

Synology Transactions User's Guide

Surveillance Station 8.0.0 and above



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Introduction

Overview

Transaction devices record details of each transaction activity and are commonly used in various commercial establishments such as restaurants and shops. However, recording transaction text alone is insufficient when a dispute occurs during a transaction activity. In addition to using transaction devices, setting up security cameras allows owners or other users to understand precisely what occurred during each transaction.

However, due to the difference in time settings across different devices, most store owners spend a significant amount of time and effort matching recorded transaction text with relevant video footage. Synology offers a solution to this challenge by introducing the integration of transaction devices and security cameras in Surveillance Station. Security feeds are recorded automatically when a transaction occurs, and transaction text or data will be saved with the corresponding video clip, bringing more convenience while reducing effort.

The **Transactions** application in Surveillance Station provides a general raw data receiving interface. Aside from supporting common transaction devices such as POS (Point-of-Sales) devices, Surveillance Station is also compatible with devices that produce raw data. Once Surveillance Station receives raw data, transaction text will be overlaid on the video images from the paired cameras. This technology can also be ideal for monitoring production lines in factories or other similar settings.

You can pair transaction devices with cameras in Surveillance Station. Please find the following key features of combining transaction devices with cameras:

- Overlay transaction text on the video images from the paired camera upon receiving raw data in Surveillance Station. You can monitor the entire transaction process by watching video feeds and reading the transaction data simultaneously.
- Record videos automatically upon receiving raw data in Surveillance Station, while transaction text is saved with the corresponding video clips, expediting the process of investigating transaction activities or evaluating work performance at the cashier.
- Search transaction records quickly by setting filter conditions such as date and time, or by searching specific keywords.
- Download a report in html format including camera snapshots from recordings and the recorded transaction text.
- Receive notifications with camera snapshots attached when certain transactions occur.
- Trigger action rules and live view alerts when a transaction string matches a specific text.

Compatibility of Synology Transactions

Basic integration methods

Surveillance Station is compatible with devices that transmit data by network or COM port. If your device transmits data using one of the two interfaces, you can set up your device in Surveillance Station. There are three ways Surveillance Station receives raw data from a transaction device:

- **TCP:** Set up an IP address and port to receive data over TCP connection. Note that Surveillance Station only receives data as a TCP client. The received raw data are the contents above TCP including the package headers.
- **Serial Port:** Receive data via COM port (RS232). Note that this option is only available if your NAS comes with a COM port interface. Currently, only the NVR model NVR1218 supports this interface.
- **Surveillance Station WebAPI:** Receive raw data using Surveillance Station WebAPI. For more information, please refer to the section on How to use WebAPI to send transactions.

Special integration

Integration with the **AXIS Barcode Reader** can be used to monitor factory production lines or used during checkouts in supermarkets to monitor transactions along with video recordings. However, only AXIS cameras support AXIS Barcode Reader. For more information on AXIS Barcode Reader, please refer to the [FAQ](#) in the Synology official website.

License

One transaction device will be counted as one device when calculating the maximum number of supported devices for each NAS model, however two device licenses will be required to set up a transaction device in Surveillance Station without pairing it with a camera. Including a paired camera to the setup will require an additional device license. Please refer to the following scenarios:

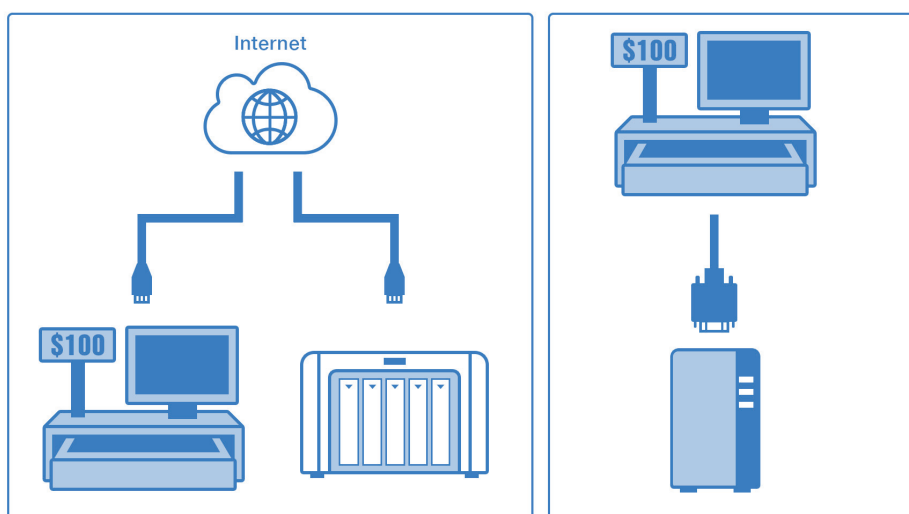
- To receive transaction data, 2 licenses will be required to set up 1 transaction device in Surveillance Station.
- To overlay transaction data on the video images from a paired camera, 3 licenses will be required to set up 1 transaction device and 1 paired camera in Surveillance Station.

Installation

This chapter introduces how to add transaction devices in Surveillance Station, and contains complete instructions for hardware and software installation.

Connect Transaction Devices to NAS

Communication with transaction devices in Surveillance Station are done using three methods: TCP, serial ports, and WebAPI. TCP and WebAPI sends data over the Internet, while the serial port sends data via a COM port.



If your transaction device has network interfaces, make sure your device is connected to a network after configuring the IP settings. After the network settings have been configured, set up your device as a TCP server and make sure data can be transmitted to a specific port. Surveillance Station will receive data as a TCP client from the specified port. If you wish to develop your own software for more control on data transmission, it is recommended to use Surveillance Station WebAPI to transmit data since setting filter rules for raw transaction data will not be required when using Surveillance Station WebAPI. However, some traditional transaction devices only provide COM ports for data transmission. Selected Synology NVR devices also provide you the option to transmit data to Surveillance Station via a COM port. To receive data from the device, you only need to connect the device via COM port. If you want to transmit data over the network with devices with COM ports only, you can reference other third-party solutions for serial over LAN transferring.

Note: Currently, only selected Synology NVR models provide COM port interface (e.g. **NVR1218**).

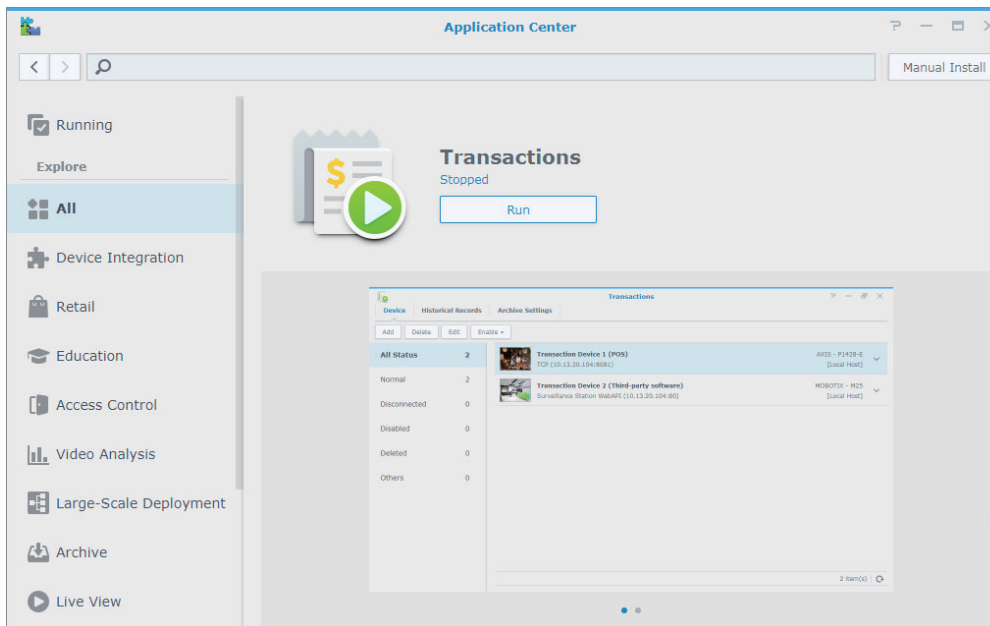
Add Transaction Devices in Surveillance Station

The following steps demonstrate how to add transaction devices in Surveillance Station if your device is able to properly connect to Surveillance Station.

Enable Transactions service

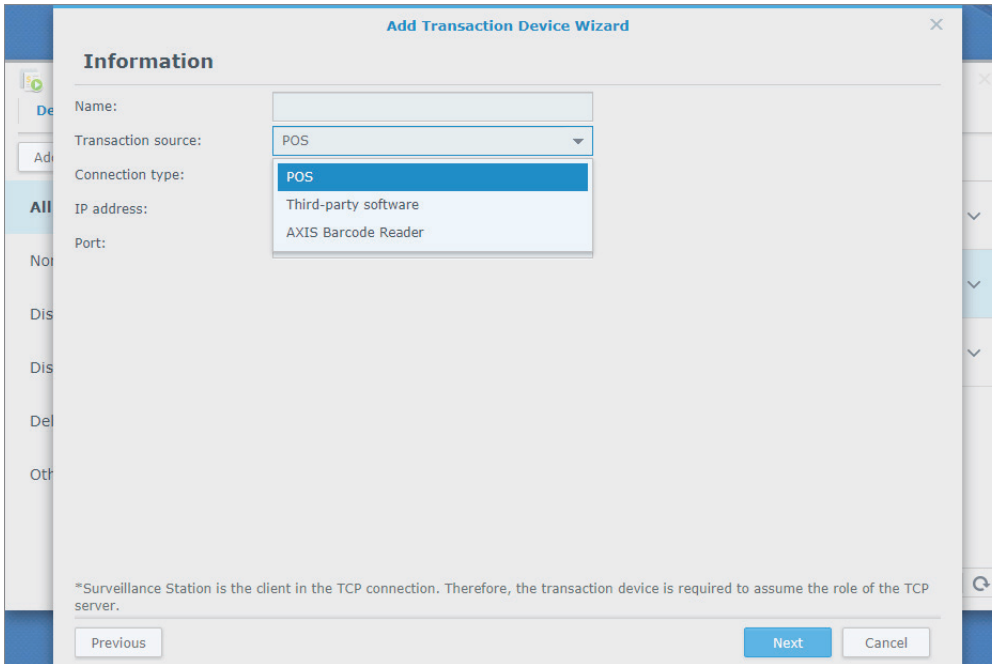
Enable **Transactions** in the **Add-ons** application before operating transaction devices.

Transactions can be installed in Surveillance Station on every NAS/NVR models for free, but adding transaction devices will require additional device licenses. Please refer [License](#) for more information.



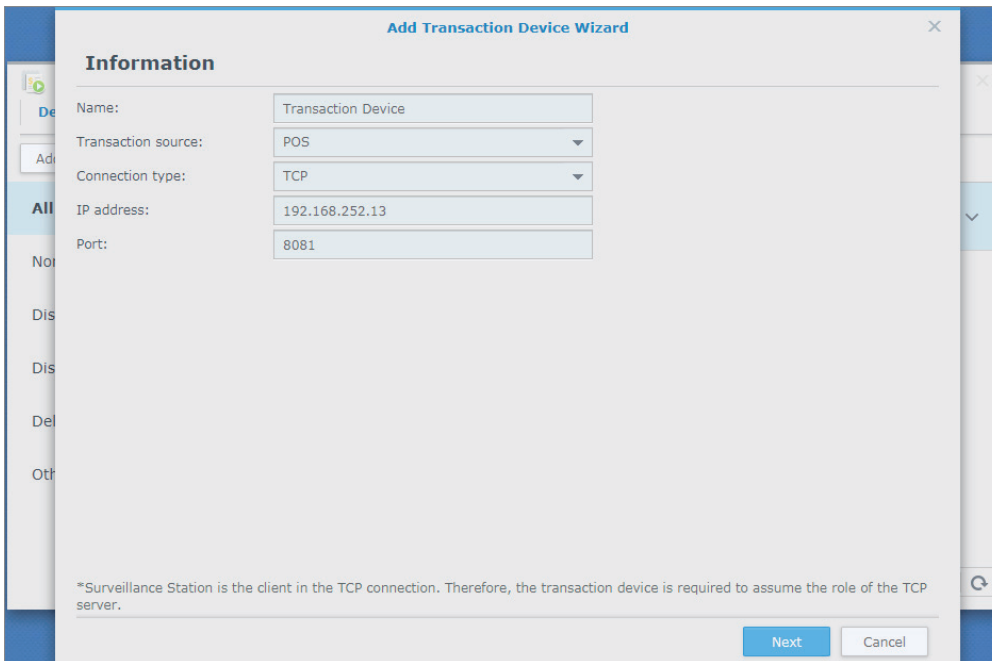
Set up the Transactions source of transaction devices

Launch the **Transactions** application and choose to add a transaction device. You may select **POS**, **Third-party software**, or **AXIS Barcode Reader** from the **Transactions source** drop-down menu in the **Add Transaction Device Wizard** window. The first two options are used for identifying the device and will not affect the connection type or other settings. However, the option **AXIS Barcode Reader** will force select Surveillance Station WebAPI as the connection type since the camera application sends data through Surveillance Station WebAPI.

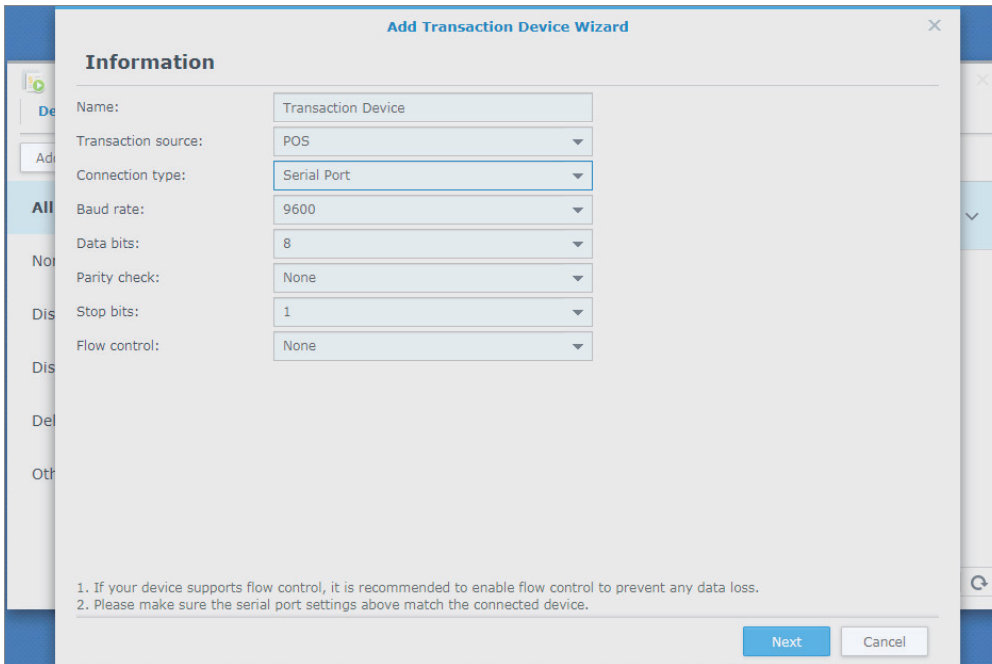


Set up the connection type of transaction devices

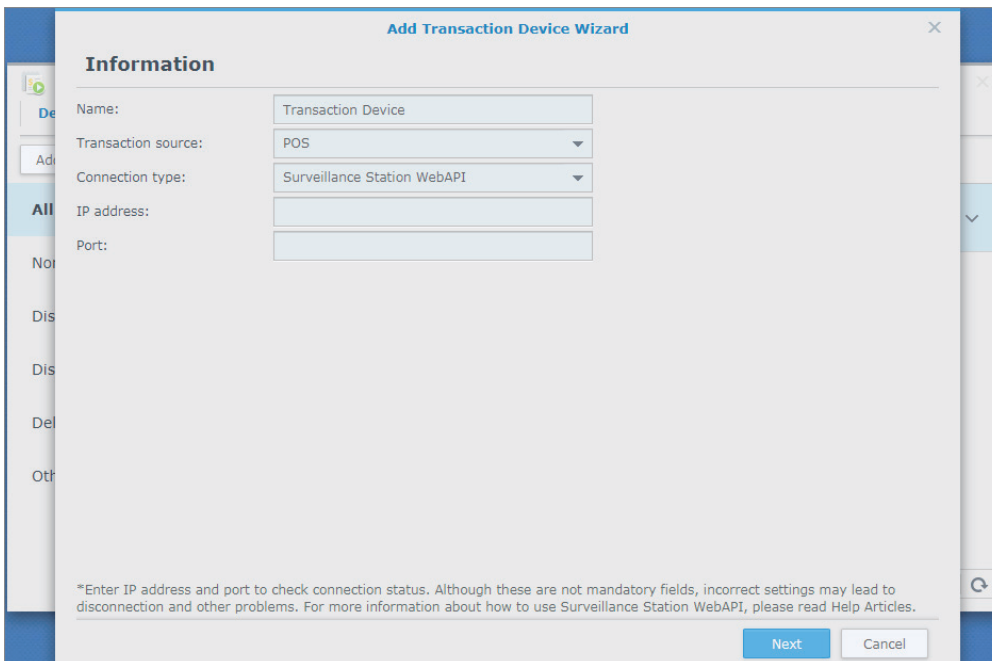
Launch the **Transactions** application and choose to add a transaction device. In the **Add Transaction Device Wizard** window, you can determine the connection type of your transaction device. There are three options provided, **TCP**, **Serial Port** and **Surveillance Station WebAPI**. When selecting **TCP** from the **Connection type** drop-down menu, you will be required to set up the IP address and the corresponding port of the transaction device. Surveillance Station will receive data from this specified port.



When selecting **Serial Port** from the **Connection type** drop-down menu, you will be required to set up port related settings, which are to be consistent with your device.



When selecting **Surveillance Station WebAPI** from the **Connection type** drop-down menu, you will also be required to set up the IP address and the specified port. However, unlike **TCP**, Surveillance Station WebAPI does not receive raw data from the IP address and port. These are only used to detect whether the device is still active or not. Surveillance Station receives raw data from the device via the WebAPI Synology provided. For more information, please refer to [Chapter 6: Send Transactions Using WebAPI](#).



After completing the connection settings, you can click **Next** to set up parsing rules for the received raw data if you have selected **TCP** or **Serial port** for your device.

Data Definition

The following steps only apply to setting up filter rules for raw data over TCP and Serial Port connection. If Surveillance Station WebAPI is used as the connection type for the transaction device, please go to [Set up the display style](#) to set up display options.

The purpose of data definition is to convert raw transaction data into coherent and structured information. You can omit or replace unwanted or redundant characters by setting up rules to filter and transform raw data into understandable text which are to be displayed on the screen. With this feature, you can precisely indicate the beginning and end of every transaction.

1. In **Data Definition**, you can start to collect raw data through the connection settings configured in the previous step by switching on **Start Collecting Raw Data**.
2. Please choose the correct encoding method for the received data before you start to transmit raw data to Surveillance Station. Choosing the wrong encoding method may result in the system failing to recognize the data and thereby unable to receive data. Although the system can automatically detect possible encoding methods upon receiving incoming data, the detected encoding method may not be 100% correct. Specifying the correct encoding method of your device before starting to transmit data is recommended.
3. The raw data that Surveillance Station received will be displayed in the **Raw data** area. You can set up parsing rules according to the received data. The transaction records will be filtered by the parsing rules and displayed in the **Filtered data** area.
4. The **Start of transaction**, **End of transaction**, and **Canceling of transaction** strings are the most important filter rules that should be set up first, since these are used to indicate the beginning and end of a transaction. When the received raw data contains strings that match Start transaction, Stop transaction, or Cancel transaction strings, a transaction record that includes data from the beginning to the end of a transaction will be automatically generated and stored in Surveillance Station. In addition, you can also add rules to mark certain strings as other text, replace certain strings with line breaks, or ignore certain strings.
5. Besides using strings in plain text, you can also use regular expression as the parsing rule for the **Start of transaction**, **End of transaction**, and **Canceling of transaction** strings. Compared with ordinary strings, regular expressions provide a more flexible format to represent a string. The following are examples of some of the most commonly used regular expressions:

1. If you want to parse a string in the date format of "yyyy-mm-dd", you can use the following regular expression:

- `[0-9]{4}-[0-1][0-2]-[0-3][0-9]` or `\d{4}-\d{2}-\d{2}`

Note: In the regular expression above, "[0-2]" represent digits from 0 to 2, "\d" represents normal digits from 0 to 9 and {4} means to repeat the previous character 4 times.

2. If you want to parse a string in the format of "Cash \$dddd", you can use the following regular expressions:

- **Cash.*\\$\d+**

Note: In this regular expression, "." represents any characters other than "\n", and "*" means the previous character repeats 0 or more times. Therefore, the combination ".*" can parse any string formats. "\\$" represents the character "\$". Since the character "\$" has a special meaning in regular expression, we need to add an additional "\" before "\$" to take away its special meaning. The character "+" means the previous character repeats 1 or more times.

6. Regular expressions provide highly flexible formats to represent strings. In this article, we have only given you some less complicated examples. Please refer to other online resources for more information on regular expressions.

7. After you finish setting up the parsing rule settings, the Filtered data area will show the transactions list by list, and the text in the Raw data area will have a different appearance. Different styles in the area represent different meanings as follows:

1. Bold: The strings are currently shown in the Filtered data area.
2. Blue: The matched strings parsed by the Start of transaction, End of transaction and Canceling of transaction rules.
3. Black: The normal strings that does not match any rules.
4. Gray: Represent the control characters defined in ASCII or the strings be filtered by rules.

For more information on the control characters defined in ASCII, please refer to this [website](#).

8. You can click **Next** to pair cameras and set up the display options after you finished setting up parsing rules.

Set up the display style

The following steps will show you how to pair a camera for the transaction device, and modulate the display style of the text to be displayed on screen.

1. Under the **Paired Camera** section in the **Add Transaction Device Wizard** window, you can decide whether or not to pair a camera to a transaction device. If you choose to pair a camera to a transaction device, the pairing camera can be selected from the cameras that are added in Surveillance Station, and you can determine which stream profile to record when transactions occur. You can watch live view streams of the paired camera while overlaying transaction data in the **Live View** application. Video images of the paired camera during transactions will be automatically recorded and stored. If you enable the **CMS** service in Surveillance Station, the paired camera must be on the local server. If you choose not to pair a camera, the data receiving function will not be affected.
2. Under the **On-Screen Display** section in the **Add Transaction Device Wizard** window, you can modulate the display style of the text to display on screen. Any changes you modify will immediately be displayed on the right-hand side of the screen, which is the snapshot taken from the paired camera. You can effortlessly adjust and select a desired display style.

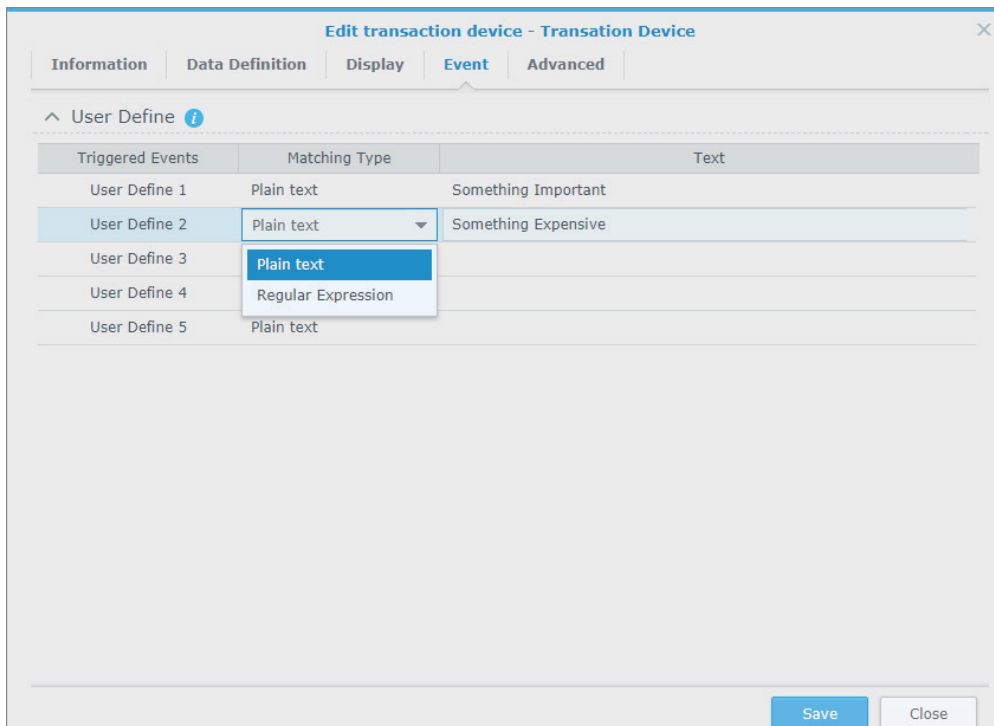
- After all the settings are finished, click **Finish** to complete the setup process. After completing the setup, you can go to **Transactions > Device**, select a device and click on the play button to preview.



User-defined events

After you have added a transaction device, you can set up event detection based on the matching strings from the transactions. When the received transaction data contains strings you have defined, Surveillance Station will trigger the corresponding event. These events can be used in other applications like **Notification** or **Action Rule** to send notifications or trigger other actions. For more information, please refer to [Live View Alert](#), [Action Rule](#), and [Notification](#).

You can go to **Transactions > Edit > Event** to set up matching strings for the events.



Surveillance Station provides five sets of events for users to set up. **Matching Type** can be set as **Plain text** or **Regular Expression**. Plain text means normal strings and **Regular Expression** refers to the regular expression mentioned in **Data definition**. Note that the strings are matched based on the raw data instead of the filtered data.

Advanced transaction settings and on-screen display

1. In addition to setting up user-defined events, after the transaction device is added, you can go to **Transactions > Edit > Advanced** to set up **Transaction Settings** and **Live View On-Screen Display**.

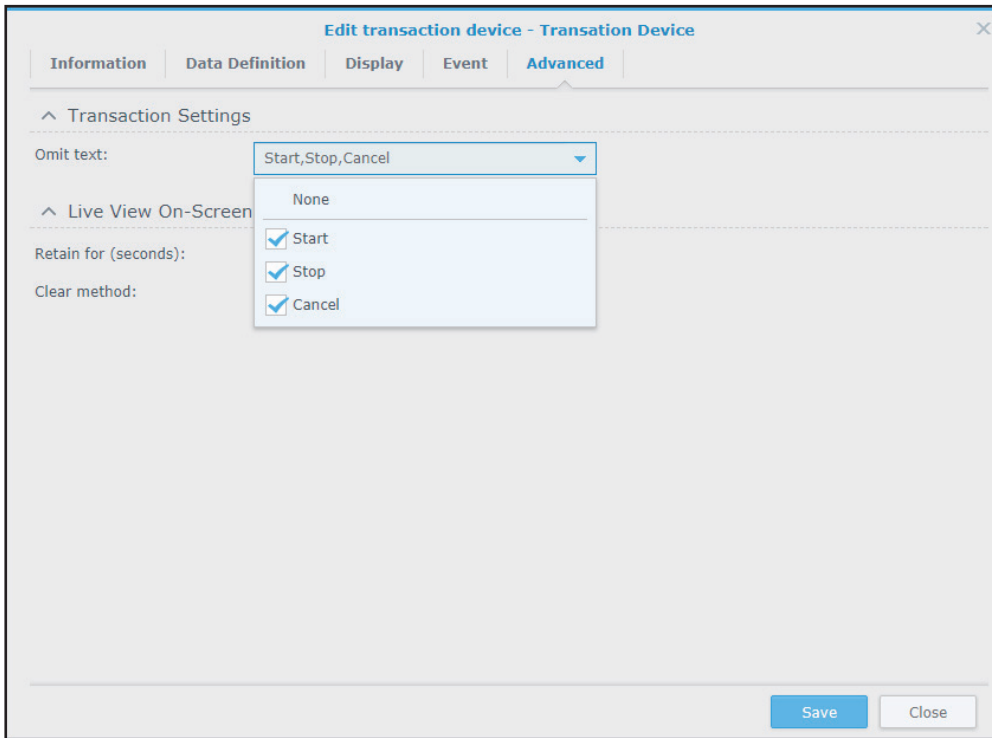
The screenshot shows a dialog box titled "Edit transaction device - Transaction Device" with a close button (X) in the top right corner. The dialog has five tabs: "Information", "Data Definition", "Display", "Event", and "Advanced", with "Advanced" selected. The "Advanced" tab is divided into two sections: "Transaction Settings" and "Live View On-Screen Display".

- Transaction Settings:** The "Omit text:" label is followed by a dropdown menu containing the text "Start,Stop,Cancel".
- Live View On-Screen Display:** The "Retain for (seconds):" label is followed by a text input field containing the number "10". Below it, the "Clear method:" label is followed by a dropdown menu containing the text "None".

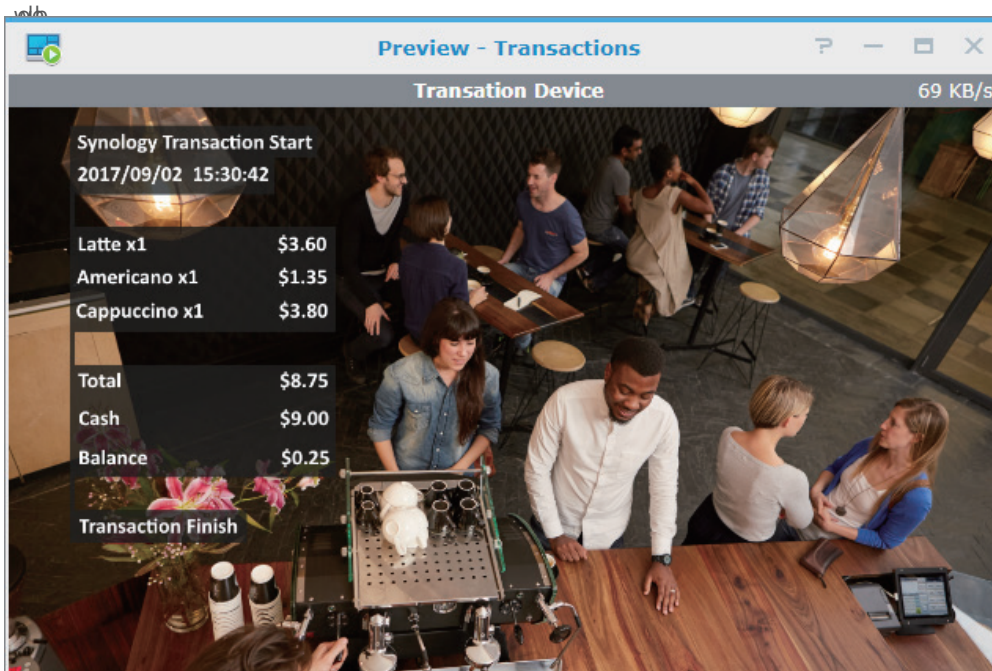
At the bottom right of the dialog, there are two buttons: "Save" (highlighted in blue) and "Close".

2. If your device is connected using **Surveillance Station WebAPI**, only **Live View On-Screen Display** will be available since there are no **Start of transaction**, **End of transaction**, or **Canceling of transaction** marked in **Data Definition** to be omitted when sending data via WebAPI.

3. **Start of transaction**, **End of transaction**, and **Canceling of transaction** corresponds to the settings in the **Data Definition** page. You can choose which of these you would like to omit in **Live View** and **Historical Record**.



4. If the strings you want to omit is defined in regular expression, the Live View on-screen display will be shown after the transaction is completed. The result of omitting **Start of transaction** and **End of transaction** is shown in image

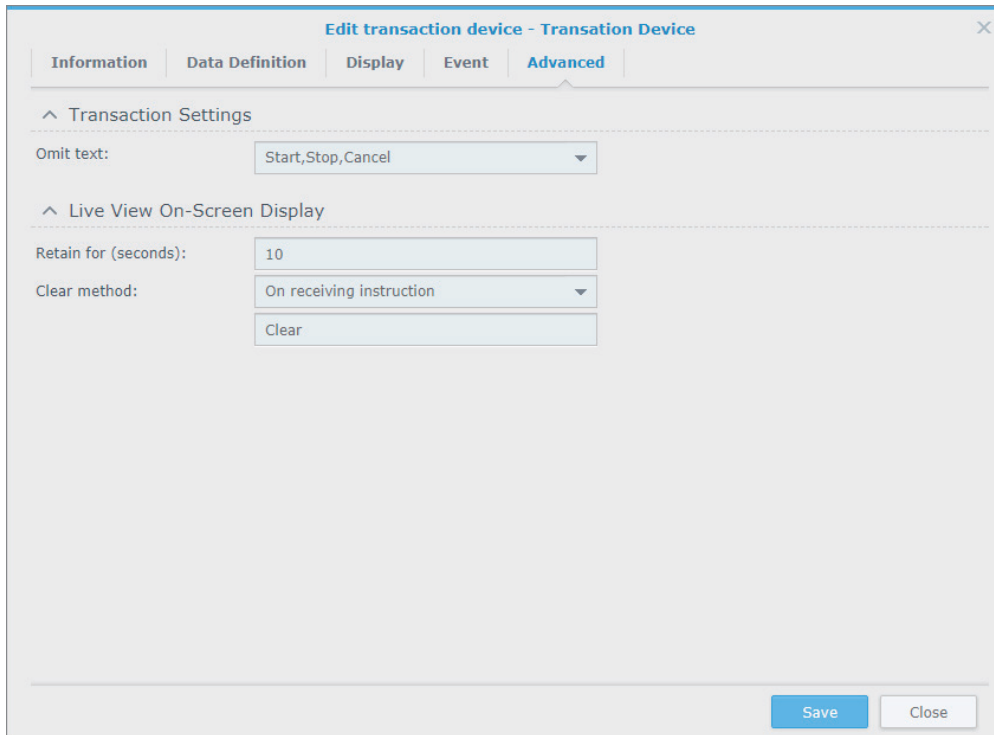


5. Go to **Transactions > Edit > Advanced**, and under the **Live View On-Screen Display** section, you can set up the **Retain for (seconds)** and **Clear method** options. In the **Retain for (seconds)** field, you can customize the duration that the transaction data will be retained on-screen when there are no new messages, the duration must be within 1 to 600 seconds.
6. From the **Clear method** drop-down menu, you may choose in what condition other than time to clear the on-screen display text.

The screenshot shows a dialog box titled "Edit transaction device - Transaction Device" with a close button (X) in the top right corner. The dialog has five tabs: "Information", "Data Definition", "Display", "Event", and "Advanced", with "Advanced" selected. Under the "Advanced" tab, there are two sections: "Transaction Settings" and "Live View On-Screen Display". In "Transaction Settings", the "Omit text:" dropdown is set to "Start,Stop,Cancel". In "Live View On-Screen Display", the "Retain for (seconds):" text box contains the value "10". The "Clear method:" dropdown is set to "None", and its dropdown menu is open, showing three options: "None" (highlighted in blue), "On receiving next transaction", and "On receiving instruction". At the bottom right of the dialog, there are "Save" and "Close" buttons.

7. If you select **On receiving next transaction**, the on-screen display text will be cleared upon the start of a new transaction. If you select **On receiving instruction**, an additional text field will appear under **Clear method**, and in this field you can customize instructions for clearing the on-screen display text.

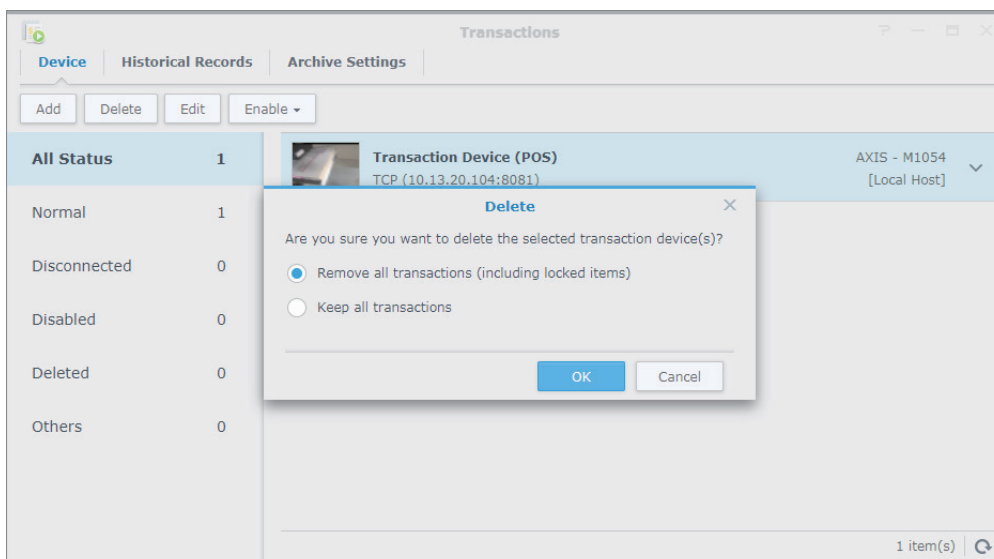
- Once the instructions you have set up has been received, the transaction data on screen will be cleared immediately.



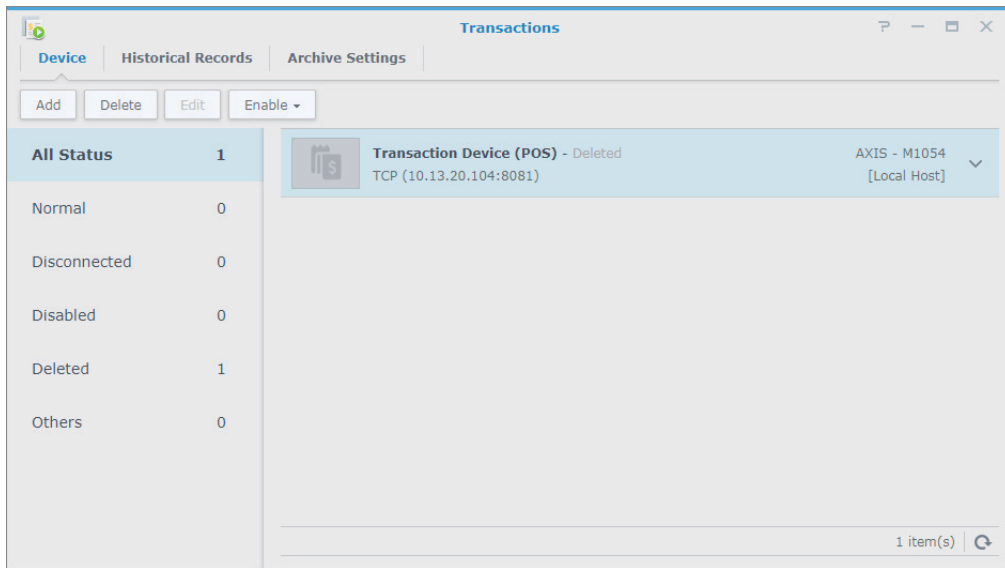
Delete Transaction Devices

Please refer to the following steps to delete transaction devices.

- To delete transaction devices, select the transaction device to be deleted, and click the **Delete** button. During the deleting process, you can choose whether or not to keep transaction records generated by the device.



- If you choose to keep all transactions, the deleted transaction device will remain on the transaction device list, but the status will be marked as **Deleted**.

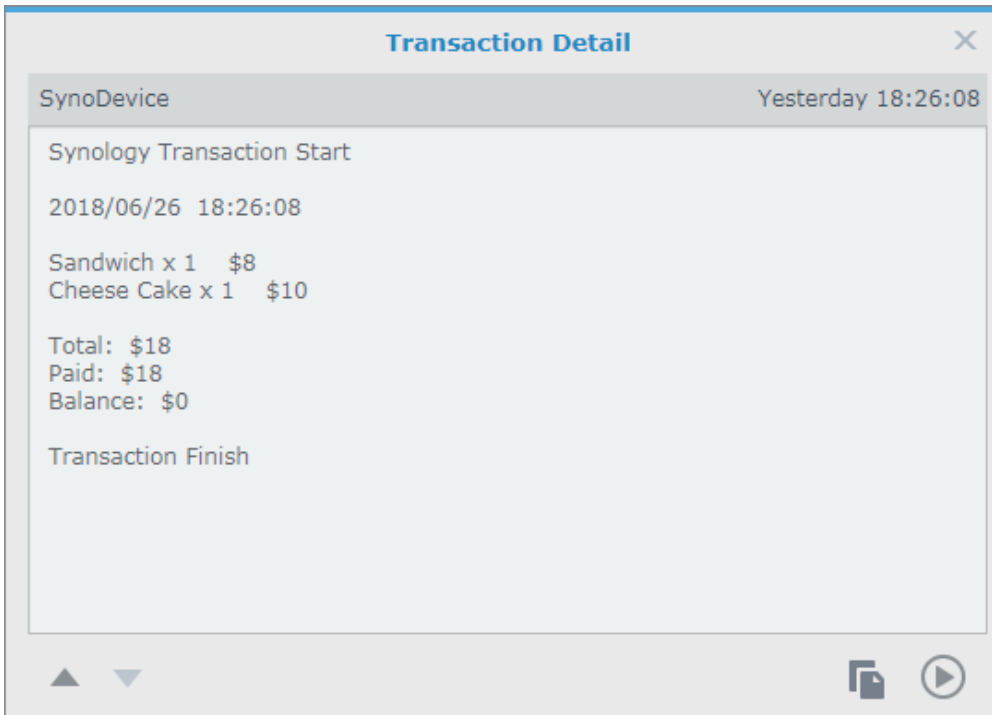


Transactions historical records

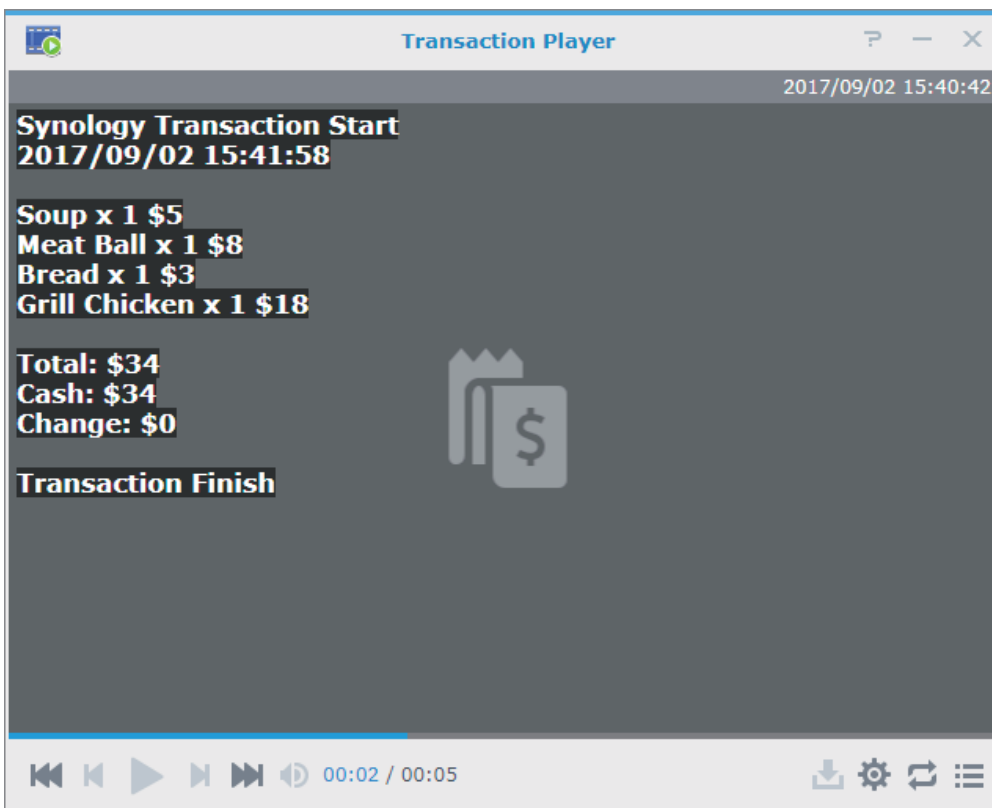
View Historical Records

Please refer to the following to view historical records.

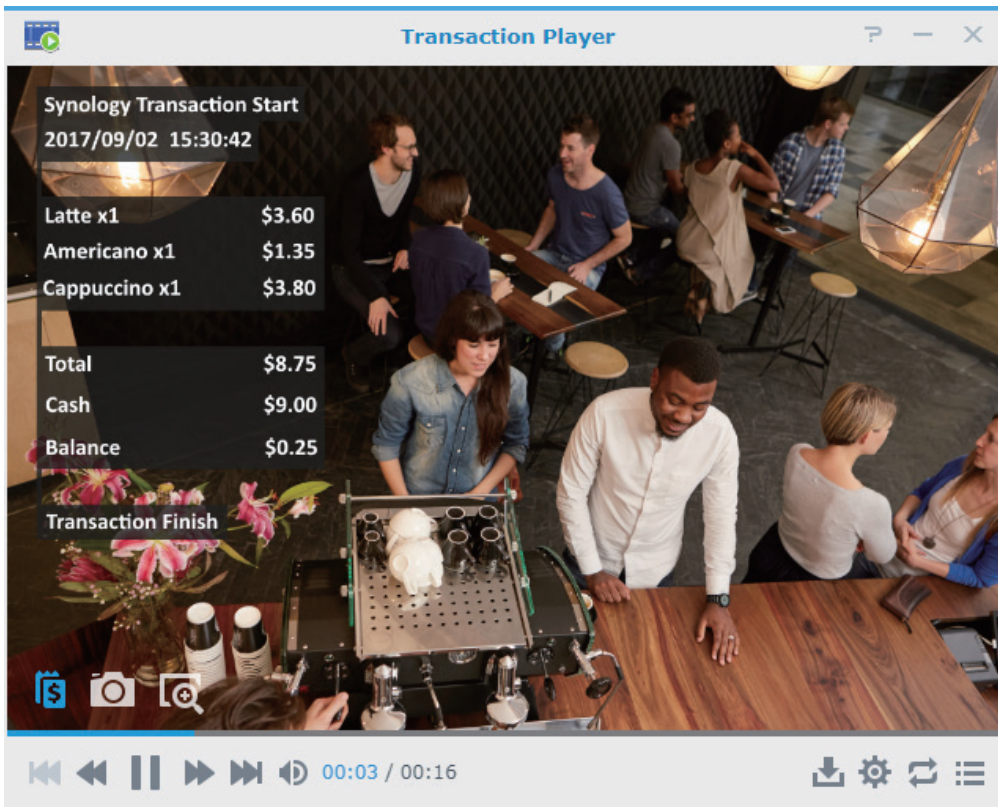
1. Go to **Transactions > Historical Records** to review the transaction records generated by your devices. You can do the following in the **Historical Records** tab:
 - **Lock:** Click the **Lock** button to lock certain transaction records. Unless you delete the corresponding device, you can never delete a locked record.
 - **Delete:** Click the **Delete** button to delete the selected transaction records.
 - **Generate Report:** Click the **Generate Report** button to generate reports of the selected records in HTML format.
2. Surveillance Station provides a search function to help you quickly find transaction records. The search filters you can set up are as follows:
 - **Status:** Search for transaction records with statuses marked as **Complete, Canceled** or **Incomplete**.
 - **Date & Time:** Search for transaction records that have occurred during a particular period of time.
 - **Keyword:** Search for the contents of the transaction records including the matched strings.
3. You can view contents, time, and corresponding device names from the list of transaction records. To read the complete transaction contents in text, click the **More** button on the right-hand side to open the **Transaction Detail** window.
4. The complete transaction contents, generated time, and the corresponding device names are shown in the **Transaction Detail** window. You can switch between different transaction records quickly and play the corresponding video clips by clicking the **Play** button on the lower right corner. For **Local Display** and **Surveillance Station Client**, the control characters will not be shown in this window. You can also play videos on the list by clicking the play button on the thumbnail to launch **Transaction Player**.



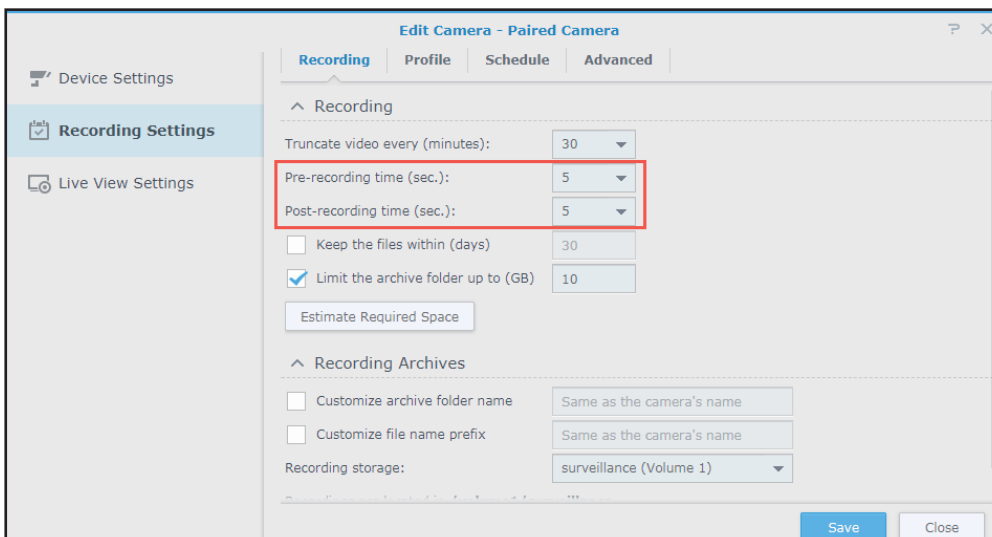
- 5. For the devices that are not paired with cameras, a 5 second long video with a default image with text overlaid will be played.



- For devices that are paired with cameras, the video clip during the transaction will be played.



- The length of the recorded video is determined by **Pre-recording time** and **Post-recording time** of the paired camera, you can adjust the settings in **IP Camera > Edit > Recording Settings > Recording**.



Set up Archive Settings

You can set up rotating rules, including the number of days to keep logs and video clips, the maximum transaction record size to be kept, and whether to delete transaction records automatically under the **Rotation Rules** section in the **Archive Settings** tab of the **Transactions** application.

Note:

1. The number of days to keep video clips cannot exceed the number of days to keep logs. After the transaction records have reached the rotation criteria, you can choose to archive records instead of deleting them.
2. **Archive Settings** only keep the text contents of the transaction records without including video recordings.

You can also customize share folders to store the recordings. Only the share folders created or added in Surveillance Station can be used for keeping recordings.

The screenshot shows the 'Transactions' application window with the 'Archive Settings' tab selected. The window is divided into two main sections: 'Rotation Rules' and 'Storage Destination for Archives'.

Rotation Rules:

- 'Keep logs within (days):' is set to 90.
- 'Keep corresponding video clips within (days):' is set to 90.
- 'Limit log and video clip size up to (GB):' is set to 256.
- 'Recording storage:' is set to 'surveillance (Volume 1)'.
- 'Recordings are located in /volume1/surveillance'.

Storage Destination for Archives:

When exceeding the specified number of days or maximum available space for logs to be kept, logs will be archived to the destination without recordings.

- 'Archive destination' is currently empty, with a 'Browse' button next to it.
- 'Archive logs as text format in addition to default format' is unchecked.
- 'Compress log archives' is unchecked.

At the bottom right, there are 'Save' and 'Close' buttons.

Applications

Transaction devices added in Surveillance Station can interact with other applications in Surveillance Station to provide more useful functions. This chapter introduces how to set up the transaction device settings in other applications.

Live View

Users can include transaction devices in the layout in the **Live View** application by editing the layout in **Live View Layout Management**, in order to watch live feeds of the paired camera with overlaid transaction data.

You can see live view streams of the paired camera in the transaction device region. The received transaction text will be overlaid on the screen using the style that has been set up, please refer to [Set up the display style](#).

If the text exceeds the screen range, the oldest messages will be rotated out of the screen. By default, the screen will be cleared automatically if no data is received within 10 seconds. You can also temporarily hide the received text by clicking the on-screen display button below.

Live View Alert

Events from transaction devices, including **New Transaction Received** and **User-Defined Events**, can also trigger alert events under **Alert Management** in the **Live View** application, in order to notify you that abnormal transactions might have occurred while you are watching video streams in **Live View**.

When alert events are detected, you can watch recorded videos in the **Alert History** tab in **Live View > Alert Management**.

Events triggered by the camera, such as digital input events, motion events, and other events will usually remain triggered for a period of time. However, transaction events are triggered upon detecting certain keywords from the raw data received, and therefore will not remain triggered for a longer period of time. You will see that the duration for all transaction events are no longer than 1 second. However, when you play back the transaction events, an additional 10 second footage before the triggered event and 20 second footage after the triggered event will be played. You cannot play transaction events if there is no camera paired with the transaction device.

Action Rule

You can also set up transaction events in the **Action Rule** application in order to trigger actions in response to possible abnormal transactions. To use transaction device events, please select the **Triggered** option from the **Rule type** drop-down menu when adding an action rule in **Add Action Rule Wizard**.

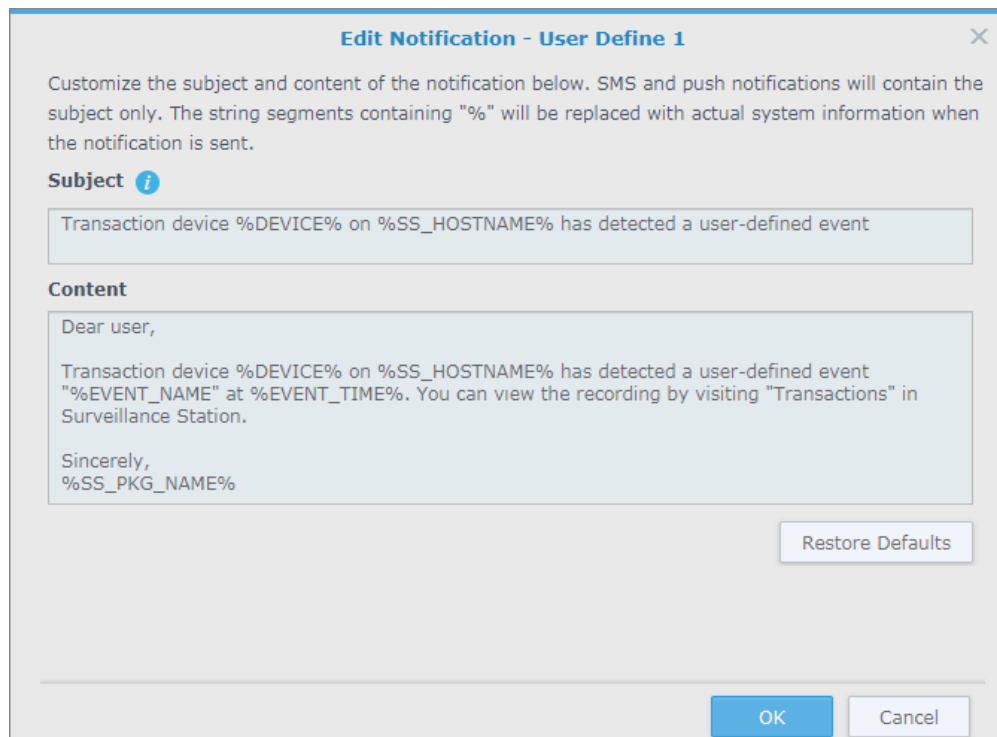
Select **Transaction Device** from the **Event source** drop-down menu under **Event**, in **Add Action Rule Wizard**, the transaction device you have added to Surveillance Station will be shown in the **Device** field. If you want to detect more than one event, click the **Add** button to add more events.

You can see detailed information under the **List** tab in **Action Rule** after finishing the action rule setup.

Notification

You can set up transaction events in the **Settings** tab of the **Notification** application in order to send real-time notifications to managers or guards when possible abnormal transactions occur. You can receive notifications via e-mail or mobile messages once transaction events are triggered.

You can go to **Notification > Settings**, select an event and click the **Edit** button to edit the message content to be delivered.



You can go to **Notification > Settings**, select an event and click the **Edit Schedule** button to specify the notification schedule for each transaction device.

Edit Schedule - User Define 1 [X]

Source: Local Host [v]
Transaction Device: SynoDevice [v]

Allow Notification Delete

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|-----|---|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
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OK Cancel

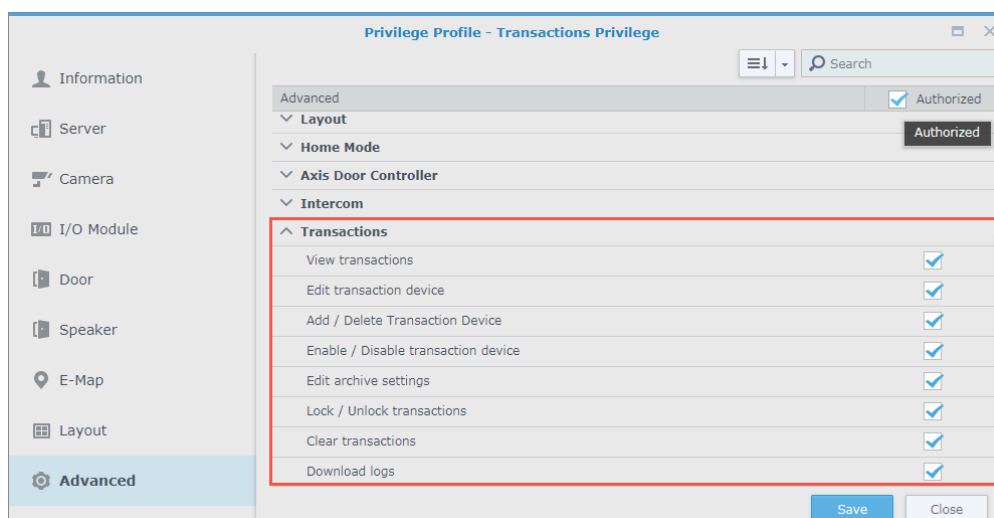
Transaction privilege

This chapter will introduce the privilege settings of **Transactions**. Please note that the each user privilege settings of **Transactions** are applied to all transaction devices, not individual devices.

Manager

Go to **Users**, select a **Manager** user and click the **Privilege** button. Then go to the **Advanced** tab to adjust the following privilege settings for **Transactions**:

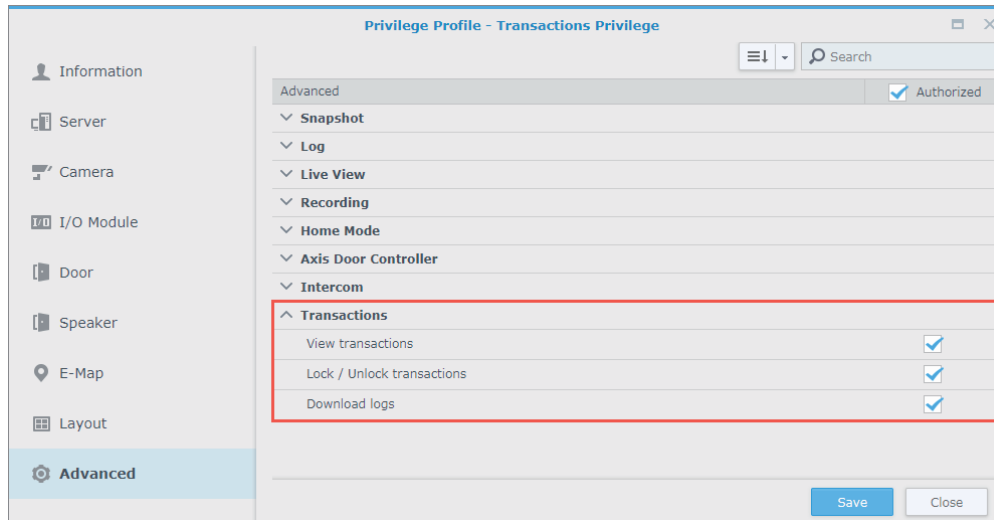
- **View transactions:** The privilege to view transactions. If users do not have this privilege, they will not be able to use the Transactions application.
- **Edit transaction device:** The privilege to edit transaction devices.
- **Add / Delete transaction device:** The privilege to add and delete transaction devices.
- **Enable / Disable transaction device:** The privilege to enable and disable transaction devices.
- **Edit archive settings:** The privilege to edit the archive settings.
- **Lock / Unlock transactions:** The privilege to lock and unlock transaction records.
- **Clear transactions:** The privilege to clear the transaction records.
- **Download logs:** The privilege to download transaction record reports.



Spectator

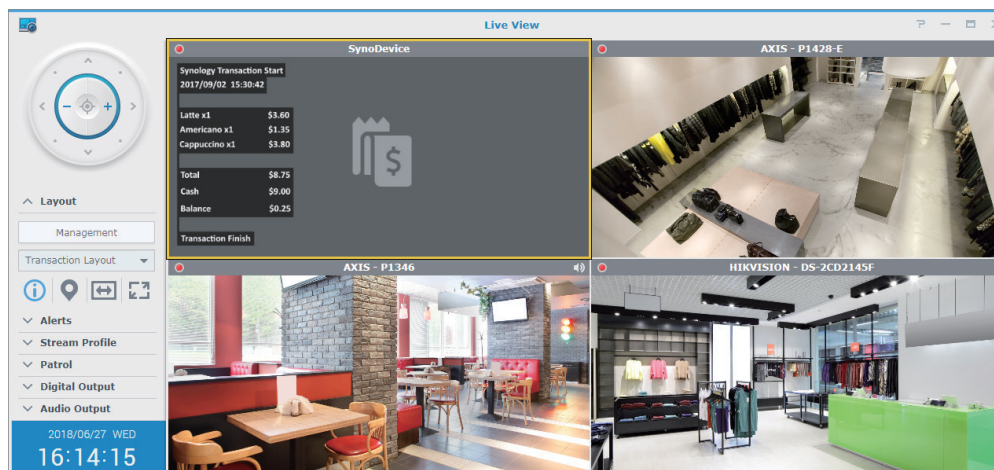
Go to **Users**, select a **Spectator** user and click the **Privilege** button. Then go to the **Advanced** tab to adjust the following privilege settings for **Transactions**:

- **View transactions:** The privilege to view transactions. If users do not have this privilege, they will not be able to use the Transactions application.
- **Lock / Unlock transactions:** The privilege to lock and unlock transaction records.
- **Download logs:** The privilege to download transaction record reports.



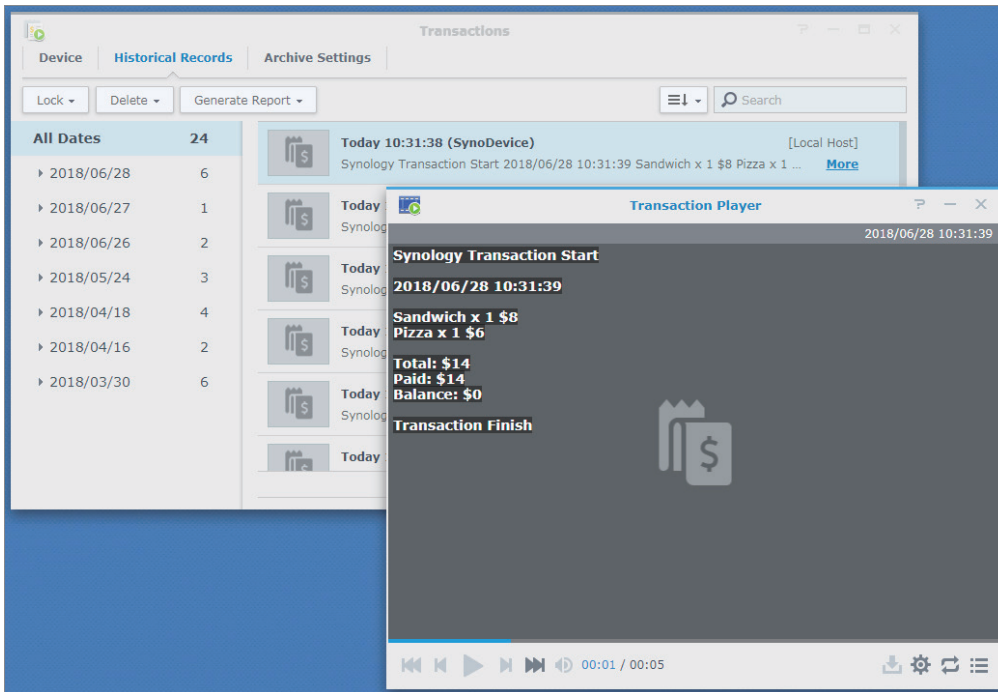
Paired Camera

If you do not have privileges to access live view streams of the paired camera, the default image with overlaid text will be displayed for the transaction device in **Live View**.



If you do not have privileges to play back recordings of the paired camera, the default image will be shown for the thumbnails in the list in **Historical Records** and **Transaction Player**.

However, not having privileges to the paired camera will not affect receiving, displaying, and recording of transaction data.



Send Transactions Using WebAPI

You can transmit transaction data from transaction devices added in Surveillance Station using **Surveillance Station WebAPI**, the WebAPI provided by Surveillance Station. In this chapter, we will provide detailed instructions on how to use **Surveillance Station WebAPI** to transmit data.

Note: If you wish to connect with the transaction device on the recording server, please send WebAPI directly to the recording server instead of the host server.

Authentication

Authentication is required before using any WebAPI provided by Synology. For more information on the login process, please refer to **2.1.2 Operation flow** and **2.3.2 SYNO.API.Auth** in this [document](#).

For API methods related to sending transactions, you can specify account and password as parameters to log in to NAS directly.

API format

Synology WebAPI requests are implemented based on HTTP format. All the transaction operations are defined under the WebAPI, **SYNO.SurveillanceStation.Transactions.Transaction**. Therefore, the basic request format is as follows:

```
http://{ip}:{port}/WebAPI/entry.cgi?api=SYNO.SurveillanceStation.Transactions.Transaction&method=<METHOD>&version=<VERSION>[&<PARAM_LIST>]
```

| Tag | Description |
|--------------|--------------------------------------|
| <METHOD> | Method of API |
| <VERSION> | Version of API |
| <PARAM_LIST> | Parameter list for the method of API |

An example for canceling a transaction:

```
http://192.168.2.3:5000/WebAPI/entry.cgi?api=SYNO.SurveillanceStation.Transactions.Transaction&method=Cancel&version=2&deviceName=POS01&sessionId=1
```

API method list

Surveillance Station provides four methods to handle the transaction transmission.

Insert

This method is used to insert a complete transaction into Surveillance Station.

- Request

| Parameter | Description | Value | Version |
|------------|--|----------------------------|-------------|
| dsName | <i>Optional.</i> The name of the CMS recording server which the transaction device is on. | <string>, i.e. "NVR_1F" | 2 and above |
| deviceName | The name of the transaction device added in Surveillance Station. | <string>, i.e. "Device01" | 2 and above |
| content | The content of the whole transaction. | <string>, i.e. "1234" | 2 and above |
| format | The format of the content. "json" indicates the content is of JSON format. "string" indicates the content is pure text. | <string>, i.e. "string" | 2 and above |
| timestamp | <i>Optional.</i> The number of seconds that have elapsed from 00:00:00 Coordinated Universal Time (UTC), Thursday, 1 January 1970 to the occurrence time of the transaction. | <integer>, i.e. 1508989055 | 2 and above |
| account | <i>Optional.</i> The login account name for NAS. | <string>, i.e. "Manager" | 2 and above |
| password | <i>Optional.</i> Password of the account. | <string>, i.e. "000000" | 2 and above |

- Example:

`http://192.168.2.3:5000/WebAPI/entry.cgi?api=SYNO.SurveillanceStation.Transactions.Transaction&method="Insert"&version=2&deviceName="POS01"&content="1234"&format="string"`

- Response:

| Status | JSON Format Content |
|---------|--|
| Success | <code>{"success":true}</code> |
| Failed | <code>{"error":{"code":<ERROR CODE>},"success":false}</code> |

Please refer to [API Error Code](#) for more information about the error codes.

Cancel

This method is used to cancel a session with the ID specified in sessionId. A session will end and a transaction labeled as **Canceled** will be generated after this request has been sent. Any data carried by the **AppendData** method with the same **sessionId** afterwards will be dropped and error will be reported.

- Request:

| Parameter | Description | Value | Version |
|------------|--|----------------------------|-------------|
| dsName | <i>Optional.</i> The name of the CMS recording server which the transaction device is on. | <string>, i.e. "NVR_1F" | 2 and above |
| deviceName | The name of the transaction device added in Surveillance Station. | <string>, i.e. "Device01" | 2 and above |
| sessionId | ID of a session. | <string>, i.e. "1234" | 2 and above |
| timestamp | <i>Optional.</i> The number of seconds that have elapsed from 00:00:00 Coordinated Universal Time (UTC), Thursday, 1 January 1970 to the occurrence time of the transaction. | <integer>, i.e. 1508989055 | 2 and above |
| account | <i>Optional.</i> The login account name for NAS. | <string>, i.e. "Manager" | 2 and above |
| password | <i>Optional.</i> Password of the account. | <string>, i.e. "000000" | 2 and above |

- Example:

http://192.168.2.3:5000/WebAPI/entry.cgi?api=SYNO.SurveillanceStation.Transactions.Transaction&method="Cancel"&version=2&deviceName="POS01"&sessionId="1"

- Response:

| Status | JSON Format Content |
|---------|---|
| Success | {"success":true} |
| Failed | {"error":{"code":<ERROR CODE>},"success":false} |

Please refer to [API Error Code](#) for more information about the error codes.AppendData

AppendData

This method is used to carry data into the session with the ID specified in sessionId.

- Request:

| Parameter | Description | Value | Version |
|------------|--|------------------------------------|-------------|
| dsName | <i>Optional.</i> The name of the CMS recording server which the transaction device is on. | <string>, i.e. "NVR_1F" | 2 and above |
| deviceName | The name of the transaction device added in Surveillance Station. | <string>, i.e. "Device01" | 2 and above |
| sessionId | ID of a session. | <string>, i.e. "1234" | 2 and above |
| content | The transaction content. The contents sent by one request would be regard as one line. Users can also carry "\n" in the contents to break lines. | <string>, i.e. "Start\n2017/01/01" | 1 and above |
| timestamp | <i>Optional.</i> The number of seconds that have elapsed from 00:00:00 Coordinated Universal Time (UTC), Thursday, 1 January 1970 to the occurrence time of the transaction. | <integer>, i.e. 1508989055 | 2 and above |
| account | <i>Optional.</i> The login account name for NAS. | <string>, i.e. "Manager" | 2 and above |
| password | <i>Optional.</i> Password of the account. | <string>, i.e. "000000" | 2 and above |

- Response:

| Status | JSON Format Content |
|---------|---|
| Success | {"success":true} |
| Failed | {"error":{"code":<ERROR CODE>},"success":false} |

Please refer to [API Error Code](#) for more information about the error codes.API Error Code

API error code

| Code | Description |
|------|--------------------|
| 400 | Operation failed |
| 401 | Illegal parameters |

Operation failed means the system is in an abnormal status. Please confirm that the **Transactions** service is enabled in the **Add-ons** application. If the service has been enabled, please try to restart **Surveillance Station**.

Several reasons can cause **Illegal parameters**, here are some common reasons listed as follows:

- Incomplete or invalid parameters.
- Tried to append, complete, or cancel a session before it started.
- The **sessionId** does not match any existing sessions.
- The **deviceName** is not found in **Surveillance Station**.
- The **timestamp** of AppendData, Complete, or Cancel is less than the timestamp of Begin in one of the sessions.

Examples

- Start a transaction: `http://192.168.2.3:5000/WebAPI/entry.cgi?api=SYNO.SurveillanceStation.Transactions.Transaction&method="Begin"&version=2&deviceName="POS01"&sessionId="1"&timeout=300`
- Append data: `http://192.168.2.3:5000/WebAPI/entry.cgi?api=SYNO.SurveillanceStation.Transactions.Transaction&method="AppendData"&version=2&deviceName="POS01"&sessionId="1"&content="Start\n2017/01/01"`
- Append data: `http://192.168.2.3:5000/WebAPI/entry.cgi?api=SYNO.SurveillanceStation.Transactions.Transaction&method="AppendData"&version=2&deviceName="POS01"&sessionId="1"&content="Pen $40\nBook $300"`
- Append data: `http://192.168.2.3:5000/WebAPI/entry.cgi?api=SYNO.SurveillanceStation.Transactions.Transaction&method="AppendData"&version=2&deviceName="POS01"&sessionId="1"&content="Total $340\nEnd"`
- Complete a transaction: `http://192.168.2.3:5000/WebAPI/entry.cgi?api=SYNO.SurveillanceStation.Transactions.Transaction&method="Complete"&version=2&deviceName="POS01"&sessionId="1"`

Note:

- If your Synology NAS is a CMS Host server, you can specify **dsName** to designate a CMS recording server which the transaction device is on. If **dsName** is not specified, the CMS Host server is first searched before CMS recording servers for transaction devices matching the given name. If two or more CMS recording servers connects to transaction devices matching the given name and **dsName** is not specified, the command will be ignored.
- **sessionId** is used to distinguish between different transaction events. The same **deviceName** and **sessionId** will be treated as the same record. If the same parameter is sent again, the Begin method will be ignored until the transaction has completed, canceled, or exceeded transaction time limit. After that, **sessionId** can be reused.
- After the start of the transaction, if the time limit is exceeded before receiving the Complete or Cancel methods, the transaction record will be saved and marked as Incomplete.
- **timestamp** is in UTC format, you can use <https://www.epochconverter.com/> to convert the current time to timestamp or check if the timestamp is correct.



Troubleshoot

Why is my device always disconnected?

If your device was connected using TCP or WebAPI, please make sure your device is still connected to Surveillance Station. You can check the firewall settings and try to ping the devices from your NAS. Another possible reason for disconnection is that your device is not working as a TCP server to transmit data over TCP connection. Please check the TCP settings on your device.

Why can't I receive data?

Please make sure you can receive data properly. Go to the **Transactions** application, select a transaction device and click **Edit**, then go to the **Data Definition** tab and turn on the **Start Collecting Raw Data** switch. Make sure your device starts to deliver data to your NAS and that the data you have sent can be displayed on the screen. If no data is received, please check if your device is still connected and the encoding method is correct. If your device is connected over **Serial Port**, check if the COM port setting is correct.

If you are using WebAPI as the connection type, please check if there are any error codes returned back or if there are any typos in the **deviceName** or **dsName** WebAPI command.

How do I set up the correct data definition?

Go to the **Transactions** application, select a transaction device and click **Edit**, then go to the **Data Definition** tab and turn on the **Start Collecting Raw Data** switch. Send your data to NAS and see if the strings defined by your parsing rules are marked in blue in the **Raw data** area. Also, check if the data can convert into transaction records in the **Filtered data** area.

The paired camera does not record when a transaction event occurs

Go to the **IP Camera** application, select the paired camera and click **Edit**. Please make sure the **Disable recording and rotation** checkbox is not ticked in the **Advanced** tab in **Recording Settings**.

The user-define event was set but not triggered

The user-define events should be triggered on all the applications, including **Live View Alert**, **Notification**, and **Action Rule**. If the user-define event is only triggered correctly on selected applications, then the other applications might have some issues. Please contact Synology support to solve this problem.

If the user-define event is not triggered on all the applications, please go to **Transactions**, select the transaction device and click **Edit**, then go to the **Data Definition** tab to check whether the plain text or regular expression matching works properly. If plain text matching does not work, please contact Synology support to solve this problem. If you are using regular expression, please check whether the usage of the regular expression is correct.

Useful regular expressions

To parse dates in a format of "yyyy-mm-dd":

- [0-9]{4}-[0-1][0-2]-[0-3][0-9]

To parse strings including "Tea" or "Coke":

- Tea|Coke

To parse strings including "the", "that", or "this":

- th(e|at|is)

To parse strings in the format of "Cash \$dddd":

- Cash.*\\$\d+

To parse the string "open" and not match with "opener":

- ^open\$

To parse numbers greater than 1200:

- ^0*([1-9]\d{4,}|[2-9]\d{3}|1[3-9]\d{2}|12(?:00)\d{2})\$

| Pattern | Description |
|---------|--|
| [0-9] | Matches characters from 0-9 |
| {4} | Matches previous character four times |
| {4,} | Matches previous character at least four times |
| . | Matches any characters except "\n" |
| * | Matches previous character zero or more times |
| + | Matches previous character zero or more times |
| | Matches any elements separated by a vertical bar |
| \d | Matches characters from 0-9 |
| ^ | The match must occur at the beginning of a word |
| \$ | The match must occur at the end of a word |
| (?!abc) | Skips match for the pattern abc |



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