



ACS

Configuration Manual

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Contents

Introduction	1
Terms and Abbreviations	2
Installing ACS	3
Upgrading ACS	4
Overview	5
Configuring ACS installations in SmartSpace	6
Creating areas for use in ACS	6
Creating an Area with Walls for ACS	7
Copying models for use in ACS	10
Importing models into ACS from SmartSpace	10
Copying models to ACS	11
ACS types in SmartSpace	12
Extents of ACS types	14
Searches using ACS types	14
Using the Requested Connection Status property with ACS External Systems	15
Synchronizing SmartSpace properties and ACS product parameters	15
Adding Extents for ACS Devices in SmartSpace	16
Displaying the ACS tag representation in SmartSpace	19
User Interface	20
User Interface Components	20
The Menu Bar	21
The Task Tree View	22
The Task Page	22
The Status Bar	23
Navigating and Zooming within the Graphics Window	23
Displaying Data	25
Using Simple Filters	26
How it Works	26
Sorting by Column	26

Contents

Exporting Data from Tables	28
Change Password	29
How it Works	29
Hints	30
Language	30
How it Works	30
Map View Settings	31
How it Works	31
Hints	32
Configuration	34
Products	34
Product Types	34
How it Works	35
Adding a Product Type	35
Modifying an Existing Product Type	35
Copying a Product Type	35
Removing a Product Type	36
Product Type Properties	37
Modifying the Representation	39
Product Type Tag Positions	40
How it Works	40
Selecting the Product Type	40
Adding a Tag Position	40
Changing an Existing Tag Position	41
Copy Existing Product Tag Positions	41
Removing a Tag Position	41
Edit Tag Position Parameters Dialog	42
Product Spaces	44
How it Works	44

Contents

Selecting the Product Type	44
Adding a New Product Space	44
Changing an Existing Product Space	45
Copy Existing Product Spaces	45
Removing a Product Space	45
Edit Product Space Parameters Dialog	46
Hints	47
ProductsLocated Events	47
How it Works	47
Adding an Event Object	47
Modifying an Event Object	47
Removing an Event Object	48
Configuring Event Rules	48
Configuring External System Associations	48
Testing your Setup	49
Factory Layout	49
Production Lines	50
How it Works	50
Adding a Production Line	51
Modifying a Production Line	52
Removing a Production Line	52
Editing the Production Line Settings	52
Hints	54
Assembly Lines	54
How it Works	54
Adding an Assembly Line	55
Viewing an Assembly Line	55
Modifying an Assembly Line	55
Removing an Assembly Line	55
Editing an Assembly Line	55

Contents

Basics Tab	55
Externally Driven Tab	57
Tag Settings Tab – Tag Recognition	61
Setting Default Values	61
Hint	64
Tag Setting Tab – Transport Parameters	64
Dynamic Configuration Required	65
Move Line Without Sighting	66
Adding, Modifying and Removing Transport Parameters	66
Adding a Section Definition	66
Modifying a Transport Parameter Setting	66
Split a Transport Parameter Setting	66
Remove a Transport Parameter Setting	66
Adapt Length of All Transport Parameters	67
Editing a transport parameter setting	67
Tag Error Handling Tab	69
Error Detection	70
Sections	71
Tracking Reliability Detection	72
Error Recovery	72
Hints	73
Assembly Points	73
How it Works	74
Adding an Assembly Point	74
Modifying an Assembly Point	75
Removing an Assembly Point	75
Editing an Assembly Point	75
Tag Profile Manager	76
How it Works	76
Adding a tag profile	76

Contents

Changing an existing tag profile	76
Removing a tag profile	76
Tag Profile Properties Dialog	77
Adding a Tag Profile Section	79
Assembly Line Profile Sections	80
Adding a Profile Section	80
Changing an Existing Profile Section	80
Removing a Profile Section	80
Minimum Number of Tags with Selected Profile	80
Tag Profile Section Editor	80
Between Assembly Line Profile Sections	81
Adding a Profile Section	82
Changing an Existing Profile Section	82
Removing a Profile Section	82
Between Line - Tag Profile Section Editor	82
Workspaces	83
How it Works	84
Adding a New Workspace	84
Changing an Existing Workspace	84
Removing a Workspace	84
Workspace Editor	85
Define the Workspace Extent	86
Define the Workspace Details	86
Define Events to be Triggered at Workspaces	87
Hints	87
Assembly Line Stations	87
How it Works	87
Adding a New Station	87
Changing an Existing Station	87
Removing a Station	87

Contents

Generate Assembly Line Stations	87
Assembly Line Station Editor	88
Generating Assembly Line Stations	90
Adding New Station Descriptors	90
Changing Existing Station Descriptors	90
Removing Stations Descriptors	90
Change the Order of Stations Descriptors	91
Existing Stations	91
Editing a Station Descriptor	91
Defining Events to be Triggered at Assembly Line Stations	92
Trigger Points	92
How it Works	93
Adding a New Trigger Point	93
Changing an Existing Trigger Point	93
Removing a Trigger Point	93
Trigger Point Editor	94
Trigger Point Position	94
Trigger Point Details	94
Defining Events to be Triggered at Trigger Points	95
Ident Zones	95
How it Works	95
Adding a New Ident Zone	95
Modifying an Existing Ident Zone	96
Removing an Ident Zone	96
Editing Ident Zones	97
Ident Zone Extent	97
Ident Zone Details	98
Defining Events to be Triggered at Ident Zones	99
Association Zones	99

Contents

How it Works	100
Adding a New Association Zone	100
Changing an Association Zone	100
Removing an Association Zone	100
Association Zone Editor	101
Tag Positions Tab	103
Tag Filter Tab	104
Product Candidates	104
Extension	106
Bad Tags at Association Zones	106
Different Types of Ident Zones	106
Association Zones – Automatic Tag Swaps	107
Configuration for Automatic Swap of Tags	107
Association Zones – Automatic Swap of Tag Positions	108
Configuration for automatic swap of tag position	109
Disassociation Zones	109
How it Works	109
Adding a New Disassociation Zone	109
Changing a Disassociation Zone	109
Removing a Disassociation Zone	109
The Disassociation Zone Editor	111
Configuring Tag Activity	112
Hints	113
Trigger Named Events	113
How it Works	114
Adding a New Event	114
Changing an Existing Event	114
Removing an Event	114
Event Configuration Dialog	114

Contents

Activate Product Types to Trigger Events	115
Select External System to be informed	115
External Systems	115
Protocols	115
How it works	115
Adding a new protocol	116
Modifying an existing protocol	116
Removing a protocol	116
Predefined Protocols	116
ACS Protocol (1.0.0)	116
Atlas Copco OpenProtocol	117
Atlas Copco OpenProtocol 1.0.0	117
Atlas Copco OpenProtocol 1.1.0	118
External Systems	118
How it works	119
Adding a new external system	119
Changing an existing external system	119
Removing an external system	120
Export the external systems into a CSV file	120
Editing an external system	120
Modify the additional parameters (if necessary)	121
Editing associated objects	122
Event Subscriptions	122
How it works	122
Adding a new event subscription	123
Changing an existing event subscription	123
Removing an existing event subscription	123
Deactivate an existing event subscription	123
Editing an event subscription	124
Removing an existing event subscription	124

Contents

Message Forwarding	125
How it works	125
Select an external system to forward messages	125
Devices	125
Device Types	125
How it works	126
Adding a new device type	126
Modifying a existing device type	126
Removing a device type	126
Editing a device type	126
Device Instances	127
How it Works	127
Adding a new Device Instance	128
Modifying an existing device instance	128
Removing a device instance	128
Export the device instances into a CSV file	129
Editing a device instance	129
Filtering Devices	130
Device Activation Section	131
Automatic device deactivation	131
Setting Product Space Rules	131
Setting Static Spaces (Workspaces) Rules	131
Setting Stations Rules	132
Filtering Stations	132
Rules in Combination	132
Extended Rules	133
Setting External Systems	133
Hints	134
Operation	135
Product Instances	135

Contents

How it Works	135
Filtering Product Instances	136
Displaying Product Instances	136
Adding a New Product Instance	137
Modifying an Existing Product Instance	137
Removing a Product Instance	137
Export the Product Instances to a CSV File	137
Editing a Product Instance	137
Showing and Hiding Product Parameters	138
Adding a new product parameter	139
Modifying an existing product parameter	139
Removing a product parameter	139
Editing a Product Parameter	140
External Product Sequences	140
How it Works	141
Adding a New External Product Sequence	142
Modifying an Existing External Product Sequence	142
Removing an External Product Sequence	142
Editing an External Product Sequence	142
Displaying a Product Sequence	142
Connection Status	142
How it Works	143
Live Logs	143
Assembly Line Messages	144
How it Works	144
External System Messages	145
How it Works	145
Externally Driven Line Sequence	147
How it Works	148

Contents

Add a product	148
Modify a product	148
Remove a product	148
Move a product up or down the sequence	148
Set Offsets	148
Clear Sequence	148
Device Monitoring	149
How it Works	149
Filtering Devices	150
Map tab	150
Options tab	152
Device Event Analysis	153
How it Works	154
Analysis Parameter	155
Productioncheck Parameter	157
Analysed Devices	159
Messages	159
How it works	159
Filtering	160
Display messages	161
Export messages into CSV File	161
Hints	162
Administration	163
Configure Properties (Advanced)	163
How it Works	163
Adding a Configuration Property	163
Changing a Configuration Property	163
Removing a Configuration Property	163
Fields	164

Contents

Hints	165
Properties	165
Standard Properties	165
Special Properties	166
Process Management	177
How it Works	177
Schedule a Process	178
Unschedule a Process	179
Setting Maintenance Mode for factory layout entities	179
Sensor Management	180
How it Works	180
Filtering	182
Reboot a Sensor	182
Activate/Deactivate a Sensor	182
Swap a Sensor	182
Set Sensor Position	183
Export the list of sensor into a CSV file	184
Sensor Space Configuration	184
How it Works	184
Space Configuration	184
Sensor Space Configuration	185
Hints	186
Tag Management	186
How it Works	186
Tag Management	187
Filtering	188
Reset Warning	188
Set tag type	188
Display tag information	188

Contents

UI Authorization Configuration	188
How it Works	189
Add a new activity restricting	189
Hints	190
Audit	190
How it Works	191
Adding Messages to the Audit Log	192
Copying Audit Messages	192
Cleaning Up the Audit Log	192
Reducing the Volume of Audit Messages	193
Transferring Configurations Between ACS Instances with the <code>ubisense_acs_config_transfer</code> tool	194
How it Works	194
What Can Be Transferred	195
Product Types	196
External Systems	196
Workspaces	196
Ident Zones	196
Association Zones	196
Disassociation Zones	197
Production Lines	197
Assembly Lines	197
Devices	197
What Can't Be Transferred	198
Geometry Cells, Location Cells and Areas	198
Running the Tool	198
Exporting from an ACS Instance	199
Importing into an ACS Instance	202
Using the <code>-align-stations</code> Option	206

Contents

Standalone GUI	209
Product Tag Association	209
How it Works	210
Fields	212
Options	214
Examples	216
Pulsed Assembly Line Product Feeder	228
How it works	229
Fields	231
Options	232
Examples	233
Examples	237
Example of ACS with the Atlas Copco OpenProtocol	237
Preparation of your Environment	237
Use SmartSpace Config to Set up a Site and Add Representations for your Demonstration	237
Site Setup	237
Create an ACS Area	238
Add Representations	238
Configuration in ACS	238
Add Product Types in ACS	238
Add a Production Line	238
Configure the First External System	238
Configure the Additional Parameters for the External System	239
Add an Assembly Line	240
Add Product Spaces	240
Configure the Second External System	240
Configure Additional Parameters for the External System	241
Add a Device	241

Contents

Add a Device Instance	241
Enable Product Space Rules for the Device	241
Enable External System Connectivity	241
Simulating the Two Protocols	242
Simulate the ACS Protocol	242
Simulate the Atlas Copco OpenProtocol	242
Demonstration in SmartSpace Config	243
Add Representations to ACS Product Types	243
Define Spatial Extents for ACS Product Types	243
Add a Representation for the ACS Device	243
Set the Spatial Relations	243
Add your Configured Tool to the Object Location	244
Example of ACS with tags and a disassociation zone	245
Preparation of your Environment	245
Use SmartSpace Config to Set up a Site and Add Representations for your Demonstration	246
Site Setup	246
Add Representations	246
Configuration in ACS	246
Add Product Types in ACS	246
Add Product Type Tag Position	246
Add a Production Line	247
Add an Assembly Line	247
Add Tag Profiles	248
Configure your Tag Profile Sections	249
Configure an Ident Zone for the association	250
Configure an Association Zone	250
Configure an Ident Zone for the Disassociation	251
Configure a Disassociating Zone	252

Contents

Configure an External System	253
Use the ACSProtocol to Simulate the Association	254
See Association of Tags to Products	255
See Association of Products to Tags	256
Example of ACS using the ACS Protocol for spatial relations and message forwarding	257
Preparation of your Environment	258
Use SmartSpace Config to Set up a Site and Add Representations for your Demonstration	258
Site Setup	258
Configuration in ACS	258
Add a Workspace in ACS	258
Configure an External System	258
Configure the Additional Parameter for your External System	259
Add a Device	259
Add a Device Instance	260
Enable Static Space Rules for the Device	260
Enable Message Forwarding	260
Simulate the ACS Protocol	260
Simulate the ACSProtocol	260
Demonstration in SmartSpace Config	261
View the Spatial Relation	261
Add a Representations for the ACS Device	261
Add your Configured Tool to the Object Location	262
Use the Ubisense Service Manager to Start and Stop the ACSProtocol	263
Example: Using Individual Product Lengths	263
Example: Displaying Sequence Numbers alongside Product Names	267
Example: Uses of an External Product Sequence	269
Example: Configuring Labels in the Product Tag Association GUI	273

Contents

Troubleshooting	275
Environment	275
Error messages	275

Introduction

ACS (Assembly Control System) is part of Ubisense's strategy of developing smart location-driven applications with the aim of:

- Enhancing error proofing
- Increasing efficiency
- Increasing flexibility

ACS supports this by "location-enabling" products and devices in assembly environments.

This guide describes the configuration of ACS. Installation guides are available as listed in [*Installing ACS*](#).

Additional information on the Ubisense ACS Protocol, the ACS Atlas Copco Open Protocol, Exception Messages in ACS, Testing Tools for ACS and ACS Kafka Integration are available on the [*Ubisense Documentation Portal*](#).

Terms and Abbreviations

ACS	ACS
Coexistence system	Installation supporting both DIMENSION4 and Series 7000 tags and sensors.
DIMENSION4 (D4)	The DIMENSION4 range of tags, sensors, and RTLS software
DSP	Digital Signal Processor
DHCP	Dynamic Host Configuration Protocol
External Product Sequence	An expected sequence of products for use in assembly lines provided by an external system
Multicast	Sending of one data stream to multiple receivers (multicast group)
Sensor	UWB receiver unit
Sequence numbers	A rolling sequence of numbers from an external system that can be displayed in ACS alongside product names
Series 7000	The S7000 range of tags, sensors, and S7000 RTLS software
SmartSpace	The SmartSpace RTLS software
Tag	Active UWB transmitting radio unit
UWB	Ultra Wide Band. Radio signal with a bandwidth of around 1.5 GHz
VIN	Vehicle identification number. Equivalent to product identification

Installing ACS

The following guides provide information on installing ACS alongside other Ubisense applications:

- *Ubisense Installation Guide for SmartSpace + Series7000 + ACS*
(SmartSpaceS7kACSInstall.pdf)
- *Ubisense Installation Guide for SmartSpace + Series7000 + ACS with Site connector*
(SmartSpaceS7kACSSCInstall.pdf)
- *Ubisense Installation Guide for SmartSpace + DIMENSION4 + ACS*
(SmartSpaceD4ACSInstall.pdf)
- *Ubisense Installation Guide for SmartSpace + DIMENSION4 + ACS with Site connector*
(SmartSpaceD4ACSSCInstall.pdf)
- *Ubisense Installation Guide for SmartSpace + DIMENSION4 + Series7000 + ACS*
(SmartSpaceD4S7kACSInstall.pdf)
- *Ubisense Installation Guide for SmartSpace + DIMENSION4 + Series7000 + ACS with Site connector* (SmartSpaceD4S7kACSSCInstall.pdf)

Upgrading ACS

The following guides provide information on migrating ACS 2.6 to SmartSpace:

- *Ubisense Installation Guide for Migrating ACS 2.6 + Series 7000 to SmartSpace* (ACS26MigrateSSS7kACS.pdf)
- *Ubisense Installation Guide for Migrating ACS 2.6 + Series 7000 with Site connector to SmartSpace* (ACS26MigrateSSS7kACSSC.pdf)
- *Ubisense Installation Guide for Migrating ACS 2.6 + DIMENSION4 to SmartSpace* (ACS26MigrateSSD4ACS.pdf)
- *Ubisense Installation Guide for Migrating ACS 2.6 + DIMENSION4 with Site connector to SmartSpace* (ACS26MigrateSSD4ACSSC.pdf)
- *Ubisense Installation Guide for Migrating ACS 2.6 + DIMENSION4 Series 7000 to SmartSpace* (ACS26MigrateSSD4S7kACS.pdf)
- *Ubisense Installation Guide for Migrating ACS 2.6+ DIMENSION4 Series 7000 with Site connector to SmartSpace* (ACS26MigrateSSD4S7kACSSC.pdf)

Overview

ACS consists of two main parts:

- **Server middleware:** The server middleware is the link between sensors and external systems, like device controllers. The middleware receives tag locations for devices and products from the sensors, and decides on the basis of spatial properties and relationships what to send e.g. to device controllers, such as VIN numbers of products at which devices shall be operated.
- **Application software:** The application software has a graphical user interface allowing the user to interact with ACS. The main purpose of the application software is to configure the data regarding the assembly of products. Besides that there are two separate very simple graphical user interfaces used at operation of ACS to enter information about actual products in assembly.

The rest of this manual describes in detail the configuration, administration and operational tasks to be performed with the main ACS user interface.

Configuring ACS installations in SmartSpace

From version 2.7 onwards, ACS was installed with SmartSpace in place of earlier Ubisense services. Where previously Ubisense Site Manager would have been used for some configuration of ACS, some of these activities were carried out using SmartSpace Config. With the release of version 2.8, support for ACS in SmartSpace has been enhanced, in particular enabling you to see ACS objects in SmartSpace Config and in the web map. With these additional changes Ubisense Site Manager is no longer required.

After you have installed ACS, configuration activities outside the ACS Main GUI are:

- Creation of a Geometry Cell and Location Cell in SmartSpace

Adding cells to your site is described in [Cells](#) on the SmartSpace website on the Ubisense Documentation Portal

- Creation of ACS areas
- Import of suitable graphics for use as models for ACS product types

ACS products can be viewed in the Place objects workspace in SmartSpace Config. Additionally, depending on the SmartSpace modules you have licensed, you can use ACS types in searches on the web map or in business rules. See the SmartSpace website on the Ubisense Documentation Portal for further information.

Creating areas for use in ACS

In ACS, areas are used to partition the site model. Usually an area will represent some complete, but relatively self-contained region of the site, such as one floor of a building, or one functional area of a large floor. ACS areas can include walls which are used to create a simple visualization of the area's layout. Walls are defined in text files containing a list of coordinates for the start and end point of each wall in an area. To create an area with walls for use in ACS, you must first define the walls and then load them into a new area. The extent of the area is automatically created. After they have been defined, you can view the areas in the map views in ACS.

Command-line tools are available for working with walls and areas for ACS:

- **ubisense_load_walls** creates a new area with a given name with wall details read from a specified file
- **ubisense_export_walls** allows you to export existing wall data for an area for import into a different dataset

Other command-line tools enable you to import and export area data in **.xbd** format:

- **ubisense_import_area_data** allows you to import area data from a file into ACS
- **ubisense_export_area_data** allows you to export existing area data from ACS

You can download these tools using the Ubisense Application Manager where they can be found in the **DOWNLOADABLES** tab under **Ubisense Generation 2.X > ACS > Tools**.

Creating an Area with Walls for ACS

The following example shows how a file of co-ordinates that define the locations of a number of walls can be used to create an area for use in ACS.

The file **walls-area-1.txt** contains details of an area with each wall defined in a line of details containing a pair of (x,y) co-ordinates for the beginning and end of the wall:

```
-35.25 -32.25 -35.25 25.35
-35.25 -32.25 -2.6 -32.25
-35.25 -25.1 -35.25 25.35
-34.95 -31.95 -34.95 -25.3
-34.95 -31.95 -16.76 -31.95
```

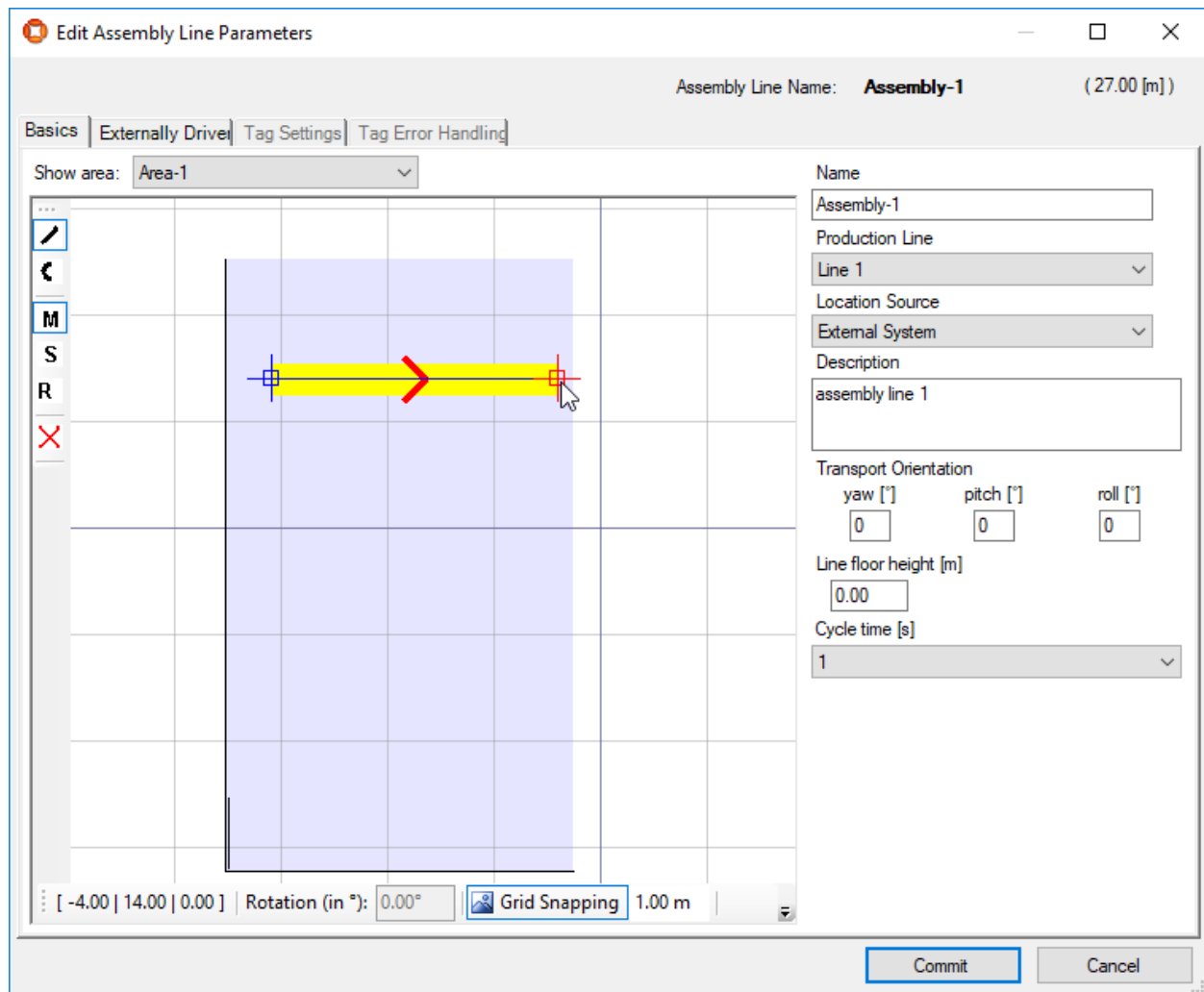
The co-ordinates are calculated from the origin on your site map. You can specify an offset during area creation to shift the area and walls relative to the origin. The height of the area is also specified during this process.

To create a new area called Area-1 containing these walls with a vertical extent of 1.5 m, run the following command:

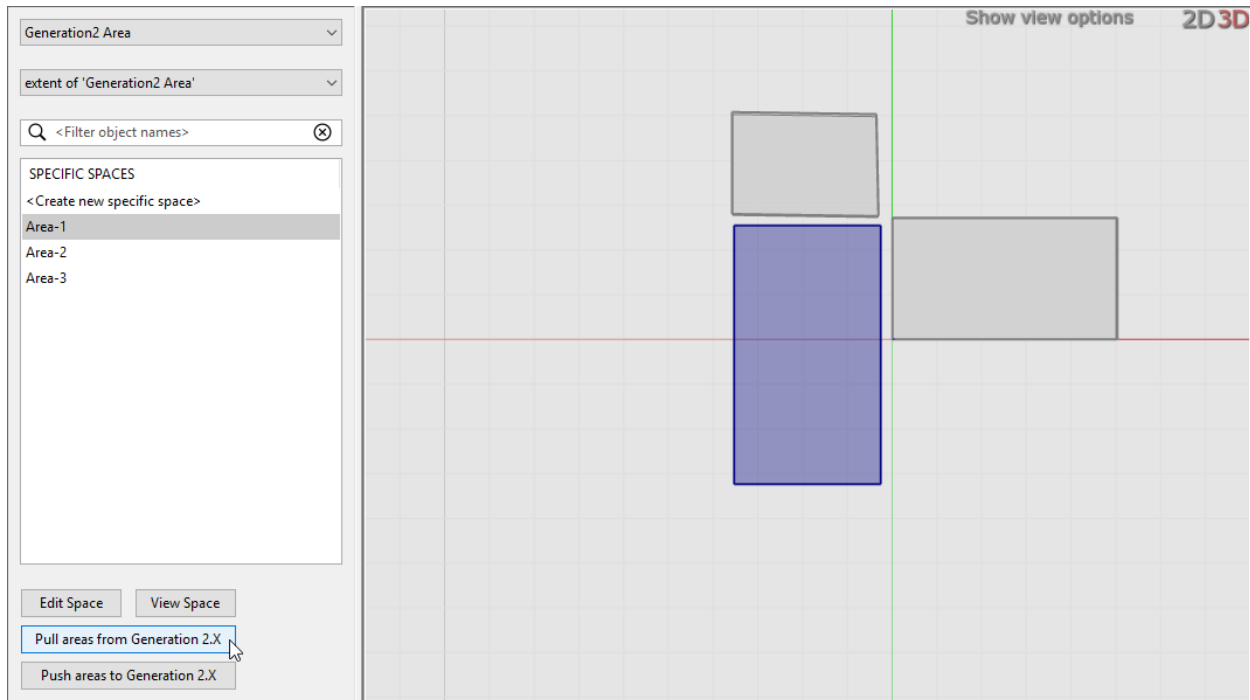
```
ubisense_load_walls create Area-1 "Area 1" 0 1.5 walls-area-1.txt
```

In the ACS Main GUI, you can now select the area for display in maps for example in the Edit Assembly Parameters dialog:

Configuring ACS installations in SmartSpace



You can view the extents of imported areas in SmartSpace by using the **Pull areas from Generation2.X** button in the Spatial properties workspace:



Note: You cannot see the details of walls in SmartSpace.

After you have pulled details of ACS areas into SmartSpace Config you can edit their extents. You must then use the **Push areas to Generation2.X** button to propagate the changes to the ACS Main GUI. Similarly, if you edit areas extents in the ACS Main GUI and you want to see these changes in SmartSpace, you must use the **Pull areas from Generation2.X** button to ensure the details match.

You can also create ACS areas directly in SmartSpace Config and define their extents. However areas created in this way cannot have walls within them and are not visible in the ACS Main GUI. See Creating areas for use in ACS in the SmartSpace section of the Ubisense Documentation Portal.

You can use the **ubisense_load_walls** command to list all areas whether imported or created in SmartSpace. For example, the three areas shown in the preceding screenshots are listed as follows:

```
Area-3 Generated by SmartSpace Config
Area-2 Area 2
Area-1 Area 1
```


Copying models for use in ACS

Importing models into ACS from SmartSpace

You can import 2D models into ACS from SmartSpace. Note, however, that the 3D view engine is not the same in ACS and SmartSpace and you cannot share 3D representations between SmartSpace and ACS.

When you want to use a representation in ACS, the original image size, in pixels, must be in terms of powers of 2. So, for example, a square image could be 256 x 256 or 512 x 512. Rectangular images can be, for example, 256 x 128 or 256 x 512. If the original images do not conform to this rule, then, although they appear as expected in SmartSpace, when they are imported into ACS the representations' origins may be shifted or their scaling distorted.

Note: If your image does have dimensions that conform to the power of 2 rule, you could add transparent padding to the image to make it comply.

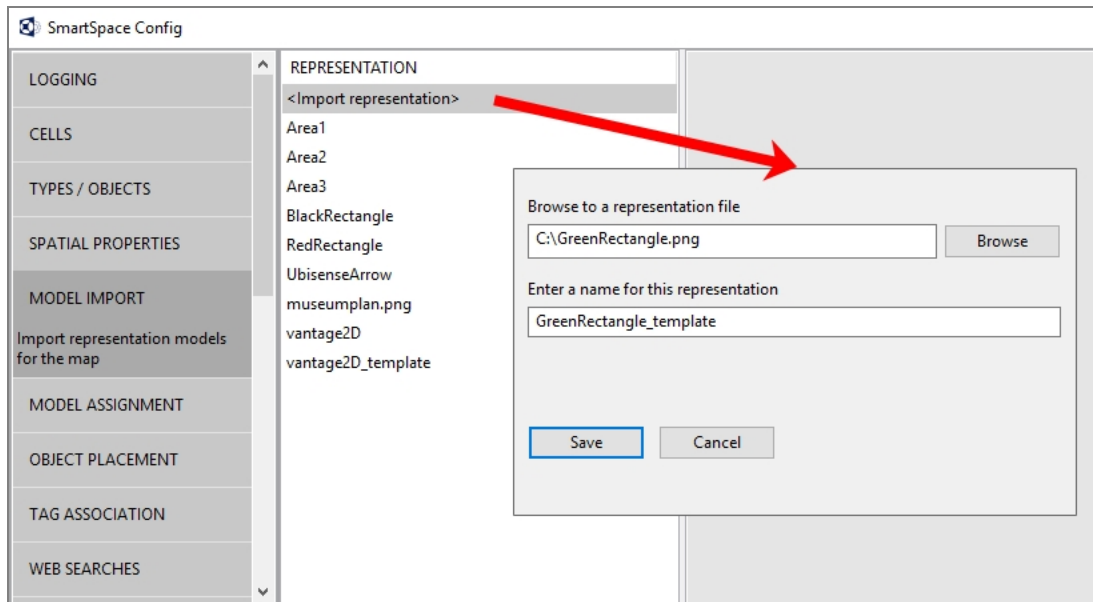
You import 2D models using the Model import workspace where you can select an image file for import and give it a name.

For any models you intend to associate with product types, you must include the suffix **_template** in their names.

To import an object representation:

1. In SmartSpace Config click MODEL IMPORT to open the Model import workspace.
2. Double-click **<Import representation>**.
3. Navigate to the image file.
4. The filename, including its suffix, becomes the default name of the representation.

Edit the name ensuring that you add the suffix **_template** to the filename.



5. Click **Save**.
6. You can now adjust the size and orientation of the representation, and set its origin to match the object it will depict.

See *Model import* on the SmartSpace website at <http://www.ubisensesmartspace.com/> for further information on manipulating imported representations.

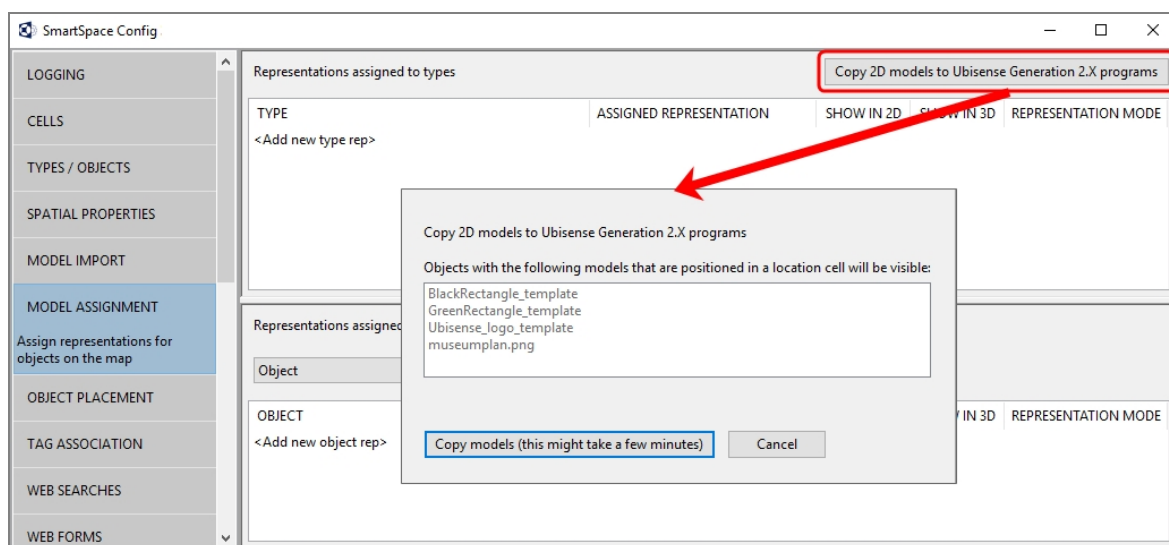
When you have imported the models you require, you can copy them to ACS.

Copying models to ACS

To copy 2D models to ACS:

1. In SmartSpace Config, click **MODEL ASSIGNMENT** to open the Model assignment workspace.
2. Click the **Copy 2D models to Ubisense Generation2.X programs** button to display a list of 2D models to be copied.

Configuring ACS installations in SmartSpace



All objects listed in the dialog will be imported into ACS. However, only those whose names end in **_template** will be offered as representations when defining product types.

3. Click the **Copy models...** button and the files are copied to ACS.

When the operation is complete, the dialog closes and you are returned to the Model assignment workspace.

You can now use the templates when defining ACS Product types.

ACS types in SmartSpace

A number of ACS types are available in SmartSpace to which you can add properties and representations .

The following table summarizes ACS types and their properties in SmartSpace, and how you can use them is discussed below.

ACS type	Description	Spatial properties visible in SmartSpace	Other properties visible in SmartSpace
ACS Object	Parent type for all ACS Object types	–	ACS name
ACS Device	Parent type for all ACS Device types	extent	ACS name
ACS External System	Parent type for all ACS External System types	–	ACS name Actual Connection Status Description Desired Connection Status IP Address Port Protocol Protocol Version Remote station is server Requested Connection Status
ACS Ident Zone	Parent type for all ACS Ident Zone types	preparation zone trigger zone	ACS name

ACS type	Description	Spatial properties visible in SmartSpace	Other properties visible in SmartSpace
ACS Product	Parent type for all ACS Product types	–	ACS name
ACS Station	Parent type for all ACS Station types	extent	ACS name
ACS Workspace	Parent type for all ACS Workspace types	extent	ACS name
Outgoing ACS Event	Parent type for all Outgoing ACS Event types	–	ACS name Maintenance Mode Requested Maintenance Mode

You can use SmartSpace Config to create properties for ACS types. However, there are limits to what you can do with ACS types:

- You must not create types based on any of the ACS types.
- You must not create or rename ACS objects using SmartSpace Config.
- You must not create properties that are 'used as the name of the type' for ACS types.

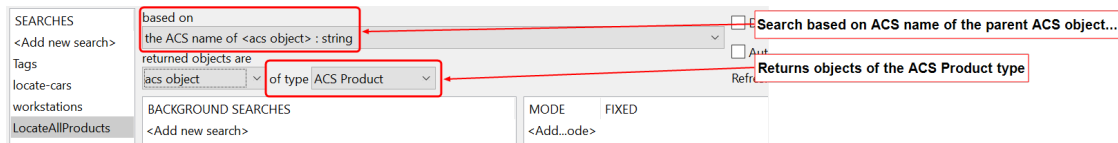
Extents of ACS types

SmartSpace Config will show spatial properties automatically for ACS Device, ACS Ident Zone, ACS Station, ACS Workspace types and you can edit them in the Spatial properties workspace. Do not delete any object-specific spaces in SmartSpace because ACS may then delete the object entirely.

ACS Product spaces are not visible in SmartSpace, and any space properties you add to ACS Products in SmartSpace Config will not be visible in the ACS Main GUI.

Searches using ACS types

If you have licensed the Visibility component of SmartSpace, you create searches to use with the web map and web forms for display in a browser. When creating a search for an ACS type, it is based on the ACS name property. For example a search for ACS Products would be defined in the Web searches workspace as shown below:



Using the Requested Connection Status property with ACS External Systems

The ACS External System type has a number of properties whose values can be seen in SmartSpace. However, with one exception, you cannot set these values in SmartSpace. If you attempt to do so they will change back to the real values from ACS. The special case is the Requested Connection Status which you can set to one of three permitted values:

- Connected
- Disconnected
- Restart

This value is sent to the Desired Connection Status in ACS. If you have the Visibility component licensed, you can create a web search and a web form that allows users to connect or disconnect external systems.

Synchronizing SmartSpace properties and ACS product parameters

ACS product parameters can be pushed into SmartSpace properties by following these steps:

1. Identify the property to sync in the ACS Main GUI.

Go to **Operation > Product Instances** and click **Show parameters**. Select a product and any parameters associated with it are listed.

2. Create a corresponding property in SmartSpace Config.

In the Types and objects workspace, select the ACS type in the upper part of the types and properties list. Double-click **<Create new property>** and enter the details of the property.

3. Set up the transfer process with the **ubisense_acs_smartspace_sync_admin** tool.

You can get the **ubisense_acs_smartspace_sync_admin** tool using the Application Manager where you can find it in the **DOWNLOADABLES** tab under **Ubisense Generation 2.X > SmartSpace backward tools**.

The command-line usage is as follows:

```
ubisense_acs_smartspace_sync_admin.exe create <property> <type>  
<internal>
```

where:

- <property> is the name in the ACS Main GUI Product Instances screen
- <type> is the type of object that has a value for the parameter
- It is the internal name of the type, which must inherit "ACS::Physical"

For example, "ACS::Physical" and "ACS::Product" are both valid and user-defined product types prefixed with "ACS::" are also valid

- <internal> is the internal name of the the SmartSpace property, for example
[Custom]sequence_number<ACS::Product>

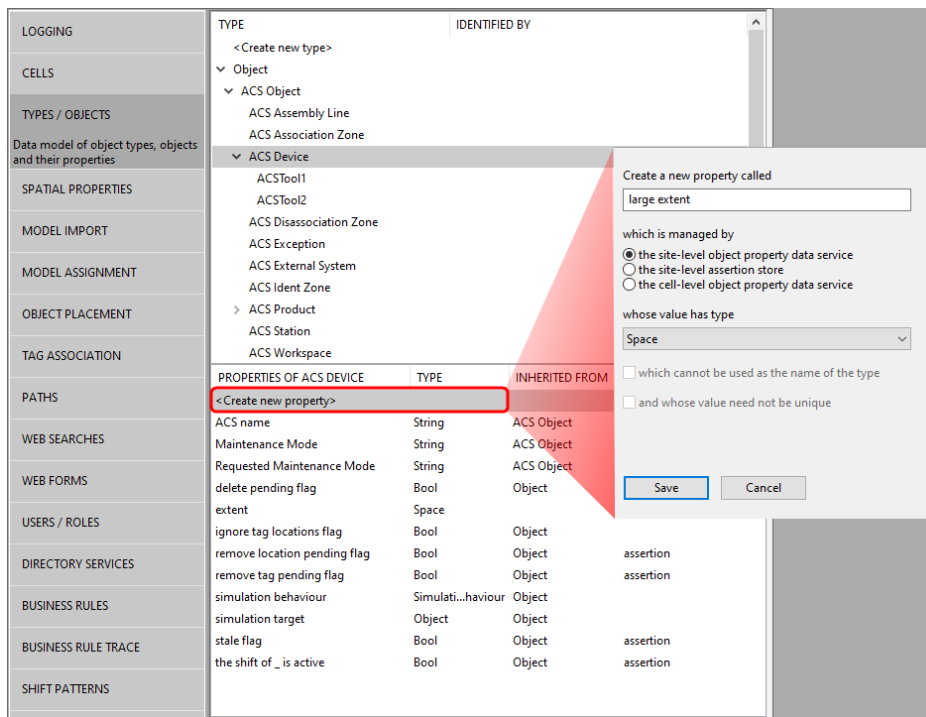
Adding Extents for ACS Devices in SmartSpace

If you need various hysteresis values, you can use SmartSpace Config to configure multiple extents using different spatial property names, and you can then select them in the ACS Main GUI. The steps to take are summarized below. See Types and objects and Spatial properties on the SmartSpace website on the Ubisense Documentation Portal for further information on configuring types and their spatial properties in SmartSpace Config, and the section on Devices for information on configuring devices in ACS.

To configure additional non-default extents for ACS devices:

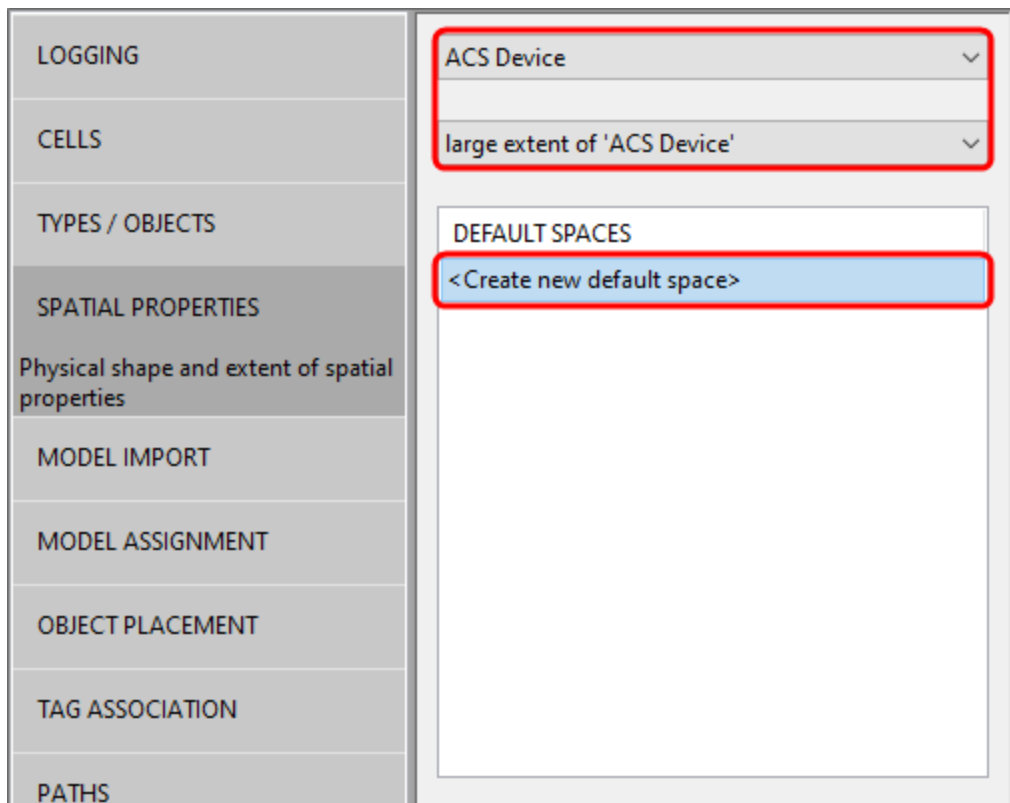
In SmartSpace Config:

1. In TYPES / OBJECTS, create a new property of type "Space" for the ACS Device type or any of its descendants:



2. In SPATIAL PROPERTIES, create a default space for the property you just created:

Configuring ACS installations in SmartSpace



In the ACS Main GUI

3. In the Device Instances dialog, choose the space you just created from the Space dropdown:

The screenshot shows a 'Device Parameters' dialog box with the following fields and values:

- Device Name:** A7773456 Tool 1
- Device Type:** Tool 1 (dropdown)
- Tag-ID:** (empty text field)
- Tag-Profile:** (empty dropdown)
- Space:** large extent (dropdown, highlighted with a red rectangle)
- Buttons:** Commit, Cancel

- Depending on your workflow and how this is done across multiple datasets, changing the default extent might be confusing, so always consider giving non-default extents a suitable property name.

Displaying the ACS tag representation in SmartSpace

In ACS, tags are displayed using a green representation. To enable the same default representation in SmartSpace, for example to be visible in the Place objects workspace, download and run the **ubisense_toggle_v2_tag_rep** tool.

Download the tool using Ubisense Application Manager. You can find the **ubisense_toggle_v2_tag_rep** tool by choosing the **DOWNLOADABLES** tab and going to **Ubisense Generation 2.X > ACS > Tools**. Select the **ubisense_toggle_v2_tag_rep** tool, click **Download selected items** and then choose your download location and click **Start download**.

To switch the default representation on, use the following command:

```
ubisense_toggle_v2_tag_rep on
```

User Interface

The user interface of ACS is designed to both support a work flow of configuration tasks in order to set up a complete system and to allow the user to easily select single configuration topics if configurations have to be changed or administration tasks have to be performed.

This chapter describes the ACS user interface and general activities such as:

- Navigating and zooming within the graphics window
- Accessing Ubisense Platform Applications directly from ACS
- Changing your password
- Changing the language used in ACS
- Configuring the display of objects in map view
- Applying column sort and filters to organize displays of data
- Exporting data from ACS.

Subsequent chapters describe the configuration, operational and administrative tasks.

User Interface Components

The ACS user interface consists of several parts.

User Interface

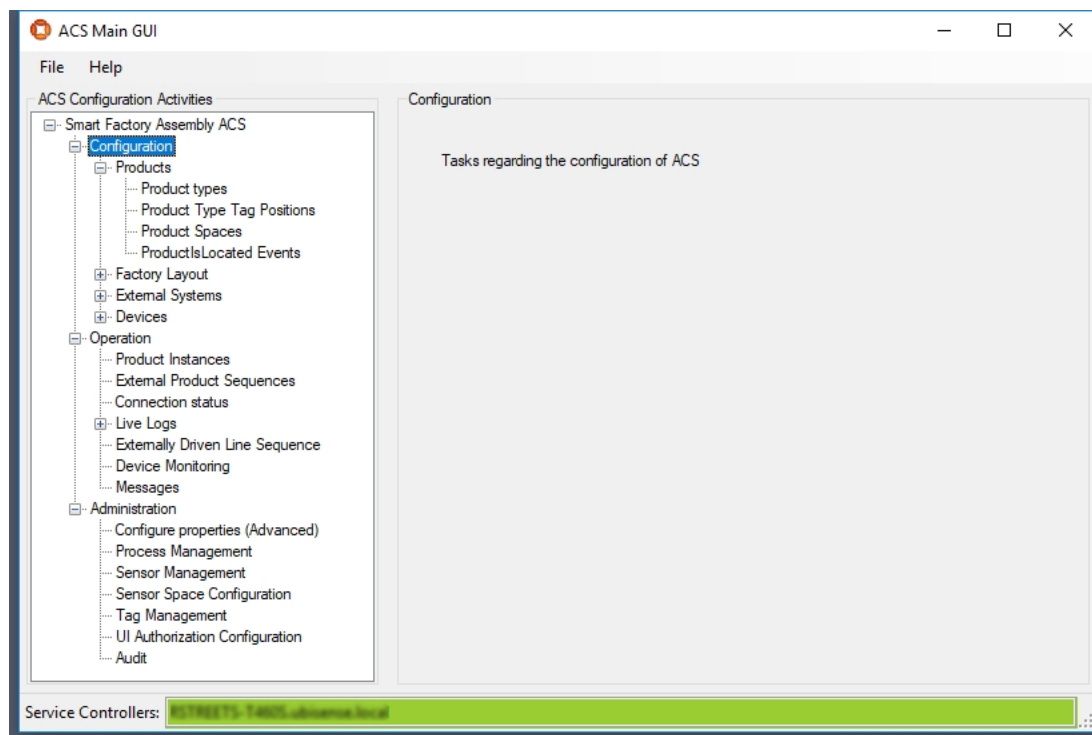
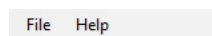


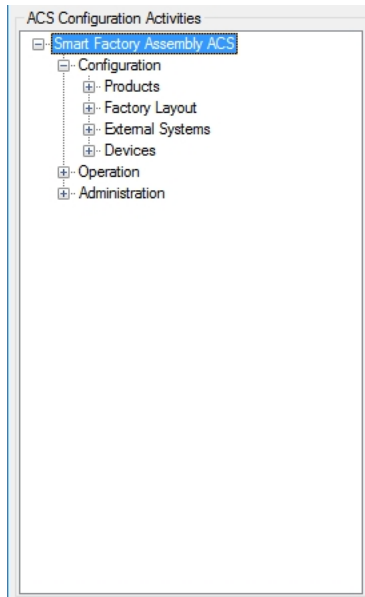
Figure: ACS Main GUI

The Menu Bar



The **menu bar** provides lists of general actions to be performed. The entries of the menu strip can change dynamically.

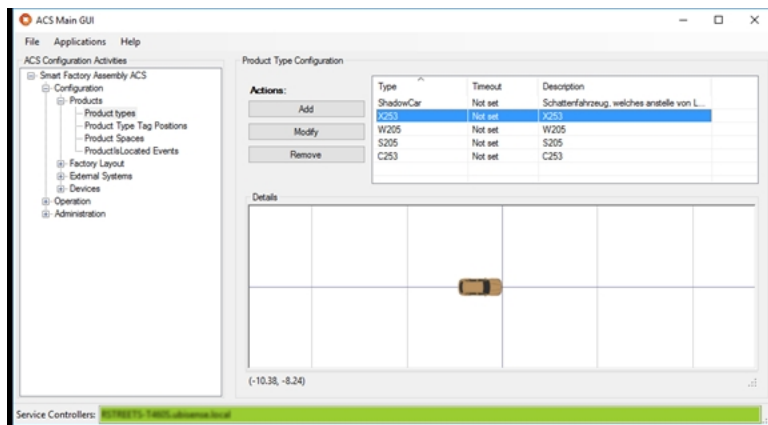
The Task Tree View



The **task tree** view allows you to select pages to perform configuration tasks or do some administration of ACS.

If you want to start a completely new ACS configuration perform the tasks, top down in the order they are within the tree.

The Task Page



The **task page** changes its contents depending on what you have selected in the task tree view. Each page provides controls to perform a single, self contained configuration or administration task.

The Status Bar



The **status bar** shows the service controller names. Usually it is just one name but it is possible that you have more than one service controller configured.

Under **Administration > Configure properties (Advanced) > Group ACS >**

ProductionControllerNames you can configure appropriate the controller names of production systems that you may be connected to. If you add such a name and are connected to that controller, the field changes to yellow and the names of the controller are extended with *Connected with production dataset!*



Navigating and Zooming within the Graphics Window

Some tabs display a map of the workshop or assembly hall, together with objects that you want to configure, such as monitored areas, sensors, static assembly points or assembly lines. These map controls have common functions to navigate and change the view.

All maps can show their contents in 2D in a top-down view. Where necessary the map view can be changed to 3D, so that you can visualize the vertical location and extent of objects.

The following image shows a 2D top-down map view:



Figure: 2D Map View

The 2D map view provides the following navigation functions:

Function	Description
Pan	<i>Mouse:</i> Left click the mouse on the map, keeping the left button pressed, move the mouse to pan the view. <i>Keyboard:</i> Use the arrow keys to pan the view.
Zoom	<i>Mouse:</i> Right click the mouse on the map, keeping the right button pressed, move up to zoom in and move down to zoom out. <i>Keyboard:</i> Use PgUp to zoom out of and PgDn to zoom into the map.
Rotate	<i>Mouse+keyboard:</i> Press and hold the Shift key on the keyboard, left click the mouse on the map, move left to rotate the view clockwise and move right to rotate the view counter-clockwise. <i>Keyboard:</i> Use the + and - keys to rotate the view clockwise and anticlockwise respectively.

For maps providing a 3D view too you can toggle between 2D and 3D:

- Press the **3** key on the keyboard to switch to 3D view;
- Press the **2** key on the keyboard to switch to 2D view.

The image below shows a 3D map view:

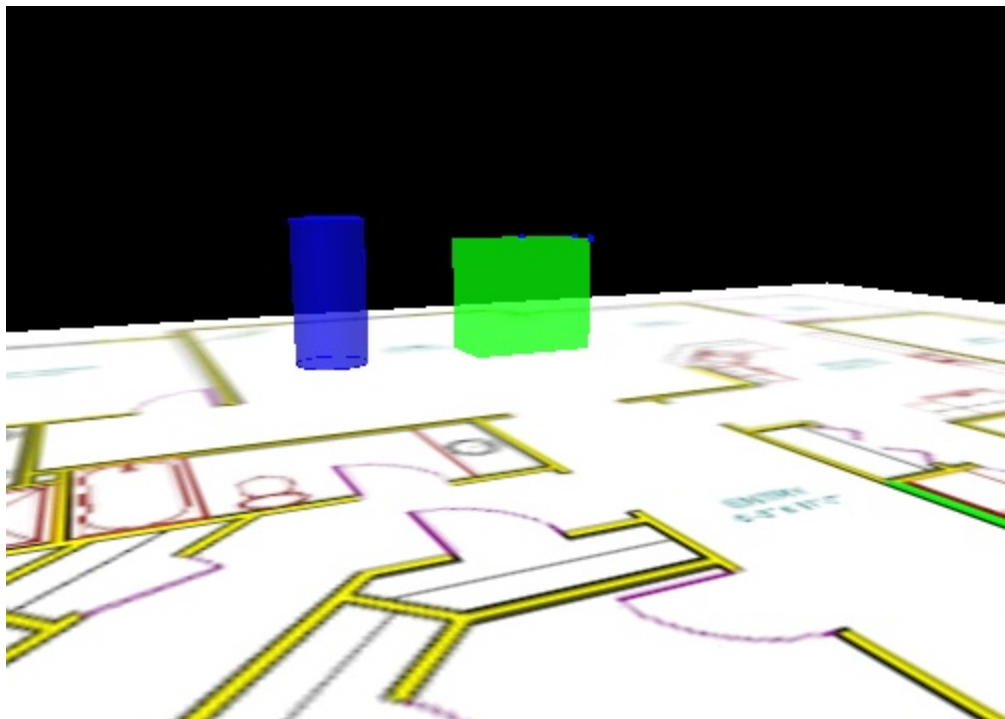


Figure: 3D Map View

The 3D map view provides the following additional navigation functions:

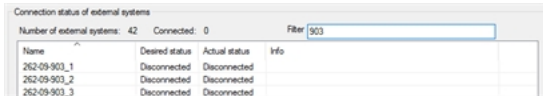
Function	Description
Rotate	Press and hold the Shift key on the keyboard, left click the mouse on the map, move left to rotate the view clockwise along the vertical axis and move right to rotate the view counter-clockwise. Moving the mouse up or down will rotate the view along the horizontal axis.

Displaying Data

ACS provides methods to filter, sort and export data displayed in many of the tables in the GUI. This chapter describes how to use these features.

Using Simple Filters

ACS provides a simple filter on some tables in the ACS user interface.



Connection status of external systems			
Number of external systems: 42		Connected: 0	Filter (903)
Name	Desired status	Actual status	Info
262-09-903_1	Disconnected	Disconnected	
262-09-903_2	Disconnected	Disconnected	
262-09-903_3	Disconnected	Disconnected	

Figure: Example of Simple Filter

How it Works

In a table which has a simple filter, type text into the **Filter** field. The table displays all entries which contain the text you entered.



The filter is case sensitive.

To remove the filter, delete the text.

Sorting by Column

Where the ACS user interface displays data in a tabular format, you can sort the entries by any one of the columns. Entries can be sorted in alphabetical or reverse-alphabetical order.

By default, when you first display a tab, the entries are displayed in alphabetical order by the left-most column. Any changes to sorting are retained until you close down ACS.

To sort on a column, click in the column heading. Click again to reverse the sort order. The current column and the direction of sorting are identified by an upward-pointing or downward-pointing arrow above the column heading.

For example, in the Product Instances Tab, tags are displayed sorted by Product Name:

User Interface

Product Instances

Actions:

Add

Modify

Remove

CSV Export

Filter options:

Product type:

Product name:

Sequence number:

Tag-ID:

Info:

Product count: 209

Clear filter

Show parameters

Product Name	Sequence number	Product Type	Modification Time	Tag-ID	Tag Position	Association Time	Info
11681970	359	VEHICLECARRIER	12/09/2018 07:57:55	00:11:CE:00:11:68:19:70	Default	12/09/2018 10:00:13	Ass
11681980	360	VEHICLE	12/09/2018 10:34:31	00:11:CE:00:11:68:19:80	Default	12/09/2018 15:32:07	Ass
11681990	361	VEHICLECARRIER	11/09/2018 14:58:27	11:68:19:90	Default	11/09/2018 15:04:30	Mar
11682000	362	VEHICLECARRIER	12/09/2018 10:31:30				
11682010	363	VEHICLECARRIER	11/09/2018 14:58:29	11:68:20:10	Default	11/09/2018 15:04:49	Mar
11682020	364	VEHICLECARRIER	11/09/2018 14:58:30	11:68:20:20	Default	11/09/2018 15:06:00	Mar
11682030	365	VEHICLE	11/09/2018 14:58:32	11:68:20:30	Default	11/09/2018 15:06:08	Mar
11682040	366	VEHICLE	11/09/2018 14:58:33	11:68:20:40	Default	11/09/2018 15:06:40	Mar
11682050	367	VEHICLECARRIER	11/09/2018 14:58:34	11:68:20:50	Default	11/09/2018 15:06:47	Mar
11682060	368	VEHICLE	11/09/2018 14:58:35	11:68:20:60	Default	11/09/2018 15:06:30	Mar
11682070	369	VEHICLECARRIER	11/09/2018 14:58:36	11:68:20:70	Default	11/09/2018 15:12:12	Mar
11682080	370	VEHICLECARRIER	11/09/2018 16:14:25				
11682090	371	VEHICLECARRIER	11/09/2018 16:14:25				
11682100	372	VEHICLECARRIER	11/09/2018 16:14:25				
11682110	373	VEHICLECARRIER	11/09/2018 15:07:23	11:68:21:10	Default	11/09/2018 15:12:23	Mar
11682120	374	VEHICLECARRIER	11/09/2018 16:41:08				
11682130	375	VEHICLECARRIER	11/09/2018 16:41:08				
11682140	376	VEHICLECARRIER	11/09/2018 16:41:08				
11682150	377	VEHICLECARRIER	11/09/2018 15:07:23	11:68:21:50	Default	11/09/2018 15:10:49	Mar
11682160	378	VEHICLE	12/09/2018 08:07:17				
11682170	379	VEHICLE	12/09/2018 08:07:17				
11682180	380	VEHICLE	12/09/2018 08:07:17				
11682190	381	VEHICLE	12/09/2018 08:07:17				
11682200	382	VEHICLE	12/09/2018 08:07:17				

Displaying all instances.

To sort by Association Time, click in the Association Time column heading and the table is sorted accordingly:

Product Instances

Actions:

Add

Modify

Remove

CSV Export

Filter options:

Product type:

Product name:

Sequence number:

Tag-ID:

Info:

Product count: 209

Clear filter

Show parameters

Product Name	Sequence number	Product Type	Modification Time	Tag-ID	Tag Position	Association Time	Info
CAR-002	0002	VEHICLE	21/06/2018 13:37:21	00:11:CE:00:00:00:00:02	Default	01/09/2018 14:53:35	Ass
CAR-003	0003	VEHICLE	21/06/2018 13:43:35	00:11:CE:00:00:00:00:03	Default	01/09/2018 14:54:04	Ass
CAR-010	0010	VEHICLE	04/09/2018 16:54:08	00:11:CE:00:00:00:00:10	Default	04/09/2018 16:54:08	Ass
CAR-011	0011	VEHICLE	04/09/2018 16:54:08	00:11:CE:00:00:00:00:11	Default	04/09/2018 16:54:08	Ass
CAR-012	0012	VEHICLE	04/09/2018 16:54:08	00:11:CE:00:00:00:00:12	Default	04/09/2018 16:54:08	Ass
CAR-015	0015	VEHICLE	04/09/2018 16:54:08	00:11:CE:00:00:00:00:15	Default	04/09/2018 16:54:08	Ass
CAR-013	0013	VEHICLE	04/09/2018 16:54:08	00:11:CE:00:00:00:00:13	Default	04/09/2018 16:54:08	Ass
CAR-017	0017	VEHICLE	04/09/2018 16:54:08	00:11:CE:00:00:00:00:17	Default	04/09/2018 16:54:08	Ass
CAR-019	0019	VEHICLE	04/09/2018 16:54:08	00:11:CE:00:00:00:00:19	Default	04/09/2018 16:54:08	Ass
CAR-018	0018	VEHICLE	04/09/2018 16:54:08	00:11:CE:00:00:00:00:18	Default	04/09/2018 16:54:08	Ass
11681990	361	VEHICLECARRIER	11/09/2018 14:58:27	11:68:19:90	Default	11/09/2018 15:04:30	Mar
11682010	363	VEHICLECARRIER	11/09/2018 14:58:29	11:68:20:10	Default	11/09/2018 15:04:49	Mar
11682020	364	VEHICLECARRIER	11/09/2018 14:58:30	11:68:20:20	Default	11/09/2018 15:06:00	Mar
11682030	365	VEHICLE	11/09/2018 14:58:32	11:68:20:30	Default	11/09/2018 15:06:08	Mar
11682060	368	VEHICLE	11/09/2018 14:58:35	11:68:20:60	Default	11/09/2018 15:06:30	Mar
11682040	366	VEHICLE	11/09/2018 14:58:33	11:68:20:40	Default	11/09/2018 15:06:40	Mar
11682050	367	VEHICLECARRIER	11/09/2018 14:58:34	11:68:20:50	Default	11/09/2018 15:06:47	Mar
11682150	377	VEHICLECARRIER	11/09/2018 15:07:23	11:68:21:50	Default	11/09/2018 15:10:49	Mar
11682070	369	VEHICLECARRIER	11/09/2018 14:58:36	11:68:20:70	Default	11/09/2018 15:12:12	Mar
11682110	373	VEHICLECARRIER	11/09/2018 15:07:23	11:68:21:10	Default	11/09/2018 15:12:23	Mar
11681910	353	VEHICLE	12/09/2018 07:57:55	11:68:19:10	Default	12/09/2018 07:57:55	Mar
11681920	354	VEHICLE	12/09/2018 07:57:55	11:68:19:20	Default	12/09/2018 07:58:19	Mar
11681950	357	VEHICLE	12/09/2018 07:57:55	00:11:CE:00:11:68:19:50	Default	12/09/2018 09:28:02	Ass
11681960	358	VEHICLECARRIER	12/09/2018 07:57:55	00:11:CE:00:11:68:19:60	Default	12/09/2018 09:29:16	Ass

Displaying all instances.

Sorting columns with check boxes

When a list view column contains a check box, the first click on the column header makes the checked items display at the top of the list. The checked items are then sorted on other columns in the table.

Exporting Data from Tables

Data displayed in any table in the ACS user interface can be copied to the Clipboard and imported into other applications. All items currently in the table are copied, even if they are not visible.

To copy data to the Clipboard, click in the relevant table and press CTRL+C.

ACS encloses each entry with double quotes and separates items within a row with a comma.



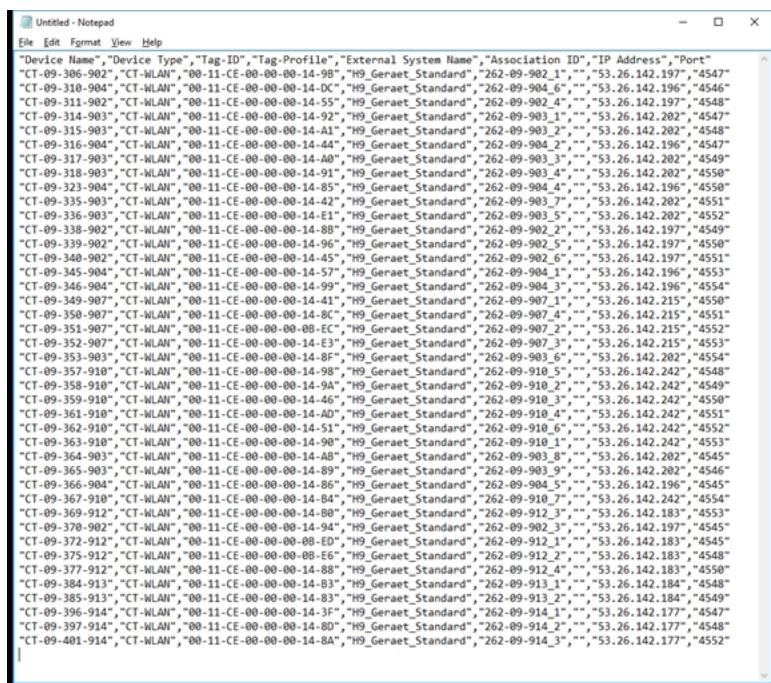
Quotes in the names of any items in the dataset are escaped with a backslash.

For example, copy the following from the Device Instances Tab:

Device Name	Device Type	Tag-ID	Tag-Profile	External System Nar
CT-09-306-902	CT-WLAN	00-11-CE-00-00-00-14-9B	H9_Geraet_Standard	262-09-902_1
CT-09-310-904	CT-WLAN	00-11-CE-00-00-00-14-DC	H9_Geraet_Standard	262-09-904_6
CT-09-311-902	CT-WLAN	00-11-CE-00-00-00-14-55	H9_Geraet_Standard	262-09-902_4
CT-09-314-903	CT-WLAN	00-11-CE-00-00-00-14-92	H9_Geraet_Standard	262-09-903_1
CT-09-315-903	CT-WLAN	00-11-CE-00-00-00-14-A1	H9_Geraet_Standard	262-09-903_2
CT-09-316-904	CT-WLAN	00-11-CE-00-00-00-14-44	H9_Geraet_Standard	262-09-904_2
CT-09-317-903	CT-WLAN	00-11-CE-00-00-00-14-A0	H9_Geraet_Standard	262-09-903_3
CT-09-318-903	CT-WLAN	00-11-CE-00-00-00-14-91	H9_Geraet_Standard	262-09-903_4
CT-09-323-904	CT-WLAN	00-11-CE-00-00-00-14-85	H9_Geraet_Standard	262-09-904_4
CT-09-335-903	CT-WLAN	00-11-CE-00-00-00-14-42	H9_Geraet_Standard	262-09-903_7
CT-09-336-903	CT-WLAN	00-11-CE-00-00-00-14-E1	H9_Geraet_Standard	262-09-903_5

Paste into Notepad and the additional unseen rows and columns of data are also included:

User Interface



Change Password

Standard user

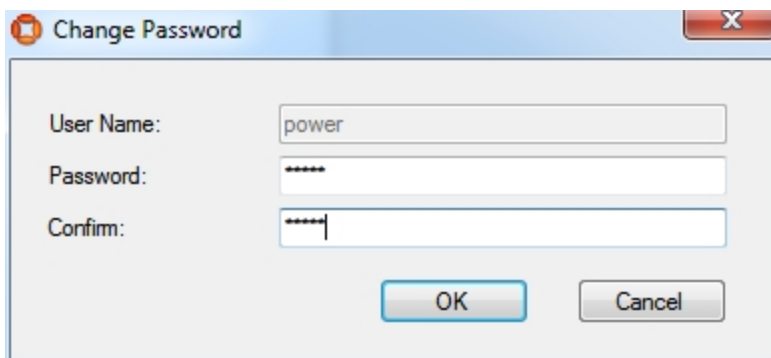
Use this to change your password when authorization is enabled in ACS.



It is *not* possible to change your user name.

How it Works

1. From the menu bar, select **File > Change Password**.

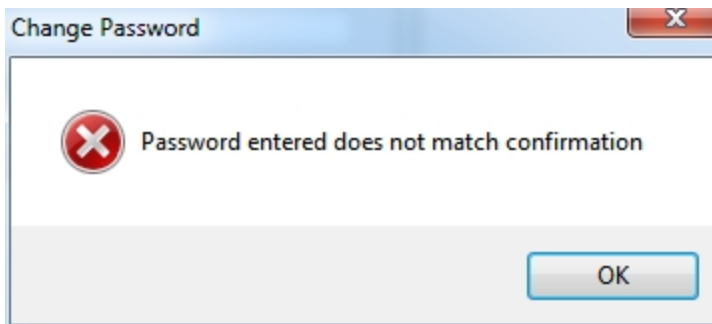


2. Type in your new password in both fields **Password** and **Confirm**.

3. Click **OK** to change your password.
4. If everything was OK you will get the following message.



If the fields did not match you will get the following message.



Hints

You *cannot* enter an empty password.

Language

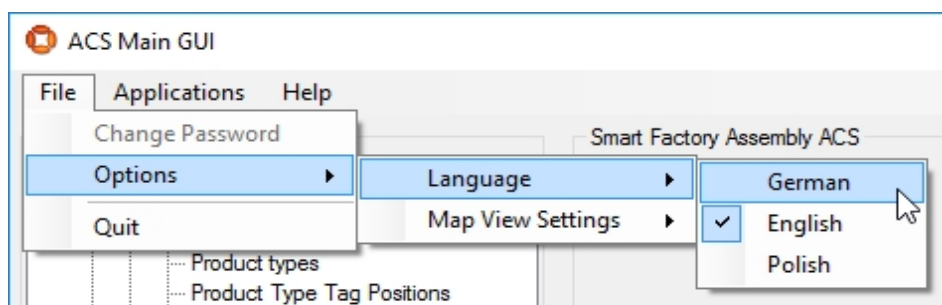
Standard user

Configure the language used in ACS independent of the current system language.

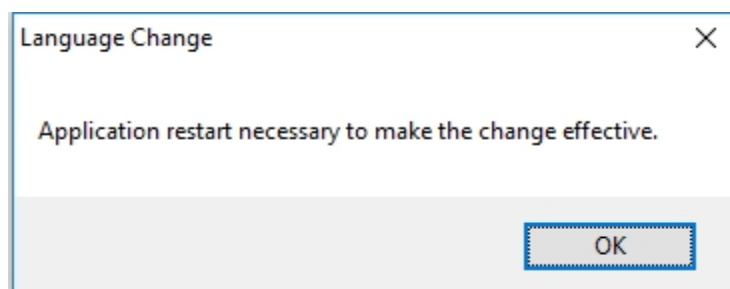
How it Works

1. From the menu bar, select **File > Options > Language**.

The current language is marked with a check mark.



2. Select one of the available languages.
3. After changing the language, restart ACS.



Map View Settings

Standard user

Configure whether or not to display **Located Objects** and what kind of objects - **Devices**, **Products**, **Tags** - to display in the map views.

How it Works

From the menu bar, select **File > Options > Map View Settings** and click **Show Located Objects** to toggle between enabled and disabled.

When enabling **Show Located Objects**, the **Device**, **Product** and **Tag** options are enabled by default. Each one of these options can also be toggled.

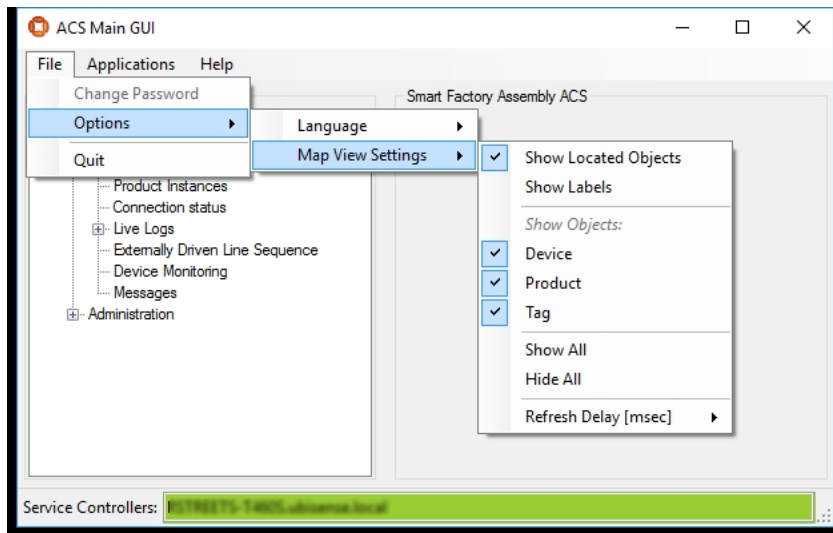


Figure: Map View Settings

Options	Details
Show Located Objects	Located objects are Devices, Products and Tags.
Show Labels	Show the labels of the located objects. (Only available when Show Located Objects is enabled).
Show Objects	Select which object types should be shown.
Show All	Show all located objects.
Hide All	Hide all located objects.
Refresh Delay [msec]	Set the refresh delay for the visualization.

Hints

This configuration is used in all the ACS map views.

If the map view settings restrict the visualization of any of the object types then a yellow exclamation mark is shown above the map view.

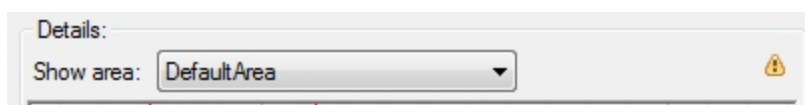


Figure: Warning Displayed When Not All Object Types are Displayed

Configuration

The ACS **Configuration** section allows the configuration of products and devices, external systems and factory layout related configurations. This includes the following:

- Connect ACS to device controllers or other external systems.
- Send information to controllers.
- Receive information from other sources.



The options described in this section describe the manual configuration of an ACS instance. If you have already created configuration, for example in a test environment, and want to apply the same configuration in a production environment, a tool, **ubisense_acs_config_transfer**, enables you to make a bulk transfer of this configuration instead of manually recreating it. See [Transferring Configurations Between ACS Instances with the ubisense_acs_config_transfer tool](#).

Products

In **Products**, you can define the:

- Real-world products (Product Types).
- Positions where tags are going to be placed on products (Product Type Tag Positions).
- Zones at products (Product Spaces) in which devices may be activated.

Product Types

Standard user

In **Product Types** you can create and define real-world product types.

You must define their physical extent by assigning a visual representation and modifying it accordingly.

From ACS version 2.8, product types are available in SmartSpace as objects based on the ACS Product type and you can add new product types both in the ACS Main GUI (described in this section) or in the Types and objects workspace in SmartSpace Config.

You can display and amend product types' spatial extents using the Spatial properties workspace in SmartSpace Config and assign representations to them using the Model assignment workspace. With the relevant licenses installed in SmartSpace, you can create searches for use with Web maps and Web forms and use ACS Product types in Business rules.

How it Works

Adding a Product Type

1. Click **Add** to add a new type. This will display the **Edit Product Type Properties** dialog.
2. Click **Commit** to save the new product type.

Modifying an Existing Product Type

1. Select a Product Type in the list.
2. Click **Modify** to change the selected Type. This will display the **Edit Product Type Properties** dialog.
Clicking **Reset Details** during changing an existing Product Type will undo your changes.
3. Click **Commit** to save changes to the Product Type.

Copying a Product Type

1. Select a Product Type in the list.
2. Click **Copy** to copy the selected Type. This will display the **Copy product type** dialog.
3. Give the new Type a name and description.
4. Click **Commit** to create the copied Product Type.

After you have copied the product type, you can modify it where it differs from the source product type.

All of the following is copied to the new product type:

- Product type properties, including the representation, defined in the **Product Type Properties** dialog (described below)
- Product type tag positions, defined on the [Product Type Tag Positions tab](#)
- Product spaces, defined on the [Product Spaces tab](#)
- Any configured ProductIsLocatedEvents, defined on the [ProductIsLocated Events tab](#)
- Production Line configuration for the source product type, defined on the [Production Lines tab](#)

Note: if the source product is designated as a shadow product on a production line, this designation is not carried over to the new product.

- Events configured for the source product type for workspaces, assembly line spaces, trigger points and ident zones (where the source product type is selected in the Active Types list for an event). See [Trigger Named Events](#).
- Tag Positions for AssociationZones, defined on the [Association Zones tab](#)
- For all Device Events (Object Is Located Event), the configuration of Product Spaces. See [Setting Product Space Rules](#).

Removing a Product Type

Select a Product Type in the list and click **Remove**.

Configuration

Product Type Configuration

Actions:

AddCopyModifyRemove

Type ^	Timeout	Description
Car	Not set	Car A
Car B	Not set	Car B
Chassis	Not set	

Details

(4.07, -0.37)

Figure: Adding, Modifying, Copying and Removing a Product Type

Product Type Properties

Use the **Product Type Properties** dialog to define attributes common to all product instances of that type. There are a number of alphanumerical attributes to be defined and the graphical representation of the Product Type.

Edit Product Type Properties

Editor interaction
☐ Rescale ☒ Move ☐ Rotate ☐ Do Nothing


Type: X253
 Description: X253
 Representation: X253
 Timeout: d h m s
 Length (optional):

Reset Details

Commit Cancel

(-5.09, 1.54)

Figure: Editing Product Type Properties

Field	Details
Type	Mandatory field. Each Product Type must have a unique name, which should reflect what the Product Type is in reality (such as "Car Z4"). The value cannot be changed for existing Product Types.
Description	Optional field. Enter a description for the Product Type.
Representation	<p>Mandatory field. Select one of the given representations to use a representation-based extent.</p> <div>  <p>The representations you are offered are those which have been defined using SmartSpace Config and copied into ACS. In order to be available for selection, when they are defined in SmartSpace Config, the representations must be given a name ending in _template. See the SmartSpace section of the Ubisense Documentation Portal for information on adding representations to ACS.</p> </div>
Timeout	Optional field. Define a timeout in d(ays), h(ours), m(inutes) and s(econds), after

Field	Details
	which a product instance of this type will be removed automatically, if its existence is not refreshed. The existence is currently only refreshed by importing product locations from external systems, so usually leave the timeout blank.
Length (optional)	<p>Optional field. Input the length of the product in meters. This length is used, if you have checked Use product length in the Edit Production Line Parameters dialog, along with the minimum carrier distance (defined in the Tag Settings tab of Edit Assembly Line Parameters) to calculate a minimum actual product distance. Tag-driven lines <i>only</i>.</p> <p>See Example: Using Individual Product Lengths to see how variable product lengths can be used on production lines.</p>

- Click **Reset Details** to load the attribute values as currently stored in the database.
- Click **Commit** to save the attributes in the database and close the dialog.
- Click **Cancel** to discard any changes and close the dialog.

Modifying the Representation

Use the **Editor interaction** buttons to select the interactions you want to execute on the representation in the map view.

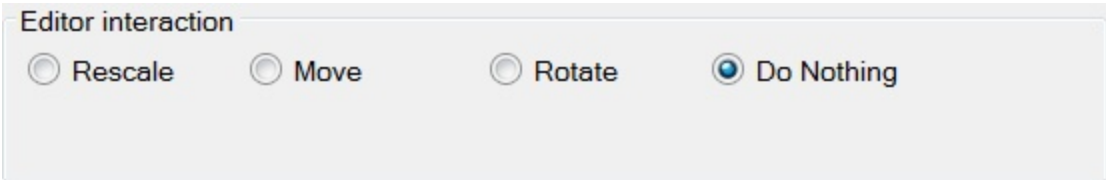


Figure: The Editor interaction options

Button	Details
Rescale	Click Rescale to change the size of the representation. Move the mouse pointer over the representation, then press and hold the left mouse button and move the mouse. This will rescale the representation.
Move	Click Move to change the relative position of the representation. Move the mouse pointer

Button	Details
	over the representation, then press and hold the left mouse button and move the mouse. This will move the representation.
Rotate	Click Rotate to change the rotation of the representation. Move the mouse pointer over the representation, then press and hold the left mouse button and move the mouse. This will rotate the representation.
Do nothing	Click Do Nothing to unselect any previously selected interaction. Clicking on the representation will not have any effect.



You can also change the representation used by a product type in the MODEL ASSIGNMENT workspace in SmartSpace Config. Types used by ACS can be identified by the prefix ACS in their names, for example **ACS Product**.

Product Type Tag Positions

Standard user

You can define one or more named Tag Positions for [Product Types](#) on the **Product Type Tag Positions** tab.

A Tag Position defines where on the physical extent of a product the tag is placed during the assembly process.

How it Works

Selecting the Product Type

The list of tag positions contains either all tag positions of all Product Types or only the tag positions of a single Product Type. You can choose this by either selecting **All** or a specific product type in the **Select Product Type** list.

Adding a Tag Position

1. Click **Add** to add a new tag position. This will display the **Edit Tag Position Parameters** dialog.
2. Click **Commit** to save new tag position.

Changing an Existing Tag Position

1. Select a tag position in the list.
2. Click **Modify** to change the selected tag position. This will display the **Edit Tag Position Parameters** dialog.
3. Click **Commit** to save changes to the tag position.

Copy Existing Product Tag Positions

1. Select the product type from the **Select Product Type** list where you want to copy the tag positions to.
2. Click **Copy** to copy the product tag positions. This will display the **Copy Product Tag Positions** dialog.
3. Select the product type to copy the tag positions from and click **Copy**. This will copy all product tag positions from one product type to the other.

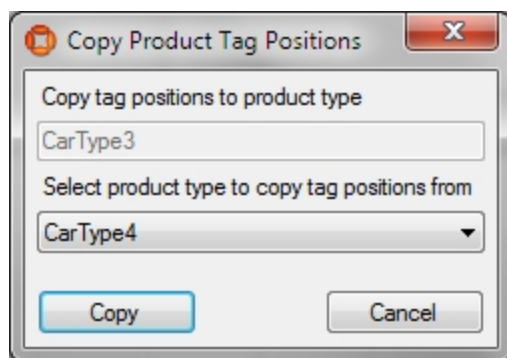


Figure: Copy Product Tag Positions from one Product Type to another

Removing a Tag Position

Select a tag position in the list and click **Remove**.

[illegible]

Figure: The Product Type Tag Position Configuration

Edit Tag Position Parameters Dialog

Use the **Edit Tag Position Parameters** dialog to define a tag position common to all product instances of a product type.

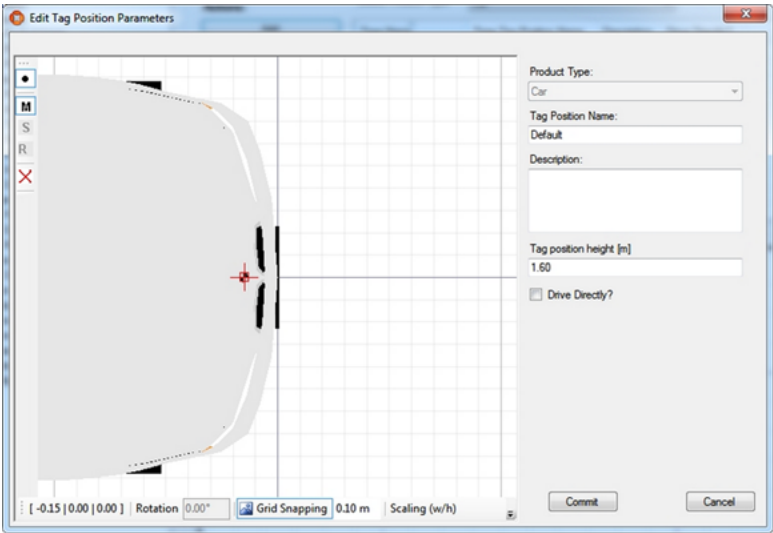




Figure: Editing Tag Position Parameters

Field	Details
Product Type	Mandatory field. Each tag position must have a product type assigned. Select a product type from the list. The value cannot be changed for existing tag positions.
Tag Position Name	Mandatory field. Each tag position must have a name. The name must be unique for the selected product type.
Description	Optional field. You can enter additional information for your own reference here.
Tag position height	Mandatory field. Specify the tag height above the floor for the tag position. The unit of the value is meter.
Drive Directly?	<p>Check this check box if you want the product to be positioned directly from the tag position, using standard functionality of the underlying Ubisense platform. If the check box is not checked, specific services are responsible to calculate the position of product instance, based on the position of the tag and possibly additional information.</p> <div> For products on assembly lines the checkbox should not usually</div>

Field	Details
	 be checked. Assembly lines only accept directly-driven products if they are explicitly configured to do so.

- Click **Commit** to save the attributes in the database and close the dialog.
- Click **Cancel** to discard any changes and close the dialog.

Product Spaces

Standard user

For each [Product type](#), you can define the spaces where your devices will be used on the **Product Spaces** tab.

The Product Spaces are necessary for the association between device and product. If a device is moved into a Product Space (and the association rules are configured accordingly, see [Association Rules](#)) the product identification can be sent to the controller of the device.

From ACS version 2.8, ACS product types and individual products are available in SmartSpace. However, due to the potentially large number of spaces that might be defined for a product type, product spaces are not visible in SmartSpace.

How it Works

Selecting the Product Type

The list of Product Spaces contains either all Product Spaces of all Product Types or only the Product Spaces of a single Product Type. You can choose this by either selecting **All** or a specific Product Type in the **Select Product Type** list.

You can use the Simple Filter to display items matching the criteria you input. See [Using Simple Filters](#) for further information.

Adding a New Product Space

1. Click **Add** to add a new Product Space. This will display the **Edit Product Space Parameters** dialog.
2. Click **Commit** to save the new Product Space.

Configuration

Changing an Existing Product Space

1. Select a Product Space in the list.
2. Click **Modify** to change the selected Product Space. This will display the **Edit Product Space Parameters** dialog.
3. Click **Commit** to save changes to the Product Space.

Copy Existing Product Spaces

1. Select the Product Type from the list where you want to copy the Product Spaces to.
2. Click **Copy** to copy the Product Spaces. This will display the **Copy Product Spaces** dialog.
3. Select the Product Type to copy the Product Spaces from and click **Copy**. This will copy all Product Spaces from one Product Type to the other.

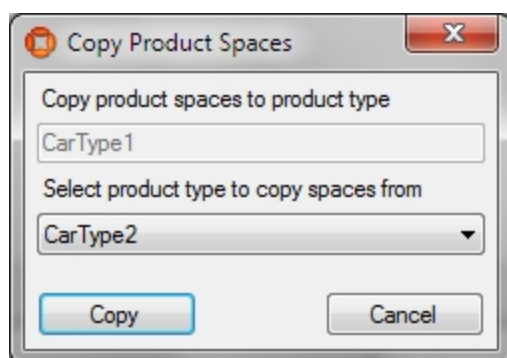


Figure: The Copy Product Spaces dialog

Removing a Product Space

Select a Product Space in the list and click **Remove**.

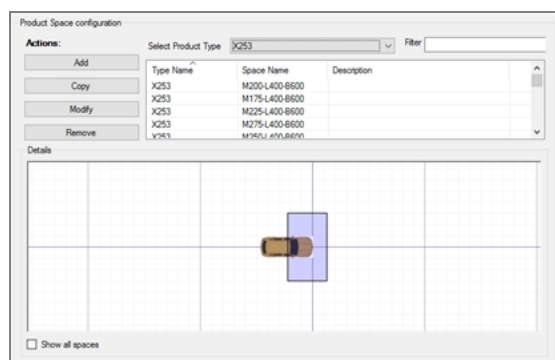


Figure: The Product Space configuration screen

Edit Product Space Parameters Dialog

Use the **Edit Product Space Parameters** dialog to define a Product Space common to all product instances of a Product Type. The space extent in 2D must be defined graphically whereas a number of alphanumeric attributes including space floor and ceiling height must additionally be defined.

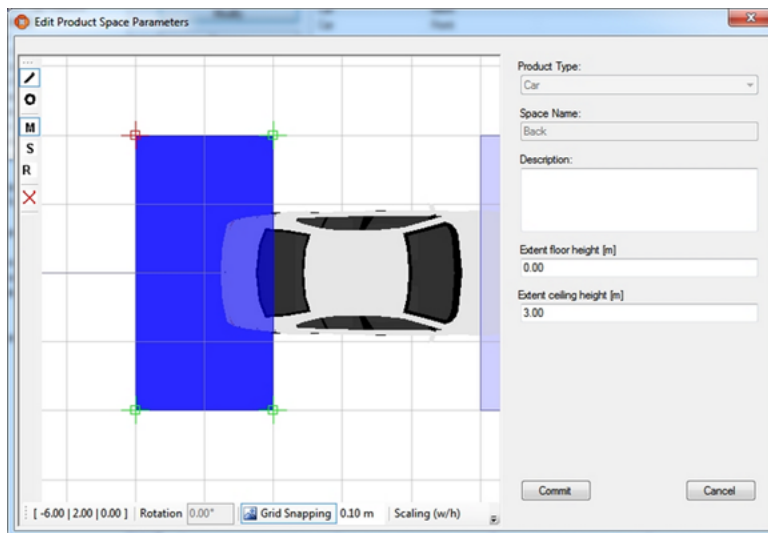


Figure: Editing Product Space Parameters

Field	Details
Product Type	Mandatory field. Each Product Space must have a Product Type assigned. Select a Product Type from the list. The value cannot be changed for existing Product Spaces
Space Name	Mandatory field. Each space must have a name. The name must be unique for the selected Product Type.
Description	Optional field. You can enter additional information for your own reference here.
Extent floor height	Mandatory field. Specify the lower border (floor) of the extent as a height above the floor. The unit of the value is meter.
Extent ceiling height	Mandatory field. Specify the upper border (ceiling) of the extent as a height above the floor. The unit of the value is meter.

Configuration

- Click **Commit** to store the attributes in the database and close the dialog.
- Click **Cancel** to discard any changes and close the dialog.

Hints

If you define space extents please be aware that you must not define them too small. A device tracked by a tag on it must be well covered by the Product Space extent taking into the account the inaccuracy of the system. The optimum size of a Product Space depends on the use case and on the sensor density, but as a rule of thumb extents with less than 1.5m from the center of the space to its borders may lead to problems.

It is possible to define multiple Product Spaces for a Product Type.

ProductsLocated Events

Standard user

You can use *ProductsLocatedEvents* to notify an external system (event consumer) when products enter or exit certain zones in a factory. For example, a Manufactory Execution System (MES) might require information about which vehicles are currently located in which rework bays (in a rework area).

ProductsLocatedEvents are very similar to Workspace events (see [Workspaces](#)). However, ProductsLocatedEvents can deal with many workspaces and/or stations, whereas Workspace events only deal with a single workspace.

How it Works

Adding an Event Object

An event object defines rules for associating products and zones and the link to external systems, which use these events.

To add an event object:

1. Click **Add**. In the editor window, specify:
 - A unique name for the event.
 - An optional description for the event.
2. Click **Commit**.

The event object is saved.

Modifying an Event Object

To modify an event object:

1. Select the event object, and then either click **Modify**, or double-click the event.
2. Modify the details as required. Note that you cannot change the name of the event.
3. Click **Commit**.

Removing an Event Object

To remove an event object, select the event object, and then click **Remove**.

When you delete an event object, the event rules and external system association are also deleted.

Configuring Event Rules

A `ProductIsLocatedEvent` is an assertion that a product is either located within a specified zone, or that it is no longer located within a zone.

You need to configure event rules to define which product types and zones (workspaces and stations) must be used for generating events.

The **Event Rules** section contains the following tabs:

- **Product Types**, for selecting [product types](#). Only product instances of the selected types can generate events. You must select at least one Product Type for the rule to become valid.
- **Workspaces**, for selecting the workspaces. Product instances of a type (which you have selected in the **Product Types** tab) generate events when they enter or leave the selected workspaces.
- **Stations**, for selecting stations. Product instances of a type (which you have selected in the **Product Types** tab) generate events when they enter or leave the selected stations.



You must select at least one workspace or one station for the rule to become valid. You can specify only workspaces, or only stations or any combination of both.

Configuring External System Associations

An *External System Association* is the link between a `ProductIsLocatedEvent` and the external systems that use these events.

When a `ProductIsLocatedEvent` is generated, all associated external systems are informed; these systems can then send out messages containing event information.

To define an External System Association:

Configuration

1. Select a ProductIsLocatedEvent.
2. In the list of external systems, select the check boxes of the required external systems.

To remove an External System Association:

1. Select a ProductIsLocatedEvent.
2. In the list of external systems, deselect the check box of the required external system.

Testing your Setup

This section explains how to test a setup for a ProductIsLocatedEvent with the following rules:

- Product type <P> is selected.
- Workspaces or stations <S1> and <S2> are selected, and external system <ES> is associated to the ProductIsLocatedEvent, <ES> being configured using the ACSProtocol.

To test your setup:

1. Establish the connection between ACS and an ACSProtocol simulation tool (**ubisense_acs_protocol_clientserver.exe**).
2. Move a product instance <PI> of type <P> into <S1>.

An event is generated, resulting in a telegram being sent to the ACSProtocol simulation tool, in the following form:

```
TH0100000086***ISINZ01*****<S1>*****  
*****<PI>
```

3. Move the product instance <PI> of type <P> out of <S1>.

An event is generated, resulting in a telegram being sent to the ACSProtocol simulation tool, in the following form

```
TH0100000086**ISOUTZ01*****<S1>*****  
*****<PI>
```

Factory Layout

The **Factory Layout** section allows you to define a simple virtual model of your factory.

Topics covered include:

- Create Production Lines and Assembly Lines where products are worked on
- Define Workspaces where devices will operate
- Define Ident Zones where products will be identified to trigger actions

Production Lines

Standard user

An ACS Production Line holds a list of [Assembly Lines](#) in a specified order which reflects the order in which products are dealt with on subsequent Assembly Lines during the production process. For each Production Line, you also define which [Product Types](#) are supported by the production line.

How it Works

In the **Production Line Configuration** tab you see a list of Production Lines. When you select a Production Line the associated Assembly Lines are listed in the Assembly Lines area. The order of the Assembly Lines reflects the order of the production process.

If the Production Line has attribute **closed?** set as *true* this means that products are cycling on the Production Line.

The tab also lists the Product Types that are allowed for this Production Line.

Production Line Configuration

Actions:

Add

Modify

Remove

Name	Closed?	Description
Main_Production_Lin...	No	

Assembly lines

Assembly Lines
Line_01
Line_02

Supported product types

Type Name	Supported on line?
GreenCar	Shadow Product
RedCar	Supported

Figure: Production Line Configuration Tab

Adding a Production Line

Click **Add** to add a new production line. This displays an editor where you can enter the attributes of a Production Line (see below for details).

Modifying a Production Line

Select a Production Line from the list and then click **Modify**. This displays the editor filled with the attributes which can be changed.

Removing a Production Line

Select a Production Line from the list and click **Remove** to delete the selected Production Line.

Editing the Production Line Settings

The possible settings of a Production Line are displayed in the following figure.

Edit Production Line Parameters

Name

PL_W67B09

Description

Assembly lines

Move Up

Move Down

Assembly Lines

PL_W67B09_Bd03

PL_W67B09_Bd04

PL_W67B09_Bd32

PL_W67B09_Bd33

PL_W67B09_Bd36

☐ Closed?

Supported product types

Supported?

Type Name	Supported on line?
C253	Supported
S205	Supported
W205	Supported
X253	Supported

☐ Use product length

Shadow Product

ShadowCar



Commit

Cancel

Figure: Edit Production Line Parameters Dialog

Field	Details
Name	Mandatory field. The name must be unique within ACS.

Configuration

Field	Details
Description	Non mandatory field. Here you enter a short description of the Production Line.
Assembly Lines	The table shows all the Assembly Lines which are associated with this Production Line. To change the order of the Assembly Lines for this Production Line, select one Assembly Line and click Move Up or Move Down .
Supported product types	<p>Listed are all available Product Types, if the Product Type is not selected as Shadow Product.</p> <p>To change the attribute if a Product Type is supported by the current Production Line: select a Product Type and click the button Supported? to toggle the attribute value.</p> <div>  <p>The Shadow Product feature will only work for tag-driven Assembly Lines. If between two products there is a gap greater than 90% of the "Minimum Carrier Distance [m]" for the tag driven Assembly Line, one or more product instances of the configured Shadow Product type are inserted into the gap. The same holds for gaps between Assembly Line start point and a product, a product and Assembly Line end point or if the Assembly Line is completely empty. In the extreme that means that an Assembly Line may show the whole line full of Shadow vehicles, if no tracked vehicle is yet taken on the line.</p> </div>
Use product length	<p>Tag-driven lines <i>only</i></p> <p>Not intended for use on Constant Distance assembly lines</p> <p>Check Use product length if you want the minimum actual product distance on this production line to be based on the length of the product plus the minimum carrier distance (defined in the Tag Settings tab in Edit Assembly Line Parameters).</p> <p>See Example: Using Individual Product Lengths to see how variable product lengths can be used on production lines.</p> <div>  <p>Make sure you define lengths for all product types supported on this line if you intend to use this feature.</p> </div>

- To save the current settings, click **Commit**.
- To discard the changes, click **Cancel**.

If the entered data is not valid (for example no name is entered) this will be shown as a red exclamation mark.

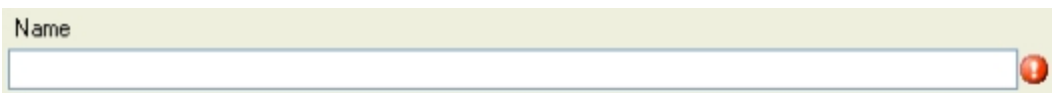


Figure: Warning for Invalid Data

Hints

The Association of assembly lines to production lines is defined in [Assembly Lines](#). So if you add a new production line there are no assembly lines listed as associated. If there are associated assembly lines the order will be changed here.

Assembly Lines

Standard user

The ACS Assembly Line is a model of a real world assembly line for products. ACS has built-in services to very accurately track products on an assembly line. This is done by specifying:

- The path of the Assembly Line.
- The minimum distance of subsequent products on the line.
- The usual speed at which the products are transported.
- Optionally further more advanced properties.

It is possible to define a series of Assembly Lines.

How it Works

In the **Basic Assembly Line Configuration** tab you can see some basic data for all the Assembly Lines. To add, view, modify or remove an assembly line you have the corresponding buttons which in case of adding, viewing and modifying an Assembly Line opens the custom assembly editor. Selecting a line in the table shows the corresponding geometry of the selected line.

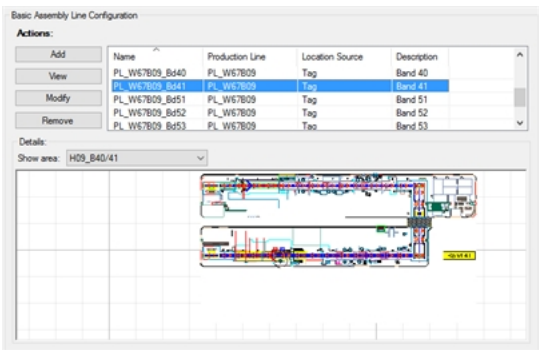


Figure: Basic Assembly Line Configuration Tab

Adding an Assembly Line

Click **Add** to add a new Assembly Line. Detail fields (see below) will be pre-set with default values. This opens the custom Assembly Line editor dialog.

Viewing an Assembly Line

Click **View** to view an Assembly Line.

Modifying an Assembly Line

Select an Assembly Line from the list and click the **Modify** button. This opens the custom assembly line editor filled with the data of the selected Assembly Line.

Removing an Assembly Line

Select an Assembly Line from the list and click **Remove** to delete the selected Assembly Line.

Editing an Assembly Line

When clicking **Add** or **Modify** the custom assembly line editor dialog opens.

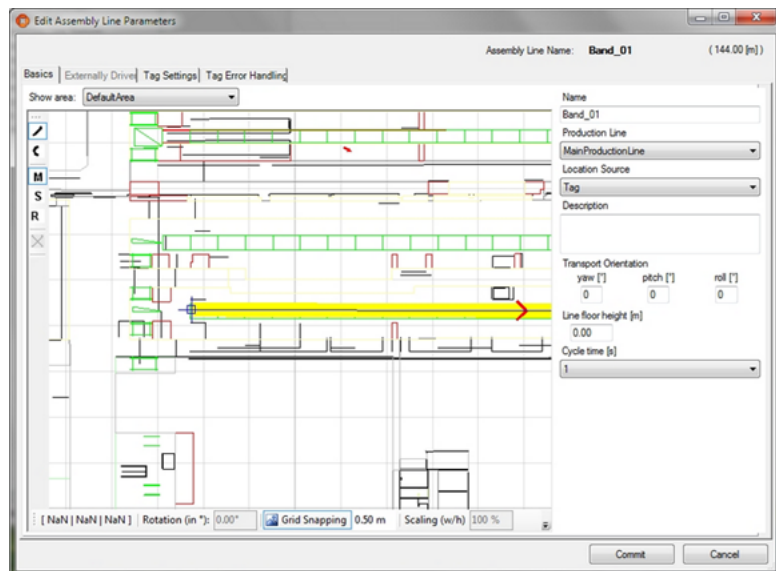


Figure: Edit Assembly Line Parameters Dialog

Basics Tab

The basic settings are the primary configuration of an Assembly Line which you must enter.

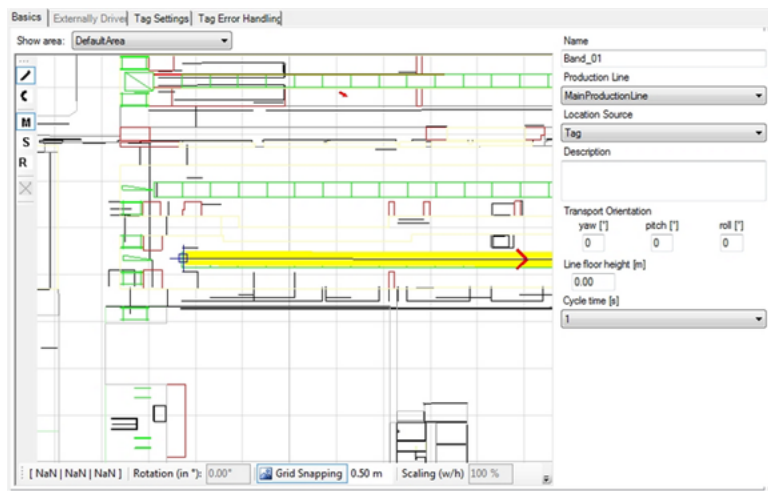


Figure: Basic Settings for an Assembly Line

Field	Detail
Name	Mandatory field. The name must be unique within ACS.
Production Line	Mandatory field. Select one of the available Production Lines from the list. If there are no entries you first have to create a Production Line.
Location Source	Mandatory field. Here you decide if the assembly line is tag driven or externally driven. If it is tag driven you only can enter data into Tag Settings and Tag Error Handling tabs.
Description	Non mandatory field. Here you enter a short description of the line to describe the purpose of the assembly.
Transport Orientation	<p>Mandatory field. Default values here for yaw, pitch and roll are 0. These values define the orientation of the product relative to the orientation of the Assembly Line. As a base serves a right-handed coordinate system.</p> <p>If using the length of product types as part of the calculation of minimum product distance on tag-driven lines, setting an orientation for yaw has the following effects:</p> <ul style="list-style-type: none"> –45 to 44 degrees: Product Length supported, forward 45 to 134 degrees: Product Length not supported 135 to –136 degrees: Product Length supported, backwards

Configuration

Field	Detail
	–135 to –46 degrees: Product Length not supported
Line floor height [m]	Mandatory field. Default value here is 0. This value defines the height of floor for an assembly in meters. Starting from this height products are placed onto the Assembly Line.
Cycle time [s]	Mandatory field. The time one cycle of the tracking support service takes. The default value is 1.
Areas	Non mandatory field. Here you can select one of the available areas to have it as a background to place the points of the Assembly Line geometry.

In the graphics area, you can:

- Left-click on an existing point selects the point.
- Left-click on a point and dragging it moves the point.
- DEL key to delete a selected point.
- R key and having selected a point of the Assembly Line geometry allows rotating the complete line.
- S key and having selected a point of the Assembly Line geometry allows scaling the complete line.

See [Navigating and zooming within the graphics window](#) for further information.

Externally Driven Tab

If in the [Basics](#) tab you have set **Location Source** to *External System* then you can enter some parameters for it.

For an externally driven line.

The screenshot shows a configuration window titled 'Externally Driven' with three tabs: 'Basics', 'Tag Settings', and 'Tag Error Handling'. The 'Basics' tab is active. It contains several sections:

- Product Provision:** Includes radio buttons for 'All products' (selected), 'Only first product', and 'Product offsets'. Below these are input fields for 'Minimum offset [m]' (0), 'Fixed [m]' (0), and 'Based on stations' (0). There is also a checkbox for 'Product distance information'.
- Line Movement:** Includes radio buttons for 'Pulsed', 'Line Movement', and 'Product offsets'. Below these are input fields for 'Line Speed [m/s]' (0) and a checkbox for 'Reversed'.
- Translation in:** Includes input fields for X (0), Y (0), and Z (0).
- External System:** Includes a dropdown for 'Name', an input field for 'AssociationId', and a checkbox for 'Clear locations when connection is lost for more than [s]' (0).

Figure: External System Parameters

Field	Detail
Product Provision	<ul style="list-style-type: none"> • All products: The PLC delivers the sequence of all products on the Assembly Line, the sequence will include information about 'empty' carriers. Additionally the position of all products (i.e. distance from the start point) is regularly reported by the PLC. • Only first product: The PLC delivers the first product on the line whenever it reaches the first station. The PLC will also send information about 'empty' carriers.
Line Movement	<ul style="list-style-type: none"> • Pulsed: A pulsed assembly line requires either the use of Assembly Line Stations or a fixed product distance must be defined. The PLC will send ACS the first product on the line whenever it reaches the first station, or the whole sequence of products on the assembly line whenever the sequence changes. When a new product is sent, ACS maintains the sequence of products on the line by adding new products/gaps to the beginning of the sequence, or if a whole sequence is sent by the PLC, ACS will position the products along the assembly line and remove any products not in the sequence. ACS will compute offsets based on stations or fixed product distance. • Line Movement: Similar to a pulsed assembly line, Line Movement requires either the use of Assembly Line Stations or a fixed product distance must be defined. However, Line Movement also requires the Assembly Line speed to be set.

Field	Detail
	<p>The PLC will send ACS the first product on the line whenever it reaches the first station, or the whole sequence of products on the assembly line whenever the sequence changes. Additionally, the PLC will send information about the line moving or standing still. When a new product is sent, ACS maintains the sequence of products on the line by adding new products/gaps to the beginning of the sequence, or if a whole sequence is sent by the PLC, ACS will position the products along the assembly line and remove any products not in the sequence.</p> <p>ACS will compute offsets based on stations or fixed product distance, then takes into account Assembly Line speed. If stations are used, then the products are positioned at the beginning of stations, then the actual position of a product is determined by the line speed during time the line moves.</p> <ul style="list-style-type: none"> • Product offsets: All products on the physical assembly line are transported with the same speed, although the distance between products may not be the same for all products on the assembly line. The distance between a product to its predecessor remains the same all the time from the point of time when the product enters the assembly line and therefore is sent to ACS for the first time. The actual position of the products within a station is determined by offset for the first product sent by the PLC. <p>For calculating the offset delta between the last telegram and the current it is necessary to get the first two products from the assembly line. That way even if a new product is sent, the second product will have been sent last time such that the offset delta can be calculated anyway.</p> <p>The PLC delivers the first two products on the line or will send the whole sequence of products on the assembly line - including information about empty carriers. Additionally, the PLC regularly sends the position of the product/gaps (i.e. the offset from the assembly line start point). Whenever a new product or a gap is sent by the PLC, ACS maintains the sequence of products on the line and adds the new product/gap to the beginning of the sequence, or if the whole sequence is sent by the PLC, ACS will position the products/gaps at the position the PLC has delivered.</p> <p>Products/gaps which would exceed the assembly line length are removed from the sequence.</p>
Minimum Offset [m]	Mandatory field. The smallest offset value delivered by the External System.

Field	Detail
	The default value is 0.
Product distance information	<p>If the PLC delivers product distance information enable the check box. In that case, select one of the following:</p> <ul style="list-style-type: none"> • Fixed [m]: Enter the fixed distance between two products. • Based on stations: The product distance is based on the station along the assembly line.
Line Speed [m/s]	This is the transportation speed for products on the line [m/s]. Mandatory if 'Line Movement' was chosen.
Reversed	<p>Mandatory field. Whether or not the offset values delivered by the external system are reversed or not.</p> <p>Reversed means that the offset value is the maximum at the start point and decreases towards the end point.</p> <p>The default is unchecked.</p>
Translation in X Y Z	<p>Mandatory field. The transform to be applied to the calculated position on the line in order to derive the product position.</p> <p>X=translation perpendicular to the assembly line at the current position</p> <p>Y=translation along the assembly line at the current position</p> <p>Z=translation in height at the current position on the assembly line</p> <p>This offset may actually be product type dependent, but for the current version we ignore that.</p> <p>The default values are 0.</p>
External System	Select the External System, which shall be notified of products being identified at the Assembly Line.
Association Id	Enter a unique Association ID for the given External System. That way the External System can distinguish the source of the information.
Clear locations when	The timeout after which any cached product information is cleared in ACS, if the connection to the External System is disconnected.

Configuration

Field	Detail
connection is lost for more than [s]	

Tag Settings Tab - Tag Recognition

If in the [Basics](#) tab you set **Location Source** to *Tag* then you have to enter parameters for tag recognition handling and transport.

There are a number of configuration parameters, which control how the flow assembly product tracking service maintains products on the Assembly Line.



Usually they do not need to be changed, but you should be aware that they can be changed.

Setting Default Values

The screenshot shows the 'Tag Recognition' configuration window with a 'Defaults' button. The parameters and their values are as follows:

Parameter	Value
Min sightings required for expected candidate	2
Min sightings required for unexpected candidate	4
Max candidate time delta [s]	40
Max candidate distance delta [m]	2
Min disjunctive tag updates needed for driver update	3
Max just removed	3
Max product accept offset [m]	1000
Offset before line end point for product removal [m]	0
Max positioning error [m]	2
Inactive product time delta [s]	15
Inactive products removal sections	No sections configured
Candidate product sequence	MySequence
Fill gaps with products from sequence	<input type="checkbox"/>
Automatically remove inactive products	<input type="checkbox"/>
Accept directly driven products	<input type="checkbox"/>

Figure: Default Recognition Parameters

Click the **Defaults** button to restore the default parameters. The values above are the defaults for the recognition parameters.

Field	Description
Min sightings required for expected candidate	Number of position updates required before an expected product is to be taken onto the Line. Field type: UInt

Field	Description
Min sightings required for unexpected candidate	Number of position updates required before an unexpected product is to be taken onto the Line. Field type: UInt
Max Candidate Time Delta	Maximum time interval between position updates; not to be exceeded if the product is to be taken onto the Line. Field type: Float
Max Candidate Distance Delta	Maximum distance between position updates; not to be exceeded if the product is to be taken onto the Line. Field type: Float
Min Disjunctive Tag Updates Needed For Driver Update	Threshold value for number of disjunctive tag updates needed per processing cycle until driver positions are updated without any further test criteria passing. Field type: UInt
Max Just Removed	Should a product be taken off the Line, the given number of other products must be taken off the Line before this product can be accepted again. Field type: UInt
Max Product Accept Offset	Maximum distance (in meters) from the start point at which products can still be accepted onto the Line. Field type: Float
Max Positioning Error	Maximum distance allowed between the Product Tag position and the nominal position of the product, if the product is to be taken onto the Line. Field type: Float
Offset before line end point for product removal	Offset (in meters) before line end point after which product will be removed. Field type: Float
Inactive Product Time Delta	Time (seconds). If a new product is to be taken onto the Line, but

Field	Description
	<p>another product is in the way, then the other product will be removed from the Line if it does not provide any position updates in the specified time. This function is only active when the given value is > 0.</p> <p>If Automatically remove inactive products is checked, this is the time after which the product is to be removed from the line due to inactivity.</p> <p>Field type: Float</p>
Inactive products removal sections	<p>This parameter defines in which sections along the line the inactive vehicle checking shall be performed. Only in these sections inactive products are removed. Example: The functionality is needed for the beginning of the line, but is undesirable for other sections of the line, where associated car tags (e.g. from cars parking close to the line) could create wrong positions within the line and (in unlucky situations) remove correct cars from the virtual line.</p> <p>Field type: Line Sections</p>
Candidate product sequence	<p>The External Product Sequence used on this line. If configured, expected/not expected products will be derived from the external product sequence instead of the sequence in which products left the assembly line before this one.</p> <p>Field type: External Product Sequence</p>
Fill gaps with products from sequence	<p>If a product has no tag association, but its immediate neighbors (ahead and behind) in the External Product Sequence <i>do</i> have tag associations, enables the tag to be associated with the product automatically.</p>
Automatically remove inactive products	<p>If checked, products that have been inactive for a specified length of time (configured in Inactive Product Time Delta) are automatically removed from the line.</p>
Accept directly driven products	<p>If the checkbox is checked, the Tracking Support service will accept products where the 'drive directly?' flag is set. Products will not be driven directly by tags while the product is on the assembly line.</p>

Field	Description
	If the checkbox is not checked, the Tracking Support service will refuse to accept products with the 'drive directly?' flag.

Hint

As best practice the following values seems to be very useful for all different types of Assembly Lines.

- Max Expected Candidate Readings : 4
- Max Unexpected Candidate Readings : 10
- Max Candidate Time Delta : 2
- Max Candidate Distance Delta : 1.5
- Max Just Removed : 30
- Max Positioning Error : 1.5
- Inactive Product Time Delta : 30
- Min Disjunctive Tag Updates Needed For Driver Update : 5

Tag Setting Tab - Transport Parameters

Transport Parameters

Line Width [m]

Comidor Shift [m]

Minimum Carrier Distance [m]

Standard line speed [m/s]

3

1

6

0.2

☐ Dynamic Configuration required
☐ Move Line Without Sighting

Adapt Length

Line Sections

Add

Modify

Split

Remove

Transport Type	Length...	Catch up Distanc...	Fixed Position Snap Di...	Fixed Position Release Distanc...
VariableDistance	138.5	0.5	0	0

Figure: The Transport Parameters Tab

There are some transport parameter settings valid for the whole assembly line and other transport parameters only valid for sub sections of an Assembly Line. These global settings are described in the following table.

Global Setting	Detail
Line Width	<p>Defines the width of the corridor [m] along the Assembly Line, in which tag position updates are taken into account to move products along. Tag locations outside the corridor are ignored.</p> <p>Field type: Float</p>
Corridor Shift	<p>Shifts the corridor defined by Line Width right or left of the Assembly Line by the specified distance [m]. A positive value shifts the corridor to the right and a negative value shifts the corridor to the left relative to the assembly line's direction of travel.</p> <p>The field can be used to improve the accuracy of tag updates on assembly lines where tags are mounted on the carriers instead of on the products with the tags moving alongside the corridor in which the products move. Shifting the pick up corridor ensures all necessary tag updates are picked up, where increasing the width of the corridor would risk picking up unwanted tag updates.</p> <p>Field type: Float</p>
Minimum Carrier Distance	<p>Defines the minimum distance [m] between two subsequent product positions on the Assembly Line. Two products (product positions) will never come closer to each other than this distance.</p> <p>Also used if you are defining the minimum actual product distance using product length. In this case the minimum product distance is product type length (defined in the Product Type Properties dialog) added to the minimum carrier distance defined here. See Example: Using Individual Product Lengths to see how variable product lengths can be used on production lines.</p> <p>Field type: Float</p>
Standard Line Speed	<p>This is the rough transportation speed for products on the line [m/s]. This value should approximately correspond to the real speed of the line.</p> <p>Field type: Float</p>

Dynamic Configuration Required

Boolean value stating whether a dynamic configuration is required or not.

The dynamic configuration can be set by external systems. These two parameters can be dynamically configured as one of the following:

- *LineIsMoving*
- *LineSpeed*

If **Dynamic Configuration required** is set to *true*, and there is no dynamic configuration for a line (*LineIsMoving*), then the line will not accept any location updates and reset itself, if there are currently products on the line.

If there is a dynamic configuration with *LineIsMoving=false* the line will not move.

If there is a dynamic configuration with *LineIsMoving=true* the line will move. If there are sufficient tag location updates, it will move according to the tag updates. If not, depending on the line speed, either the statically configured speed, or the dynamically set line speed.

Move Line Without Sighting

Boolean value stating whether the line should be moved without sightings or not.

The Assembly Line can be subdivided into sections, each section having some individual transport parameters.

Default is to have one section with a given length according to the assembly line length (example above is 144m).

Default Transport Type is **VariableDistance**.

Adding, Modifying and Removing Transport Parameters

Adding a Section Definition

Click **Add** to add transport parameters of a new section. Detail fields (see below) will be pre-set with default values. This opens the custom **Edit Transport Parameter** dialog.

Modifying a Transport Parameter Setting

Select a transport parameter setting from the list and click the **Modify** button. This opens the custom transport editor filled with the data of the selected transport parameter setting.

Split a Transport Parameter Setting

Select a transport parameter setting section from the list and click **Split** to split the section. This creates a new transport parameter setting of half the length of the selected one with the same parameter settings.

Remove a Transport Parameter Setting

Select a section from the list and click **Remove** to remove the transport parameter settings section.

Adapt Length of All Transport Parameters

If you click the **Adapt Length** button the overall length of the transport parameters listed is adapted to the real length of the Assembly Line.

Overlapping transport parameters will be deleted from the list according the Assembly Line length. If necessary the last transport parameter setting will be adapted to the length of the Assembly Line geometry.

Editing a transport parameter setting

When clicking **Add** or **Modify** the custom transport editor dialog opens.

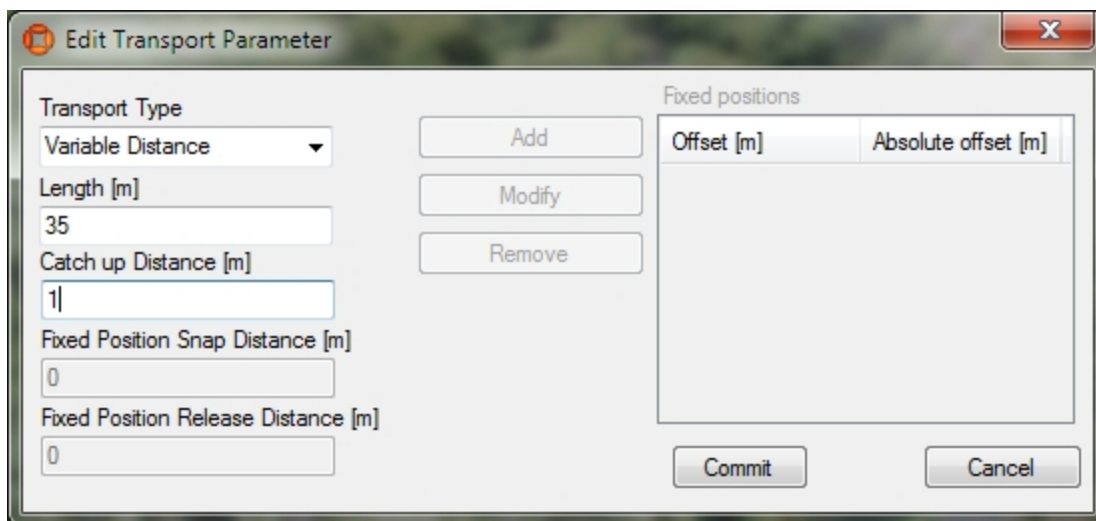


Figure: The Edit Transport Parameter Dialog

Field	Detail
Transport Type	<p>The transport types are:</p> <ul style="list-style-type: none"> • Fixed Distance: Once a product is on the line it will be transported with a fixed distance to its predecessor. The distance between carriers is kept the same as at the time a carrier is put on the line. However the distance between carriers is never smaller than <i>Minimum Carrier Distance</i>. • Constant Distance: All carriers on a line are positioned according to a fixed raster based on the <i>Minimum Carrier Distance</i>. As soon as carriers are positioned, their distance to neighboring carriers never changes even during movement.

Field	Detail
	<ul style="list-style-type: none"> • Variable Distance: The distance between carriers might vary while a carrier is on the line. However the distance between carriers is never smaller than <i>Minimum Carrier Distance</i>. Products are tracked individually with the only restriction, that they will not change their order on the line and are at least the <i>Minimum Carrier Distance</i> apart from each other. • Variable Bidirectional: The Variable Bidirectional transport type behaves exactly like the Variable Distance transport type except that products may move backwards, which is not possible for any other transport type. If a backwards-moving product moves close to its successor then both products will be treated as a group and an average position will be calculated for them based on their tag positions. This grouping will be potentially extended to further successors. The assembly line starting point is the backstop for backwards moving products and the rearmost product of a group will never be pushed over the assembly line start. • Fixed Position: Carriers are snapped to certain defined offsets on the line if they enter a certain proximity to that offset. They are also only moving forward if the tag leaves a defined offset range. There are fixed positions defined on the line. Products will be positioned at these positions as long as their actual tag position is in the range of <i>Fixed Position Snap Distance</i> and <i>Fixed Position Release Distance</i> away from the position. These parameters are described in the table below.
Length	The length along the line for which the parameters apply.
Catch Up Distance	If the distance between two products falls below <i>Minimum Carrier Distance</i> + <i>Catch Up Distance</i> the two products will be positioned with <i>Minimum Carrier Distance</i> .



Usually the tracking type is the same throughout the whole assembly line. The default section type is *Variable Distance*.

Only for a Transport Type of **Fixed Position** are the following parameters relevant:

Edit Transport Parameter

Transport Type: Fixed Position

Length [m]: 10

Catch up Distance [m]: 1

Fixed Position Snap Distance [m]: 1.5

Fixed Position Release Distance [m]: 0.5

Fixed positions:

Offset [m]	Absolute offset [m]
5	5
10	10

Buttons: Add, Modify, Remove, Commit, Cancel

Figure: Transport Parameters for the Fixed Position Transport Type

Fixed Position Settings	Details
Fixed Position Offsets	The positions on the line for the Fixed Position transport type. Field type: Sequence of Float
Fixed Position Snap Distance	The distance from a tag position to a Fixed Position from which a product shall be located at the fixed position. Field type: Float
Fixed Position Release Distance	The distance from a Fixed Position to a tag position from which a product is released from the fixed position. Field type: Float

Tag Error Handling Tab

If in the [Basics](#) tab you set **Location Source** to *Tag* then you can (so not mandatory) enter tag error handling parameters.

In ACS there is a distinction between Error Detection and Error Recovery.

Error Detection

☒ Raise Exception
 ☐ Disassociation of unexpected products (effective: disabled)

Max accepted off position updates

☐ Check product sequence number

Max accepted tag offset [m]

Select disassociation zone

Sections Offsets:

Add

Modify

Remove

From [m]	To [m]

Sections Updating:

Add

Modify

Remove

From [m]	To [m]
25	35

Tracking Reliability Detection

Error Threshold [m]

Gap Threshold [m]

Hysteresis [m]

Error Recovery

☒ Is error recovery processing enabled

Simultaneous product error count threshold

Error threshold for restart counter increment

Consecutive error cycles until restart

Figure: The Tag Error Handling Tab

Error Detection

Error Detection Option	Details
Raise Exception	<p>Whether the Car-Filter should output error messages or not, and whether the exception should be raised and managed. <i>false</i> = No error output and no exception managed <i>true</i> = Error output enabled and exception managed.</p> <p>Field type : Boolean</p>
Max Accepted Off Position Updates	<p>The number of subsequent tag position updates accepted to be further away from the corresponding product position as MaxAcceptedTagOffset.</p>

Error Detection Option	Details
	Field type : UInt
Max Accepted Tag Offset	Maximum accepted distance in meters between a product position and its tag position. Beyond this distance an error exception can be raised. Field type : Float
Disassociation of unexpected products	Boolean value to set the automatic disassociation for unexpected products on this assembly line. There is also a global value for the automatic disassociation. (Effective: disabled/enabled.) The disassociation is performed only if the local and the global value are set to <i>true</i> and a disassociation zone is set. Field type : Boolean
Check product sequence number	With automatic disassociation of unexpected products enabled, ACS automatically disassociates a product which appears unexpectedly at the beginning of an assembly line. With Check product sequence number checked, if an unexpected product's sequence number is next in the sequence, its tag is not automatically disassociated. By default, the product sequence number needs to be numeric for this check. If the product sequence number is not numeric, but for example comprises a non-numeric prefix and a numeric part, then the numeric part can be extracted by defining the numeric portion within the product sequence number. See Tracking Support Field type : Boolean
Select disassociation zone	Select the disassociation zone if automatic disassociation is enabled. All parameters configured for this disassociation zone are considered. If no local zone is selected then the global configuration is used.

Sections

Check Tag Offset Sections : Sequence of OffsetRanges

Sections along the line (in meters from the start point). Within this area, actual tag positions will be compared with corresponding product positions, to determine whether the values deviate unacceptably (see parameter maxAcceptedTagOffset_).

You can add, modify and remove section offsets.

Check Tag Updating Sections : Sequence of OffsetRanges

Sections along the line (meters from start point). If no product tag position update can be found in a given range an error exception can be raised.

You can add, modify and remove section offsets.

Tracking Reliability Detection

The reliability conditions for gaps and for cumulated error are combined by an 'and' operator, i.e. if either reliability condition is false, the combined condition is also false.

Option	Detail
Error Threshold [m]	<p>If during error calculation the cumulated error becomes bigger than this value, the reliability condition becomes false.</p> <p>If the error threshold is set to 0 then the error threshold is not used.</p> <p>Field type: double</p>
Gap Threshold [m]	<p>If the distance between two subsequent products, or between line start and lowest offset product, or between highest offset product and line end, is bigger than the specified value, the reliability condition becomes false.</p> <p>The distance is calculated as (bigger offset - smaller offset - minimumCarrierDistance).</p> <p>If the gap threshold is set to 0 then the gap threshold is not used.</p> <p>Field type: double</p>
Hysteresis [m]	<p>If during error calculation the cumulated error becomes less than (unreliableTrackingErrorThreshold_ this value), the reliability condition becomes true.</p> <p>Field type: double</p>

Error Recovery

Error recovery means that consecutive errors that are not resolved after a certain time will lead to a complete line reinitialization.

Option	Description
Is Error Recovery Processing Enabled	<p>Is error recovery enabled or not for the parameters in the Error Recovery area.</p> <p>Field type: Boolean</p>

Option	Description
Simultaneous Product Error Count Threshold	The number of cars with faulty update data needed until the error cycle counter is incremented. Field type: UInt
Error Threshold For Restart Counter Increment	Error threshold value indicating at what error level the error cycle counter is incremented. Field type: UInt
Consecutive Error Cycles Until Restart	Error cycle counter threshold indicating at what number of consecutively occurring errors a faulty line gets reinitialized. If there is a cycle with no errors the related internal counter is reset to a value of 0, i.e. error cycle counting starts from the beginning. Field type: UInt

Hints

Products must have tags associated in order to be tracked on an assembly line. Use [Tag Product Association](#) to do this.

Disassociation of tags happens automatically at the end of the last assembly line. Additionally [Disassociation Zones](#) can be specified, to reliably put product tags into deep sleep.

If a product type is defined after the assembly line has been defined, the new product type is by default not allowed on that line.

Assembly Points

Standard user

In rework areas, products do not follow a strictly predefined path, in contrast to assembly line areas, where products move along [Assembly Lines](#). Instead there can be fixed positions where products are placed (e.g. cars are parked) and workers do their rework.

To support tracking in such areas Assembly Points can be used:

- Products are detected when they come close to the point.
- Products are located at this fixed position, with a predefined orientation.

The detection, when a product is close to an Assembly Point is done using the Ident Determination functionality (similar to [Association Zones](#) and [Disassociation Zones](#)).

How it Works

In the **Assembly Points Configuration** tab, you can see some basic data for all Assembly Points. To add, modify or remove an Assembly Point, use the corresponding buttons. Selecting a point in the table shows the corresponding orientation and the ident zone of the selected point.

The screenshot shows the 'Assembly Points Configuration' window. On the left, under 'Actions:', there are three buttons: 'Add', 'Modify', and 'Remove'. To the right is a table with three columns: 'Name', 'Ident Zone', and 'Description'. The first row is highlighted in blue and contains the text 'Rework1', 'Rework', and an empty field. Below the table, under 'Details:', there is a 'Show area:' dropdown menu set to 'DefaultArea'. At the bottom is a large grid. In the center of the grid, there is a blue rectangle containing a yellow arrow pointing right with the word 'Rework' written inside it.

Name	Ident Zone	Description
Rework1	Rework	

Details:
Show area: DefaultArea

Figure: Assembly Points Configuration Tab

Adding an Assembly Point

Click **Add** to add a new Assembly Point. Detail fields (see below) will be pre-set with default values. This opens the custom **Assembly Point Editor**.

Configuration

Modifying an Assembly Point

Select an Assembly Point from the list and click the **Modify** button. This opens the custom Assembly Point editor filled with the data of the selected Assembly Point.

Removing an Assembly Point

Select an Assembly Point from the list and click **Remove** to delete the selected Assembly Point.

Editing an Assembly Point

When clicking Add resp. Modify the custom Assembly Point editor dialog opens.

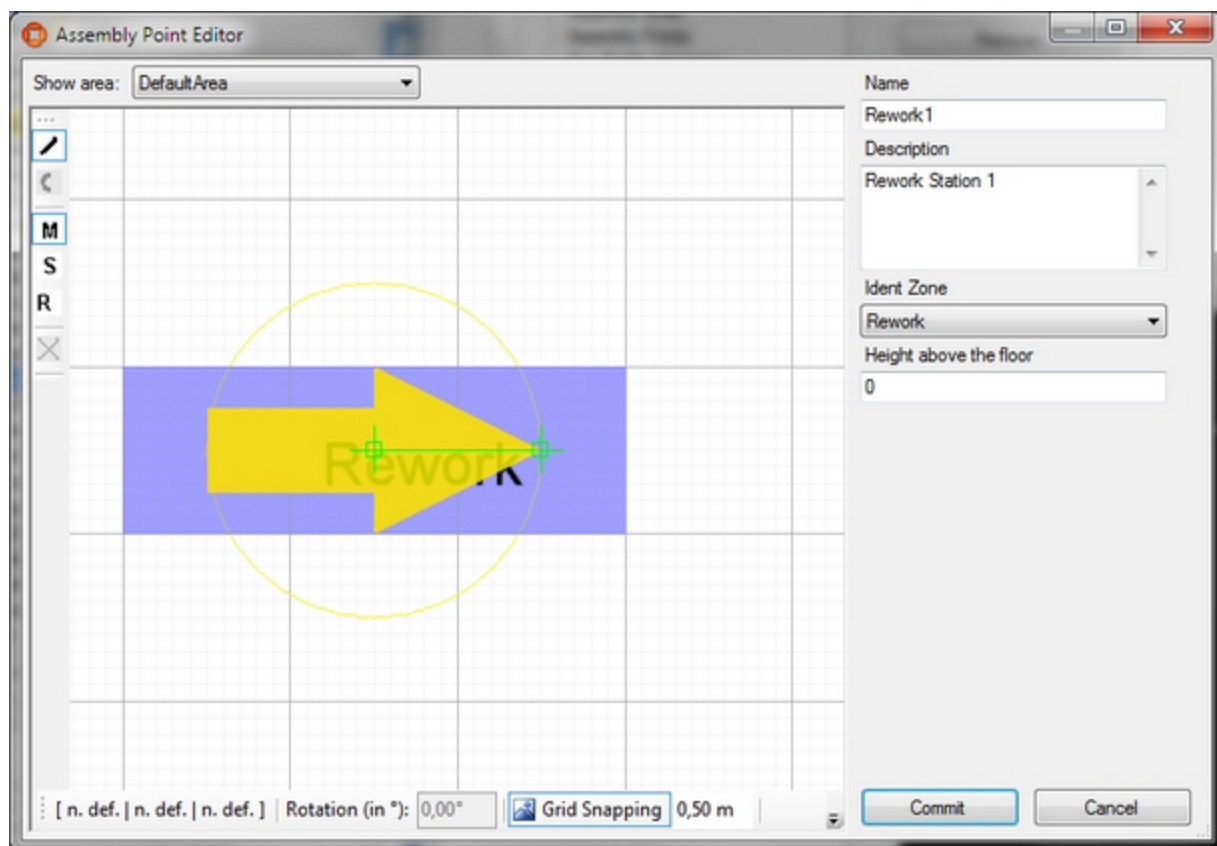


Figure: The Assembly Point Editor

Field	Detail
Name	Mandatory field. The name must be unique within ACS.
Description	Non mandatory field. Here you enter a short description of the point to describe the

Field	Detail
	purpose of the assembly.
Ident Zone	Mandatory field. Here you can select one of the available Ident Zones in order to associate to this Assembly Point.
Height above the floor	Mandatory field. This value defines the height of floor for an Assembly Point in meter. Starting from this height products are placed onto the Assembly Point.
Show Area	Non mandatory field. Here you can select one of the available areas to have it as a background when placing Assembly Point geometry.

Tag Profile Manager

Standard user

Tag Profile Management has the purpose of changing tag filters and QoS (Quality of Service) parameters depending on the whereabouts of a tag. You start by defining named tag profiles. You then associate the tag profiles with [Production Lines](#), or sections of Production Lines. When a tag is located within a section the associated tag profile is applied to the tag.

Tag Profile Management is different in Series 7000 and DIMENSION4 systems:

- Series 7000: a tag profile consists of a tag filter and QoS parameters
- DIMENSION4: a tag profile consists of just a tag filter (the tag update rates are fixed)

How it Works

Adding a tag profile

Click **Add** to add a new Tag Profile. This will display the **Tag Profile Properties** dialog (see below). Click **Save** to store new profile.

Changing an existing tag profile

Select a Tag Profile from the list. Click **Modify** to change the selected profile. This will display the **Tag Profile Properties** dialog (see below). Click **Save** to store changes to the profile.

Removing a tag profile

Select a Tag Profile from the list and click **Remove**.

Configuration

Name	Description	Profile P...	Filter	Default tag type...	Slower QoS	Faster QoS	QoS Speed Threshol...
CarS...	Car Standard	0	CarStandard	Tool tag (A cell)	one update ev...	one update ev...	1.00
CarS...	CarStandardUp...	0	CarStandard	Tool tag (A cell)	one update ev...	one update ev...	1.00

Figure: Tag profiles for a Series 7000 System

Name	Description	Profile P...	Filter	Default tag type...
CarS...	Car Standard	0	CarStandard	Tool tag (A cell)

Figure: Tag profiles for a DIMENSION4 System

Tag Profile Properties Dialog

The Tag Profile Properties dialog is used to define a named Tag Profile. A Tag Profile consists of a:

- Tag filter
- Priority
- Description
- Default tag type

For Series 7000 tags, a Tag Profile also consists of a:

- Faster QoS parameter
- Slower QoS parameter
- QoS threshold

The screenshot shows the 'Tag Profile Properties' dialog box for Series 7000 Tags. It contains the following fields and controls:


- Name:** Text box containing 'CarStandardUpdate'.
- Description:** Text box containing 'CarStandardUpdate'.
- Profile Priority [0-Highest]:** Dropdown menu set to '0'.
- Filter:** Dropdown menu set to 'CarStandard'.
- Default tag type for tool tags:** Dropdown menu set to 'Tool tag (A cell)'.
- Faster QoS:** Dropdown menu set to 'one update every 32 time slots'.
- Slower QoS:** Dropdown menu set to 'one update every 32 time slots'.
- QoS Speed Threshold [m/s]:** Text box containing '1.00'.
- Buttons:** 'Save' and 'Cancel' buttons at the bottom.

Figure: Tag profile for Series 7000 Tags

The screenshot shows the 'Tag Profile Properties' dialog box for DIMENSION4 Tags. It contains the following fields and controls:

- Name:** Text box containing 'CarStandard|'.
- Description:** Text box containing 'Car Standard'.
- Profile Priority [0-Highest]:** Dropdown menu set to '0'.
- Filter:** Dropdown menu set to 'CarStandard'.
- Default tag type for tool tags:** Dropdown menu set to 'Tool tag (A cell)'.
- Buttons:** 'Save' and 'Cancel' buttons at the bottom.

Figure: Tag profile for DIMENSION4 Tags

Field	Description
Name	<p>Mandatory field. Each tag profile must have a name. The name must be unique within all tag profiles.</p> <div> Naming a Tag Profile is important to identify the correct filter. It is a good idea to use the filter (and the QoS if set) as part of the name. In Series 7000 systems, you will typically have two versions of most tag profiles, one with a high update rate and another one with a low update rate.</div>

Field	Description
Description	Optional field. You can describe what the profile shall be used for.
Profile Priority	Mandatory field. Specify the priority of the profile for cases in which the profile management must decide what profile to use. Profile priority can be a number between 0 and 31, where 0 is the highest priority.
Filter	Mandatory field. Select from the list of existing tag filter definitions: <ul style="list-style-type: none"> For Series 7000, the list is derived from the filters defined in the Location Engine Config (LEC) tool. For DIMENSION4, the list is derived from the filters defined in the Location System Configuration (LSC) tool.
Default tag type for tool tags	When set, tags for devices with this tag profile that do not have a tag type will get the default tag type automatically.

For Series 7000 tags the following QoS settings apply:

QoS Setting	Description
Faster QoS	Mandatory field. Select from the list of possible QoS values.
Slower QoS	Mandatory field. Select from the list of possible QoS values.
QoS Speed Threshold	Mandatory field. Define a threshold speed [m/s] above which a tag will be scheduled with the faster QoS and below which a tag will be scheduled with slower QoS.

- Click **Save** to store the Tag Profile properties in the database and close the dialog.
- Click **Cancel** to discard any changes and close the dialog.

Adding a Tag Profile Section

First, select the part of a Production Line for which the section shall be defined. This is done by:

- Selecting the Production Line from the Production Line list.
- Selecting the Assembly line or the area between two Assembly Lines from the Assembly Line Name list.

The Profile Sections list layout then depends on the selection.

Tag Profile List Tag Profile Sections

Production Line
Main

Assembly Line Name:
Band-01

Assembly Line - Profile Sections

Start Offset [m]	End Offset [m]	Profile
0	15	CarStandardUpdate
15	25	CarLowUpdate
25	35	CarStandardUpdate

Minimum number of tags with selected profile 0 CarLowUpdate

Figure: Assembly Line Profile Sections

Assembly Line Profile Sections

Adding a Profile Section

Click **Add** to add a new profile section. This will display the **Tag Profile Section Editor** (see below). Click **Save** to store new section.

Changing an Existing Profile Section

Select a section from the list. Click **Modify** to change the selected section. This will display the **Tag Profile Section Editor** (see below). Click **Save** to store changes to the section.

Removing a Profile Section

Select a profile section from the list and click **Remove**.

Minimum Number of Tags with Selected Profile

The minimum number of tags on the Assembly Line the selected profile is applied to (if a sufficient number of tags is on the line at all).

Tag Profile Section Editor

Use the **Tag Profile Section Editor** to define a section within an Assembly Line and associate a Tag Profile to it.

Configuration

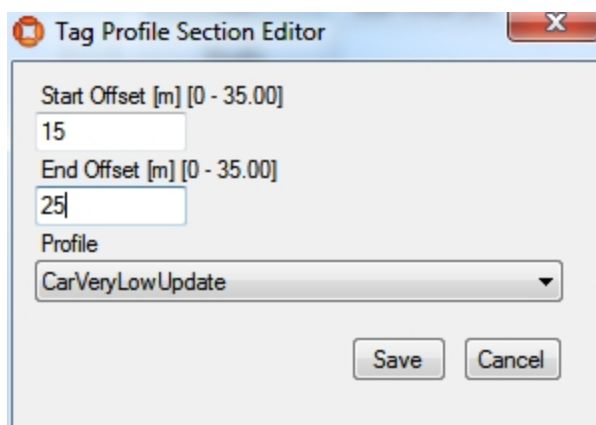


Figure: Defining a Tag Profile

Field	Detail
Start Offset [m]	<p>Mandatory field. Define the lower offset of the section in [m]. The offset is the distance from the start point of the Assembly line. Valid values are dependent on the length of the Assembly Line.</p> <p>In the given example, values between 0 and 35m are valid. In the current version ACS does not check the validity of the values.</p>
End Offset [m]	<p>Mandatory field. Define the higher offset of the section in [m]. The offset is the distance from the start point of the Assembly Line. Valid values are dependent on the length of the Assembly Line.</p> <p>In the given example values between 0 and 35m are valid. In the current version ACS does not check the validity of the values.</p>
Profile	<p>Mandatory field. Select the profile from the list of possible profiles.</p>

Between Assembly Line Profile Sections

Sections between two Assembly Lines have different parameters. Three different types of sections can be specified: Entry Section, Middle Section and Exit Section.

Tag Profile List | Tag Profile Sections

Production Line
Main

Assembly Line Name:
Between Band-01 and Band-02

Between Line - Tag Profile Sections

Add Modify Remove

Type	Fill Priority	Tag Count	Profile
Entry Section	No	3	CarStander...
Middle Section	No	0	CarLowUpd...
Exit Section	Yes	3	CarStander...

Figure: Between Line Profile Sections

Adding a Profile Section

Click **Add** to add a new profile section. This will display the **Between Line - Tag Profile Section editor** (see below). Click **Save** to store new section.

Changing an Existing Profile Section

Select a section from the list. Click **Modify** to change the selected section. This will display the **Between Line - Tag Profile Section editor** (see below). Click **Save** to store changes to the section.

Removing a Profile Section

Select a profile section from the list and click **Remove**.

Between Line - Tag Profile Section Editor

Use the **Between Line - Tag Profile Section editor** to define a section between two Assembly Lines and associate a Tag Profile to it.

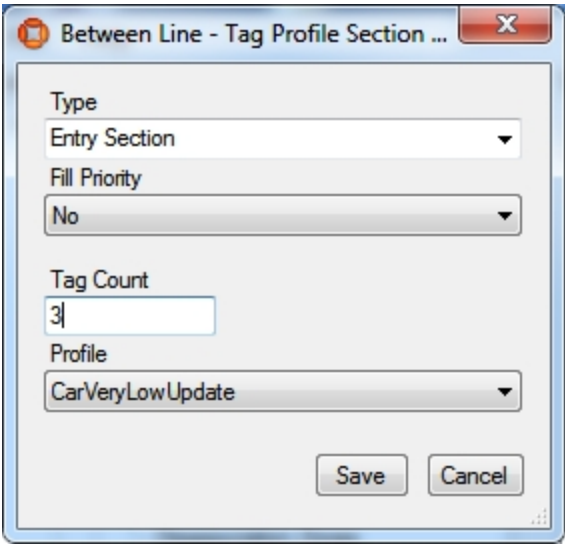


Figure: Defining a Between Line Tag Profile

Field	Detail
Type	<p>Mandatory field. Select the section type from the list of three possible section types:</p> <ul style="list-style-type: none">• Entry Section: This is the section for tags just having left the first Assembly Line.• Exit Section: This is the section of tags just before arriving at the second Assembly Line.• Middle Section: This is the section between entry and exit section. <p>It is only possible to define a single section of each type.</p>
Fill priority	<p>If there is an insufficient number of tags between the two Assembly Lines, the Fill Priority decides which of the sections will be filled first.</p> <p>E.g. if the Exit Section has Fill Priority and if up to 'Tag Count' tags are between the two Assembly Lines then all tags will be associated to the Exit Section.</p> <p>Only the Entry Section or the Exit Section can have Fill Priority.</p>
Tag Count	<p>Mandatory field. Enter the maximum number of tags to be associated to this section.</p>
Profile	<p>Mandatory field. Select the profile from the list of possible profiles.</p>

Workspaces

Standard user

Workspaces are areas in the factory, where certain devices will be either activated or deactivated. This behavior of devices will be defined later on.

From ACS version 2.8, workspaces are available in SmartSpace as objects based on the ACS Workspace type. Despite this, you should always configure workspaces using the ACS Main GUI as described in this section. Do not configure workspaces using SmartSpace Config: the details will not be saved or will be reset to the values configured in ACS.

You can display and amend workspaces' spatial extents using the Spatial properties workspace in SmartSpace Config and assign representations to them using the Model assignment workspace. With the relevant licenses installed in SmartSpace, you can create searches for use with Web maps and Web forms and use workspaces in Business rules.

How it Works

Adding a New Workspace

Click **Add** to add a new Workspace. This will display the **Edit Workspace Parameters** dialog (see below). Click **Commit** to save the new Workspace.

You can use the Simple Filter to display items matching the criteria you input. See [Using Simple Filters](#) for further information.

Changing an Existing Workspace

Select a Workspace from the list. Click **Modify** to change the selected Workspace. This will display the **Edit Workspace Parameters** dialog (see below). Click **Commit** to save changes to the Workspace.

Removing a Workspace

Select a Workspace from the list and click **Remove**.

Configuration

Configuration of static workspace instances

Actions:

Add

Modify

Remove

Filter by name

Name	Type of space	Description
Battery_Assembly	Workspace	Battery Assembly
Safety_Belt_Assembly	Workspace	Safety Belt Assembly

Location Events

Show area:

Figure: Configuration of Workspaces in ACS

Workspace Editor

Use the **Workspace Editor** to define a named extent of a zone, in which assembly takes place. The space extent in 2D must be defined graphically whereas name, space floor and ceiling height must be defined alphanumerically.

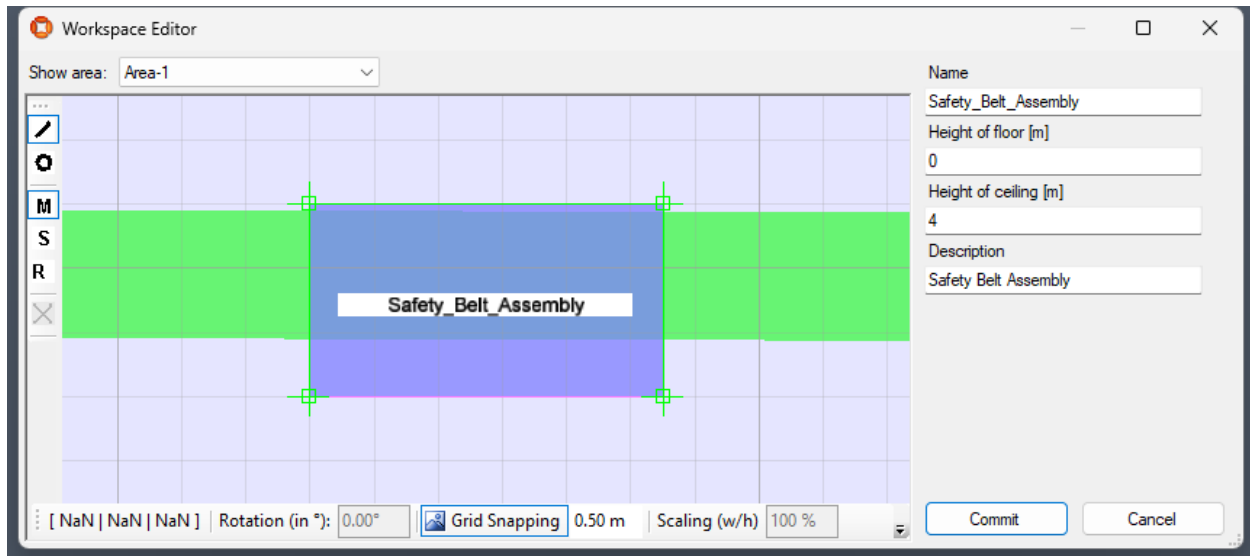


Figure: The Workspace Editor is used to define a named extent of a zone

Define the Workspace Extent

1. First select an area from the Area list.
2. Navigate the map view to the region where you want to set the space extent.
3. Enter the space extent by clicking the map view and defining the extent polygon.

Define the Workspace Details

The Workspace Details provide controls to define alphanumerical attributes and buttons to save or discard changes.

Field	Details
Name	Mandatory field. Each Workspace must have a name. The name must be unique within all Workspaces.
Height of floor [m]	Mandatory field. Specify the lower border (floor) of the extent as a height above the floor. The unit of the value is meter.
Height of ceiling [m]	Mandatory field. Specify the upper border (ceiling) of the extent as a height above the floor. The unit of the value is meter.
Description	Optional field. Enter a short description of the Workspace.

Define Events to be Triggered at Workspaces

For each Workspace you can define events that will be triggered if a product type enters the Workspace.

For more information see [Trigger Named Events](#).

Hints

Don't make the areas too small, devices must be well tracked inside the spaces in order to activate them.

Assembly Line Stations

Standard user

Stations (or sometimes called takts) are named sections on [Assembly Lines](#).

From ACS version 2.8, stations are available in SmartSpace as objects based on the ACS Station type. Despite this, you should always configure stations using the ACS Main GUI as described in this section. Do not configure stations using SmartSpace Config: the details will not be saved or will be reset to the values configured in ACS.

You can display and amend stations' spatial extents using the Spatial properties workspace in SmartSpace Config and assign representations to them using the Model assignment workspace. With the relevant licenses installed in SmartSpace, you can create searches for use with Web maps and Web forms and use stations in Business rules.

How it Works

Adding a New Station

Click **Add** to add a new Station. This will display the **Edit Assembly Line Station** dialog (see below). Click **Commit** to save the new Station.

Changing an Existing Station

Select a Station from the list. Click **Modify** to change the selected Station. This will display the **Edit Assembly Line Station** dialog (see below). Click **Commit** to save changes to the Station.

Removing a Station

Select one or more Station(s) from the list and click **Remove**.

Generate Assembly Line Stations

Click **Generate** to generate Stations for an Assembly Line.

Use the Select Assembly Line dropdown to display one selected line or all lines.

You can also filter by the assembly line or description.

Use the **Assembly Line Station Editor** to define a named extent of a Station. The space extent in 2D must be defined graphically whereas name, description, space floor and ceiling height must

Configuration

be defined alphanumerically.

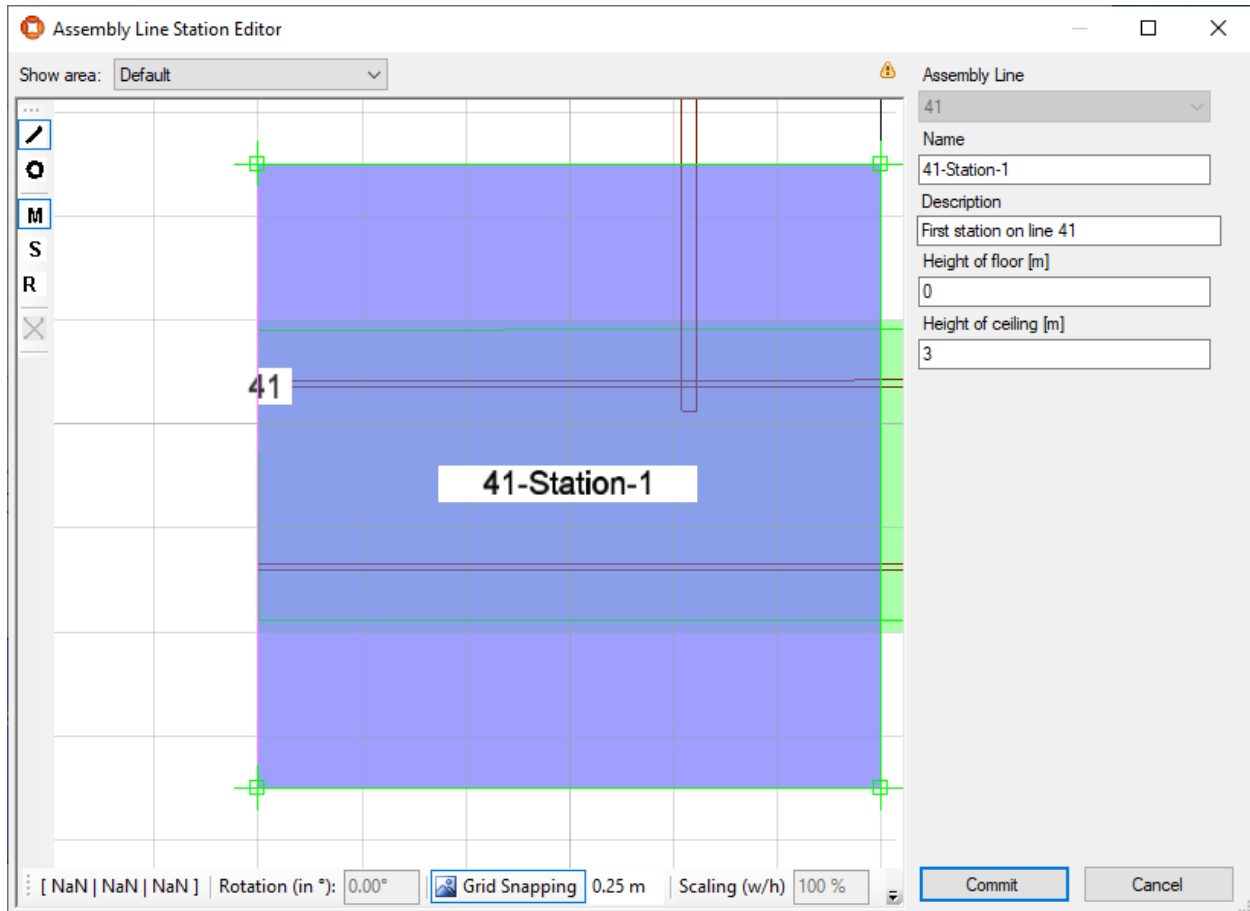


Figure: Editing an Assembly Line Station

Field	Detail
Assembly Line	Mandatory field. Choose the Assembly line from the list.
Name	Mandatory field. The name must be unique within ACS.
Description	Optional. Description of the assembly line.
Height of floor [m]	Mandatory field. The floor height must be a float value.
Height of ceiling [m]	Mandatory field. The ceiling height must be a float value and be bigger than the floor height.

Field	Detail
Start offset [m]	Optional field. Set the start offset in meters for all defined Stations.

Generating Assembly Line Stations

Click **Generate** to open the **Generate Assembly Line Stations** dialog.

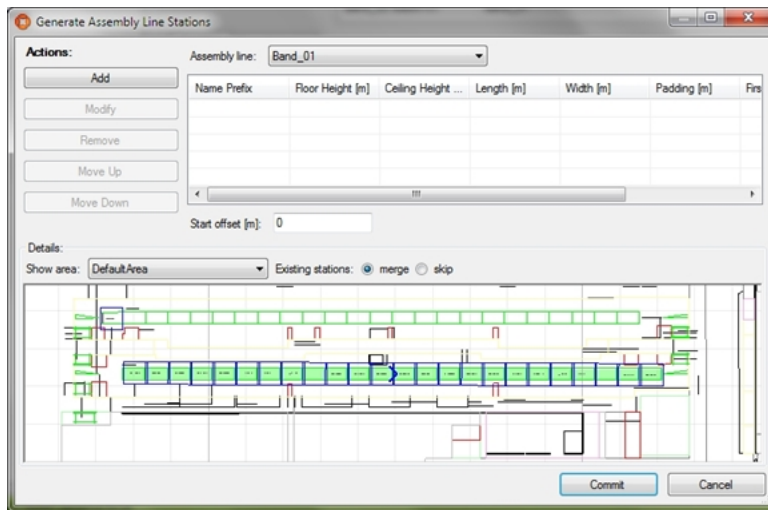


Figure: The Generate Assembly Line Stations Dialog

A station descriptor is used for generating Assembly Line Stations. A station descriptor is a pattern used to generate Stations and station geometries based on alphanumeric descriptions.

Adding New Station Descriptors

Click **Add** to add new station descriptors. This displays the **Stations Descriptor Editor** (see below). Click **Commit** to save new stations descriptor.

Changing Existing Station Descriptors

Select a station descriptor from the list. Click **Modify** to change the selected station descriptor. This displays the **Stations Descriptor Editor** (see below). Click **Commit** to save changes to the station descriptor.

Removing Stations Descriptors

Select one or more station descriptors from the list and click **Remove**.

Change the Order of Stations Descriptors

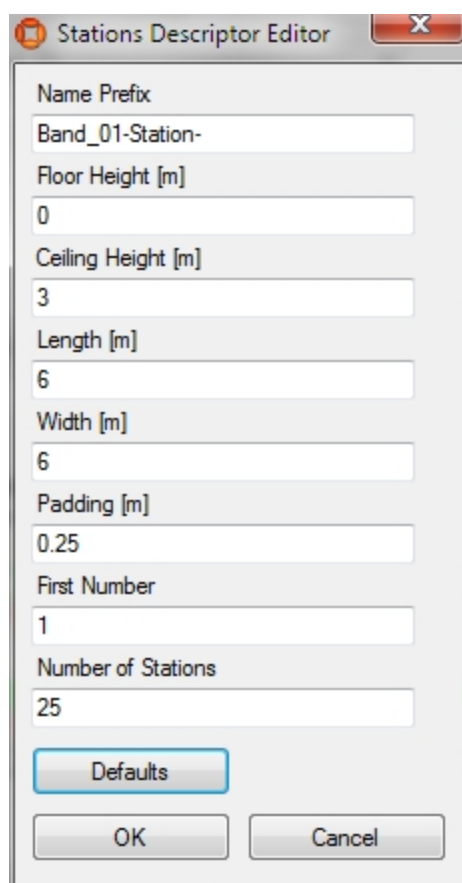
To change the order of station descriptors defined for the Assembly Line, use the **Move Up** or the **Move Down** buttons.

Existing Stations

- Choose **merge** to merge existing stations after changing the station descriptor.
- Choose **skip** to skip existing stations after changing the station descriptor.

Editing a Station Descriptor

When clicking Add resp. Modify the custom stations descriptor editor dialog opens.



The screenshot shows a Windows-style dialog box titled "Stations Descriptor Editor". It contains the following fields and values:

- Name Prefix: Band_01-Station-
- Floor Height [m]: 0
- Ceiling Height [m]: 3
- Length [m]: 6
- Width [m]: 6
- Padding [m]: 0.25
- First Number: 1
- Number of Stations: 25

At the bottom of the dialog, there are three buttons: "Defaults", "OK", and "Cancel".

Figure: Editing a Station Descriptor

Field	Detail
Name Prefix	Mandatory field. The name must be unique within ACS.
Floor Height [m]	Mandatory field. The floor height must be a float value.
Ceiling Height [m]	Mandatory field. The ceiling height must be a float value and be bigger than the floor height.
Length [m]	Mandatory field. The width of a station zone.
Padding [m]	Non mandatory field. The padding between consecutive stations.
First Number	Non mandatory field. The starting number of the station sequence. If none is defined the station names are derived from the name and the current number of the stations.
Number of Stations	Mandatory field. The number of stations for this station setting along the line.

- Clicking **OK** shows any invalid data for this station descriptor. If the data is valid clicking **OK** saves the values as an existing or new row in the stations descriptor table.
- Clicking **Defaults** will add default values for all fields.
- Clicking **Cancel** will dismiss the current edited values.

Defining Events to be Triggered at Assembly Line Stations

For each Assembly Line Station you can define events that will be triggered if a [Product Type](#) enters the station.

For more information see [Trigger Named Events](#).

Trigger Points

Standard user

Define positions (Trigger Points) on [Assembly Lines](#), which are used as event triggers, when products pass the points.

When used with the ACS protocol, trigger points will generate a PRODAT telegram. (See the Ubisense ACS Protocol guide, available from the Ubisense Documentation Portal, for further information.)

How it Works

Adding a New Trigger Point

Click **Add** to add a new Trigger Point. This will display the **Trigger Point Editor** (see below). Click **Save** to store new Trigger Point.

Changing an Existing Trigger Point

Select a Trigger Point from the list. Click **Modify** to change the selected Trigger Point. This will display the **Trigger Point Editor** (see below). Click **Save** to store changes to the Trigger Point.

Removing a Trigger Point

Select one or more Trigger Point(s) from the list and click **Remove**.

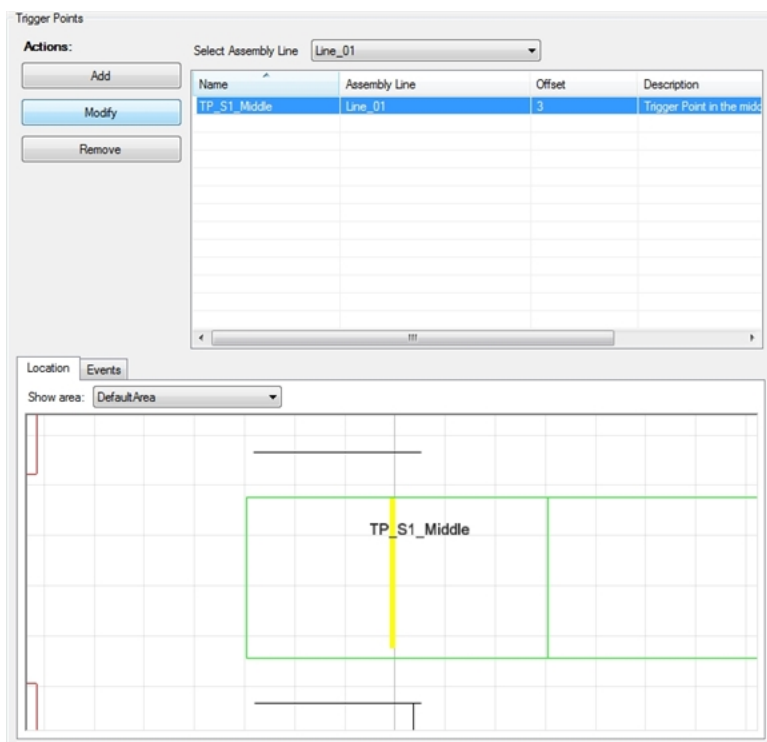


Figure: The Trigger Points Tab

Use the Select Assembly Line dropdown to display one selected line or all lines.

You can use the Simple Filter to display items matching the criteria you input. See [Using Simple Filters](#) for further information.

Trigger Point Editor

Use the **Trigger Point Editor** to define a named Trigger Point on an Assembly Line. The point must be defined graphically or via the Offset field whereas name and description must be defined alphanumerically.

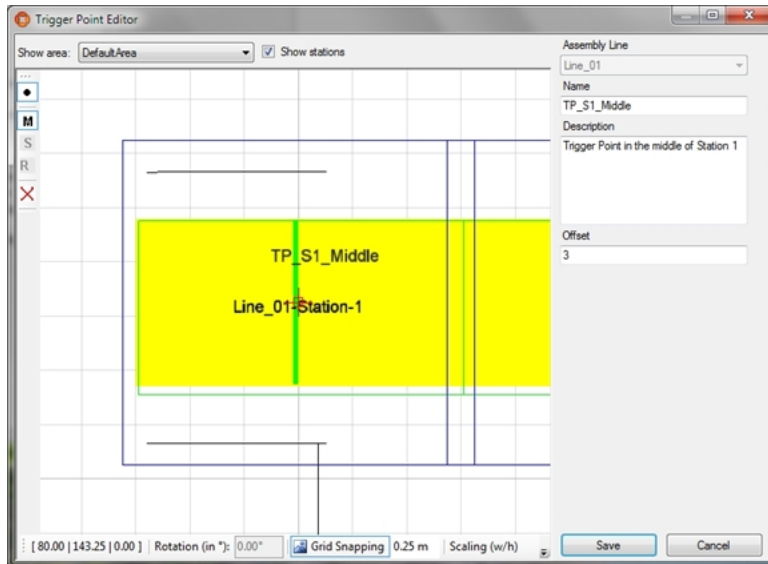


Figure: Configuring a Trigger Point

Trigger Point Position

1. Select an area from the **Area** list.
2. Navigate the map view to the region where you want to set the point.
3. Enter the point by clicking the map view. The point can also be specified by setting the offset.



With **Show Stations** an existing station for the assembly line can be enabled or disabled.

Trigger Point Details

Field	Detail
Assembly Line	Mandatory field. Choose the Assembly Line from the list.

Field	Detail
Name	Mandatory field. The name must be unique within ACS.
Description	Optional. You can describe the purpose of a specific Trigger Point in more detail.
Offset	Mandatory field. The offset of the Trigger Point from the begin of the selected Assembly Line. The offset is calculated from the geometry of the trigger point, but can be changed here.

Defining Events to be Triggered at Trigger Points

For each Trigger Point, you can define events that will be triggered if a [Product Type](#) passes the trigger point.

For more information see [Trigger Named Events](#).

Ident Zones

Standard user

Ident Zones are areas in the factory where certain products will be identified to trigger some further actions.

Additionally, Ident Zones are used in conjunction with [Association](#) and [Disassociation](#) zones and [Assembly Points](#) to identify tags to be associated/disassociated to/from products.

From ACS version 2.8, ident zones are available in SmartSpace as objects based on the ACS Ident Zone type. Despite this, you should always configure ident zones using the ACS Main GUI as described in this section. Do not configure ident zones using SmartSpace Config: the details will not be saved or will be reset to the values configured in ACS.

You can display and amend ident zones' spatial extents using the Spatial properties workspace in SmartSpace Config and assign representations to them using the Model assignment workspace. With the relevant licenses installed in SmartSpace, you can create searches for use with Web maps and Web forms and use ident zones in Business rules.

How it Works

Adding a New Ident Zone

Click **Add** to add a new Ident Zone. This will display the custom **Ident Zone Editor** (see below). Click **Commit** to save the new Ident Zone.

You can use the Simple Filter to display items matching the criteria you input. See [Using Simple Filters](#) for further information.

Modifying an Existing Ident Zone

Select an Ident Zone from the list. Click **Modify** to change the selected Ident Zone. This will display the custom **Ident Zone Editor** (see below). Click **Commit** to save changes to the Ident Zone.

Removing an Ident Zone

Select an Ident Zone from the list and click **Remove**.

Configuration of Ident Zones

Actions:

Add

Modify

Remove

Filter

Name	Description
iZone	Ident zone for association

Location

Details

Events

Show area:

Configuration

Figure: Ident Zones are areas where certain products will be identified to trigger some further actions

Editing Ident Zones

Use the **Ident Zone Editor** to define a named extent of a zone, in which identification takes place. The space extent in 2D must be defined graphically whereas name, floor and ceiling height must be defined alphanumerically.

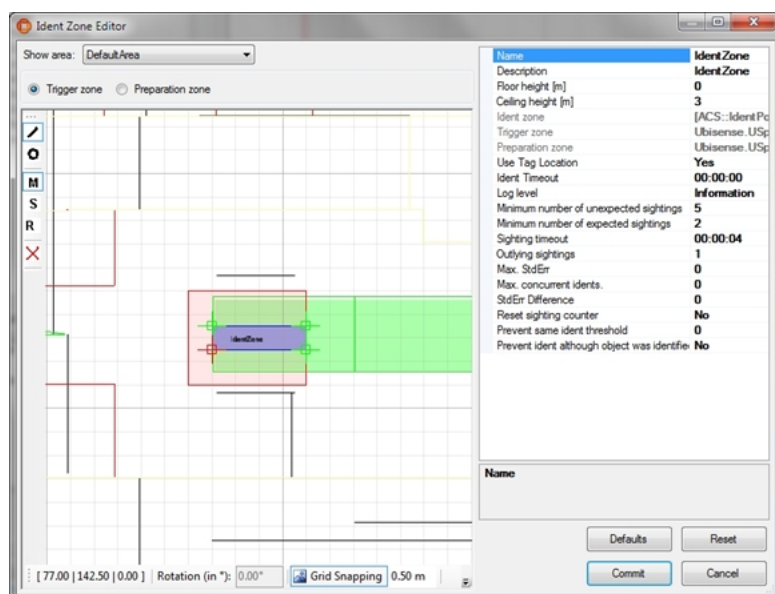


Figure: Defining an Ident Zone

Ident Zone Extent

1. Select an area from the **Area** list.
2. Navigate the map view to the region where you want to set the space extent.
3. Enter the space extent by clicking the map view and defining the extent polygon.

Notes

- **Trigger zone:** The Trigger zone is the space extent within which a product must be located before being identified at the Ident Zone

- **Preparation zone:** Optional extent. The Preparation zone is the space extent within which a product must be located before a location within the Trigger zone leads to an identification at the Ident Zone. The Preparation zone must include the Trigger zone.

There are two geometry checks implemented:

- Trigger zone must be covered by Preparation zone.
- Zones must be contained in Location Cell bounds.

Ident Zone Details

Field	Detail
Name	Mandatory field. Each Ident Zone must have a name. The name must be unique within all Ident Zones.
Description	Optional field. You can describe the purpose of the Ident Zone.
Height of floor [m]	Mandatory field. Specify the lower border (floor) of the extent as a height above the floor. The unit of the value is meter.
Height of ceiling [m]	Mandatory field. Specify the upper border (ceiling) of the extent as a height above the floor. The unit of the value is meter.
Use Tag Location	Mandatory field. Select either 'Yes' or 'No'. If 'No' is selected, the position of the product will be used for identification at the Ident Zone, if 'Yes' is selected, the position of the tag associated to the product will be used.
Ident Timeout	If a timeout greater than zero is specified the product to be identified must update its position before the timeout passes, otherwise it will no longer be asserted to be at the Ident Zone. If the timeout is given a zero seconds, the product will be retracted from the Ident Zone only if positions outside the Ident Zone are found.
Log Level	Select a log level from the list of possible values. The log level selects the amount of trace information which the Ident Determination service writes into log files.
Minimum number of unexpected sightings	This is the minimum number of sightings required in the Ident preparation zone for an unexpected object.
Minimum number of expected sightings	This is the minimum number of sightings required in the Ident preparation zone for an expected object. An expected object is for example a product, which follows a proceeding product in the correct order.
Sighting Timeout	If the time between two position updates is greater than the given timeout, position count will be cleared and start again from zero.

Field	Detail
Outlying sightings	The number of position updates outside the Trigger zone after which a product will no longer be asserted to be at the Ident Zone.
Max. StdErr	If object location's StdErr is greater than Max. StdErr, then location is discarded. If value is set to 0, then Max. StdErr is not checked.
Max. concurrent idents	The maximum expected number of objects concurrently asserted to be at an Ident Zone. If this number would be exceeded the standard error values of the objects are compared and the one with worst std error will no longer asserted to be at the Ident Zone. If the value is set to zero the option is not used.
StdErr Difference	The maximum accepted difference between standard error values for different objects being asserted to be at the Ident Zone at the same time. This parameter is only used if the parameter Max. concurrent idents. is defined too.
Reset sighting counter	If true then if a location is discarded because of the StdErr Difference, then the sighting update counter for the object is reset to 0, and it needs the configured minimum updates again, to be a candidate for an assertion.
Prevent same ident threshold	If an object (tag or product) was identified at an Ident Point, then you specify with this parameter the number of other objects, which must be detected at the Ident Point, before the object (tag or product) can be identified again. If set to zero the feature is disabled.
Prevent ident although object was identified at another Ident Point	If the value is set to 'No' for an Ident Point then an object (tag or product) can immediately be identified here again if it was identified at another Ident Point in the meanwhile, even if the 'Prevent same ident threshold' is not reached yet.

- Click **Defaults** to fill the attributes with default values.
- Click **Reset** to discard any changes.
- Click **Commit** to save the attributes in the database and close the dialog.
- Click **Cancel** to discard any changes and close the dialog.

Defining Events to be Triggered at Ident Zones

For each Ident Zone you can define events that will be triggered if a product type enters the Ident Zone.

For more information see [Trigger Named Events](#).

Association Zones

Standard user

Define zones in which tags can automatically be associated to products.



The functionality for automatic association is only available if the product information is received from an external system. However, half automatic association can be done by automatically detecting tags within the Association Zone and manually providing the product ID, e.g. by scanning a barcode. To enter barcodes, use the standalone Product Tag Association tool.

How it Works

Adding a New Association Zone

Click **Add** to add a new Association Zone. This will display the **Association Zone Editor** (see below). Click **Commit** to store new Association Zones.

Changing an Association Zone

Select an Association Zone from the list. Click **Modify** to change the selected Association Zone. This will display the **Association Zone Editor** (see below). Click **Commit** to store changes to the Association Zone.

Removing an Association Zone

Select an Association Zone from the list and click **Remove**.

Configuration

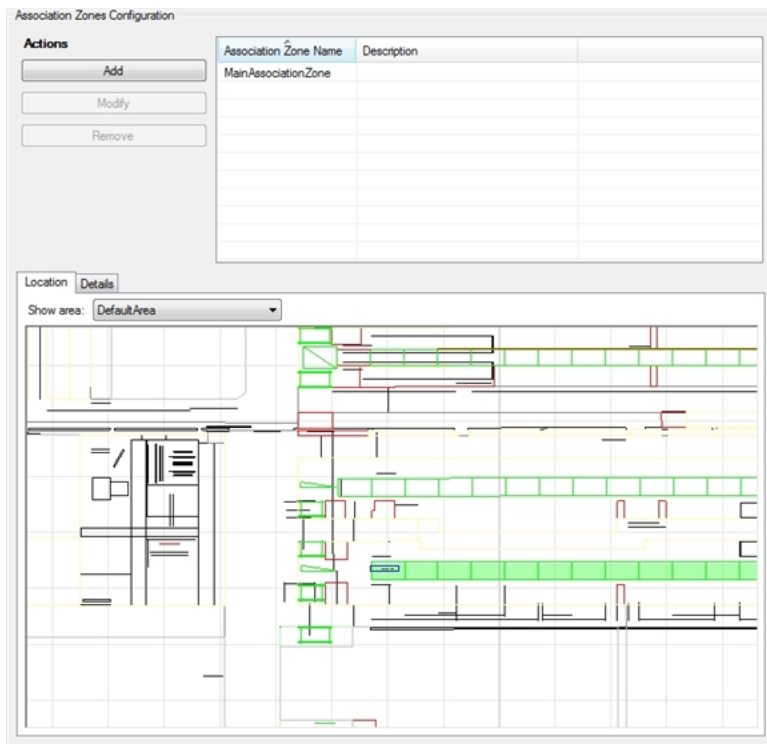


Figure: The Association Zones Configuration Tab

Association Zone Editor

Use the **Association Zone Editor** to define an Association Zone object, which is used to perform an association.

Various alphanumeric attributes must be given to define an association space.

Association Zone Editor

Name: Main Association Zone

Description:

Ident Zones: Association_ident

External System:

Association Id:

Tag Positions | Tag Filter

Product Types and Tag Positions

Product Type	Tag Position
C253	
S205	
W205	
X253	

Tag Positions:

Same Tag Reuse Threshold: 0

Product Candidates

Product sequence: MPS

Number of association candidates:

Association candidate delay (seconds): 5

☐ Auto-associate verified product

☐ Generate warning if sequence is violated

Commit Cancel

Figure: Defining an Association Zone

Field	Detail
Name	Mandatory field. The unique name for the Association Zone.
Description	Optional field. You can describe the purpose of a specific Association Zone in more detail.
Ident Zones	Mandatory field. You must select an Ident Zone from the list of available Ident Zones. There are three different types of Ident Zones. (See Different Types of Ident Zones).

Configuration

Field	Detail
External System	Select the External System, which shall be informed about products being identified at the Association Zone.
Association Id	Enter a unique Association ID for the given External System. That way the External System can distinguish the source of information.

Tag Positions Tab

Tag Positions Tag Filter

Product Types and Tag Positions

Product Type	Tag Position
GT	
RT	
W123	Front
W321	Front

Tag Positions

Front


Same Tag Reuse Threshold

0

Field	Detail
Product Types and Tag Positions	Mandatory field. You must select at least one tag position of a Product Type to get a working Association Zone. First select a product type from the list of Product Types. This will update the list of tag positions in the combo box. Then select a tag position from the list of available tag positions. When an association takes place the tag will be associated to the tag position defined here. Only products of types configured here can be associated.
Same Tag Reuse Threshold	The threshold to reuse the same tag in the Association Zone again.

Tag Filter Tab

The screenshot shows the 'Tag Filter' tab in a configuration window. At the top, there are two tabs: 'Tag Positions' and 'Tag Filter'. The 'Tag Filter' tab is active. Below the tabs, there is a 'Tag type' dropdown menu. Underneath, the 'Tag ranges' section contains three buttons: 'Add', 'Modify', and 'Remove'. Below these buttons is a table with two columns: 'From Tag Id' and 'To Tag Id'. The first row of the table contains the values '00:00:7B:01' and '00:00:7B:FF'. Below the table, there is a 'Use tags' section with two radio buttons: 'From defined ranges' and 'Not from ranges'. The 'Not from ranges' radio button is selected.

Field	Detail
Tag type	<p>Optional field. Select a tag type for which the Use tag parameter should apply from a dropdown of tag types. During tag association at an association zone, only tags assigned to the selected tag type, or which are not associated with any tag type, are valid for associations. Tags that do not have a tag type will be assigned the tag type selected here.</p> <p>If a candidate tag is rejected, a tag type is <i>not</i> assigned to the rejected tag. (In versions earlier than 2.10, association zones could assign a tag type to a candidate tag even when rejecting the candidate tag and not associating it with a product.)</p>
Tag Ranges	Optional field. To further control which tags association should be possible for you can define tag ranges.
Use tags	<p>Select:</p> <ul style="list-style-type: none"> • From defined ranges to associate only such tags, which are included in one of the defined ranges (whitelist). • Not from ranges to associate only to such tags, which are not included in any of the defined ranges (blacklist). <div>  Do not select From defined ranges if you have not actually defined a range, as this will result in only using tags from an empty tag list, i.e. no tags will be allowed! </div>

Product Candidates

If you use External Product Sequences, you can configure their use in the Product Candidates section of the editor.

Field	Detail
Product sequence	Choose an External Product Sequence (configured in External Product Sequences). Leave blank if no External Product Sequence is used in the association zone.
Number of association candidates	If an External Product Sequence is used, enter the number of candidate products subsequent to the most recently associated product in the sequence to be offered for manual association in the Product Tag Association GUI. This should generally be a small number, such as 2 or 3. See Example: Uses of an External Product Sequence
Association candidate delay (seconds)	<p>Enter the delay after an association has been made before the next candidates are offered for manual association. For example, if the delay is set to five seconds, the Product Tag Association GUI displays the last association for five seconds and then shows the next association candidates.</p> <p>The delay must be set to a number less than the time for the next physical product to arrive at the association station.</p> <p>The default is 5 seconds.</p>
Auto-associate verified product	<p>If checked, automatically associate a single seen tag with the next unassociated product from the product sequence.</p> <div> <p>i Use of this feature requires two association zones. See Example: Uses of an External Product Sequence for further information.</p> </div>
Generate warning if sequence is violated	Generate a warning in the Product Tag Association GUI if the most recently associated product was not the next in the External Product Sequence.

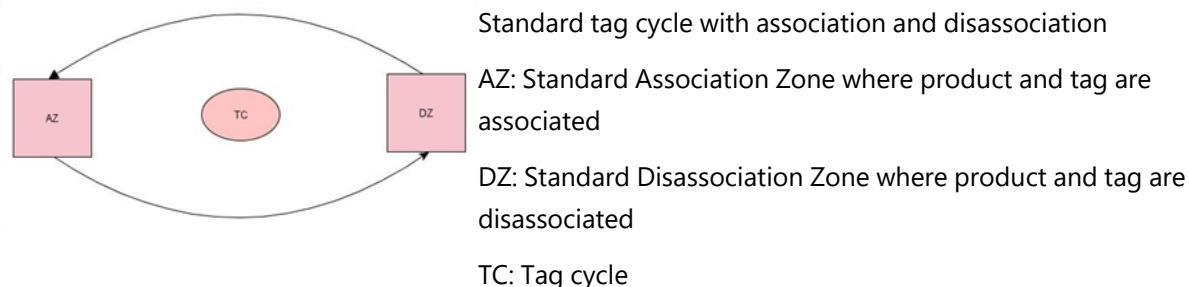


Figure: Standard tag cycle with association and disassociation

Extension

Besides supporting standard associations of tags and products, there are two other types of associations supported:

- Swap tag – see [Association Zones – Automatic Tag Swaps](#)
- Swap tag position – see [Association Zones – Automatic Swap of Tag Positions](#)

Bad Tags at Association Zones

If tags show defective behavior they can be flagged as being 'bad' by assigning them the **Bad tag** tag type in the [Tag Management](#) page. When a tag with the **Bad tag** tag type is detected at an association zone it is prevented from being associated with any products.

The Product Tag Association GUI identifies these tags with a **Bad tag** label so that they can be removed from the product and collected for repair or disposal.

Different Types of Ident Zones

There are three types of Ident Zones:

Type	Details
Standard	The most common type of Ident Zone. The tag is recognized and gets the product ID from an external system.
Tag Swap	Swap tags associated to products with other tags at a fixed location. For example, vehicles which are associated with standard industry tags while in production, are swapped to Series 7000 TriMode tags or DIMENSION 4 Multi-mode tags, when cars leave the assembly and move into rework areas and are finally driven to outdoor parking spaces.
Tag Position Swap	Swap tag positions at certain points in the factory, while keeping the same tag for a product. This might either be because the tag must be moved physically to another location at the product or because the tag position parameters must change, but the tag stays on its original location at the product.

The following table shows the enabled types for each Ident Zone type.

	Standard	Swap Tag	Swap Tag Position
Tag	x	x	-
Product	-	x	x

- For a standard Ident Zone **only tags** must be enabled for ident determination.
- For a tag swap Ident Zone **tags and products** must be enabled for ident determination.
- For a tag position swap **only products** must be enabled for ident determination.

Association Zones - Automatic Tag Swaps

Standard user

It is possible to swap tags associated to products with other tags at a fixed location. E.g. vehicles which are associated with standard industry tags while in production, but must be swapped to TriMode tags, when cars leave the assembly and move into rework areas and are finally driven to outdoor parking spaces. This swap of tags is supported by an automatic process, which only requires the physical swap of tags while the change of the association of tags to products in software is done automatically.

To ensure reliability, there are some restrictions regarding the physical process:

- The location of the new tag on the product must be close to the location of the old tag (reason is that there is only a single ident zone for identifying products and tags)
- There is no further association zone behind the one supporting the automatic swap.

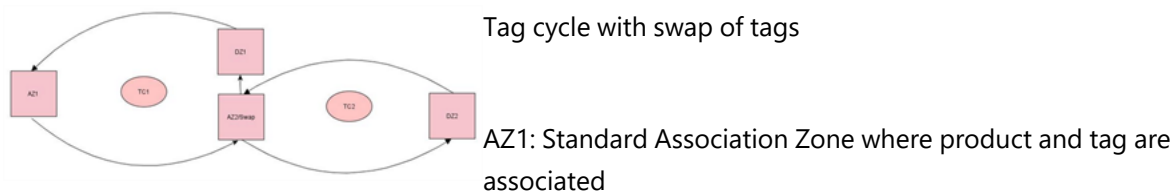
Configuration for Automatic Swap of Tags

An Association Zone must be configured in the usual way, i.e. for all product types, which shall be supported, suitable tag positions must be configured. The tag positions for the new tags can be the same as for the old tags, or can be different. E.g. during assembly a tag position with option "Drive directly?=false" may be used while outdoor a tag position with option "Drive directly?=true" must be selected.

- "Same Tag Reuse Threshold" is typically greater than zero.
- There is typically no External System associated, since the product information must be provided by ACS itself.
- An ident zone is associated, its configuration is described below.

An ident zone must be configured and associated to the Association Zone, with the following properties:

- The ident zone must identify tags: In the type activation list the type `ULocationIntegration::Tag` must be activated.
- The ident zone must identify products: In the type activation list all product types must be activated for which the automatic tag swap is possible. If the Ident Point is not on an assembly line, where product positions are generated by the tracking support service, the option "Use Tag Location=true" of the Ident Point must be selected.
- For both tags and products an ident timeout is configured.



AZ2: Swap Association Zone where product gets another tag or tag is moved

DZ1: Disassociation Zone where tag is send to sleep

DZ2: Disassociation Zone where product and tag from TC2 are disassociated

TC1 and TC2: Tag cycle

Association Zones - Automatic Swap of Tag Positions

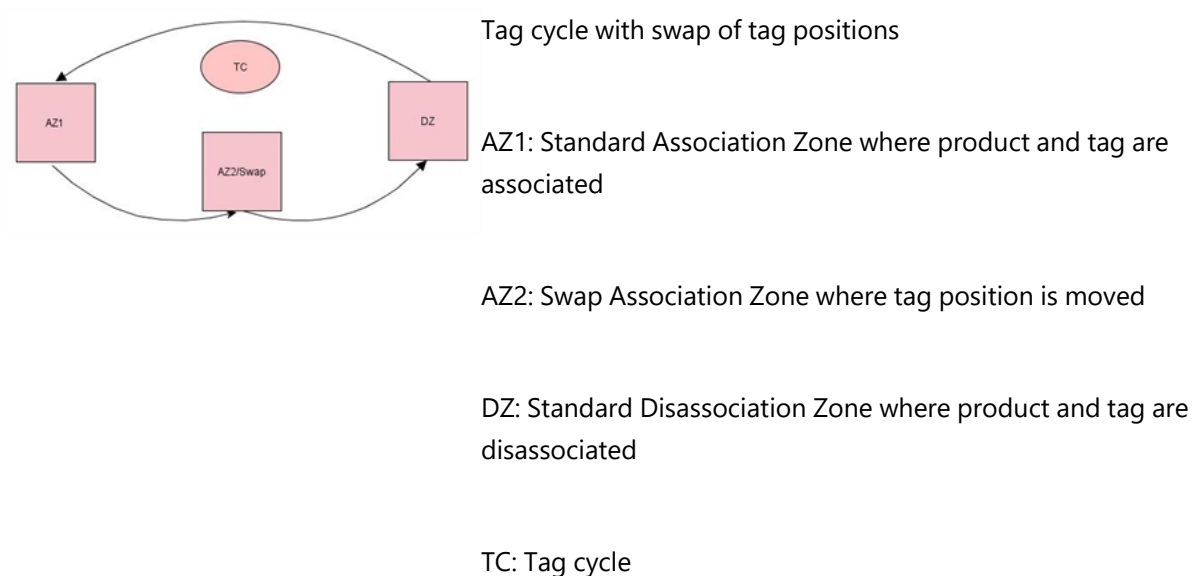
Standard user

It is possible to swap tag positions at certain points in the factory, while keeping the same tag for a product. This might either be because the tag must be moved physically to another location at the product or because the tag position parameters must change, but the tag stays on its original location at the product.

Configuration for automatic swap of tag position

The configuration for automatic swap of tag position is almost equal to the configuration for automatic swap of tags (see [Association Zones – Automatic Tag Swaps](#)) but in addition:

- The associated ident zone must not identify tags: In the type activation list the type `ULocationIntegration::Tag` must be deactivated.



Disassociation Zones

Standard user

You can define zones in which tags are automatically unassociated from products. Additionally product instances can be removed or tags can be sent to deep sleep.

How it Works

Adding a New Disassociation Zone

Click **Add** to add a new disassociation zone. This will display the **Disassociation Zone Editor** (see below). Click **Commit** to store the new disassociation zone.

Changing a Disassociation Zone

Select a disassociation zone from the list. Click **Modify** to change the selected disassociation zone. This will display the **Disassociation Zone Editor** (see below). Click **Commit** to store changes to the disassociation zone.

Removing a Disassociation Zone

Select an disassociation zone from the list and click **Remove**.

Disassociation Zones Configuration

Actions

Add

Modify

Remove

Name	Description
Disassociation	Disassociation

LocationDetails

Name

Description

Ident Zones

External System

Perform disassociation

Remove product

Set tag to low activity

Tag type

Using the following tags only

Disassociation

Disassociation

Ident 1

LinePLC (Association Id: 963741)

Yes

Yes

Yes (Tag profile: CarStandard)

VEHICLETAG

From Tag...	To Tag Id
00:00:00:01	00:00:00:FF

Figure: The Disassociation Zones Configuration Tab

The Disassociation Zone Editor

Use the **Disassociation Zone Editor** to define a disassociation zone object, which is used to perform disassociation actions.

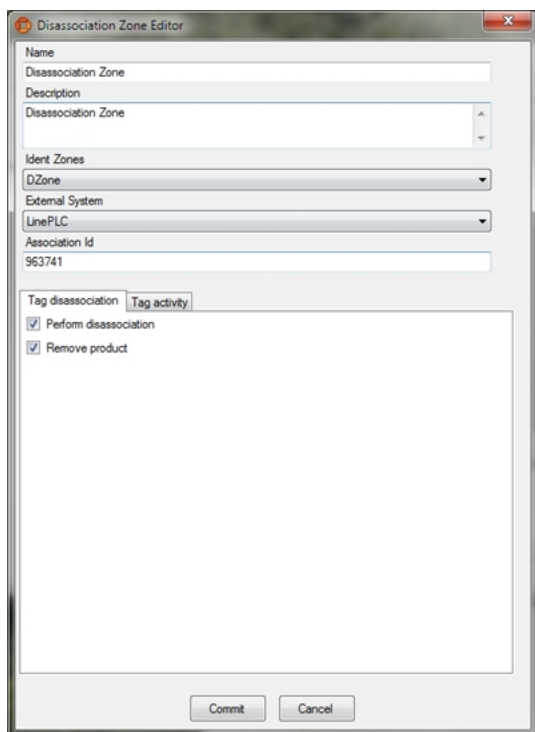


Figure: Defining a Dissociation Zone

Field	Detail
Name	Mandatory field. The unique name for the disassociation zone.
Description	Optional field. You can describe the purpose of a specific disassociation zone in more detail.
Ident Zones	You must select the corresponding ident zone.
External System	Select the External System, which shall be informed about products being identified at the Disassociation Zone.
Association Id	Enter a unique Association ID for the given External System. That way the External System can distinguish the source of information.
Perform	Check this check box if you want products being detected within the extent of the

Field	Detail
disassociation	disassociation zone be disassociated from their tags.
Remove product	Check this check box if you want products being detected within the extent of the disassociation zone be removed from ACS. When products are removed, they are also disassociated from their tags.

Configuring Tag Activity

The tag activity parameters are used to configure the activity of tags that are detected within the disassociation zone. Tags can be:

- Sent to deep sleep mode
- Set to a specified activity profile

Tag Disassociation Tag Activity

☐ Send tag to sleep

Wakeup time short

☒ Set tag to low activity

Profile selection

Tag type
Series 7000 compact tag

Tag ranges

Add Modify Remove

From Tag Id	To Tag Id

Use tags

☒ From defined ranges

☐ Not from ranges

Figure: Configuring Tag Activity (Series 7000 systems – V2 tags)

Tag Disassociation Tag Activity

☒ Set tag to low activity

Profile selection CarStandard

Tag type
VEHICLETAG

Tag ranges

Add Modify Remove

From Tag Id	To Tag Id
00:11:CE:00:00:00:20:00	00:11:CE:00:00:00:FF:FF


Use tags

☒ From defined ranges

☐ Not from ranges

Figure: Configuring Tag Activity (D4 systems)

Field	Detail
Send tag to sleep	Check this check box if you want tags detected in the disassociation zone be sent to deep sleep (Series 7000 only).
Wakeup time	The command sent to tags to let them sleep also defines the time that you must press the button to wake them up again. You can choose between short

Field	Detail
	(approx. 1s) and long (approx. 3s) (Series 7000 only).
Set tag to low activity	Check this check box if you want tags detected in the disassociation zone to be configured with a specified tag profile.
Profile selection	Select the tag profile from the list of available profiles (See Tag Profile Manager).
Tag type	Optional field. Select a tag type for which the Use tag parameter should apply from a dropdown of tag types.
Tag ranges	You can define tag ranges to further control the tags to which the activity parameters are applied.
Use tags	<p>Select:</p> <ul style="list-style-type: none"> • From defined ranges to associate only such tags, which are included in one of the defined ranges (whitelist). • Not from ranges to associate only to such tags, which are not included in any of the defined ranges (blacklist). <div>  Do not to select From defined ranges if you have not actually defined a range, as this will result in only using tags from an empty tag list, i.e. no tags will be allowed! </div>

Hints

Only tags that have been successfully disassociated can be sent to deep sleep (Series 7000 only).

If you want to apply the activity parameters to all disassociated tags, do not define a range and select **Not from ranges**.

Trigger Named Events

Advanced user

You can configure named events to be triggered at Workspaces, Assembly Line Stations, Trigger Points, and Ident Zones.



You configure named events on the configuration tabs for [Workspaces](#), [Assembly Line Stations](#), [Trigger Points](#), and [Ident Zones](#).

How it Works

For each Workspace, Assembly Line Station, Trigger Point, or Ident Zone you can configure events to be triggered.

Adding a New Event

Click **Add** to add a new event. This will display the **Event Configuration** dialog (see below). Click **Save** to save the new event.

Changing an Existing Event

Select an event from the list. Click **Modify** to change the selected event. This will display the **Event Configuration** dialog (see below). Click **Save** to save changes to the event.

Removing an Event

Select an event from the list and click **Remove**.

Event Configuration Dialog

Use the **Event Configuration** dialog to define an event.

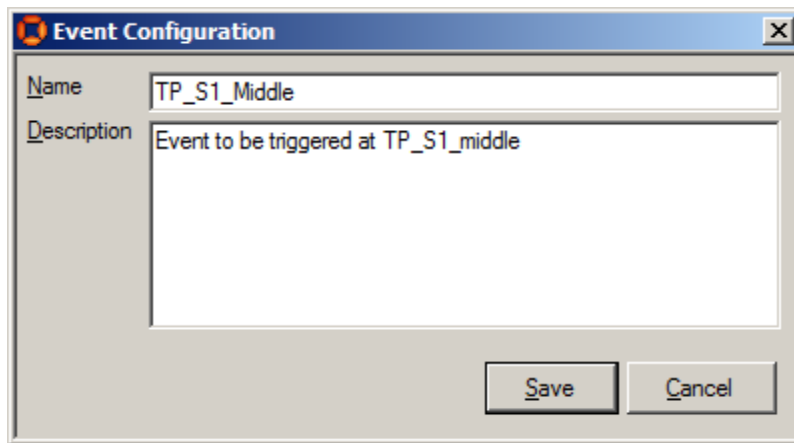


Figure: Configuring an Event

Field	Detail
Name	Mandatory field. The name is derived by the name of the Workspace, Assembly Line Station, Trigger Point, or Ident Zone and must be unique within ACS.
Description	Optional field. You can describe the purpose of an event in more detail.

Activate Product Types to Trigger Events

For each event, you can activate the product types to trigger the event.

Select the event and activate all the product types that you want to trigger the event, if they enter the Workspace, Assembly Line Station, Trigger Point, or Ident Zone.

Select External System to be informed

For each event, you can select the external system to be notified by a product entering an area or passing a trigger point.

Select the event and activate all the external systems to which you want to forward the event, if an active product type enters.

Location		Events						
Actions:		Name	Timeout	Description	Active Types	Ext. Syst. Name	IP Address	Port
<input type="button" value="Add"/>		TP_S1_Middle	00:00:15	Event to be triggered at TP_S1_M	<input checked="" type="checkbox"/> W321 <input type="checkbox"/> W123	<input checked="" type="checkbox"/> ACS_PLC <input type="checkbox"/> Tool-Controller (ACS)	127.0.0.1	4545 6045
<input type="button" value="Modify"/>								
<input type="button" value="Remove"/>								

External Systems

Define protocols and external systems, which can be dealt with in ACS.

Protocols

Standard user

Create protocols, which you want to use within ACS. Some protocols are already predefined in ACS because they are common to a number of devices ACS is capable of talking to. Furthermore there exists the possibility to define so called generic protocols to individually define a protocol for your own purpose.



In the current version it is NOT possible to add, modify, remove or configure protocols.

How it works

The configuration already presents a number of predefined protocols

Click **Add** to add a new protocol. Set the detail fields in the custom protocol editor and click **OK** to store the new protocol.

Modifying an existing protocol

Select a protocol from the list. Click **Modify** and change detail fields according to your needs in the custom protocol editor and click **OK**.

Removing a protocol

Select a protocol from the list and click **Remove**.

Predefined Protocols

This section describes the predefined protocols.

ACS Protocol (1.0.0)

The table below shows the **Additional parameter requirements** for the Initial version of the ACS Protocol.

Parameter	Description	Default Value
Alive Time-Out	Mandatory field. Alive message time-out seconds.	15
Endpoint Roles	Non mandatory field. Comma separated list of roles of the external system, valid values are <i>ProductInstanceProvider</i> and <i>ProductDataProvider</i> .	
Send telegrams for both product space and workspace changes	Non mandatory field. Only relevant for device activation if both product space and workspace rules are configured. If set to 0 (=default), a single ISINZ telegram is sent when the device is enabled and a single ISOUTZ telegram is set when the device is disabled.	0
Send ZONESTAT	Non mandatory field. Valid values [0,1]. If value=1, send ZONESTAT telegram instead of ISINZ/ISOUTZ telegrams.	0

Atlas Copco OpenProtocol

Open Protocol is an interface for building applications for remote control or data subscription of controllers.

Atlas Copco OpenProtocol 1.0.0

The table below shows the **Additional parameter requirements** for the Atlas Copco Open Protocol Version 1.0.0.

Parameter	Description	Default Value
Abort job when entering product space?	Optional parameter. 1=yes, 0=no	1
Abort job when leaving static space?	This parameter applies only applies only for events that are configured for a combination of product and static spaces, not for events that are configured solely for static spaces. 1=yes, 0=no (static space = Ident Zone, Workspace or Station)	1
Disable tool when leaving product space?	1=yes, 0=no	1
Disable tool when leaving static space?	If the parameter is set, the tool is disabled when a <i>product</i> leaves a static space. 1=yes, 0=no (static space = Ident Zone, Workspace or Station)	0

Parameter	Description	Default Value
Send Enable/Disable only	If the option is chosen, only 'Enable tool (MID 43)' is sent when a tool is enabled, and only 'Disable tool (MID 42)' is sent when a tool is disabled. This option overrides the 'Abort job...' options, since no 'Abort job' telegram will be sent. This option only applies to devices with product space rules configured. 1=yes, 0=no	

Atlas Copco OpenProtocol 1.1.0

Atlas Copco OpenProtocol Version 1.1.0 supports the special tool location system messages. The table below shows the **Additional parameter requirements** for the Atlas Copco OpenProtocol 1.1.0.

Parameter	Description	Default Value
Disable tool when leaving product space?	1=yes, 0=no	1
Disable tool when leaving static space?	If the parameter is set, the tool is disabled when a <i>product</i> leaves a static space. 1=yes, 0=no (static space = Ident Zone, Workspace or Station)	0

External Systems

Standard user

Create all external systems, which you want to control by ACS.

From ACS version 2.8, external systems are available in SmartSpace as objects based on the ACS External System type. Despite this, you should always configure external systems using the ACS Main GUI as described in this section. Do not configure external systems using SmartSpace Config: the details will not be saved or will be reset to the values configured in ACS.

You can display and amend external systems' spatial extents using the Spatial properties workspace in SmartSpace Config and assign representations to them using the Model assignment workspace. With the relevant licenses installed in SmartSpace, you can create searches for use with Web maps and Web forms and use external systems in Business rules.

Configuration

How it works

Add, modify, remove and configure external systems which can be dealt with using ACS.

Name	Type	IP Address	Port
+09_PL_HZ_FP4079	PLC	53.26.9.38	5002
262-09-902_1	Tool Controller	53.26.142.1	4547
262-09-902_2	Tool Controller	53.26.142.1	4549
262-09-902_3	Tool Controller	53.26.142.1	4545
262-09-902_4	Tool Controller	53.26.142.1	4548
262-09-902_5	Tool Controller	53.26.142.1	4550
262-09-902_6	Tool Controller	53.26.142.1	4551

Name	262-09-902_2
Type	Tool Controller
Description	
IP Address	53.26.142.197
Port	4549
Protocol	Atlas Copco OpenProtocol
Protocol Version	1.0.0
Remote station is Server	True
Accepted IP Addresses	-
Used by subscription	False

Name	Value	Description	Default
Abort job when enter...	1	Optional parameter. 1=yes, 0=no	1
Abort job when leavin...	0	1=yes, 0=no (static space = Ident Zon...	1
Disable tool when lea...	1	1=yes, 0=no	1
Disable tool when lea...	0	1=yes, 0=no (static space = Ident Zon...	0

You can use the Simple Filter to display items matching the criteria you input. See [Using Simple Filters](#) for further information.

The Details section displays information about the selected external system.



Used by subscription: If the selected external system was created through telegrams received from a different external system, this flag is set to **True**. If this is the case, do not modify the its settings in the **External System Parameter** dialog.

Adding a new external system

Click **New** to add a new controller. Set the detail fields in the custom editor for external systems and click **OK** to store the new external system.

Changing an existing external system

Select an external system from the list. Change detail fields in the custom editor for external systems according to your needs and click **OK**.

Removing an external system

Select an external system from the list and click **Remove**.

Export the external systems into a CSV file

Click **CSV Export** to open a standard file chooser dialog in order to export all shown external systems with a name and into a directory of your choice. The associated objects are also exported with the list of external systems.

Editing an external system

The screenshot shows a dialog box titled "External System Parameters". It contains the following fields and controls:

- Name:** A text box containing "262-09-902-1".
- Type:** A dropdown menu with "Tool Controller" selected.
- Description:** An empty text box.
- IP Address:** A text box containing "53.26.142.197".
- Port:** A text box containing "4547".
- Protocol:** A dropdown menu with "Atlas Copco OpenProtocol" selected.
- Protocol Version:** A dropdown menu with "1.0.0" selected.
- Remote station is Server:** A checked checkbox.
- Accepted IP Addresses (empty allows all):** A large empty text area.
- Buttons:** "OK" and "Cancel" buttons at the bottom.

The table below shows details on each field of the **External System Parameter** dialog.

Field	Detail
Name	Mandatory field. Each external system must have a unique name. To keep it simple, this should be the same name the external system is identified with the production environment.
Type	Mandatory field. Select either PLC (programmable logic controller) or Tool Controller.
Description	Non mandatory field. Short description of the purpose of the external system

Configuration

Field	Detail
IP Address	Mandatory field. The IP address assigned to the external system.
Port	Mandatory field. The port number to be used for the external system.
Protocol	Mandatory field. The protocol to be used for the external system.
Protocol Version	Mandatory field. The version of the protocol to be used for the external system.
Remote station is Server	If the external system is a producer (so a server) of information.
Accepted IP Addresses	White list of accepted IP Addresses to be used for the external system. This functionality must be supported by the protocol. Currently only the ACS Protocol supports it. If not set the TCP Server must check incoming connection requests, whether or not they match the list of allowed clients. If not, the connection will be refused.

Modify the additional parameters (if necessary)

Edit Additional Protocol Parameters

Name
Send telegrams for both product space and workspace changes

Value
0

Description
Optional parameter. Only relevant for device activation if both product space and workspace rules are configured.
If set to '0' (=default) a single ISINZ telegram is sent when the device is enabled and a single ISOUTZ telegram is sent when the device is disabled (resp. ZONESTAT, if configured).
If set to '1' ISINZ and ISOUTZ telegrams (resp. ZONESTAT, if configured) are sent for both product space and work space changes

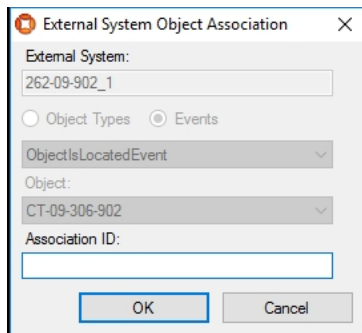
Commit Cancel

The table below shows details on each field of the **Edit Additional Protocol Parameters** dialog.

Field	Detail
Name	Mandatory field. The name of the additional parameter.
Value	Mandatory field. The value for this protocol parameter. Usually described in description.
Description	Non mandatory field. A short description of the purpose of the protocol parameter.

Editing associated objects

Add, remove or modify an associated object from the selected external system.



The table below shows details on each field of the **External System Object Association** dialog.

Field	Detail
External System	The name of the selected External System
Object Type / Events	Mandatory field. This list shows all available object types or events from the system.
Object	Mandatory field. This list shows all object instances /events from the selected object type /event.
Association ID	Mandatory field. Set the Association ID for the external system.

Event Subscriptions

Advanced user

The ACS **Event Subscription** provides functionality for external systems to dynamically subscribe for events and further on receive events, just by using a telegram interface.

The purpose of the ACS GUI for event subscriptions is basically to monitor which subscriptions exist, and modify them, in case the subscribing external system has problems doing that.

How it works

Add, modify, remove or deactivate event subscriptions.

Configuration

ID	Description	Event Name	Timeout	Status
Device1	Event subscription	CT-09-306-902	25/03/2017 16:57:24	Active

External System	IP Address	Port	Protocol	Version	Is server?
252-09-902_1	53.25.142.197	4547	Allegro Capos Op...	1.0.0	Yes

Adding a new event subscription

Click **Add** to add a subscription. Set the detail fields in the custom editor for event subscriptions and click **Commit** to store the new event subscription.

Changing an existing event subscription

Select an event subscription from the list and click **Modify**. Change detail fields in the custom editor for event subscriptions according to your needs and click **Commit**.

Removing an existing event subscription

Select an event subscription from the list and click **Remove**.

Deactivate an existing event subscription

Select an event subscription from the list and click **Deactivate**.

Editing an event subscription

The screenshot shows the 'Event Subscription Editor' dialog box. It contains the following fields and values:

- Id:** Station1
- Description:** Event subscription for product from type W123 entering Station 1 at Line 1
- Event Class:** ContainerContainsObjectEvent
- Event:** L1_T1
- Timeout:** 18 August 2019 10:31:30
- Activate:** ☒

Buttons at the bottom: Commit, Cancel.

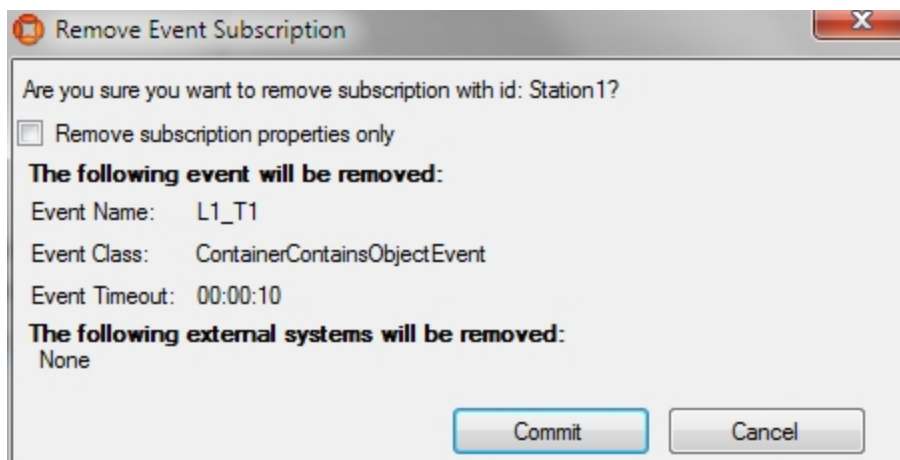
The table below shows details on each field of the **Event Subscription Editor** dialog.

Field	Detail
Id	Mandatory field. Each event subscription must have a unique name.
Description	Non mandatory field. Short description of the purpose of the event subscription.
Event Class	Mandatory field. List of all available event classes.
Event	Mandatory field. List of defined events from the chosen event class.
Timeout	Mandatory field. The timeout for this subscription. The value must be in the future. After the timeout the event subscription is removed automatically.
Activate	If the event subscription is active or not.

Removing an existing event subscription

When removing an existing event subscription the user can choose to remove only the subscription properties or remove the corresponding event and external system if they are not used elsewhere.

Configuration



Message Forwarding

Standard user

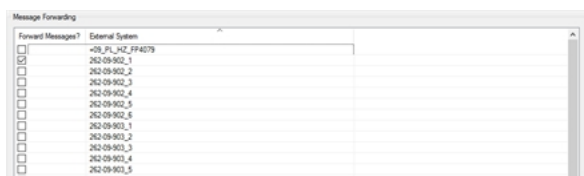
Forward ACS messages to external systems.



In the current version ONLY the ACS Protocol is supported.

How it works

The configuration presents the configured external systems.



Select an external system to forward messages

Select an external system from the list. This external system will forward the ACS messages to the corresponding protocol.

Devices

Create Device Types and Instances that can be used in ACS.

Device Types

Standard user

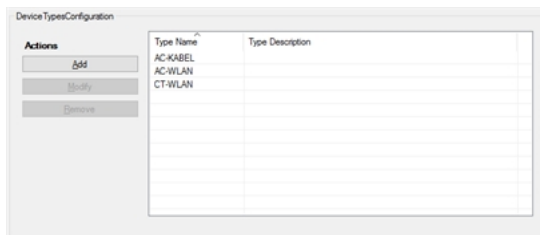
Create Device Types which can be used in ACS

From ACS version 2.8, device types are available in SmartSpace as objects based on the ACS Device type and you can add new device types both in the ACS Main GUI (described in this section) or in the Types and objects workspace in SmartSpace Config.

You can display and amend device types' spatial extents using the Spatial properties workspace in SmartSpace Config and assign representations to them using the Model assignment workspace. With the relevant licenses installed in SmartSpace, you can create searches for use with Web maps and Web forms and use ACS Device types in Business rules.

How it works

Add, modify remove and configure device types which can be dealt with using ACS.



Adding a new device type

Click **Add** to add a new device type. Set the detail fields in the custom editor for device types and click **Commit** to store the new device type.

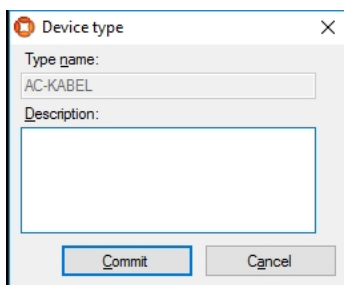
Modifying a existing device type

Select a device type from the list and click **Modify** . Change detail fields in the custom editor for device types according to your needs and click **Commit**.

Removing a device type

Select a device type from the list and click **Remove**.

Editing a device type



The table below shows details on each field of the **Device Type** dialog.

Field	Detail
Type Name	Mandatory field. Each device type must have a unique name. To keep it simple, this should be the same name the device type is identified with the production environment.
Description	Non mandatory field. Short description of the purpose of the device type.

Device Instances

Standard user

Create device instances which can be used in ACS.

From ACS version 2.8, device types are available in SmartSpace as objects based on the ACS Device type and you can see new instances of devices both in the ACS Main GUI (described in this section) or in the Types and objects workspace in SmartSpace Config.

How it Works

Add, modify, remove and configure device instances which can be dealt with using ACS.

Actions:
Add
Modify
Remove
CSV Export

Filter options:
Device type:
Device name:
Tag-ID:
Clear filter

Device Name	Device Type	Tag-ID	Tag-Profile	External System Name	Association ID	IP Address	Port
CT-09-310-904	CT-WLAN	00:11:CE:00:00:14:DC	H9_Geraet_Standard	262-09-904_6		53.26.142.196	4546
CT-09-311-902	CT-WLAN	00:11:CE:00:00:14:55	H9_Geraet_Standard	262-09-902_4		53.26.142.197	4548
CT-09-314-903	CT-WLAN	00:11:CE:00:00:14:92	H9_Geraet_Standard	262-09-903_1		53.26.142.202	4547
CT-09-315-903	CT-WLAN	00:11:CE:00:00:14:A1	H9_Geraet_Standard	262-09-903_2		53.26.142.202	4548
CT-09-316-904	CT-WLAN	00:11:CE:00:00:14:44	H9_Geraet_Standard	262-09-904_2		53.26.142.196	4547
CT-09-317-903	CT-WLAN	00:11:CE:00:00:14:A0	H9_Geraet_Standard	262-09-903_3		53.26.142.202	4549
CT-09-318-903	CT-WLAN	00:11:CE:00:00:14:91	H9_Geraet_Standard	262-09-903_4		53.26.142.202	4550
CT-09-323-904	CT-WLAN	00:11:CE:00:00:14:85	H9_Geraet_Standard	262-09-904_4		53.26.142.196	4550
CT-09-335-903	CT-WLAN	00:11:CE:00:00:14:42	H9_Geraet_Standard	262-09-903_7		53.26.142.202	4551
CT-09-336-903	CT-WLAN	00:11:CE:00:00:14:E1	H9_Geraet_Standard	262-09-903_5		53.26.142.202	4552
CT-09-338-902	CT-WLAN	00:11:CE:00:00:14:8B	H9_Geraet_Standard	262-09-902_2		53.26.142.197	4549
CT-09-339-902	CT-WLAN	00:11:CE:00:00:14:96	H9_Geraet_Standard	262-09-902_5		53.26.142.197	4550
CT-09-340-902	CT-WLAN	00:11:CE:00:00:14:45	H9_Geraet_Standard	262-09-902_6		53.26.142.197	4551
CT-09-345-904	CT-WLAN	00:11:CE:00:00:14:57	H9_Geraet_Standard	262-09-904_1		53.26.142.196	4553
CT-09-346-904	CT-WLAN	00:11:CE:00:00:14:99	H9_Geraet_Standard	262-09-904_3		53.26.142.196	4554
CT-09-349-907	CT-WLAN	00:11:CE:00:00:14:41	H9_Geraet_Standard	262-09-907_1		53.26.142.215	4550
CT-09-350-907	CT-WLAN	00:11:CE:00:00:14:8C	H9_Geraet_Standard	262-09-907_4		53.26.142.215	4551
CT-09-351-907	CT-WLAN	00:11:CE:00:00:0B:EC	H9_Geraet_Standard	262-09-907_2		53.26.142.215	4552

Device Activation
☐ Deactivate after position timeout Time threshold (sec):

Actions:
Add
Modify
Remove

Name	Description
------	-------------

Rules External Systems
Product Spaces: Static Spaces: Stations:
Filter

Is Enabled?	Product Type	Product Space
-------------	--------------	---------------

Figure: Devices Configuration Tab

Adding a new Device Instance

Click **Add** to add a new Device Instance. Set the detail fields in the custom editor for device instances and click **Commit** to store the new device instance.

Modifying an existing device instance

Select a device instance from the list and click **Modify**. Change detail fields in the custom editor for device instances according to your needs and click **Commit**.

Removing a device instance

Select an device instance from the list and click **Remove**.

Export the device instances into a CSV file

Click **CSV Export** to open a save file dialog in order to export all shown device instances with a name and into a directory of your choice. The enabled product and static spaces are also exported with the list of device instances.

Editing a device instance

Device Parameters

Device Name

003

Device Type

PF6000

Tag-ID

00:11:CE:00:01:00:00:03

Tag-Profile

DeviceDefault

Space

<default>

Commit

Cancel

Field	Detail
Device Name	Mandatory field. Each device instance must have a unique product name. To keep it simple, this should be the same name the device instance is identified within the production environment.
Device Type	Mandatory field. The available device types in ACS. If a device instance shall be modified it is not allowed to change its device type.
Tag-ID	Non mandatory field. A tag id for this device if there is a tag for the device.
Tag-Profile	Non mandatory field. A tag profile if there is a tag for the device.
Space	<div>Select a spatial extent to associate with the device.</div> <div>Spaces available for selection from the dropdown come from the following sources:</div> <div><ul style="list-style-type: none">the <default> space associated with the extent property of the ACS</div>

Field	Detail
	<p>Device type. The <default> space is a cylindrical space of 10 cm in diameter with zero height (and provides this amount of hysteresis for the device)</p> <ul style="list-style-type: none"> • Spatial properties defined for the device type in SmartSpace Config (from ACS version 2.8 onwards) <p>See the SmartSpace Config section of the SmartSpace website on the the Ubisense Documentation Portal for information on creating spatial extents for ACS devices.</p>

Filtering Devices

To easier find devices you can define a filter setting. The options are connected with **AND**. The filter options are:

- **Device type;**
- parts of a **Device name** or;
- parts of a **Tag-ID**.

To clear the filter click **Clear Filter**.

[illegible]

Figure: Example of Filtering Devices

Configuration

Device Activation Section

Automatic device deactivation

Device Activation

☒ Deactivate after position timeout Time threshold (sec) (effective 95)

The check box **Deactivate after position timeout** allows the user to select whether or not the selected device will be automatically deactivated after the given **Time Threshold** if there are no position updates.

Setting Product Space Rules

Device Activation

☒ Deactivate after position timeout Time threshold (sec) (effective 95)

Actions: Add, Modify, Remove

Name	Description
CT-09-306-902	Object CT-09-306-902 is located

Rules: External Systems

Product Spaces Static Spaces Stations

Filter

Product Type	Product Space
<input type="checkbox"/> C253	M075-L350-8800
<input type="checkbox"/> C253	M125-L350-8800
<input type="checkbox"/> C253	M025-L350-8800
<input type="checkbox"/> C253	M075-L400-8800
<input type="checkbox"/> C253	M025-L400-8800
<input type="checkbox"/> C253	M025-L350-8800
<input type="checkbox"/> C253	M005-L400-8800
<input type="checkbox"/> C253	M075-L350-8800
<input type="checkbox"/> C253	M175-L350-8800

The **Product Spaces** tab allows you to define whether a device is enabled for Product Space-driven events.

To associate a device with a Product Space and Product Type, choose the check box to the left of the product type's name.

When a device enters the Product Space of a Product Type, an event is fired.

You can use the Simple Filter to display items matching the criteria you input. See [Using Simple Filters](#) for further information.

Setting Static Spaces (Workspaces) Rules

Device Activation

☒ Deactivate after position timeout Time threshold (sec) (effective 95)

Actions: Add, Modify, Remove

Name	Description
M005-L10-902	Object M005-L10-902 is located

Rules: External Systems

Product Spaces Static Spaces Stations

Filter

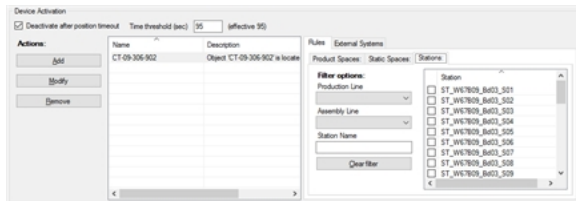
Is Enabled?	Product Type	Product Space
<input type="checkbox"/>	C253	M075-L350-8800
<input type="checkbox"/>	C253	M125-L350-8800
<input type="checkbox"/>	C253	M025-L350-8800
<input type="checkbox"/>	C253	M075-L400-8800
<input type="checkbox"/>	C253	M025-L400-8800

The **Static Spaces** tab allows you to define whether a device is enabled for Workspace-driven events.

To associate a device with a Workspace-driven event, choose the check box to the left of the static space's name. When a device enters the Workspace an event is fired.

You can use the Simple Filter to display items matching the criteria you input. See [Using Simple Filters](#) for further information.

Setting Stations Rules



The **Stations** tab allows you to define whether a device is enabled for Station-driven-events.

To associate a device with a station, choose the check box to the left of the station's name.

When a device enters the Station an event is fired if the device has been enabled for the Station.

Filtering Stations

Stations can be filtered, with options connected with **AND**. The filter options are:

- Production Line;
- Assembly Line;
- Station Name.

To clear the filter click **Clear Filter**.

Rules in Combination

If you configure both Product Space Rules and Workspace (Static Space) Rules or Stations Rules, ACS behaves as follows:

- If a device moves into a configured product space **and** the device is located inside a configured Workspace or Station an ENTRY event is fired.
- If a device moves out of either the configured Product Space or out of the configured Workspace or Station, an EXIT event is fired.

Extended Rules

The screenshot shows the 'Device Activation' configuration window with the 'Extended rules' tab selected. The 'Actions' section on the left has buttons for 'Add', 'Modify', and 'Remove'. The main table lists rules with columns for 'Name' and 'Description'. One rule is visible: 'PF-001' with the description 'Object 'PF-001' is located event'. The 'Rules' section on the right has tabs for 'Product Spaces', 'Static Spaces', 'Stations', and 'Extended rules'. The 'Extended rules' tab is active, showing a checkbox labeled 'Require that static space contains product extent' which is currently unchecked.

The Extended rules tab allows you to change how events are triggered from the default behavior described in [Rules in Combination](#).

If you configure both Product Space Rules and Workspace (Static Space) Rules or Stations Rules, and the Require that static space contains product extent rule is enabled ACS behaves as follows:

An ENTRY event is fired only if all of the following conditions are met:

- The device moves into a configured product space
- The device is located inside a configured Workspace or Station
- The product, in whose product space the device is located, is located inside one of the configured workspaces or stations

An EXIT event is fired if the device moves out of the product space, or the device moves out of the workspaces or stations, or the product moves out of the workspaces or stations.

To enable the Require that static space contains product extent rule, choose the check box to the left of the rule's name.

Setting External Systems

The screenshot shows the 'Device Activation' configuration window with the 'External Systems' tab selected. The 'Actions' section on the left has buttons for 'Add', 'Modify', and 'Remove'. The main table lists external systems with columns for 'Ext. Syst. Name', 'IP Address', and 'Port'. One system is visible: 'CT-09-306-902' with IP address '53.26.142.197' and port '4547'. The 'Rules' section on the right has tabs for 'Product Spaces', 'Static Spaces', 'Stations', and 'Extended rules'. The 'Extended rules' tab is active, showing a checkbox labeled 'Require that static space contains product extent' which is currently unchecked.

Use the External Systems tab to select an external system or systems to associate with the device instance. External systems are identified by their name, IP address and port. To associate a device with an external system, choose the check box to the left of the external system's name.

You can use the Simple Filter to display items matching the criteria you input. See [Using Simple Filters](#) for further information.

Hints

If a device instance shall be modified it is not allowed to change its device type.

Operation

The Operation section will cover the following:

- Create and maintain **Product Instances**.
- Connect to **External System** and check the **Connection status**.

Product Instances

Standard user

You can create **Product Instances** for use in ACS.

From ACS version 2.8, product types are available in SmartSpace as objects based on the ACS Product type and you can add new instances of products both in the ACS Main GUI (described in this section) or in the Types and objects workspace in SmartSpace Config.

How it Works

Add, modify, remove and configure product instances which can be dealt with using ACS.

Product Instances

Actions:

Add

Modify

Remove

CSV Export

Filter options:

Product type:

Product name:

Sequence number:

Tag-ID:

Info:

Product count: 297

Clear filter

Show parameters

Product Name	Sequence number	Product Type	Modification Time	Tag-ID	Tag Position	Association Time	Info
SP-PL_W67B09_Bd03-012		ShadowCar	20/08/2018 16:36:21				
SP-PL_W67B09_Bd03-013		ShadowCar	20/08/2018 16:36:21				
SP-PL_W67B09_Bd03-014		ShadowCar	20/08/2018 16:36:21				
SP-PL_W67B09_Bd03-015		ShadowCar	20/08/2018 16:36:21				
SP-PL_W67B09_Bd03-016		ShadowCar	20/08/2018 16:36:21				
SP-PL_W67B09_Bd03-017		ShadowCar	20/08/2018 16:36:21				
SP-PL_W67B09_Bd03-018		ShadowCar	20/08/2018 16:36:21				
SP-PL_W67B09_Bd03-019		ShadowCar	20/08/2018 16:36:21				
SP-PL_W67B09_Bd03-020		ShadowCar	20/08/2018 16:36:21				
SP-PL_W67B09_Bd03-021		ShadowCar	20/08/2018 16:36:21				
SP-PL_W67B09_Bd03-022		ShadowCar	20/08/2018 16:36:21				
SP-PL_W67B09_Bd03-023		ShadowCar	20/08/2018 16:36:21				
SP-PL_W67B09_Bd03-024		ShadowCar	20/08/2018 16:36:21				
SP-PL_W67B09_Bd03-025		ShadowCar	20/08/2018 16:36:21				
SP-PL_W67B09_Bd03-026		ShadowCar	20/08/2018 16:36:21				
SP-PL_W67B09_Bd03-027		ShadowCar	20/08/2018 16:36:21				
SP-PL_W67B09_Bd03-028		ShadowCar	20/08/2018 16:36:21				
SP-PL_W67B09_Bd03-029		ShadowCar	20/08/2018 16:36:21				
SP-PL_W67B09_Bd03-030		ShadowCar	20/08/2018 16:36:21				
SP-PL_W67B09_Bd03-031		ShadowCar	20/08/2018 16:36:21				
SP-PL_W67B09_Bd03-032		ShadowCar	20/08/2018 16:36:21				
SP-PL_W67B09_Bd03-033		ShadowCar	20/08/2018 16:36:21				
SP-PL_W67B09_Bd04-001		ShadowCar	20/08/2018 16:36:20				
SP-PL_W67B09_Bd04-002		ShadowCar	20/08/2018 16:36:20				
SP-PL_W67B09_Bd04-003		ShadowCar	20/08/2018 16:36:20				

Displaying all instances.

Figure: Product Instances in ACS

Filtering Product Instances

To make it easier to find products you can define a filter setting. The options are connected with **AND**. The filter options are:

- **Product type**
- parts of a **Product name**
- **Sequence number**
- parts of a **Tag-ID**
- parts of **Information**

To clear the filter, click **Clear filter**.

The screenshot shows the 'Product Instances' interface. On the left, there is a sidebar with 'Actions' (Add, Modify, Remove, CSV Export) and 'Filter options'. Under 'Filter options', 'Product type' is set to '001'. Below this, there are input fields for 'Product name', 'Sequence number', 'Tag-ID', and 'Info'. The 'Product count' is shown as 2. At the bottom of the sidebar is a 'Clear filter' button. The main area is a table with the following columns: Product Name, Sequence number, Product Type, Modification Time, Tag-ID, Tag Position, Association Time, and Info. The table contains two rows of data.

Product Name	Sequence number	Product Type	Modification Time	Tag-ID	Tag Position	Association Time	Info
02205052	223	001	29/08/2018 14:59:46	00:11:CE:00:00:00:10	Schrägförderer	29/08/2018 14:59:46	Manual Association
02207209	375	001	29/08/2018 15:01:12	00:00:11:CE:00:00:01:89	Schrägförderer	29/08/2018 15:01:12	Manual Association

At the bottom of the interface, it says 'Displaying all instances.' followed by '+' and '-' buttons.

Figure: Filtering by Product type in Product Instances

Displaying Product Instances

The number of Product Instances shown in the list is limited to 500 items by default.

Displaying 500 instances. + -

The number of Product Instances to display can be increased or decreased in increments of 500 by using the + and - buttons.

If all existing Product Instances are shown the text shows **Displaying all instances**.

Displaying all instances.  

Adding a New Product Instance

Click **Add** to add a new Product Instance. Set the detail fields in the custom editor for Product Instances and click **Commit** to save the new Product Instance.

Modifying an Existing Product Instance

Select a Product Instance from the list and click **Modify**. Change detail fields in the custom editor for Product Instances according to your needs and click **Commit**.

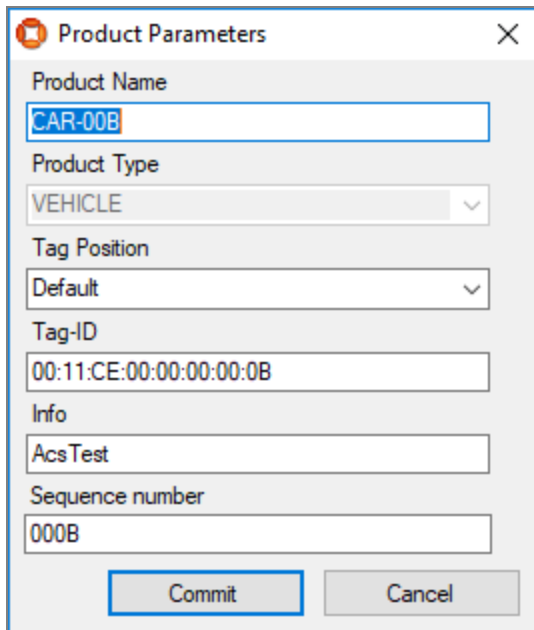
Removing a Product Instance

Select an Product Instance in the list and click **Remove**.

Export the Product Instances to a CSV File

Click **CSV Export** to open a save file dialog in order to export all shown Product Instances, with a name, and into a directory of your choice.

Editing a Product Instance



The image shows a 'Product Parameters' dialog box with the following fields and values:

Field	Value
Product Name	CAR-00B
Product Type	VEHICLE
Tag Position	Default
Tag-ID	00:11:CE:00:00:00:00:0B
Info	AcsTest
Sequence number	000B

At the bottom of the dialog are two buttons: 'Commit' and 'Cancel'.

Figure: Editing a Product Instance

Field	Detail
Product Name	Mandatory field. Each Product Instance must have a unique product name. To keep it simple, this should be the same as the name used to identify the Product Instance in the production environment.
Product Type	Mandatory field. The available product types in ACS. If a Product Instance shall be modified it is not allowed to change its product type.
Tag-ID	Non mandatory field. A tag ID for this product if there is a tag for the product.
Tag Position	Non mandatory field. One of the tag positions available for the selected product type.
Info	Non mandatory field. The information for this Product Instance. When the association is done without any user interaction the name of the association zone is stored in this field. If the text field is left empty, the text 'Manual Association' is set automatically.
Sequence number	Non mandatory field. A sequence number for the product that can be displayed, if configured, alongside the product name in the map and assembly line messages. It is generally provided by an external system.

Showing and Hiding Product Parameters

Click **Show Parameter** to show the existing product parameters and then add, modify or remove parameters for the selected product.

Product Instances

Actions:

Add

Modify

Remove

CSV Export

Filter options:

Product type:

Product name:

Sequence number:

Tag-ID:

Info:

Product count: 297

Clear filter

Hide parameters

Product Name	Sequence number	Product Type	Modification Time	Tag-ID	Tag Position	Association Time	Info
SP-PL_W67B09_Bd03-019		ShadowCar	20/08/2018 16:36:21				
SP-PL_W67B09_Bd03-020		ShadowCar	20/08/2018 16:36:21				
SP-PL_W67B09_Bd03-021		ShadowCar	20/08/2018 16:36:21				
SP-PL_W67B09_Bd03-022		ShadowCar	20/08/2018 16:36:21				
SP-PL_W67B09_Bd03-023		ShadowCar	20/08/2018 16:36:21				
SP-PL_W67B09_Bd03-024		ShadowCar	20/08/2018 16:36:21				
SP-PL_W67B09_Bd03-025		ShadowCar	20/08/2018 16:36:21				
SP-PL_W67B09_Bd03-026		ShadowCar	20/08/2018 16:36:21				
SP-PL_W67B09_Bd03-027		ShadowCar	20/08/2018 16:36:21				
SP-PL_W67B09_Bd03-028		ShadowCar	20/08/2018 16:36:21				
SP-PL_W67B09_Bd03-029		ShadowCar	20/08/2018 16:36:21				
SP-PL_W67B09_Bd03-030		ShadowCar	20/08/2018 16:36:21				
SP-PL_W67B09_Bd03-031		ShadowCar	20/08/2018 16:36:21				
SP-PL_W67B09_Bd03-032		ShadowCar	20/08/2018 16:36:21				
SP-PL_W67B09_Bd03-033		ShadowCar	20/08/2018 16:36:21				
SP-PL_W67B09_Bd04-001		ShadowCar	20/08/2018 16:36:20				
SP-PL_W67B09_Bd04-002		ShadowCar	20/08/2018 16:36:20				
SP-PL_W67B09_Bd04-003		ShadowCar	20/08/2018 16:36:20				
SP-PL_W67B09_Bd04-004		ShadowCar	20/08/2018 16:36:21				
SP-PL_W67B09_Bd04-005		ShadowCar	20/08/2018 16:36:21				
SP-PL_W67B09_Bd04-006		ShadowCar	20/08/2018 16:36:21				
SP-PL_W67B09_Bd04-007		ShadowCar	20/08/2018 16:36:21				
SP-PL_W67B09_Bd04-008		ShadowCar	20/08/2018 16:36:21				

Displaying all instances.

Product Parameters

Add

Modify

Remove

Name	Value
Steering	right

Figure: Showing the Product Parameters

Adding a new product parameter

Click **Add** to add a new product parameter. Set the detail fields in the **Product Parameters** dialog and click **Commit** to store the new product parameter.

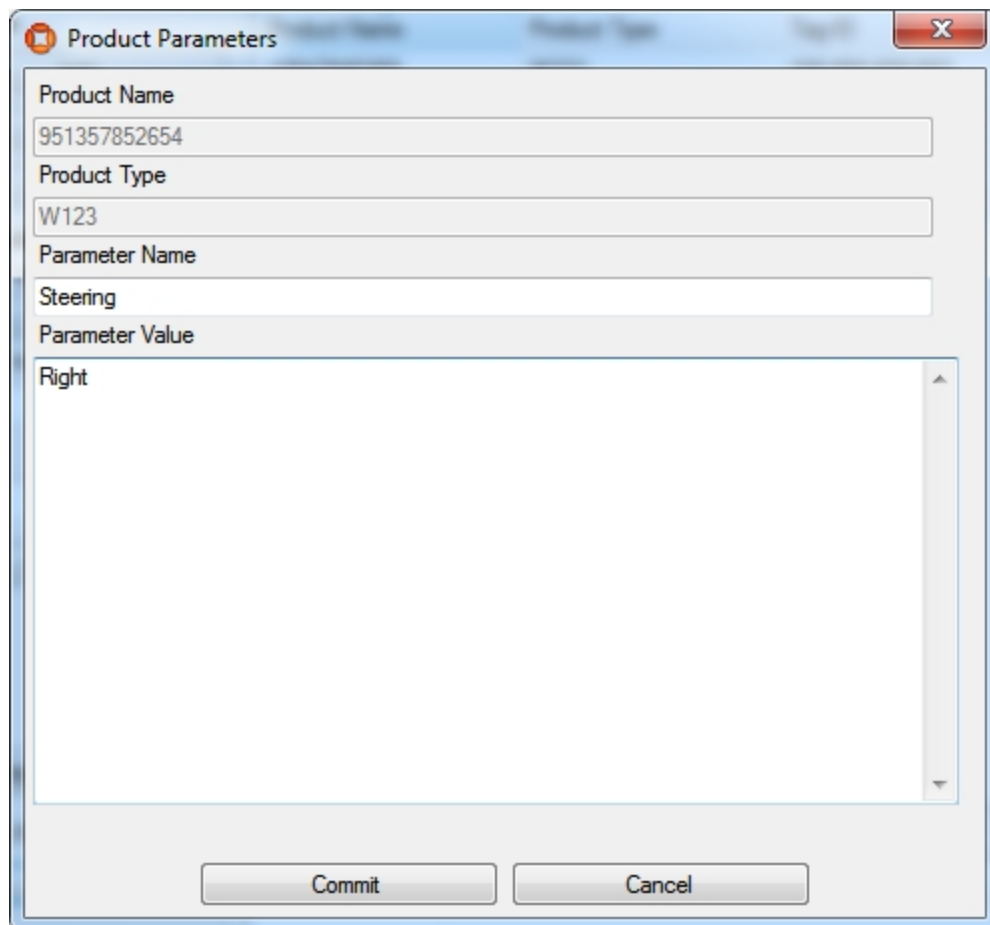
Modifying an existing product parameter

Select a product parameter in the list and click **Modify**. Change the detail fields in the **Product Parameters** dialog as required and click **Commit**.

Removing a product parameter

Select an product parameter in the list and click **Remove**.

Editing a Product Parameter



The screenshot shows a 'Product Parameters' dialog box. It has a title bar with a close button. The dialog contains four input fields: 'Product Name' with the value '951357852654', 'Product Type' with the value 'W123', 'Parameter Name' with the value 'Steering', and 'Parameter Value' with the value 'Right'. At the bottom are 'Commit' and 'Cancel' buttons.

Figure: Editing a Product Parameter

Field	Details
Product Name	The product name of the selected product.
Product Type	The product type of the selected product. Note: cannot be modified.
Parameter Name	Mandatory field. Each product parameter name must be unique.
Parameter Value	Non Mandatory field. The value for the product parameter.

External Product Sequences

Standard user

External systems can deliver verified sequences of products for use in product tag association, product sequence checks on assembly lines, and shadow car replacement on assembly lines.



External Product Sequences are available for tag-driven assembly lines only.

Use the Externally Generated Product Sequences tab to:

- Add the name and a description of an externally-generated product sequence.
- Display the current sequence of products.

See [Example: Uses of an External Product Sequence](#) for an example of using an External Product Sequence.

How it Works

Add, modify and delete External Product Sequences.

Externally Generated Product Sequences

Add

Modify

Delete

Name	Description
MPS	
ProductSequence	

Filter

Sequence	Product
1	CAR-000
2	CARRIER-000
3	CAR-001
4	CARRIER-001
5	CAR-002
6	CARRIER-002
7	CAR-003
8	CARRIER-003
9	CAR-004
10	CARRIER-004

Figure: External Product Sequence in ACS

Adding a New External Product Sequence

Click **Add** to add a new External Product Sequence. Set the detail fields in the custom editor for external product sequences and click **Commit** to save the new External Product Sequence.

Modifying an Existing External Product Sequence

Select an External Product Sequence from the list and click **Modify**. Change detail fields in the custom editor for external product sequences and click **Commit**.

Removing an External Product Sequence

Select an External Product Sequence from the list and click **Delete**.

Editing an External Product Sequence

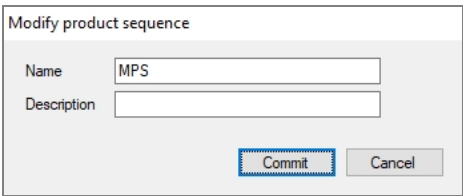


Figure: Editing an External Product Sequence

Field	Detail
Name	Mandatory field. Each External Product Sequence must have a unique name. This should match the name which is either received by, or configured at, the External System receiving sequence information.
Description	Non mandatory field. Short description of the External Product Sequence.

Displaying a Product Sequence

You can use the Simple Filter to display items matching the criteria you input. See [Using Simple Filters](#) for further information.

Connection Status

Standard user

You can change and check the connection status of the external systems that are used in ACS on the **Connection status** tab.

From ACS version 2.8, external systems are available in SmartSpace as objects based on the ACS Device device type. If you have licensed the SmartSpace Visibility component, you can create a form to display the status of external systems in a web browser, and to update statuses by setting the Requested Connection Status property. See the Ubisense Documentation Portal for information on creating web searches and forms.

How it Works

The tab displays a list of External Systems that you can connect, disconnect or reconnect.

It is possible to select multiple entries in the list to connect, disconnect or reconnect.

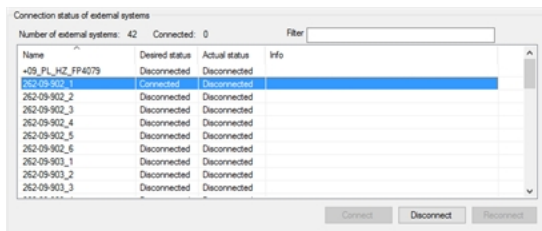


Figure: The Connection Status Tab

You can use the Simple Filter to display items matching the criteria you input. See [Using Simple Filters](#) for further information.

Field	Details
Name	Name of the External System.
Desired Status	If you click the Connect button then the desired state is <i>Connected</i> . In case of clicking Disconnect the desired status is <i>Disconnected</i> .
Actual Status	Current state of the connection such as <i>Connected</i> or <i>Disconnected</i> .
Info	Non mandatory field. Short information about the connection to the External System.

Live Logs

The Live Logs section of ACS allows you to set logging for:

Operation

- Assembly Line messages;
- External System messages.

A command-line tool **ubisense_exception_client.exe** is available to simulate ACS messages.

Assembly Line Messages

Standard user

For a selected Assembly Line, the user can see, in real time, the stream of messages produced by the tracking support service. These messages are also written to the corresponding log file.

How it Works

Select one or more of the existing Assembly Lines in the left by selecting the check box.

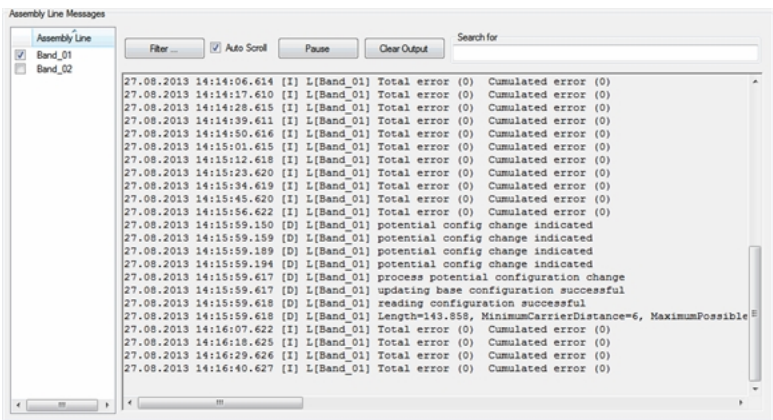

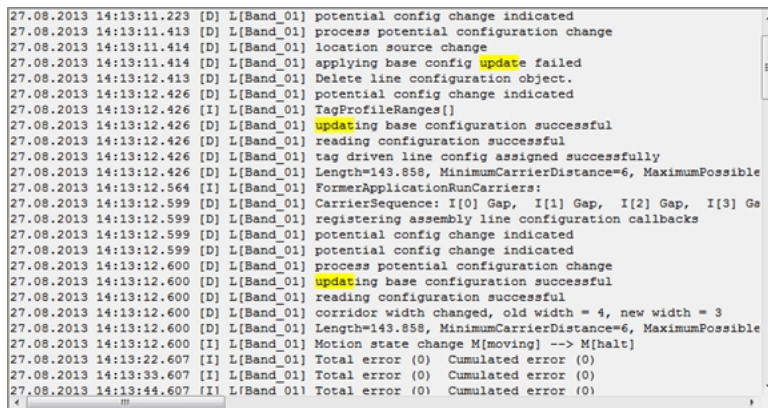


Figure: Example Showing the Stream of Tracking Support Messages

Field	Details
Assembly Line	A list of all existing assembly lines.
Filter	<div>Click this button to opens a new window where you can set a filter for the messages (the pattern is case sensitive). You can include or exclude one pattern per line.</div> <div><div><div>i</div><div>When a filter is active the color of the Filter button changes to orange.</div></div></div>
Auto Scroll	If this check box is marked the list with the messages always shows the newest messages at the end of the list otherwise the list stays in the current

Field	Details
	view.
Pause/Resume	<p>Click this button to pause and resume the writing of messages to the message window.</p> <div>  When output is paused, the Pause button changes to orange. </div>
Clear Output	Clears the complete output window. <i>This is irreversible.</i>
Search for	You can type an arbitrary value to search for in the message window. The matching parts are marked in yellow.



```

27.08.2013 14:13:11.223 [D] L[Band_01] potential config change indicated
27.08.2013 14:13:11.413 [D] L[Band_01] process potential configuration change
27.08.2013 14:13:11.414 [D] L[Band_01] location source change
27.08.2013 14:13:11.414 [D] L[Band_01] applying base config update failed
27.08.2013 14:13:12.413 [D] L[Band_01] Delete line configuration object.
27.08.2013 14:13:12.426 [D] L[Band_01] potential config change indicated
27.08.2013 14:13:12.426 [I] L[Band_01] TagProfileRanges[]
27.08.2013 14:13:12.426 [D] L[Band_01] updating base configuration successful
27.08.2013 14:13:12.426 [D] L[Band_01] reading configuration successful
27.08.2013 14:13:12.426 [D] L[Band_01] tag driven line config assigned successfully
27.08.2013 14:13:12.426 [D] L[Band_01] Length=143.858, MinimumCarrierDistance=6, MaximumPossible
27.08.2013 14:13:12.564 [I] L[Band_01] FormerApplicationRunCarriers:
27.08.2013 14:13:12.599 [D] L[Band_01] CarrierSequence: I[0] Gap, I[1] Gap, I[2] Gap, I[3] Gs
27.08.2013 14:13:12.599 [D] L[Band_01] registering assembly line configuration callbacks
27.08.2013 14:13:12.599 [D] L[Band_01] potential config change indicated
27.08.2013 14:13:12.599 [D] L[Band_01] potential config change indicated
27.08.2013 14:13:12.600 [D] L[Band_01] process potential configuration change
27.08.2013 14:13:12.600 [D] L[Band_01] updating base configuration successful
27.08.2013 14:13:12.600 [D] L[Band_01] reading configuration successful
27.08.2013 14:13:12.600 [D] L[Band_01] corridor width changed, old width = 4, new width = 3
27.08.2013 14:13:12.600 [D] L[Band_01] Length=143.858, MinimumCarrierDistance=6, MaximumPossible
27.08.2013 14:13:12.600 [I] L[Band_01] Motion state change N[moving] --> M[halt]
27.08.2013 14:13:22.607 [I] L[Band_01] Total error (0) Cumulated error (0)
27.08.2013 14:13:33.607 [I] L[Band_01] Total error (0) Cumulated error (0)
27.08.2013 14:13:44.607 [I] L[Band_01] Total error (0) Cumulated error (0)

```

Figure: Searching the Messages

External System Messages

Standard user

For a selected device (or External System) you can see, in real time, the stream of messages between ACS and the Tool Controller. The logs will record:

- When messages are sent;
- What the content of messages is;
- If the expected messages are being sent at all.

How it Works

Select one or more of the existing External Systems on the left by selecting the check box.

Operation

You can also use the **Simple Filter** to select one or more External Systems by typing in the **Filter** field:

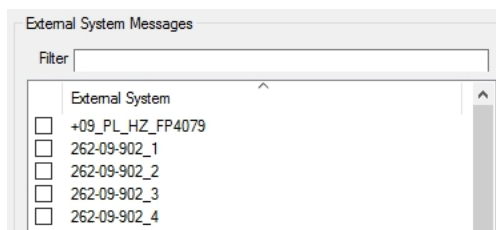


Figure: External System Messages Simple Filter

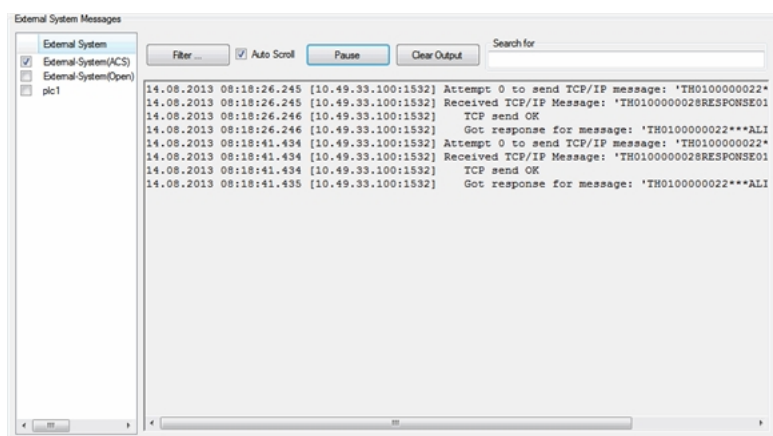


Figure: Example Showing the Messages Sent ACS and the External System

You can filter, pause and search for messages. For details of the fields, see [Assembly Line Messages](#).

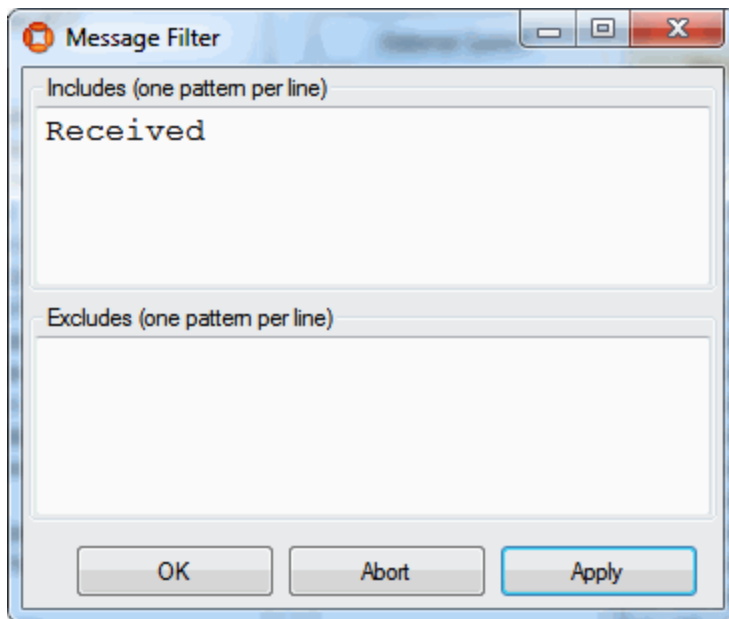


Figure: Example of a Message Filter

In the **Search for** field, you can type an arbitrary value to search for in the message window. The matching parts are marked in yellow.

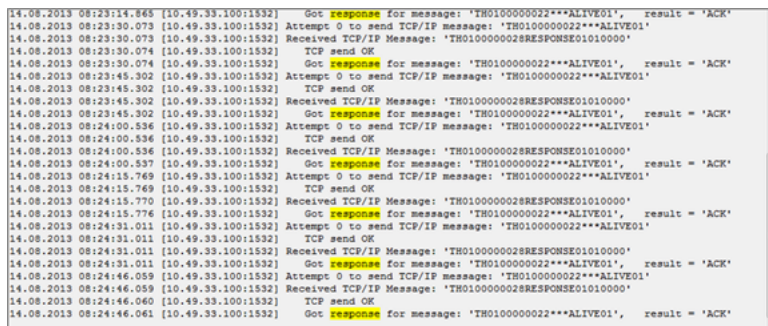


Figure: Example of Searching External System Messages

Externally Driven Line Sequence

Configuration user

Use the **Externally Driven Line Sequence** tab to manually manipulate the product sequence of an externally driven Assembly Line in cases where ACS maintains the product sequence.

Operation

How it Works

Select the externally driven Assembly Line whose products you want to manipulate.

Add a product

1. Click **Add** to add a new product. This will display the **Product Editor**.
2. Select the Product type, enter the Product name, and specify an offset if needed for your configured Assembly Line.

Modify a product

Click **Modify** to modify an existing product. This operation is only available when the product has an offset.

Remove a product

Click **Remove** to remove an existing product.

Move a product up or down the sequence

Click **Move Up** or **Move Down** to move the selected product up or down the sequence.

Set Offsets

Click **Set Offsets** to set the offset for an existing product. This operation is only available when the product has an offset.

Clear Sequence

Click **Clear Sequence** to remove all products from the line.

Sequence Number	Product type	Product ID	Offset	Station
1	EXS	137	0	Test_EXS-Station-1
2	EXS	136	6	Test_EXS-Station-1
3	EXS	135	12	Test_EXS-Station-2
4	EXS	134	18	Test_EXS-Station-3
5	EXS	133	24	Test_EXS-Station-4
6	EXS	132	30	Test_EXS-Station-5
7	EXS	131	36	Test_EXS-Station-6
8	EXS	130	42	Test_EXS-Station-7
9	EXS	129	48	Test_EXS-Station-8
10	EXS	128	54	Test_EXS-Station-9
11	EXS	127	60	Test_EXS-Station-10
12	EXS	126	66	Test_EXS-Station-11
13	EXS	125	72	Test_EXS-Station-12
14	EXS	124	78	Test_EXS-Station-13
15	EXS	123	84	Test_EXS-Station-14
16	EXS	122	90	Test_EXS-Station-15
17	EXS	121	96	Test_EXS-Station-16
18	EXS	120	102	Test_EXS-Station-17
19	EXS	119	108	Test_EXS-Station-18
20	EXS	118	114	Test_EXS-Station-19
21	EXS	117	120	Test_EXS-Station-20
22	EXS	116	126	Test_EXS-Station-21
23	EXS	115	132	Test_EXS-Station-22
24	EXS	114	138	Test_EXS-Station-23
25	EXS	113	144	Test_EXS-Station-24
26	EXS	112	150	Test_EXS-Station-25
27	EXS	111	156	Test_EXS-Station-26
28	EXS	110	162	Test_EXS-Station-27

Figure: The Externally Driven Line Sequence Tab

Field	Details
Sequence Number	The sequence number of the product.
Product Type	The product type of the product.
Product ID	The product ID of the product.
Offset	The offset from the starting point of the corresponding Assembly Line.
Station	The possible station name derived from the offset.
Last Update	Last update time stamp.
Line Moving?	Indicates whether the line is moving or not.
External System	The name of the associated External System.
Connection Status	The connection status of the associated External System.

Device Monitoring

Configuration user

Use the **Device Monitoring** tab to visualize how a device is enabled or disabled based on the zones it moves into or out of. This is necessary in order to adjust zones or to track down any possible device configuration errors.

How it Works

Select the device you want to monitor.

Operation

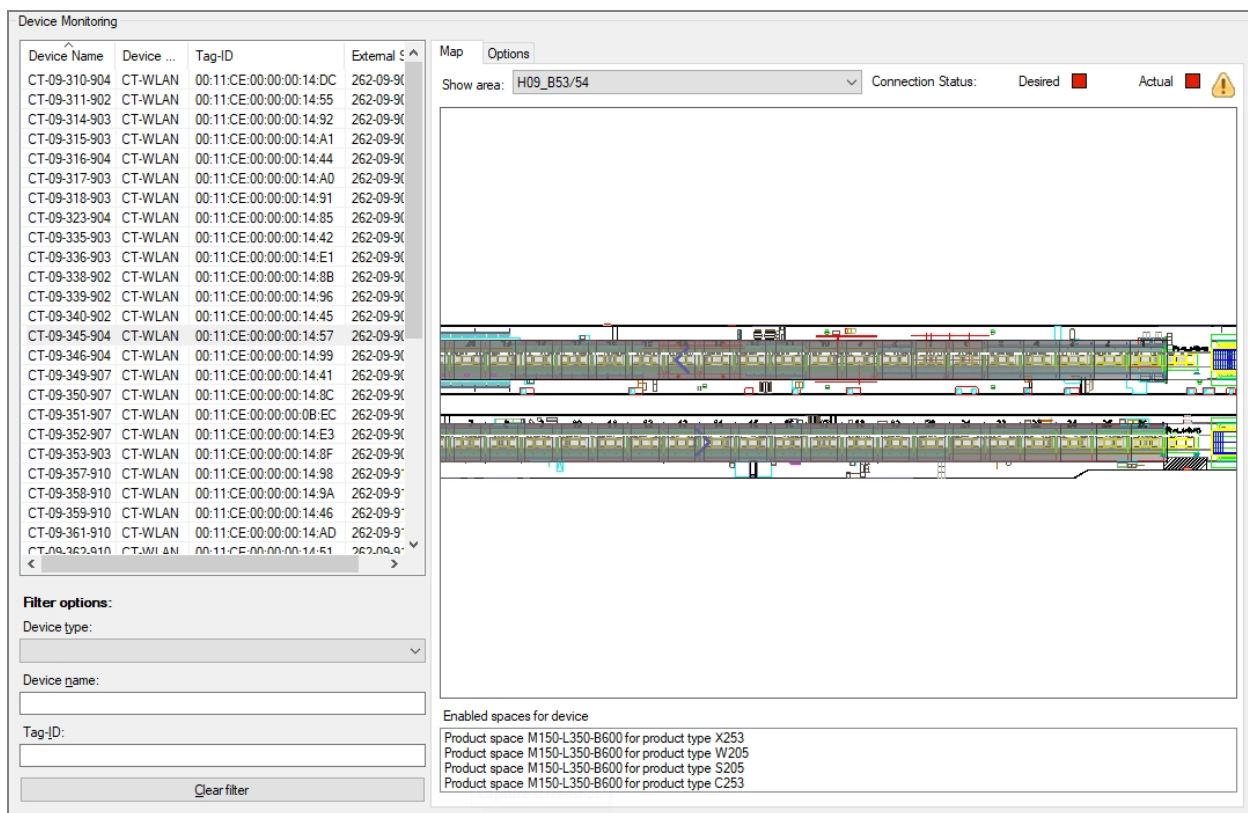


Figure: Monitoring a Device

Field	Details
Device Name	Name of the device.
Device Type	The device type
Tag-ID	The Tag-ID of the device
External System Name	The name of the corresponding External System.

Filtering Devices

You can use the Simple Filter to display items matching the criteria you input. See [Using Simple Filters](#) for further information.

Map tab

In the map the selected device is shown when ACS can determine a position for the device:

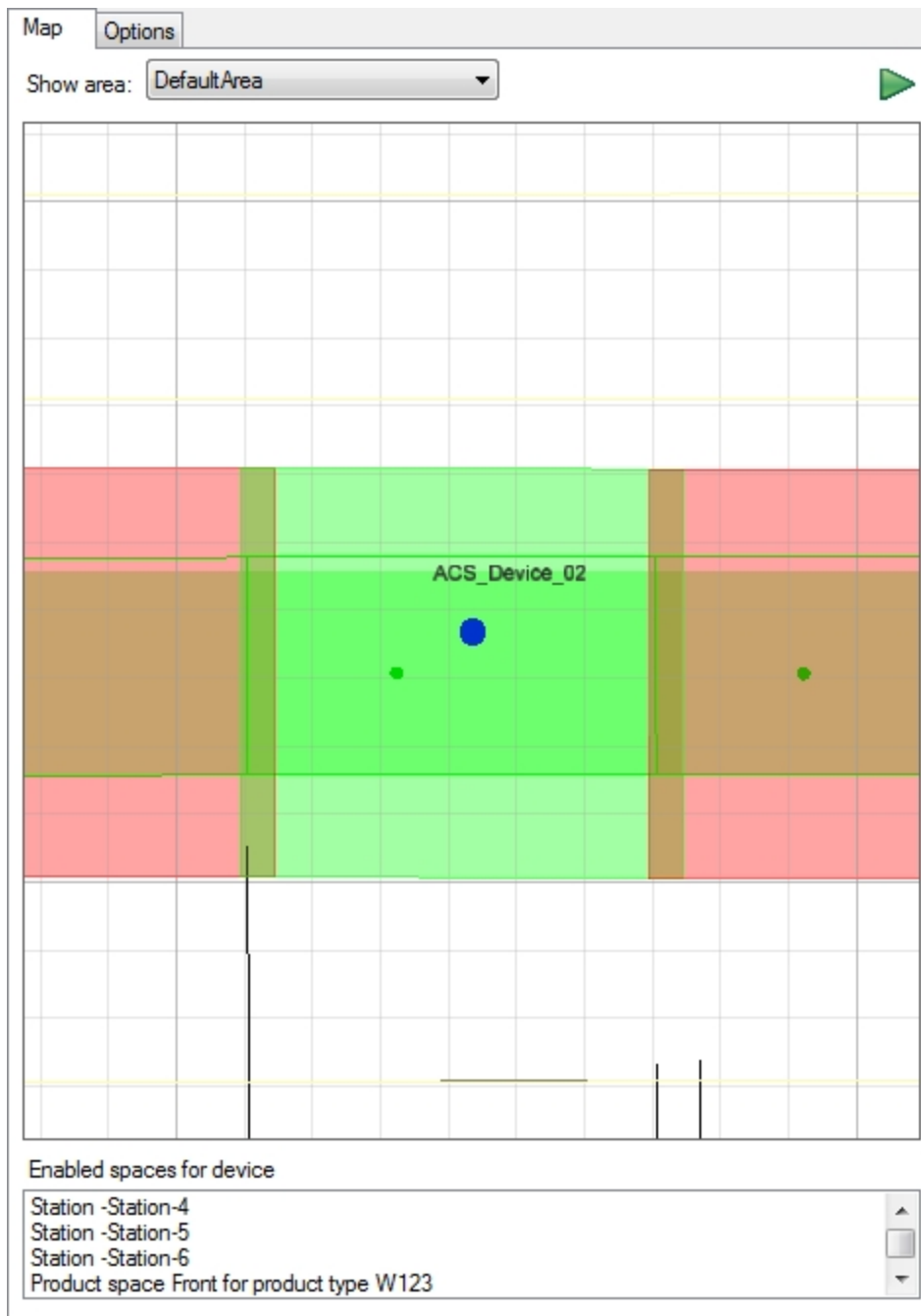




Figure: Device Monitoring Options

Operation







For devices with multiple events, an additional **Enabled spaces for device event** dropdown is provided for you to choose which device event and enabled spaces you want to display.

Desired and Actual connection status of a device are indicated above the map:

Icon	Status
	connected
	disconnected

The icon in the upper right corner indicates the state of the selected device:

Icon	Status
	no device is selected
	the location of the selected device is unknown
	the selected device is disabled
	the selected device is enabled

Options tab

In order to adjust the information shown on the map, you can add certain objects to the visualization, even if they may not be relevant for the device trigger.

The screenshot shows the 'Options' tab of a software interface. It contains four main sections: Devices, Stations, Workspaces, and Products. Each section has a 'Show:' dropdown menu and a 'Show labels' checkbox. The 'Refresh delay [msec]' is set to 1000.

Section	Show:	Show labels
Devices	selected device only	<input checked="" type="checkbox"/>
Stations	stations device is enabled for	<input checked="" type="checkbox"/>
Workspaces	workspaces device is enabled for	<input checked="" type="checkbox"/>
Products		<input checked="" type="checkbox"/>

Refresh delay [msec]: 1000

Field	Details
Devices, Stations, Workspaces	Show: <ul style="list-style-type: none"> Show the selected object only or all objects (in the second case the selected object is shown in a different color). Show labels: Show the name of the objects if checked.
Products	Show space labels: Show the name of the product spaces if selected. (Only the product spaces the device is enabled for are shown) Show labels: Show the name of the products if checked
Refresh delay [msec]	Select the refresh delay for the visualization.

Device Event Analysis

Configuration user

Use the **Device Event Analysis** tab to find devices with performance measures indicating a strong likelihood of incorrect behavior regarding the association of the devices to vehicles.



This tab and its functionality is only available when the service ULEHealthMonitor is installed.

How it Works

Add, modify and remove parameters and devices which should be analysed in ACS.

There are several indicators being observed for each device tag, each of which can lead to a performance warning message:

- Sighting rate (=number of positions / number of events). Generally the sighting rate shall be above 90%. Sighting rates below indicate a problem.
- Absolute number of subsequent events without position. Generally each event shall produce a position. Exceptions of one or two events without position are acceptable but a larger number of subsequent events without position indicates a problem.
- Absolute number of subsequent events without position in conjunction with big distance between two subsequent positions. This behavior almost always indicates a problem.
- Big jumps. Generally big distances between subsequent positions (1.5m and above) indicate a problem.
- Handover performance. Generally the handover of a device tag from one sensor cell to another shall not take longer than 2s-3s.
- Almost all positions (>98%) generated by tool tags shall be inside a suitable polygon around sensor positions. Positions generated outside indicate a problem.

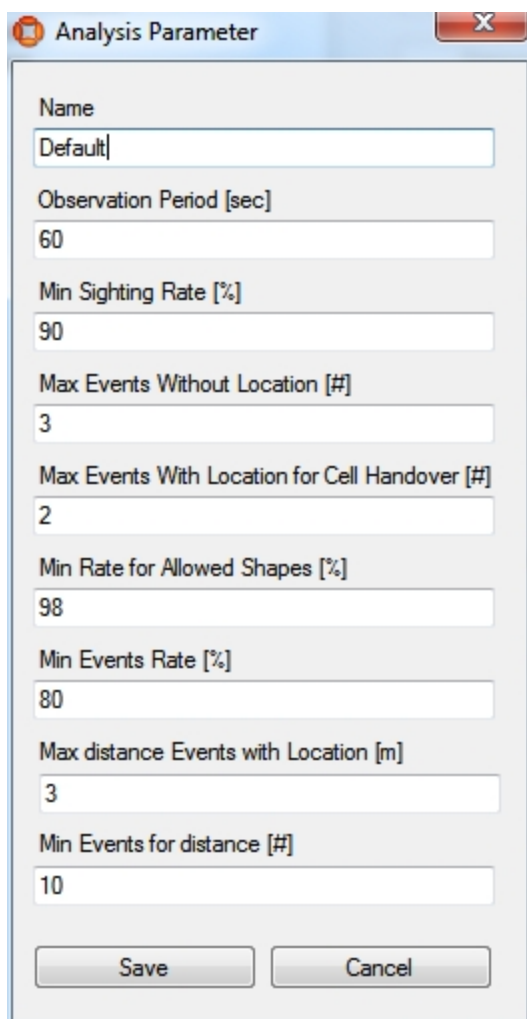
There is an automatic production time analysis to prevent warning messages to be generated during times of a production break.

[illegible]

Analysis Parameter

The analysis parameter has a "Default" entry which cannot be removed but parameter values can be updated.

Operation



Analysis Parameter

Name
Default

Observation Period [sec]
60

Min Sighting Rate [%]
90

Max Events Without Location [#]
3

Max Events With Location for Cell Handover [#]
2

Min Rate for Allowed Shapes [%]
98

Min Events Rate [%]
80

Max distance Events with Location [m]
3

Min Events for distance [#]
10

Save Cancel

Field	Details
Name	Mandatory field. Each Analysis Parameter must have a name. The name must be unique within all Analysis Parameter.
Observation Period [sec]	Mandatory field. The time interval (in seconds) for the checks.
Min Sighting Rate [%]	Mandatory field. The minimum sighting rate. A sighting rate below the given value will generate a warning.
Max Events Without Location [#]	Mandatory field. The maximum number of events which may occur without location. If the number of subsequent events without location exceeds the given number a warning message is generated.
Max Events With Location for Cell Handover [#]	Mandatory field. The maximum number of events without location if a cell handover is performed. If more than the given number of

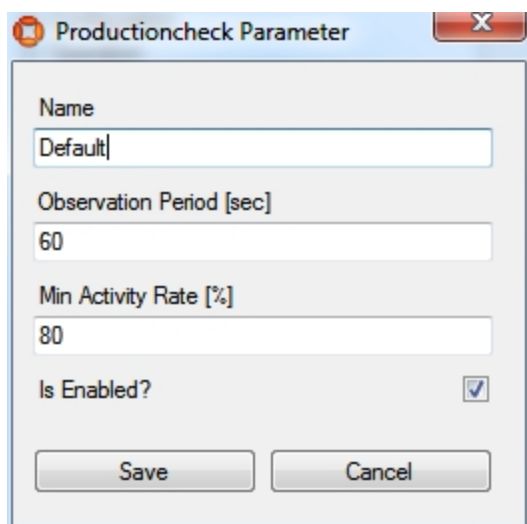
Field	Details
	subsequent events are without location a warning message is generated.
Min Rate for Allowed Shapes [%]	Mandatory field. The minimum rate of sightings which must lie inside the polygonal shapes around sensor cells. If too many sightings are outside of the sensor cell polygons warning messages are generated.
Min Events Rate [%]	Mandatory field. The minimum rate of events which must occur compared to the expected number of events. The expected event rate is derived from the low QoS value configured for the device tag.
Max distance Events with Location [m]	Mandatory field. The maximum allowed distance between for events with location. Bigger distances lead to warning messages.
Min Events for distance [#]	Mandatory field. If a configured number of events without location occur between two events with a big distance, the distance warning may be suppressed. This is to prevent legal situations to generate warnings. An example for such a legal situation is if a device is operated inside of a car where the tag events are bad and no locations are generated. After leaving the car the distance between the current and last event with location may be big.

Productioncheck Parameter

The **Productioncheck** parameter has a "Default" entry which cannot be removed but parameter values can be updated.

The purpose of this analysis is to automatically distinguish production times from times of production breaks. The basis of the analysis is the overall event stream produced by tags in the system. In order to distinguish lines or certain areas groups of tags can be defined and an activity threshold for each group can be configured.

Operation



Productioncheck Parameter

Name
Default

Observation Period [sec]
60

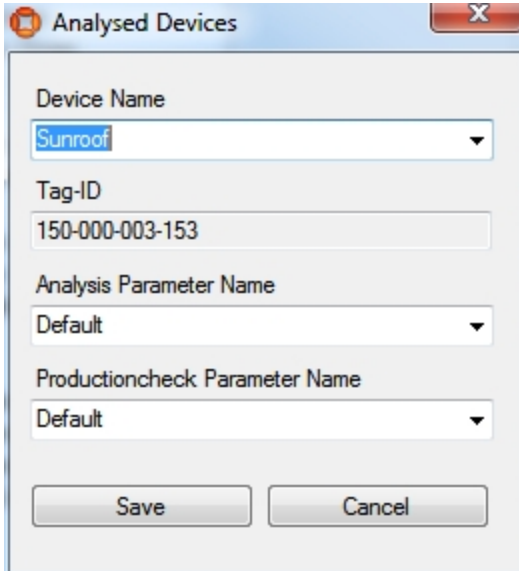
Min Activity Rate [%]
80

Is Enabled? ☒

Save Cancel

Field	Details
Name	Mandatory field. Each Productioncheck Parameter must have a name. The name must be unique within all Productioncheck Parameter.
Observation Period [sec]	Mandatory field. The time interval (in seconds) after which production checks are performed.
Min Activity Rate [%]	Mandatory field. The activity rate below which a production break is assumed.
Is Enabled?	Non Mandatory field. If checked the production time check is performed by the algorithm built into ACS. If not checked the production and break times are set by an external system.

Analysed Devices



Analysed Devices

Device Name
Sunroof

Tag-ID
150-000-003-153

Analysis Parameter Name
Default

Productioncheck Parameter Name
Default

Save Cancel

Field	Details
Device Name	Mandatory field. Select the device for whom the parameter shall occur.
Tag-ID	The Tag-ID of the selected device is automatically derived.
Analysis Parameter Name	Mandatory field. Select one of the defined analysis parameter names. The selected analysis parameters are then used for the selected device.
Productioncheck Parameter Name	Mandatory field. Select one of the defined productcheck parameter names. The device is then part of the set of devices with a common production time check. NB: There should be a sufficiently large number of devices in the same set to make the production time check reliable.

Messages

Standard user

Show all ACS messages and filter them.

How it works

Show all ACS messages and filter them in different ways

Messages

Filter

Type is

☐ Error

ID (+/- 10)

☐

Acknowledgement

☐ Show acknowledged messages, too

Time from

☐ 12:56:06

☐ 09.01.2020

Time to

☐ 11:42:15

☐ 17.01.2020

Information

contains

☐

contains not

☐

Messages

	ID	Time	Type	Information
<input type="checkbox"/>	213...	17/01/2020 11:42:15	Warning	CPU freeze detected: Thread sleep execution took 284ms longer...
<input type="checkbox"/>	213...	17/01/2020 11:06:56	Warning	CPU freeze detected: Thread sleep execution took 138ms longer...
<input type="checkbox"/>	213...	17/01/2020 10:51:48	Warning	CPU freeze detected: Thread sleep execution took 267ms longer...
<input type="checkbox"/>	213...	17/01/2020 10:41:42	Warning	CPU freeze detected: Thread sleep execution took 108ms longer...
<input type="checkbox"/>	213...	17/01/2020 10:36:39	Warning	CPU freeze detected: Thread sleep execution took 280ms longer...
<input type="checkbox"/>	213...	17/01/2020 10:31:37	Warning	CPU freeze detected: Thread sleep execution took 251ms longer...
<input type="checkbox"/>	213...	17/01/2020 10:26:34	Warning	CPU freeze detected: Thread sleep execution took 287ms longer...
<input type="checkbox"/>	213...	17/01/2020 10:21:31	Warning	CPU freeze detected: Thread sleep execution took 121ms longer...
<input type="checkbox"/>	213...	17/01/2020 10:06:17	Warning	CPU freeze detected: Thread sleep execution took 311ms longer...
<input type="checkbox"/>	213...	17/01/2020 10:01:11	Warning	CPU freeze detected: Thread sleep execution took 275ms longer...
<input type="checkbox"/>	213...	17/01/2020 09:56:05	Warning	CPU freeze detected: Thread sleep execution took 193ms longer...
<input type="checkbox"/>	213...	17/01/2020 09:50:59	Warning	CPU freeze detected: Thread sleep execution took 280ms longer...
<input type="checkbox"/>	213...	17/01/2020 09:40:47	Warning	CPU freeze detected: Thread sleep execution took 249ms longer...
<input type="checkbox"/>	213...	17/01/2020 09:35:41	Warning	CPU freeze detected: Thread sleep execution took 293ms longer...

Displaying 500 messages.

☐
☐

2115

09/01/2020 12:56:06

17/01/2020 11:42:15

Export into CSV File ...

Filtering

To easier find messages you can define filter settings. The options are connected with **AND**. The filter options are:

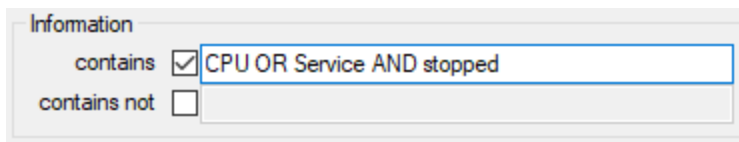
- Type is
- ID (+/- 10)
- Time from
- Time to

- Acknowledgement
- Information.

For **Information**, there are two options:

- contains, which allows you to filter the Information column for entries containing text you specify
- contains not, which allows you to filter the Information column for entries that do not contain text you specify

For either of the Information options, you can define multiple **AND/OR** separated components. For example:



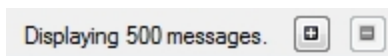
Information

contains ☒ CPU OR Service AND stopped

contains not ☐

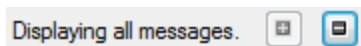
Display messages

The number of messages shown in the list is limited to a number of currently 500 messages as default.



The number of messages to display can be changed in steps of 500 messages by using the + and - buttons.

If all existing messages are shown the text shows **Displaying all messages**.



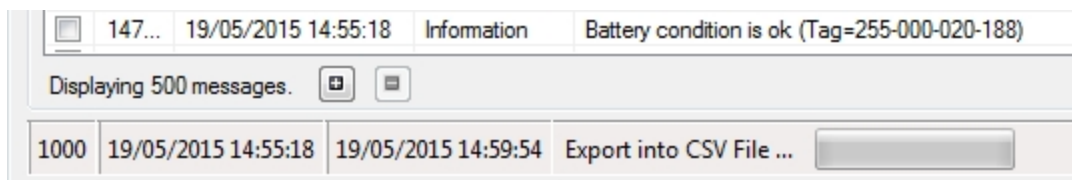
Export messages into CSV File ...

All messages shown in the list can be exported into a csv file to be analyzed outside the application, e.g. in Excel.

To reduce the number of messages to be exported to the csv file the given filters at top of the list should be used.

The user can start the export by clicking **Export messages into CSV File ...**

Operation



The save file dialog (depending of the operating system) will appear to select a directory and choose a file name to store the csv file.

Hints

A command-line tool, **ubisense_exception_client.exe**, is available to simulate ACS messages.

Acknowledged messages are deleted after 24 hours by default (after appearance).

All other messages are deleted after 14 days.

Administration

For administration purposes only, the Administration sections covers:

- Configuring advanced properties.
- Process Management.
- Sensor Management.
- Sensor Space Configuration.
- Tag Management.
- UI Authorization Configuration.
- Audit Log Configuration.

Configure Properties (Advanced)

Advanced user

Define configuration properties to change the behavior of services and user interfaces, such as [Product Space Definition](#).



In the current version of ACS it is not possible to add new properties.

How it Works

Adding a Configuration Property

Click **New** to add a property. Set the detail fields and click **Save** to store the new property.

See [Properties](#) for explanations of each property.

Changing a Configuration Property

Select a property from the list. Change detail fields according to your needs and click **Save**.

Removing a Configuration Property

Select a property from the list and click **Remove**.

Fields

Configuration of properties

Saved Properties

Group	Name	Value
ACS	ACS::Association::send T...	3
ACS	ACS::Association::send T...	5
ACS	ProductionControllerNames	
ACS	Service::RemoveOutdat...	10
ACS Protocol Service	LogFileMaxLines	100000
ACS Protocol Service	LogFileMaxSize	5000000
ACS Protocol Service	LogLevel	Information
ACS Protocol Service	LogMaxFiles	10
ACS Protocol Service	LogRootDirectory	c:\temp
ACS Protocol Service	ProdAtErrorProductNames	ERROR:#ERR
Association	AssociationDisassociatio...	
Association	LogFileMaxLines	100000

Remove

Property details

Group

ACS

Name

ACS::Association::send Tags To Deep Sleep

Value

3

Default Value

3

Save

Column or Field	Details
Group	Mandatory field. Using the group field to collect several properties of one topic.
Name	Mandatory field. Each property must have a unique name.
Value	Mandatory field. The value of the property.
Default Value	Optional field. The default value of the property.
Description	Optional field. Each property should have a text to describe it.

Part Number: ACS_UG_2.11.5_EN

Page 164

Hints

You must be very careful when changing property values. There is no type checking implemented. If you enter a wrong value this can lead to unexpected errors or ACS may stop working properly.



Properties

Advanced user

This section provides an overview of the most common properties.

Standard Properties

The following table shows an overview of the standard properties which exist for most of the services provided from and used with ACS.

Name	Description
LogFileMaxLines	<p>The maximum number of line per log file until the next file is started.</p> <p>Default value: 100000</p> <div>  When changing this value keep in mind that you have to handle the log file with an editor. </div>
LogFileMaxSize	<p>The maximum number of bytes per log file until the next file is started.</p> <p>Default value: 5000000 bytes</p> <div>  When changing this value keep in mind that you have to handle the log file with an editor. </div>
LogLevel	<p>The level of logging details that get reported. Values are: Debug, Information, Warning, Error, Max</p> <p>Default value: Information</p>
LogMaxFiles	<p>The maximum number of log files to create.</p> <p>Default value: 10</p>
LogRootDirectory	<p>The directory in which the service should store its log files. (The directory must be specified as seen from the server)</p> <p>e.g. C:\RTLS\ACS\logs</p>

Special Properties

The following table shows an overview of special properties from different services. If the properties are available on your system or not depends on the installed services.

Group	Name	Description
ACS	ControllerNameACSInstanceNameMapping	<p><u>This property allows you to set an additional human readable string for the controller name, describing the ACS instance. This can be helpful to distinguish production sites from test sites.</u></p> <p><u>The format of the configuration is</u> <u>ControllerName=ACSInstanceName</u></p> <p><u>The ControllerName must be given exactly as shown in Ubisense Service Manager.</u></p> <p><u>The ACSInstanceName can be chosen freely.</u></p>
ACS	Maintenance Mode Entities	Comma-separated list of entities (Lines, Association zones, Disassociation zones) which are currently in maintenance mode and therefore deactivated. See Setting Maintenance Mode for factory layout entities
ACS	Product Name Pattern	<p>Defines the format for the display of the product name in the map view, the Product Tag Association tool, and in log files, to allow the display of sequence numbers alongside product names.</p> <p>For example, you could enter {ProductName}{SeqNo} to show the sequence number in parentheses after the product name. See Example: Displaying Sequence Numbers</p>

Group	Name	Description
		<u>alongside Product Names.</u>
ACS	ProductionControllerNames	<p><u>Usually it is just one name but it is possible that you configure more than one service controller.</u></p> <p><u>If you are connected to that controller the status changes its color to yellow and the names of the controller are extended to "Connected with production dataset!"</u></p>
ACS	ResetTagStatusAfterTime	<p>Time [weeks] after which the status of a tag is automatically reset, if it has not been seen since.</p> <p>This automatic cleanup helps to remove tag battery status entries for tags which no longer exist in a system.</p> <p>Default value: 156</p>
ACS	Service::RemoveOutdatedProductsAction	<p>Time (in seconds) after which RemoveOutdatedProductsAction will be called after server initialization.</p> <p>Default Value: 10s</p>
ACS GUI Support	AggregationFrequency	<p>Frequency[Hz] with which data is aggregated, in order to reduce the data rate for GUI applications.</p> <p>Default Value: 2</p>
ACS Protocol Service	ProdAtErrorProductNames	<p>Colon separated list of names regarded as error objects in ProdAt telegrams</p> <p>Default Value: ERROR:#ERR</p>
ACS Protocol Service	ProdAtGapType	<p>Products of this type sent from PLC will be treated as a gap</p> <p>Default value: _GAP_</p>

Group	Name	Description
ACS Protocol Service	Store subscription rules persistently	<p>Boolean value [0,1,false,true].</p> <p>Synchronize rules received by SUBSCR telegram persistently.</p> <p>Only set to 'true' if rules don't change for every product!</p> <p>Default value: 0</p>
ACS Protocol Service	UseHexTagID	<p>If true (default), tag ID are represented by hexadecimal digits in telegrams like PRODTAG.</p> <p>Default value: 1</p>
Association	AssociationDisassociationZone Relation	<p>Relation between association and disassociation zones.</p> <p>This is a comma separated list of zone name pairs, which are divided by an equal sign,</p> <p>e.g</p> <p>AssocZone1=DisassocZone,AssocZone 2=DisassocZone</p> <p>This information is used by the Tag Swapping functionality of Association Zones</p>
Association	Candidate Products Are Reliable Default	<p>Default value that determines whether product candidates from an external product sequence are reliable or not. Permitted values are 'true', 'True', '1', 'false', 'False', '0'</p>
Association	TagCircuitNames	<p>Relation between association zones and tag circuit name.</p> <p>This is a comma separated list of zone name and tag circuit name pairs, which are divided by an equal sign,</p>

Group	Name	Description
		<p>e.g AssocZone1=TagCircuit,AssocZone2=TagCircuit</p> <p>This information is used by the Tag Swapping functionality of Association Zones</p>
ConfigurableTagStatusProvider	EvaluationStrategy	<p>Evaluation method to return the battery status for tags</p> <p>Default Value: Core (The Ubisense Core System delivers the battery status for each tag)</p>
ConfigurableTagStatusProvider	NotOKStates	<p>Comma separated list of battery states characterizing which tags are not OK, e.g. in associations</p> <p>Default Value: Warning, Failing</p>
Exception Service	AcknowledgedExceptionMaxAge	<p>Time [in days] after which acknowledged messages are removed from the messages list in Operation/Messages.</p> <p>To acknowledge set the check box at the beginning of the line with the message.</p> <p>Default Value: 14d</p>
Exception Service	ExceptionMaxAge	<p>Time [in days] after which messages are removed from the messages list in Operation/Messages.</p> <p>These property is applied to all messages that are not acknowledged.</p> <p>Default Value: 14d</p>
Exception Service	ExceptionMaxCount	<p>Maximum number of messages in the list. When this number is exceeded the</p>

Group	Name	Description
		oldest messages are removed from the messages list. Default Value: 10000
Exception Service	SensorReportTimeout	Time [in seconds] which must pass until sensor status changes are reported. This timeout is used to avoid generating messages if the sensor status changes for only a very short time Default Value: 180s
Exception Service	ServiceRestartCountUntilError	Defines how many times a service may restart within a given time period (see ServiceRestartPeriodForError) before an exception will be raised. Value must be greater than '0'. Default value is '5'
Exception Service	ServiceRestartErrorMessageTimeout	Defines period of time in which restart exceptions will be omitted after a restart error exception has been raised. Value must be greater than '0'. Default value is '15'
Exception Service	ServiceRestartPeriodForError	Defines period of time within which service restarts are counted. If the number of restarts exceeds a limit (see ServiceRestartCountUntilError) an exception will be raised. Value must be greater than '0'. Default value is '60'
Exception Service	ServiceStatusReportingDelay	The delay ([s]) between a service status change and the time it is reported as an exception message, and the startup

Group	Name	Description
		<p>time for which the Exception Service discards service status change messages.</p> <p>When set to the default, this suppresses the large number of exception messages that would otherwise happen when restarting the entire platform.</p> <p>Set the value to 0[s] to get all service status change messages reported immediately.</p> <p>Default Value: 5 [s]</p>
External Object Information Transfer	ForwardingRole	<p>External Object Information Transfer is part of ACSSupport to transfer external object information.</p> <p>E.g. from a production database (source) to a test database (sink).</p> <p>This property must be set at both systems.</p> <p>ForwardingRole is either 'source' or 'sink'</p> <p>Default Value: source</p>
External Object Information Transfer	TCPPort	<p>The port of the socket to connect to or to listen on.</p> <p>This property must be set at both systems.</p> <p>Default Value: 9999</p>
External Object Information Transfer	TCPRole	<p>TCPRole is either 'client' or 'server'</p> <p>This property must be set at both systems.</p> <p>Default Value: server</p>

Group	Name	Description
External Object Information Transfer	TCPServer	The IP-Address of the socket to connect to. This property must be set at both systems. Default Value: 127.0.0.1 (localhost)
External Systems	RemoveEventSubscriptionIsGoneTimeout	Timeout in hours, after which event subscription is removed from the EventSubscriptionIsGone relation. Default Value: 24
External Systems	UndesirableDisconnectionTimeout	The period of time [s] after which an exception is generated indicating the lack of connection to an external system. Exception is generated only if desired connection status is 'Connected' and the current status changed to 'Disconnected'. Default Value: 60s
FileSystemChecker	CPUFreezeLatencyThreshold	The threshold in ms for CPU freeze latency. A value above leads to a warning message. Default value: 100ms
FileSystemChecker	Enabled	Indicates whether or not the File System Checker shall be executed. Default value: true
FileSystemChecker	WriteLatencyThreshold	The threshold in ms for write latency. A value above leads to a warning message. Default value: 1000ms
HM Monitor	AllowedShapesBufferWidth	Allowed Shape Buffer Width for determining allowed shapes

Group	Name	Description
		Default Value: 2.0 Series 7000 only
HM Monitor	TagRate	The Tag Rate [Slow,Medium,Standard,High] (Rates: Slow=10, Medium=30, Standard=37 and 40, High=134) Default Value: Standard Series 7000 only
Ident Determination	Use Tag Location Strictly	Boolean value controlling the behavior of the Ident Zone 'Use Tag Location' parameter. When true, <i>only</i> tag locations are used to determine if a product is in an ident zone. When false, in addition to tag locations, product locations are also used (this was the behavior before ACS 2.9). Possible values are 'True', 'true', '1', 'False', 'false', '0'.
LocationTransfer	ForwardingRole	Location Transfer is part of ACSSupport to transfer locations. E.g. from a production database (source) to a test database (sink). This property must be set at both systems. ForwardingRole is either 'source' or 'sink' Default Value: source
LocationTransfer	TCPPort	The port of the socket to connect to or to listen on.

Group	Name	Description
		<p>This property must be set at both systems.</p> <p>Default Value: 9999</p>
LocationTransfer	TCPRole	<p>TCPRole is either 'client' or 'server'</p> <p>This property must be set at both systems.</p> <p>Default Value: server</p>
LocationTransfer	TCPServer	<p>The IP-Address of the socket to connect to.</p> <p>This property must be set at both systems.</p> <p>Default Value: 127.0.0.1 (localhost)</p>
LocationSystem	TagVersion	<p>In versions prior to ACS Version 2.6.0, defined the tag version for the underlying location system.</p> <p>From Version 2.6.0, has no effect.</p>
Logging	LogRootDirectoryDefault	<p>The directory in which services should store log files, if no local 'LogRootDirectory' configuration for the service exists.</p>
Process Management Service	historyTimeout	<p>Timeout (in seconds) after which a process is removed from list ProcessRuns.</p> <p>Default value: 604800s (7 Days)</p>
ProductIsMissingAttributesEventGenerator	ExecutionCycleTime	<p>The time after which the ProductIsMissingAttributesEventGenerator is again looking for product instances with missing attributes</p> <p>Default Value: 60s</p>
Tag Profile Supervisor	LeaseTimeInSeconds	<p>QoS (Quality of Service) lease time in</p>

Group	Name	Description
		seconds until tag <> section affiliations are cleared if no update occurs Default Value: 10s
Tracking Support	Disassociation Zone Name	The name of the disassociation zone potentially performing the disassociation
Tracking Support	DynamicLeaseTime	Time[s], after which dynamic configurations are removed, if they were not refreshed in the meantime. The tracking support service can use information provided by external systems regarding the speed of products on the line and whether or not the line is moving. This timeout controls how long ACS considers the information to be valid Default Value: 10
Tracking Support	Enable Product Disassociation	Whether or not products shall be disassociated from their tags when a sequence violation is detected at the beginning of a line. See Assembly Lines Default Value: false
Tracking Support	RepeatReliabilityExceptionTimeout	ACS can generate exception messages when a tracking support service considers the product positions on an assembly line to be reliable, that is when the status switches from 'unreliable' to 'reliable'. If the reliable status persists, the message can be resent after a specified number of seconds has elapsed. A timeout of zero seconds (default)

Group	Name	Description
		<p>disables the repetition of the exception messages.</p> <p>Default Value: 0</p>
Tracking Support	RepeatUnreliabilityExceptionTimeout	<p>ACS can generate exception messages when a tracking support service considers the product positions on an assembly line to be unreliable, that is when the status switches from 'reliable' to 'unreliable'. If the unreliable status persists, the message can be resent after a specified number of seconds has elapsed.</p> <p>A timeout of zero seconds (default) disables the repetition of the exception messages.</p> <p>Default Value: 0</p>
Tracking Support	Sequence Number Numeric Range	<p>Used in the check for disassociation of unexpected products at the beginning of an assembly line if the product sequence numbers have non-numerical parts.</p> <p>Format: 'From Position'-'To Position', integer-based, e.g. 2-4 to select the last three characters of a four-character sequence number like T123.</p> <p>Leave empty if the sequence number is entirely numerical.</p>
Tracking Support	ShadowProductNamePrefix	<p>The prefix of shadow products which are automatically generated by ACS to fill in gaps on assembly lines (if configured: see). The complete name will be generated as <Prefix> <Line Name> <-> <Running Number>.</p>

Group	Name	Description
		Default Value: SP-

Process Management

Advanced user

Schedule processes that are defined in ACS.

In the current version, the following processes can be scheduled:

- Tracking Support-Reset
- Integra-BatchSynchronization
- Set Maintenance Mode for Entity (see [Setting Maintenance Mode for factory layout entities](#))

How it Works

Schedule defined processes in ACS.

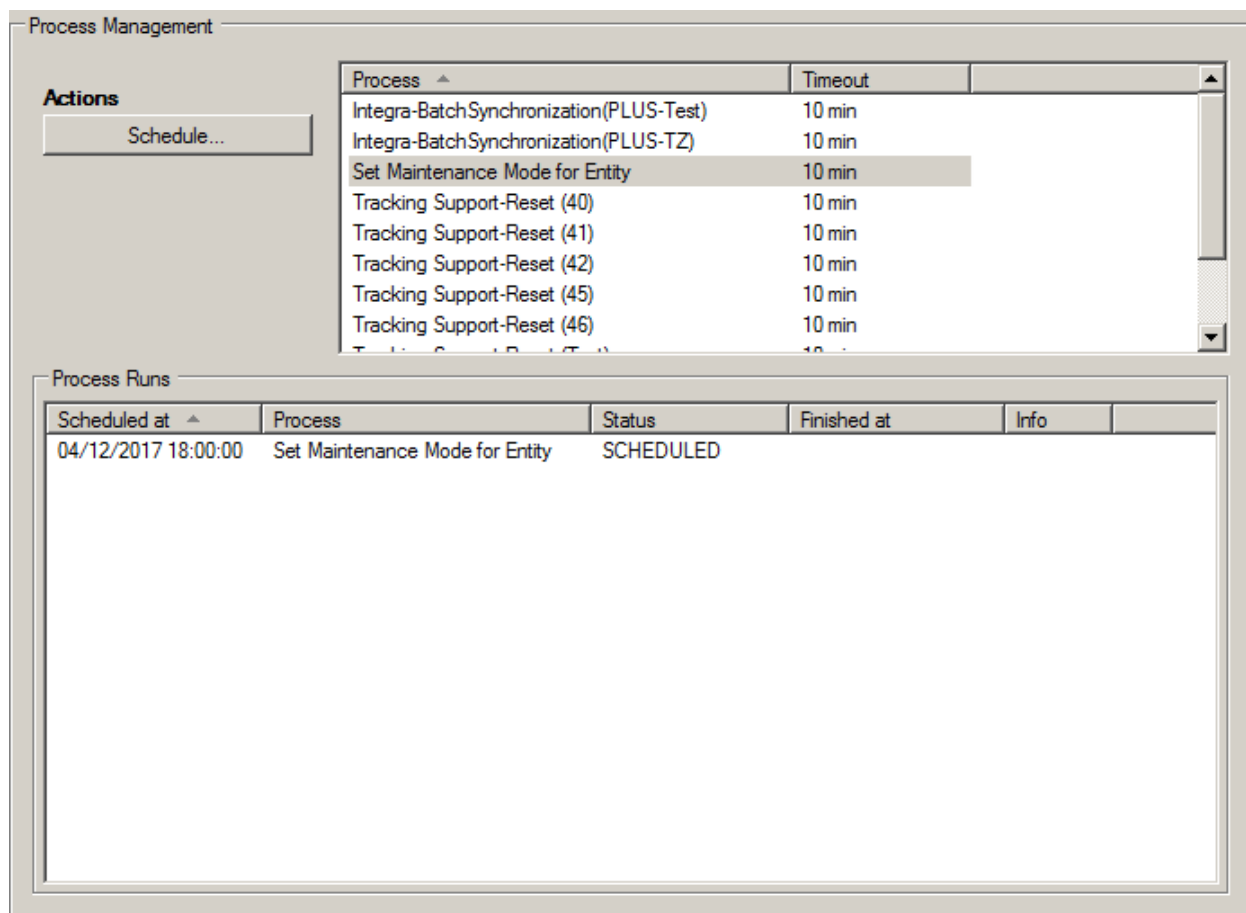


Figure: The Process Management Tab

Schedule a Process

Select a given process from the list and click **Schedule** to open the **Schedule Process** dialog.
For example, for Set Maintenance Mode for Entity:

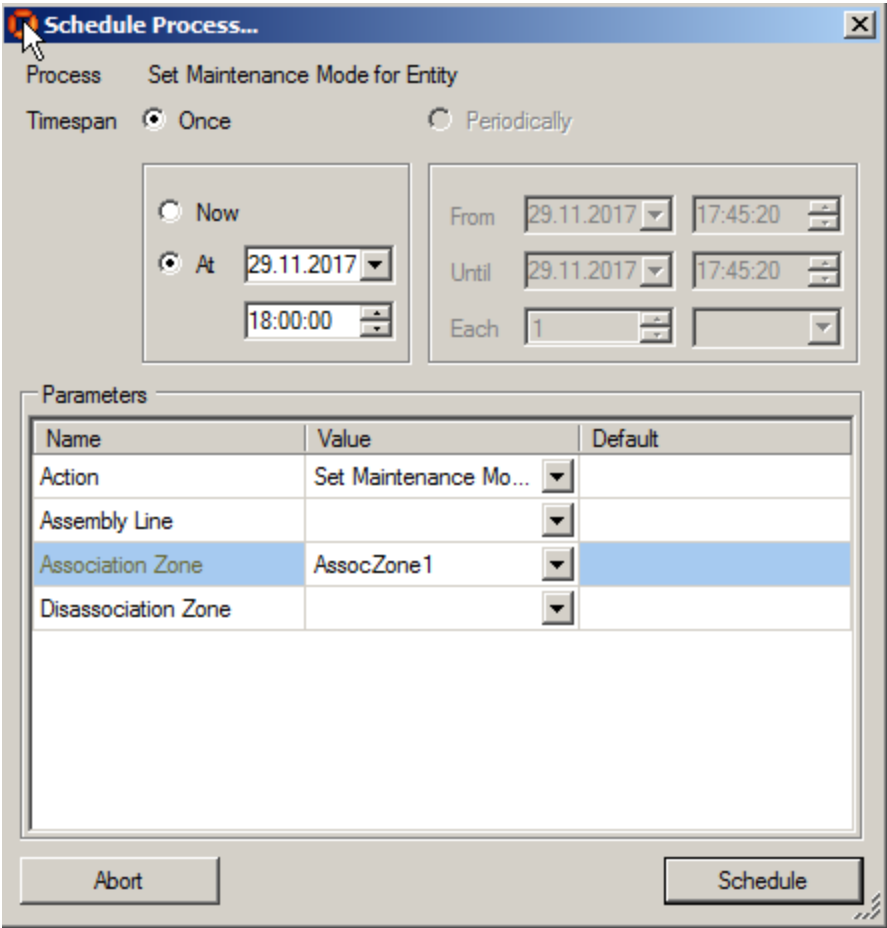


Figure: Scheduling a Process

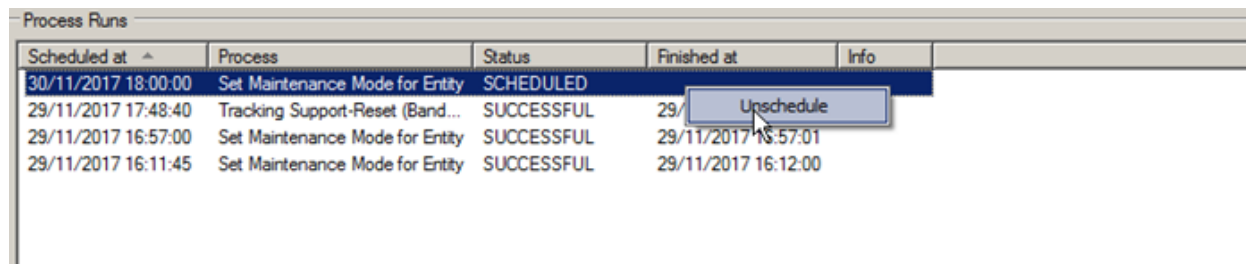
Schedule the process according your needs and click **Schedule**.

Field	Details
Process	The name of the process to schedule.

Field	Details
Schedule	<p>Mandatory field. Depending on the process you can select Once or Periodically.</p> <ul style="list-style-type: none"> • Once <ul style="list-style-type: none"> • Now: The process will run as soon as you click Schedule. • At: You can choose a date and time when the process should run. • Periodically <ul style="list-style-type: none"> • From: Select the starting date and time. • Until: Select the end date and time. • Each: Select how often the process should run.
Parameters	Mandatory fields. You must set a value for one or more parameters depending on the process selected.

Unschedule a Process

Select a process from the list that has NOT been run (Status SCHEDULED), press the right mouse button and select **Unschedule**.



The screenshot shows a table titled 'Process Runs' with columns: Scheduled at, Process, Status, Finished at, and Info. The first row is highlighted in blue and has a right-click context menu open over it. The menu contains the option 'Unschedule'.

Scheduled at	Process	Status	Finished at	Info
30/11/2017 18:00:00	Set Maintenance Mode for Entity	SCHEDULED		
29/11/2017 17:48:40	Tracking Support-Reset (Band...	SUCCESSFUL	29/11/2017 18:57:01	
29/11/2017 16:57:00	Set Maintenance Mode for Entity	SUCCESSFUL	29/11/2017 18:57:01	
29/11/2017 16:11:45	Set Maintenance Mode for Entity	SUCCESSFUL	29/11/2017 16:12:00	

Figure: Unscheduling a Scheduled Process

Setting Maintenance Mode for factory layout entities

It is possible to “freeze” certain factory layout entities in ACS by setting or unsetting “Maintenance Mode” for those entities. This stops certain functions/events relating to those entities occurring.

Entities for which this is currently possible are:

- Tag-driven Assembly Lines
- Containment events, and events such as ProductIsLocated and TriggerPoint, will then not

occur

- Association zones
Product tag association events will not occur
- Disassociation zones
Product tag disassociation events will not occur

Setting Maintenance Mode will store the name of the selected entity(ies) in the list of stored entities in the ACS schema.

Removing Maintenance Mode will delete the name of the selected entity(ies) from the list of stored entities in the ACS schema.

Prozessläufe				
Planmäßig ^	Prozess	Status	Beendet	Information
01.12.2017 11:09:53	Set Maintenance Mode for Entity	SUCCESSFUL	01.12.2017 11:09:53	Remove Maintenance Mode: Association Zone:3032, Disassociation Zone:3034
01.12.2017 11:09:27	Set Maintenance Mode for Entity	SUCCESSFUL	01.12.2017 11:09:27	Remove Maintenance Mode: Assembly Line:40
01.12.2017 11:09:04	Set Maintenance Mode for Entity	SUCCESSFUL	01.12.2017 11:09:04	Set Maintenance Mode: Assembly Line:40, Association Zone:3032, Disassociati

Figure: Process runs of "Set Maintenance Mode for Entity" – (Set/Remove)

Sensor Management

Advanced user

Show all available Ubisense sensors.

Reboot, Activate or deactivate existing sensors, swap a sensor, set the sensor position.



It is NOT possible to add a new sensor or remove existing ones.

How it Works

Select a sensor from the list and reboot, activate or deactivate, swap it or set a new position.

Sensor Management

Actions:

Reboot

Activate

Swap Sensor

Set Sensor Position

CSV Export

Filter options:

Sensor

Cell

Status

IP Address

MAC

Role

Sensor count: 534

Clear filter

Sensor	Cell	Status	Last Seen	IP Address	MAC	Booting?	Active?	Role
M071AC5010101 6E:3A	M071AC501	Unknown	24/12/2014 15:39:30	172.24.118.51	00:11:CE:00:6E...	Yes	Yes	Slave
M071AC5010102 6E:64	M071AC501	Unknown	24/12/2014 15:39:42	172.24.118.52	00:11:CE:00:6E...	Yes	Yes	Slave
M071AC5010103 6E:AA	M071AC501	Unknown	24/12/2014 15:39:34	172.24.118.53	00:11:CE:00:6E...	Yes	Yes	Slave
M071AC5010104 6E:9C	M071AC501	Unknown	24/12/2014 15:39:40	172.24.118.54	00:11:CE:00:6E...	Yes	Yes	Slave
M071AC5010105 6D:A6	M071AC501	Unknown	24/12/2014 15:39:17	172.24.118.55	00:11:CE:00:6D...	Yes	Yes	Slave
M071AC5010106 6F:29	M071AC501	Unknown	24/12/2014 15:40:19	172.24.118.56	00:11:CE:00:6F...	Yes	Yes	Slave
M071AC5010107 6E:49	M071AC501	Unknown	24/12/2014 15:39:34	172.24.118.57	00:11:CE:00:6E...	Yes	Yes	Slave
M071AC5010108 6E:69	M071AC501	Unknown	24/12/2014 15:39:44	172.24.118.100	00:11:CE:00:6E...	Yes	Yes	Master
M071AC5010109 8D:AA	M071AC501	Unknown	24/12/2014 15:39:19	172.24.118.59	00:11:CE:00:8D...	Yes	Yes	Slave
M071AC5010110 6D:92	M071AC501	Unknown	24/12/2014 15:39:09	172.24.118.60	00:11:CE:00:6D...	Yes	Yes	Slave
M071AC5010111 6D:A3	M071AC501	Unknown	24/12/2014 15:39:16	172.24.118.61	00:11:CE:00:6D...	Yes	Yes	Slave
M071AC5010112 6D:A9	M071AC501	Unknown	24/12/2014 16:18:36	172.24.118.150	00:11:CE:00:6D...	Yes	Yes	Slave, TimingSo...
M071AC5010201 6D:A2	M071AC501	Unknown	24/12/2014 15:39:16	172.24.118.63	00:11:CE:00:6D...	Yes	Yes	Slave
M071AC5010202 6D:A5	M071AC501	Unknown	24/12/2014 15:39:17	172.24.118.64	00:11:CE:00:6D...	Yes	Yes	Slave
M071AC5010203 6D:8B	M071AC501	Unknown	24/12/2014 15:39:24	172.24.118.65	00:11:CE:00:6D...	Yes	Yes	Slave
M071AC5010204 6D:A7	M071AC501	Unknown	24/12/2014 15:39:18	172.24.118.66	00:11:CE:00:6D...	Yes	Yes	Slave
M071AC5010205 73:C6	M071AC501	Unknown	24/12/2014 15:41:07	172.24.118.67	00:11:CE:00:73...	Yes	Yes	Slave
M071AC5010206 73:CA	M071AC501	Unknown	24/12/2014 15:41:08	172.24.118.101	00:11:CE:00:73...	Yes	Yes	Master
M071AC5010207 73:DF	M071AC501	Unknown	24/12/2014 15:41:13	172.24.118.69	00:11:CE:00:73...	Yes	Yes	Slave
M071AC5010208 73:BF	M071AC501	Unknown	24/12/2014 15:41:05	172.24.118.70	00:11:CE:00:73...	Yes	Yes	Slave
M071AC5010209 73:C3	M071AC501	Unknown	24/12/2014 15:40:33	172.24.118.71	00:11:CE:00:72...	Yes	Yes	Slave
M071AC5010210 72:C8	M071AC501	Unknown	24/12/2014 16:16:09	172.24.118.151	00:11:CE:00:72...	Yes	Yes	Slave, TimingSo...
M071AC5010301 72:8F	M071AC501	Unknown	24/12/2014 15:40:32	172.24.118.73	00:11:CE:00:72...	Yes	Yes	Slave
M071AC5010302 72:CA	M071AC501	Unknown	24/12/2014 15:40:36	172.24.118.74	00:11:CE:00:72...	Yes	Yes	Slave
M071AC5010303 73:05	M071AC501	Unknown	24/12/2014 15:41:12	172.24.118.75	00:11:CE:00:73...	Yes	Yes	Slave
M071AC5010304 72:C7	M071AC501	Unknown	24/12/2014 15:40:38	172.24.118.76	00:11:CE:00:72...	Yes	Yes	Slave
M071AC5010305 73:CF	M071AC501	Unknown	24/12/2014 15:41:10	172.24.118.77	00:11:CE:00:73...	Yes	Yes	Slave
M071AC5010306 73:D0	M071AC501	Unknown	24/12/2014 15:41:11	172.24.118.102	00:11:CE:00:73...	Yes	Yes	Master
M071AC5010307 73:C7	M071AC501	Unknown	24/12/2014 15:41:07	172.24.118.79	00:11:CE:00:73...	Yes	Yes	Slave
M071AC5010308 72:8E	M071AC501	Unknown	24/12/2014 15:40:32	172.24.118.80	00:11:CE:00:72...	Yes	Yes	Slave
M071AC5010309 4A:5B	M071AC501	Unknown	24/12/2014 15:38:45	172.24.118.81	00:11:CF:00:4A...	Yes	Yes	Slave

Figure: The Sensor Management Tab

Field	Details
Sensor	The current name from the sensor.
Cell	The cell the sensor is associated with. For DIMENSION4 sensors, this shows the sensor group for the sensor. For a TDU, this will be blank.
Status	The status of the sensor (All status flags from the Location Engine are reported).
Last seen	The date/time stamp from the moment when this sensor has been last seen from the application.
IP Address	The current IP address from the sensor. The IP address can be static or dynamic depending on your installation.
MAC	The MAC address from the sensor.
Booting?	This flag shows whether this sensor is booting or not.
Active?	This flag shows whether this sensor is active or not.
Role	This is the role from the sensor. There are three roles: Master, Slave and TimingSource. Not applicable to DIMENSION4 sensors.

Filtering

To make it easier to find a sensor you can define a filter setting. The options are connected with **AND**. The filter options are sensor name, cell name, status, IP address, MAC or role.

To clear the filter, click **Clear Filter**.

Reboot a Sensor

1. Select a sensor from the list where the flag **Rebooting?** is *false*.
2. Click **Reboot** to reboot the sensor. This will launch rebooting the sensor and change the flag **Rebooting?** temporarily to *true*.

If the flag **Rebooting?** is *true* the action is not active.

Activate/Deactivate a Sensor

1. Select a sensor from the list.
2. Click **Activate** or **Deactivate** as required. This will:
 - activate the selected sensor and change the flag **Active?** from *true* to *false*
 - deactivate the selected sensor and change the flag **Active?** from *false* to *true*

Swap a Sensor

1. Select a sensor from the list and click **Swap**. This will open a new window where you can swap a new sensor for an existing one.
2. You see the old MAC address and must type the new MAC address.
3. Click **Commit** to swap the sensor.

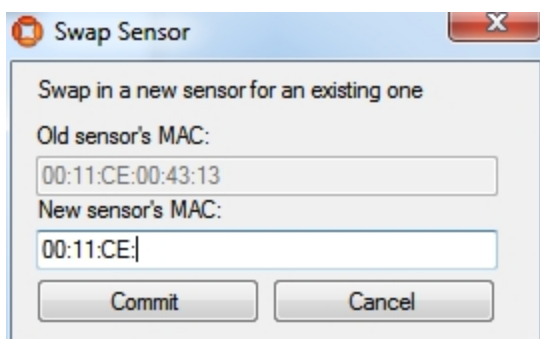


Figure: Swapping a Sensor



If you are running a DIMENSION4 location system, the Swap Sensor functionality is not supported. Calling the function will not result in any change.

Set Sensor Position

1. Select a sensor from the list and click **Set Sensor Position**. This will open a new window where you can change the coordinates of the sensor
2. Click **Commit** to move the sensor to the new position.



Notes

- If you change the value for X, Y or Z more than 3 meters, you will get a warning message whether you really want to change the value.
The set sensor position functionality is usually only for moving a sensor a small distance.
- It is not possible to change the values for Yaw and Pitch.
The two values are shown to give an indication how the sensor must be oriented after having physically moved it.

Set Sensor Position

Move sensor to a new position

MAC: 00:11:CE:00:38:5D

X: 12.54 [m]

Y: 4.11 [m]

Z: 2.72 [m]

Yaw: -151 [°]

Pitch: -26 [°]

Commit Cancel

Figure: Changing the Sensor Position

Export the list of sensor into a CSV file

Click **CSV Export** to open a standard file chooser dialog in order to export all shown sensors with a name, into a directory of your choice.

Sensor Space Configuration

Advanced user

Generate warning messages for objects affected by failing sensors.

When a sensor fails, warning messages for those devices are generated which stations / workspaces overlap sensor spaces.

How it Works

Select an existing space configuration and assign the configuration to selected sensors.

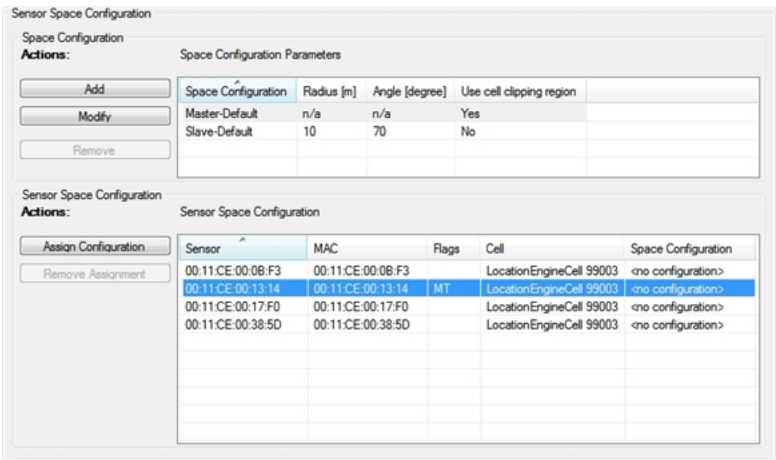
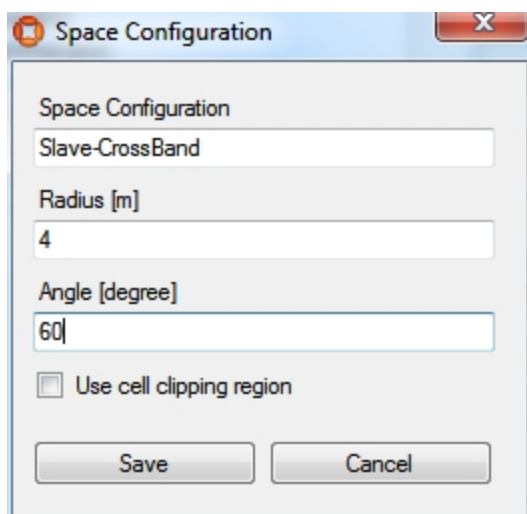


Figure: The Sensor Space Configuration Tab

Space Configuration

The space configuration has two "Default" (Master and Slave) entries which cannot be removed but parameter values can be updated.



The image shows a 'Space Configuration' dialog box. It has a title bar with a close button (X). Inside, there's a label 'Space Configuration' above a text input field containing 'Slave-CrossBand'. Below that is a 'Radius [m]' label above a text input field containing '4'. Then an 'Angle [degree]' label above a text input field containing '60'. At the bottom left is a checkbox labeled 'Use cell clipping region' which is currently unchecked. At the bottom right are two buttons: 'Save' and 'Cancel'.

Figure: Defining a Space Configuration

Field	Details
Space Configuration	Mandatory field. Each space configuration must have a name. The name must be unique within all space configurations.
Radius [m]	Mandatory field. The radius (in meter) of the space measured from the sensor.
Angle [degree]	Mandatory field. The aperture angle (in degree) of the space measured from the sensor.
Use cell clipping region	Non mandatory. If marked the whole cell clipping region is taken and the values for radius and degree are not editable.

Sensor Space Configuration

Select a Space Configuration from the list, select the sensors you want to assign the configuration and click **Assign Configuration**. A message will appear where you have to confirm your assignment.

To remove an assignment from a sensor, select the sensor and click **Remove Assignment**.

Administration

Sensor Space Configuration

Actions:

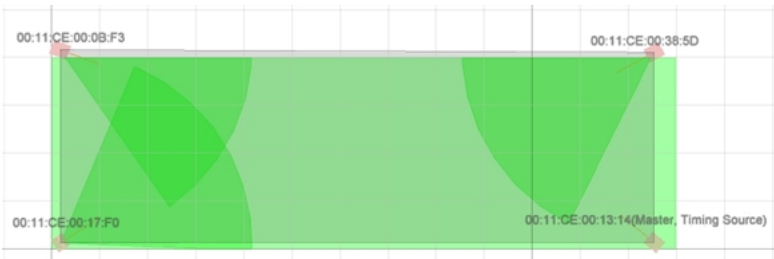
Assign Configuration

Remove Assignment

Sensor Space Configuration

Sensor	MAC	Flags	Cell	Space Configuration
00:11:CE:00:0B:F3	00:11:CE:00:0B:F3		LocationEngineCell 99003	Slave-Default
00:11:CE:00:13:14	00:11:CE:00:13:14	MT	LocationEngineCell 99003	Master-Default
00:11:CE:00:17:F0	00:11:CE:00:17:F0		LocationEngineCell 99003	Slave-Default
00:11:CE:00:38:5D	00:11:CE:00:38:5D		LocationEngineCell 99003	Slave-Default

The existing assignments can be viewed in the LEC (Location Engine Configuration).



Hints

When a sensor fails, warning messages for those devices are generated which stations / workspaces overlap sensor spaces.

Messages

	ID	Time	Type	Information
<input type="checkbox"/>	1275	04/09/2013 13:07:51	Warning	Device W1 is affected by failing sensors: '00:11:CE:00:0B:F3 (MAC:00:11:CE:00:0B:F3);'
<input type="checkbox"/>	1273	04/09/2013 13:07:49	Warning	Device W1 is affected by failing sensors: '00:11:CE:00:0B:F3 (MAC:00:11:CE:00:0B:F3);'
<input type="checkbox"/>	1271	04/09/2013 13:07:47	Warning	Device W1 is affected by failing sensors: '00:11:CE:00:0B:F3 (MAC:00:11:CE:00:0B:F3);'
<input type="checkbox"/>	1269	04/09/2013 13:07:45	Warning	Device W1 is affected by failing sensors: '00:11:CE:00:38:5D (MAC:00:11:CE:00:38:5D)'
<input type="checkbox"/>	1265	04/09/2013 12:04:53	Warning	Device W1 is affected by failing sensors: '00:11:CE:00:0B:F3 (MAC:00:11:CE:00:0B:F3)'

Tag Management

Advanced user

Shows the most recent monitored battery status, giving a warning of battery failure for tags that have been seen by the platform.

Reset the warning for a tag.

Set the tag type for a tag.

How it Works

Select a tag from the list and reset the warning.

Select a tag from the list and choose its tag type.

Tag Management					
Actions: <input type="button" value="Reset Warning"/> <input type="button" value="Set tag type"/>					
Filter options: Tag Id. <input type="text"/> Status <input type="text"/> Firmware <input type="text"/> Tag type <input type="text"/> Tag count: 70 <input type="button" value="Clear filter"/>					
Tag Id.	Time	Status	Firmware	Tag type	
00:11:CE:00:00:00:1B:CC	13/05/2019 16:17:24	OK	20.15		
00:11:CE:00:00:00:1B:CD	13/05/2019 16:17:27	OK	20.15	Minitag	
00:11:CE:00:00:00:1B:E4	13/05/2019 16:17:24	OK	20.15	Minitag	
00:11:CE:00:00:00:1B:ED	13/05/2019 16:17:39	OK	20.15		
00:11:CE:00:00:00:23:63	13/05/2019 16:18:03	OK	20.15		
00:11:CE:00:00:00:27:15	13/05/2019 16:17:28	OK	20.15	Minitag	
00:11:CE:00:00:00:27:4B	13/05/2019 16:17:31	OK	20.15		
00:11:CE:00:00:00:29:8F	13/05/2019 16:18:01	OK	20.15		
00:11:CE:00:00:00:2B:95	13/05/2019 16:17:39	OK	20.15		
00:11:CE:00:00:00:2B:D4	13/05/2019 16:17:35	OK	20.15		
00:11:CE:00:00:00:2C:8C	13/05/2019 16:17:44	OK	20.15		
00:11:CE:00:00:00:2D:9E	13/05/2019 16:17:45	OK	20.15		
00:11:CE:00:00:00:32:16	13/05/2019 16:17:57	OK	20.15		
00:11:CE:00:00:00:32:93	13/05/2019 16:17:27	OK	20.15		
00:11:CE:00:00:00:32:A3	13/05/2019 16:17:36	OK	20.15		
00:11:CE:00:00:00:32:BD	13/05/2019 16:17:38	OK	20.15		
00:11:CE:00:00:00:32:C0	13/05/2019 16:18:07	OK	20.15		
00:11:CE:00:00:00:37:4E	13/05/2019 16:17:41	OK	20.15	Minitag	

Figure: The Tag Management Tab

Tag Management

Field	Details
Tag ID	The Tag ID shown as string.
Time	Shows the time the tag battery status was last changed.
Status	This column will show one of four status values for each tag: <ul style="list-style-type: none"> • Unknown: The tag has not yet been seen for long enough to generate an estimate of battery status • OK: The tag battery is currently OK • Warning: The tag battery is showing initial signs of depletion, and the tag should be serviced soon to replace the battery • Failing: The tag battery is failing imminently, and should be replaced as soon as possible
Firmware	Shows the firmware version of the tag.
Tag type	Shows the tag type.

Filtering

To more easily find a tag you can define a filter setting. The options are connected with **AND**. The filter options are:

- tag id
- status
- firmware version
- tag type

To clear the filter click **Clear Filter**.

Reset Warning

When you click **Reset Warning**, ACS assumes that a new battery has been put in the tag, asserts that the battery has been changed and clears the warnings. It will later return one of the other battery states as the tag reports its usage.

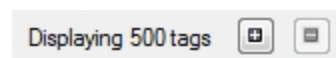
Set tag type

Click **Set tag type** and you can choose the tag's type from a dropdown of tag types.

If tags show defective behavior they can be flagged as being 'bad' by assigning them the tag type **Bad Tag**. See [Bad Tags at Association Zones](#) for a description of how such tags are treated during tag association.

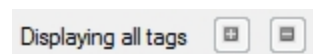
Display tag information

The number of tags shown in the list is limited to a number of currently 500 tags as default.



The number of tags to display can be increased or decreased in increments of 500 by using the + and - buttons.

If all existing tags are shown the text shows **Displaying all tags**.



UI Authorization Configuration

Advanced user

Restrict activities for given user roles.

The user roles are *not* defined in ACS. Use the Security Manager (part of Ubisense Platform) to configure user roles and advanced authorization.

You must have the rights to configure these activity restrictions otherwise you cannot change anything here.

How it Works

Restrict activities based on User Roles

UI Authorization Configuration

User Roles: ACS::ConfigurationUser

Activity Restrictions

Is Restricted?	Activity	Object Restrictions?	Object Type
<input checked="" type="checkbox"/>	Edit Assembly Lines	False	
<input checked="" type="checkbox"/>	Edit Association Zones	False	
<input checked="" type="checkbox"/>	Edit Configure properties	False	
<input type="checkbox"/>	Edit Connection Status	True	ExternalSystem
<input type="checkbox"/>	Edit Device Activation	False	
<input type="checkbox"/>	Edit Device Instances	False	
<input type="checkbox"/>	Edit Device Types	False	
<input checked="" type="checkbox"/>	Edit Disassociation Zones	False	
<input type="checkbox"/>	Edit External Systems	True	ExternalSystem
<input checked="" type="checkbox"/>	Edit Ident Zones	False	
<input checked="" type="checkbox"/>	Edit Message Forwarding	True	ExternalSystem
<input type="checkbox"/>	Edit Messages	False	
<input checked="" type="checkbox"/>	Edit Process Management	False	

Object Restrictions

Is Restricted?	Name
----------------	------

Figure: The UI Authorization Configuration Tab

Add a new activity restricting

Select one of the defined user roles you want to restrict an activity.

You can restrict any of the given activities.

If the field **Object Restrictions?** is true you can set the restriction to the whole activity or only to some defined objects.

Currently this is only possible for External Systems.

Administration

The screenshot shows the 'UI Authorization Configuration' window. At the top, 'User Roles' is set to 'ACS:ConfigurationUser'. Below this, there are two main sections: 'Activity Restrictions' and 'Object Restrictions'.

Activity Restrictions:

Is Restricted?	Activity	Object Restrictions?	Object Type
<input checked="" type="checkbox"/>	Edit Assembly Lines	False	
<input checked="" type="checkbox"/>	Edit Association Zones	False	
<input checked="" type="checkbox"/>	Edit Configure properties	False	
<input type="checkbox"/>	Edit Connection Status	True	ExternalSystem
<input type="checkbox"/>	Edit Device Activation	False	
<input type="checkbox"/>	Edit Device Instances	False	
<input type="checkbox"/>	Edit Device Types	False	
<input checked="" type="checkbox"/>	Edit Disassociation Zones	False	
<input type="checkbox"/>	Edit External Systems	True	ExternalSystem
<input checked="" type="checkbox"/>	Edit Ident Zones	False	
<input checked="" type="checkbox"/>	Edit Message Forwarding	True	ExternalSystem
<input type="checkbox"/>	Edit Messages	False	
<input checked="" type="checkbox"/>	Edit Process Management	False	
<input type="checkbox"/>	Edit Product Instances	False	
<input checked="" type="checkbox"/>	Edit Product Spaces	False	
<input checked="" type="checkbox"/>	Edit Product Type Tag Positions	False	
<input checked="" type="checkbox"/>	Edit Product Types	False	

Object Restrictions:

Is Restricted?	Name
<input type="checkbox"/>	AC-PF-Controller_5
<input type="checkbox"/>	B1_T06-07_Kopfstuetzenelement
<input type="checkbox"/>	B1_T14-18_Pedalanlage-l
<input type="checkbox"/>	B1_T14-18_Pedalanlage-re
<input type="checkbox"/>	B1_T23-26_Heckbiegetraegerinnen
<input type="checkbox"/>	B2_T01-05_Cockpit-l
<input type="checkbox"/>	B2_T01-05_Cockpit-re
<input type="checkbox"/>	B2_T19-24_Massestelle-re
<input type="checkbox"/>	B2_T19-24_Massestellen-l
<input type="checkbox"/>	B3_T06-09_Windowbag
<input checked="" type="checkbox"/>	PLUS

Hints

Be careful with restricting activities. You should restrict this part so that only an Administrator or Power user can change something here.

Audit

Standard user

Use the Audit Messages tab to view details of changes made to ACS's configuration. Changes to the ACS configuration are automatically logged, and you can also create messages for inclusion in the log.

Configure the information displayed in the audit log by:

- Choosing classes of message
- Choosing a range of dates
- Specifying text to include or exclude messages containing that text.

You can then copy the results to the Clipboard.

How it Works

By default, no messages are visible when you first display the Audit Messages tab after starting ACS. The configuration is retained until you close ACS.

Choose the types of message you want to see by:

- Choosing at least one class of message, by selecting check boxes beside the **Class** names.
- Restricting the messages to only those created before, after, or between specified dates and times.
 - Select **Show only messages newer than** and specify a date to display messages from after that date.
 - Select **Show only messages older than** and specify a date to display messages from before that date.
 - Select both **Show only messages newer than** and **Show only messages older than** and two dates to display messages between the dates you input.
- Typing text to define which items to include or exclude.

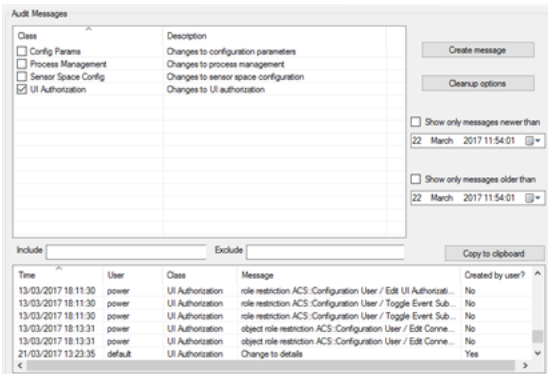


Figure: Audit Messages Tab

For each entry in the table of messages, the following is displayed:

- Date and time
- User who made the change
- The Class to which the change belongs

- A Message describing the change that was made
- A flag indicating if the entry was created by ACS or manually created by a user.

The entries in the table can be sorted in alphabetical or reverse-alphabetical order by any of the columns, by clicking on a column heading. See [Sorting by Column](#) for further information.

Adding Messages to the Audit Log

If you have the authorization, you can add messages to the audit log. Messages added manually can be deleted individually and can also be removed by use of the Cleanup options.

To manually add a message of one of the four classes to the audit log:

1. Choose **Create message**.
2. In the **Create audit message** dialog, select a class for the message.
3. Type the message and choose **Commit**.
4. A dialog displays, confirming your message has been added to the audit log.

To delete a message from the list:

1. Select the message and press Delete.
2. Choose **OK** in the **Cleanup** dialog to confirm the deletion.



Only messages entered by users can be deleted in this way. Use the Cleanup options to remove system-generated messages in bulk.

Copying Audit Messages

You can copy all audit messages that match current criteria by choosing **Copy to clipboard**. All matching messages are copied even those not currently displayed on the screen. The data and the column headings are copied to the Clipboard.

You can also copy information from this table by clicking in it and pressing CTRL+C. For information on copying and the format of the data, see [Exporting Data from Tables](#).

Cleaning Up the Audit Log

Should the volume of audit messages get too large, you can remove selected classes of message that were generated before a specified date.



Messages created by users can also be individually deleted from the display, as described above.

To clean up the audit log:

1. Choose the classes of message to be included by selecting the check box beside their titles.
2. Choose **Cleanup options**.
3. In the **Cleanup audit messages** dialog box, input a date or select it from the drop-down calendar.
The time defaults to the current system time. You can edit it, if required.
4. Choose **OK** and you are asked to confirm the deletion.
5. Choose **OK** and messages of the chosen class older than the given date and time are deleted.

Reducing the Volume of Audit Messages

Because ACS logs audit messages for various automated processes, a large number of audit messages can be generated. As a result, ACS can eventually become unusable and possibly fill the disk. To avoid this, you can set a configuration parameter—**audit_ignore_user_substring**—to prevent the generation of certain audit messages by one or more authenticated users.

By default, services that are authenticated with a user name containing the text string [Automated] do not produce audit messages. By specifying a different text string you can "ignore" audit messages from processes that are authenticated with user names containing that string of text.

Use the following command to exclude audit messages for a set of users:

```
ubisense_configuration_client set audit_ignore_user_substring <username_
to_be_ignored>
```

where any user name that contains <username_to_be_ignored> will be ignored.

For example,

```
ubisense_configuration_client set audit_ignore_user_substring notaudited
```

would prevent the generation of audit messages by services authenticated by the *notaudited* user and any other user whose name contains the string *notaudited*.

Transferring Configurations Between ACS Instances with the `ubisense_acs_config_transfer` tool

Advanced user

Export and import ACS configuration between ACS instances

Recreate configuration when moving from a test environment to a production environment

How it Works

The `ubisense_acs_config_transfer` command-line tool provides functionality to export and import ACS configuration, so that you do not have to manually recreate the configuration when moving from a test environment to a production environment.

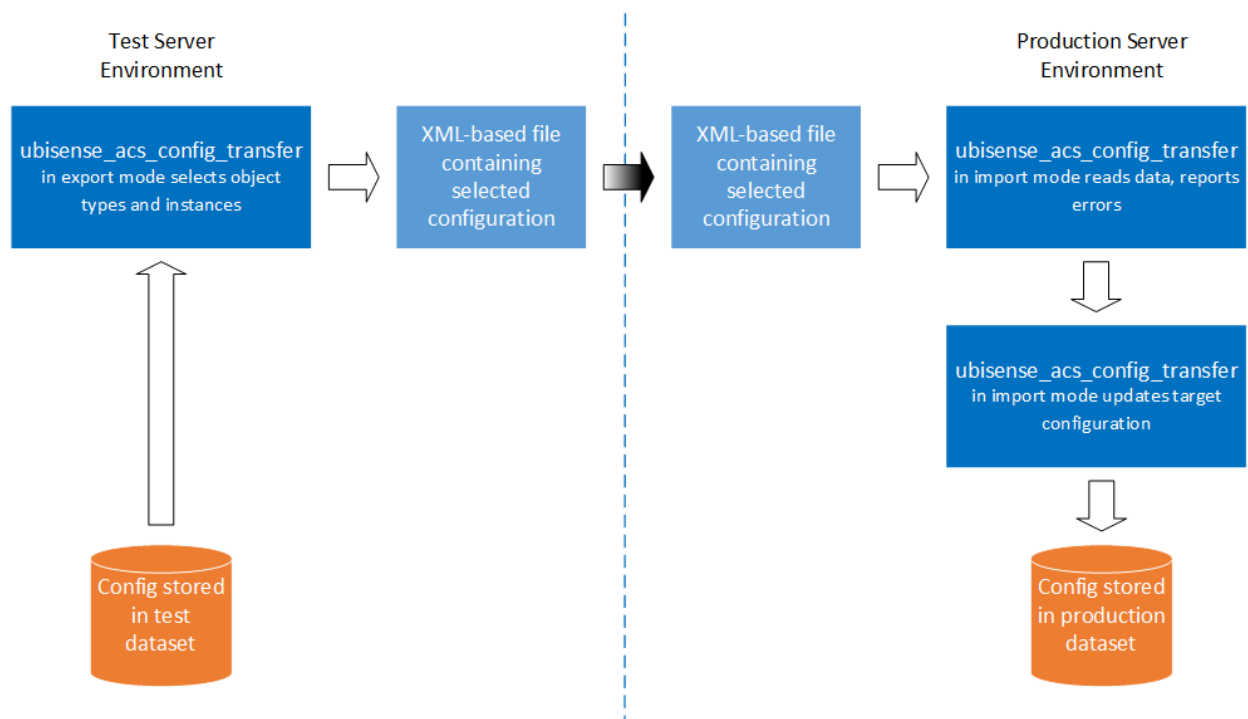


Figure: ACS configuration transfer process using `ubisense_acs_config_transfer`

The tool is run in two modes: for the import and export parts of the process respectively.

When the tool is used in export mode, you can select object types, such as Product Types or Assembly Lines, to export, and then select object instances from these object types. The tool will then write all related configuration data into an XML-based file.

When importing the file into the target dataset, there are two import phases:

1. The tool reads the file, prints out the objects it has read, and warns if there are potential issues with the import.

No changes are made to the target configuration at this stage.

You can either continue with phase 2 or stop the import at this stage.

2. If you choose to continue, objects are imported and the configuration in the target dataset is changed accordingly.

Export and import always work against the dataset currently available to the environment where the tool runs. In order to export configuration the tool must be run in the environment of the source dataset, where the transfer XML file is written. The transfer XML file must then be moved to the environment of the target dataset, where the tool can be run, reading the file and changing the configuration in the target.

Objects exported from the source dataset and imported into the target dataset are mapped by name. The export process will include the names of all exported objects in the transfer XML file. The import process will then try to find objects in the target dataset by name. If an object can be found, its properties will be updated. If the object cannot be found, the object will be inserted.

What Can Be Transferred

You can choose the following top-level configuration objects for export:

- Product Types
- External Systems
- Workspaces
- Ident Zones
- Association Zones
- Disassociation Zones
- Production Lines
- Assembly Lines
- Devices

Product Types

The following object types will be exported automatically with selected product types:

- Product type tag positions
- Product Spaces

External Systems

External systems are referenced by many other top level objects. However, they are not exported automatically if an object, such as an `ContainerContainsObjectEvent` of an `Ident Zone`, references an external system. They need to be separately selected for export.

During import, External systems require the relevant protocol to be present. Ensure the correct protocols are present by installing the corresponding services in the target. If the required protocol is not present, the external system cannot be created in the target

Workspaces

The following objects will be exported automatically when a workspace is exported:

- Workspace Events (Container Contains Object Event). They reference following objects of the following type, which possibly need to be selected for export as well:
 - Product Types
 - External Systems

Ident Zones

The following objects will be exported automatically, when an ident zone is exported:

- Ident Zone Events (Container Contains Object Event). They reference following objects of the following type, which possibly need to be selected for export as well:
 - Product Types
 - External Systems

Association Zones

Association Zones reference the following object types, which possibly need to be selected for export as well:

- Ident Zones
- External Systems

Disassociation Zones

Disassociation Zones reference the following object types, which possibly need to be selected for export as well:

- Ident Zones
- External Systems

Production Lines

Production Lines hold information relating to product types, shadow products, and the sequence of assembly lines. Production lines are preconditions for assembly lines.

Production line import is split into two phases:

1. Import of the production line object. Only the production line properties will be imported
2. Import of the assembly line sequence. This is done after the import of assembly lines. The tool will import the sequence as contained in the file. However, if there are further assembly lines in the sequence in the target dataset, they will not be removed. Please check the assembly line sequence after the import to see if it matches your expectations.

Assembly Lines

An assembly line needs a corresponding production line for the import to succeed. If the production line is not present in the target dataset, import of the assembly line will fail. So you should generally select the Production Line when exporting.

The following objects will be exported automatically when an assembly line is exported:

- Stations
- Trigger Points
- Tag Profiles
- Tag Profile Sections

Devices

The following objects will be exported automatically, when a device is exported:

- Device Types
- Device Events (Object Is Located Event). They reference following objects of the following type, which possibly need to be selected for export as well:

- Product Types
- Workspaces
- Assembly Line Stations
- External Systems

The following objects will be exported automatically, when a device is exported:

- Tag Profiles

What *Can't* Be Transferred

The following object types cannot currently be exported:

- Assembly Points

Geometry Cells, Location Cells and Areas

The source and target datasets do not have to have identical areas, Location cells or Geometry cells. But they should be such that the imported objects (for example assembly lines, ident zones and so on) will fit in their target area, Location cell or Geometry cell.

Running the Tool

From a command prompt, run the tool without no parameters to get a list of options:

```
ubisense_acs_config_transfer.exe
22.01.2021 12:55:55.580 [M] Set Cout to '1'
22.01.2021 12:55:55.585 [M] Set SynchronousWrite to '1'
22.01.2021 12:55:55.589 [M] Set LogLevel to 'Information'
22.01.2021 12:55:55.593 [E] Please use either '-i' or '-o' option
Usage: ubisense_acs_config_transfer.exe [OPTIONS]
Transfer ACS configurations between ACS instances through config files
```

OPTIONS

<code>-a, --align-stations</code>	For assembly line import, align stations. I.e. remove existing stations, which are not in the import set
<code>-i, --infile <infile></code>	The input filename
<code>-l, --log-level <log_level></code>	The log level regarding log output (Debug, Information, Warning, Error)
<code>-o, --outfile <outfile></code>	The output filename
<code>--help</code>	Display this help and exit
<code>--version</code>	Display version information and exit

Exporting from an ACS Instance

1. Use the `-o` option and provide a filename to start the tool in export mode. For example:

```
ubisense_acs_config_transfer.exe -o Sample.xml
```

If the file already exists, the tool will ask whether to overwrite it.

```
File 'Sample.xml' does already exist. Overwrite? [yes|no]:
```

2. If the tool can write the file, it displays a list of object categories:

Available top level object categories:

- [1] Product Types
- [2] External Systems
- [3] Workspaces
- [4] Ident Zones
- [5] Association Zones
- [6] Disassociation Zones
- [7] Production Lines
- [8] Assembly Lines
- [9] Devices

[f] Finish input and start export

Enter category:

Enter the number corresponding to the category you want to choose. For example enter '4' if you want to export Ident Zones:

Enter category: 4

3. The tool lists objects of the type you chose which are present in the dataset, for example:

- [1] 40-EOL
- [2] 4020
- [3] Association
- [4] Disassociation
- [5] LGPMIPA0005400
- [6] LGPMIPA0005401
- [7] VGPMIPA0005300
- [8] VGPMIPA0005301
- [9] VGPMIPA0005302
- [10] WKE

[t] Toggle all

[f] Finish selection

Enter Ident Zone index:

Enter the number corresponding to the object you want to export to select it. For example enter '3' for the 'Association' ident zone:

```
Enter Ident Zone index: 3
```

```
Available Ident Zones:
[0]    Finish selection
[1]    40-EOL
[2]    4020
[3] *   Association
[4]    Disassociation
[5]    LGPMIPA0005400
[6]    LGPMIPA0005401
[7]    VGPMIPA0005300
[8]    VGPMIPA0005301
[9]    VGPMIPA0005302
[10]   WKE

[t]     Toggle all
[f]     Finish selection
Enter Ident Zone index:
```

Continue entering numbers until you have selected all the objects you want to export. The tool marks each selected object with an asterisk '*':

```
Available Ident Zones:
[0]    Finish selection
[1]    40-EOL
[2]    4020
[3] *   Association
[4] *   Disassociation
[5]    LGPMIPA0005400
[6]    LGPMIPA0005401
[7]    VGPMIPA0005300
[8]    VGPMIPA0005301
[9]    VGPMIPA0005302
[10]*  WKE

[t]     Toggle all
[f]     Finish selection
Enter Ident Zone index:
```

Note: Entering the same number a second time will unselect an object.

You can enter 't' to toggle all selections. This is useful for example if you want to select all but a few items. In this case first enter 't' to toggle all selections and select all items and afterwards enter the index numbers of the items you want to unselect.

4. To finish selecting objects of this category, enter 'f'. The tool displays all selected objects and lets you choose the next category:

Transferring Configurations Between ACS Instances with the `ubisense_acs_config_transfer` tool

```
Enter Ident Zone index: f

Selected items:
Ident Zones:
- Association
- Disassociation
- WKE

Available top level object categories:
[1] Product Types
[2] External Systems
[3] Production Lines
[4] Assembly Lines
[5] Workspaces
[6] Ident Zones
[7] Association Zones
[8] Disassociation Zones

[f] Finish input and start export
Enter category:
```

5. You can now select another category and add further objects or enter 'f' to finish the selection and write the selected objects into the output file:

```
Enter category: f
22.01.2021 13:15:15.669 [I] Exporting Ident Zones...
22.01.2021 13:15:15.674 [I]   Exporting Association...
22.01.2021 13:15:15.678 [I]   Exporting Disassociation...
22.01.2021 13:15:15.682 [I]   Exporting WKE...
Export finished successfully
```

Importing into an ACS Instance

1. Use the `-i` option and provide a filename to start the tool in import mode. For example:

```
ubisense_acs_config_transfer.exe -i Sample.xml
```

If the file does not exist, the tool displays an error message:

```
22.01.2021 13:52:13.323 [I] Import configurations, using 'Sample.xml'
22.01.2021 13:52:13.702 [E] Cannot open Sample.xml. Reason: CannotOpenError
```

2. If the file exists, the tool will start reading the file and interpreting the contents. This is the first phase of the import, in which no data will be changed in the target database. The reading phase of the tool will fail if the file content is not in the correct format. For example:

```
22.01.2021 13:57:17.822 [E] Categories tag not found
Import failed
```

If the content can be read, the tool will print out the objects it found in the file. For example:

```
22.01.2021 13:58:53.456 [I] Import configurations, using 'Sample.xml'
22.01.2021 13:58:54.041 [I] Reading Product Types...
22.01.2021 13:58:54.044 [I] Reading External Systems...
22.01.2021 13:58:54.054 [I] Reading Workspaces...
22.01.2021 13:58:54.058 [I] Reading Ident Zones...
22.01.2021 13:58:54.062 [I] Reading Association Zones...
22.01.2021 13:58:54.065 [I] Reading Disassociation Zones...
22.01.2021 13:58:54.067 [I] Reading Production Lines...
22.01.2021 13:58:54.069 [I] Reading Assembly Lines...
22.01.2021 13:58:54.071 [I] Reading Devices...
```

```
Items to import:
Ident Zones to import:
- Association
- Disassociation
- WKE
Do you wish to import this data? [yes|no]:
```

If the tool encounters any problems, for example if referenced objects are missing, it will print out warnings, for example:

```
Ident Zones to import:
- Association
- Disassociation
- WKE
[W] Type 'ACS::TUGGER' is not a valid type
[W] External system 'ESB-Test' does not exist
```

If there are problems, you can:

- Either export the objects from the source dataset again, and select the missing objects for the export
- Or manually create the missing objects in the target dataset
- Or just ignore the warnings. In this case, the import will not populate the references or will skip part of the configuration. Depending on what is missing, the whole object may not be imported (for example if the Production Line of an Assembly Line is missing, the whole Assembly Line cannot be imported)

If you want to stop the import at this stage, enter **no** at the prompt:

```
Do you wish to import this data? [yes|no]: no
```

3. If you are ready to continue with phase 2 of the import, where the configuration changes are actually made to the target dataset, enter **yes** at the prompt.

The tool will then make the configuration changes, report what objects are being imported, and print out warnings if parts of the configuration cannot be imported. For example:

Transferring Configurations Between ACS Instances with the `ubisense_acs_config_transfer` tool

```
Do you wish to import this data? [yes|no]: yes
22.01.2021 15:12:24.999 [I] Importing Product Types...
22.01.2021 15:12:25.003 [I] Importing External Systems...
22.01.2021 15:12:25.020 [I] Importing Workspaces...
22.01.2021 15:12:25.023 [I] Importing Ident Zones...
22.01.2021 15:12:25.027 [I] Importing Ident Zone 'Association'...
22.01.2021 15:12:25.060 [I] Successfully asserted ident point rules for Ident
Point 'Association'
22.01.2021 15:12:25.072 [I] Successfully set Trigger Zone for identPoint
'Association'
22.01.2021 15:12:25.083 [I] Importing event configurations for identPoint
'Association'
22.01.2021 15:12:25.093 [I] Successfully asserted named event configuration
for event 'Association'
22.01.2021 15:12:25.102 [I] Successfully asserted named event 'Association'
uses object type 'ULocationIntegration::Tag'
22.01.2021 15:12:25.112 [I] Importing Ident Zone 'Disassociation'...
22.01.2021 15:12:25.119 [I] Successfully asserted ident point rules for Ident
Point 'Disassociation'
22.01.2021 15:12:25.131 [I] Successfully set Trigger Zone for identPoint
'Disassociation'
22.01.2021 15:12:25.139 [I] Importing event configurations for identPoint
'Disassociation'
22.01.2021 15:12:25.147 [I] Successfully asserted named event configuration
for event 'Disassociation'
22.01.2021 15:12:25.158 [I] Successfully asserted named event
'Disassociation' uses object type 'ACS::VEHICLE'
22.01.2021 15:12:25.165 [I] Successfully asserted named event
'Disassociation' uses object type 'ULocationIntegration::Tag'
22.01.2021 15:12:25.173 [I] Importing Ident Zone 'WKE'...
22.01.2021 15:12:25.177 [I] Successfully asserted ident point rules for Ident
Point 'WKE'
22.01.2021 15:12:25.185 [I] Successfully set Trigger Zone for identPoint
'WKE'
22.01.2021 15:12:25.191 [I] Importing event configurations for identPoint
'WKE'
22.01.2021 15:12:25.198 [I] Successfully asserted named event configuration
for event 'WKE'
22.01.2021 15:12:25.207 [I] Successfully asserted named event 'WKE' uses
object type 'ACS::VEHICLE'
22.01.2021 15:12:25.213 [W] Type 'ACS::TUGGER' is not a valid type
22.01.2021 15:12:25.218 [W] External system 'ESB-Test' does not exist
22.01.2021 15:12:25.224 [I] Importing Association Zones...
22.01.2021 15:12:25.227 [I] Importing Disassociation Zones...
22.01.2021 15:12:25.228 [I] Importing Production Lines...
22.01.2021 15:12:25.232 [I] Importing Assembly Lines...
22.01.2021 15:12:25.236 [I] Align assembly line sequences...
22.01.2021 15:12:25.248 [I] Importing Devices...
Import finished successfully
```

Pay attention to lines labeled warning ('[W]'). They may indicate areas where the result of the import is not as desired and may require manual correction in the dataset.

Using the `-align-stations` Option

When Assembly Lines are exported, all Assembly Line Station objects from the source dataset will be included. If the Assembly Line is then imported into the target dataset, the import process will import all those Stations into the target dataset, updating the Stations it can find by name, and inserting stations which it cannot find by name. The import process will by default not remove Stations from the target dataset which were not in the set of Stations in the XML file. This is to avoid invalidating any events (for example, device events or `ProductsIsLocated` events) which might use those Stations.

If this default behavior is not desired, for example if the Stations have been restructured and renamed in the source dataset, there is an option to remove such Stations. Use the `'-a'` or `'--align-stations'` option, when starting the tool in import mode, for example:

```
ubisense_acs_config_transfer.exe -a -i AssemblyLines.xml
```

The tool will print out a warning if it finds existing stations not included in the set of stations to be imported:

```
Items to import:
Tag Profiles to import:
- Car High Update2
- Car Default
Assembly Lines to import:
- 401
[W] Existing station '000402-Test' is not in the set of imported stations of
assembly line '401'. It will be removed.
Do you wish to import this data? [yes|no]:
```

If phase 2 of the import is then executed, the stations will be removed, and the tool will write a warning message again:

Transferring Configurations Between ACS Instances with the ubisense_acs_config_transfer tool

```
...
22.01.2021 17:17:02.973 [I] Importing Production Lines...
22.01.2021 17:17:02.983 [I] Importing Assembly Lines...
22.01.2021 17:17:02.987 [I] Importing AssemblyLine '401'...
22.01.2021 17:17:03.019 [I] Successfully asserted assembly line parameters for
AssemblyLine '401'
22.01.2021 17:17:03.029 [I] Successfully asserted assembly line geometry for
AssemblyLine '401'
22.01.2021 17:17:03.037 [I] Importing representation for Assembly Line '401'...
22.01.2021 17:17:03.048 [I] Importing stations of Assembly Line '401'...
22.01.2021 17:17:03.054 [I] Importing station '00402-Station-1'...
22.01.2021 17:17:03.061 [I] Importing station '00402-Station-2'...
22.01.2021 17:17:03.069 [I] Importing station '00402-Station-3'...
22.01.2021 17:17:03.214 [W] Existing station '000402-Test' is not in the set of
imported stations of assembly line '401'. It will be removed.
22.01.2021 17:17:03.228 [D] Remove station '000402-Test'...
22.01.2021 17:17:03.276 [I] Importing event configurations for assembly line
station '00402-Station-20'
22.01.2021 17:17:03.284 [D] Event with name '40201' exists.
...
```


Standalone GUI

This section describes the usage of the standalone GUIs, **Product Tag Association** and **Static Product Association**, that are delivered with ACS. These tools allow association of real-world objects with elements of the ACS system (Tags and Static Assembly Points, respectively).

Product Tag Association

Standard user

Visualize the automatic process of product to tag association.

Allow the user to enter product or tag information for manual association.

Resolve problems in the automatic association process.

How it Works

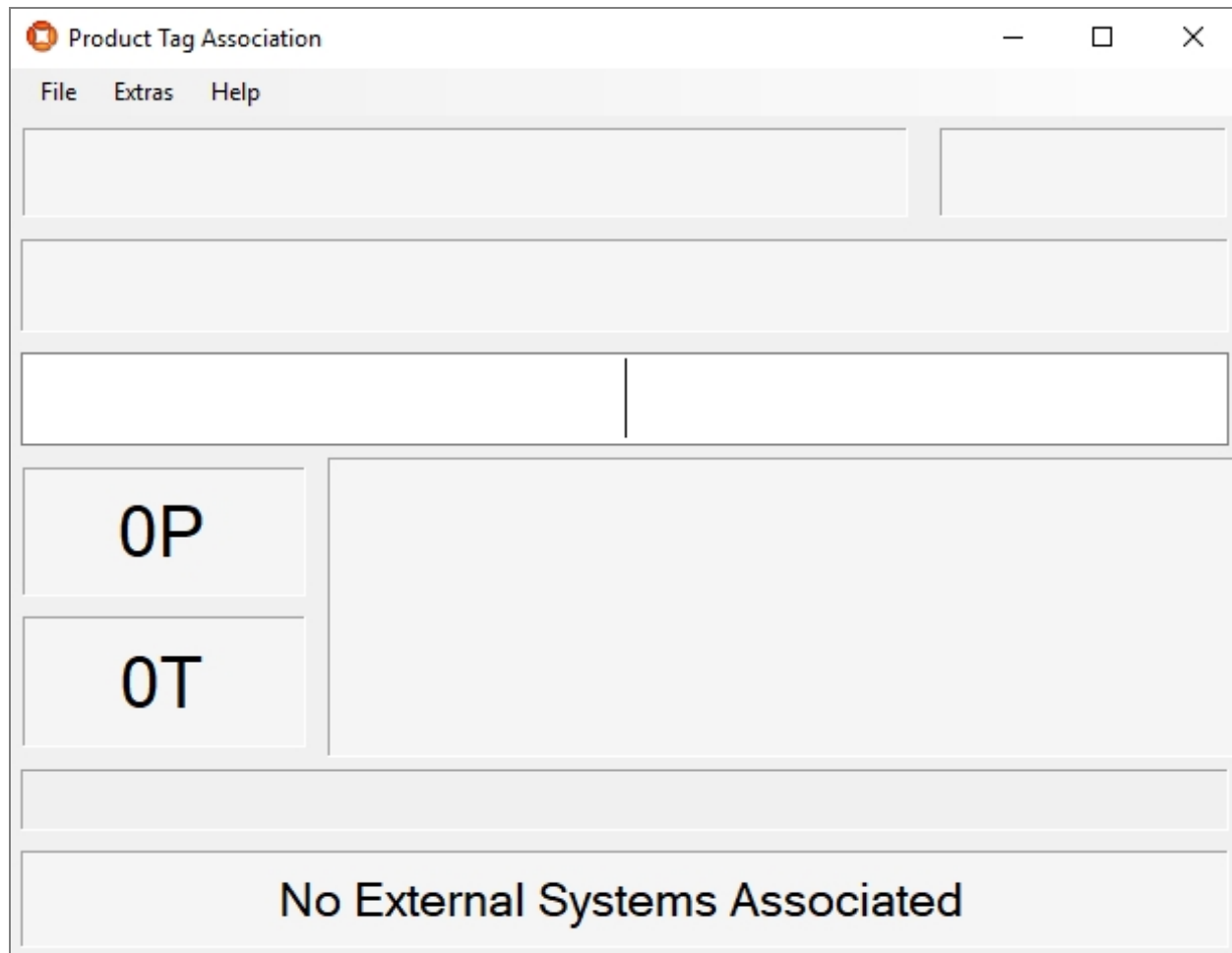


Figure: Product Tag Association Tool

The screenshot above shows the **Product Tag Association** tool immediately after starting.

The most common way to use this tool is for visualizing the product tag association. The values for product type, product ID and tag ID are usually supplied by external systems so the user does not have to do anything here.

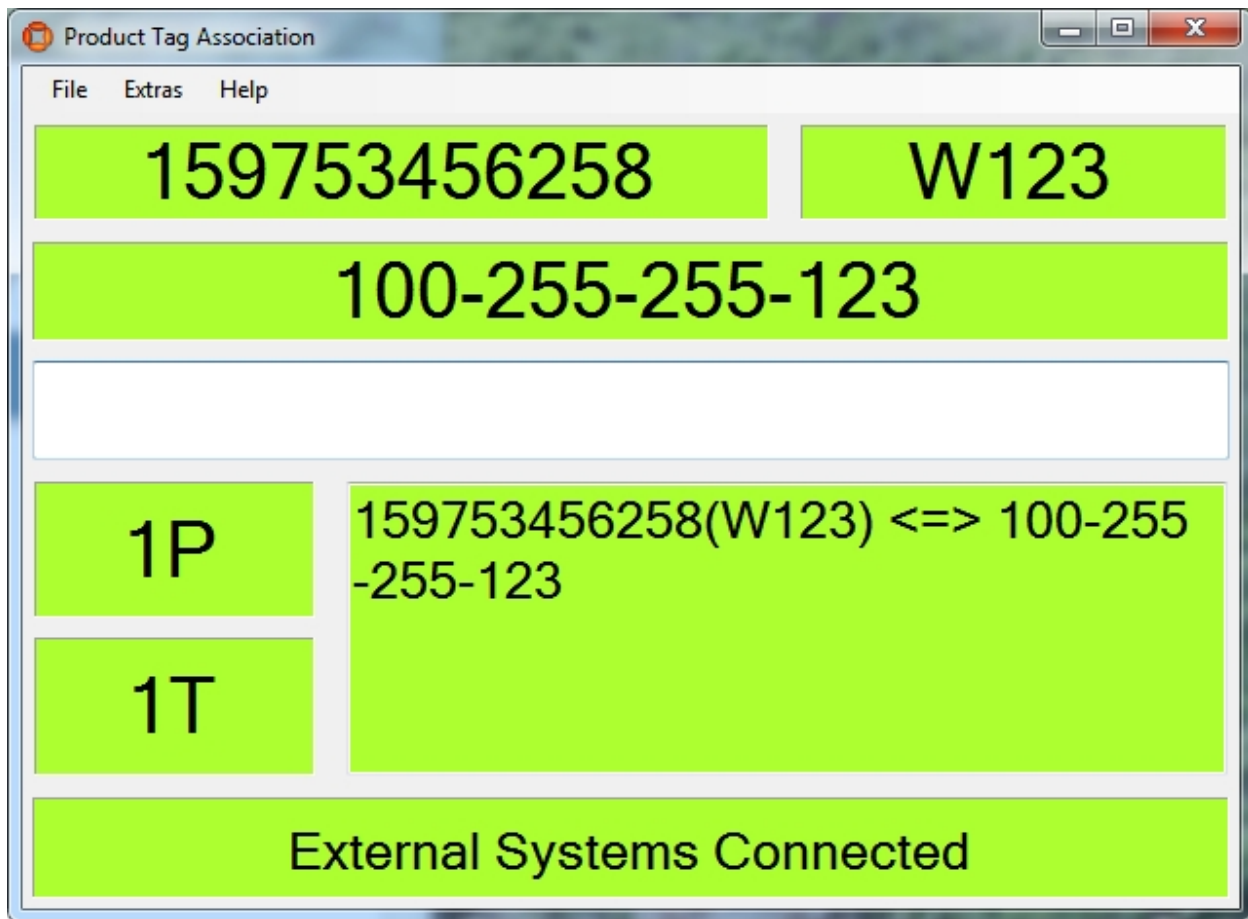


Figure: Visualizing the Product Tag Association

Fields

Product Tag Association

FileExtrasHelp

Product ID

Product

Tag ID

Input Field

of Products

Messages

of Tags

Most Recent Associations

External System Status

Figure: Detail Fields

Field	Details
Product ID	Shows the product ID. The product ID usually comes from an external system but it can entered in the "Input" field.
Product Type	Shows the product type. The product type usually comes from an external system but it can entered in the "Input" field. If only one product type has been configured, this field is automatically filled in.
Tag ID	Shows the tag ID. The tag ID usually comes from an external system but it can entered in the "Input" field.
Input	This is the only writable field in this tool. If no information from external systems is available for product ID, product type or tag ID then the user can enter these values in this field.
Number of Products	Indicates the number of products in the association zone. This number should usually be 1. If the value is bigger than 1 or is 0 then association cannot be done automatically and the user must enter the product ID manually.

Field	Details
Number of Tags	Indicates the number of tags in the association zone. This number should usually be 1. If the value is bigger than 1 or is 0 then the association cannot be done automatically and the user must enter the tag ID manually.
Messages	<p>This field shows all messages regarding the product tag association.</p> <ul style="list-style-type: none"> • If the association was successful the field shows the product ID, with a sequence number (if the Product Name Pattern property is configured to show it: see Properties); product type; and tag ID. • If the association is not successful, or if a piece of information is missing, then the field switches to red and a message is displayed. • If an External Product Sequence is in use (specified in the settings for Association Zones), then a configurable number of potential candidates for association is offered. • If an External Product Sequence is in use (specified in the settings for Association Zones) and Generate warning if sequence is violated has been set, then a message is displayed if the most recently-associated product was not the next in the sequence.
Most Recent Associations	Displays a configurable number of the most recent tag associations. (See Options for how to set this number.)
External System Status	<p>This field can contain three messages:</p> <ul style="list-style-type: none"> • "External Systems Connected" is shown when all external systems associated to the association zone are connected. • "External Systems Disconnected" is shown when one or all external systems associated to the association zone are disconnected but the desired status in ACS is disconnected. • "Lost Connection to External Systems" is shown when one or all external systems associated to the association zone are disconnected. <p>The background color of this field can switch between green, yellow and red:</p> <ul style="list-style-type: none"> • Green indicates that all external systems are connected. • Yellow indicates that one or more external systems are disconnected but the desired status in ACS is disconnected. • Red indicates that one or more external systems are disconnected.

💡 There is a slider between the fields Product ID and Product Type and between # of products/tags and messages.

Options

To display the options, from the menu bar, select **Extras->Options**.

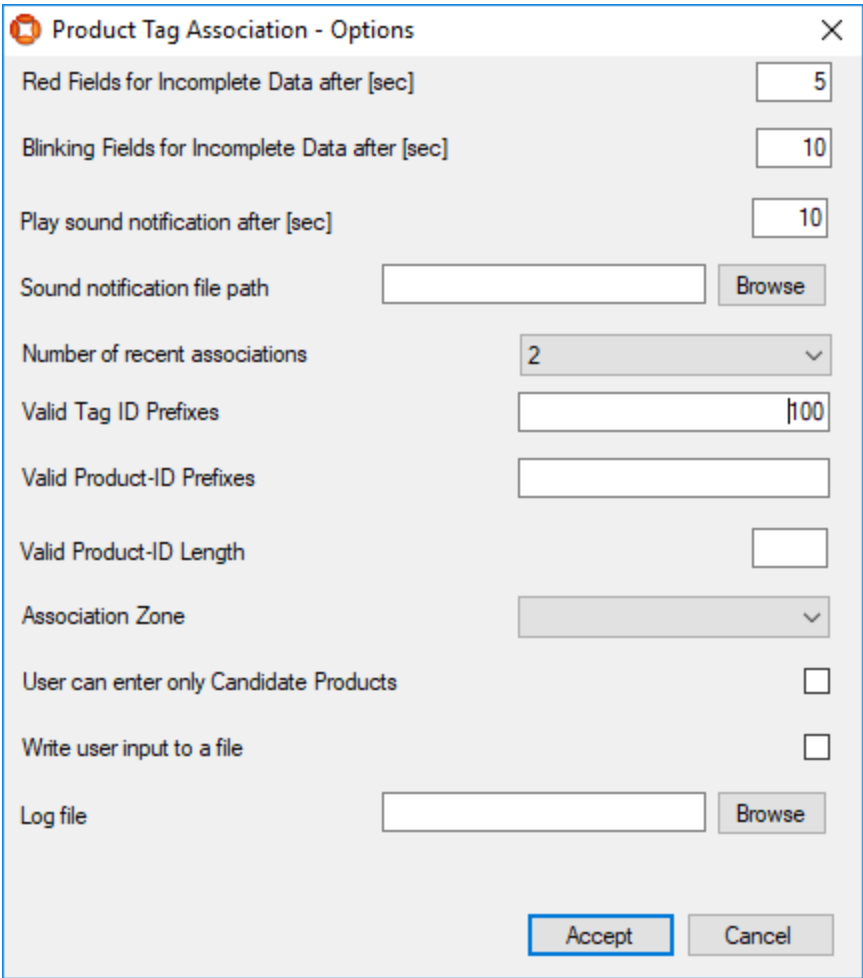

The image shows a dialog box titled "Product Tag Association - Options". It contains several settings: "Red Fields for Incomplete Data after [sec]" with a value of 5; "Blinking Fields for Incomplete Data after [sec]" with a value of 10; "Play sound notification after [sec]" with a value of 10; "Sound notification file path" with a text box and a "Browse" button; "Number of recent associations" with a dropdown menu set to 2; "Valid Tag ID Prefixes" with a text box containing "100"; "Valid Product-ID Prefixes" with an empty text box; "Valid Product-ID Length" with an empty text box; "Association Zone" with a dropdown menu; "User can enter only Candidate Products" with an unchecked checkbox; "Write user input to a file" with an unchecked checkbox; and "Log file" with a text box and a "Browse" button. At the bottom are "Accept" and "Cancel" buttons.

Figure: Options for the Product Tag Association Tool

Field	Details
Red Fields for Incomplete Data after [sec]	Fields are displayed in red when the input data is incomplete after this time.

Field	Details
Blinking Fields for Incomplete Dater after [sec]	Fields are blinking, in red, when the input data is incomplete after this time.
Play sound notification after [sec]	Plays the configured sound file after this time.
Sound notification file path	<p>Select the sound file to play as notification.</p> <div>  Only *.wav files are supported. </div>
Number of recent associations	Select how many of the latest tag associations should be displayed—up to a maximum of three. If 0 is entered, the Most Recent Associations field is not shown in the user interface. The default is 0.
Valid Tag ID Prefixes	<p>In the Valid Tag ID Prefixes field, the prefixes of product tags can be specified as a comma-separated list.</p> <p>The tool tries first to interpret values entered in the input field as tag IDs. Because tag IDs can be entered in hexadecimal form such values can be in conflict with product IDs (e.g. a value of 'A031579' will be interpreted as a tag ID '10-003-021-121'). To avoid such conflicts tag ID prefixes can be used to filter tag IDs (e.g. if a prefix of '250-' was set the value 'A031579' would be interpreted as a product ID)</p> <p>Example: 020-, 021-, 100-</p>
Valid Product-ID Length	In the Valid Product-ID Length , the length of the product ID can be specified. If a length is given, the length of a product ID entered by the user is checked against this length, similar to the prefix check.
Valid Product-ID Prefixes	<p>In the Valid Product-ID Prefixes field, the prefixes of products can be specified as a comma-separated list.</p> <p>Example: 35,36</p>
Association Zone	The list shows the association zones defined for the selected product type, if an association zone is defined.
User can enter only Candidate	Indicates whether the user can enter a product type or not. If

Field	Details
Products	marked, the user can only enter product and tag IDs.
Write user input to a file	If checked, enables logging of data which the user has entered as well as what tag or product is sent to the association service.
Log file	If Write user input to a file is checked, specify the file to use for logging. Click Browse to navigate to the required location of the log file.



Creating an association will create a product instance within ACS. The tag and product can then be used on assembly lines, which are configured in [Assembly Lines](#).

Examples

The screenshot shows a window titled "Product Tag Association" with a menu bar (File, Extras, Help). The form contains several input fields with green backgrounds:

- Top left: 159753456258
- Top right: W123
- Middle: 100-255-255-123
- Bottom left (split into two rows): 1P and 1T
- Bottom right: 159753456258(W123) <=> 100-255-255-123
- Bottom status bar: External Systems Connected

Figure: Showing the Most Common Usage – All Values are Delivered from External Systems and the Association is Successful

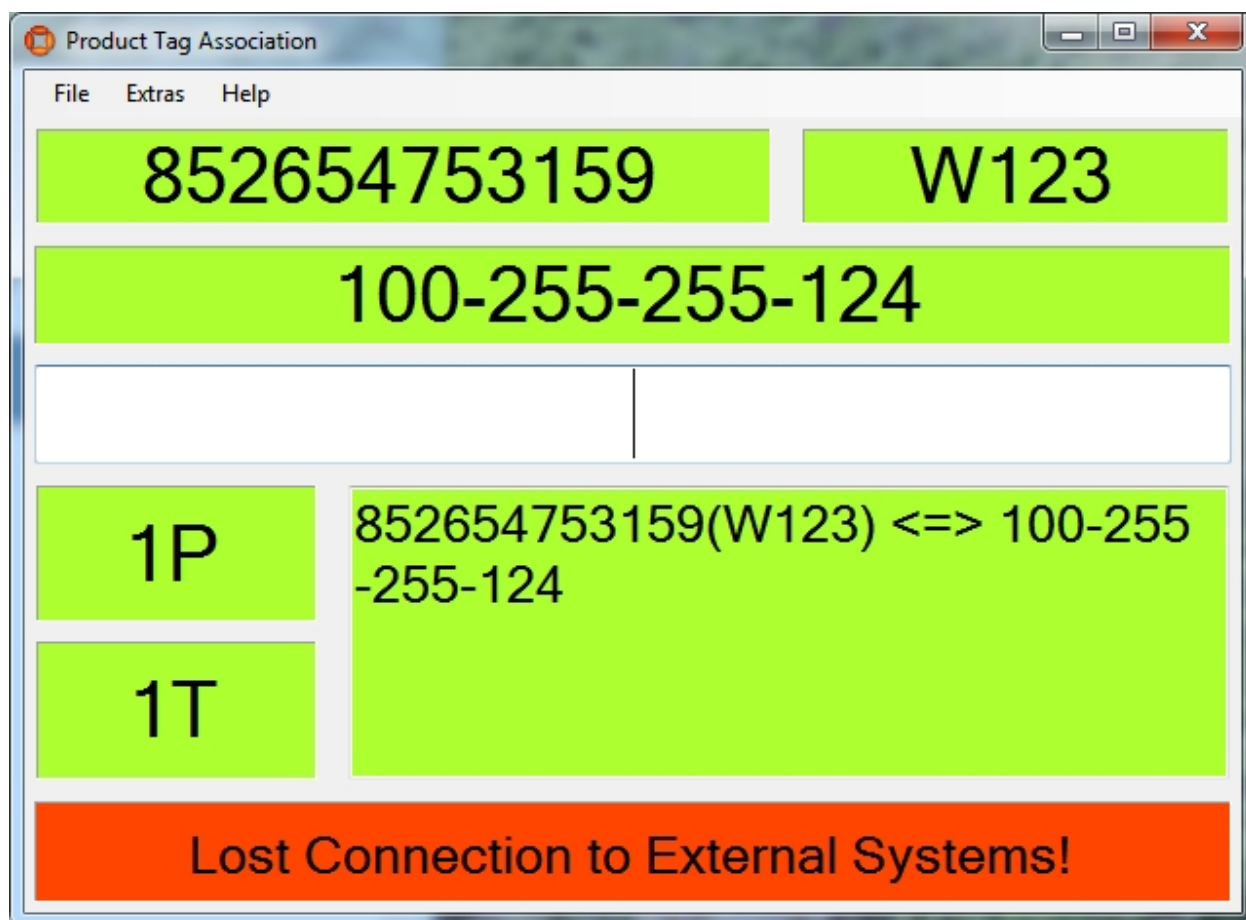


Figure: At Least One External System is Disconnected

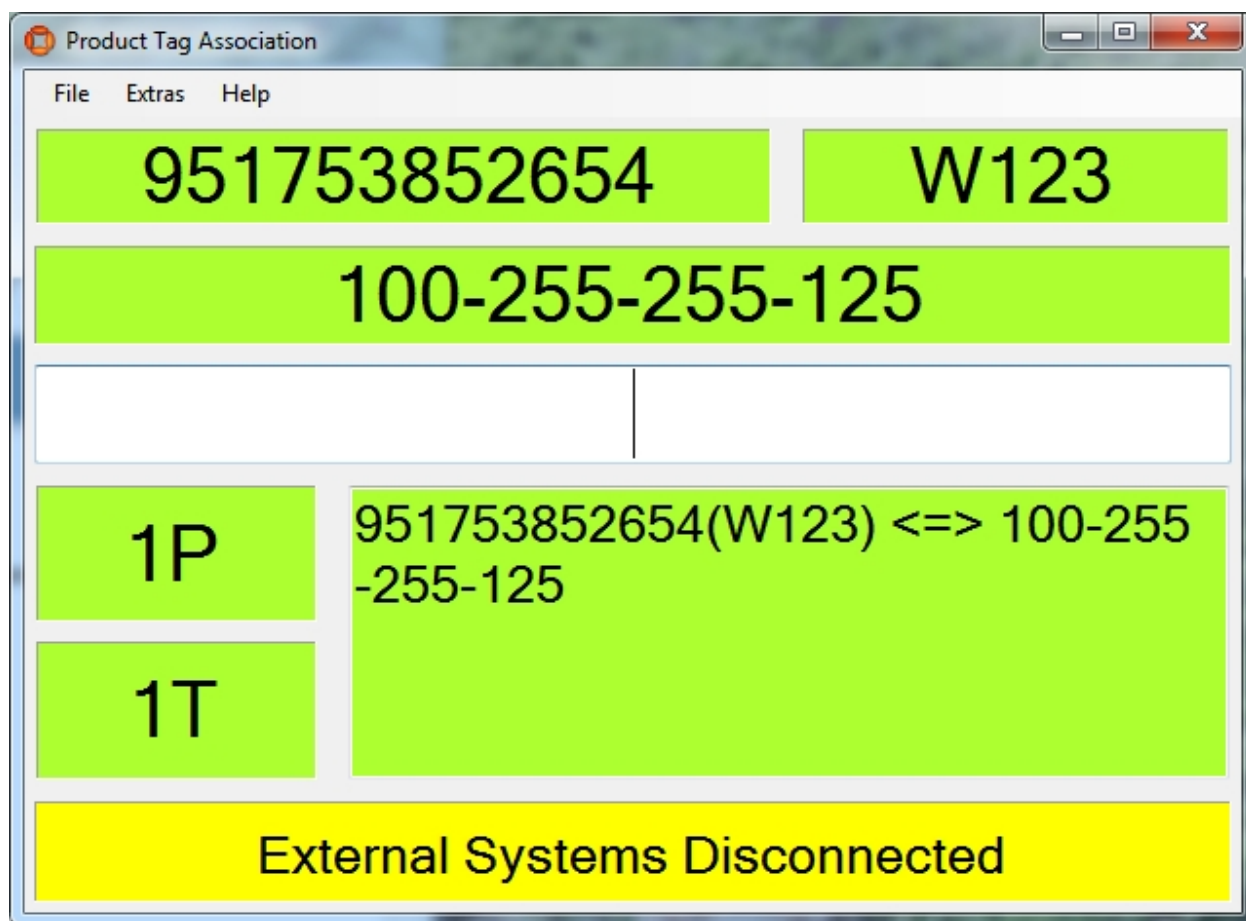


Figure: The Desired Connection Status is Set to Disconnected For One or More External Systems

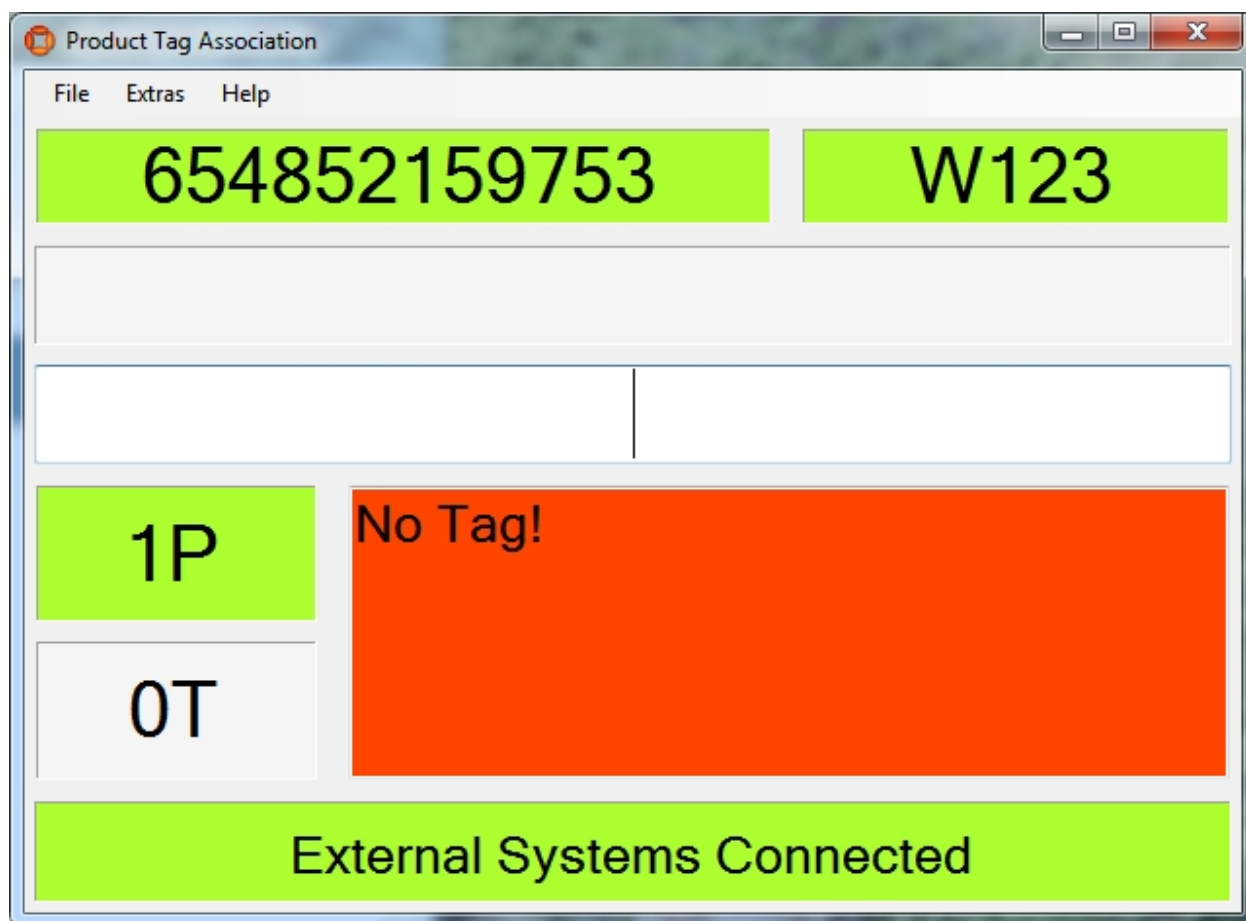


Figure: There is No Information About the Tag ID



The user can enter the tag ID manually (e.g. "100-255-255-123") in the field and press the **Enter** key.

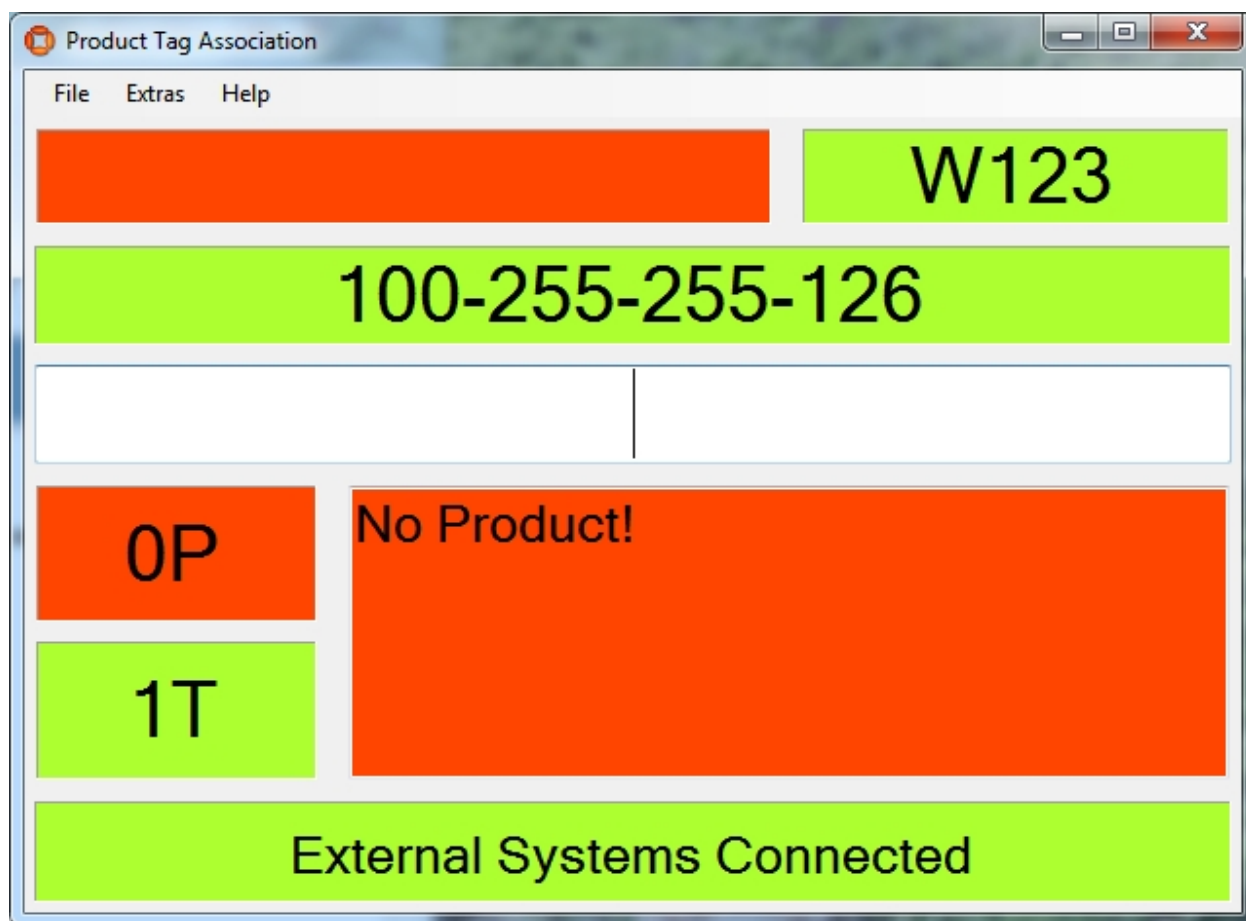


Figure: There is No information About the Product ID



If the information is coming from an external system, the user can enter the product ID manually (e.g. "753159852654") in the field and press the **Enter** key.

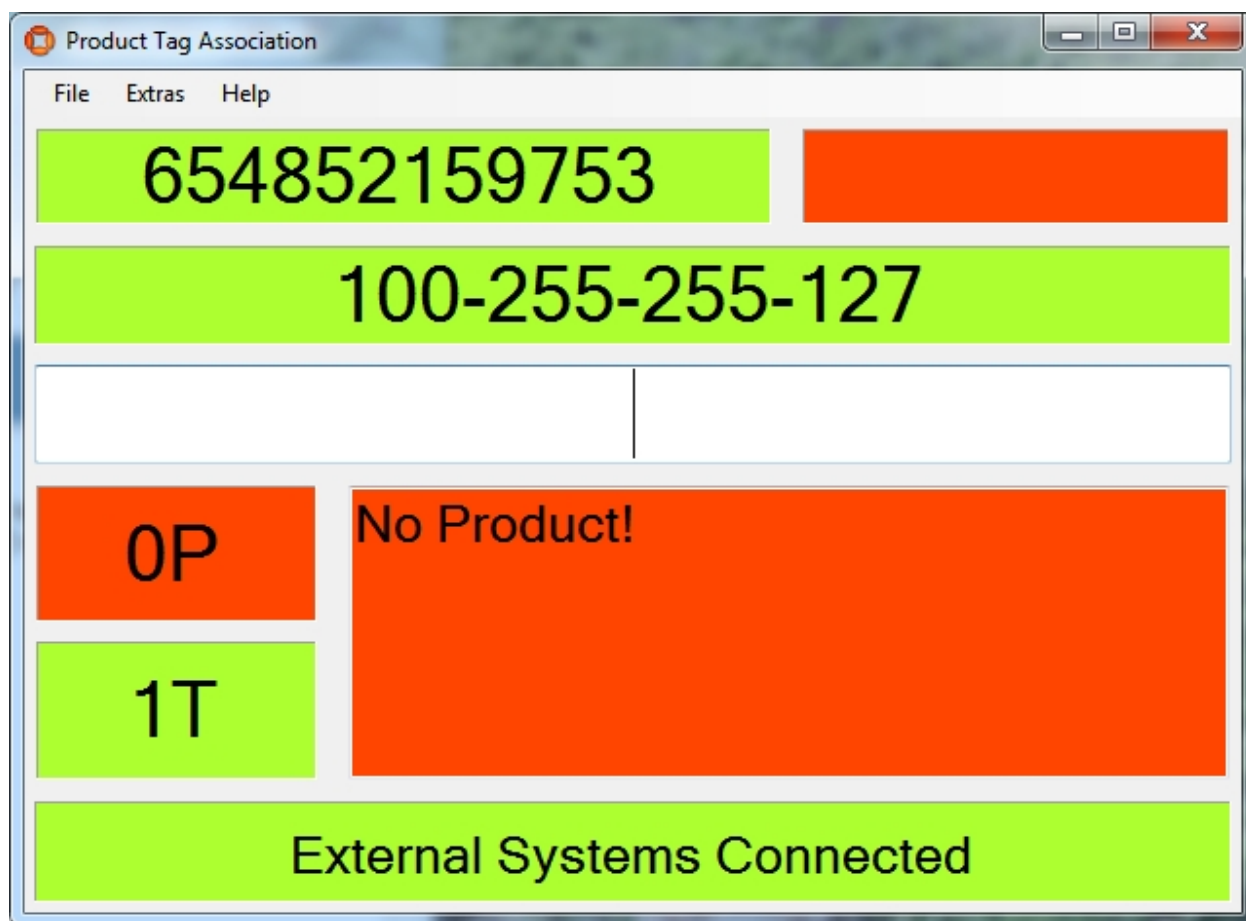


Figure: There is No Information about the Product Type



If the information is coming from an external system, the user can enter the product type manually (e.g. "W123") in the field and press the **Enter** key.

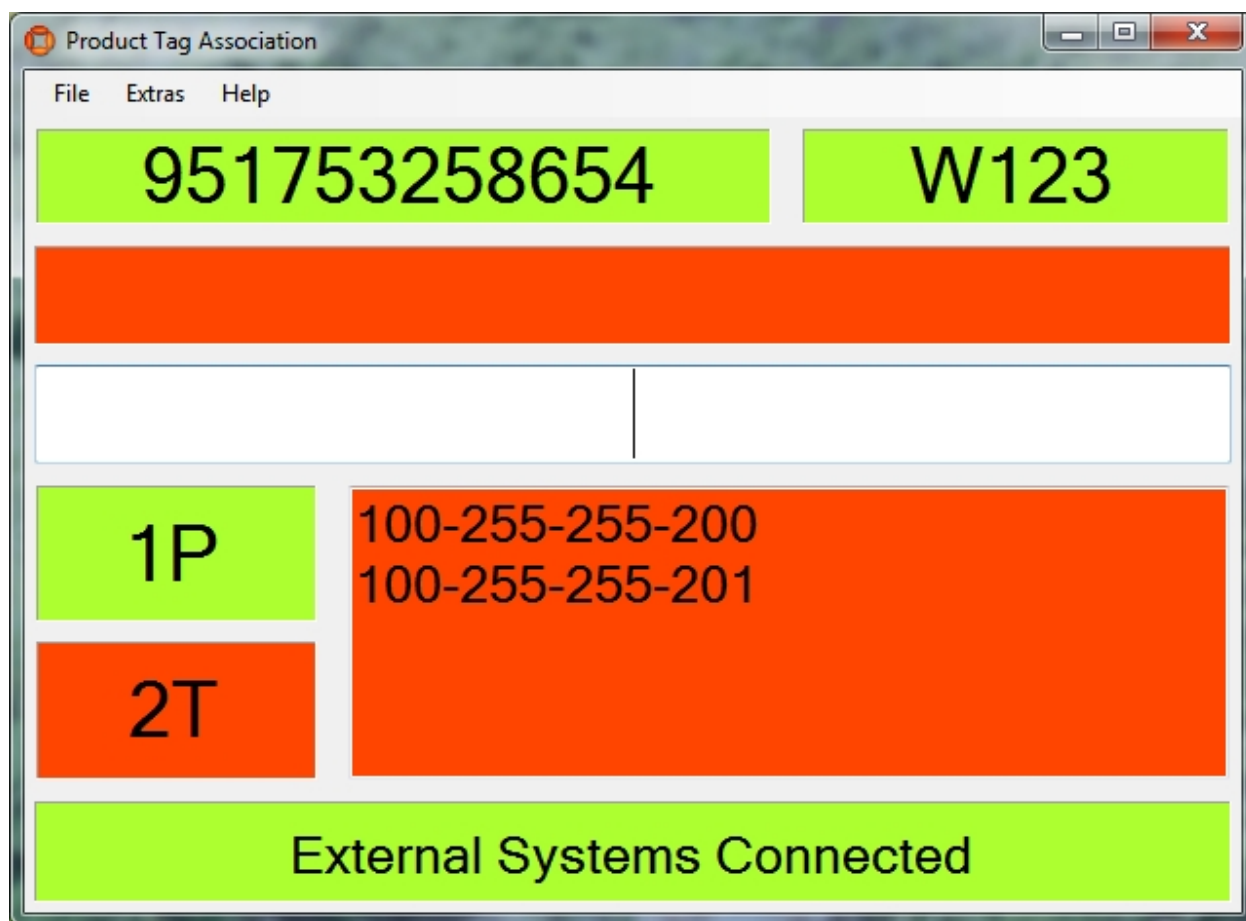


Figure: There is More than One Tag in the Association Zone



The system cannot decide which tag is the right one for the given product. The user must type the correct tag ID in the field.

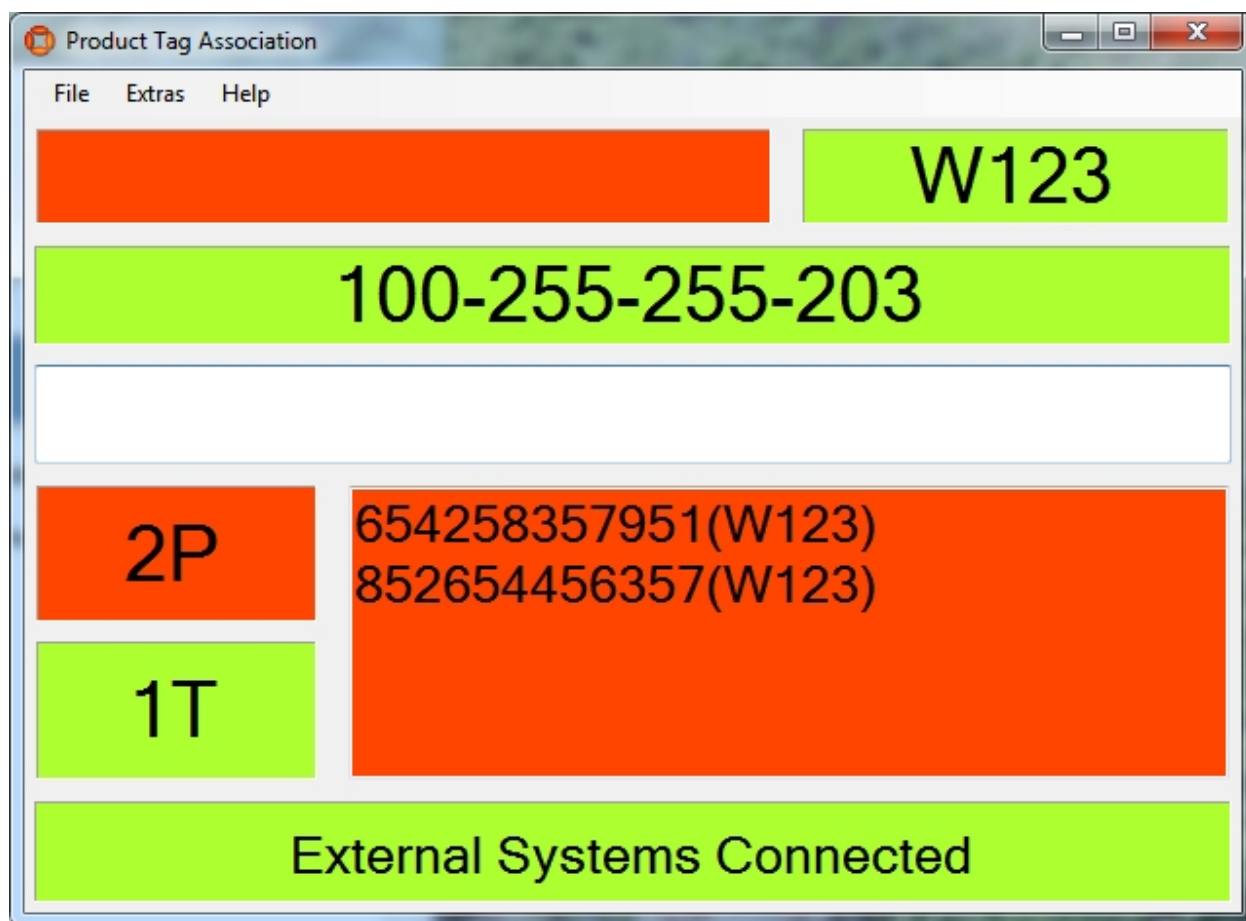


Figure: More than One Product ID Was Sent by the External System



The system cannot decide which product is the right one for the given tag. The user must type the correct product ID in the field and press the **Enter** key.

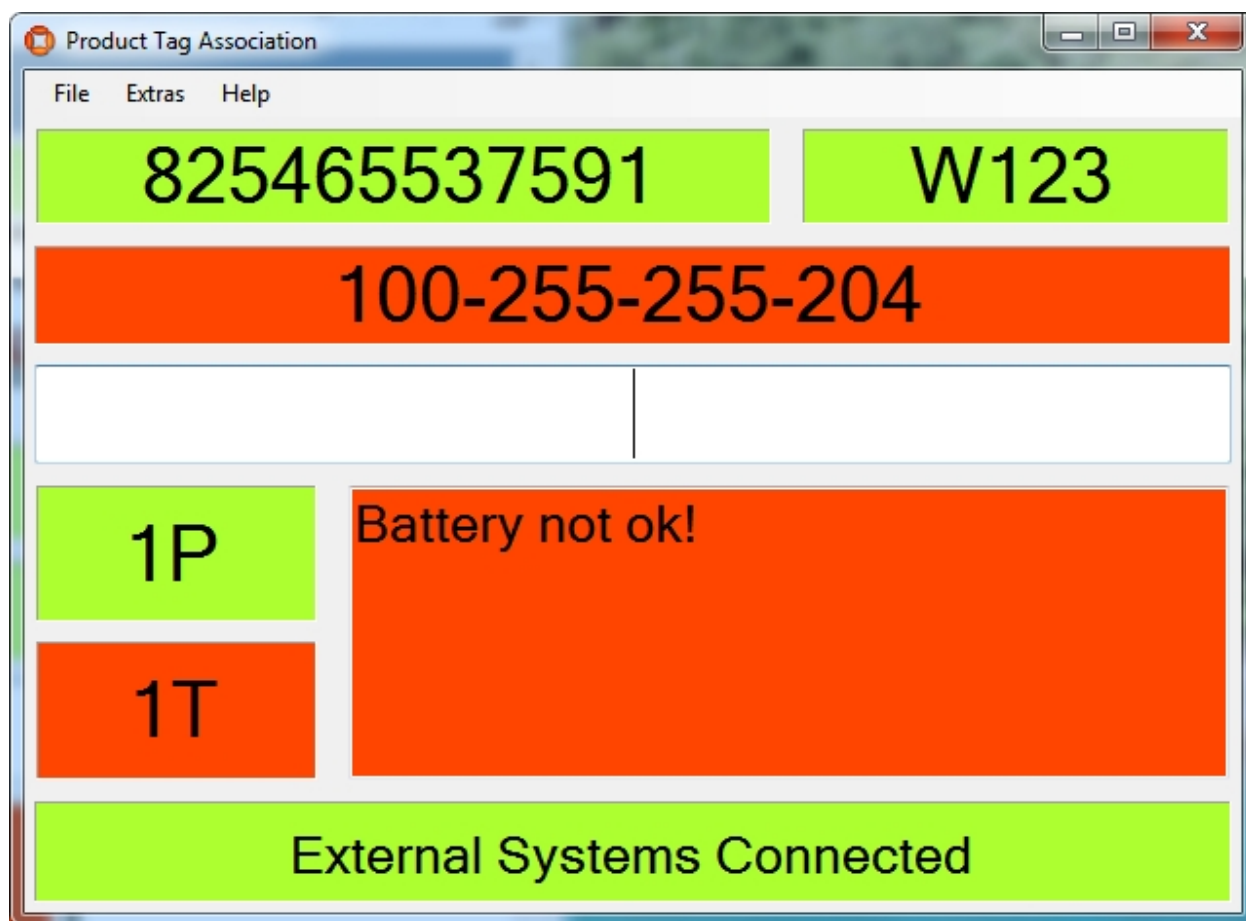


Figure: The Tag Battery is Not OK



The association is not performed. To proceed the tag must be changed.

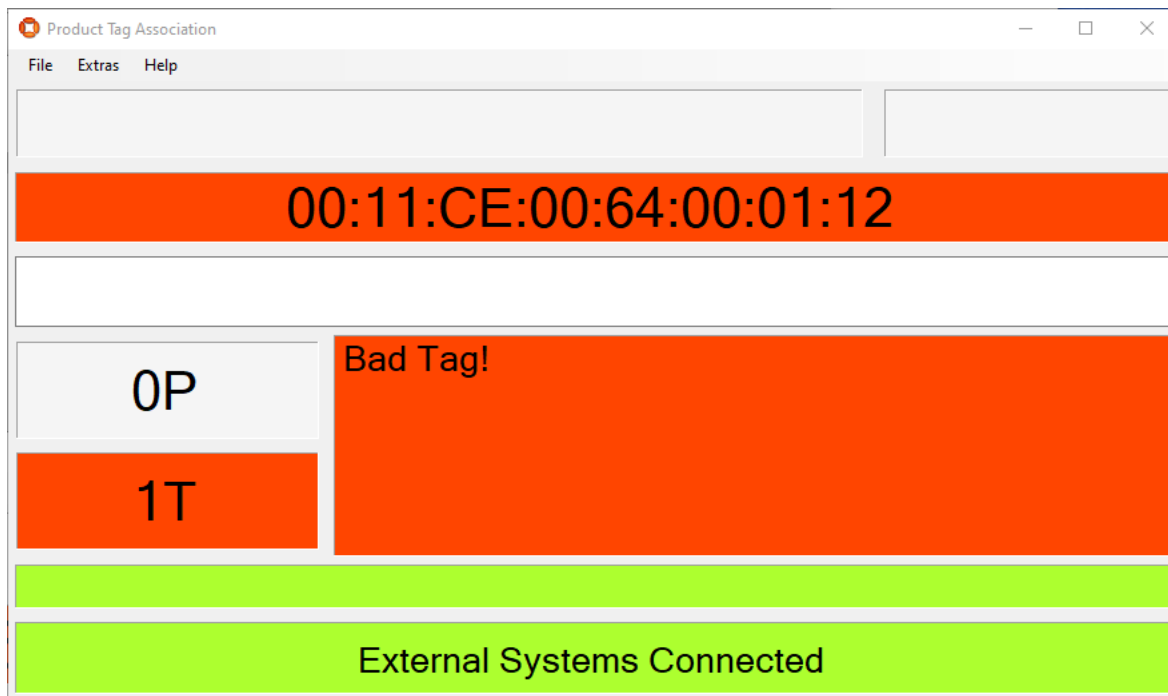
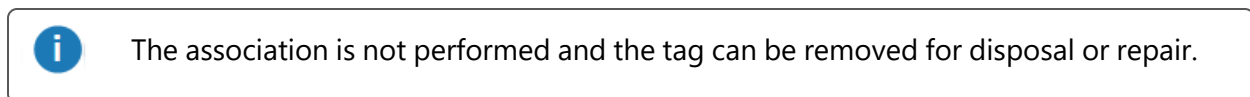


Figure: A "bad" tag has been detected in the association zone



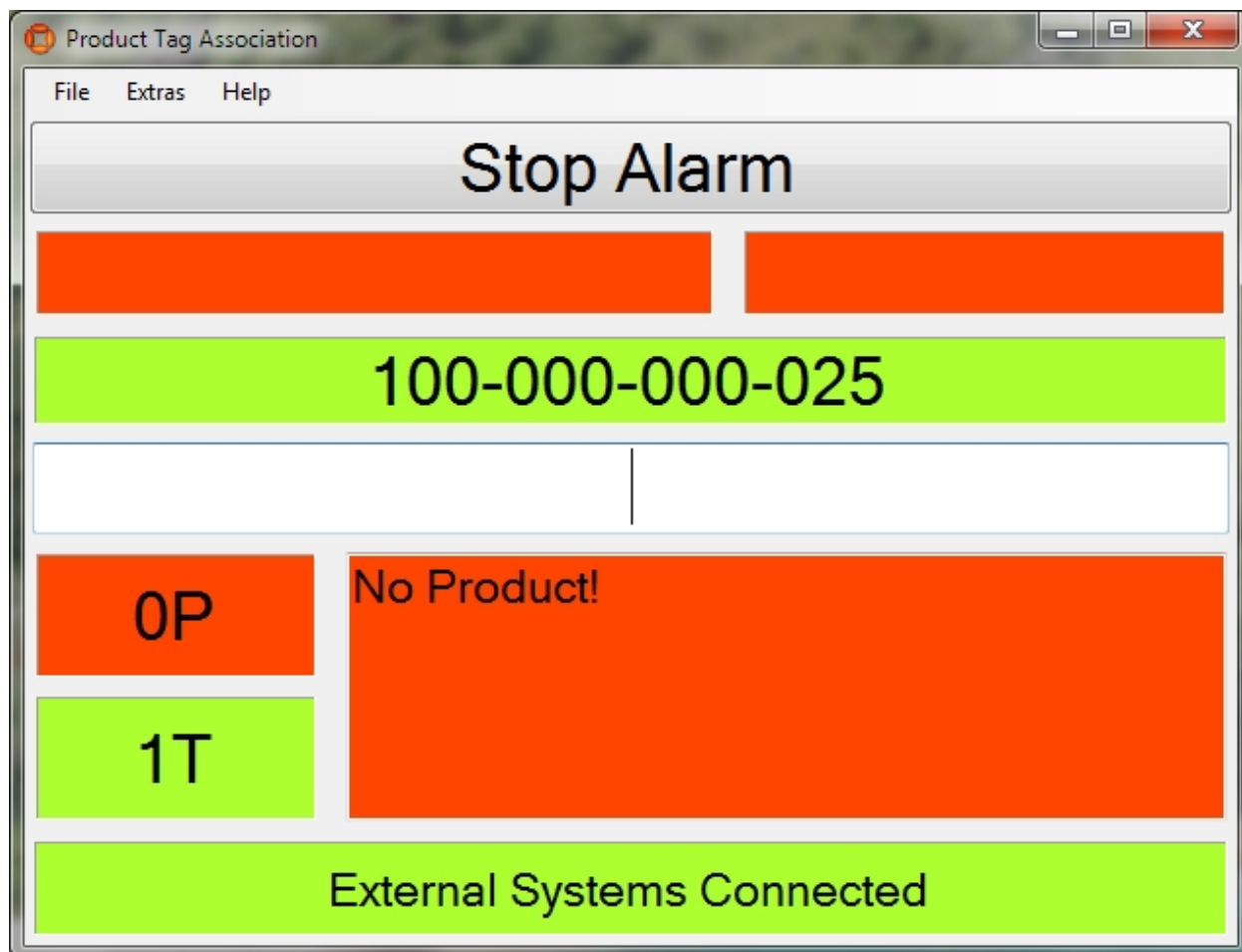


Figure: The Sound Notification is Configured and the Sound is Played



To stop the sound click **Stop Alarm**. After clicking **Stop Alarm** the playback of the sound stops and the button disappears.

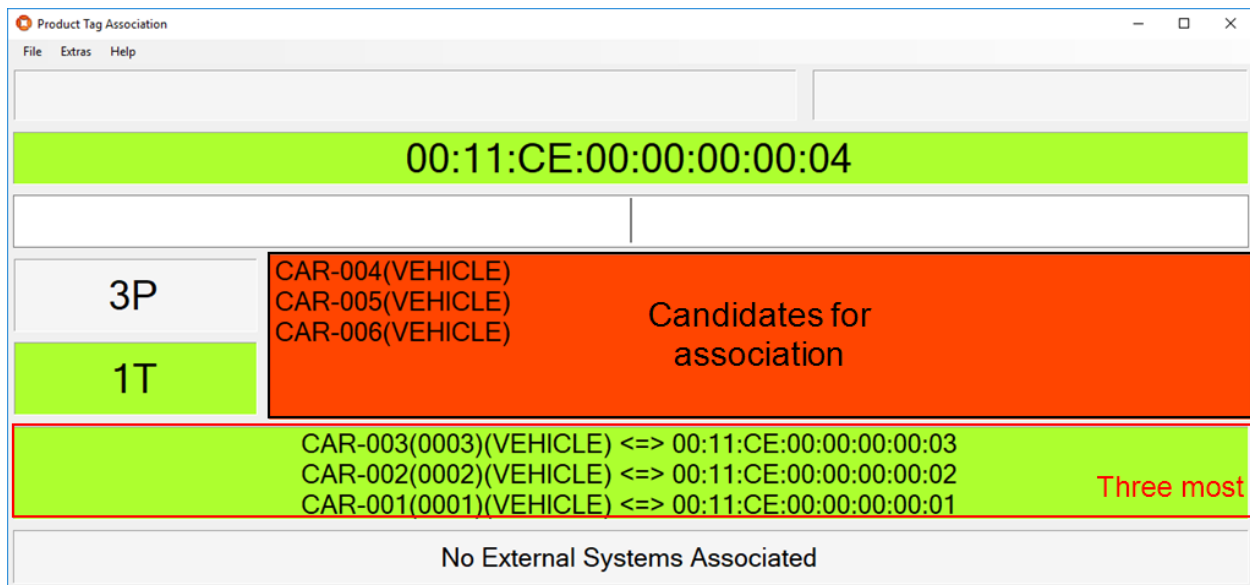


Figure: Three potential candidates are offered for association; the three most recent associations are displayed



The number of candidates offered for association is set in the [Association Zone Editor](#) and the candidates offered are next in the external product sequence for the association zone.

The number of recent associations displayed is configured in the **Product Tag Association Tool - Options** dialog described in [Options](#) above. In this example the associated products are identified by name followed by their sequence number (in brackets).

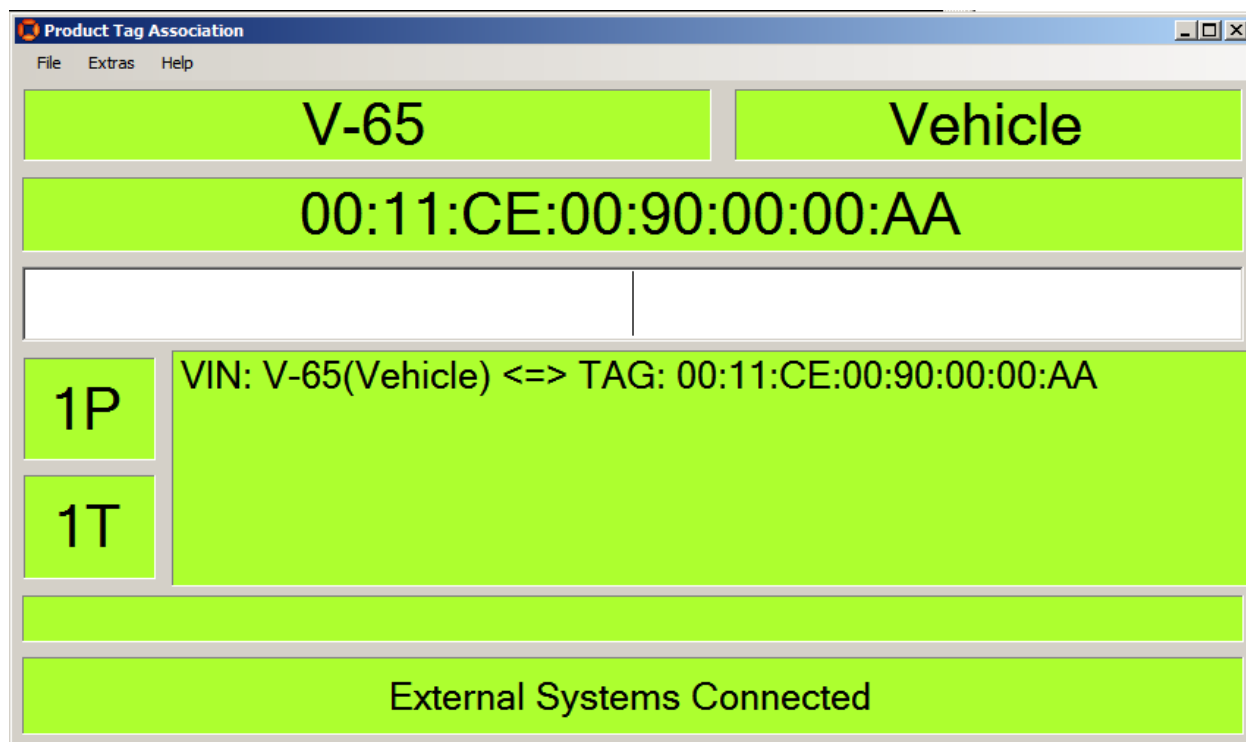


Figure: The GUI has been customized to display additional text in front of the Product ID and Tag ID



See [Example: Configuring Labels in the Product Tag Association GUI](#) for information on how to customize the Product Tag Association GUI in this way.

Pulsed Assembly Line Product Feeder

Standard user

Visualize the automatic process of adding products to an externally driven assembly line.

Allow the user to enter product information for manual product adding.

How it works

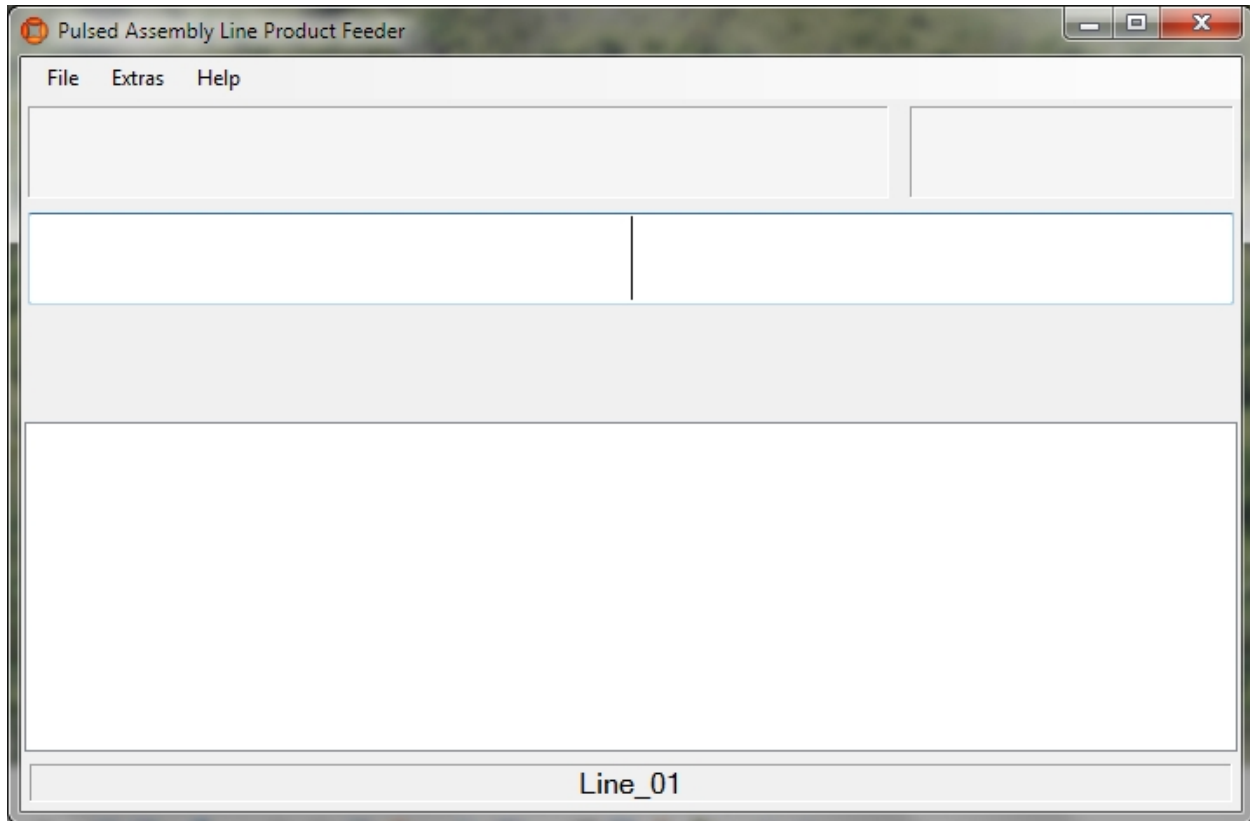


Figure: The Pulsed Assembly Line Product Feeder GUI

The screenshot above shows the **Pulsed Assembly Line Product Feeder** GUI immediately after starting.

The most common way to use this GUI is for visualizing. The values for product type and product ID usually come from external systems so users don't have to do anything here.

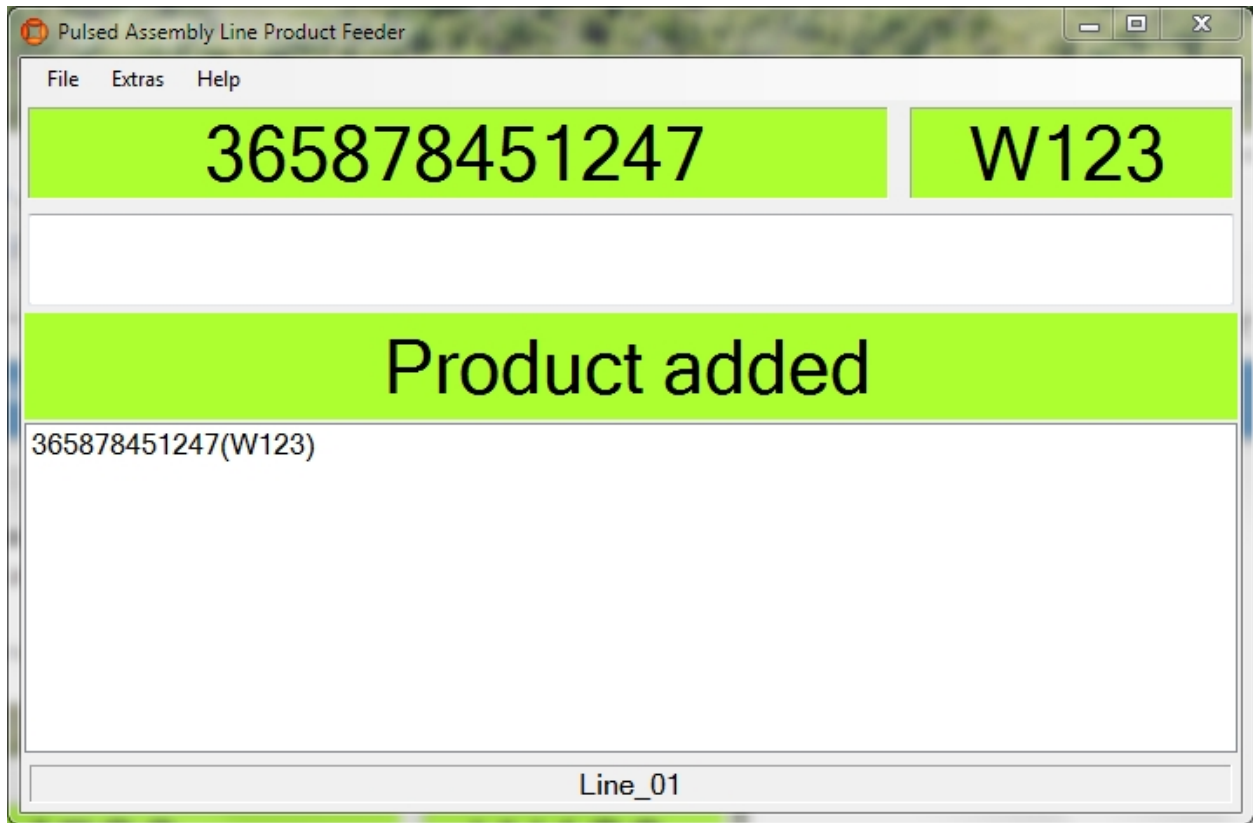


Figure: Visualizing the Pulsed Assembly Line Product Feeder

Fields

The screenshot shows a window titled "Pulsed Assembly Line Product Feeder" with a menu bar containing "File", "Extras", and "Help". The main content area is divided into several sections. At the top, there are two side-by-side fields labeled "Product ID" and "Product Type". Below these is a single wide field labeled "Input Field". Underneath the "Input Field" is a large, empty rectangular area labeled "Messages". At the bottom of the window, there is a status bar labeled "Line_01". Red rectangular boxes are drawn around the "Product ID", "Product Type", "Input Field", and "Messages" sections to highlight them.

Figure: Detail Fields

Field	Details
Product ID	In this field the product ID is shown. The product ID is usually coming from an external system but it can entered in the "Input" field.
Product Type	In this field the product type is shown. The product type is usually coming from an external system but it can entered in the "Input" field.
Input	This is the only writeable field in this GUI. If no information's from the external systems are available for product ID or product type the user can enter these values in this field.
Messages	This field shows all added products and their product type and also any gaps.



There is a slider between the fields Product ID and Product Type.

Options

You will find the options in the menu in **Extras->Options**.

Figure: Options for the Pulsed Assembly Line Product Feeder

Field	Details
Assembly Line	The list shows the assembly lines which are defined as pulsed with only the first product delivered by the PLC
Valid Product Prefixes	In the Valid Product Prefixes field of the Options window, the prefixes of products can be specified as a comma separated list. <i>Example: 36,37.</i>
Force type input	If checked the user has to type the product type each time. If not checked the last entered product type is treated as default for the next new product
Gap Name	An identifier to enter any gaps at the assembly line.

Examples

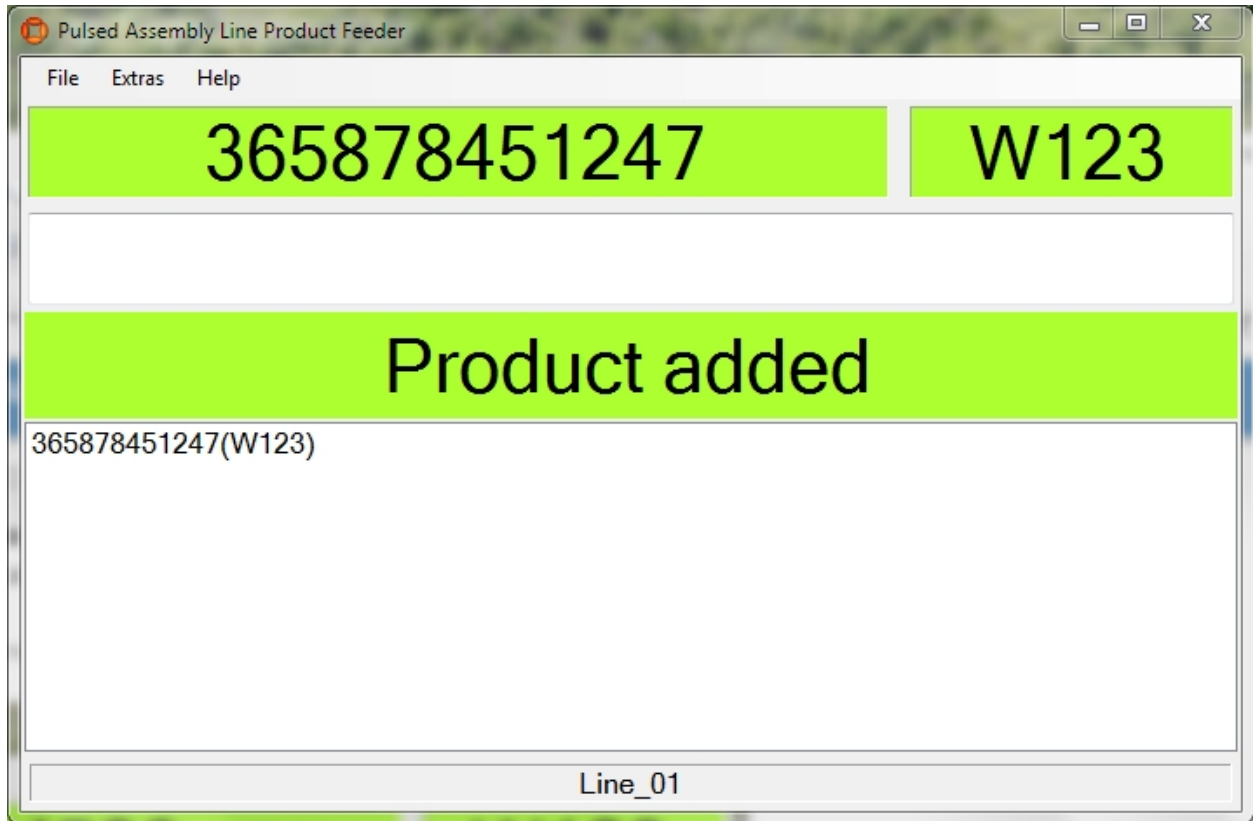


Figure: Showing the most common usage – all values are delivered from External Systems and the product was added successfully

The screenshot above shows the most common usage from the GUI. All values are delivered from external systems and the product was added successfully.

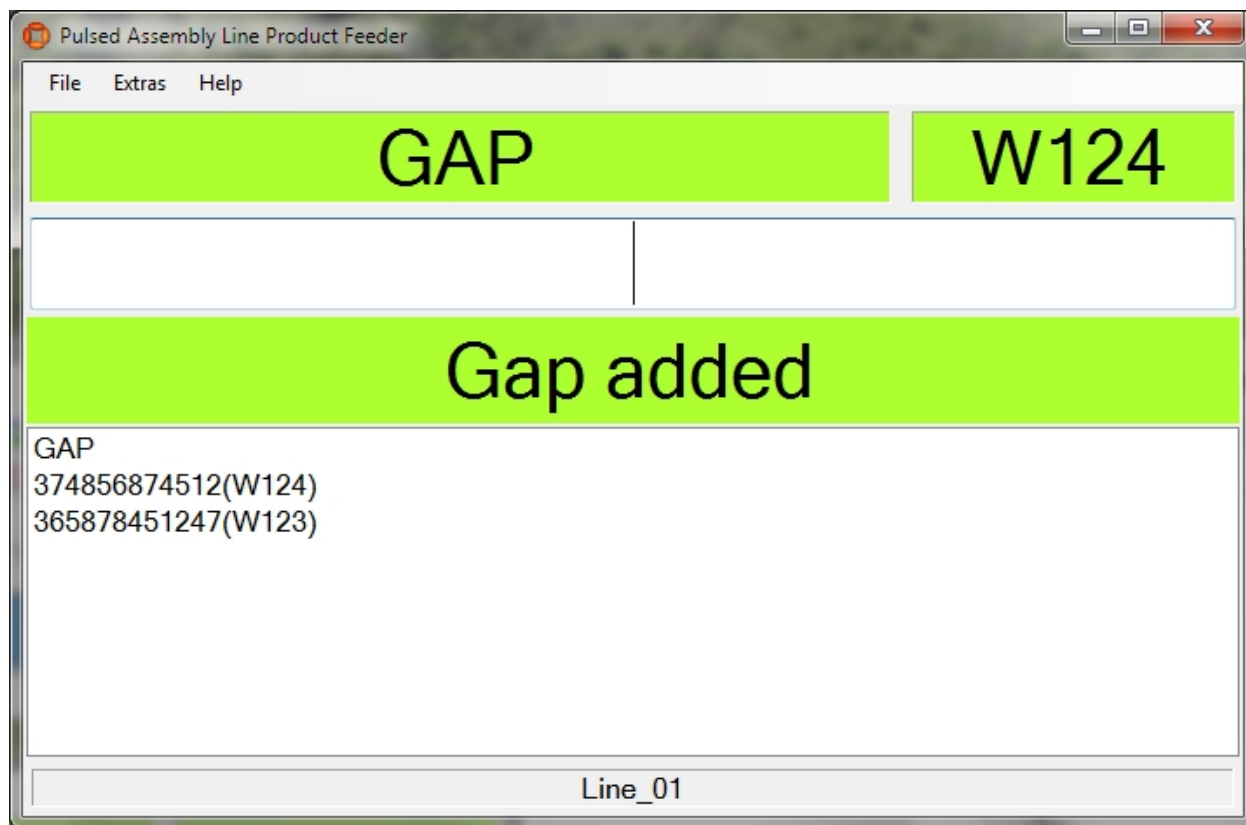


Figure: Showing the how it looks when a gap is successfully added

The screenshot above shows how it looks like when a gap was added.

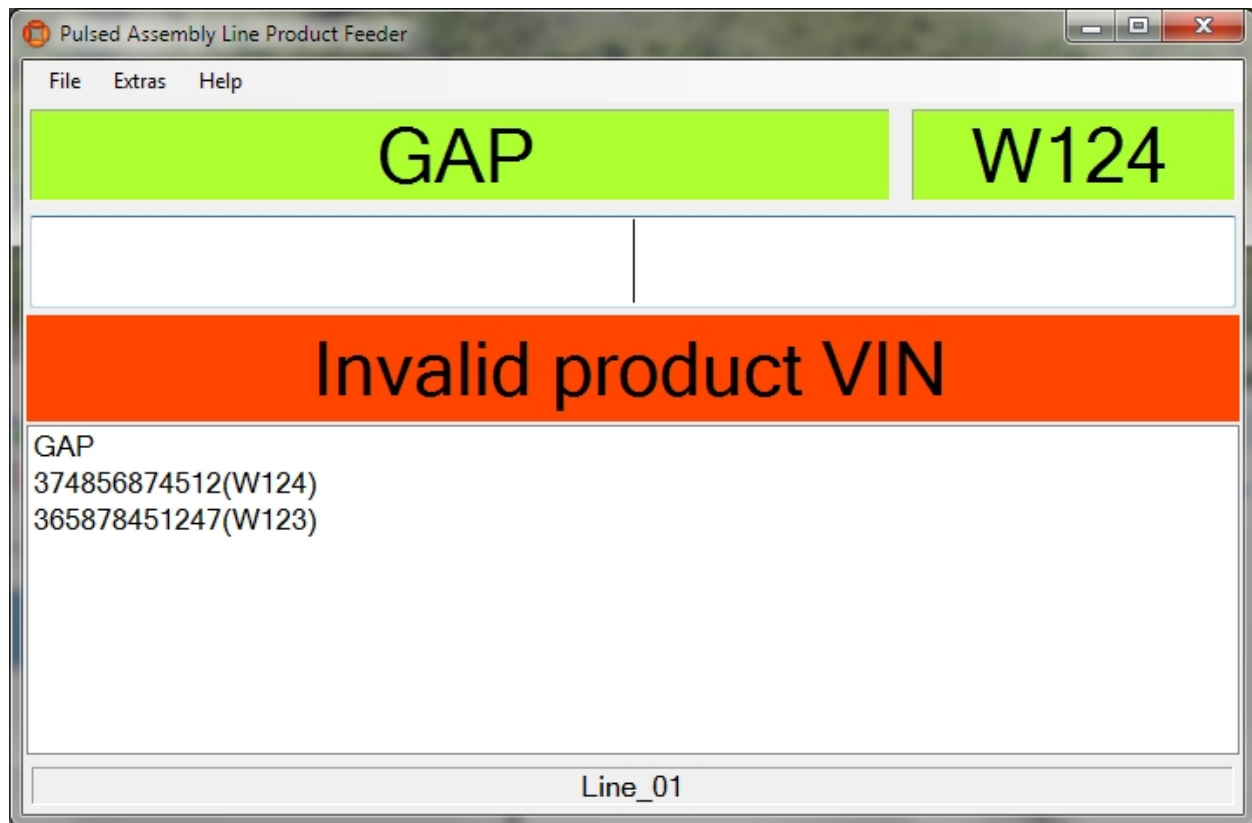


Figure: Showing how it looks when an invalid product VIN is entered

The screenshot above shows how it looks like when an invalid product VIN was entered.

Examples

This section provides examples of how to setup, configure and use ACS.

Example of ACS with the Atlas Copco OpenProtocol

Standard user

Demonstration of ACS with an assembly line getting its position information from an external system and handling spatial relation for devices and product spaces with the Atlas Copco OpenProtocol.

Preparing the Ubisense Platform in SmartSpace: Cells and Representations.

Creating an area by setting up a file with wall definitions and loading it into ACS.

Configuration of ACS including: Product Types, Product Spaces, Production Lines, Assembly Lines, External Systems and Device Types.

Show Simulations of the ACS Protocol and Atlas Copco OpenProtocol.

Preparation of your Environment

Follow the installations instructions for the combination of SmartSpace and ACS and other Ubisense products you require as described in your installation guide.

Use SmartSpace Config to Set up a Site and Add Representations for your Demonstration

Follow the instructions for configuring ACS given in [Configuration in SmartSpace](#).

In particular, you must do the following.

Site Setup

1. Add a Geometry Cell to your site.
2. Add a Location Cell to your Geometry Cell.
3. Extend your Location Cell. In the Cells task, double-click the location cell and, in the Edit the extent of Location Cell dialog, change the Top to 10.
4. Extend your Geometry Cell and Site Cell to contain your Location Cell.



Restart the Location Management Services in the Ubisense Service Manager in order to make sure that the services are running correctly.

Create an ACS Area

You can create ACS areas with walls to create a simplified representation of parts of your to aid in configuration. See [Creating areas for use in ACS](#) for information on creating areas.

Add Representations

- Import representations and push them to ACS.
- Note: Use two different representations (e.g. BlueCar_template and WhiteCar_template).



In order to use your representation in ACS, remember to extend the representation name with **_template**.

Configuration in ACS

Add Product Types in ACS

See *Product Types* in the ACS Online Help.

1. Choose one of your imported representations.
2. Set a suitable Type (Name) and Description.
3. Set the timeout to 10 seconds if you get the position from an external system, set no timeout otherwise.

Note: Add two different product types with different representations (e.g. *BlueCar* and *WhiteCar*).

Add a Production Line

See *Production Lines* in the ACS Online Help.

1. Set a suitable name (e.g. *Main Production Line*).
2. Set all Product types you want to support in your production line to *Supported*.

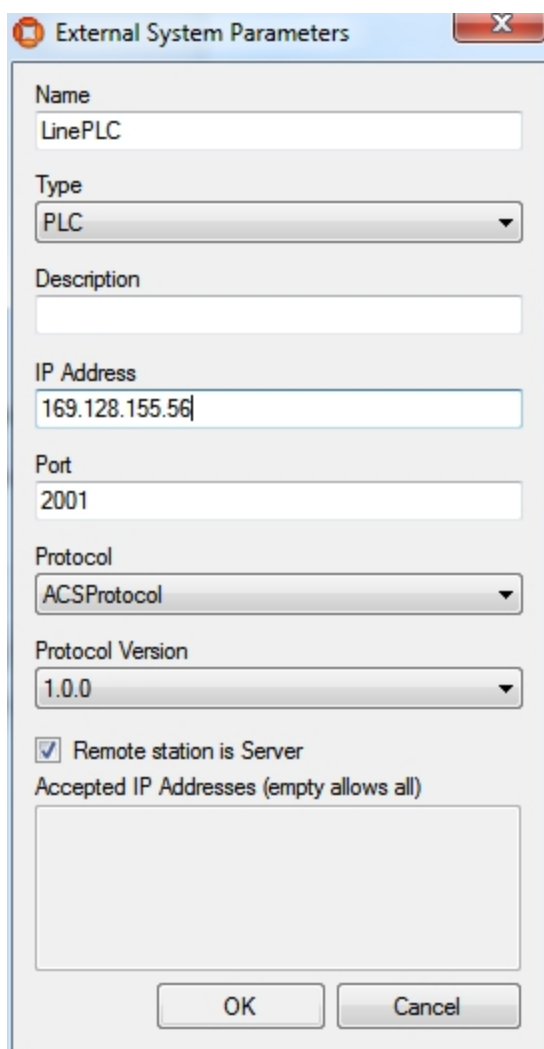
Configure the First External System

See *External Systems* in the ACS Online Help.

1. Set a suitable name (e.g. *LinePLC*).
2. As **Type** choose *PLC*.

3. Set a suitable description.
4. Specify the **IP Address** of the computer on which the External System will be run.
5. Set a suitable **Port** (e.g. *2001*).
6. As **Protocol** choose *ACSProtocol*.
7. As **Protocol Version** choose *1.0.0*.
8. Select **Remote station is Server**.

For example:



The screenshot shows a Windows-style dialog box titled "External System Parameters". It contains the following fields and controls:

- Name:** A text box containing "LinePLC".
- Type:** A dropdown menu with "PLC" selected.
- Description:** An empty text box.
- IP Address:** A text box containing "169.128.155.56".
- Port:** A text box containing "2001".
- Protocol:** A dropdown menu with "ACSProtocol" selected.
- Protocol Version:** A dropdown menu with "1.0.0" selected.
- Remote station is Server:** A checkbox that is checked.
- Accepted IP Addresses (empty allows all):** A large empty text area.
- Buttons:** "OK" and "Cancel" buttons at the bottom.

Configure the Additional Parameters for the External System

- For parameter **Alive Time-out** leave the value at *15*

Add an Assembly Line

See *Assembly Lines* in the ACS Online Help.

1. Choose the area you created in SmartSpace Config.
2. Set a suitable Name for your assembly line (e.g. *Band-01*).
3. Choose your created Production Line.
4. As **Location Source** choose *External System*.
5. Set the Grid Snapping to *1.00m*.
6. Set the line geometry for your assembly line.
7. On the **Externally Driven** tab, the parameters for the External System can be configured.
(For the Demonstration, select only your configured External System *LinePLC* and set any Association Id).
8. Set Line Movement to *Product offsets*.
9. Set Clear locations when connection is lost for more than [s] to *10*.
10. Commit your changes.

Add Product Spaces

See *Product Spaces* in the ACS Online Help.

1. Select your Product Type.
2. Add a Product Space.
3. Set a suitable name for the space (e.g. *Bonnet*).
4. Set the Grid Snapping to *1.00m*.
5. Enter a value at Extent ceiling height (e.g. *3m*).
6. Set a suitable geometry for your Product Space.



For your demonstration, add two different products with different product spaces (*Boot* for BlueCar and *Bonnet* for WhiteCar).

Configure the Second External System

See *External Systems* in the ACS Online Help.

1. Add a new external system.
2. Set a suitable name (e.g. *AC-Controller-Left*).

3. From **Type** choose *Tool Controller*.
4. Set a suitable description.
5. Specify the IP Address of the computer on which the External System will be run.
6. Set a suitable Port (e.g. **4545**).
7. From **Protocol** choose *Atlas Copco OpenProtocol*.
8. From **Protocol Version** choose *1.0.0*.
9. Select **Remote station is Server**.

Configure Additional Parameters for the External System

See *Protocols (Atlas Copco OpenProtocol)* in the ACS Online Help.

For this example it is not necessary to change any additional parameters.

Add a Device

See *Device Types* in the ACS Online Help.

1. Set a suitable device name (e.g. *AC-Wireless*).
2. Add a suitable description.

Add a Device Instance

See *Device Instances* in the ACS Online Help.

1. Set a suitable name (e.g. *Device Left*).
2. As **Device Type** choose *AC-Wireless* (the type you created in the previous step).

Enable Product Space Rules for the Device

See *Device Instances (Setting Product Space Rules)* in the ACS Online Help.

1. Select your created device.
2. In the **Device Activation** pane, select the **ObjectIsLocated Event** for your device.
3. Enable the device for each of the product spaces you created earlier.
4. As External System name select the check box for *AC-Controller-Left* (the second external system you created).

Enable External System Connectivity

See *Connection Status* in the ACS Online Help.

Make sure the *Desired status* column for both the external systems are set as *Connected*.

ACS is now configured.

Simulating the Two Protocols

For your demonstration there are two tools you can use to simulate the ACS Protocol and the Atlas Copco OpenProtocol



In order to see any output at the cmd you must set an Environment variable, otherwise you can see the output only in the log-File
set UABASEEVENTLOG=1.

Simulate the ACS Protocol

With the tool **ubisense_acs_protocol_clientserver.exe** you can present the product types moving at your assembly line. Use the Ubisense Application Manager to download the tool (see the *Installing Client Machines on Windows* section of your installation guide for more information).

```
ubisense_acs_protocol_clientserver.exe server <IP-Address> <Port> 16
```

For example:

```
ubisense_acs_protocol_clientserver.exe server 169.128.155.56 2001 16
```

When the **ubisense_acs_protocol_clientserver** starts the user has to configure some values:

Parameter	You enter...
Enter line name:	The name of the assembly line, e.g. Band-01
Enter #products:	The amount of products to be generated, e.g. 20
Enter start offset in cm:	The offset from the start of the assembly line, e.g. 0
Enter product distance in cm:	The distance between two products, e.g. 600
Enter Product Type (colon separated):	e.g. BlueCar:WhiteCar
Enter first Product ID (numeric):	The ID of the first product to be generated, e.g. 1
Enter speed (m/s):	The speed at which the tags will move along the line, e.g. 0.2
Enter loop pause (s):	The refresh rate, e.g. 1

Simulate the Atlas Copco OpenProtocol

With the tool **ubisense_open_protocol_clientserver.exe** you can present devices using the Atlas Copco OpenProtocol. You can find it in the **tools** directory.

```
ubisense_open_protocol_clientserver.exe server <IP-Address> <Port> 1
```

For example:

```
ubisense_open_protocol_clientserver.exe server 192.168.178.201 4545 1
```

Demonstration in SmartSpace Config

Now you can show the moving products and the spatial relations in SmartSpace Config.

Add Representations to ACS Product Types

See Adding a representation to a type on the Ubisense Documentation Portal.

For each of the product types you created in ACS, in the MODEL ASSIGNMENT tab, double-click **<Add new type>** and select the product and the a representation. Save the assignment.

Note: You don't need to use the same 2D representation that you exported to ACS and instead assign a default 3D representation in SmartSpace Config.

Define Spatial Extents for ACS Product Types

See Adding a space property to a type and Configure space properties of types on the Ubisense Documentation Portal.

For each of the product types you created in ACS:

1. In the TYPES / OBJECTS tab, define a space property whose name (e.g. *Bonnet*) corresponds to the Product Space you defined in ACS.
2. In the SPATIAL PROPERTIES tab, define a space that corresponds to the one you defined for the product in ACS.

Add a Representation for the ACS Device

See Adding a representation to an object on the Ubisense Documentation Portal.

1. In the MODEL ASSIGNMENT tab, double-click **<Add new object rep>** in the lower part of the screen.
2. Select the ACS Device type and then the object (e.g. *Device Left*).
3. Select a representation for the device and save the assignment.

Note: The device has a default space consisting of a cylindrical space of 10 cm in diameter with zero height which you can amend if required.

Set the Spatial Relations

See Configure space properties of types on the Ubisense Documentation Portal.

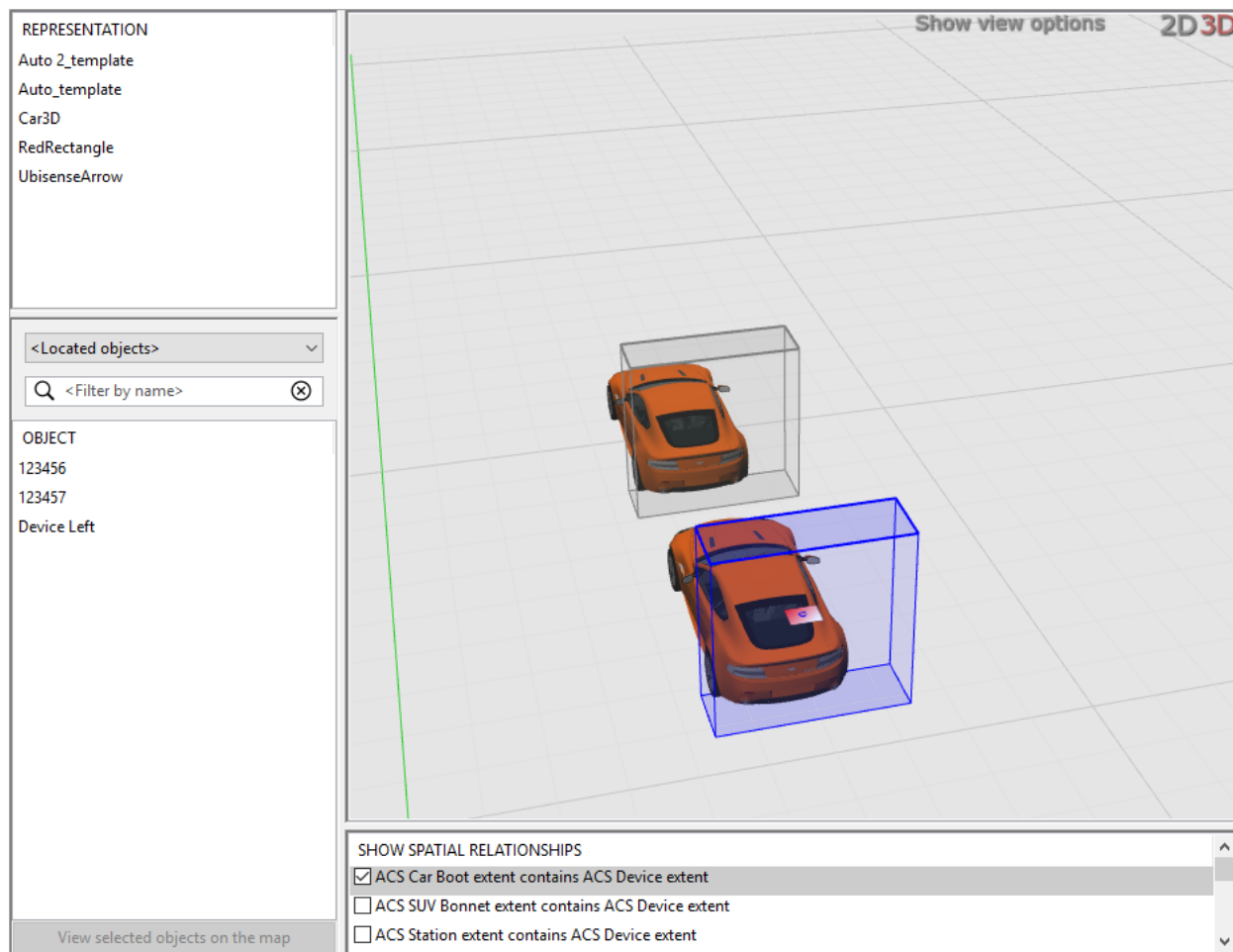
Examples

1. In the SPATIAL PROPERTIES tab, double-click <Add new request>.
2. In **Container**, select the product extent you defined.
3. In **Contained**, select extent of 'ACS Device'.

Add your Configured Tool to the Object Location

1. In the OBJECT PLACEMENT tab, choose ACS Device from the dropdown.
2. Drag your device into your area.
3. Set the Z-Coordinate to 1.5.
4. In SHOW SPATIAL RELATIONSHIPS, select the spatial relationship(s) you defined.

Now when your device is contained in a product space the containment is indicated by the containing space displaying in blue.



At the command line, from `ubisense_open_protocol_clientserver.exe` you will see a telegram each time your device enters or leaves your Production Space (if you have set `UABASEEVENTLOG=1` as described above).

```

Administrator: C:\Windows\system32\cmd.exe - ubisense_open_protocol_clientserver.exe server ASCHULZE-T510 4545 1
13.04.2012 11:24:18.496 [192.168.178.201:4545] Handle Request: '00200043000'
13.04.2012 11:24:18.496 [192.168.178.201:4545] OpenProtocolEndPoint::HandleRequest(): 00200043000
13.04.2012 11:24:30.634 [192.168.178.201:4545] Received TCP/IP Message: '00209999000'
13.04.2012 11:24:30.634 [192.168.178.201:4545] Attempt to send TCP/IP message: '00209999000'
13.04.2012 11:24:30.634 [192.168.178.201:4545] TCP send OK
13.04.2012 11:24:30.634 [192.168.178.201:4545] Handle Request: '00209999000'
13.04.2012 11:24:34.481 [192.168.178.201:4545] Received TCP/IP Message: '00200127000'
13.04.2012 11:24:34.481 [192.168.178.201:4545] Attempt to send TCP/IP message: '00240005000' 0127
13.04.2012 11:24:34.481 [192.168.178.201:4545] TCP send OK
13.04.2012 11:24:34.482 [192.168.178.201:4545] Handle Request: '00200127000'
13.04.2012 11:24:34.482 [192.168.178.201:4545] OpenProtocolEndPoint::HandleRequest(): 00200127000
13.04.2012 11:24:34.482 [192.168.178.201:4545] Received TCP/IP Message: '00280150000' 47610506
13.04.2012 11:24:34.482 [192.168.178.201:4545] Attempt to send TCP/IP message: '00240005000' 0150
13.04.2012 11:24:34.482 [192.168.178.201:4545] TCP send OK
13.04.2012 11:24:34.482 [192.168.178.201:4545] Handle Request: '00280150000' 47610506
13.04.2012 11:24:34.482 [192.168.178.201:4545] OpenProtocolEndPoint::HandleRequest(): 00280150000 47610506
13.04.2012 11:24:34.482 [192.168.178.201:4545] Received TCP/IP Message: '00200043000'
13.04.2012 11:24:34.482 [192.168.178.201:4545] Attempt to send TCP/IP message: '00240005000' 0043
13.04.2012 11:24:34.482 [192.168.178.201:4545] TCP send OK
13.04.2012 11:24:34.482 [192.168.178.201:4545] Handle Request: '00200043000'
13.04.2012 11:24:34.482 [192.168.178.201:4545] OpenProtocolEndPoint::HandleRequest(): 00200043000
13.04.2012 11:24:46.656 [192.168.178.201:4545] Received TCP/IP Message: '00209999000'
13.04.2012 11:24:46.656 [192.168.178.201:4545] Attempt to send TCP/IP message: '00209999000'
13.04.2012 11:24:46.656 [192.168.178.201:4545] TCP send OK
13.04.2012 11:24:46.656 [192.168.178.201:4545] Handle Request: '00209999000'
13.04.2012 11:24:58.669 [192.168.178.201:4545] Received TCP/IP Message: '00209999000'
13.04.2012 11:24:58.669 [192.168.178.201:4545] Attempt to send TCP/IP message: '00209999000'
13.04.2012 11:24:58.669 [192.168.178.201:4545] TCP send OK
13.04.2012 11:24:58.669 [192.168.178.201:4545] Handle Request: '00209999000'

```

Example of ACS with tags and a disassociation zone

Standard user

Demonstration of ACS with an Assembly Line getting its position information from tags using a disassociation zone to send tags to sleep.

Preparation of the Ubisense Platform in SmartSpace: cells and representations.

Creating an area by setting up a file with wall definitions and loading it into ACS.

Configuration of ACS including: Product Types, Product Type Tag Positions, Production Lines, Assembly Lines, Tag Profiles, Disassociation Zones, Product Tag Association, External Systems and Ident Zones.

Show Simulations of the ACS Protocol.

Preparation of your Environment

Follow the installations instructions for the combination of SmartSpace and ACS and other Ubisense products you require as described in your installation guide.

Use SmartSpace Config to Set up a Site and Add Representations for your Demonstration

Follow the instructions for configuring ACS given in [Configuration in SmartSpace](#).

In particular, you must do the following.

Site Setup

1. Add a Geometry Cell to your site.
2. Add a Location Cell to your Geometry Cell.
3. Extend your Location Cell. In the Cells task, double-click the location cell and, in the Edit the extent of Location Cell dialog, change the Top to *10*.
4. Extend your Geometry Cell and Site Cell to contain your Location Cell.



Restart the Location Management Services in the Ubisense Service Manager in order to make sure that the services are running correctly.

Add Representations

- Import representations and push them to ACS.
- Note: Use two different representations (e.g. BlueCar_template and WhiteCar_template).



In order to use your representation in ACS, remember to extend the representation name with **_template**.

Configuration in ACS

Add Product Types in ACS

See *Product Types* in the ACS Online Help.

1. Choose one of your created representations.
2. Set a suitable Type (Name) and Description.
3. Set *NO* timeout.



Add two different products with different representations.

Add Product Type Tag Position

See *Product Type Tag Positions* in the ACS Online Help.

Add the tag position for both product types:

1. Select one of your defined product types and add the Tag Position.
2. Set a suitable Tag Position Name and Description.
3. Set the Tag Position Height (e.g. *0.5m*).
4. Do **NOT** check *Drive Directly?*.
5. Set the geometry (point) for the Tag Position.



Check the Tag Position in 2D and 3D mode.

Add a Production Line

See *Production Lines* in the ACS Online Help.

1. Set a suitable name (e.g. *MainProductionLine*).
2. Set all Product types you want to support in your production line to Supported.

Add an Assembly Line

See *Assembly Lines* in the ACS Online Help.

1. Choose the area you created in SmartSpace Config.
2. Set a suitable Name for your assembly line (e.g. *Band-01*).
3. Choose your created Production Line.
4. As Location Source choose Tag.
5. Set the Grid Snapping to *1.00m*.
6. Set the line geometry for your assembly line.

Activate the tab **Tag Settings** – see *Assembly Lines (Tag Setting tab page - Tag Recognition)* in the ACS Online Help.

1. For Tag Recognition use the **Defaults** button to set all values to default.
2. For **Transport Parameters** set the following values:
 - Line Width [m]: 2.
 - Minimum Carrier Distance [m]: 6.
 - Standard line speed [m/s]: 0.2.

Examples

- Click "Adapt Length".
- Do NOT add additional Line Sections.

Activate the tab **Tag Error Handling** (see *Assembly Lines (Tag Error Handling)* in the ACS Online Help):

- In the Part Error Detection change nothing.
- In the Part Error Recovery change nothing.

Add Tag Profiles

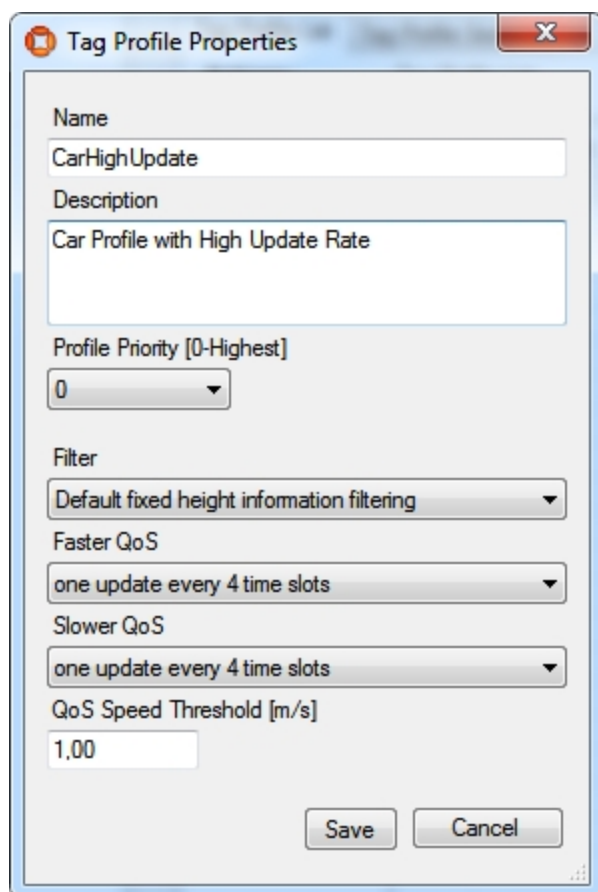
See *Tag Profile Manager (Tag Profile Properties Dialog)* in the ACS Online Help.



If you are using a Ubisense D4 system, the Tag Profile Manager dialog has fewer parameters that you can set.

1. Set a meaningful name (e.g. *CarHighUpdate*).
2. Add a description.
3. Set the Profile Priority to 0.
4. Choose a filter (e.g. *Default fixed height information filtering*).
5. Series 7000 systems only:
 - Choose a Faster QoS (e.g. *every 4 time slots*).
 - Choose a Slower QoS (e.g. *every 32 time slots*).
 - Set the QoS Speed Threshold (e.g. *1.00*).

For example:



Tag Profile Properties

Name
CarHighUpdate

Description
Car Profile with High Update Rate

Profile Priority [0-Highest]
0

Filter
Default fixed height information filtering

Faster QoS
one update every 4 time slots

Slower QoS
one update every 4 time slots

QoS Speed Threshold [m/s]
1.00

Save Cancel



Add at least two different Tag Profiles.

Configure your Tag Profile Sections

See *Tag Profile Manager (Tag Profile Sections)* in the ACS Online Help.

1. Choose your Production Line.
2. Choose your Assembly Line Name.
3. Add Profile Sections.
4. Set your Start Offset.
5. Set your End Offset.
6. Choose your Profile.



Configure at least two Profile Sections with different profiles.

Configure an Ident Zone for the association

See *Ident Zones* in the ACS Online Help.


1. Set a Name.
2. Add a Description.
3. Set Height of floor [m] (e.g. *0m*).
4. Set Height of ceiling [m] (e.g. *3m*).
5. Choose your Area.
6. Set a suitable geometry (trigger zone) for the Ident Zone.
7. Commit your changes.
8. Create an event (Events tab).
9. Give it an appropriate name. (Suffix the name with *Event* to distinguish it from the actual Ident Zone.)
10. Save changes.
11. Associate the event with Active Type *ULocationIntegration::Tag*.

Configure an Association Zone

See *Association Zones* in the ACS Online Help.

1. Set a Name.
2. Add a Description.
3. Choose an Ident Zone.
4. Select your first Product Type.
5. Choose the Tag Position for this Product Type.
6. Select your second Product Type.
7. Choose the Tag Position for this Product Type.
8. Commit your changes.

For example:

 Association Zone Editor

Name

Association

Description

Ident Zones

Association

External System

MES

Association Id

Tag Positions

Tag Filter

Product Types and Tag Positions

Product Type	Tag Position
VEHICLE	Default
VEHICLECARRIER	Default

Tag Positions

Same Tag Reuse Threshold

0

Product Candidates

Product sequence

Rahmenbau3

Number of association candidates

3

Association candidate delay (seconds)

5

☐ Auto-associate verified product

☐ Generate warning if sequence is violated

Commit

Cancel

Configure an Ident Zone for the Disassociation

See *Ident Zones* in the ACS Online Help.

Examples

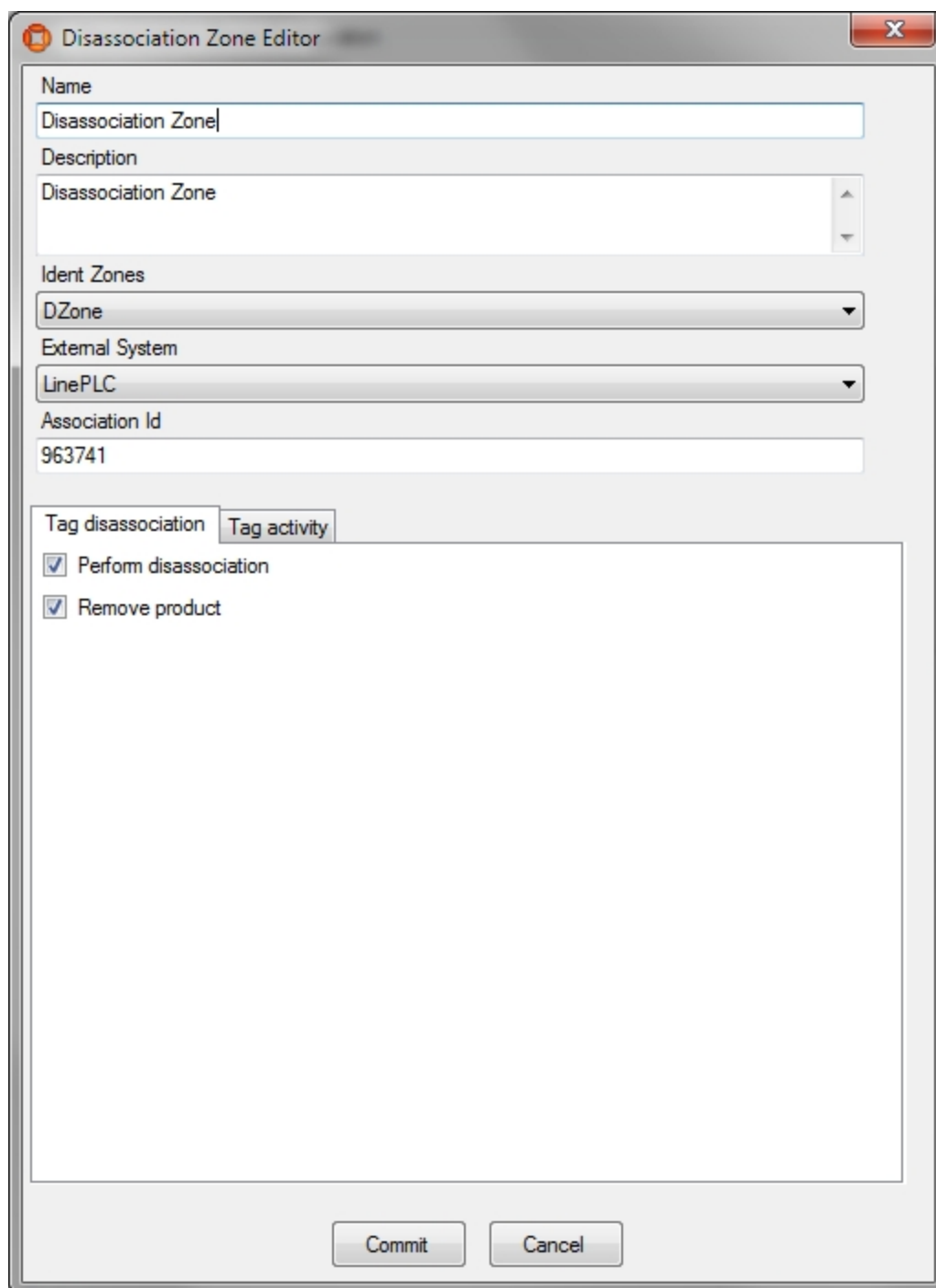
1. Set a Name.
2. Add a Description.
3. Set Height of floor [m] (e.g. 0m).
4. Set Height of ceiling [m] (e.g. 3m).
5. Choose your Area.
6. Set a suitable geometry (trigger zone) for the Ident Zone.
7. Create an event (Events tab).
8. Give it an appropriate name. (Suffix the name with *Event* to distinguish it from the actual Ident Zone.)
9. Save changes.
10. Associate the event with the Product Types as the Active Type.

Configure a Disassociating Zone

See *Disassociation Zones* in the ACS Online Help.

1. Set a Name.
2. Add a Description.
3. Choose your Ident Zone.
4. On the Tag disassociation tab, check **Perform disassociation** and **Remove product**.
5. On the Tag activity tab, check **Send tag to sleep** and as **Wakeup time** choose *short*.
6. In the Tag ranges part you can configure whitelists or blacklists for Tag ranges (for the moment leave it blank and check the *Not from ranges* radio button).

For example:



The screenshot shows a window titled "Disassociation Zone Editor". It contains several input fields and dropdown menus. The "Name" field is labeled "Disassociation Zone". The "Description" field is also labeled "Disassociation Zone". The "Ident Zones" dropdown menu is set to "DZone". The "External System" dropdown menu is set to "LinePLC". The "Association Id" field is labeled "963741". At the bottom, there are two tabs: "Tag disassociation" and "Tag activity". Under the "Tag disassociation" tab, there are two checked checkboxes: "Perform disassociation" and "Remove product". At the bottom right, there are "Commit" and "Cancel" buttons.

Disassociation Zone Editor

Name
Disassociation Zone

Description
Disassociation Zone

Ident Zones
DZone

External System
LinePLC

Association Id
963741

Tag disassociation Tag activity

☒ Perform disassociation

☒ Remove product

Commit Cancel

Configure an External System

See *External Systems* in the ACS Online Help.

Examples

1. Set a suitable name.
2. As Type choose *PLC*.
3. Set a suitable description.
4. Specify the IP Address of the computer on which the External System will be run.
5. Set a suitable Port (e.g. *2001*).
6. As **Protocol** choose *ACSProtocol*.
7. As **Protocol Version** choose *1.0.0*.
8. Select *Remote station is Server*.

Add your association zone and Disassociation Zone as Associated Objects to your external system (using two different association IDs).

Use the ACSProtocol to Simulate the Association

With the tool **ubisense_acs_protocol_clientserver.exe** you see the association/disassociation. Use the Ubisense Application Manager to download the tool (see the *Installing Client Machines on Windows* section of your installation guide for more information).

How to use:

```
ubisense_acs_protocol_clientserver.exe server <IP-Address> <Port> 14
```

For example:

```
ubisense_acs_protocol_clientserver.exe server 127.0.0.1 2001 14
```

You must specify some values from your own example.

Use the tool **ubisense_product_tag_simulator** to simulate tags moving along your production line. Use the Ubisense Application Manager to download the tool (see the *Installing Client Machines on Windows* section of your installation guide for more information).

How to use:

```
ubisense_product_tag_simulator.exe [OPTIONS] <PRODUCTION LINE>
```

For example:

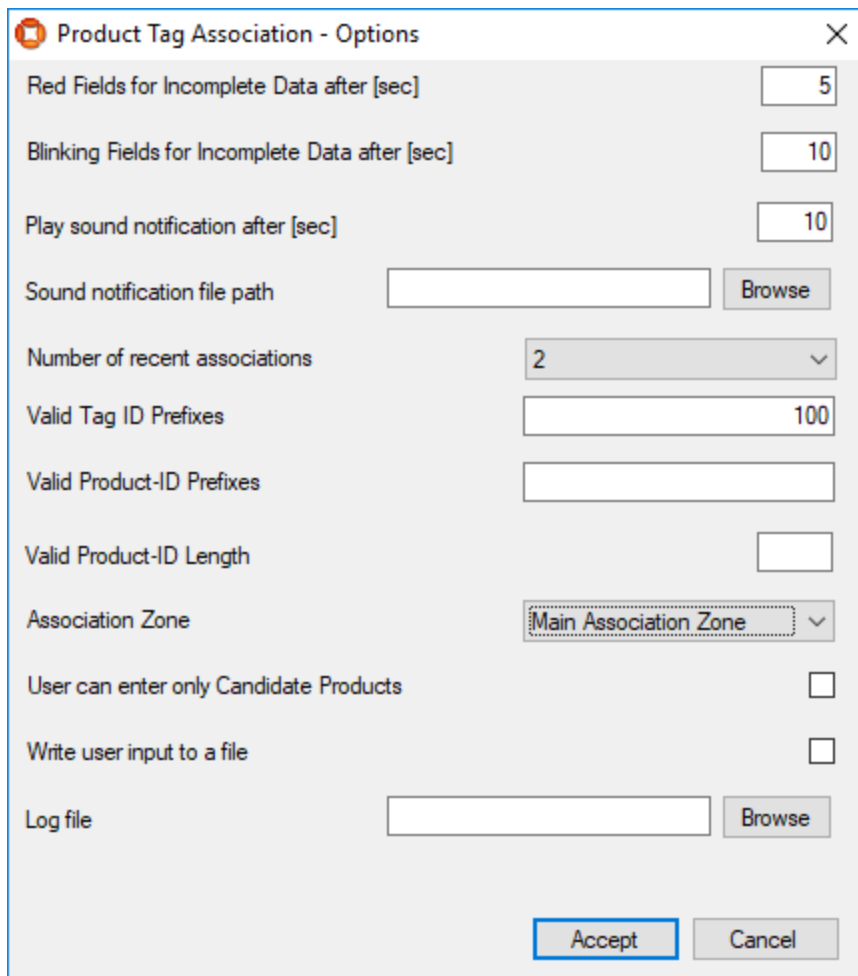
```
ubisense_product_tag_simulator.exe -t 100-0-0-1 "MainProductionLine"
```

See Association of Tags to Products

See *Product Tag Association* in the ACS Online Help.

1. Start the **ACS Product Tag Association** GUI.
2. Set your options (**Extras -> Options**).
3. Set **Red Fields for Incomplete Data after [sec]** to *5s*.
4. Set **Blinking Fields for Incomplete Data after [sec]** to *10s*.
5. Set the Tag ID prefixes to e.g., 100- . Ensure that this is consistent with what you have specified with **ubisense_product_tag_simulator**.
6. Choose your association zone.
7. Accept your options.

Examples



The image shows a Windows-style dialog box titled "Product Tag Association - Options". It contains several configuration fields and checkboxes. The fields include time intervals for red and blinking fields, a sound notification path, the number of recent associations, valid tag and product ID prefixes, and an association zone. There are also checkboxes for user input restrictions and a log file path. The "Accept" button is highlighted with a blue border.

Option	Value
Red Fields for Incomplete Data after [sec]	5
Blinking Fields for Incomplete Data after [sec]	10
Play sound notification after [sec]	10
Sound notification file path	[Empty text box]
Number of recent associations	2
Valid Tag ID Prefixes	100
Valid Product-ID Prefixes	[Empty text box]
Valid Product-ID Length	[Empty text box]
Association Zone	Main Association Zone
User can enter only Candidate Products	<input type="checkbox"/>
Write user input to a file	<input type="checkbox"/>
Log file	[Empty text box]

Buttons: Accept, Cancel

See Association of Products to Tags

If the association isn't working:

- Check the Assembly Line Messages (**Operations -> Live Logs**) and if there are no messages then try restarting the **ACS Tracking Support** service.

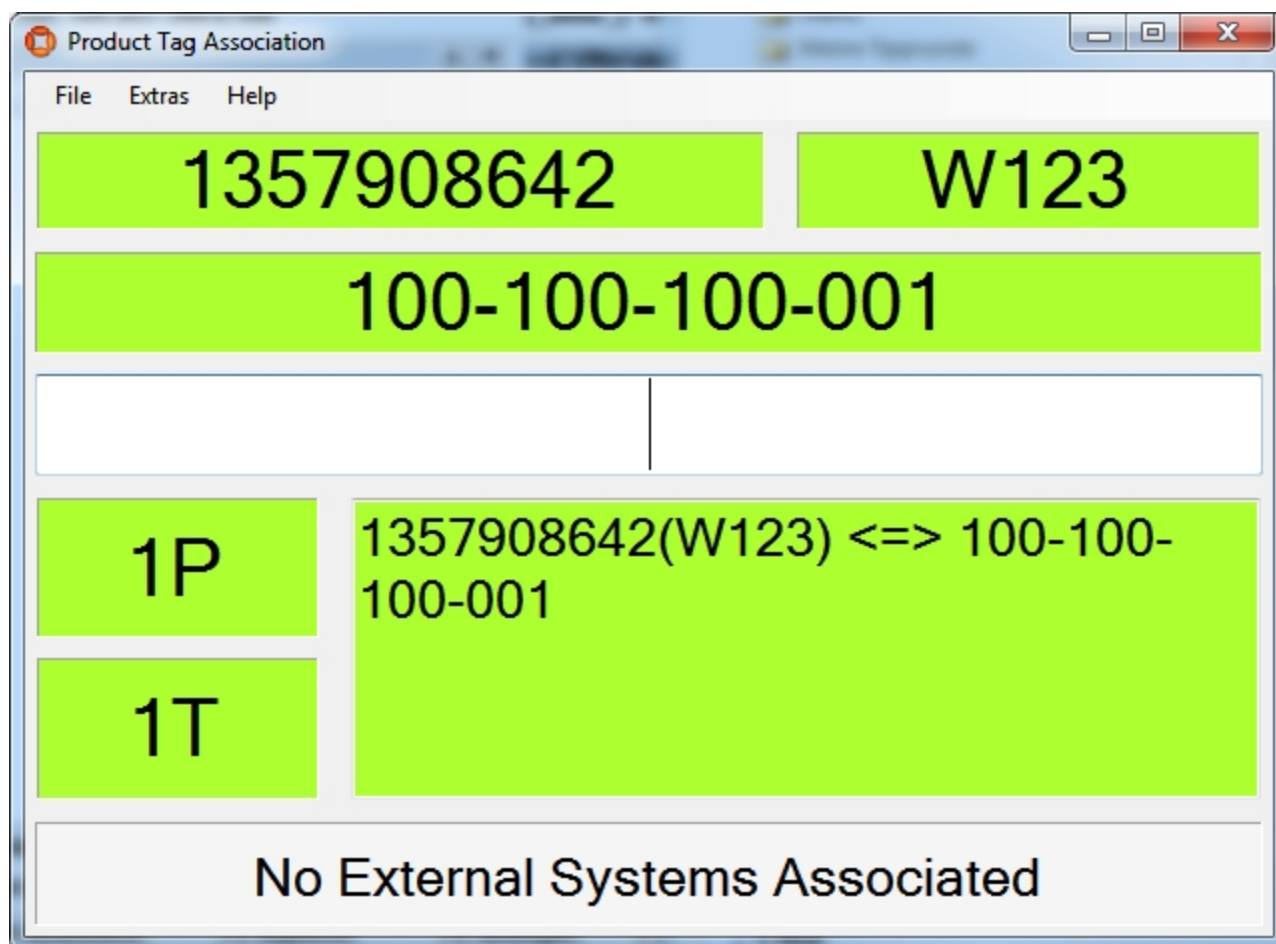


Figure: The ACS Product Tag Association tool

Example of ACS using the ACS Protocol for spatial relations and message forwarding

Standard user

Demonstration of ACS with a Workspace and handling spatial relation for devices and workspaces with the ACS Protocol, and demonstration of Message Forwarding with the ACS Protocol.

Preparation of the Ubisense Platform in SmartSpace: area and cells.

Creating an area by setting up a file with wall definitions and loading it into ACS.

Examples

Configuration of ACS including: Workspaces, External Systems and Device Types.

Show simulations of the ACS Protocol

Preparation of your Environment

Follow the installations instructions for the combination of SmartSpace and ACS and other Ubisense products you require as described in your installation guide.

Use SmartSpace Config to Set up a Site and Add Representations for your Demonstration

Follow the instructions for configuring ACS given in [Configuration in SmartSpace](#).

In particular, you must do the following.

Site Setup

1. Add a Geometry Cell to your site.
2. Add a Location Cell to your Geometry Cell.
3. Extend your Location Cell. In the Cells task, double-click the location cell and, in the Edit the extent of Location Cell dialog, change the Top to 10.
4. Extend your Geometry Cell and Site Cell to contain your Location Cell.



Restart the Location Management Services in the Ubisense Service Manager in order to make sure that the services are running correctly.

Configuration in ACS

Add a Workspace in ACS

See *Workspaces* in the ACS Online Help.

1. Choose your area.
2. Set a suitable name (e.g. "Battery assembly").
3. For Height of floor [m] set "0".
4. For Height of ceiling [m] set "2".
5. Set a suitable geometry for your workspace.

Configure an External System

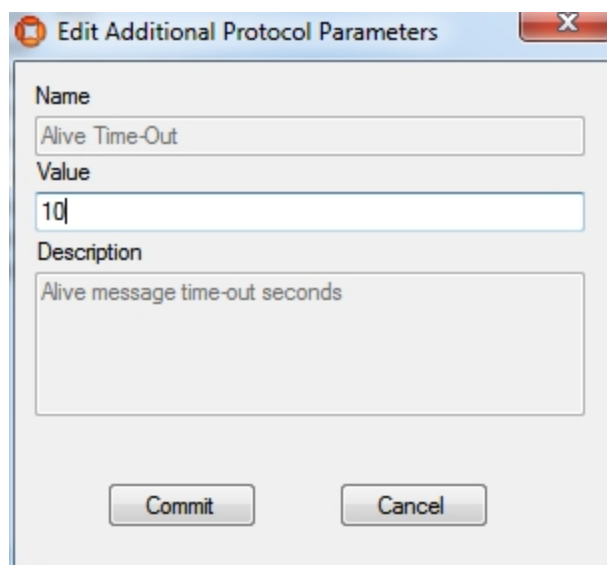
See *External Systems* in the ACS Online Help.

1. Set a suitable name (e.g. *ACSToolController*).
2. As **Type** choose *Tool Controller*.
3. Set a suitable description.
4. Specify the IP Address of the computer on which the External System will be run.
5. Set a suitable Port (e.g. *4646*).
6. As **Protocol** choose *ACS Protocol*.
7. As **Protocol Version** choose *1.0.0*.
8. Select **Remote station is Server**.
9. Press **OK**.
10. Go to **Operation > Connection status** and set the desired state of this external system to *Connect*.

Configure the Additional Parameter for your External System

See *Protocols (ACSProtocol)* in the ACS Online Help.

- Set parameter **Alive Time-Out** value to *10*.



The screenshot shows a dialog box titled "Edit Additional Protocol Parameters". It has three input fields: "Name" with the text "Alive Time-Out", "Value" with the text "10", and "Description" with the text "Alive message time-out seconds". At the bottom of the dialog, there are two buttons: "Commit" and "Cancel".

Add a Device

See Device Types.

Examples

1. Set a suitable device name (e.g. *Battery assembly tool*).
2. Add a suitable description.

Add a Device Instance

See Device Instances.

1. Set a suitable name (e.g. *BA Device*).
2. As **Device Type** choose *Battery assembly tool* (the type you created in the previous step).

Enable Static Space Rules for the Device

See Device Instances (Setting Static Space Rules).

1. Select your created device (in the upper pane).
2. In the **Device Activation** pane below, select the **ObjectIsLocated Event** for your device.

Note: Suffix the name with *OlLevent* to distinguish it from the actual device.

3. Enable the device for the Workspace you created earlier.
4. As **External System name** choose *ACSToolController* (the external system you last created).

Enable Message Forwarding

See *Message Forwarding* in the ACS Online Help.

- Select your configured External System for Message Forwarding.

ACS is now configured.

Simulate the ACS Protocol

For your demonstration there is a tool you can use to simulate the ACS Protocol.



In order to see any output at the command line you must set an environment variable, otherwise you can see the output only in the log-File
set UABASEEVENTLOG=1.

Simulate the ACSProtocol

With the tool `ubisense_acs_protocol_clientserver.exe` you can listen for the ACS Protocol messages. You can find it in the **tools** directory.

How to use:

```
ubisense_acs_protocol_clientserver.exe server <IP-Address> <Port> 1
```

For example:

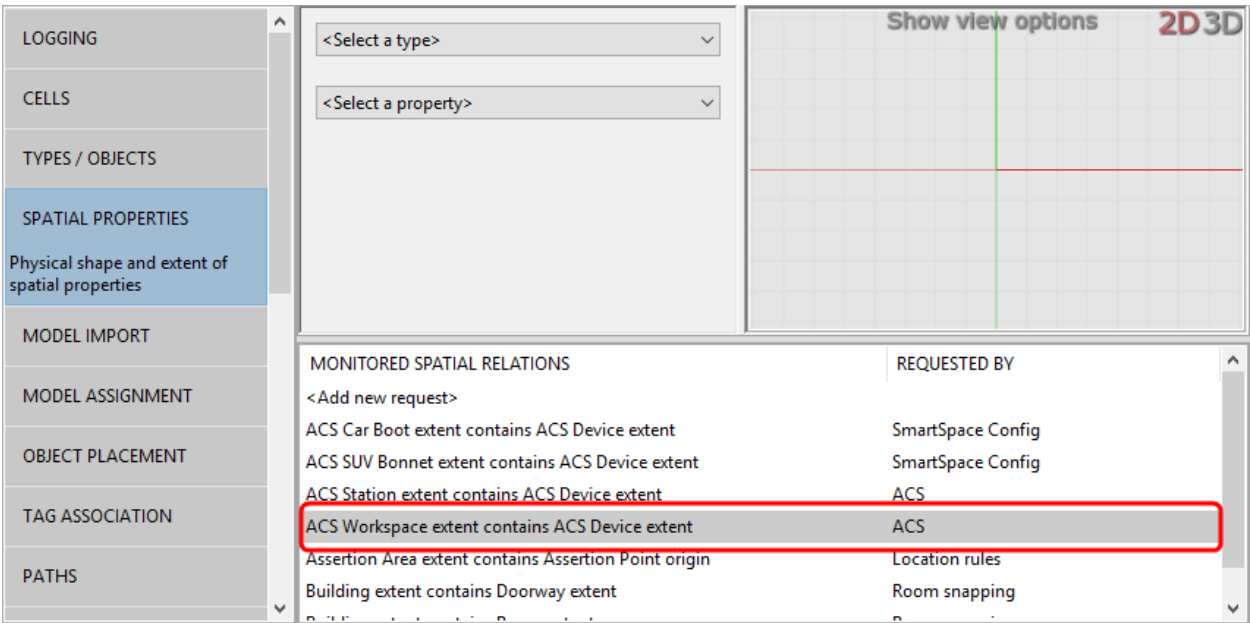
```
ubisense_acs_protocol_clientserver.exe server 192.168.178.201 4646 1
```

Demonstration in SmartSpace Config

Using SmartSpace Config, you can show the workspace and the spatial relations.

View the Spatial Relation

By enabling the static space rules in the ACS Main GUI, a monitored spatial relation has been created. Open the SPATIAL PROPERTIES tab and the spatial relation is listed in the lower part of the screen. The requested by column tells you that this spatial relation was requested by ACS.



Add a Representations for the ACS Device

See Adding a representation to an object on the Ubisense Documentation Portal.

1. In the MODEL ASSIGNMENT tab, double-click<Add new object rep> in the lower part of the screen.
2. Select the ACS Device type and then the object (e.g. *BA device*).
3. Select a representation for the device and save the assignment.

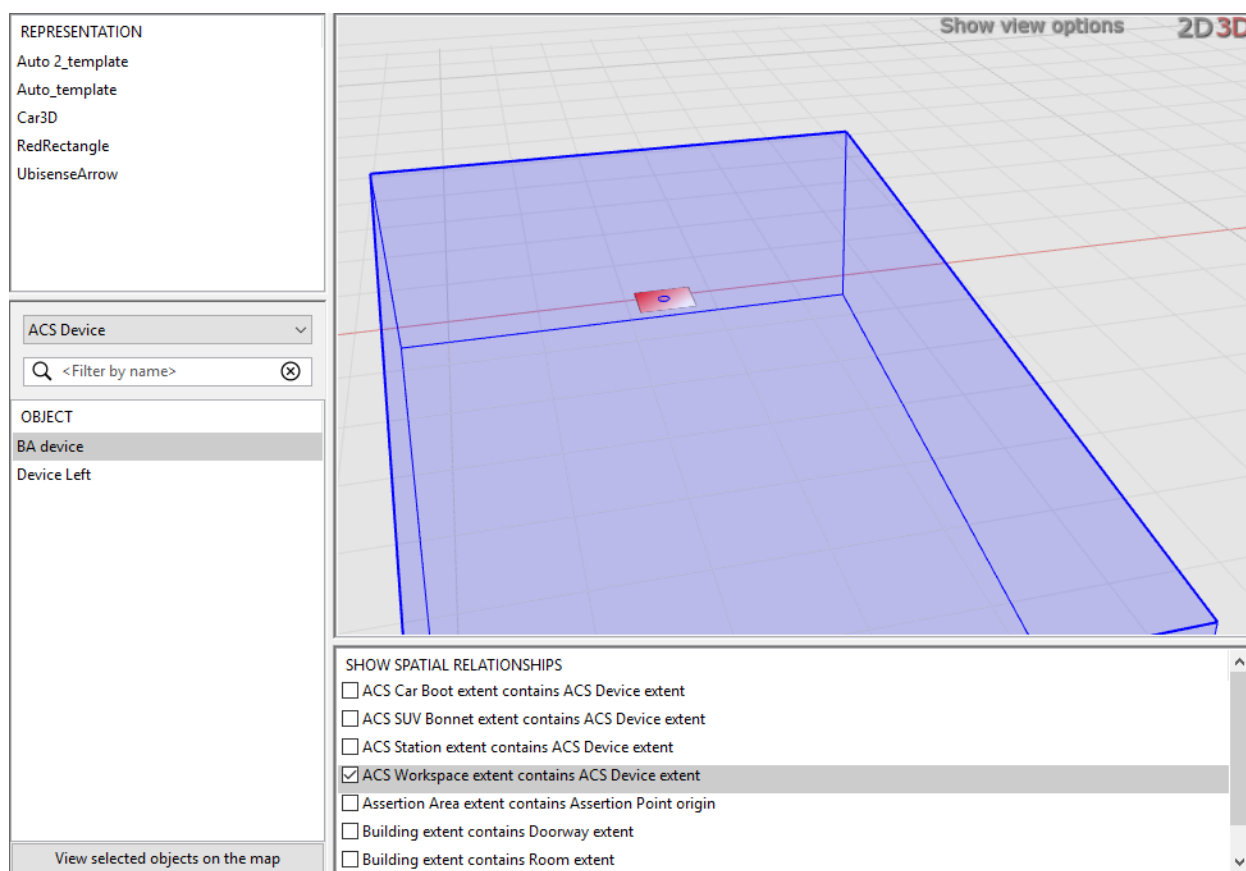
Note: The device has a default space consisting of a cylindrical space of 10 cm in diameter with zero height which you can amend if required.

Examples

Add your Configured Tool to the Object Location

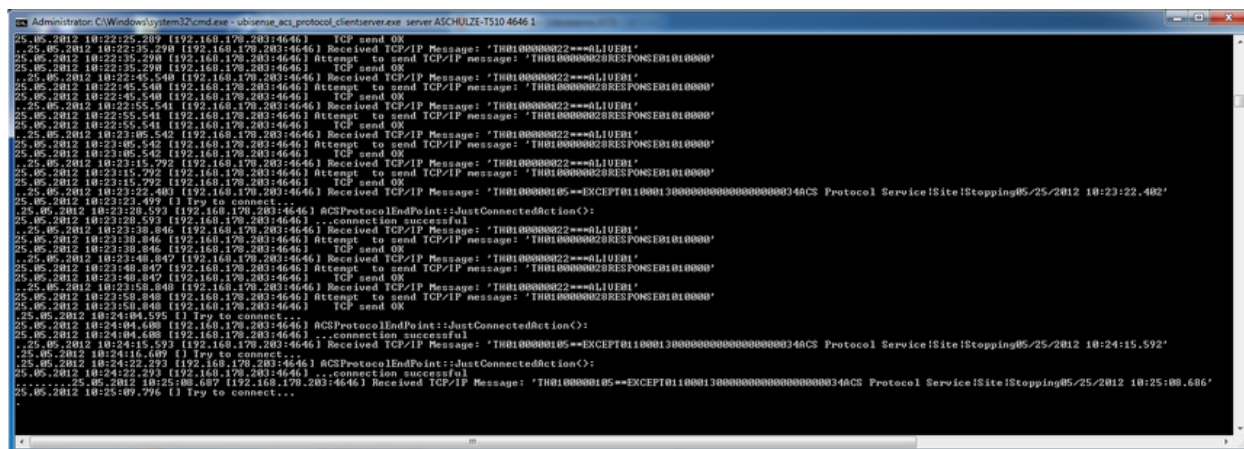
1. In the OBJECT PLACEMENT tab, choose ACS Device from the dropdown.
2. Drag your device into your area.
3. Set the Z-Coordinate to 1.5.
4. In SHOW SPATIAL RELATIONSHIPS, select the spatial relationship(s) you defined, here **ACS Workspace extent**.

Now when your device is contained in a product space the containment is indicated by the containing space displaying in blue.



At the command line from **ubisense_acs_protocol_clientserver.exe** you will see a telegram each time you enter or leave your workspace with your device. You can also see these telegrams in the corresponding Log-File (**ubisense_acs_protocol_service*.log**).

At the command line from **ubisense_acs_protocol_clientserver.exe** you will see a telegram each time the ACSProtocol is stopped. You can also see these telegrams in the corresponding Log-File (**ubisense_acs_protocol_service*.log**).



This example shows what to configure in order for the product tracking service to use the length of individual product types and the minimum carrier distance to calculate the distance between products on a production line where product types are of differing lengths. The product tracking service calculates the distance between products by adding the product length and the minimum carrier distance. With this configuration, all products types on the line require lengths.

Examples

All product types whose lengths are to be used in the calculation of product distance must have their origins set at the same distance from the front of the product. You set the origin of product representations in SmartSpace Config. See the Ubisense Documentation Portal for further information.

The tag position can still be different for different product types.



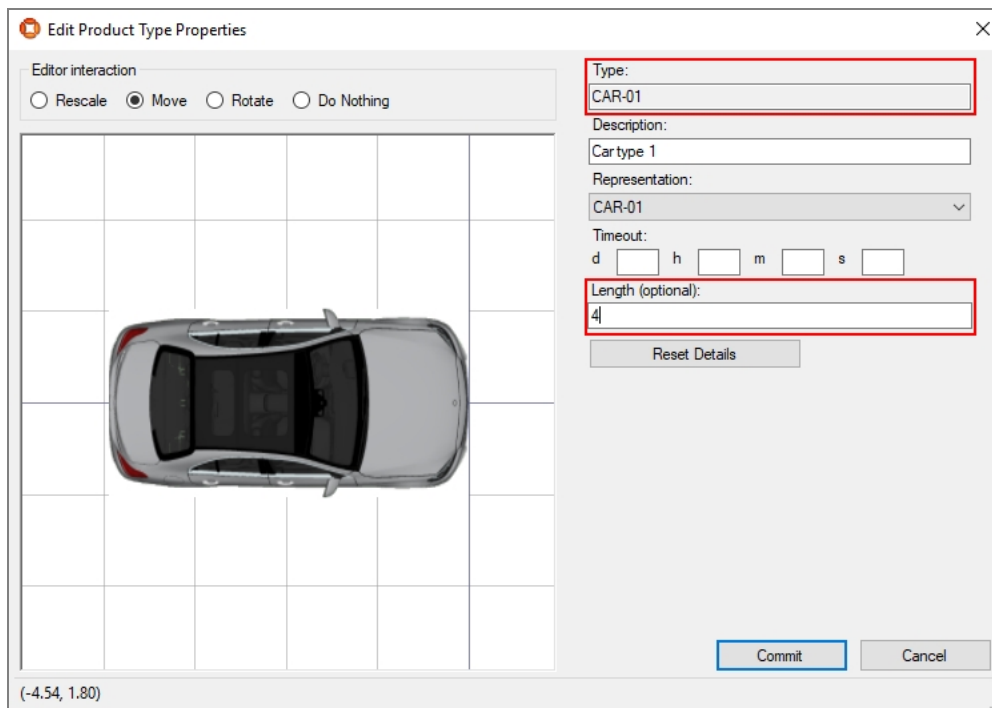
This feature is available for tag-driven lines only.



Individual product length is not intended for assembly lines using the **Constant Distance** transport type.

1. Configure the lengths of your product types.

In the **Edit Product Type Properties** dialog, ensure you have entered a length in **Length (optional)** for each product type on the line. (If you are using shadow cars on the line, these need a length too.) For example, in the screenshot below, the length for instances of the type CAR-01 is 4 meters.





You must configure product lengths for all supported products for a production line that uses product length.

2. Configure the production line to use product length in calculating distances between products.

In the **Edit Production Line Parameters** dialog, check **Use product length** for any production line that will use this method of determining product spacing. In the screenshot below, LINE-01 has been set to use product length and the product type CAR-01 whose length was set in the previous step is supported on this line. Because it is also supported on LINE-01, CAR-02 must also have had a product length configured.

Edit Production Line Parameters

Name: LINE-01

Description: Production Line 1

Assembly lines

Move Up Move Down

Assembly Lines

☐ Closed?

Supported product types

Supported?

Type Name	Supported on line?
C253	Not supported
CAR-01	Supported
CAR-02	Supported
S205	Not supported
ShadowCar	Not supported
W205	Not supported

☒ Use product length

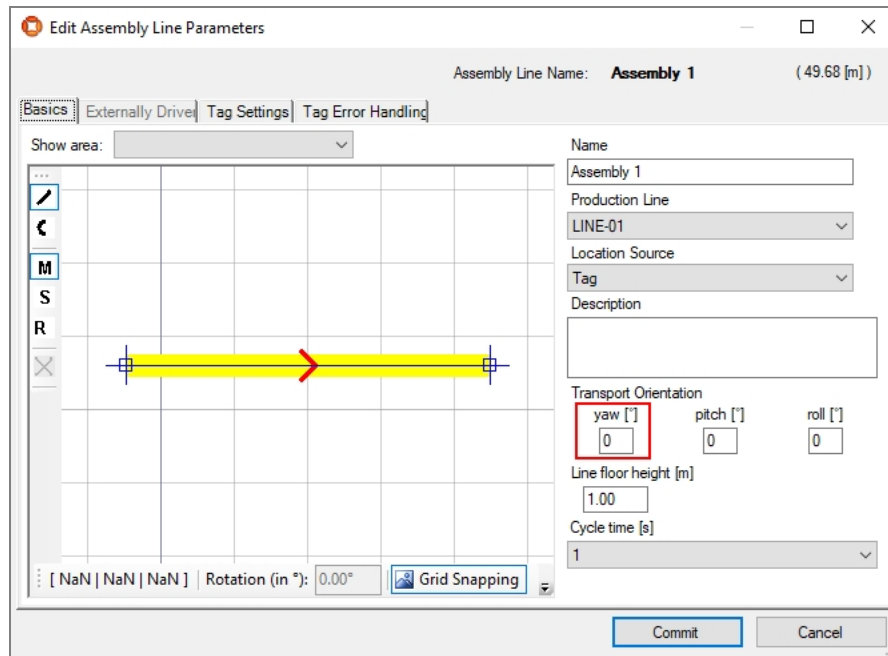
Shadow Product

Commit Cancel

3. Configure assembly line(s).

- In the **Edit Assembly Line Parameters Dialog**, in the **Basics** tab, ensure the assembly line has its **Location source** set to **Tag** and in **Transport Orientation yaw** is either **0°**

or 180°.



- In the **Edit Assembly Line Parameters Dialog**, in the **Tag Settings** tab, set the minimum carrier distance.

Edit Assembly Line Parameters

Assembly Line Name: **Assembly 1** (49.68 [m])

BasicsExternally DriverTag SettingsTag Error Handling

Tag Recognition

Defaults

Max expected candidate readings

4

Max unexpected candidate readings

10

Max candidate time delta [s]

4

Max candidate distance delta [m]

2

Min disjunctive tag updates needed for driver update

2

Max just removed

3

Max product accept offset [m]

1000

Offset before line end point for product removal [m]

0

Max positioning error [m]

2

Inactive product time delta [s]

15000

Inactive products removal sections

No sections configured

Candidate product sequence

☐ Fill gaps with products from sequence

☐ Automatically remove inactive products

Transport Parameters

Line Width [m]

2

Minimum Carrier Distance [m]

1

Standard line speed [m/s]

2

☐ Dynamic Configuration required

☐ Move Line Without Sighting

Adapt Length

Line Sections

Add

Modify

Split

Remove

Transport Type	Length...	Catch up Distanc...	Fixed Position Snap Di...	Fixed Position Release Distanc...
FixedDistance	49.679	0	0	0

Fixed positions

Offset [m]	Absolute offset [m]

Commit

Cancel

With these parameters set, the product tracking service will use the product type length plus the assembly line minimum carrier distance to calculate the distance between two product instances on the line.

Example: Displaying Sequence Numbers alongside Product Names

Standard user

Sequence numbers that are supplied alongside a product name can be displayed in ACS on the Map and in Assembly line messages if you define a product name pattern.

This example shows how to configure a product name pattern in ACS, and how ACS can then display sequence numbers in the user interface.

Examples

1. To include the sequence number alongside the product name in the map view and log files, you must configure the format to be displayed.

In the **Configuration of properties** tab, select **Product Name Pattern** and enter the definition of the format in the **Value** field. Click **Save**.

In the example below, the format entered will cause the product name to be displayed followed by the sequence number in brackets.

Configuration of properties

Saved Properties

Group	Name	Value
ACS	ControllerNameACSInstanceNameMapping	s067alacs856.de067.corpintra.net=APP-Server.s067al...
ACS	Maintenance Mode Entities	
ACS	Product Name Pattern	
ACS	ProductionControllerNames	s067alacs856.de067.corpintra.net,s067alacs857.de0...
ACS	Reset TagStatusAfterTime	156
ACS	Service::RemoveOutdatedProductsActionTimeout	10
ACS GUI Support	AggregationFrequency	2
ACS Protocol Service	LogFileMaxLines	10000000
ACS Protocol Service	LogFileMaxSize	25000000
ACS Protocol Service	LogLevel	Debug
ACS Protocol Service	LogMaxFiles	10
ACS Protocol Service	LogRootDirectory	

Property details

Group: ACS

Name: Product Name Pattern

Value: {ProductName}({SeqNo})

Default Value:

Save

2. For assembly lines that use sequence numbers, you will now see the product name pattern in the format you defined.

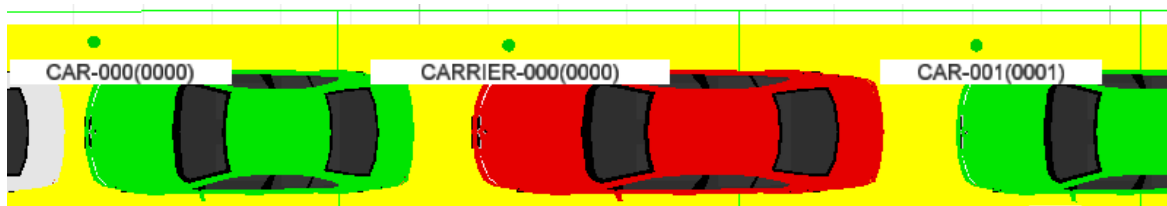


Figure: Map with products labeled with product name and sequence number

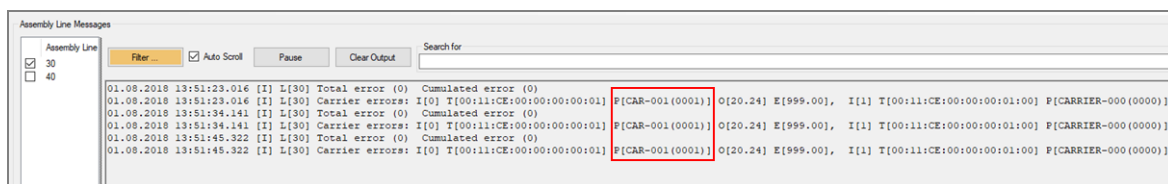


Figure: Assembly line messages with products identified by product name and sequence number

Example: Uses of an External Product Sequence

Standard user

External product sequences can be used to provide ACS with an expected sequence of products along an assembly line. An external system provides a verified order of products for a line. This sequence can then be used in several ways:

- to provide one or more candidates for association in the Product Tag Association GUI
- to fill gaps where tag association has failed
- to report where a candidate just associated is out of sequence

This example shows how to add an external product sequence to ACS, and some uses of external product sequences.



External Product Sequences are available for tag-driven assembly lines only.

1. Add the external product sequence.

In the **Externally Generated Product Sequences** tab, click **Add** and enter the name and optional description of the external product sequence in the dialog. (See [External Product Sequences](#) for more information.)

2. You can use external product sequences to provide a configurable number of candidate products for association in the Product Tag Association GUI. To configure this behavior for an association zone, in the **Product Candidates** section of the **Association Zone Editor**, select the sequence from the **Product sequence** dropdown and enter the **Number of association candidates** to offer to users.

In the example below, the External Product Sequence chosen is **MPS** and the number of candidates is **3**. The **Association candidate delay** setting, which allows you to set the delay

Examples

after an association before a new set of association candidates is displayed, has been left at the default of 5 seconds.

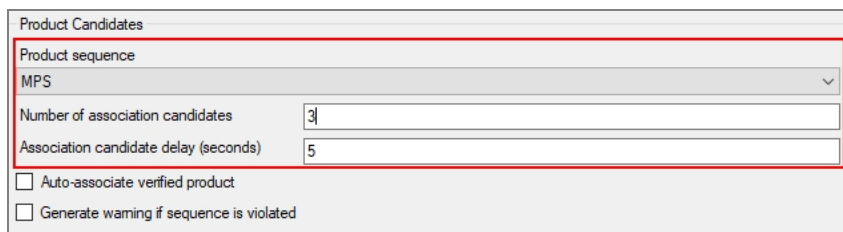


Figure: Product Candidates section of Association Zone Editor showing setting of Number of association candidates

In the Product Tag Association GUI, users see three possible candidates which are the next three products in the External Product Sequence following the most recently associated product

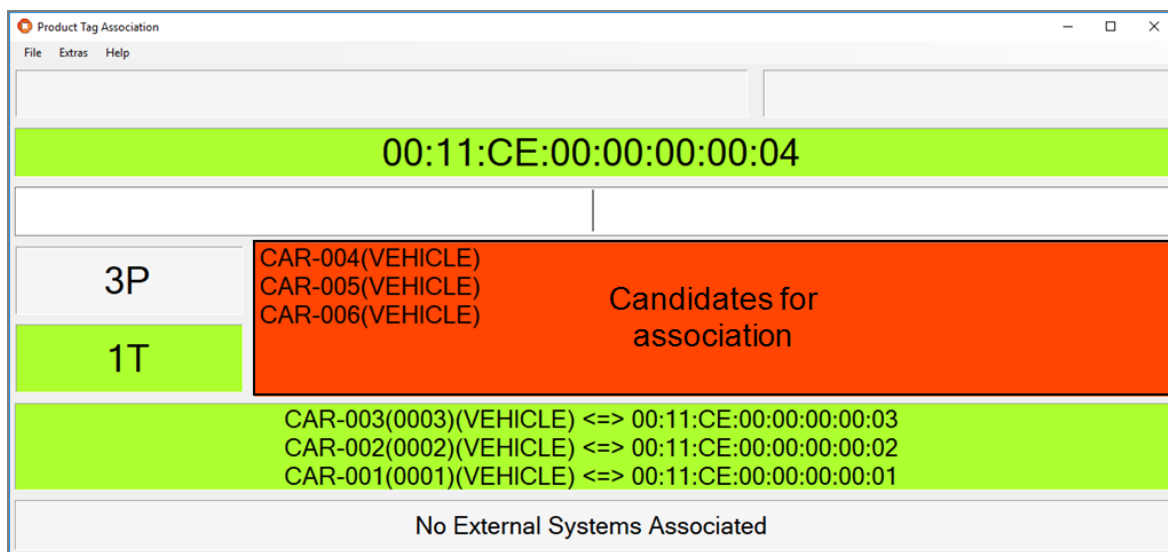


Figure: Product Tag Association GUI with three candidates for association

Note: If the number of product candidates is set to 1 and the global configuration parameter **Association**-'**Candidate Products Are Reliable Default** is set to the value *true* (default), ACS automatically selects the next product from the product sequence, allowing you to assign the automatically selected product to a tag. If **Association**-'**Candidate**

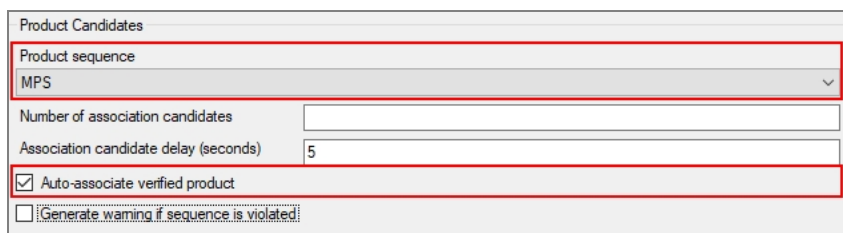
Products Are Reliable Default is set to the value *false*, or the number or product candidates is greater than 1, the list of product candidates is displayed and you must select which product you would like to associate with a tag next.

3. You can use an External Product Sequence to automatically associate an unassociated product with a tag. If there is a single unassociated product, and if the product immediately ahead of it and following it in the sequence have associations, then the product can be associated with the detected tag.

This feature requires two association zones:

- the first association zone, most likely is at the beginning of the line, requires no additional configuration for automatic association
- the second zone is configured for automatic association, as described below. This association zone must be a sufficient distance along the line to permit the product following behind an unassociated product to be associated at the first zone before the unassociated product has reached the auto-association zone

To configure this behavior for the automatic association zone, in the **Product Candidates** section of the **Association Zone Editor**, select the sequence from the **Product sequence** dropdown and check **Auto-associate verified product**.

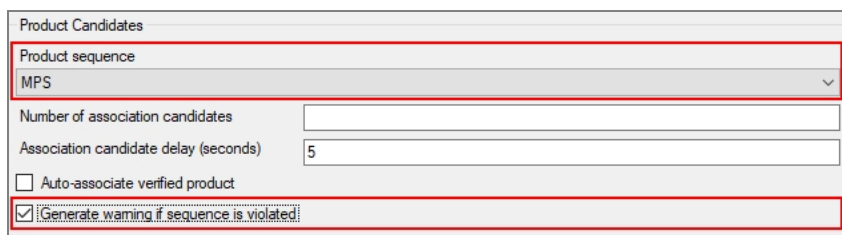


Product Candidates	
Product sequence	MPS
Number of association candidates	
Association candidate delay (seconds)	5
<input checked="" type="checkbox"/> Auto-associate verified product	
<input type="checkbox"/> Generate warning if sequence is violated	

Figure: Product Candidates section of Association Zone Editor showing selection of Auto-associate verified product

4. You can generate a warning if an association happens out of sequential order. To configure this behavior for an association zone, in the **Product Candidates** section of the **Association Zone Editor**, select the sequence from the **Product sequence** dropdown and check **Generate warning if sequence is violated**.

Examples



Product Candidates

Product sequence
MPS

Number of association candidates

Association candidate delay (seconds) 5

☐ Auto-associate verified product

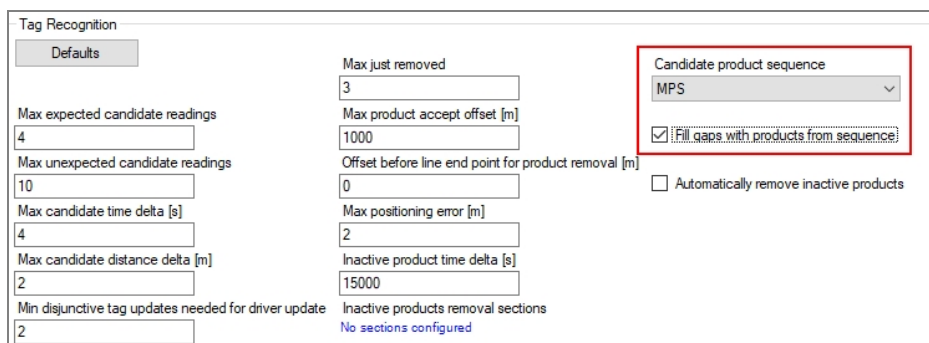
☒ Generate warning if sequence is violated

Figure: Product Candidates section of Association Zone Editor showing selection of Generate warning if sequence is violated

When a product is associated, if it is not the next one as dictated by the External Product Sequence, a warning is shown in the Messages screen.

5. External Product Sequences can also be used to fill gaps in assembly lines (and avoid the creation of shadow products) for example if a tag is missing or has failed. In this situation, if there is a single gap in the sequence between two associated products (and if the gap is neither too small nor too large), the product with the intervening sequence number is used to fill the gap (without associating it with a tag). This configuration works best with constant distance and fixed distance transport types (see [Adding, Modifying and Removing Transport Parameters](#) for information on setting transport parameters.)

To enable the automatic filling of gaps, in **Assembly Line Parameters** in the **Tag Settings** tab, select the sequence from the **Candidate product sequence** dropdown and check **Fill gaps with products from sequence**.



Tag Recognition

Defaults

Max expected candidate readings 4

Max unexpected candidate readings 10

Max candidate time delta [s] 4

Max candidate distance delta [m] 2

Min disjunctive tag updates needed for driver update 2

Max just removed 3

Max product accept offset [m] 1000

Offset before line end point for product removal [m] 0

Max positioning error [m] 2

Inactive product time delta [s] 15000

Inactive products removal sections No sections configured

Candidate product sequence MPS

☒ Fill gaps with products from sequence

☐ Automatically remove inactive products

Figure: Tag Settings tab of the Edit Assembly Line Parameters dialog showing selection of Fill gaps with products from sequence

Example: Configuring Labels in the Product Tag Association GUI

Standard user

You can configure the Product Tag Association GUI to display a piece of fixed text in front of the Product ID and the Tag ID in the **Messages** and **Most Recent Associations** fields when association occurs. You can configure a different piece of text for each available language.

To add customized text, you need to edit values in the translation files that contain the text displayed in the GUI and then load these edited files into the dataset.



Updated translation files are supplied for installation with upgrades to ACS. If you make changes to these files, you must ensure that you incorporate these customizations into subsequent versions to resupplied translation files as part of the upgrade procedures.

The steps to follow are given below.

1. Using a text editor, in the **translations** folder of the ACS software distribution open the file **Ubisense.ACS.ProductTagAssociationGUI-en_xx.utf**, where **xx** is the two-character code that identifies the language used your Product Tag Association GUI.

For example, to make these changes for the German language, open **Ubisense.ACS.ProductTagAssociationGUI-de_DE.utf**.

You will need to make changes to the file for each language you use in the Product Tag Association tool.

2. Find the **PTAF_AssociationSucceeded** parameter.

Before any customization is carried out, this parameter is **PTAF_AssociationSucceeded = {0} <=> {1}**.

3. Add the text you require:

- For a label to precede the Product ID, type the required text to the left of **{0}**.
- For a label to precede the Tag ID, type the required text to the left of **{1}**.

For example, to display "VIN" in front of the Product ID and "Tag" in front of the Tag ID, you would change the parameter to:

PTAF_AssociationSucceeded = VIN: {0} <=> TAG: {1}.

The results are shown below.

Examples

The screenshot shows a software window titled "Product Tag Association" with a menu bar containing "File", "Extras", and "Help". The interface is divided into several sections:

- Top section: Two green boxes, the left one contains "V-65" and the right one contains "Vehicle".
- Second section: A single green box containing the MAC address "00:11:CE:00:90:00:00:AA".
- Third section: A white rectangular area, possibly for a barcode or image.
- Fourth section: A green box containing the text "VIN: V-65(Vehicle) <=> TAG: 00:11:CE:00:90:00:00:AA". To the left of this box are two smaller green boxes, the top one labeled "1P" and the bottom one labeled "1T".
- Fifth section: A green box.
- Sixth section: A green box containing the text "External Systems Connected".

4. Save your changes and load them to the dataset using **ubisense_text_translation_reader.exe** as described in the installation guides.

Troubleshooting

Below is a list of frequently asked questions and their answers, and basic troubleshooting steps for the ACS program.

Keep in mind that this list may not cover all possibilities. The list will be extended in later releases.

Environment

Components known to sometimes cause problems with ACS installation:

- Some firewalls - Ensure that they are configured correctly or switched off.
- VPN functionality - In case of problems disable or uninstall the relevant software.
- Direct3D acceleration - Check that it is switched on. In case of problems ensure that your drivers are up to date and that your card is supported by DirectX.
- Virtualization Software - Virtual network interfaces associated with virtualization software may cause problems. Deactivating them could solve these problems.
- Some UMTS drivers cause problems.

Error messages

Why does the Ubisense licensing message box appear?

The ACS system requires a valid Ubisense license to run the services.

Possible reasons why the licensing message box might appear:

- Your (demo) license has expired.
To ensure that you have a valid license check the Platform Control Licenses Information.
Please contact your support for further information.
- The primary network card that was attached during the ACS installation has been removed or is not the one ACS should use.

Why does a window called 'ACS Output' appear, saying that ACS cannot connect or cannot find one or more services, when starting the ACS?

The ACS system requires a connection to the platform server.

If you are running ACS on the platform server please check that the ACS services are running. If that is not the case please make sure that you have a valid license.

If the ACS is started on a client desktop and not on the Platform Control server, please check that the following are true:

- The client belongs to the same network as the server.
- The client has no running ACS services. Check this in Platform Control on the client computer.
- The prefix in Platform Control matches the prefix of the server.
- The services are running on the server.
- No firewall is blocking the connection.
- VPN or UMTS software is disabled, as this can be responsible for problems.

Why does ACS crash saying that ACS stopped working unexpectedly?

If this message box appears it means that a serious error occurred and a program halt could not be prevented.

The reason for this could be a network or platform error. Please check your network and platform configuration.