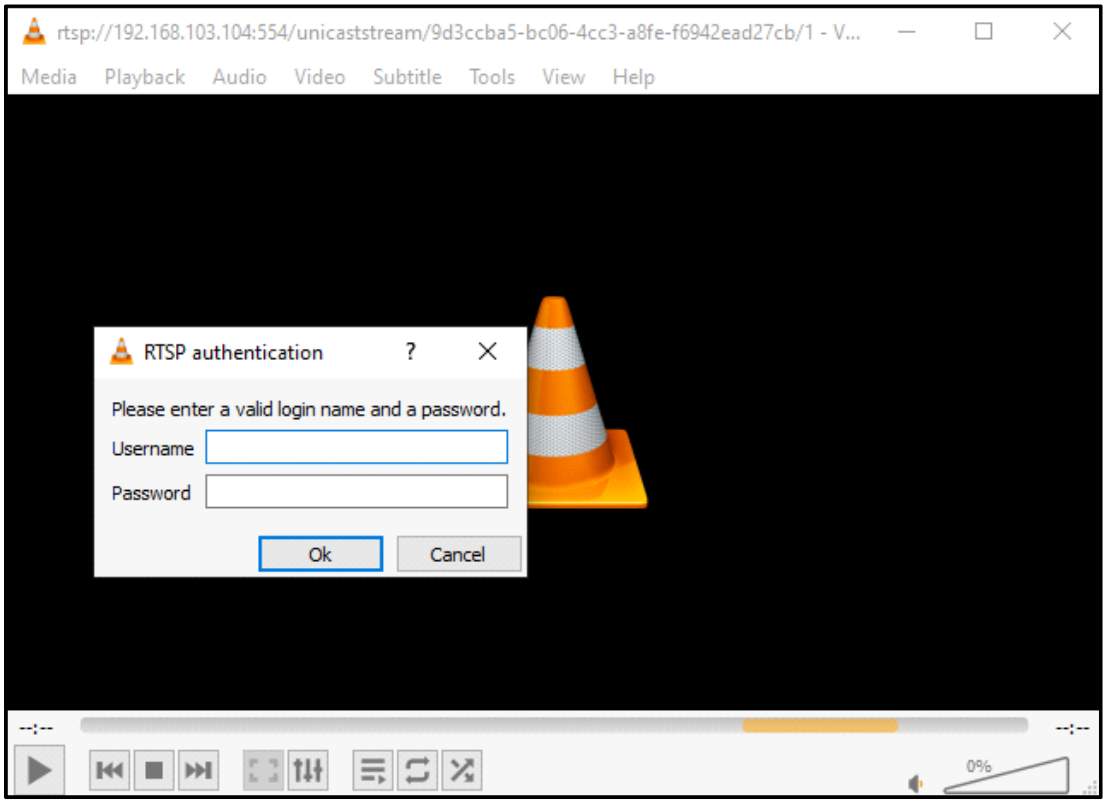
- You need to enter the details in the following format: **rtsp:// <Server Address>:<RTSP Port>/ unicaststream/<CameraGUID>/<profile_no>**, for example, rtsp://192.168.103.104:554/unicaststream/ c00bf4b0-0b18-435e-a8e2-73162760e6d1/1

  Here,
  - Server Address is the IP Address of the ONVIF Server
  - Server Port is the Port of the RTSP Port (Default: 554) of the ONVIF Server
  - Camera GUID
  - Profile Number

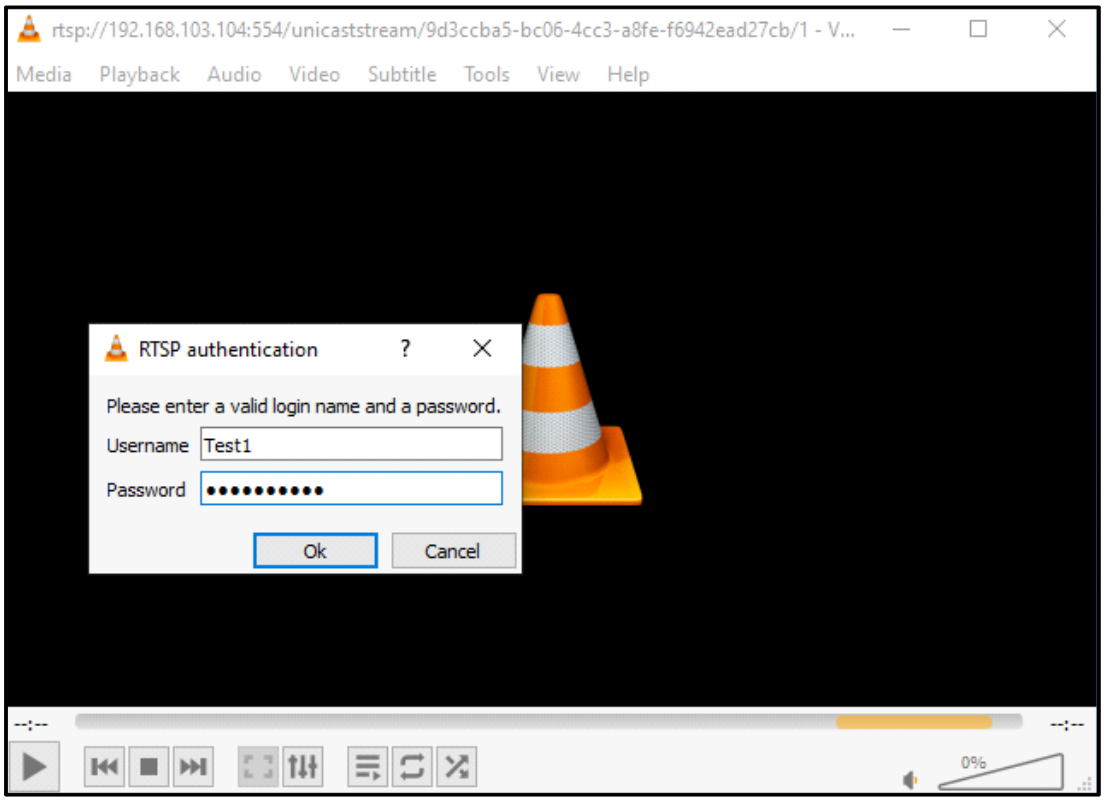
For Multicast use the following: ***rtsp:// <Server Address>:<RTSP Port>/multicaststream/ <CameraGUID>/<profile_no>***


VLC media player
Media
Open Media
File
Disc
Network
Capture Device
Network Protocol
Please enter a network URL:
rtsp://192.168.103.104:554/unicaststream/9d3ccba5-bc06-4cc3-a8fe-f6942ead27cb/1
http://www.example.com/stream.avi
rtp://@:1234
mms://mms.examples.com/stream.asx
rtsp://server.example.org:8080/test.sdp
http://www.yourtube.com/watch?v=gg64x
Show more options
Play
Cancel

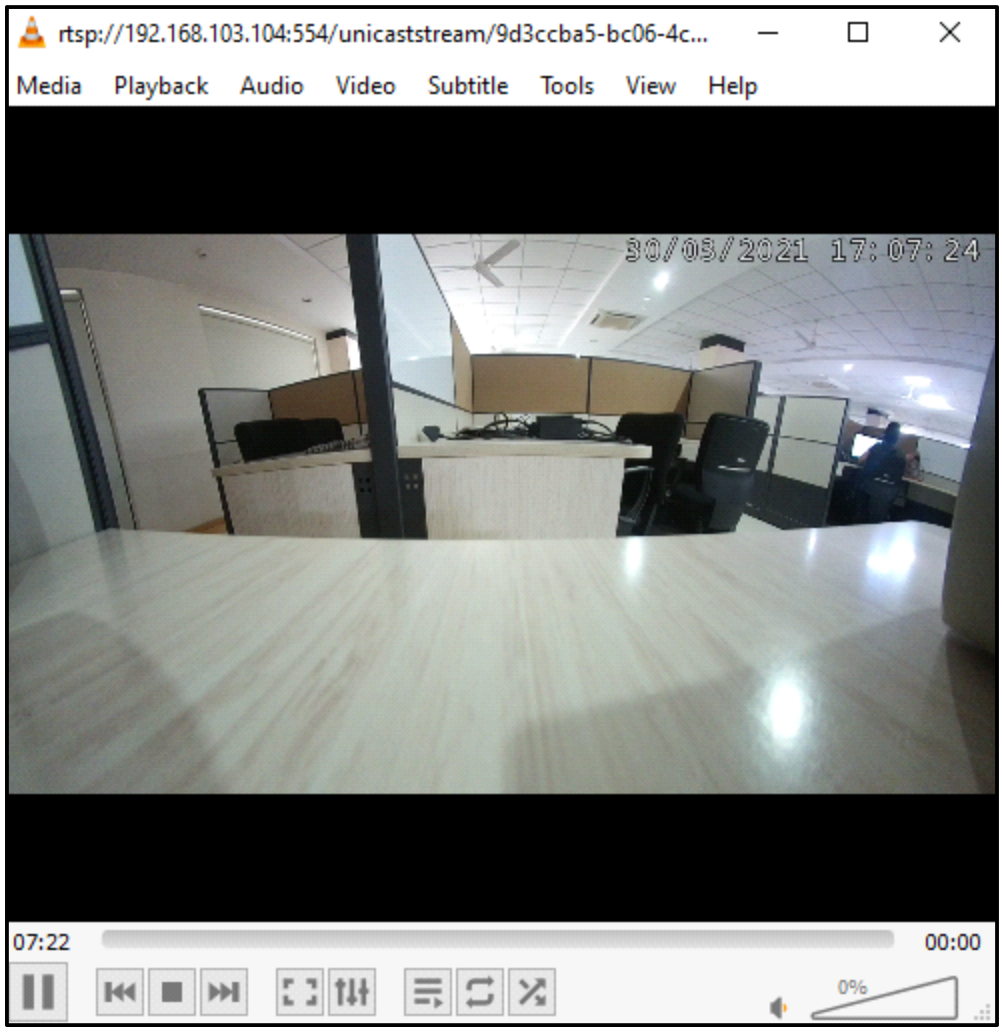
- Click **Play**.


rtsp://192.168.103.104:554/unicaststream/9d3ccba5-bc06-4cc3-a8fe-f6942ead27cb/1 - V...
Media
Playback
Audio
Video
Subtitle
Tools
View
Help
RTSP authentication
Please enter a valid login name and a password.
Username
Password
Ok
Cancel

- A pop up appears. Enter the ONVIF **User Name** and **Password**, you created in SAMAS Admin Client.



- Click **OK**. The Live Video appears.



CHAPTER 6

Viewing Playback

Viewing Playback using the ONVIF G Clients

An ONVIF Client compliant to the Profile G is an ONVIF G Client, that can configure, request and control recording of video data over an IP network from an ONVIF device compliant to the Profile G.

The Playback request involves two steps:

- Searching for the record
- Play the record with RTSP

The following requests need to be sent from the ONVIF Client to the ONVIF Server:

1. **FindEvents** request with the mandatory parameters:

   - Scope > IncludedSources > Camera GUID Token
   - StartPoint
   - EndPoint

   You will get a response with a SearchToken, which is unique for the search criteria.

2. **GetEventSearchResults** request with the SearchToken

   You will get a **Response** with the RecordingToken, which is a unique identifier of the recording.

3. **GetReplayUri** with the RecordingToken

   You will get a **Response** with the RTSPUrl.

   The Playback stream will appear.

4. **EndSearch** request with the SearchToken

   The **Response** will be the end of the search.

Viewing Playback using the VLC Media Player

For playback follow the steps given below:

- Click the VLC media player application to open.
- On the toolbar, click **Media**, and select **Open Network Stream**.

- You need to enter the details in the following format: **rtsp://<Server Address>:<RTSP Port>/playback/<CameraGUID>/recording-type=<value>& start=<value>&end=<value>**

  Here,
  - Server Address is the IP Address of the ONVIF Server
  - RTSP Port is the RTSP Port of the ONVIF Server (Default: 554)
  - Camera GUID
  - Recording-type in value you should enter 2
  - Start, in value you need to specify the start date and time to play recordings. Format:DDMMYYYYhhmmss,
    - DD= 01 to 31
    - MM=01 to 12
    - YYYY=2014 to 2037
    - hh = 00 to 23
    - mm = 00 to 59
    - ss= 00 to 59
  - End, in value you need to specify till what date and time recordings are to be played. Format:DDMMYYYYhhmmss,
    - DD= 01 to 31
    - MM=01 to 12
    - YYYY=2014 to 2037
    - hh = 00 to 23
    - mm = 00 to 59
    - ss= 00 to 59

- The Playback stream appears.

CHAPTER 7

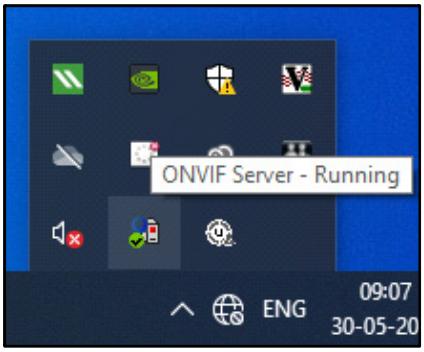
Maintenance

You can check the status of the ONVIF Server, ONVIF Users and the Event Logs from the Admin as well as the Smart Client. You can also change the settings of the ONVIF Server.

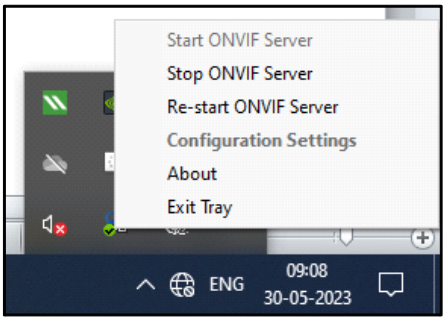
Change Settings of the ONVIF Server

To change the setting follow the steps mentioned below:

- Once the ONVIF Server is installed, the ONVIF Sever icon appears in the Tray.



- Right-click on the ONVIF Server icon, the following options appear.



- Click **Stop ONVIF Server**. After that click right-click on the icon again and click **Configuration Settings**.
- The SAMAS ONVIF Server Manager appears. For configurations details, refer to “Configure ONVIF Server settings using the ONVIF Server Manager Utility”.

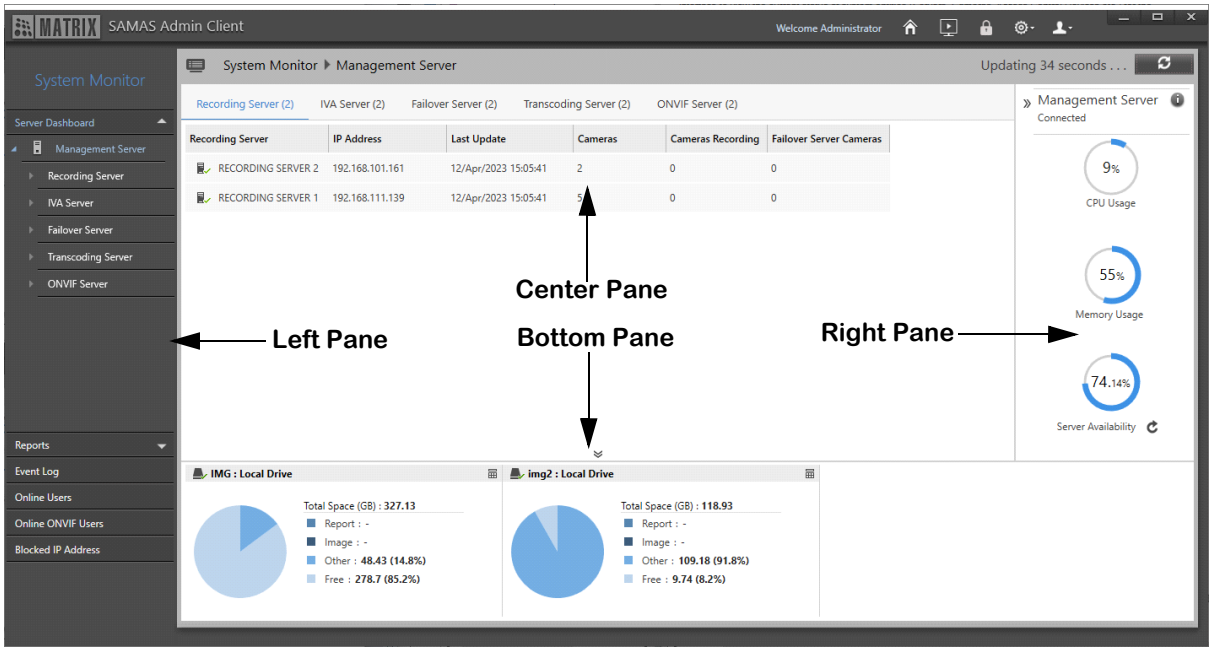
Check Status of ONVIF Server, ONVIF Users and Event Logs (Admin Client)

To check the status of the ONVIF Server, ONVIF Users and the Event Logs from the Admin Client,

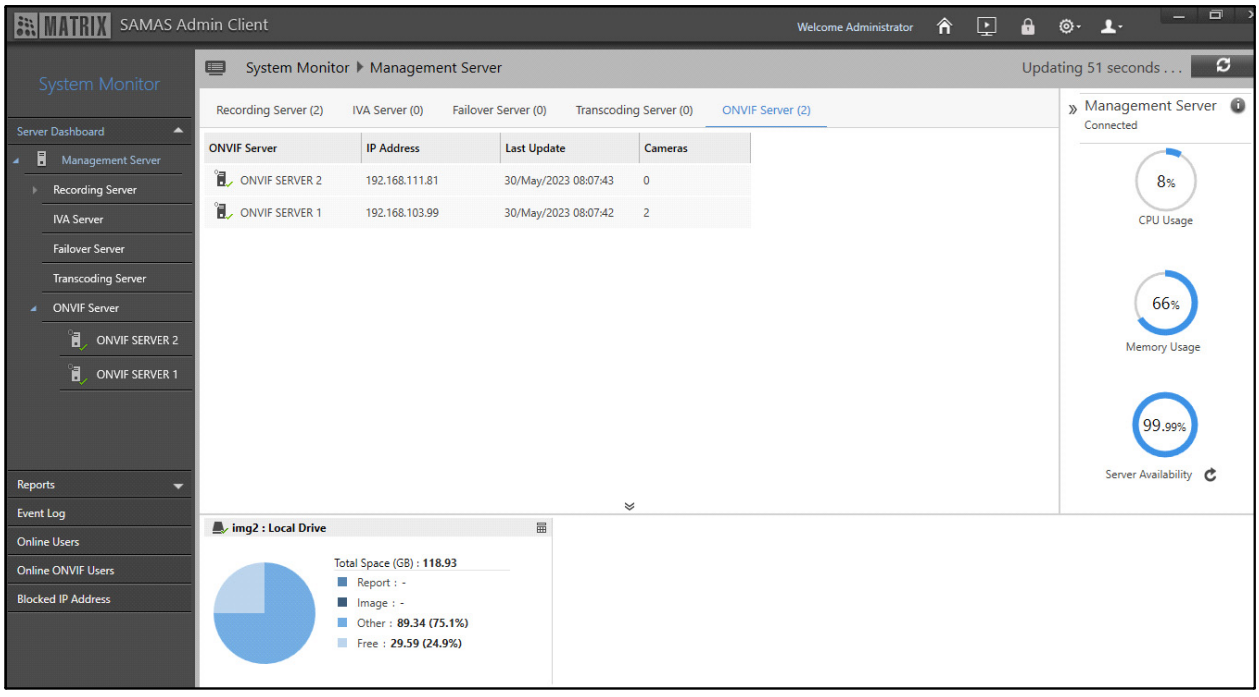
- Login into the Admin Client.

ONVIF Server

- Click **System Monitor** Module **> Server Dashboard > Management Server** and following page appears.

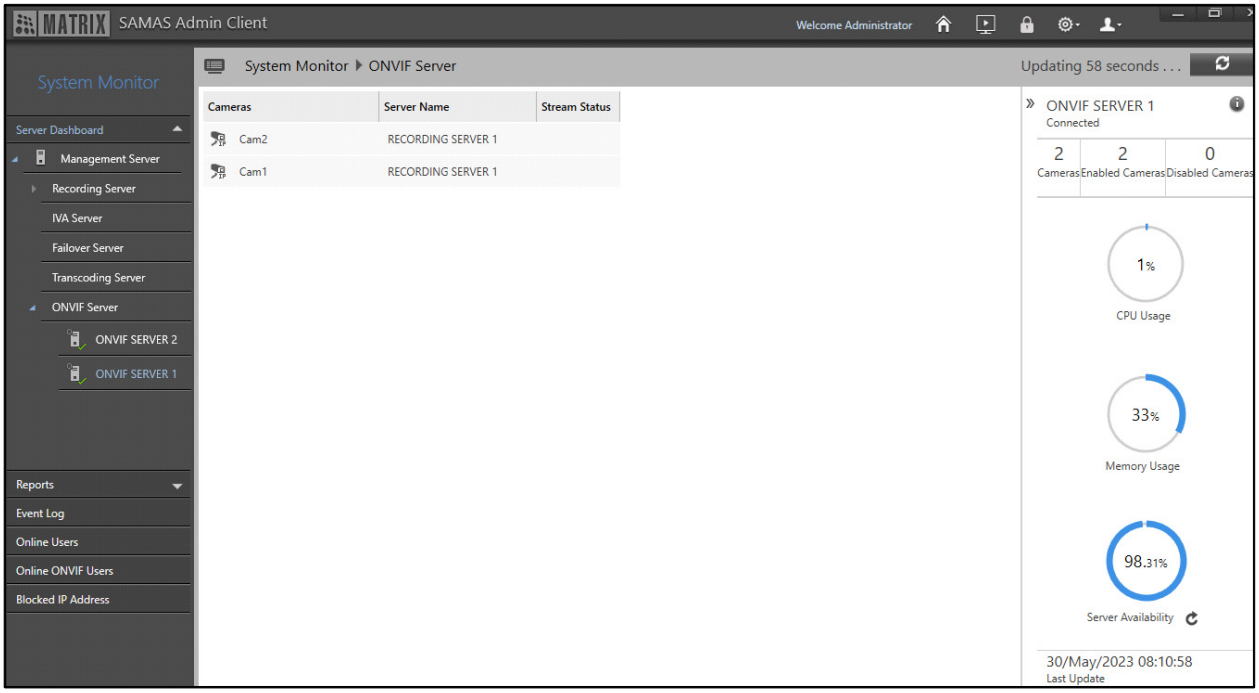


- Click the **ONVIF Server** tab and the following screen appears.



- The Right pane displays the list of ONVIF Servers, along with the IP Address, Last Updated, cameras assigned.

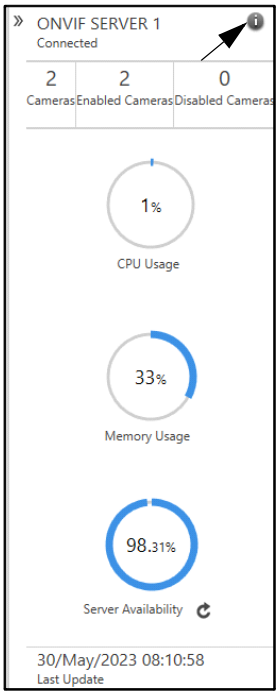
- Click on the desired ONVIF Server from the Left pane or double click on the desired server from the list, to view the details — the Cameras connected, Server Name and Stream Status as shown below.

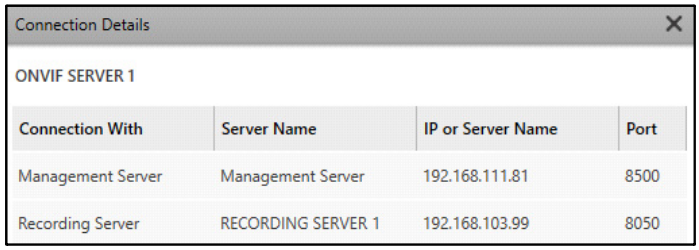


The **CPU Usage**, **Memory Usage** and **Server Availability** of the selected Server is displayed in the Right Side pane.

- Click on **Refresh** button at top right to refresh the status of servers.

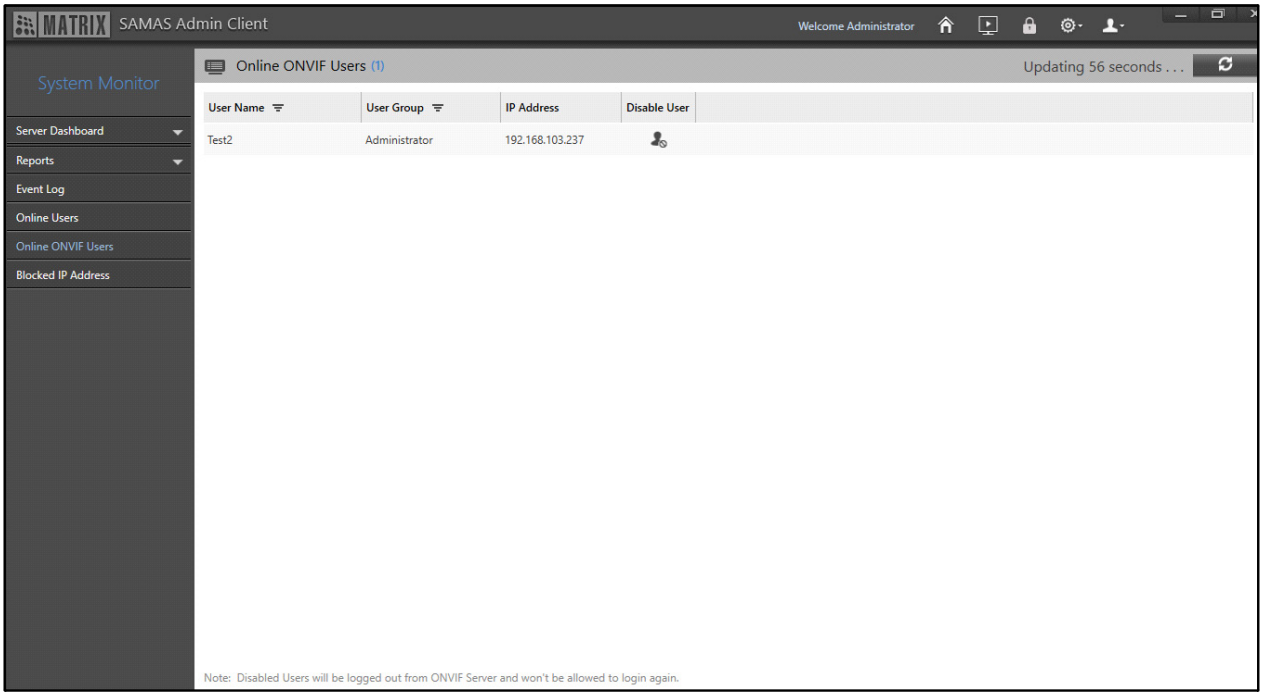
- To view the **Connection Details** of the ONVIF Server, click on the **Information** icon on the top right corner of particular ONVIF Server page as shown below.





ONVIF Users

- Click **System Monitor** Module **> Online ONVIF Users**. It displays all currently logged-in ONVIF users in the system.



The following User Details are displayed — User Name, User Group, IP Address and Disable User.

You can filter the User records according to User Name or User Group. You can also sort the data by clicking on the respective fields — User Name, User Group, IP Address and Disable User.

- Click **Filter** of the respective parameter in the header row.

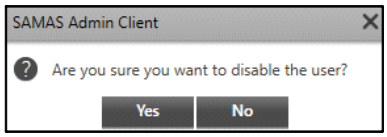
  Select the check box of the desired options and click outside the filter pop-up. The records appear as per the set filters.

  To clear the filter, click **Filter** and then click **CLEAR FILTER**.

- You can also **Sort** records. To do so, click on the desired option in the header row. An arrow icon appears. Click on it. Records can be sorted in ascending or descending order.

You can disable User's to prevent them from logging in.

- Click **Disable User** . The following pop-up appears.



- Click **Yes** to disable the user or click **No** to cancel. The disabled User's active session will be terminated within one minute.

- The disabled user can be enabled from the Admin Client > General Settings > System Account > Users.

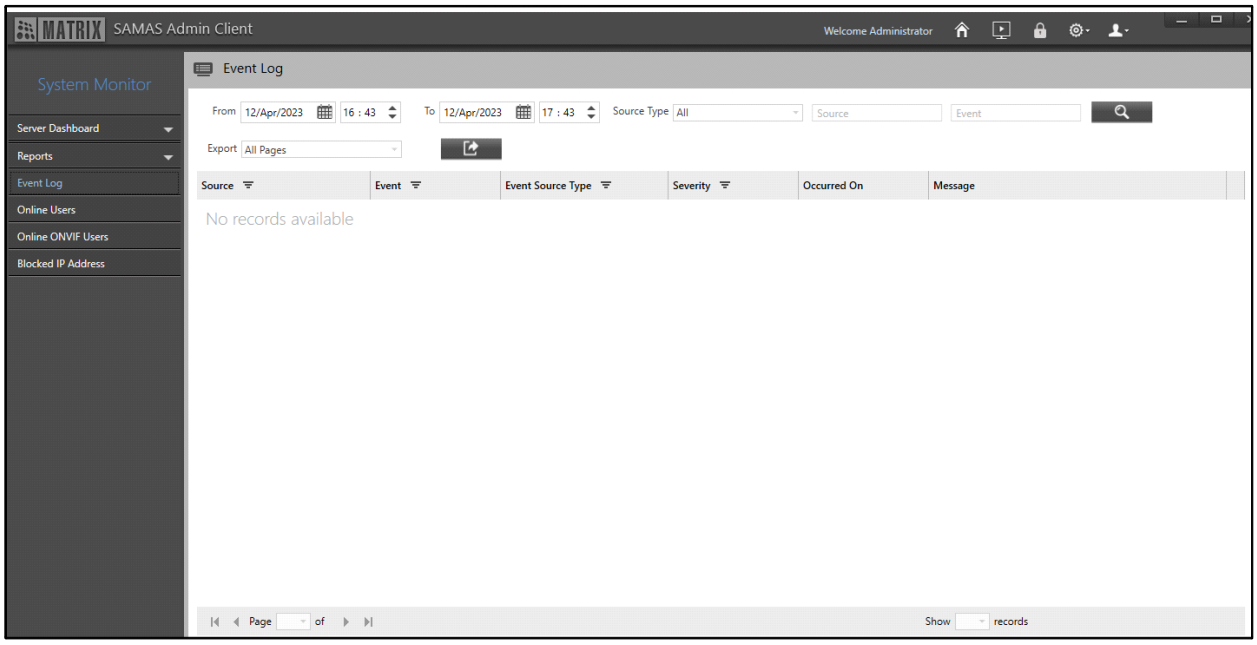
Admin User cannot be disabled.

Event Logs

Event log provides various logs for all events on the system.

To view a log of the events for the ONVIF Server,

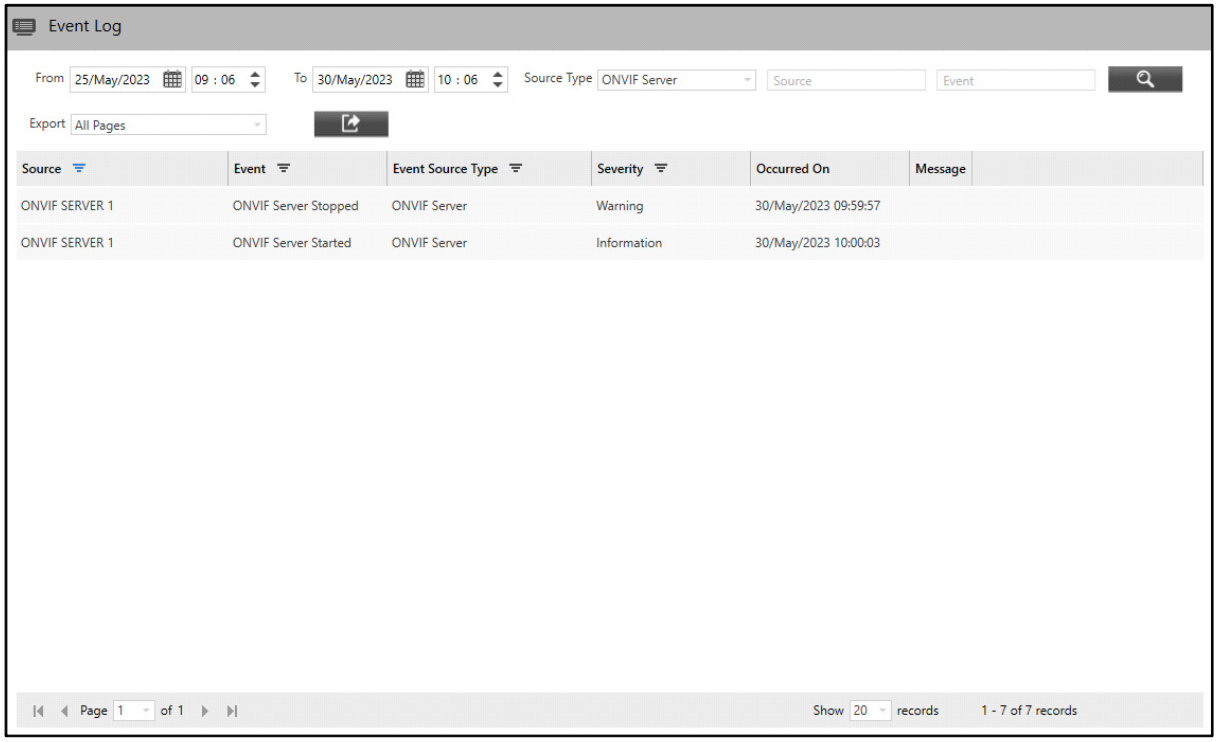
- Click **System Monitor** Module **> Event Log** and the following screen appears:



Configure the following parameters:

- **From**: Select the date from which you wish to view the Event Log from the calendar and specify the time.
- **To**: Select the date till which you wish to view the Event Log from the calendar and specify the time.
- **Source Type**: Select the Source Type as ONVIF Server from the drop-down list.
- **Source**: Specify the name of the Source according to the selected Source Type, that is configure the name of the ONVIF Server.
- **Event**: Specify the name of the Event of the Source Type for which you wish to view the Event Log, for example Connected, Disabled etc.

- Click **Search** . The list of all the Event Logs for the configured duration appear in a list.



The Event Log details displayed are — Source, Event, Event Source Type, Severity, Occurred On and Message. You can also export the Event logs to your system.

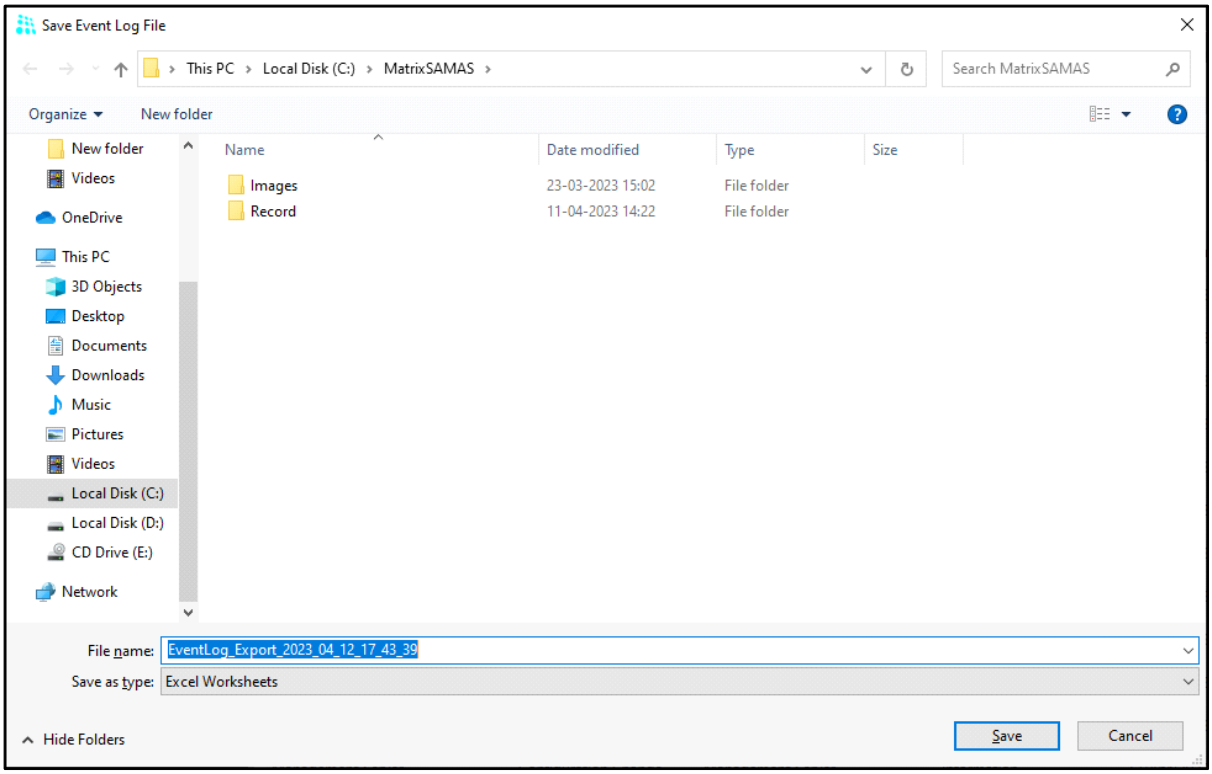
- Click **Filter** of the respective parameter in the header row.

  Select the check box of the desired options and click outside the filter pop-up. The records appear as per the set filters.

  To clear the filter, click **Filter** and then click **CLEAR FILTER**.

- You can also **Sort** records. To do so, click on the desired option in the header row. An arrow ▲ icon appears. Click on it. Records can be sorted in ascending or descending order.

- Select the pages that you wish to export from the **Export** drop-down list.
- Click **Export** . The **Save Event Log File** pop-up appears.



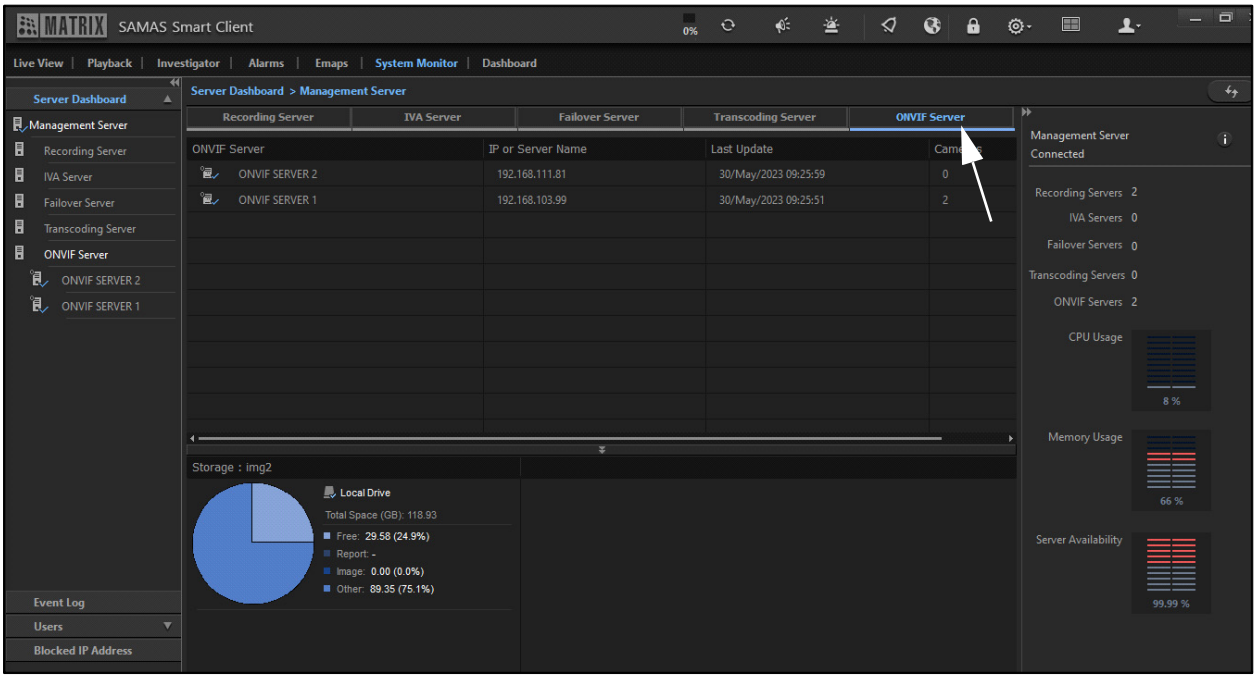
- Select the desired folder where you wish to save the Event Log file and specify the file name.
- Click **Save** to save the file or click **Cancel** to discard.

Check Status of ONVIF Server, ONVIF Users and Event Logs (Smart Client)

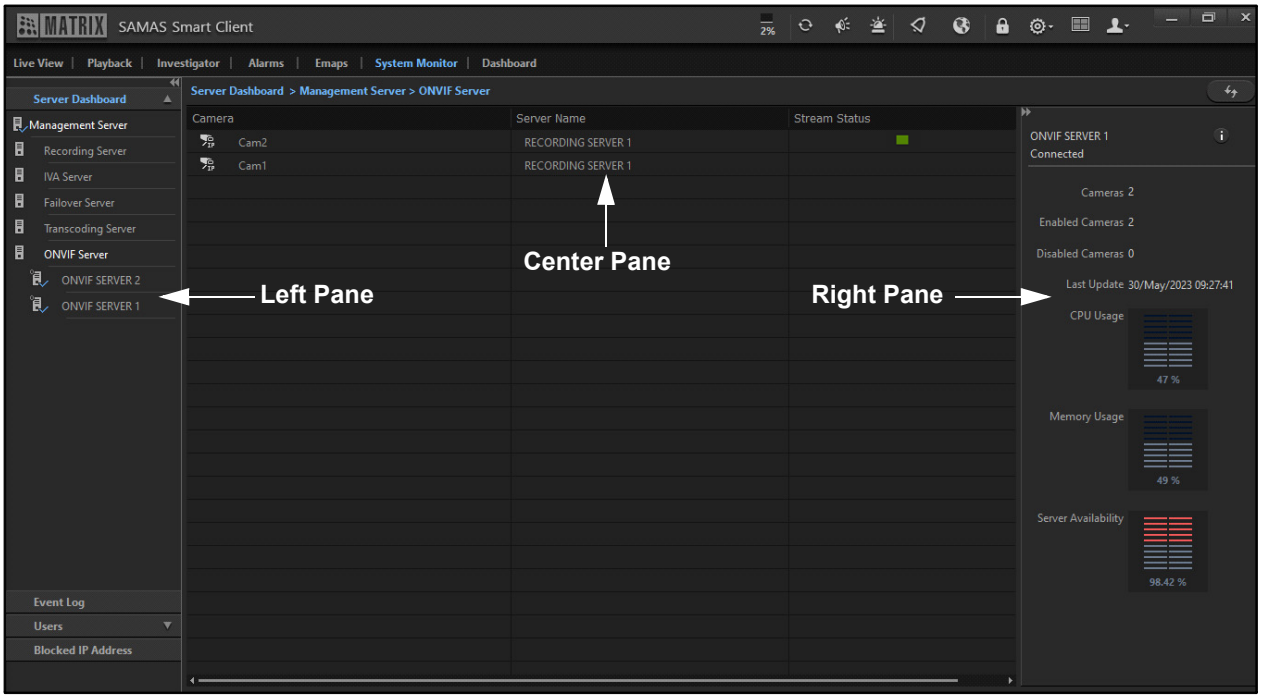
To check the status of the ONVIF Server, ONVIF Users and the Event Logs from the Smart Client,

ONVIF Server

- Login into the Smart Client.
- Click **System Monitor > Server Dashboard > Management Server**.
- Click **ONVIF Server**. The Server details displayed are — ONVIF Server Name, IP Address, Last Update and Cameras.



Double-click on the desired ONVIF Server to view its individual details.



The ONVIF Server's details are displayed in different panes — Left Pane, Center Pane and Right Pane.

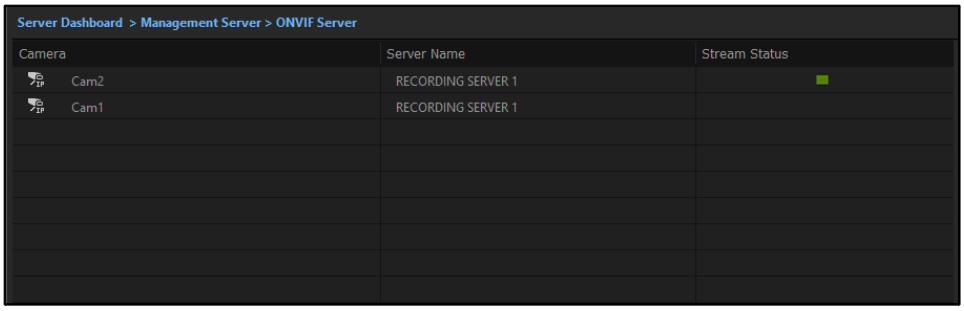
- Click **Refresh** to update the ONVIF Server details.

Left Pane

The Left Pane displays all the pages of the System Monitor module.

Center Pane

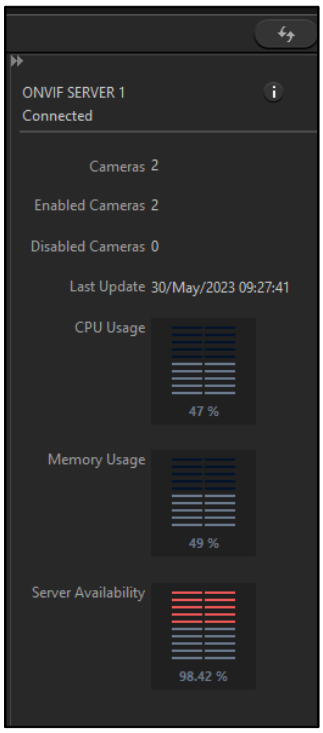
The Center Pane displays all the configuration details of the selected ONVIF Server.



The Server details displayed are — Cameras, Server Name and Stream Status. The camera for which ONVIF streaming is currently on is displayed by green color.

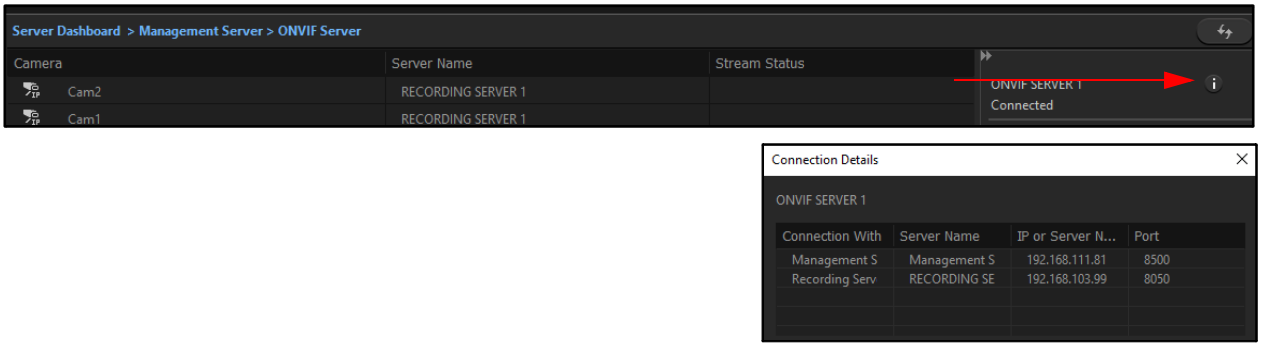
Right Pane

The Right Pane displays the Connection Details, the CPU Usage, Memory Usage and Server Availability of the ONVIF Server along with Camera details.



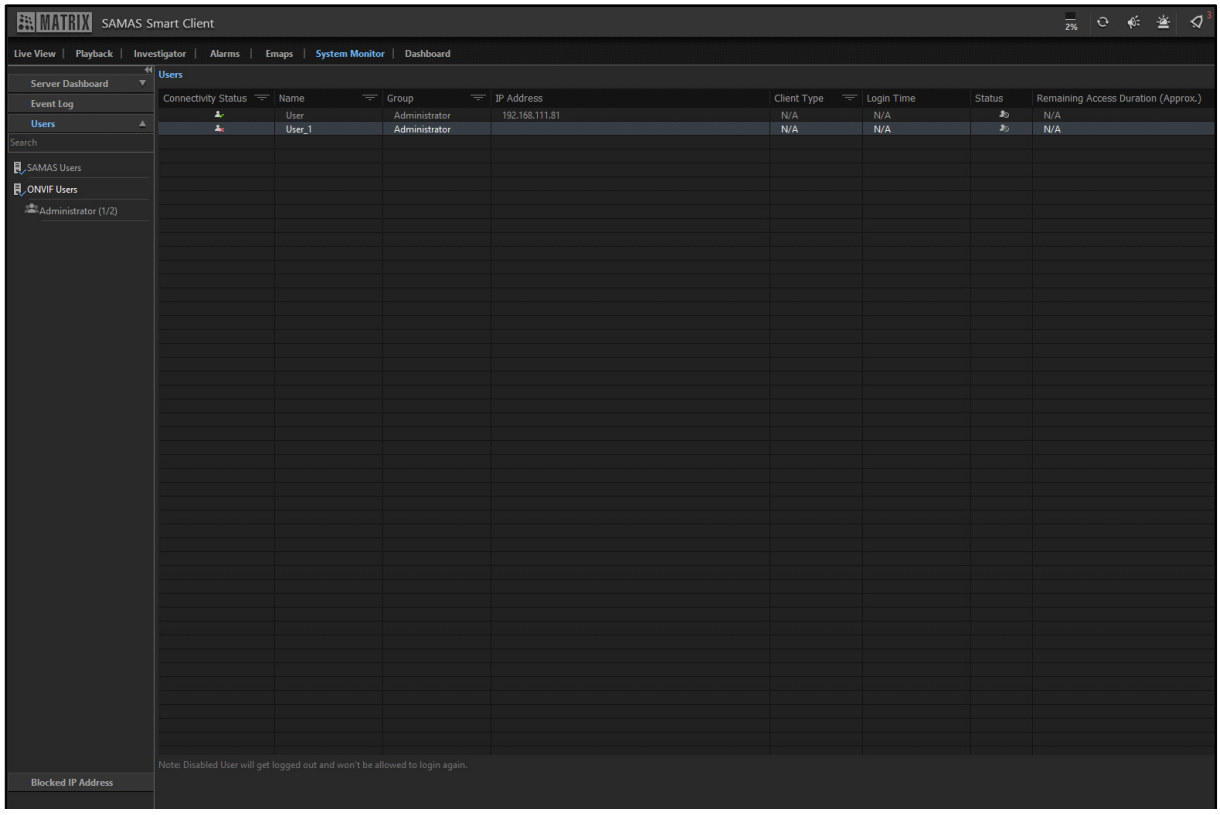
The details displayed are — Number of Cameras added, Number of Cameras Enabled, Number of Cameras Disabled, CPU Usage, Memory Usage and Server Availability. The date and time of last update is also displayed.

- Click **Connection Details** at top right corner of the page, to view the connection details of the ONVIF Server. It displays the connection details of the ONVIF Server with the Management Server and Recording Server. It displays the following details — Connection With, Server Name, IP or Server Name and Port.



ONVIF Users

- Click **System Monitor > Users > ONVIF Users** to view all currently logged-in ONVIF users in the system.



The following User Details are displayed — Connectivity Status, Name, Group, IP Address, Client Type, Login Time, Status and Remaining Access Duration (Approx.).

- You can filter the records. To do so, click **Filter** of the respective parameter — Connectivity Status (Offline/Online), Name, Group, Client Type.

  Select the check box of the desired options and click outside the filter pop-up. The records appear as per the set filters.

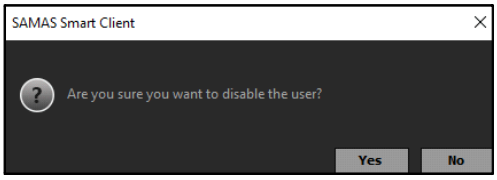
  To clear the filter, click **Filter** and then click **CLEAR FILTER** of the desired parameter.

- You can also sort the data by clicking on the respect field names — Name, Group, IP Address, Client Type, Login Time.

You can also view the IP Address when you hover over the User Name in the left pane.

You can disable a user to prevent them from logging in. To do so,

- Click **Disable User** under Status. The following pop-up appears.



- Click **Yes** to disable the user or click **No** to cancel. Disabled user's active session will be terminated instantly.

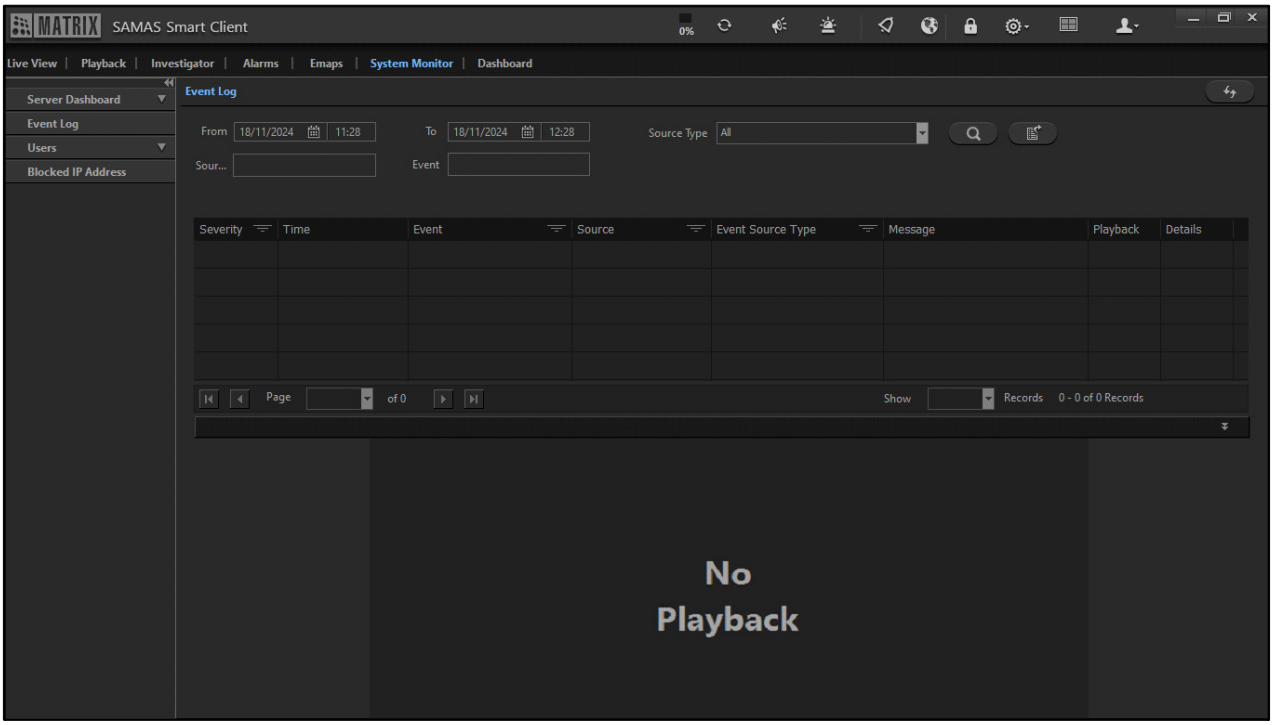
To enable a disabled user,

- Click **Enable User** under Status. The disabled user can also be enabled from the Admin Client > General Settings > System Account > ONVIF Users.

Admin User cannot be disabled.

Event Log

- Click **System Monitor > Event Log** to view a log of events as shown below.

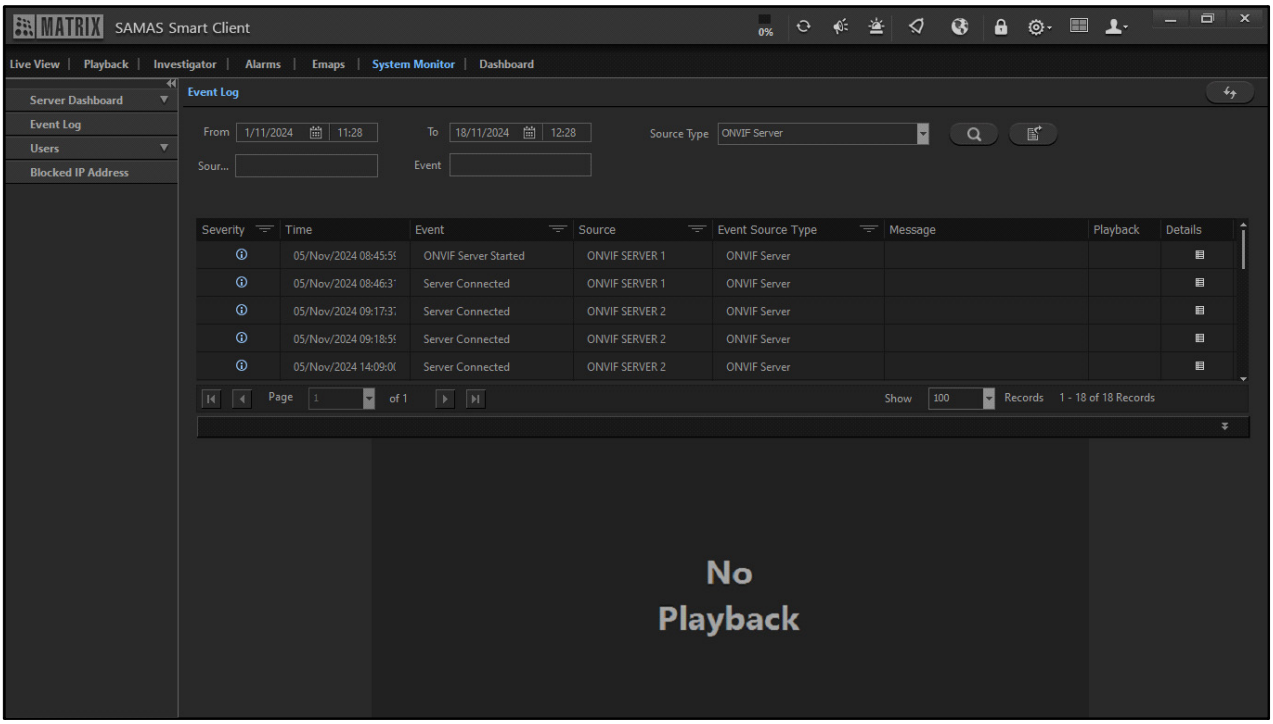


Configure the following parameters.

- **From**: Select the date from which you wish to view the Event Log from the calendar and specify the time.
- **To**: Select the date till which you wish to view the Event Log from the calendar and specify the time.
- **Source Type**: Select the Source Type as ONVIF Server from the drop-down list.
- **Source**: Specify the name of the Source according to the selected Source Type, that is configure the name of the ONVIF Server.
- **Event**: Specify the name of the Event of the Source Type for which you wish to view the Event Log, for example Connected, Disabled etc.

- Click **Search** . The list of all the Event Logs for the configured duration appear in a list.

.



The Event Log details displayed are — Severity, Time, Event, Source, Event Source Type, Message, Playback and Details

- You can filter the records. To do so, click **Filter** of the respective parameter — Severity, Event, Source, Event Source Type.

  Select the check box of the desired options and click outside the filter pop-up. The records appear as per the set filters.

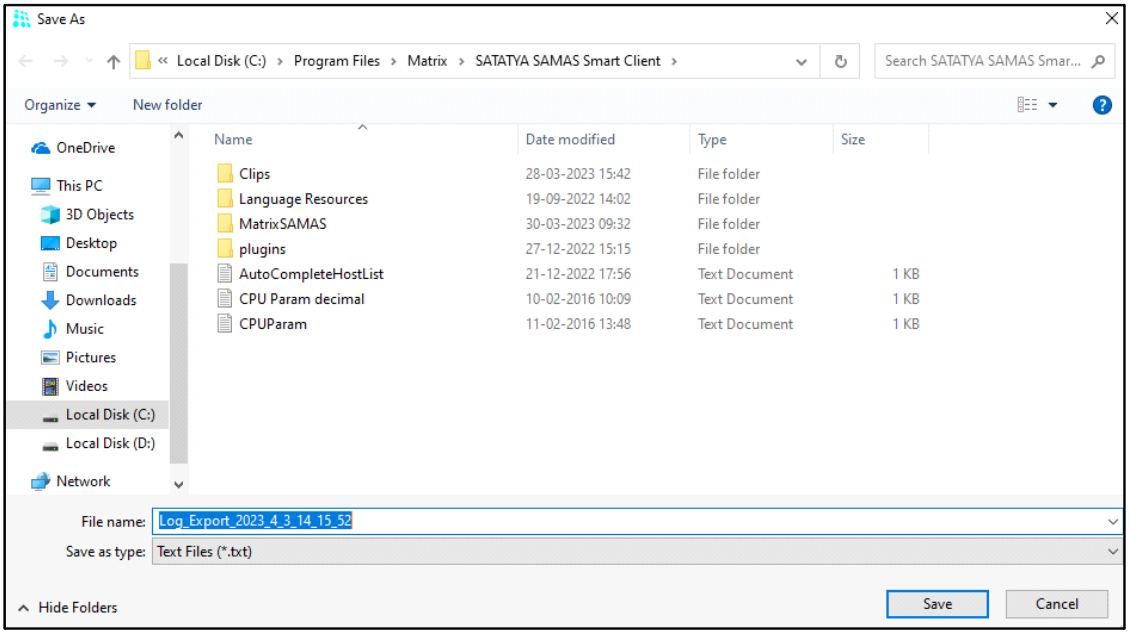
  To clear the filter, click **Filter** and then click **CLEAR FILTER** of the desired parameter.

- You can configure the following Event log parameters — Refresh, Playback and Details.
  - Click **Refresh** to refresh the Event logs.

- Click **Playback** to play the recording of the captured Event. The playback begins below the Event log grid.
- Click **Details** corresponding to the desired log to view its details.

You can also export the Event Logs. To do so,

- Click **Export** . The **Save As** pop-up appears.



- Select the desired folder where you wish to save the Event Log file and specify the file name.
- Click **Save** to save the file or click **Cancel** to discard.

CHAPTER 8

Supported Functions

Supported Functions for ONVIF Profile G

The table given below lists the supported functions for ONVIF Profile G. The tables show whether these functions are mandatory (M), optional (O), or conditional (C) according to the specifications.

The Implemented column mentions whether the function has been implemented in the ONVIF Server.

7.2.3 Function list for Capabilities

Function	Service	Requirement	Implemented
GetServices	Device	Mandatory	Yes
GetServiceCapabilities	Device	Mandatory	Yes
GetWsdlUrl	Device	Mandatory	Yes
GetServiceCapabilities	Replay	Mandatory	Yes
GetServiceCapabilities	Search	Mandatory	Yes
GetServiceCapabilities	Media	Conditional	Yes

7.3.3 Function list for Recording Search

Function	Service	Requirement	Implemented
FindEvents	Search	Mandatory	Yes
GetEventSearchResults	Search	Mandatory	Yes
EndSearch	Search	Mandatory	Yes

7.4.3 Function List for Replay Control

Function	Service	Requirement	Implemented
GetReplayUri	Replay	Mandatory	Yes

9.1.4.3 Function List for Recording Control – Using an on-board media source (if supported)

Feature	Function	Service	Requirement	Implemented
Media Profile Configuration	GetProfiles	Media	Mandatory	Yes
Media Profile Configuration	GetProfile	Media	Mandatory	Yes
Video Source Configuration	GetVideoSources	Media	Mandatory	Yes
Video Source Configuration	GetVideoSourceConfiguration	Media	Mandatory	Yes
Video Source Configuration	GetVideoSourceConfigurations	Media	Mandatory	Yes
Video Encoder Configuration	GetVideoEncoderConfiguration	Media	Mandatory	Yes
Video Encoder Configuration	GetVideoEncoderConfigurations	Media	Mandatory	Yes
Video Encoder Configuration	GetVideoEncoderConfigurationOptions	Media	Mandatory	Yes

9.3.3 Function List for Discovery

Function	Service	Requirement	Implemented
WS-Discovery	Core	Mandatory	Yes
GetScopes	Device	Mandatory	Yes

9.4.3 Function List for Network Configuration

Function	Service	Requirement	Implemented
GetDNS	Device	Mandatory	Yes
GetNetworkInterfaces	Device	Mandatory	Yes

9.5.3 Function List for System

Function	Service	Requirement	Implemented
GetDeviceInformation	Device	Mandatory	Yes
GetSystemDateAndTime	Device	Mandatory	Yes

9.6.3 Function List for User Handling

Function	Service	Requirement	Implemented
GetUsers	Device	Mandatory	Yes
CreateUsers	Device	Mandatory	Yes
DeleteUsers	Device	Mandatory	Yes
SetUsers	Device	Mandatory	Yes

Supported Functions for ONVIF Profile S

The table given below lists the supported functions for ONVIF Profile S. The tables show whether these functions are mandatory (M), optional (O), or conditional (C), according to the specifications.

The Implemented column mentions whether the function has been implemented in the ONVIF Server.

7.1.3 User authentication Function List for Devices

Function	Service	Requirement	Implemented
WS-Usernametoken Authentication	Core	Mandatory	Yes
HTTP Digest	Core	Optional	Yes

7.2.3 Capabilities Function List for Devices

Function	Service	Requirement	Implemented
GetCapabilities	Device	Mandatory	Yes
GetWsdlUrl	Device	Mandatory	Yes

7.3.3 Discovery Function List for Devices

Function	Service	Requirement	Implemented
WS-Discovery	Core	Mandatory	Yes
GetScopes	Device	Mandatory	Yes

7.4.3 Network Configuration Function List for Devices

Function	Service	Requirement	Implemented
GetDNS	Device	Mandatory	Yes
GetNetworkInterfaces	Device	Mandatory	Yes

7.5.3 System Function List for Devices

Function	Service	Requirement	Implemented
GetDeviceInformation	Device	Mandatory	Yes
GetSystemDateAndTime	Device	Mandatory	Yes

7.6.3 User Handling Function List for Devices

Function	Service	Requirement	Implemented
GetUsers	Device	Mandatory	Yes
CreateUsers	Device	Mandatory	Yes
DeleteUsers	Device	Mandatory	Yes
SetUser	Device	Mandatory	Yes

7.8.3 Video Streaming Function List for Devices

Function	Service	Requirement	Implemented
GetProfiles	Media	Mandatory	Yes
GetStreamUri	Media	Mandatory	Yes
Media Streaming using RTSP	Streaming	Mandatory	Yes

7.9.3 Video Streaming – MJPEG Function List for Devices

Function	Service	Requirement	Implemented
MJPEG Media streaming using RTSP	Streaming	Mandatory	Yes

7.10.3 Video Encoder Configuration Function List for Devices

Function	Service	Requirement	Implemented
GetVideoEncoderConfiguration	Media	Mandatory	Yes
GetVideoEncoderConfigurations	Media	Mandatory	Yes

7.11.3 Media Profile Configuration Function List for Devices

Function	Service	Requirement	Implemented
GetProfiles	Media	Mandatory	Yes
GetProfile	Media	Mandatory	Yes

7.12.3 Video Source Configuration Function List for Devices

Function	Service	Requirement	Implemented
GetVideoSources	Media	Mandatory	Yes
GetVideoSourceConfiguration	Media	Mandatory	Yes
GetVideoSourceConfigurations	Media	Mandatory	Yes

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