SIMPLIFYING
COMPLEXITY

SEOUL ROBOTICS INTEGRATION

USER GUIDE

V1.1

milestone
GOLD
TECHNOLOGY
PARTNER

6SS

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Introduction

LIDAR, or light detection and ranging is a popular technology that is used in a wide range of applications such as Land Management, Hazard assessment, and most importantly, security application.

6SS plugin is a software fully integrated with SEOUL ROBOTICS Sensr tracking software that uses Lidar technology and computer vision to build a 3d perception engine (3D object Detection). Our solution provides a live view map of Sensr in Milestone XProtect VMS. In addition, all events that are triggered in Sensr tracking software such as: Entering, Exiting, loitering and PTZ tracking events will be directly fired as an alarm in XProtect Smart Client.
Additionally, our software provides the user with many statistical reports, charts, and graphs based on the data gathered from Sensr.

6SS Robotics combines the power of Milestone and the LIDAR technology to ensure a fully secure environment.

Seoul Robotics Main Features

- Integrated with Milestone XProtect Corporate, Expert, Professional+, Express+ & Essential+
- Accessed from the Smart Client interface
- Data received from sensor using Protobuf
- Ability to view a live Map of sensor tracking software
- Ability to add and configure a floor plan
- Ability to view to translate, zoom in and out on the Map
- Ability to add, edit and delete a zone through XProtect Management Client
- Event Alarms and triggers generated by the sensor are shown in Smart Client
- Two-way communication with Sensor system using API
- Charts and Statistical report based on live data gathered from sensor
- Ability to filter reports by date and time
- Ability to export a report in PDF or Excel format

Main Benefits

- Cost-effective
- Time effective
- Easy to use and configure
- Very fast processing speed
- Very High refresh rate
- Seamless integration
- Enhanced security
- Centralized control through the Smart client
- Multiple applications and use cases

- Development team is always available to add Customer-tailored features

Getting Started

System Components

- Windows OS 8.1 or above
- Microsoft .NET framework 4.5 or newer (for .NET components usage)
- Microsoft SQL Server Express, Standard or Enterprise edition
- Milestone XProtect Corporate, XProtect Expert, Professional+, Express+, or Essential+
- Nodejs 14 or above
- 6SS Robotics client plugin
- 6SS Robotics server

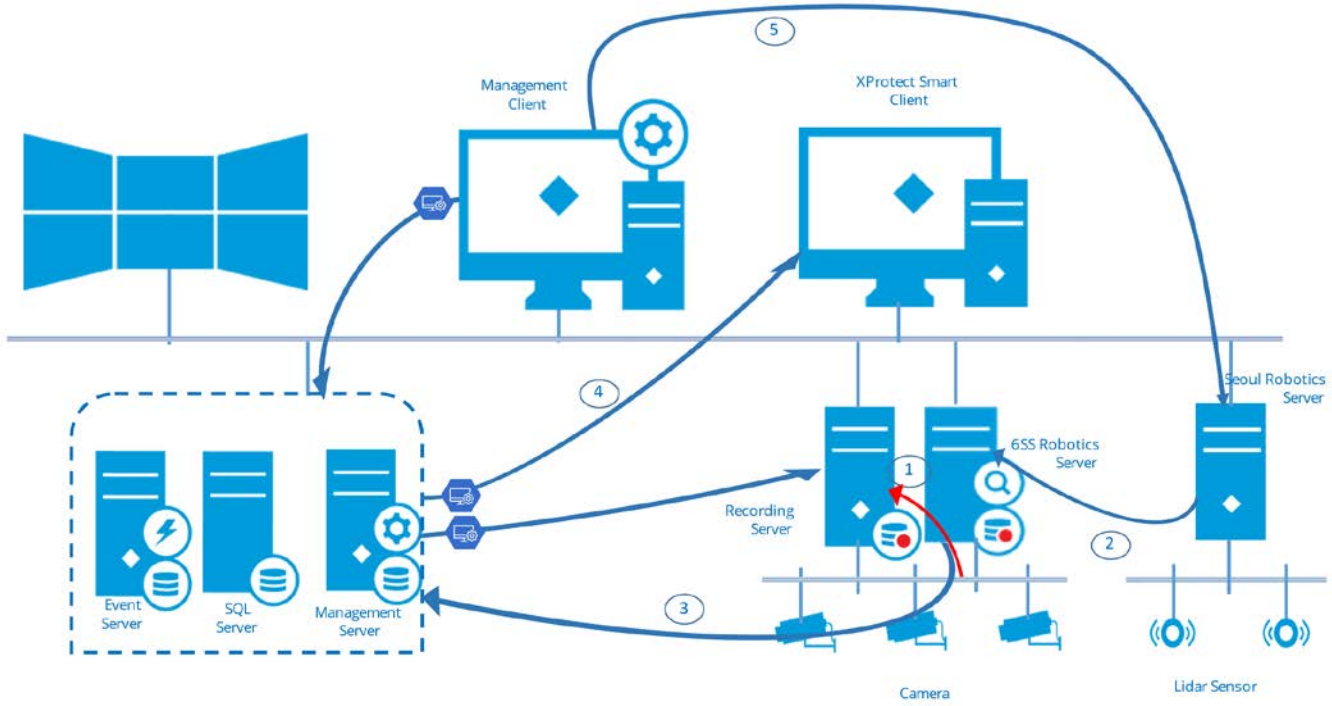
Quick Start

- Microsoft SQL Server Management Studio installed.
- Named pipes and TCP/IP protocols must be enabled first
- XProtect Management Client must be installed on the Windows server machine
- Node.js must be downloaded on the Windows server machine
- Seoul Robotics – 6SS Plugin must be downloaded and configured first on the server machine
- Seoul Robotics – 6SS Server must be downloaded on the Windows server machine
- Seoul Robotics – 6SS Plugin must be downloaded on the machines where XProtect Smart Client is installed

System Introduction

The Server part of the system consists of two main components: Management, Sensr system. Each 6SSRobotics system will contains one Management server and one Sensr system, where each Sensr system can contain one or more Lidar Sensors. Sensr system should be installed on an Ubuntu system and Management should be installed on a windows machine.

Below is a figure describing the architecture of the system.

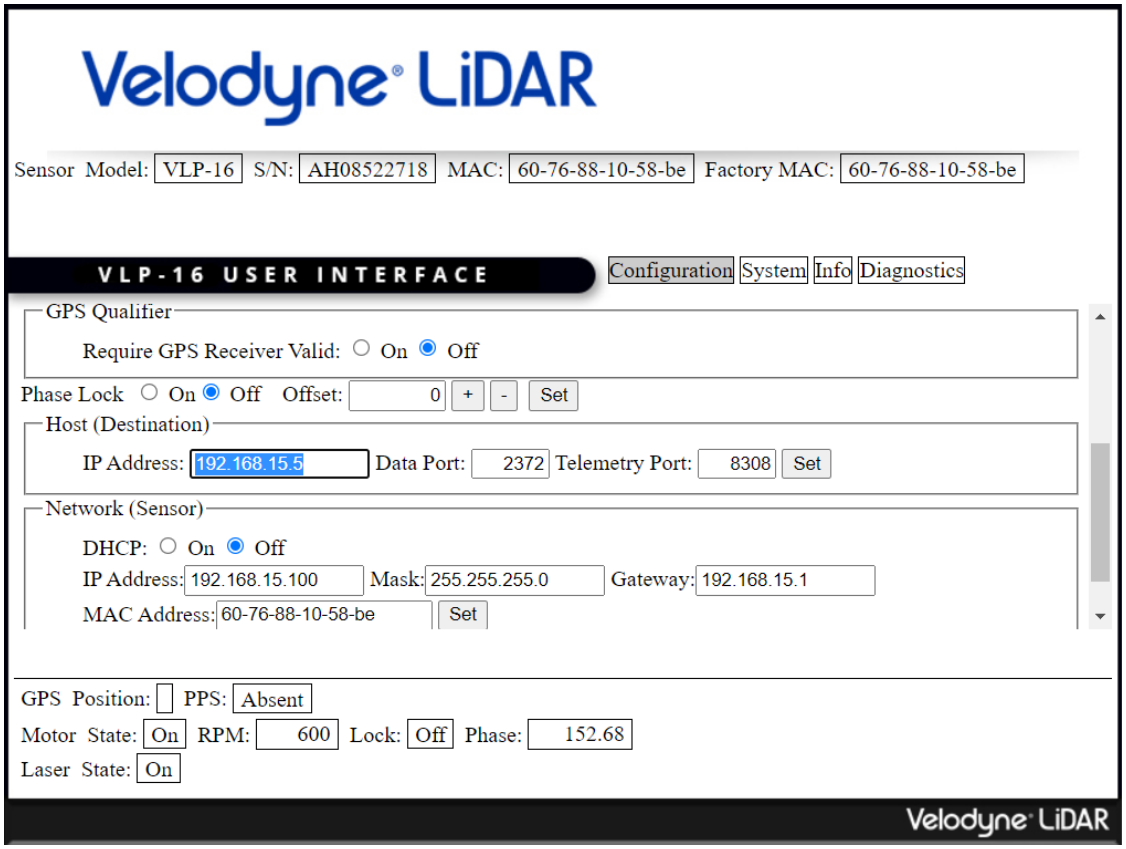


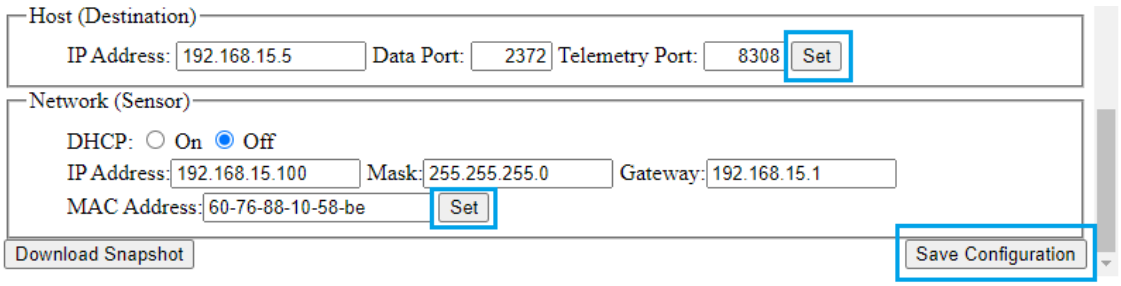
1. Camera Streams sent to Recording Server
2. Seoul Robotics – 6SS Server will be receiving all the data sent from Seoul Robotics Server using Protobuf
3. Seoul Robotics – 6SS Server will store all the data in SQL Server and alarm triggered if any
4. Display results in Smart Client
5. Management client will exchange data with Seoul Robotics Server using Rest API

Seoul Robotics – 6SS Installation & Configuration

Seoul Robotics - 6SS Ubuntu Server-Side

Browse to http://SensorIPAddress/ and specify Ubuntu server IP address in Host (Destination) panel and Sensor IP address in Network (Sensor) panel. Click Set buttons and then Save Configuration button.

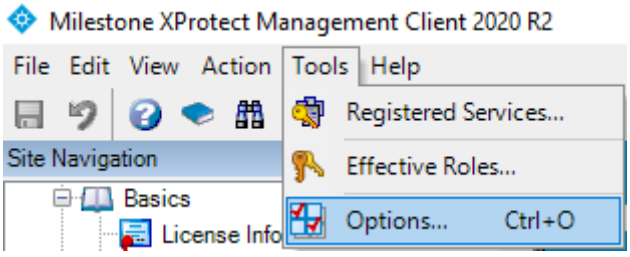




Seoul Robotics - 6SS Windows Server-Side

Start first by installing Node.js on the Windows server machine by choosing Windows x64.msi installer.
Seoul Robotics – 6SS Plugin must be then installed & configured on the same Windows server machine using XProtect Management Client. Then run Seoul Robotics – 6SS Server installer on the same server machine.

After installing Seoul Robotics plugin and server installers, login to Milestone XProtect Management Client and navigate to Tools > Options.



Under Seoul Robotics Options, follow the below steps:

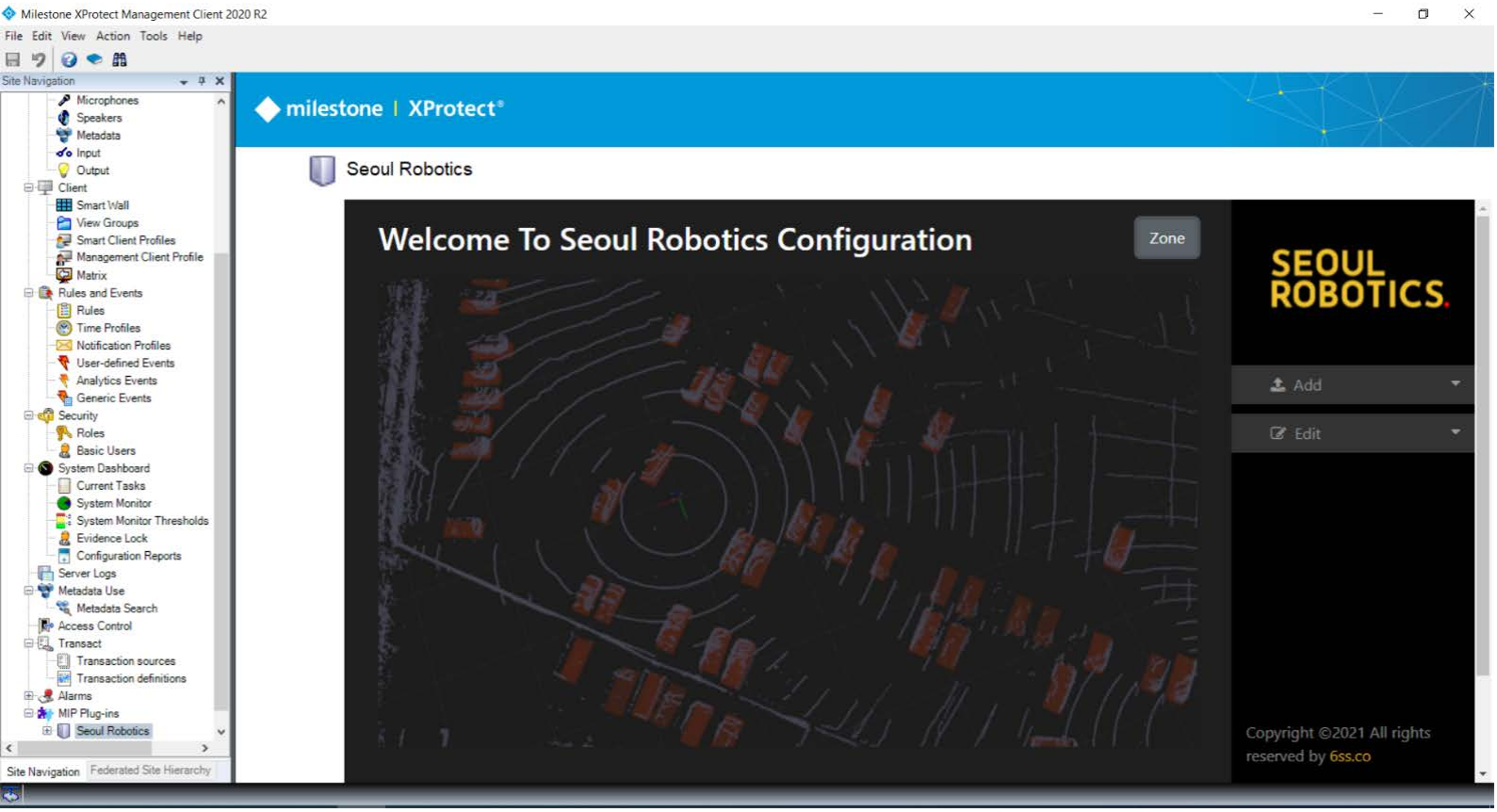
- Specify SQL Server address to establish a connection to the SQL Server where the database must be installed.
- Specify Seoul robotics IP which is the Ubuntu server address on which Seoul Sensor is configured.
- Set the time between firing the same alarm.

Choose Windows Authentication option and test the connection, if test succeeded you will be notified with a notification text “Test Succeeded!”.

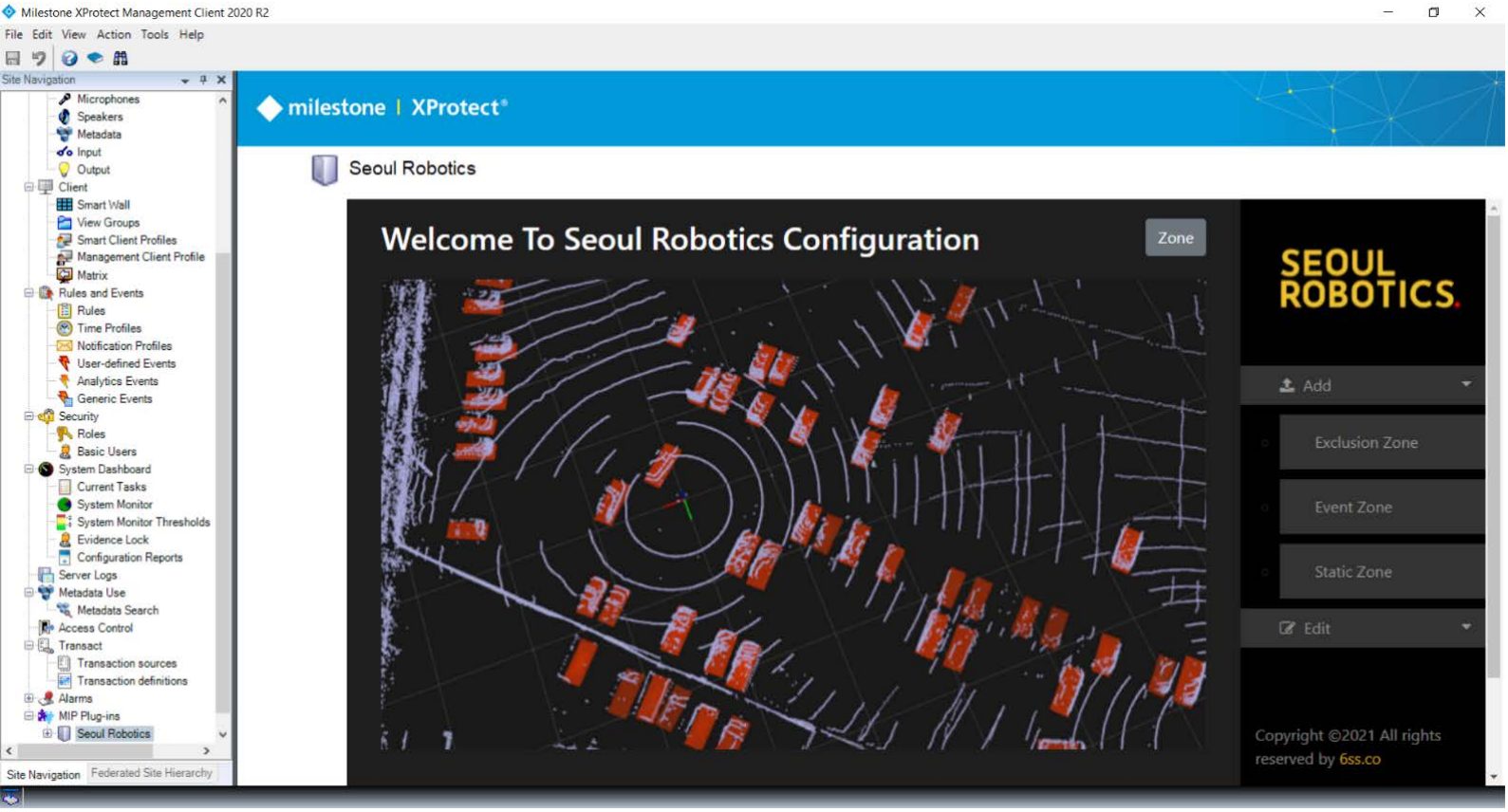
In other cases, when you encounter an error, SQL Server Authentication is needed in this case as windows authentication is not allowed and trusted in the current environment. Follow FAQ on how to enable SQL Server and Windows Authentication Mode.

After making sure that the connection is successfully established, go to Windows Start- Services and find 6SS Robotics from the list of services. Right-click and choose Start to run the service.

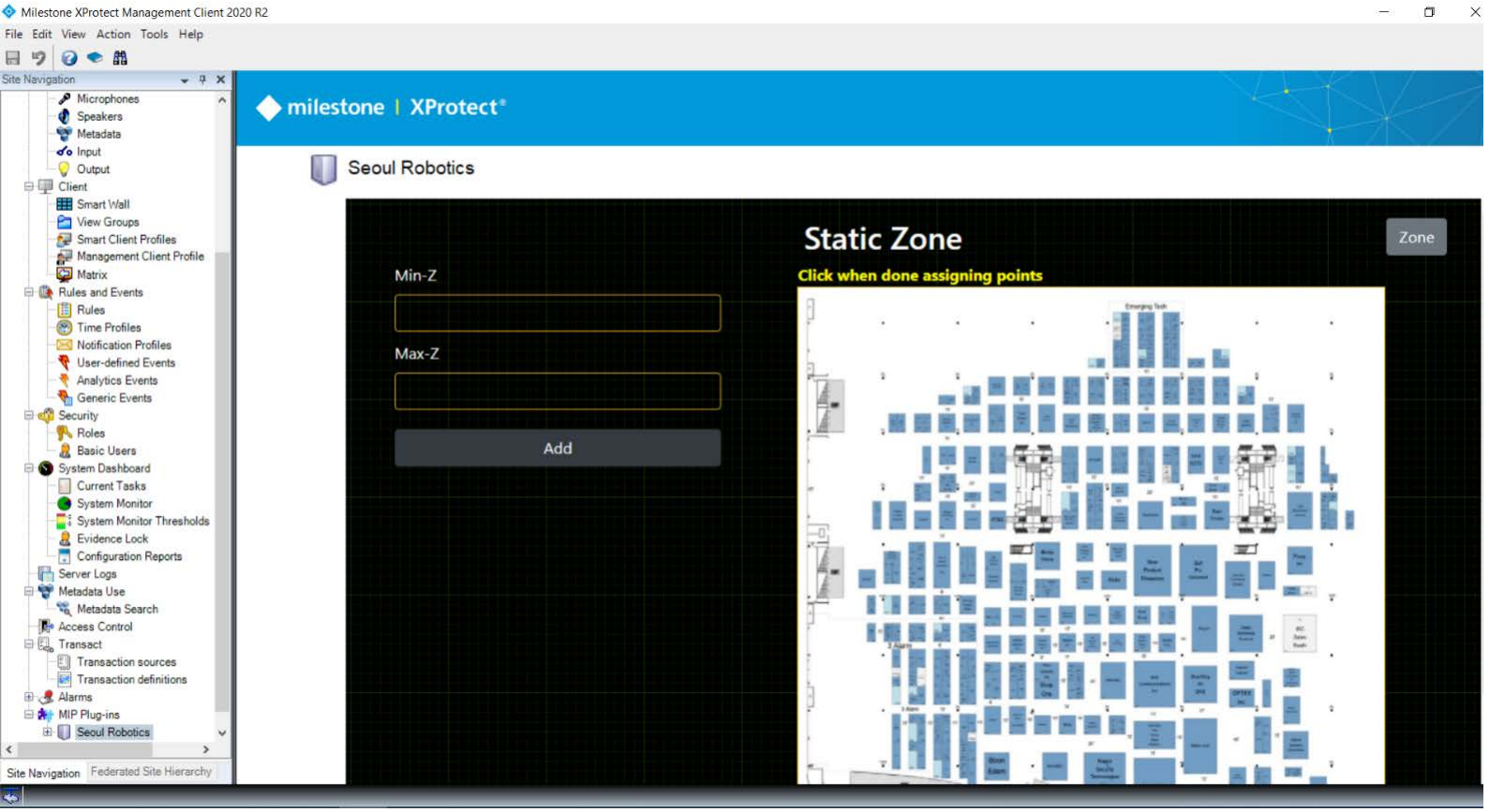
Navigate back to the Management client and go to MIP Plug-ins, Seoul Robotics. Apply zone configurations by adding a new zone (event, static, or exclusion), editing an existing zone, or deleting it.



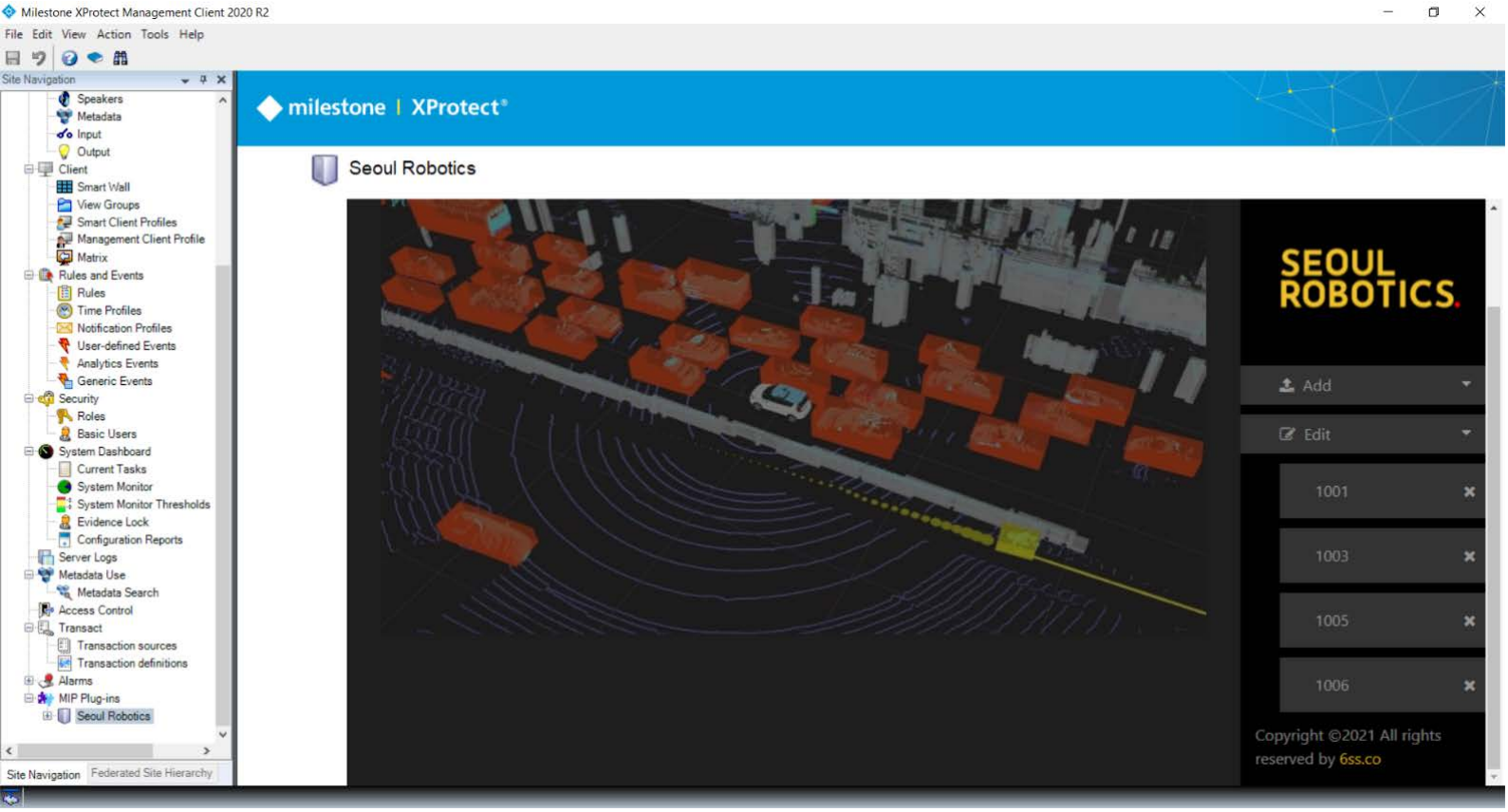
By clicking on Add button, the user can choose to add a zone with the type he needs.



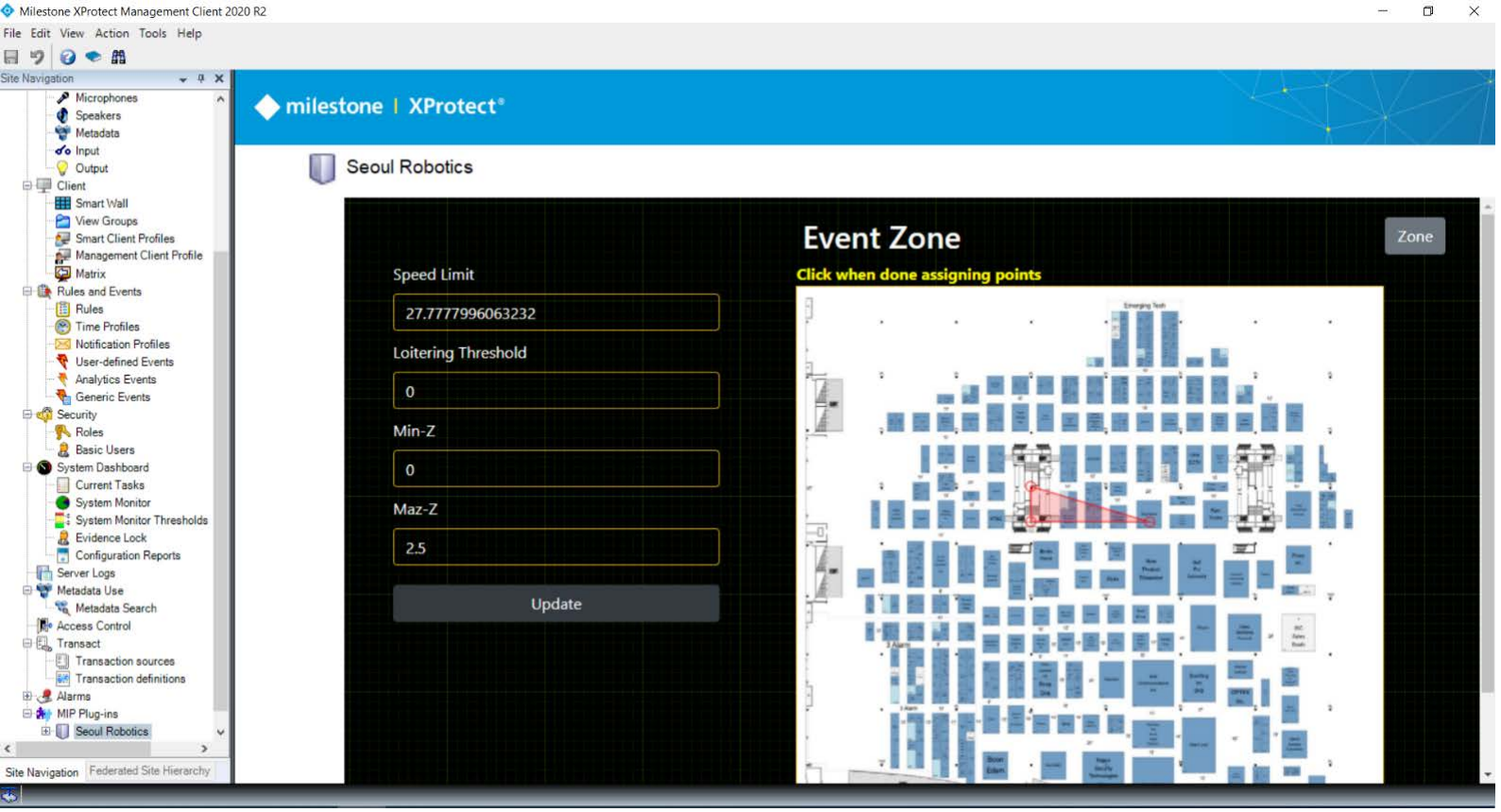
If create static zone is chosen, the user will specify the minimum and maximum Z, then he can draw the zone. Upon clicking on Add, the zone will be added automatically in Sensr software.



When clicking on the Edit button, a dropdown list will show all the available zones where the user can click on a zone to edit it or on the small x at the side to delete it.

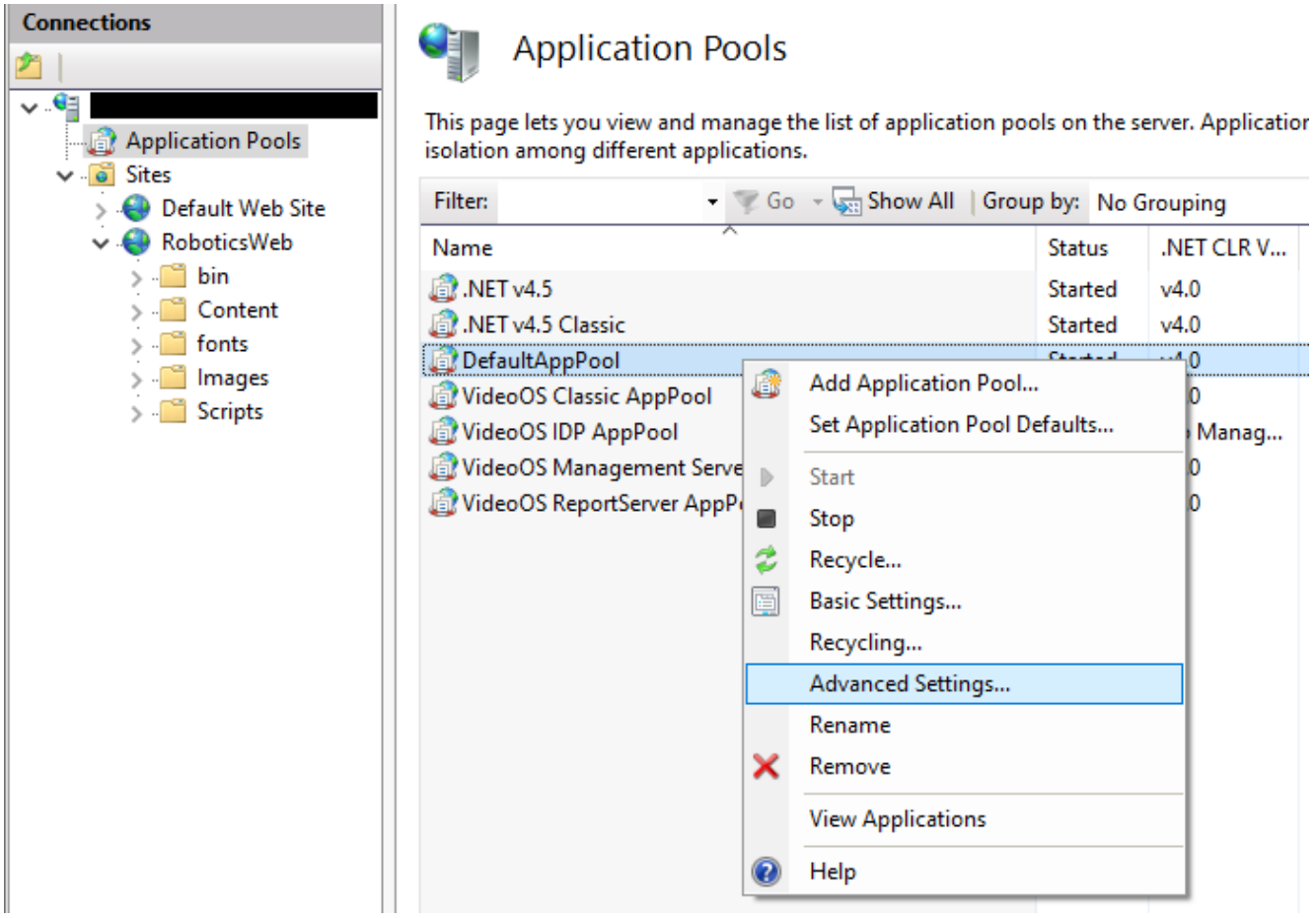


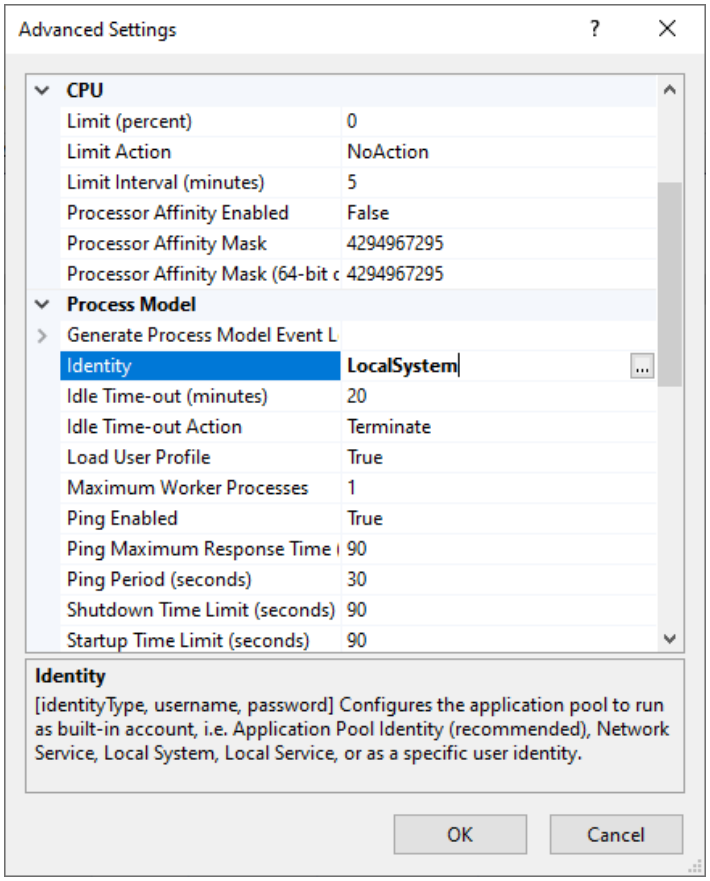
Upon clicking on a zone to edit it, the user will see the zone on the map, once he clicks on the map a new point is added, and when clicking on the word done the user can change the position of existing points. After clicking on Update, the given zone will be updated directly in the Sensr system.



Seoul Robotics - 6SS Client-Side

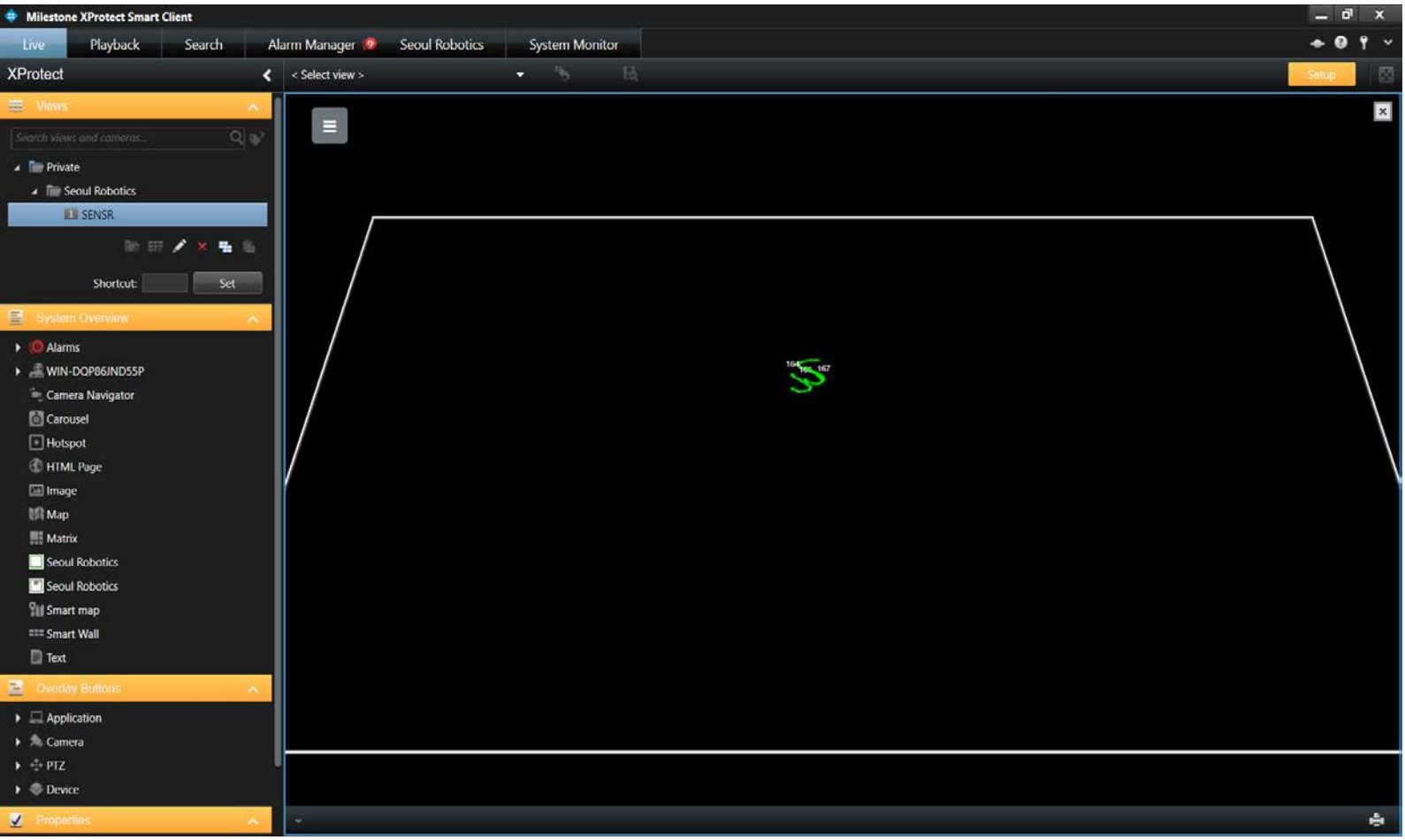
Before connecting to XProtect Smart Client, go to the machine where IIS is configured for XProtect Management server, choose Application Pools -> DefaultAppPool -> right-click and choose 'Advanced Settings'. Find 'Identity' property and change it to LocalSystem.




Advanced Settings
?
CPU
Limit (percent) 0
Limit Action NoAction
Limit Interval (minutes) 5
Processor Affinity Enabled False
Processor Affinity Mask 4294967295
Processor Affinity Mask (64-bit c 4294967295
Process Model
Generate Process Model Event L
Identity LocalSystem
Idle Time-out (minutes) 20
Idle Time-out Action Terminate
Load User Profile True
Maximum Worker Processes 1
Ping Enabled True
Ping Maximum Response Time (90
Ping Period (seconds) 30
Shutdown Time Limit (seconds) 90
Startup Time Limit (seconds) 90
Identity
[identityType, username, password] Configures the application pool to run as built-in account, i.e. Application Pool Identity (recommended), Network Service, Local System, Local Service, or as a specific user identity.
OK
Cancel

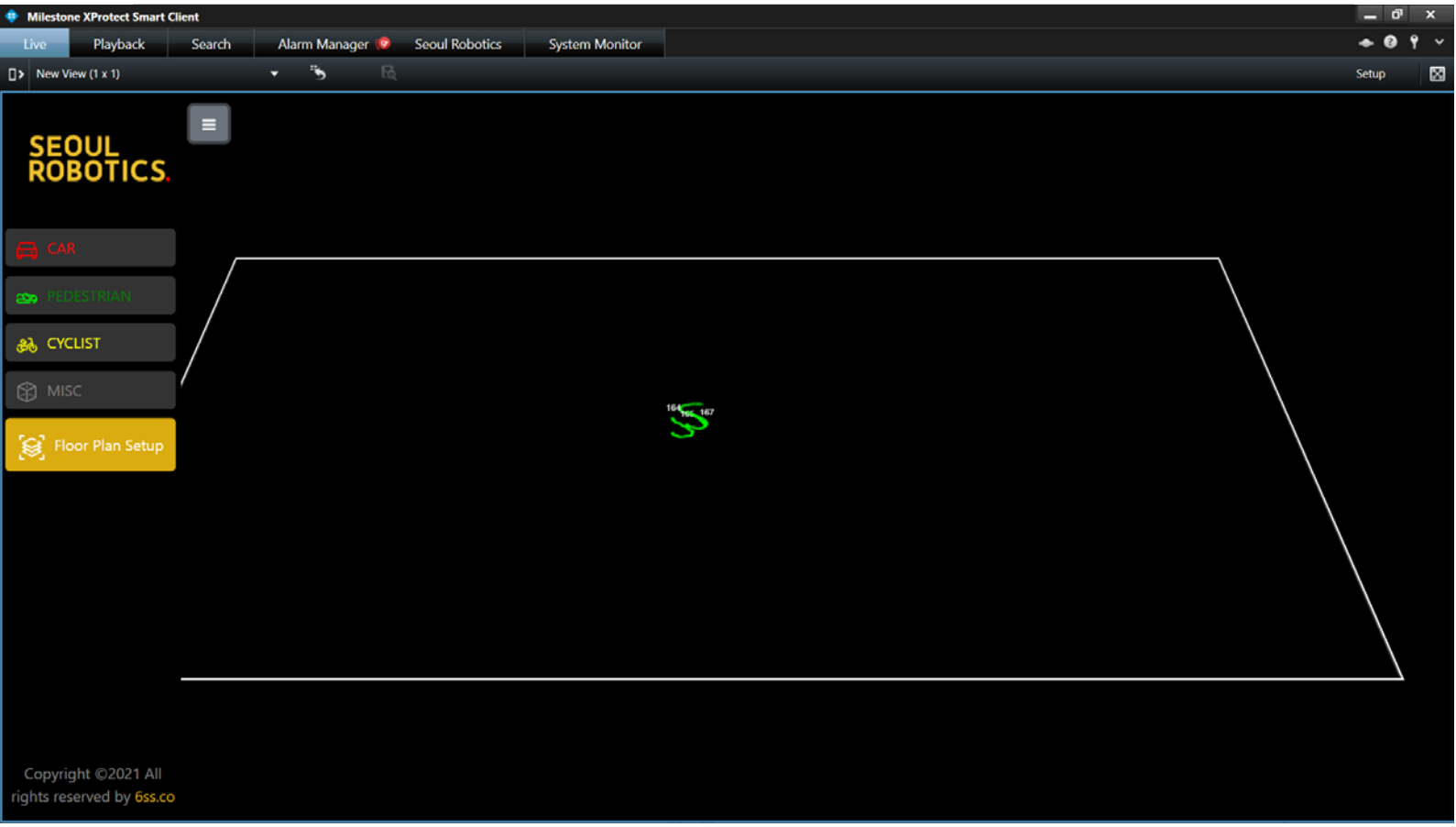
XProtect Smart Client- Live Tab

After installing Seoul Robotics plugin, a new item will appear in the System Overview side panel.

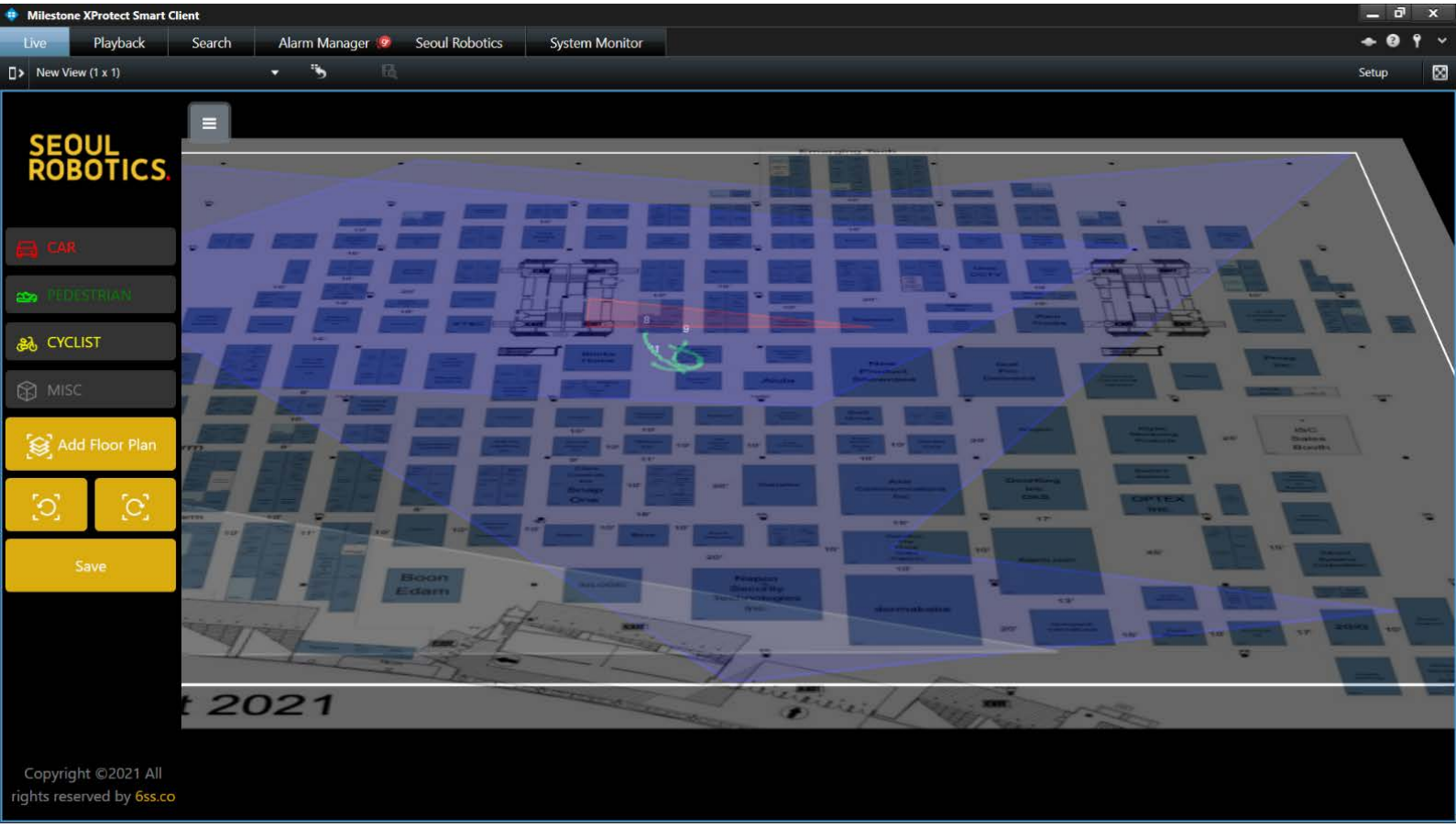


By drag-drop the item to a new view, a live map of Sensr will be shown directly where the points displayed on the screen are the object detected by the LIDAR system, and the color of the points designate the classification of the object:

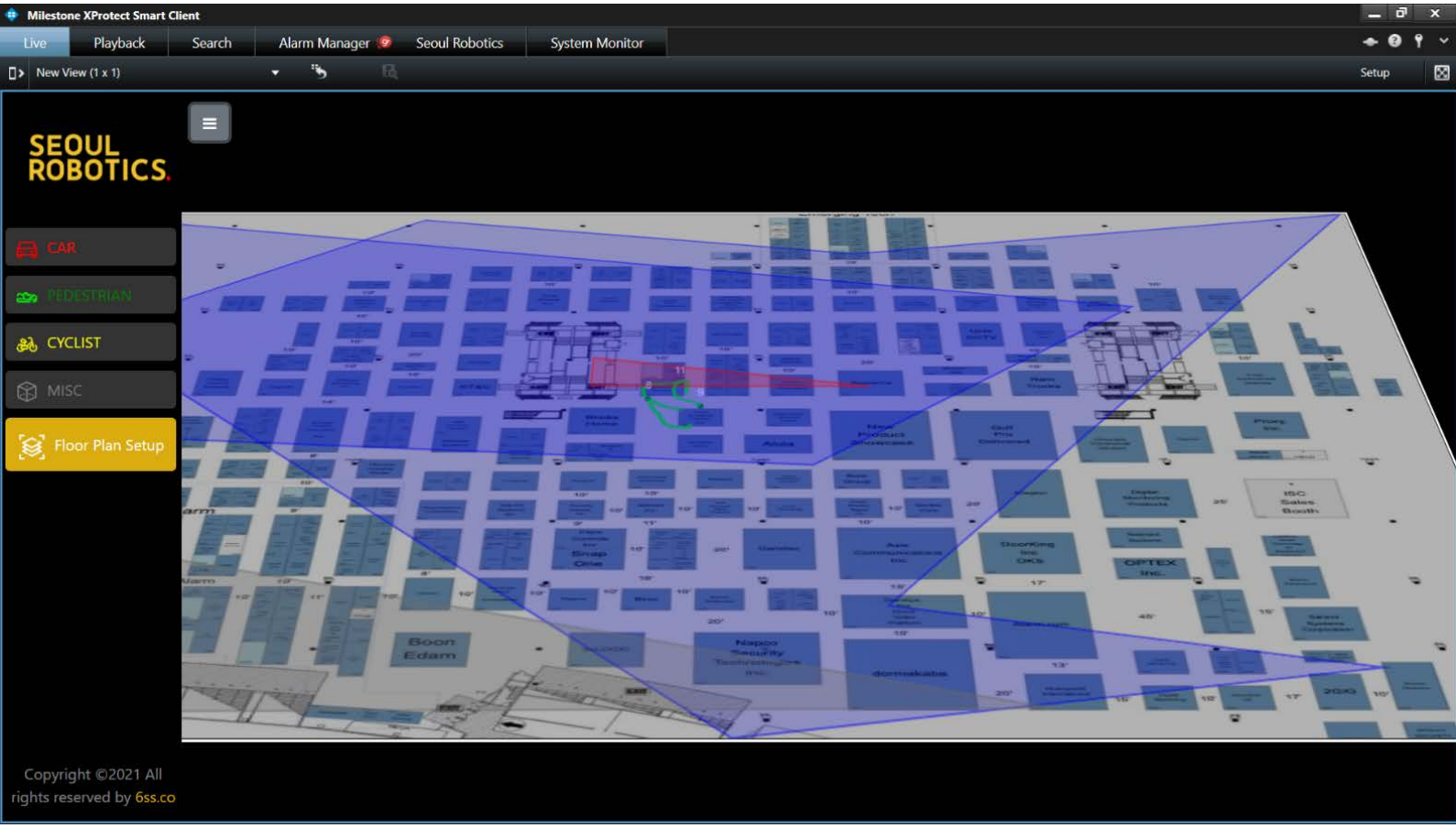
- Red: Car
- Green: Pedestrian
- Yellow: Cyclist
- Grey: MISC



By clicking on the Add Floor Plan, the user can add the floor plan needed in JPEG, PNG, or JPG format. In addition, the user can rotate, translate, and zoom in or out the floor plan to fit in perfectly on the map.

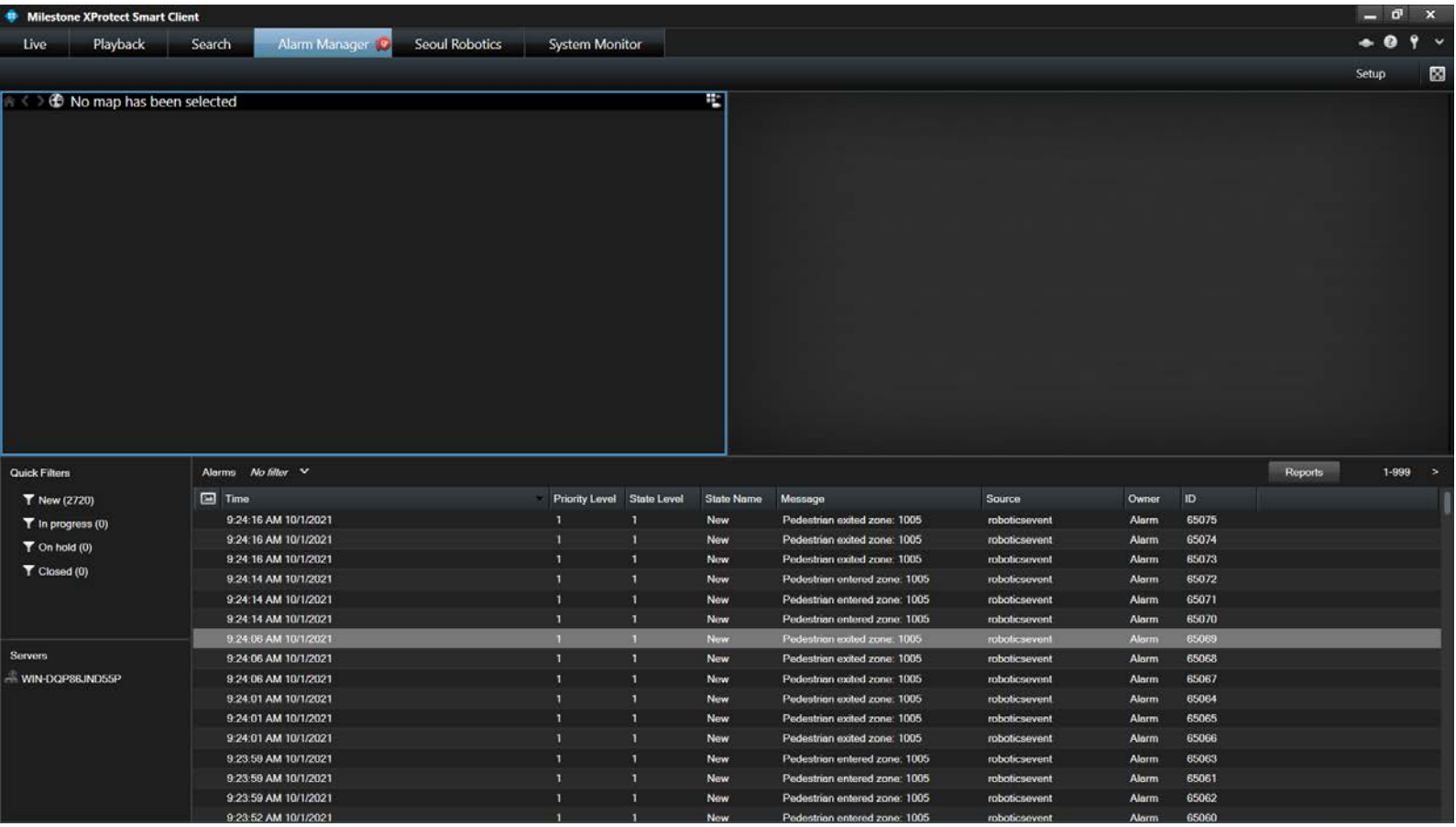


After the floor plan is set up, the user will have a view on the live map, where all objects are shown with a refresh rate of 100ms, and all zone added or edited in Sensr system will be shown and updated directly on the map.



XProtect Smart Client- Alarm Manager Tab

In XProtect Smart Client Alarm Manager tab, all events, alarms and triggers that were fired in the Sensr system will directly appear. The alarm message will include the type of the event and the zone where the event happened.
In addition, an alarm will be fired in case a problem with the sensor or the software occurs.

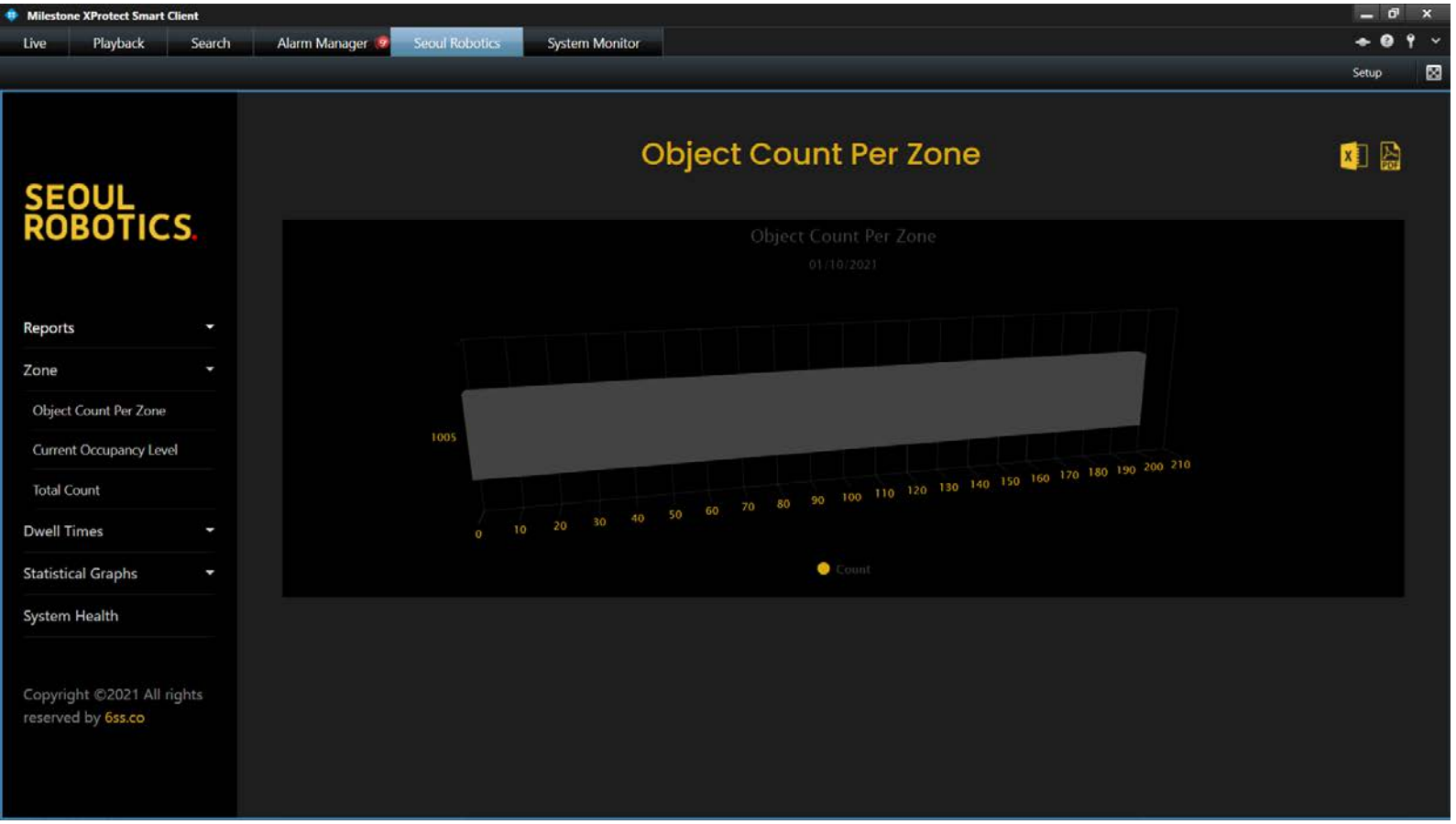


XProtect Smart Client- Seoul Robotics Tab

In Seoul Robotics tab, the user will have access to many reports and statistics based on data gathered from Sensr Software. In addition, every chart or report can be exported to PDF or Excel format.

In the Reports drop-down menu, the user can check People, Bike and Cars count. Data will appear in a 3D chart that shows the number of people, bikes, or cars that are detected now.

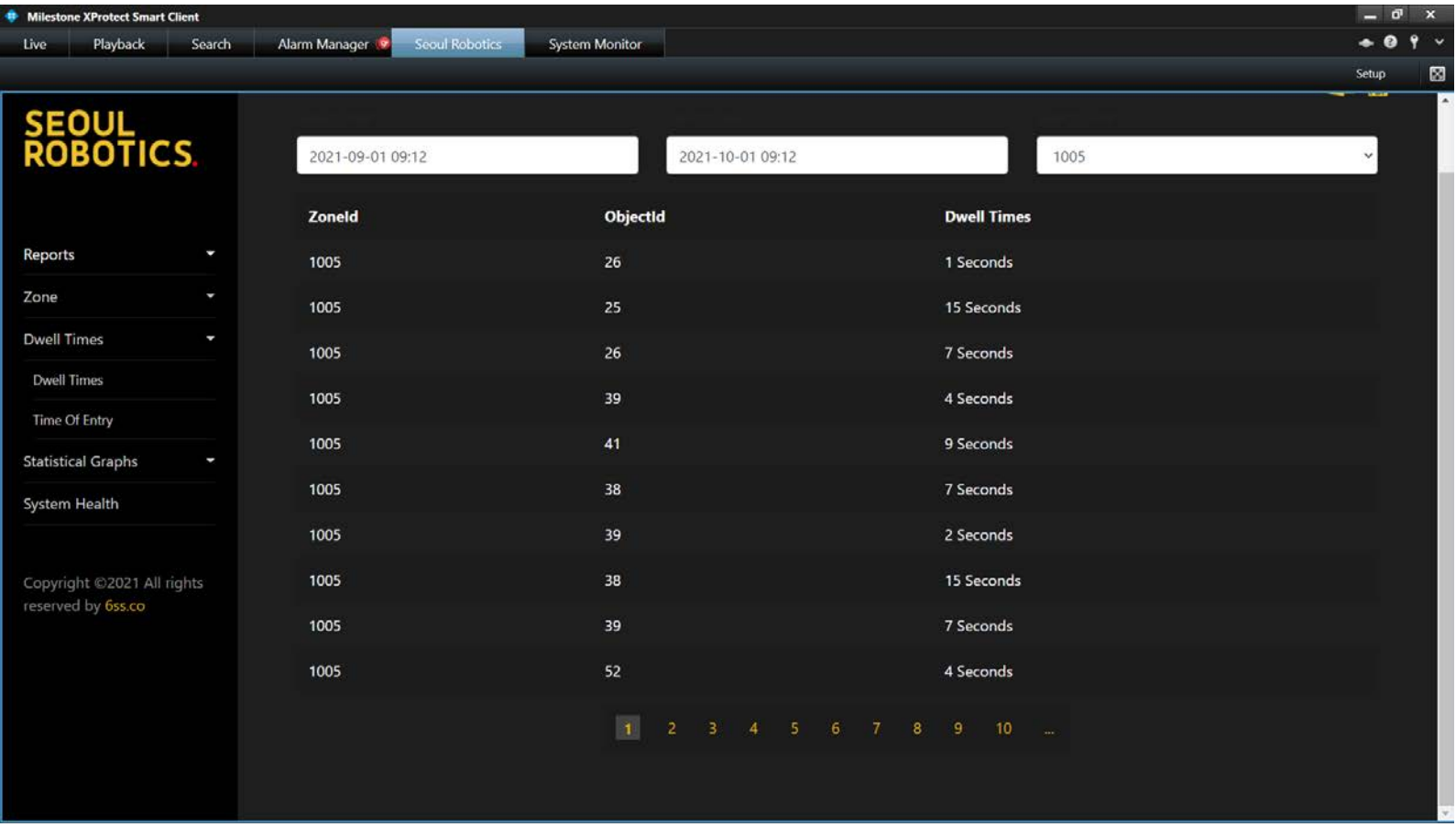
In the Object Count per zone, the user can check the number of detected objects that entered each event zone (for example 200 objects entered the zone 1005).



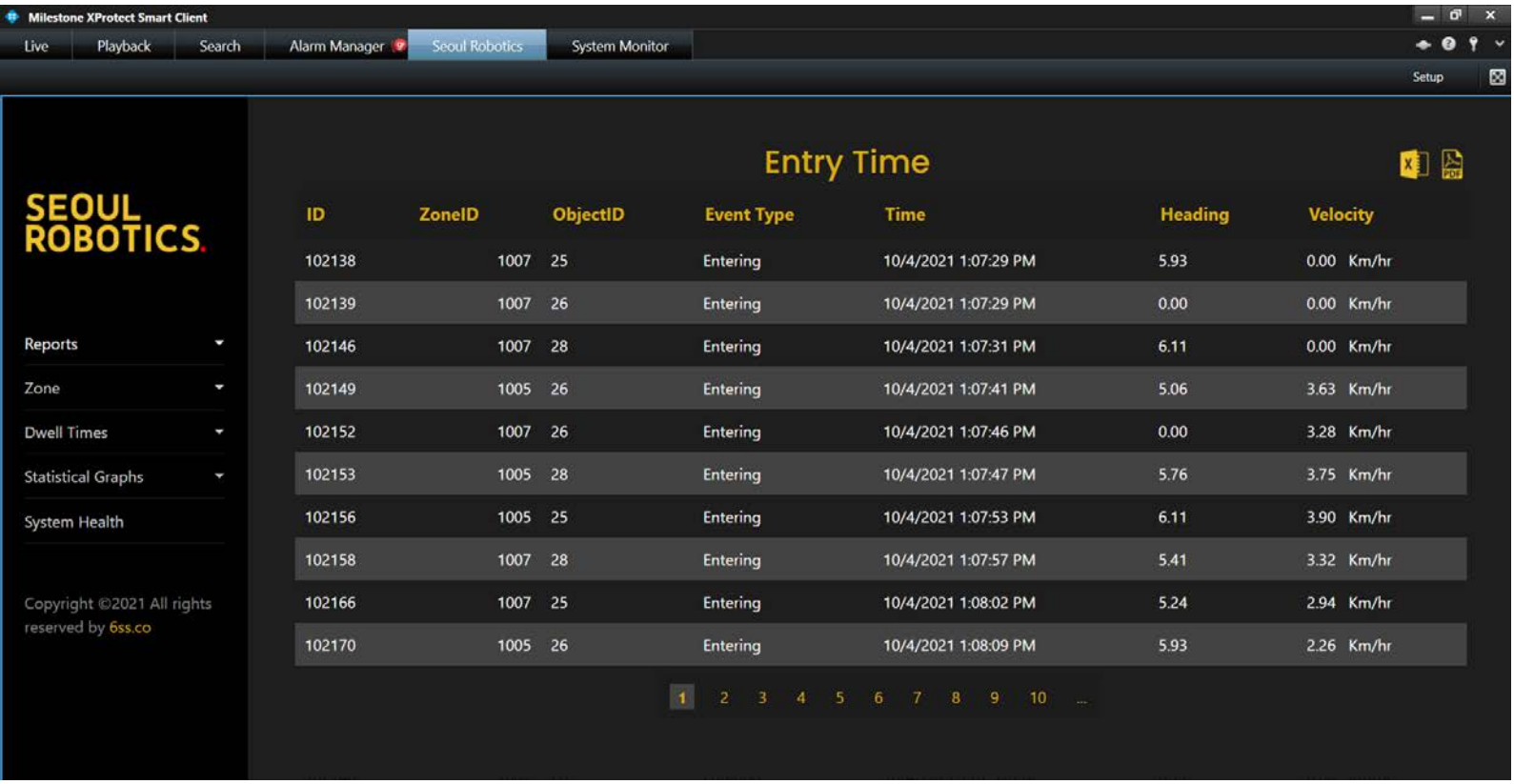
Current Occupancy level will show the number of objects that are currently inside each event zone.

Total Count will show the total number of objects that have entered in all of the available event zones.

Dwell Times shows in a table the amount of time an object has spent inside a zone.

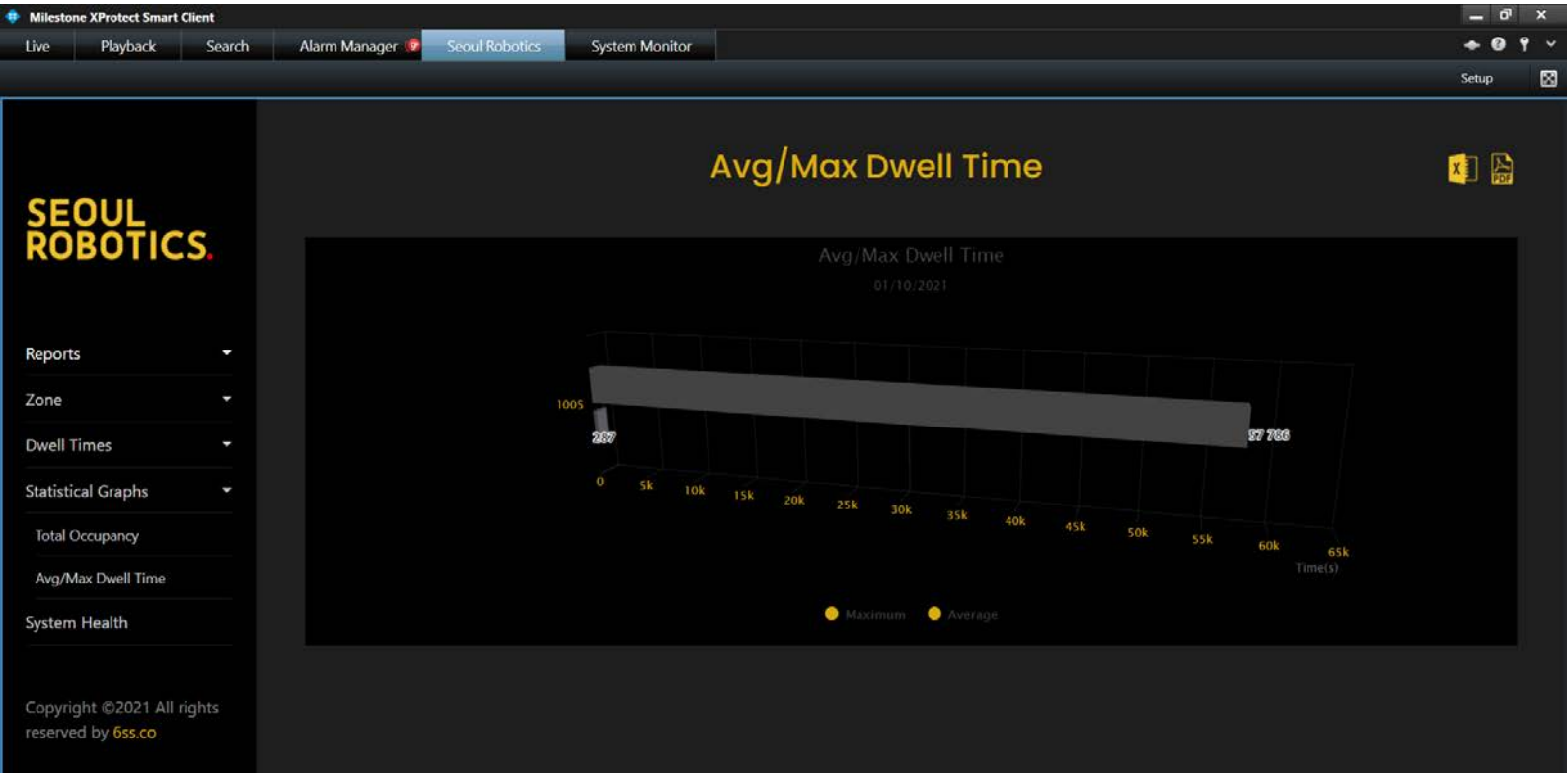


Entry Time represents the date and time when an object enters a zone. It also shows other data such as Heading and velocity(Km/h).

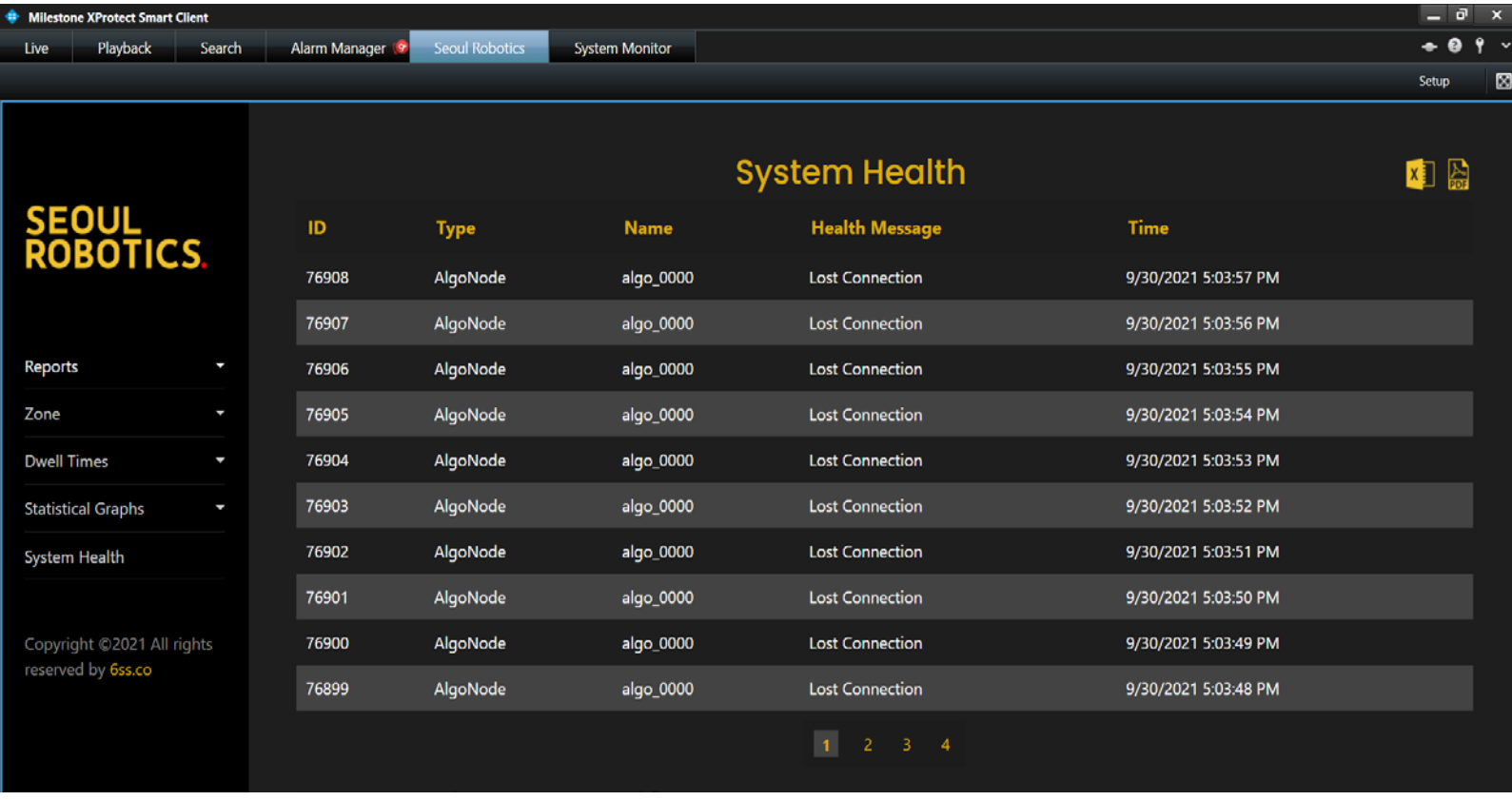


Total Occupancy report shows the current detected objects, and in case an object entered a zone, the chart shows the amount of time this object has stayed.

Avg/Max Dwell Time shows the average and maximum dwell time for objects in each available zone.



System Health shows a report of all error messages that were received from the system. The report will include the type of error (Master, Sensor, or Algo node), the name, the Health Message, and the time when this error happened.

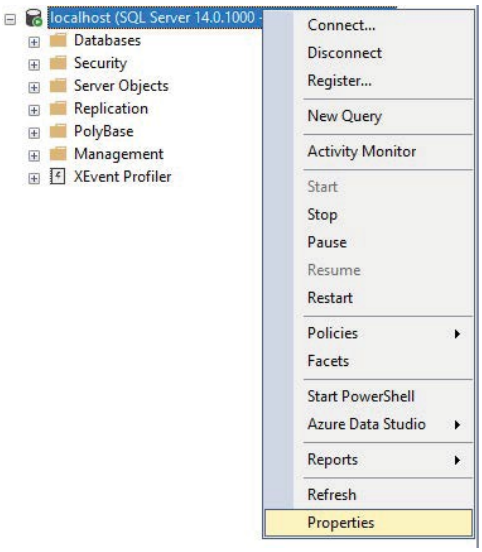


FAQ

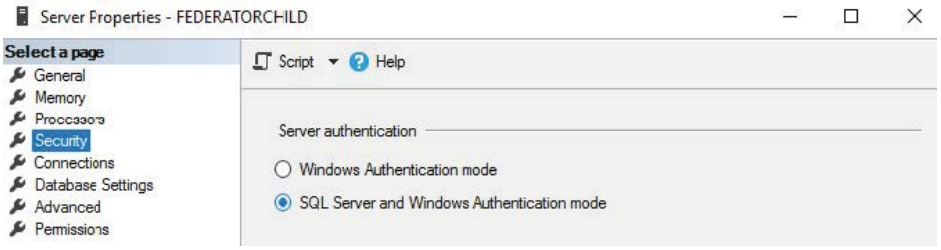
Frequently Asked Questions

How to Allow SQL Server and Windows Authentication Mode?

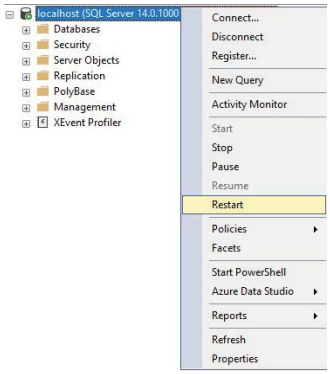
- Open SQL Server Management Studio and connect to the server. Right click on the SQL server name and choose Properties.



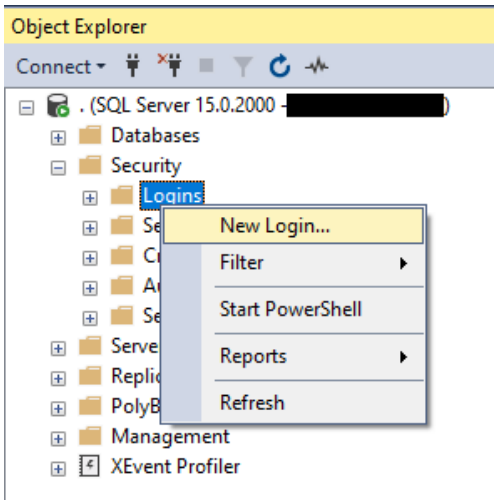
- Select Security node and choose SQL Server and Windows Authentication mode option under Server authentication.



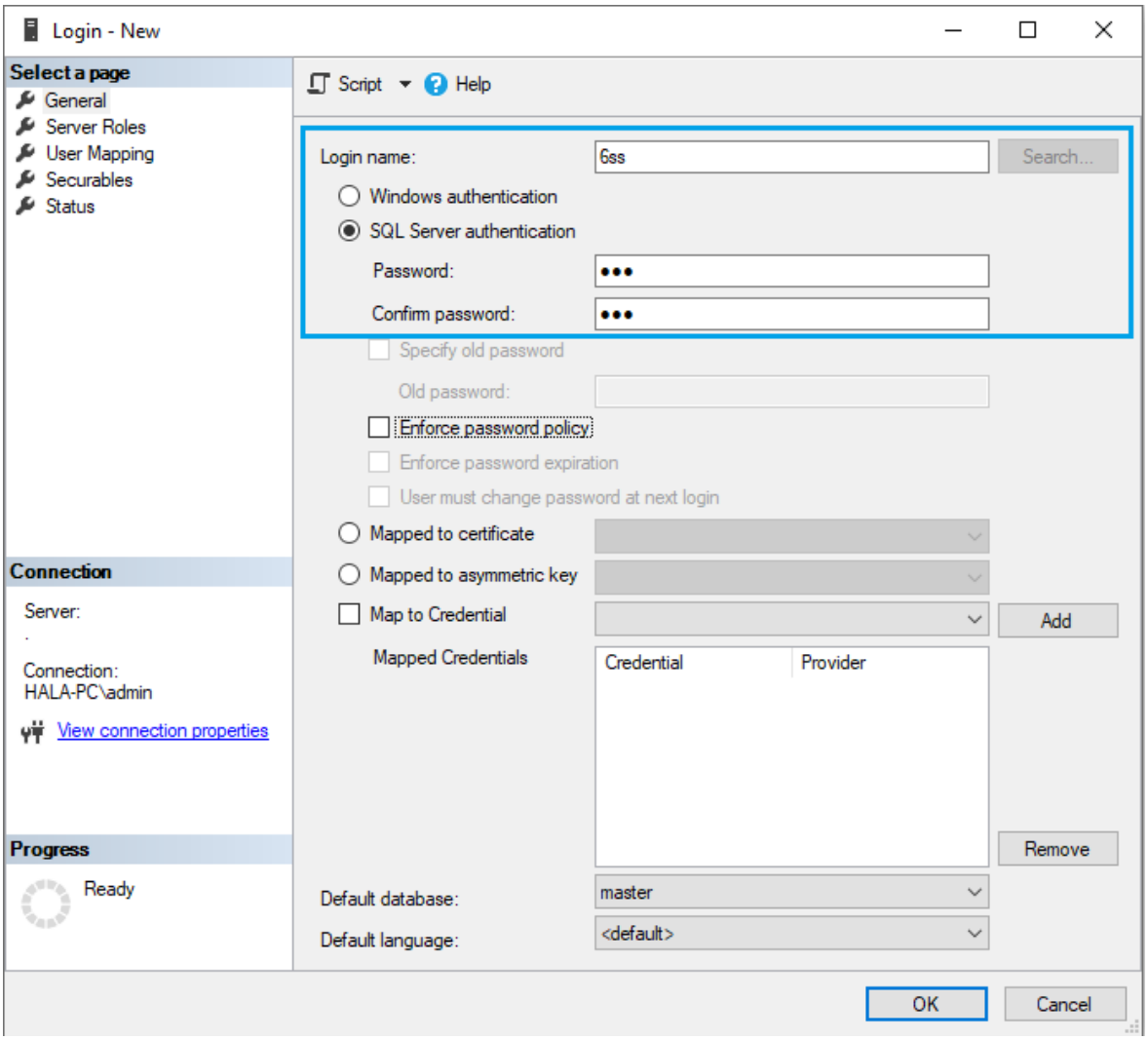
- SQL Server needs to be restarted in order to take effect. Right click again on SQL server name and choose Restart.



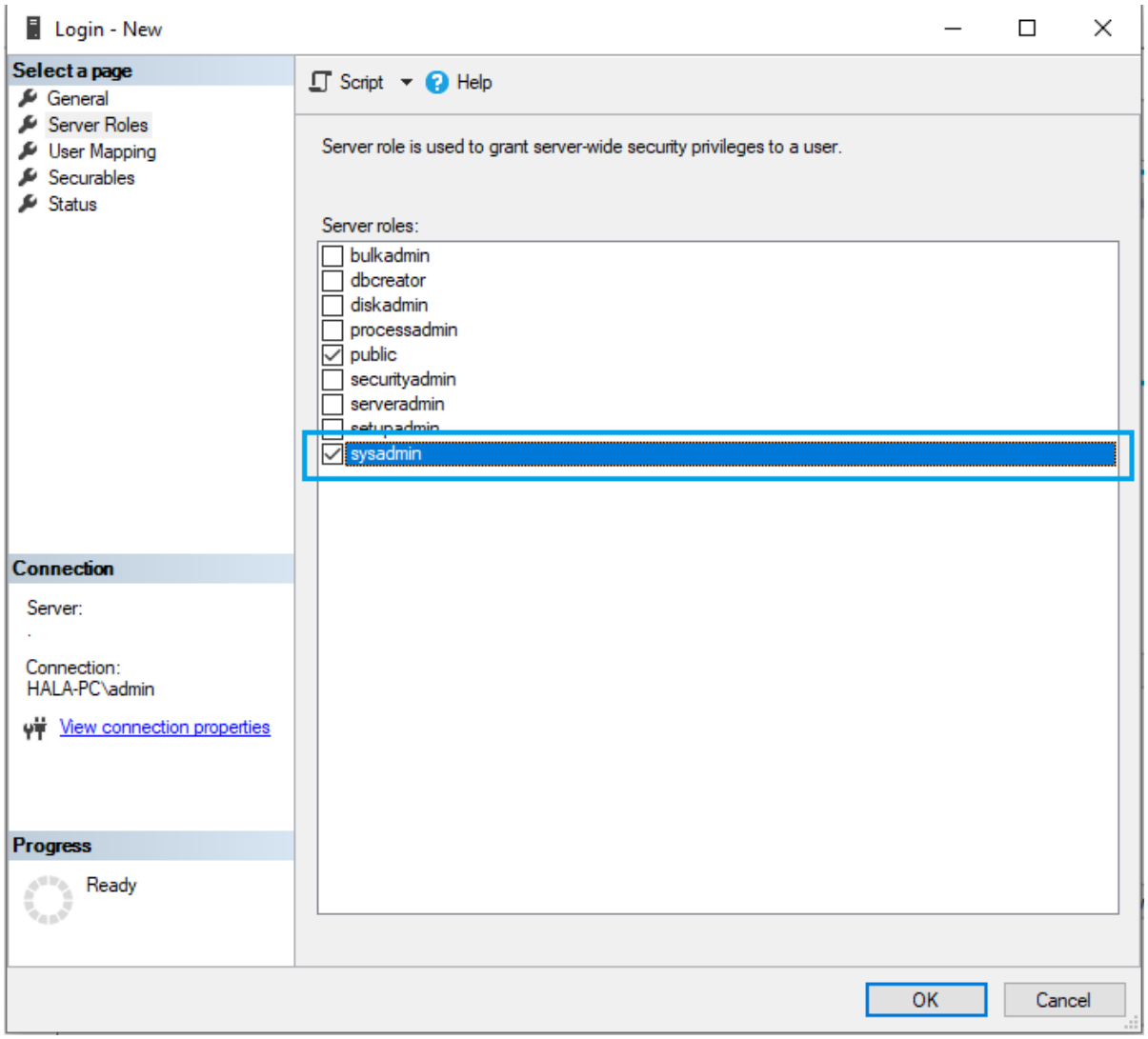
- After restarting SQL server service, navigate to Security- Logins- New Login...



- Specify 6ss in Login name and choose SQL Server authentication with Password 6ss. Uncheck Enforce password policy tick.

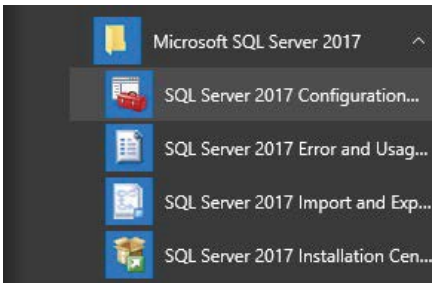


- In Server Roles tab, enable sysadmin checkbox and click OK.

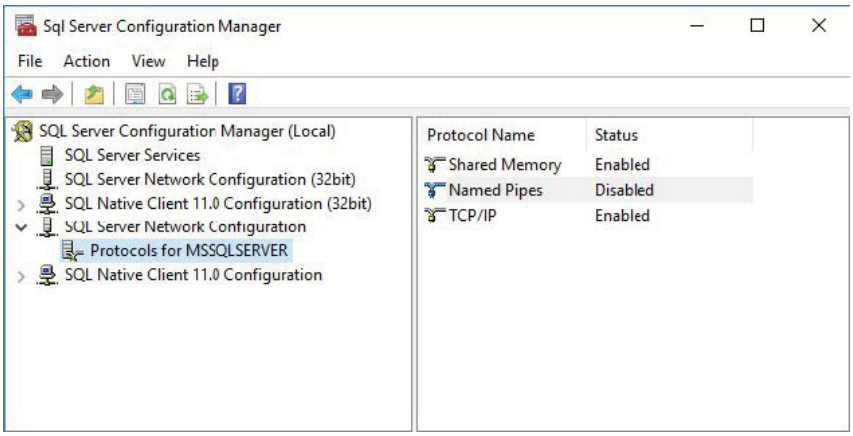


How to enable Named pipes and TCP/IP protocols?

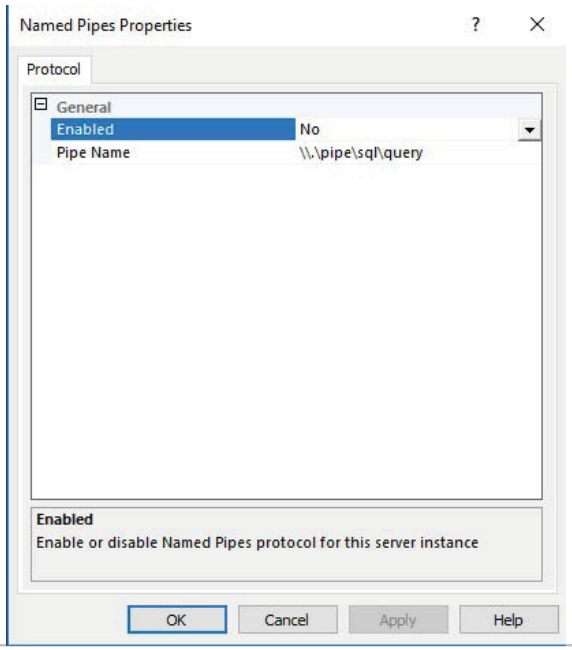
Go to Windows Start screen and navigate to Microsoft SQL Server folder and click on SQL Server Configuration Manager.



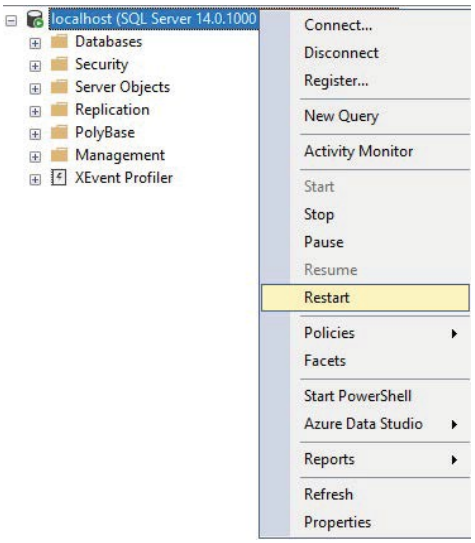
Navigate to SQL Server Configuration Manager > SQL Server Network Configuration > Protocols for <machine instance>



Double-click Named Pipes. The Named Pipes Properties screen appears. From Enabled, select Yes. Then click OK.



From SQL Server Management Studio, restart the server instance.



About 6SS

6SS was founded in Minneapolis Minnesota with a global team alongside Milestone to provide security solutions powered by XProtect.

Our services help governments and businesses across the world with video analytics, intelligent platforms, plug-ins and third-party integrations.

We ensure that XProtect & 6SS products runs reliably by tailored and certified trainings and professional services in Arabic, English, French and Russian.

Any Questions?

Please reach out to us if you have any question or inquiry
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