

Tyco AI User Guide

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Tyco AI is a deep learning solution that combines Artificial Intelligence with Tyco security technology. Tyco AI provides a more autonomous approach to alerts, searches, privacy, and access, leveraging a facility's surveillance infrastructure and reducing the need for operator intervention. Empowered by the powerful algorithms in Tyco AI, object classification and behavior and facial recognition analytics become faster and more accurate, enabling the industry-leading suite of Tyco's automation solutions for access control and video surveillance to produce critical and customizable operational intelligence data for nearly any customer application.

This section contains installation instructions for the Tyco AI Deep Learning server.

Hardware Specifications

The following table contains the hardware specification for 4-channel and 16-channel Face Recognition.

Figure 1: Hardware specifications

Component	Specification	
	4-channel Face Recognition	16-channel Face Recognition
CPU	1 x Intel Core i9-9820X 3.3GHz with 10 cores	2x Intel Xeon Gold 6230 2.1 GHz with 20 cores
GPU	1 x Nvidia Quadro RTX4000 8GB	4x Nvidia Quadro RTX4000 8GB
RAM	64GB DDR4 RAM	128GB DDR4 RAM ECC
Storage	512GB SSD	1TB NVMe SSD
	4TB 7200rpm SATA enterprise HDD	4TB 7200rpm SATA enterprise HDD
Network	2x 1Gb Ethernet NICs • Video traffic • Management	2x 1Gb Ethernet NICs • Video traffic • Management

Installing Tyco AI

To install Tyco AI, complete the following procedure:

- 1 Create a bootable USB drive from the Tyco AI ISO image.
- 2 Insert the USB drive into a server and configure the server to boot from the USB.
- 3 Select **Legacy Boot from USB**.
- 4 From the installation options, highlight and select **Install_TycoAI-OEM-....**
- 5 To start the installation process, select **SSD** for installation and then select **Yes**.
When the installation is complete, the server reboots automatically.
- 6 Log on to the server.

Note:

- The default server user name and password is admin / admin.
- As part of the startup wizard, you must change the root and admin password.

Initial configuration

After you install the Tyco AI software, log on to the Tyco AI interface to complete the configuration process. The following table contains information about the settings that you can configure from each stage of the Setup Wizard.

Figure 2: The Setup Wizard

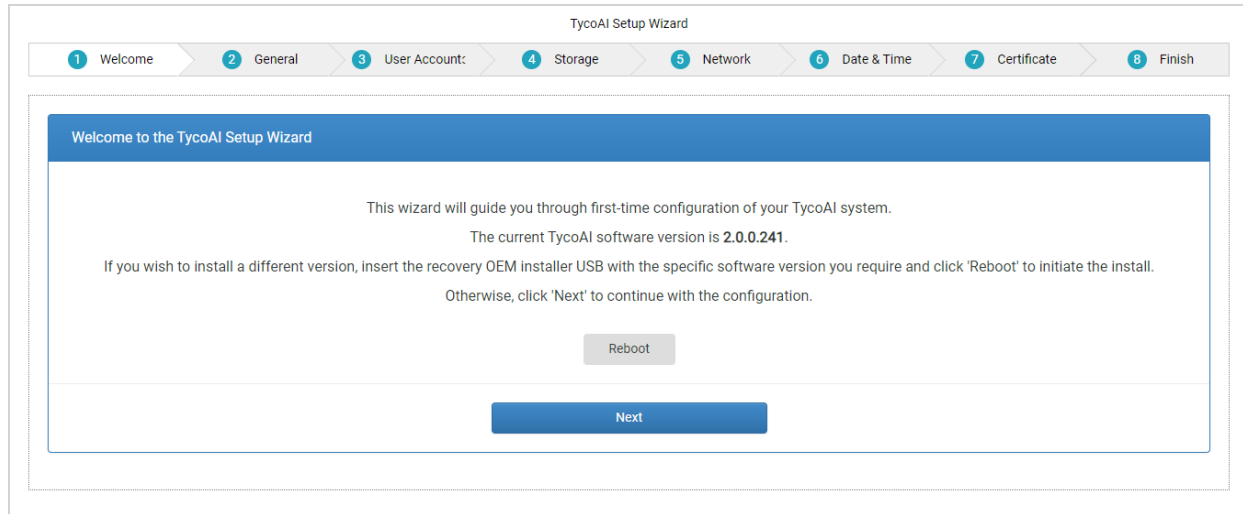


Table 1: Setup Wizard pages

Setup Wizard page	Description
Welcome	This is the starting page of the Setup Wizard. On this page, you can start the configuration process, or you can install a different version of Tyco AI.
General	On this page, you must configure Tyco AI for Video Clip Ingest or for Face Enrollment. <ul style="list-style-type: none">• Select Video Clip Ingest if you want to upload video clips or connect an exacqVision device to the Tyco AI server.• Select Face Enrollment if you want to enroll people in a facial recognition database.
User Accounts	On this page, you must change the usernames and passwords for the default Tyco AI user accounts: <ul style="list-style-type: none">• WebUI Account: administrator• REST API User• Linux Account: admin• Linux Account: root Note: For the root account, you can only change the password.
Storage	On this page, you must create an encrypted partition for Tyco AI data. For optimum performance, select an SSD. However, if you want to use a non-SSD hard drive, click the Show All button in the top-right corner of the Storage page.
Network	On this page, you must configure the Tyco AI server's network settings.
Date & Time	On this page, you can manually configure the server's date and time settings, or you can connect the Tyco AI server to an NTP server.
Certificate	On this page, you must configure a self-signed certificate.
Finish	This is the last page of the Setup Wizard. On this page, you can complete the configuration process.

From the Licensing page, you can upload a license file to your Tyco AI server, view license information, and view analytic stream usage. After you configure Tyco AI, you must purchase a license to continue using the product.

Figure 3: The Licensing page

The screenshot shows the 'License' tab in the Tyco AI interface. It contains several sections: 'License Information' (with fields for License Type, SSA Expires, and License Manager Status), 'Current Analytic Stream Usage' (a table showing usage for various analytics types), 'Configure Local Licensing' (with a file selection button and an 'Apply License' button), and 'Upgrade License' (with a 'Generate Host ID' button). Callouts A, B, C, and D point to specific elements: A points to the 'License Information' section, B points to the 'Current Analytic Stream Usage' table, C points to the 'Configure Local Licensing' section, and D points to the 'Upgrade License' section.

Analytics Type	Maximum Possible	Currently Used	Available
Device	10	0	10
FaceRecognition	10	0	10
FaceRedaction	10	0	10
FaceRe-identification	10	0	10
PersonRe-identification	10	0	10
FaceEnrollmentTier	10	0	10
VMLicense	10	0	10

Key	Description
A	Current license information
B	Current Analytic Stream Usage. This table displays the number of analytics that the server can support, and the number of analytics that are currently in use.
C	Configure licensing. Select a license file to apply to Tyco AI.
D	Generate a Host ID file for your Tyco AI server. If you want to renew or upgrade your Tyco AI license, you must use this Host ID file.

Generating a Host ID

Before you can purchase a Tyco AI license, you must generate a Host ID for Tyco AI. The Host ID is unique to your Tyco AI installation, and you must enter this ID when you register, renew, or upgrade a Tyco AI license.

- 1 Log on to Tyco AI.
- 2 From the main menu, click **Licensing**.
- 3 On the **Licensing** page, in the **Upgrade License** section, click **Generate Host ID**.
- 4 Save the Host ID file to a secure location.

Applying a license file to Tyco AI

Complete the following procedure to apply a license to Tyco AI.

- 1 Log on to Tyco AI.
- 2 From the main menu, click **Licensing**.
- 3 On the **Licensing** page, in the **Configure Local Licensing** section, click **Choose License File**.
- 4 Navigate to the license file and click **Open**.
- 5 Click **Apply License**.

The Tyco AI interface

You can access the Tyco AI interface through your web browser.

Note:
The Tyco AI interface is not compatible with Internet Explorer.

Accessing Tyco AI

- 1 To access the Tyco AI interface, select one of the following options:
 - To access Tyco AI from the Tyco AI server, on the desktop, double-click the Tyco AI icon.
 - To access Tyco AI remotely, open your web browser and go to the following address:
`https://<Tyco AI IP address>:8001`
- 2 If required, accept the self-signed certificate.
- 3 Enter your user name and password.

Figure 4: The Tyco AI interface

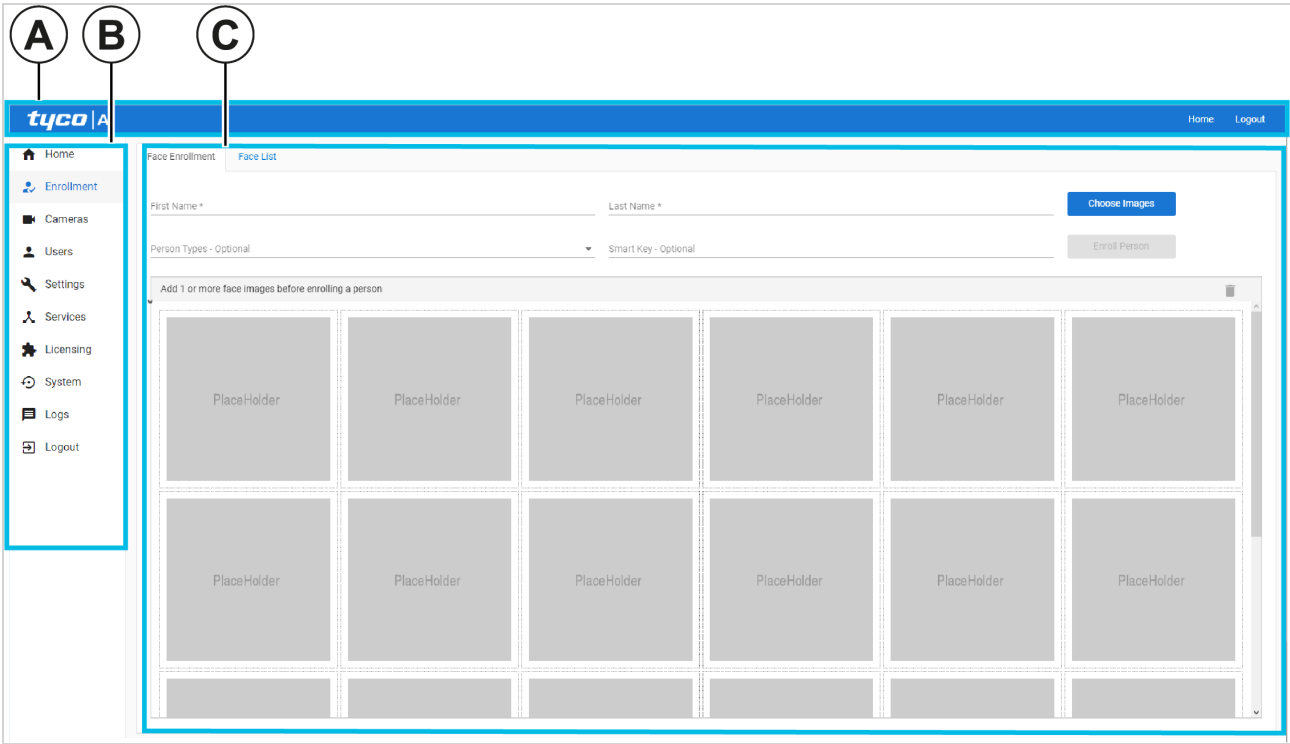








Table 2: Interface descriptions

Callout	Description
A	The top menu bar
B	The side menu bar
C	The main window

Common icons

The following table shows the commonly-used icons that appear in the Tyco AI interface.

Table 3: Common icons

Icon	Description
	Refresh the information on the main window.
	Add a new object.
	Add a new user profile.
	Edit an object.
	Delete an object.
	Save an object.

The Home page displays the following information:

- About
- Credits
- EULA and Copyright
- 3rd Party License

Figure 5: The About page

The screenshot shows the Tyco AI Home page. The top navigation bar includes the Tyco AI logo and links for Home and Logout. A left sidebar contains icons for Home, Enrollment, Cameras, Users, Settings, Services, Licensing, System, Logs, and Logout. The main content area has tabs for About, Credits, EULA & Copyright, and 3rd Party License. The About tab is active, displaying a welcome message and two sections: Server information and Network Interfaces.

Welcome to the Tyco AI Application v2.0.0.348

Server information	
API Version	1.0
Device Name	localhost
Firmware Version	2.0.0.348
Max Control Units	16
Max Video Sources	16
NTP Server	192.168.1.32
Heartbeat Interval	10

Network Interfaces				
Interface Name	IP Address	Subnet Mask	MAC Address	Network Type
eth0	192.168.82.218	255.255.255.0	e4:54:e8:61:3c:9d	static
eth2	10.160.108.107	255.255.252.0	e4:54:e8:61:3e:4c	dhcp
eth1	---	---	b4:96:91:5a:c1:08	dhcp

The Face Enrollment page

From the Face Enrollment page, you can enroll users into the Face List.

Note:

This page is only available if you select the Face Enrollment option when you initially configure Tyco AI.

Figure 6: The Face Enrollment page

To enroll a user, you must upload at least one photo of the user.

However, to optimize the facial recognition process, upload at least five photos of the user, with the user facing a different angle in each photo:

- User's head facing straight forward
- User's head tilted 45° upward
- User's head tilted 45° downward
- User's head tilted 45° left
- User's head tilted 45° right

Note:

If Tyco AI cannot detect a face in a photo, that photo is not uploaded. If none of the photos contain a detectable face, the enrollment fails.

Enrolling a user

To enroll users in the Tyco AI facial recognition database, complete the following procedure:

- 1 From the main menu, click **Enrollment**.
- 2 From the **Face Enrollment** page, configure user profile information:
 - a Enter the **First Name**.

- b Enter the **Last Name**.
- 3 **Optional:** To integrate the user profile with an access control system, configure the following parameters:
 - c Select the person type from the **Person Types** list.
 - d Enter the Smart key number in the **Smart Key** field.
- 4 Upload profile photos:
 - a Click the **Choose Images** button.
 - b Navigate to the image files that you want to use, and then click **Open**.
- 5 Click the **Enroll Person** button.

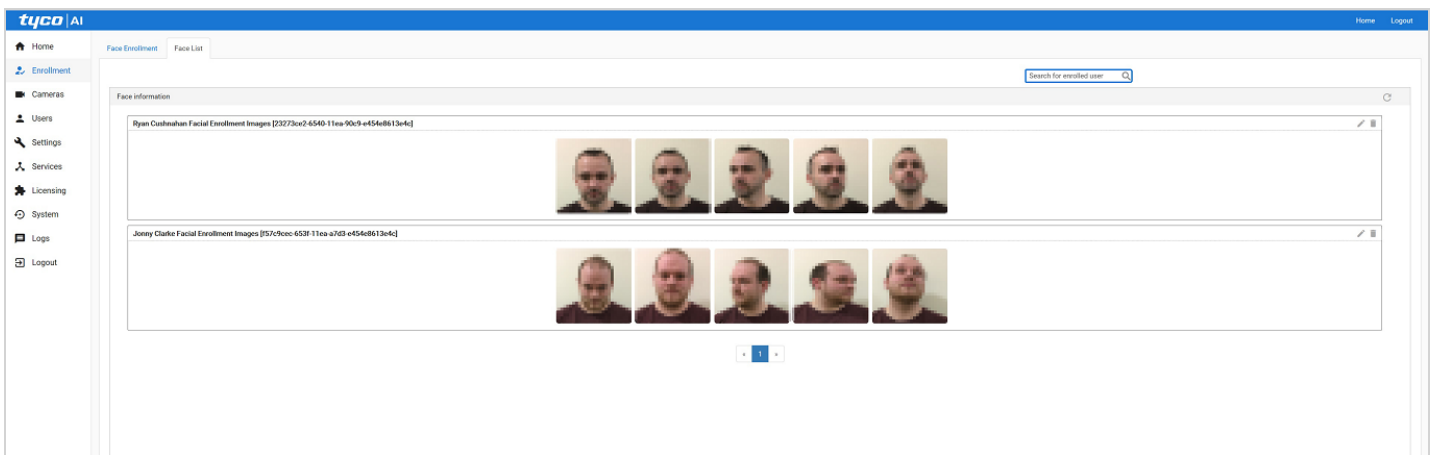
The Face List page

From the Face List page, you can view the user profile images that are enrolled in the Tyco AI facial recognition database. You can also edit and delete user face information.

Note:

For privacy purposes, the faces in the following image are obscured.

Figure 7: The Face List page



Editing a user

- 1 From the main menu, click **Enrollment**.
- 2 Click the **Face List** tab.
- 3 In the **Face information** pane, navigate to the user profile that you want to edit.
- 4 Click the **Edit Person** icon.
- 5 Edit the profile settings:
 - a Edit the **First Name**.
 - b Edit the **Last Name**.
 - c Select a person type from the **Person Types** list.
 - d Edit the Smart key number in the **Smart Key** field.
- 6 To upload new profile images, complete the following steps:
 - a Click the **Choose Images** button.
 - b Navigate to the images that you want to upload.
 - c Select the image files, and then click **Open**.

- 7 To delete profile images, complete the following steps:
 - a Select the check box for each image that you want to delete.
 - b Click the **Delete Selected Images** icon.

Note:

Each user profile must have at least one image before you can re-enroll that person.

- 8 Click **Save**.

Deleting a user

- 1 From the main menu, click **Enrollment**.
- 2 Click the **Face List** tab.
- 3 In the **Face information** pane, navigate to the user profile that you want to edit.
- 4 Click the **Delete Person** icon.

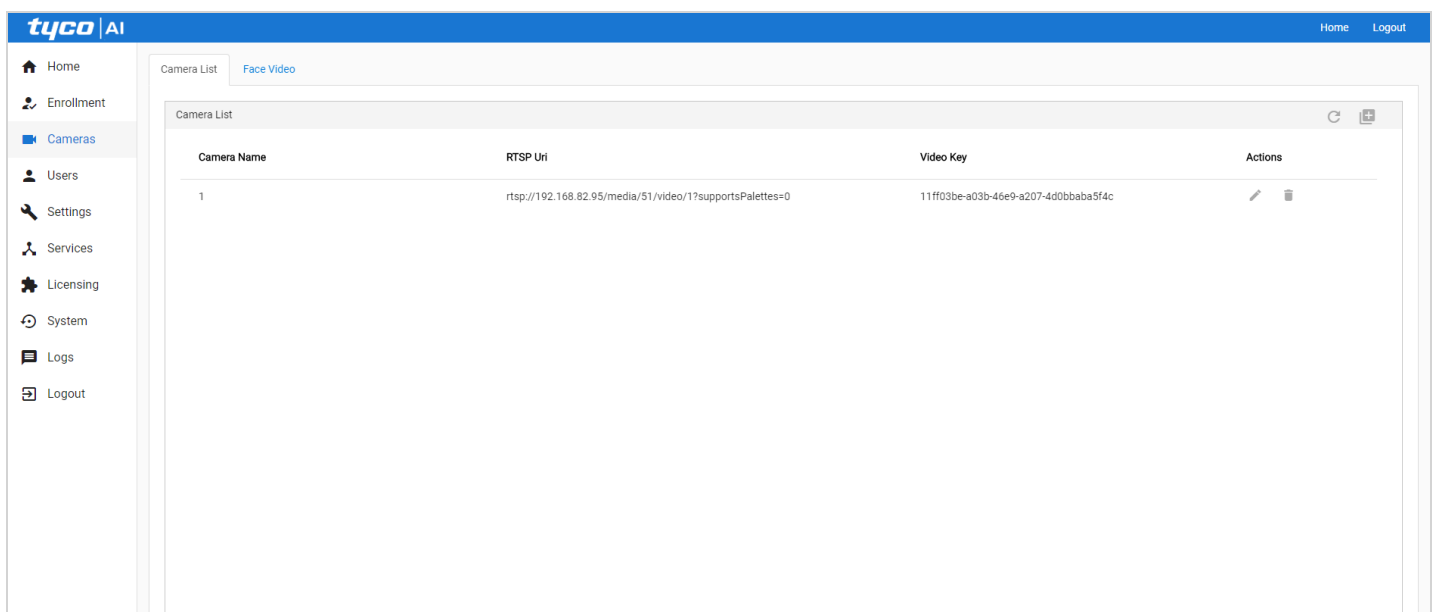
The Camera List page

From the Camera List page, you can add RTSP streams to Tyco AI.

Examples:

- Camera RTSP stream - `rtsp://192.168.10.51/live_video`
- Generic RTSP stream - `rtsp://192.168.10.51/media/1/video/1?supportsPalettes=0`

Figure 8: The Camera List page



Adding a camera

To add a camera to Tyco AI, complete the following procedure.

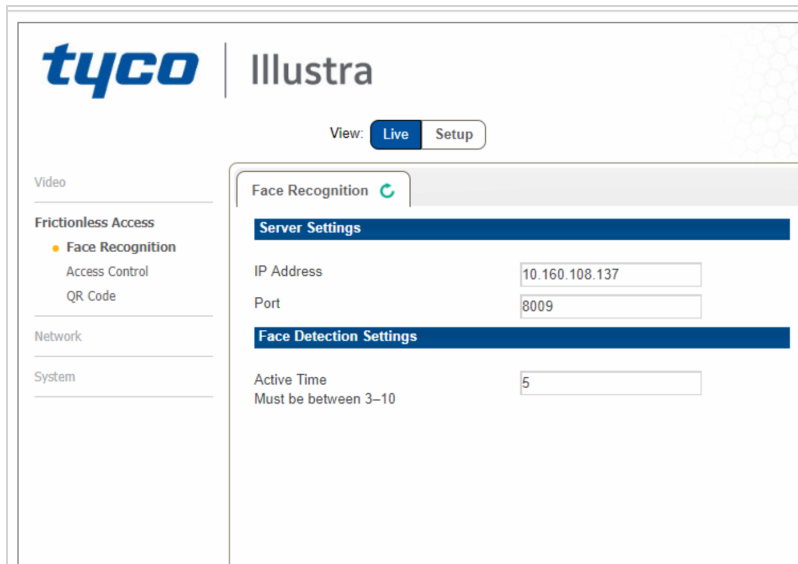
Note:

For Illustra Insight cameras, you must also link the camera to the Tyco AI server.

- 1 From the main menu, click **Cameras**.
- 2 On the Camera List page, click the **Add A New Camera** icon.
- 3 **Optional:** To disable the camera, clear the **Camera Enabled** check box.
- 4 **Optional:** To disable the camera's video feed, clear the **Display Video** check box.
- 5 Enter the **Display Name**.
- 6 Enter the RTSP stream address in the **RTSP URL** field.
- 7 **Optional:** If you require RTSP authentication, complete the following procedure:
 - a Ensure that the **RTSP Authentication Enabled** check box is selected.
 - b Enter the camera user name in the **Username** field.
 - c Enter the camera password in the **Password** field.

- 8 Click **Save**.
- 9 **Illustra Insight cameras only:** To link the camera to the Tyco AI server, complete the following procedure:
 - a Log on to the camera's web interface.
 - b From the main menu, click **Frictionless Access**, and then click **Face Recognition**.

Figure 9: Camera web interface



- c In the **Server Settings** section, enter the Tyco AI server's address in the **IP Address** field.

Editing a camera

- 1 From the main menu, click **Cameras**.
- 2 On the Camera List page, navigate to the camera that you want to edit.
- 3 In the **Actions** column, click the camera's **Edit Camera** icon.
- 4 Edit the camera settings.
- 5 Click **Save**.

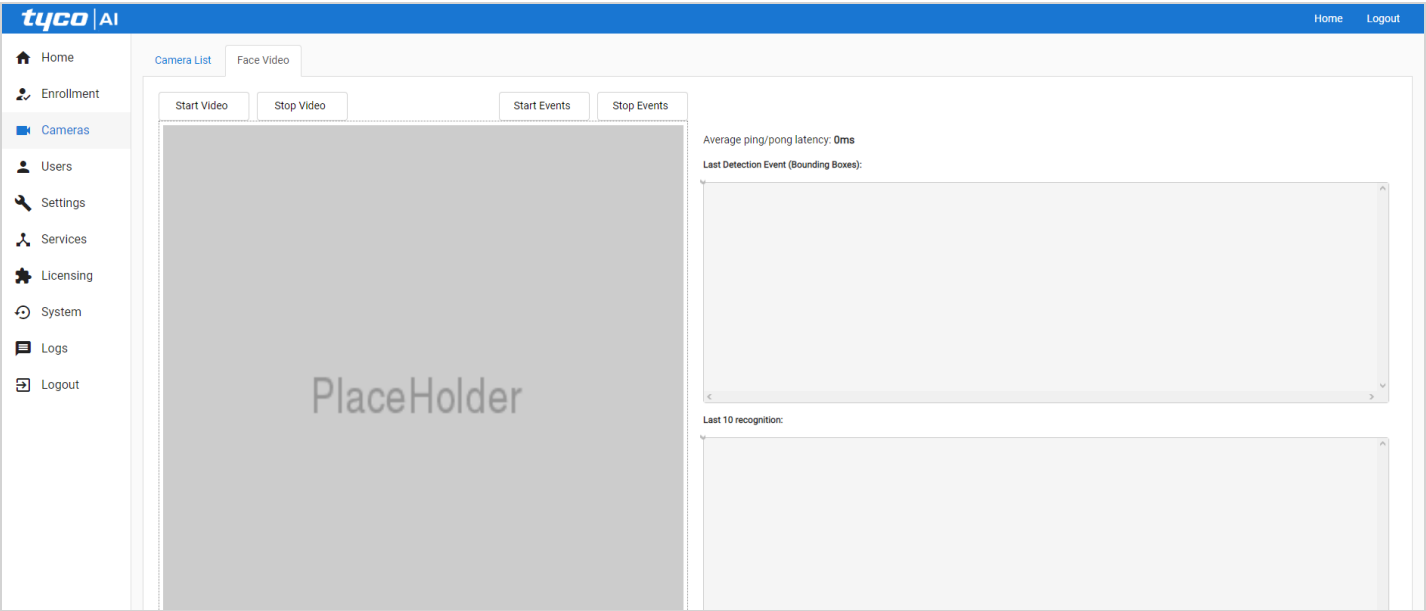
Deleting a camera

- 1 From the main menu, click **Cameras**.
- 2 On the Camera List page, navigate to the camera that you want to delete.
- 3 In the **Actions** column, click the camera's **Delete Camera** icon.

The Face Video page

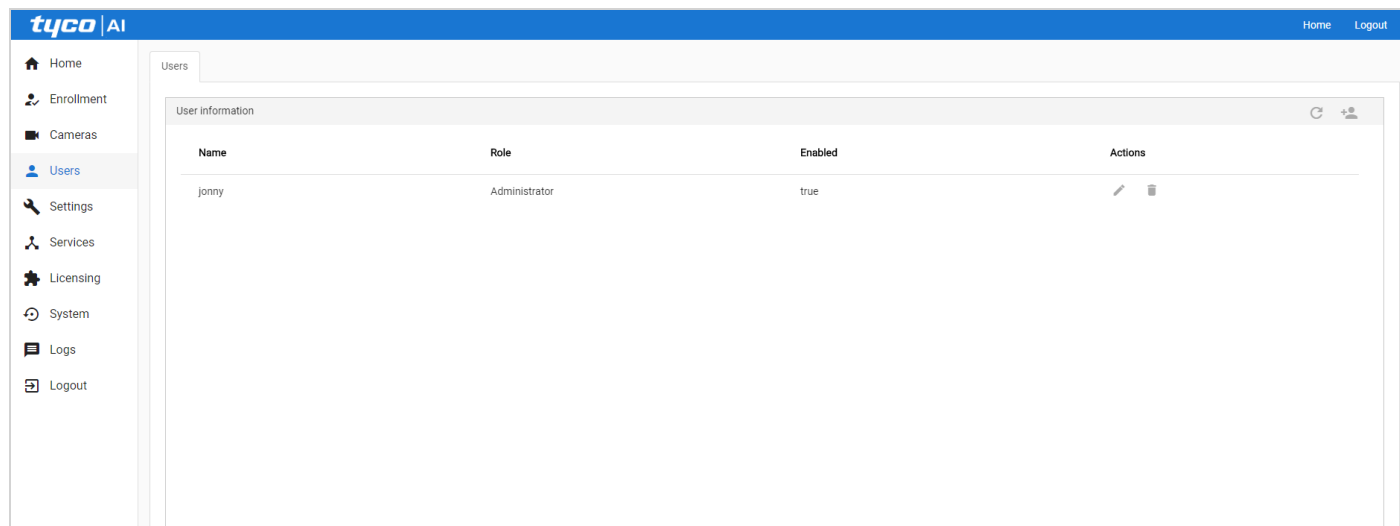
From the Face Video page, you can view live video streams. The purpose of this page is to test your system's camera configuration.

Figure 10: The Face Video page



From the Users page, you can create, edit, and delete user profiles for Tyco AI.

Figure 11: The Users page



Adding a user

- 1 From the main menu, click **Users**.
- 2 On the **Users** page, click the **Add A New User** icon.
- 3 Enter a name in the **Username** field.
- 4 Enter a password in the **Password** field and in the **Confirm Password** field.
- 5 Ensure that the **Enabled** check box is selected.
- 6 Click **Save**.

Editing a user

- 1 From the main menu, click **Users**.
- 2 On the **Users** page, navigate to the user that you want to edit.
- 3 In the **Actions** column, click the user's **Edit User** icon.
- 4 Edit the user settings.
- 5 Click **Save**.

Deleting a user

- 1 From the main menu, click **Users**.
- 2 On the **Users** page, navigate to the user that you want to delete.
- 3 In the **Actions** column, click the user's **Delete User** icon.

The General settings page

From the General settings page, you can enable or disable the Liveness Detection analytic. This analytic can differentiate between a live person and an image of a person. The purpose of this analytic is to prevent a person from using a picture to obtain access.

Figure 12: The General settings page

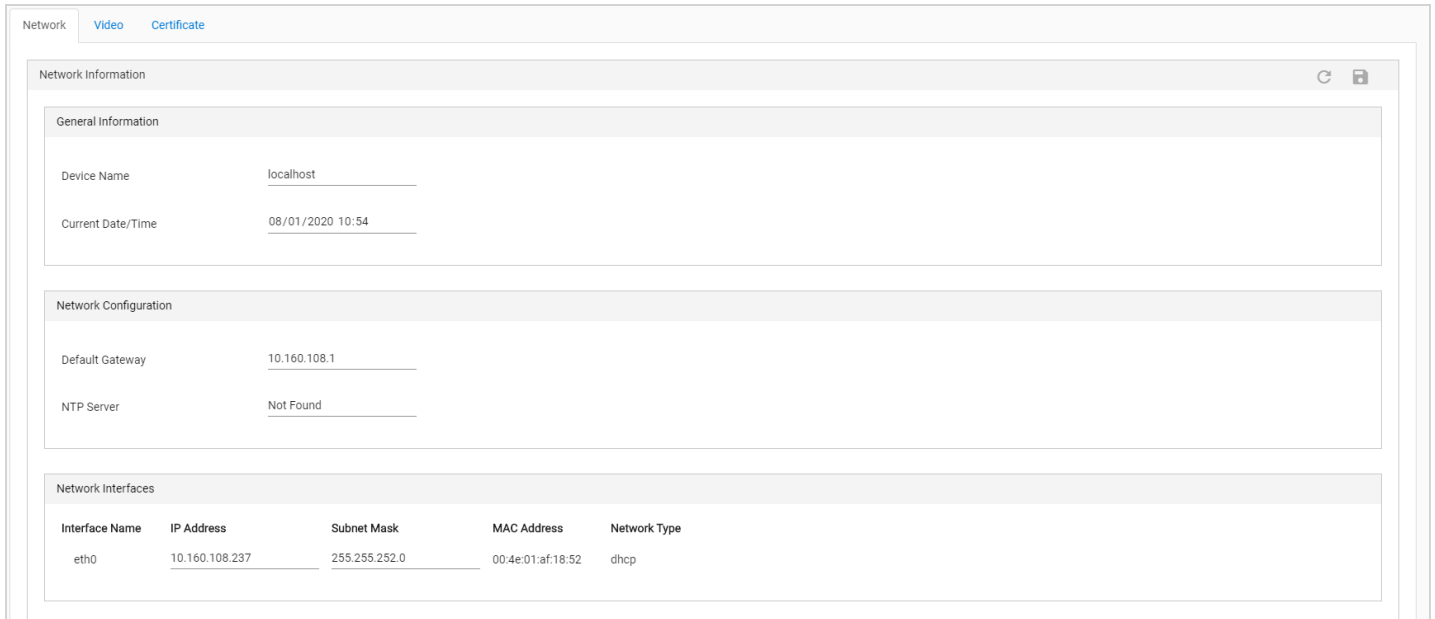


The screenshot shows the 'General' settings tab. Under 'General Settings', there is an 'Analytic Settings' section. Within this section, the 'Liveness Detection' toggle switch is currently set to 'OFF'.

The Network settings page

From the Network settings page, you can configure the device name, date and time settings, network configuration settings, and network interface settings.

Figure 13: The Network settings page



The screenshot shows the 'Network' settings tab. It is divided into three main sections: 'General Information', 'Network Configuration', and 'Network Interfaces'.

General Information

Device Name	localhost
Current Date/Time	08/01/2020 10:54

Network Configuration

Default Gateway	10.160.108.1
NTP Server	Not Found

Network Interfaces

Interface Name	IP Address	Subnet Mask	MAC Address	Network Type
eth0	10.160.108.237	255.255.252.0	00:4e:01:af:18:52	dhcp

The Certificate settings page

From the Certificate settings page, you can create a self-signed certificate.

- Note:**
- You must create a self-signed certificate when you initially configure the Tyco AI web interface. See Initial configuration for more information.
 - See SSL Certificate Country Codes for a list of country codes that you can use with the self-signed certificate.

Figure 14: The Certificate settings page

NetworkVideoCertificate

Create new self-signed certificate

Country Code *

Invalid Country Code

State or Province

Locality

Organization

Organizational Unit

Common Name *

localhost

Subject Alternative Name *

localhost

☒ Include Existing IP Addresses

Interface Name	IP Address	
eth0	192.168.82.218	<input checked="" type="checkbox"/>
eth2	10.160.108.111	<input checked="" type="checkbox"/>

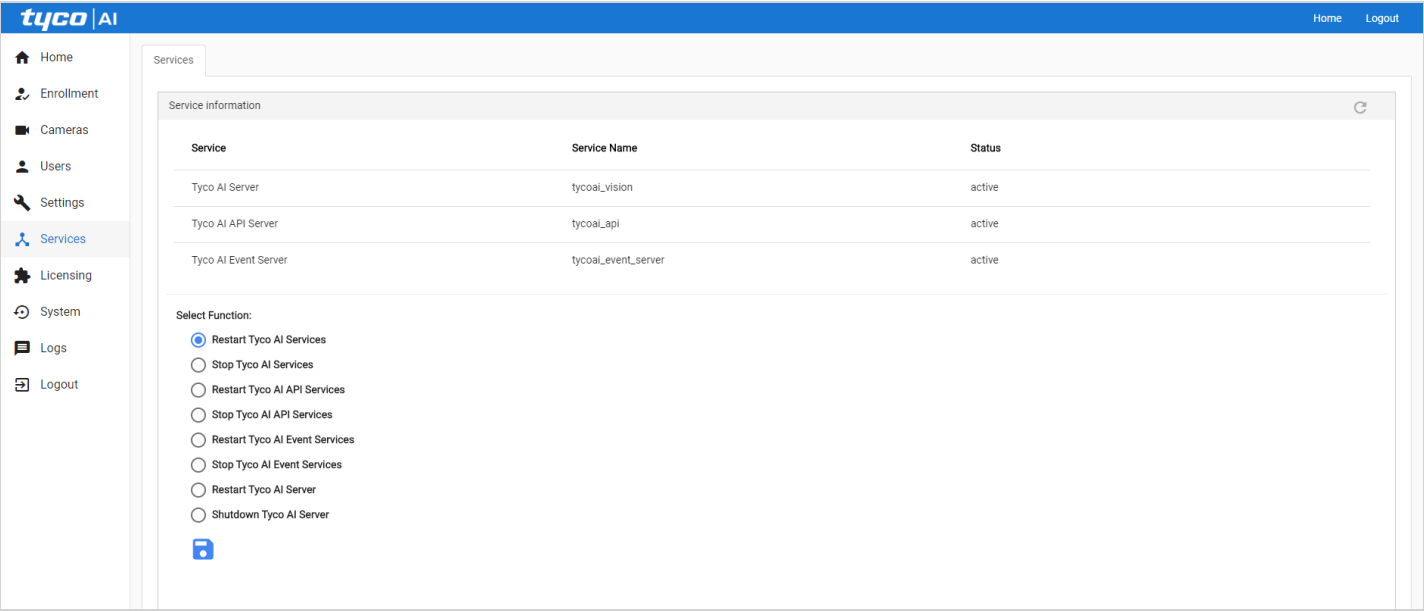
Validity *

365

From the Services page, you can review the status of the Tyco AI Server, the Tyco AI API server, and the Tyco AI Event Server. You can also stop or restart these services, and you can also restart or shut down the Tyco AI server.

Note:
If you shut the Tyco AI server down, you must have local access to the server to restart it.

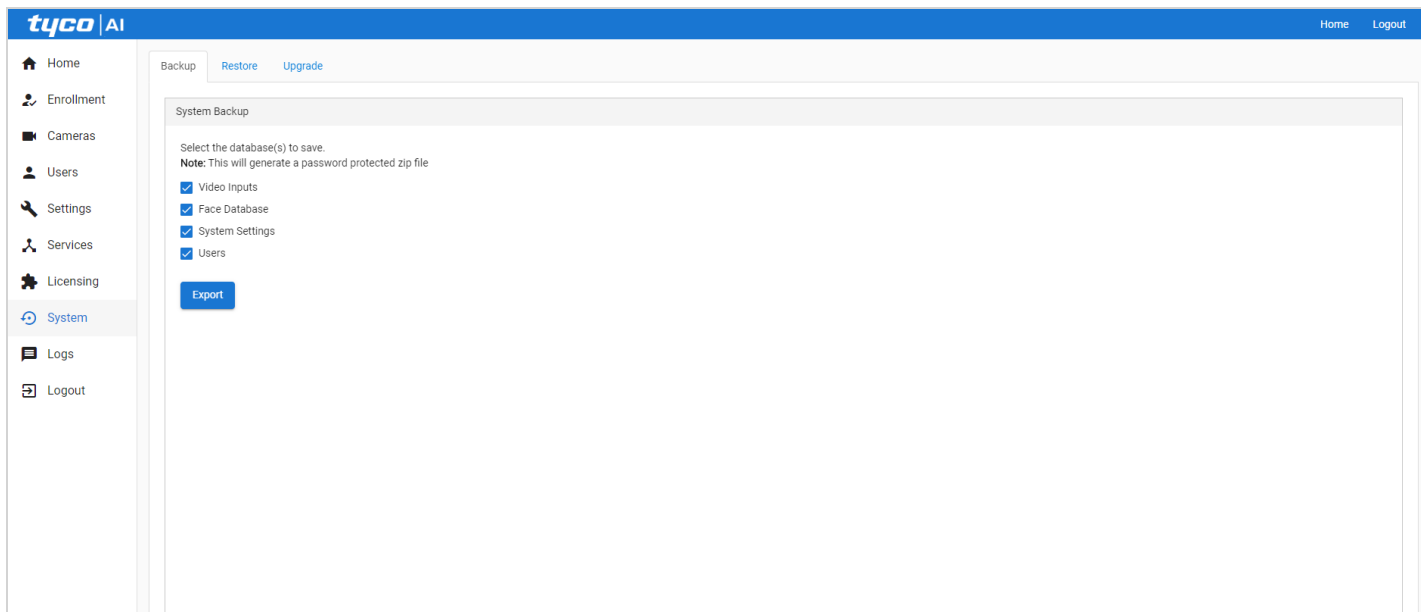
Figure 15: The Services page



The Backup page

From the Backup page, you can back up the Tyco AI databases. The backup file is an encrypted zip file.

Figure 16: The Backup page



Backing up the Tyco AI databases

- 1 From the main menu, click **System**.
- 2 In the **System Backup** pane, select the check boxes for the databases that you want to back up.
- 3 Click **Export**.
- 4 In the **Password Protection** window, enter a password in the **Password** and **Confirm Password** fields.

Note:

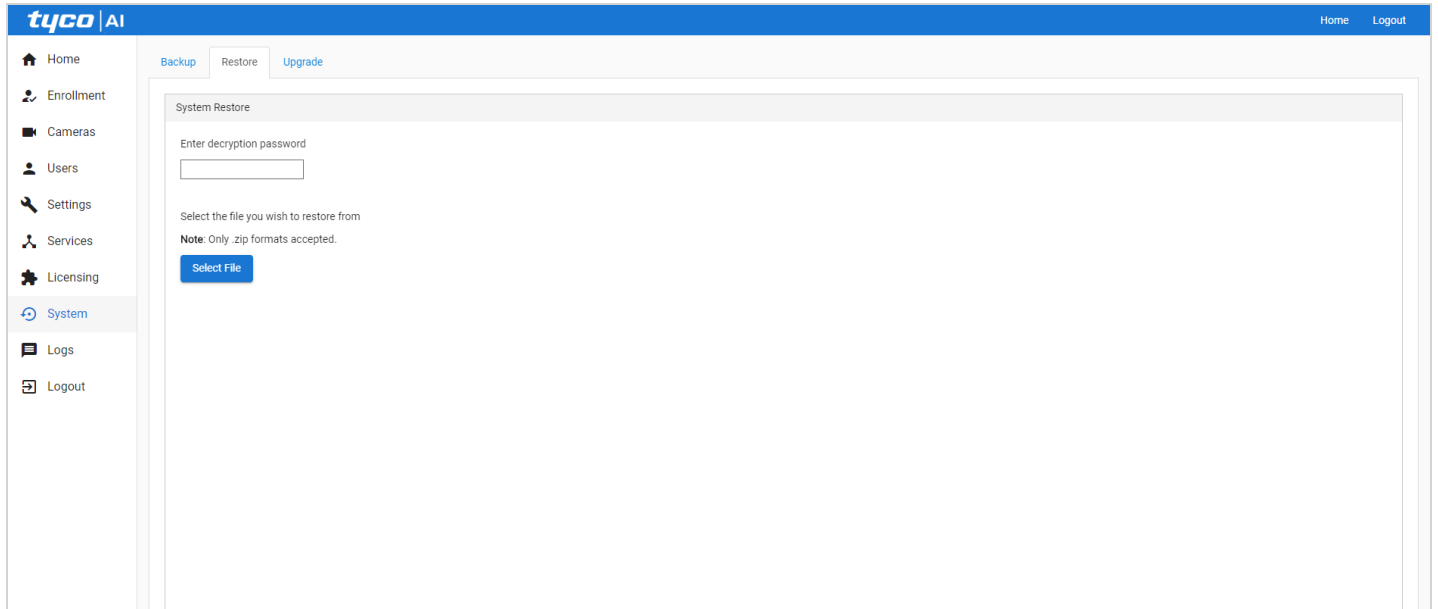
You must use this password to restore the backup. Record this password in a secure location - if the password is lost there is no way to recover it.

- 5 Click **Save**.

The Restore page

From the Restore page, you can upload a backup file to restore Tyco AI databases.

Figure 17: The Restore page



The screenshot shows the Tyco AI web interface. At the top is a blue header with the 'tyco AI' logo on the left and 'Home' and 'Logout' links on the right. A left-hand navigation menu contains icons and labels for Home, Enrollment, Cameras, Users, Settings, Services, Licensing, System (highlighted with a blue bar), Logs, and Logout. The main content area has three tabs: 'Backup', 'Restore' (selected), and 'Upgrade'. Below the tabs is a 'System Restore' section. It contains a text input field labeled 'Enter decryption password', a note stating 'Select the file you wish to restore from' and 'Note: Only .zip formats accepted.', and a blue 'Select File' button.

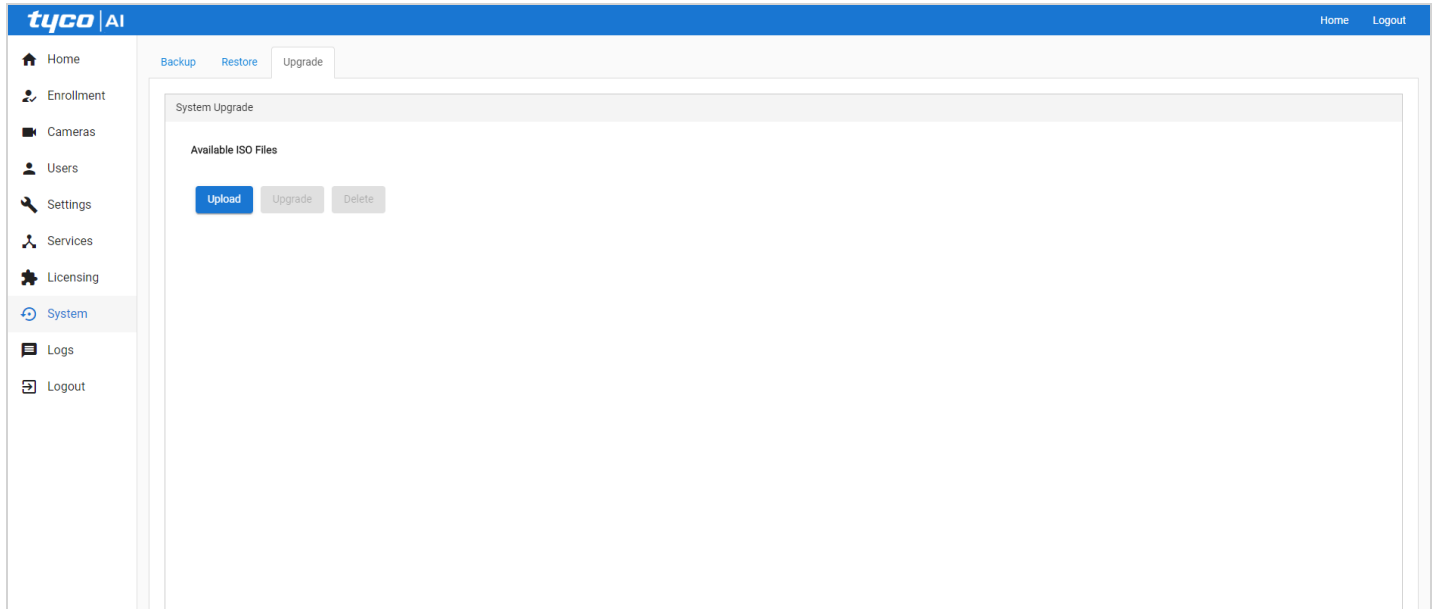
Restoring the Tyco AI databases

- 1 From the main menu, click **System**.
- 2 Click **Restore**.
- 3 In the **System Restore** pane, type the backup file's password in the **Enter decryption password** field.
- 4 Click **Select File**, navigate to the Tyco AI backup file, and click **Open**.

The Upgrade page

From the Upgrade page, you can upgrade the Tyco AI software.

Figure 18: The Upgrade page



Upgrading Tyco AI

- 1 From the main menu, click **System**.
- 2 Click **Upgrade**.
- 3 In the **System Upgrade** pane, click **Select ISO**.
- 4 Navigate to the Tyco AI upgrade file, and click **Open**.

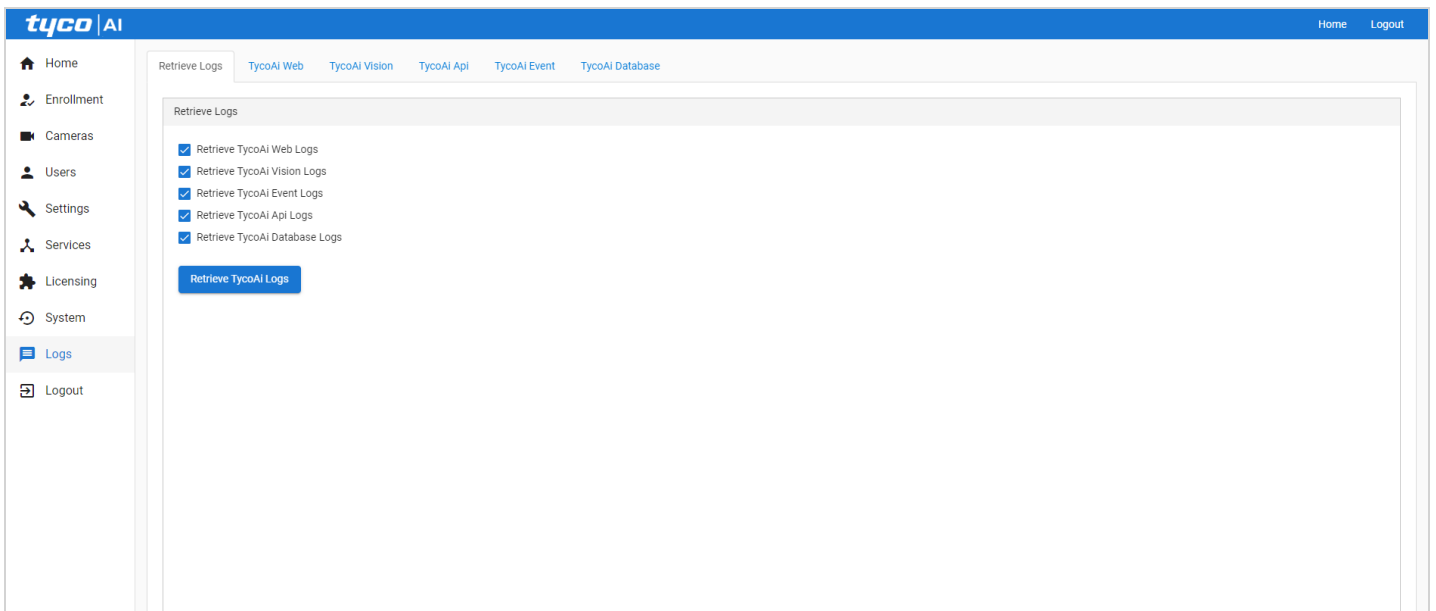
From the Retrieve Logs page, you can download the following system logs:

- Web Server logs
- Tyco AI logs
- Event Server logs
- CouchDb logs

If you need to contact product support, you must provide a copy of these logs.

You can also view individual logs through the Tyco AI interface. Select the tab that corresponds to the log that you want to review.

Figure 19: The Retrieve Logs page



SSL Certificate Country Codes

AX	Aland Islands
AD	Andorra
AE	United Arab Emirates
AF	Afghanistan
AG	Antigua and Barbuda
AI	Anguilla
AL	Albania
AM	Armenia
AN	Netherlands Antilles
AO	Angola
AQ	Antarctica
AR	Argentina
AS	American Samoa
AT	Austria
AU	Australia
AW	Aruba
AZ	Azerbaijan
BA	Bosnia and Herzegovina
BB	Barbados
BD	Bangladesh
BE	Belgium
BF	Burkina Faso
BG	Bulgaria
BH	Bahrain
BI	Burundi
BJ	Benin
BM	Bermuda
BN	Brunei Darussalam
BO	Bolivia
BR	Brazil
BS	Bahamas
BT	Bhutan
BV	Bouvet Island
BW	Botswana
BZ	Belize
CA	Canada
CC	Cocos (Keeling) Islands
CF	Central African Republic
CH	Switzerland
CI	Cote D'Ivoire (Ivory Coast)
CK	Cook Islands
CL	Chile
CM	Cameroon
CN	China
CO	Colombia
CR	Costa Rica
CS	Czechoslovakia (former)
CV	Cape Verde
CX	Christmas Island
CY	Cyprus
CZ	Czech Republic
DE	Germany

DJ	Djibouti
DK	Denmark
DM	Dominica
DO	Dominican Republic
DZ	Algeria
EC	Ecuador
EE	Estonia
EG	Egypt
EH	Western Sahara
ER	Eritrea
ES	Spain
ET	Ethiopia
FI	Finland
FJ	Fiji
FK	Falkland Islands (Malvinas)
FM	Micronesia
FO	Faroe Islands
FR	France
FX	France, Metropolitan
GA	Gabon
GB	Great Britain (UK)
GD	Grenada
GE	Georgia
GF	French Guiana
GG	Guernsey
GH	Ghana
GI	Gibraltar
GL	Greenland
GM	Gambia
GN	Guinea
GP	Guadeloupe
GQ	Equatorial Guinea
GR	Greece
GS	S. Georgia and S. Sandwich Isls.
GT	Guatemala
GU	Guam
GW	Guinea-Bissau
GY	Guyana
HK	Hong Kong
HM	Heard and McDonald Islands
HN	Honduras
HR	Croatia (Hrvatska)
HT	Haiti
HU	Hungary
ID	Indonesia
IE	Ireland
IL	Israel
IM	Isle of Man
IN	India
IO	British Indian Ocean Territory
IS	Iceland
IT	Italy
JE	Jersey
JM	Jamaica
JO	Jordan

JP	Japan
KE	Kenya
KG	Kyrgyzstan
KH	Cambodia
KI	Kiribati
KM	Comoros
KN	Saint Kitts and Nevis
KR	Korea (South)
KW	Kuwait
KY	Cayman Islands
KZ	Kazakhstan
LA	Laos
LC	Saint Lucia
LI	Liechtenstein
LK	Sri Lanka
LS	Lesotho
LT	Lithuania
LU	Luxembourg
LV	Latvia
LY	Libya
MA	Morocco
MC	Monaco
MD	Moldova
ME	Montenegro
MG	Madagascar
MH	Marshall Islands
MK	Macedonia
ML	Mali
MM	Myanmar
MN	Mongolia
MO	Macau
MP	Northern Mariana Islands
MQ	Martinique
MR	Mauritania
MS	Montserrat
MT	Malta
MU	Mauritius
MV	Maldives
MW	Malawi
MX	Mexico
MY	Malaysia
MZ	Mozambique
NA	Namibia
NC	New Caledonia
NE	Niger
NF	Norfolk Island
NG	Nigeria
NI	Nicaragua
NL	Netherlands
NO	Norway
NP	Nepal
NR	Nauru
NT	Neutral Zone
NU	Niue
NZ	New Zealand (Aotearoa)

OM	Oman
PA	Panama
PE	Peru
PF	French Polynesia
PG	Papua New Guinea
PH	Philippines
PK	Pakistan
PL	Poland
PM	St. Pierre and Miquelon
PN	Pitcairn
PR	Puerto Rico
PS	Palestinian Territory
PT	Portugal
PW	Palau
PY	Paraguay
QA	Qatar
RE	Reunion
RO	Romania
RS	Serbia
RU	Russian Federation
RW	Rwanda
SA	Saudi Arabia
SB	Solomon Islands
SC	Seychelles
SE	Sweden
SG	Singapore
SH	St. Helena
SI	Slovenia
SJ	Svalbard and Jan Mayen Islands
SK	Slovak Republic
SL	Sierra Leone
SM	San Marino
SN	Senegal
SR	Suriname
ST	Sao Tome and Principe
SU	USSR (former)
SV	El Salvador
SZ	Swaziland
TC	Turks and Caicos Islands
TD	Chad
TF	French Southern Territories
TG	Togo
TH	Thailand
TJ	Tajikistan
TK	Tokelau
TM	Turkmenistan
TN	Tunisia
TO	Tonga
TP	East Timor
TR	Turkey
TT	Trinidad and Tobago
TV	Tuvalu
TW	Taiwan
TZ	Tanzania
UA	Ukraine

UG	Uganda
UM	US Minor Outlying Islands
US	United States of America
UY	Uruguay
UZ	Uzbekistan
VA	Vatican City State (Holy See)
VC	Saint Vincent and the Grenadines
VE	Venezuela
VG	Virgin Islands (British)
VI	Virgin Islands (U.S.)
VN	Viet Nam
VU	Vanuatu
WF	Wallis and Futuna Islands
WS	Samoa
YE	Yemen
YT	Mayotte
ZA	South Africa
ZM	Zambia