

# TEOS Technical Flowchart

Manage Version 3.3 – Revision 1.0

SONY





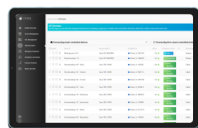
# Make spaces perform: Simplifying Workdays

## ORCHESTRATE YOUR OFFICE



### TEOS Platform\*

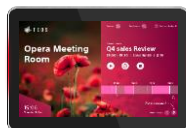
Take full control of devices, signage, content and building controls. Automate scenarios with sensors and manage spaces leased to tenants.



### TEOS Control

Control, manage and schedule all your devices remotely through TEOS

## STREAMLINE BOOKINGS



### TEOS Room Booking

Save time and optimize the use of meeting spaces with an interactive room booking solution.



### TEOS Spaces

Manage meetings and desk bookings from anywhere with a mobile app or Outlook add-in that combines booking, room control and mirroring.

## MAKE VISITING EASY



### TEOS Reception

Extend a professional welcome to every visitor as they sign in and notify their host of their arrival.



### TEOS Wayfinding

Navigate the workplace easily and find available rooms.

As people move through the workplace Sony corporate solutions help them be more efficient and productive.



## MASTER YOUR MEETINGS



### TEOS Meeting Room

Turn idle meeting screens into smart and informative displays, with native mirroring capability.

## COMMUNICATE CLEARLY






### TEOS Signage

Create and distribute eye-catching digital signage. Including touch interactivity, videowall, IPTV and many external source providers from Instagram to PowerBI.



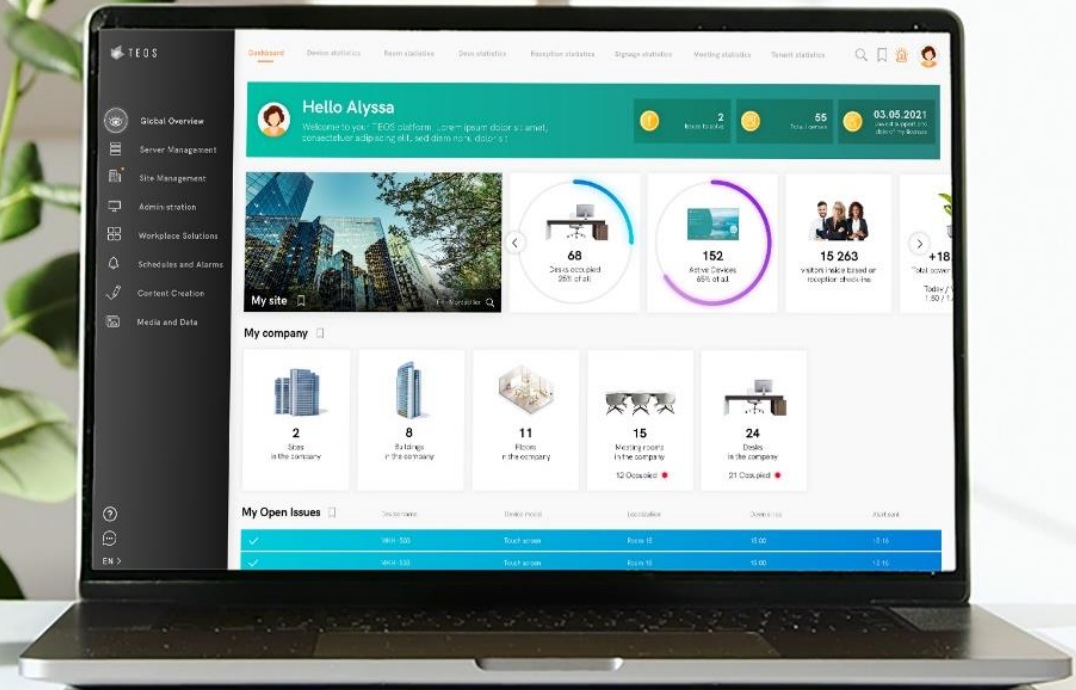
# Choose your installation type

	 TEOS Lite CLOUD	 ENTERPRISE CLOUD	 ENTERPRISE ON-PREMISE
Device Control	Yes	Yes	Yes
Apps installations & Updates	Updates only	Yes	Yes
Issue report	Yes	Yes	Yes
Badge printer (for reception)	No	Yes (email to print)	Yes
User rights management	No	Yes	Yes
Custom protocols	No	Yes (virtual devices only)	Yes (virtual devices & custom commands)
Users access simultaneous accesses	Yes	Yes	Yes (depending on server specifications)
Content rights management	No	Selectable (depending if basic or advanced signage mode is used)	Selectable (depending if basic or advanced signage mode is used)
Schedule management	Yes (power for all devices)	Yes	Yes
Workplace solutions (room booking, etc.)	Simple Room booking	Yes	Yes
Signage	Limited signage	Selectable (Basic or advanced)	Selectable (Basic or advanced)
Analytics & Site overview	No	Yes	Yes
Data Export	No	Yes	Yes
Active Directory & SSO	No	SSO (using OpenID connect)	Yes
Azure AD & MFA	No	Yes	Yes
Building Management	No	Yes (LoRaWAN only)	Yes (KNX, DALI, LoRaWAN)
Mirroring (using TEOS Connect)	Yes	Yes	Yes



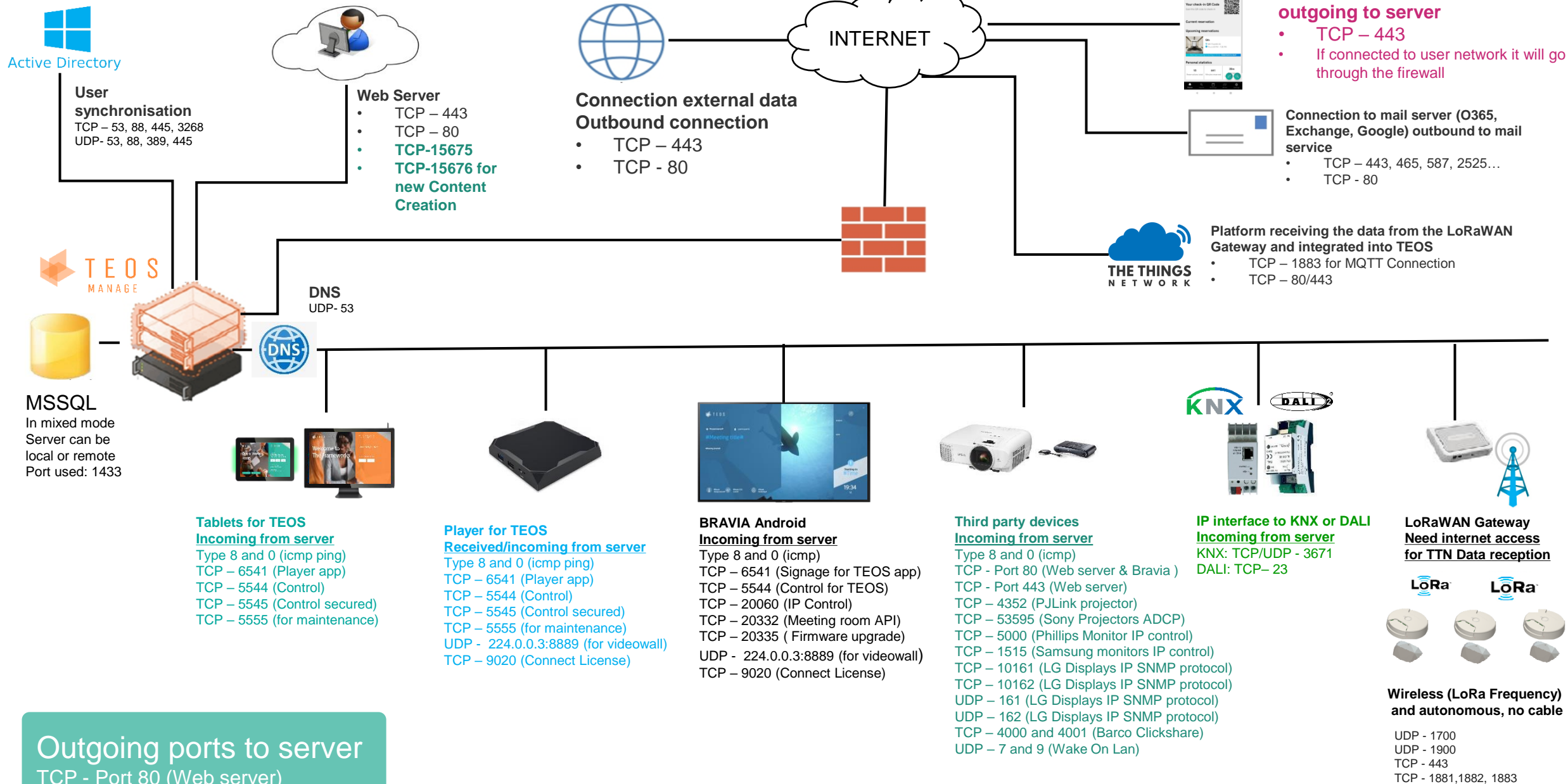
# Technical workflow

## TEOS Server on-premise





# On-premise architecture (push method)



## Outgoing ports to server

TCP - Port 80 (Web server)  
 TCP - Port 443 (Web server)



# Manage for TEOS SERVER Construction

You can find below details extracted from the specification and requirement document for TEOS

Devices / user connected	Processor	Memory	Disk space (for content)
1 - 49 devices / users	4 x 2.1 GHz. *	12GB RAM	80GB
50 - 99 devices / users	4 x 2.6 GHz *	16GB RAM	120GB
100 - 249 devices / users	4 x 3.0 GHz. *	20GB RAM	200GB
250 - 499 devices / users**	6 x 2.6 GHz. *	24GB RAM	400GB
500 - 999 devices / users**	8 x 2.6 GHz. *	32GB RAM	500GB

\*In the case of virtual processors, it is not required to have 2 physical processors.

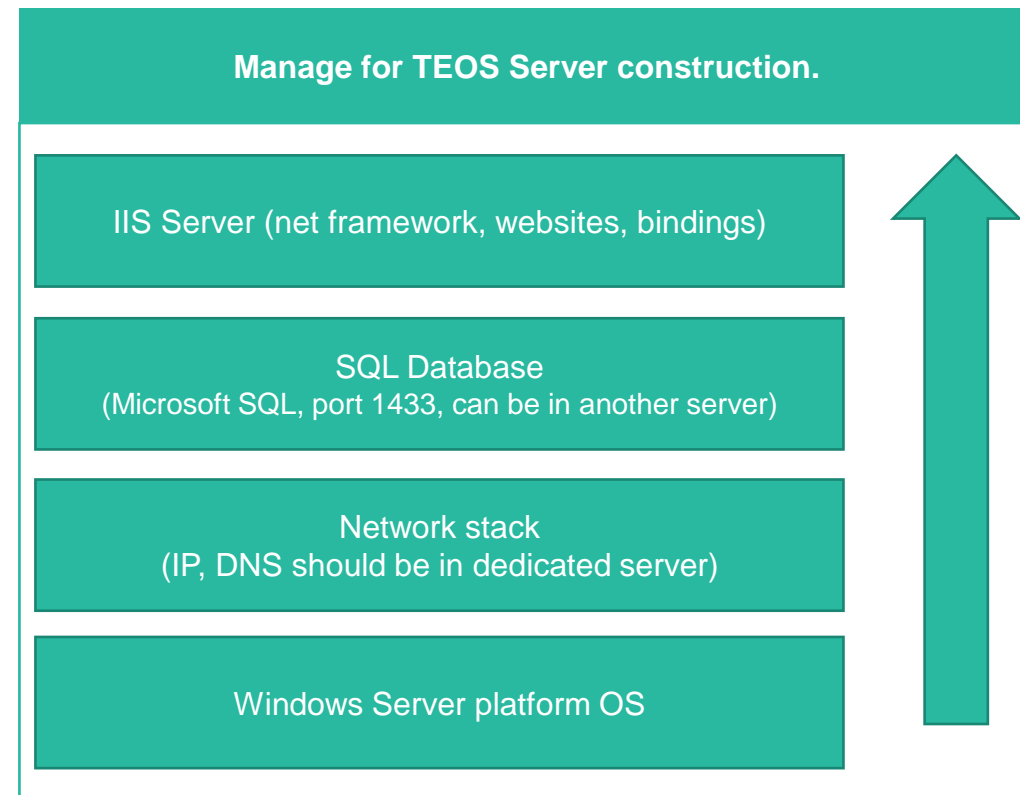
\*\* The SQL server should be installed on a separate server with the same specifications as the TEOS server.

\*\*\* Performances are considering the usage of calendars such as Office365, Google or exchange, if there is no calendar use, performances can be decreased.

The server can **run on hardware** but also **run on a virtualization platform** like Hyper-V, VM-Ware, XEN server or others. For the best performance we recommend that the server has an **SSD storage device** directly connected, or in the case of **virtualization**, a **SAN with SSD storage**.

**NOTE:** If you require higher performance, please contact us for advice on hardware requirements.

**NOTE:** If Microsoft SQL Express is used in TEOS server localhost, it is recommended to use 1x socket with for 4 cores/CPU (maximum that SQL Express license can perform) just for SQL. If you use a Microsoft SQL Standard or any other license, please check the performance requirements to make sure it is efficient.



TEOS Application is installed on a server with such configuration and will interact with the different services



# Manage for TEOS SSL Certificate on premise

The table below gives more information and requirements to take into consideration when using Manage for TEOS with **External platform used on different Add-ons**. **SSL certificates for TEOS are not provided by Sony for the on-premise version and are mandatory** for a full usage of TEOS features. Online certificates are compatible with Manage for TEOS, no internal certificates and self signed certificates.



## Official Trusted Root Certificates on Android Mandatory

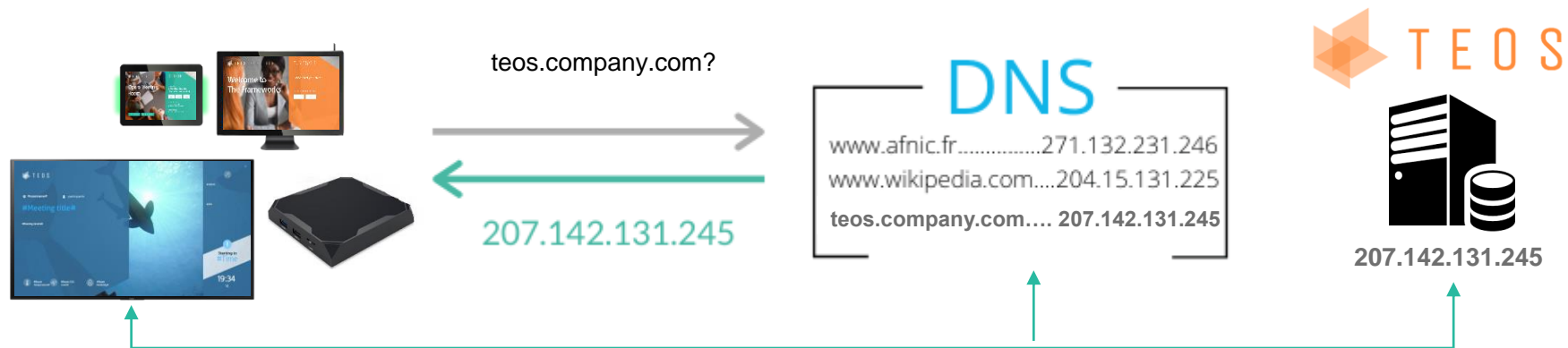
1. Open Settings
2. Tap "Security"
3. Tap "Encryption & credentials"
4. Tap "Trusted credentials." This will display a list of all trusted certs on the device.

TEOS Add-on	External platform compatible	SSL Certificate Required*
Wayfinding for TEOS	Office365	NO (OAuth 2.0)
	Google Calendar	YES (OAuth 2.0)
	RSS (SOCIAL MEDIAS)	YES
Reception for TEOS	Office365	YES (Add-in)
	Outlook (from 2010)	YES (Add-in)
	RSS (SOCIAL MEDIAS)	YES
	Office365	NO (OAuth 2.0)
	Google Calendar	YES (OAuth 2.0)
Book for TEOS	Office365	NO (OAuth 2.0)
	Google Calendar	YES (OAuth 2.0)
Meeting Interface / Meeting display / Rooms status	Office365	NO (OAuth 2.0)
	Google Calendar	YES (OAuth 2.0)
Employee App/ Outlook Add-in (only with Office365)	Office365	YES
	Google Calendar	YES
	Calendar for TEOS	YES
	Microsoft Exchange	YES
	Single Sign On	YES



# Manage for TEOS DNS Entries

The Domain Name of the server (IIS) is configurable during the installation of the TEOS application, make sure the DNS name of TEOS is reachable by the devices and users.



TEOS Web Service	DNS Record	DNS record example
Main website client access	yourcompany.com	teos.sony.com

For Manage for TEOS to work properly there needs to be multiple DNS records pointing to the Manage for TEOS server IP address, for example:

**teos.sony.com** can be replaced by your own domain name at the installation time or using domain name changer software



# TEOS On-premise device configuration and communication

Platform domain is in your DNS name.

DNS need to be accessible as well as port opens to make sure communication will work



TEOS Android Player  
(Signage app)



TEOS Control



TEOS Connect

## Company network



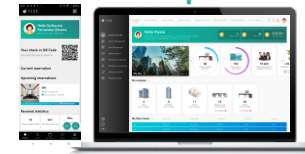
Please follow the existing installation guides for BRAVIA and take the IP address of your BRAVIA to put it in your TEOS Server



When receiving a new tablet, all the apps are directly installed in the tablet. You only need to take the IP address from the device to add it in TEOS Server

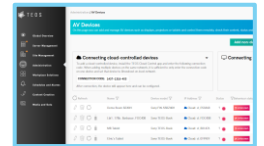


Please follow the existing installation guides for the installation of an Android Player and take the IP address of your Player to put it in your TEOS Server



You can use the Mobile apps for TEOS or the Client Web access, insert the TEOS URL  
<https://yourcompanyteosname.com/employeeapp> for the web access and your login and password

TEOS



<https://yourcompanyteosname.com>

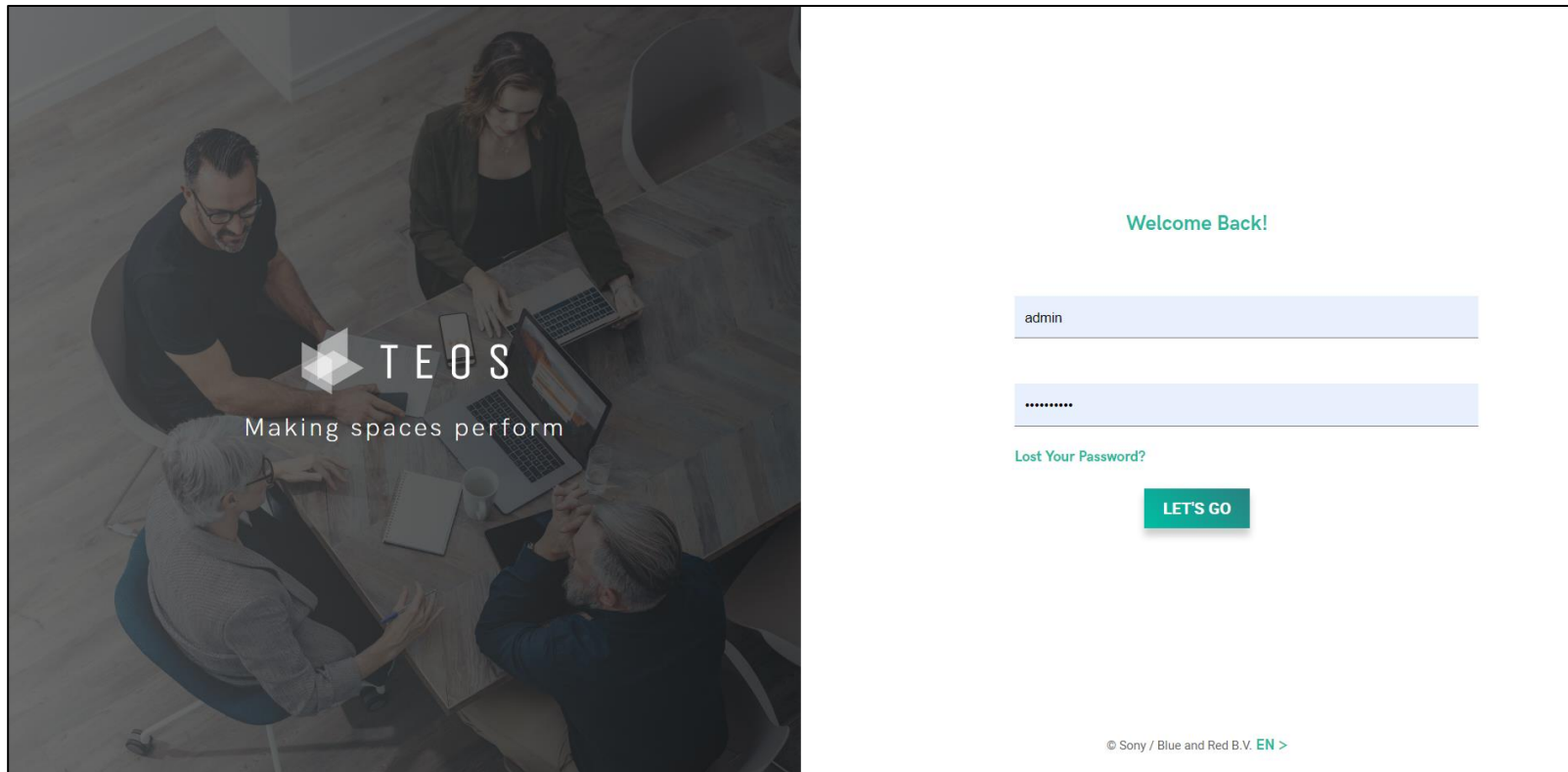
First connection of a device in TEOS Server is done by adding the device IP address in TEOS and adding license to the device (device need to be configured). TEOS is after sending commands to the devices



# Add your device TEOS (1/3)

Please find below the different steps to connect your devices to TEOS

1. Make sure your TEOS Apps are installed and configurations are done in your device
2. Connect to your TEOS platform for example <https://sony.teosonpremise.com>, default login and password are : admin/admin

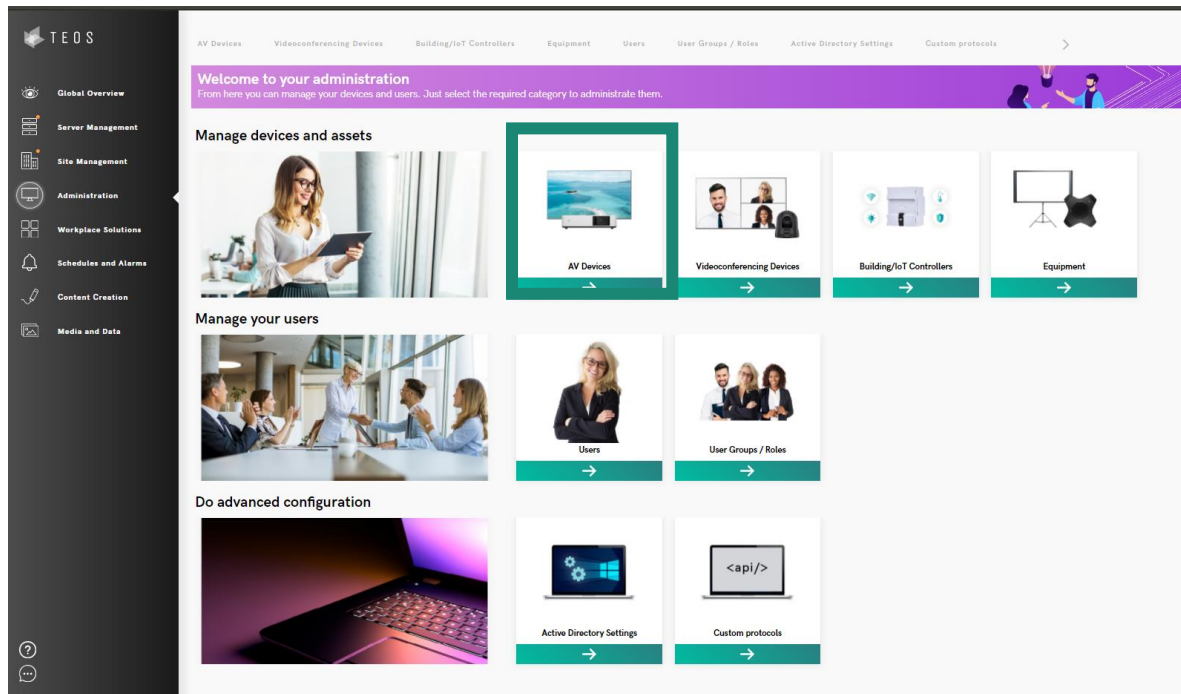




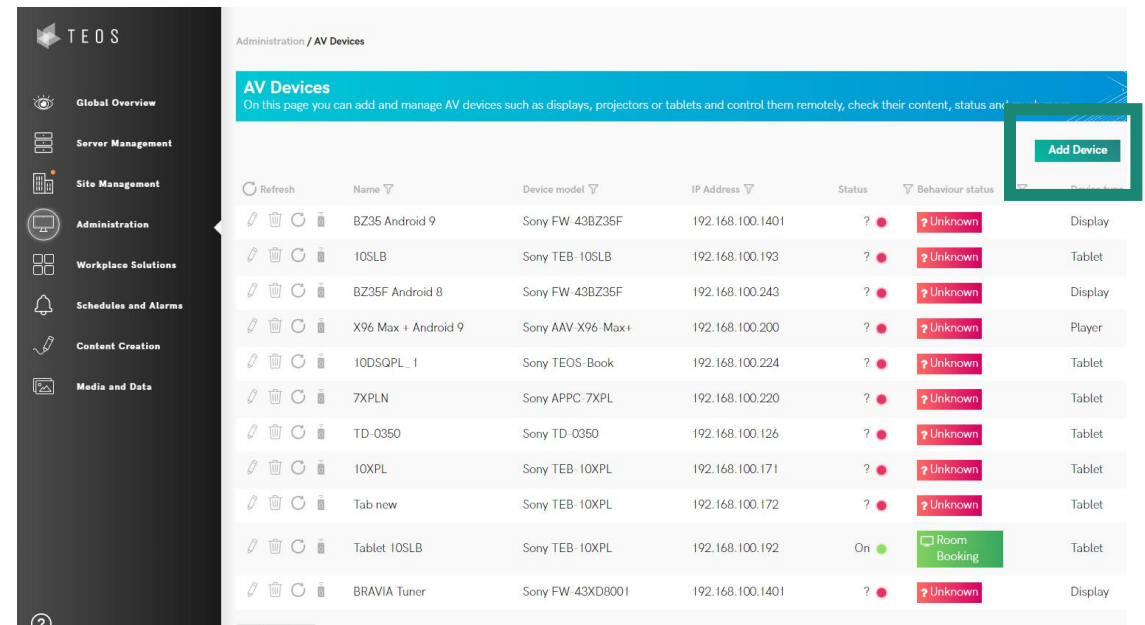
# Add your device TEOS (2/3)

Please find below the different steps to connect your devices to TEOS

3. Go to Administration > AV Devices



4. Under AV Device, click on « add device » to add manually your device, you can also do an auto-discovery or import a group of device from an excel





# Add your device TEOS (3/3)

Please find below the different steps to configure your devices to TEOS

5. You can finalise your device configuration by adding the **IP address** of your device, **assigning his license**, defining a **device name**, linking it with a **device localization**, etc. Press save when configuration is finished

Administration / AV Devices

### Edit device

On this page you can change the settings of your AV device to be used in TEOS.

**General** Status

**General**

Name:  ?

Device type:  ▼

Device brand:  ▼

Model:  🔍 ?

IP Address:  ?

License type:  ▼ ?

Room/desk solution type:  ▼ ?

Controlled by custom protocol: ☐ ?

Ignore schedule: ☐ ?

**Device Localization**

Company

Site 1

Building 1

Floor 1

Room 1

Room 2

Desk Zone

会議室の床

Basic desk zone

Basic Zone 2

Advanced desk zone

Basic Zone 3

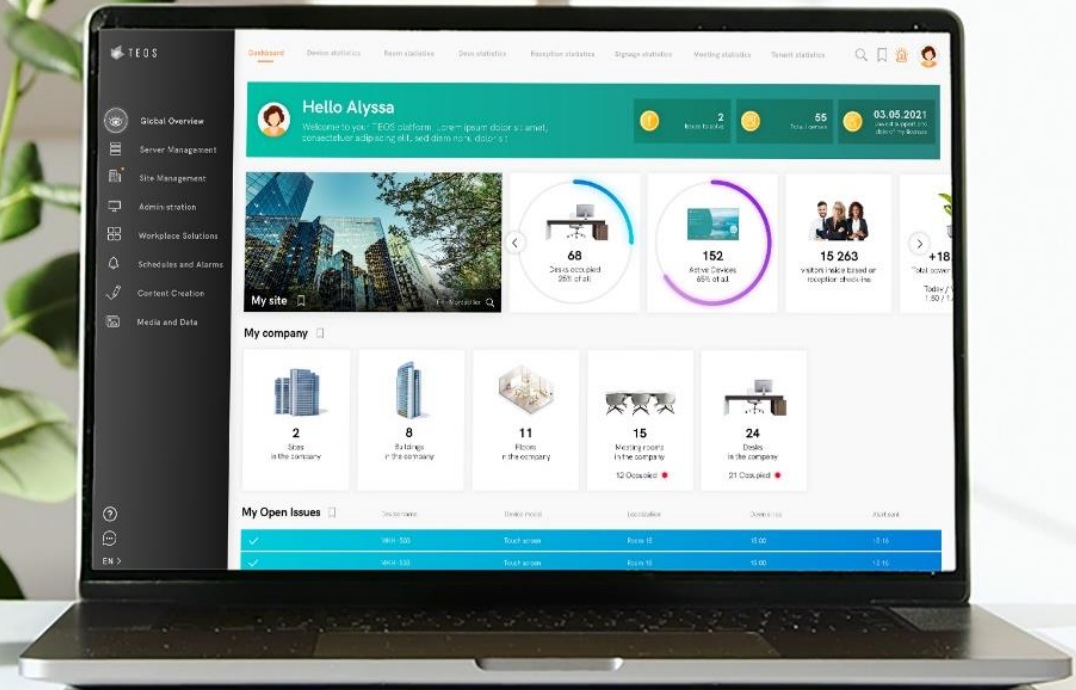
6. Your device status become green and your device takes your configuration. TEOS Start pushing the content at that moment.

Refresh	Name	Device model	IP Address	Status	Behaviour status
	Tablet 10SLB	Sony TEB-10XPL	192.168.100.192	On	Room Booking



# Technical workflow

## TEOS Server CLOUD

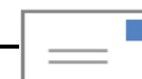
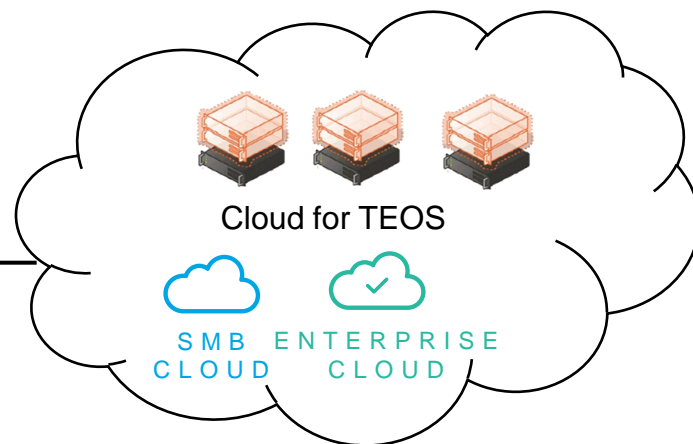
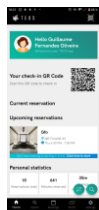




# CLOUD architecture (pull method)

## TEOS Employee app and Mobile outgoing to server

- TCP – 443
- Connection can be done directly using 3G/4G access too



Connection to mail server (O365, Google) outbound to mail service



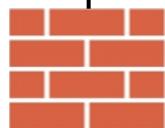
Azure AD for calendar and user Management



External datasources incoming to server  
TCP - 443



Platform receiving the data from the LoRaWAN Gateway and integrated into TEOS



### Tablets for TEOS outgoing to server

TCP – 443  
TCP – 5671 (TEOS Cloud Control)  
TCP – 8084 (TEOS Content)



### Player for TEOS outgoing to server

TCP – 443  
TCP – 5671 (TEOS Cloud Control)  
TCP – 8084 (TEOS Content)  
UDP - 224.0.0.3:8889 (for videowall local network)  
TCP – 9020 (Connect License)



### BRAVIA Android outgoing to server

TCP – 443  
TCP – 5671 (TEOS Cloud Control)  
TCP – 8084 (TEOS Content)  
UDP - 224.0.0.3:8889 (for videowall local network)  
TCP – 9020 (Connect License)



### Third party devices

#### Incoming from TEOS Cloud Control device

Type 8 and 0 (icmp)  
TCP - Port 443 (Web server)  
TCP – 4352 (PJLink projector)  
TCP – 53595 (Sony Projectors ADCP)  
TCP – 5000 (Phillips Monitor IP control)  
TCP – 1515 (Samsung monitors IP control)  
TCP – 10161 (LG Displays IP SNMP protocol)  
TCP – 10162 (LG Displays IP SNMP protocol)  
UDP – 161 (LG Displays IP SNMP protocol)  
UDP – 162 (LG Displays IP SNMP protocol)  
TCP – 4000 and 4001 (Barco Clickshare)  
UDP – 7 and 9 (Wake On Lan)

UDP - 1700  
UDP - 1900  
TCP - 443  
TCP - 1881, 1882, 1883



LoRaWAN Gateway  
Need internet access  
for TTN Data reception



Wireless (LoRa Frequency)  
and autonomous, no cable



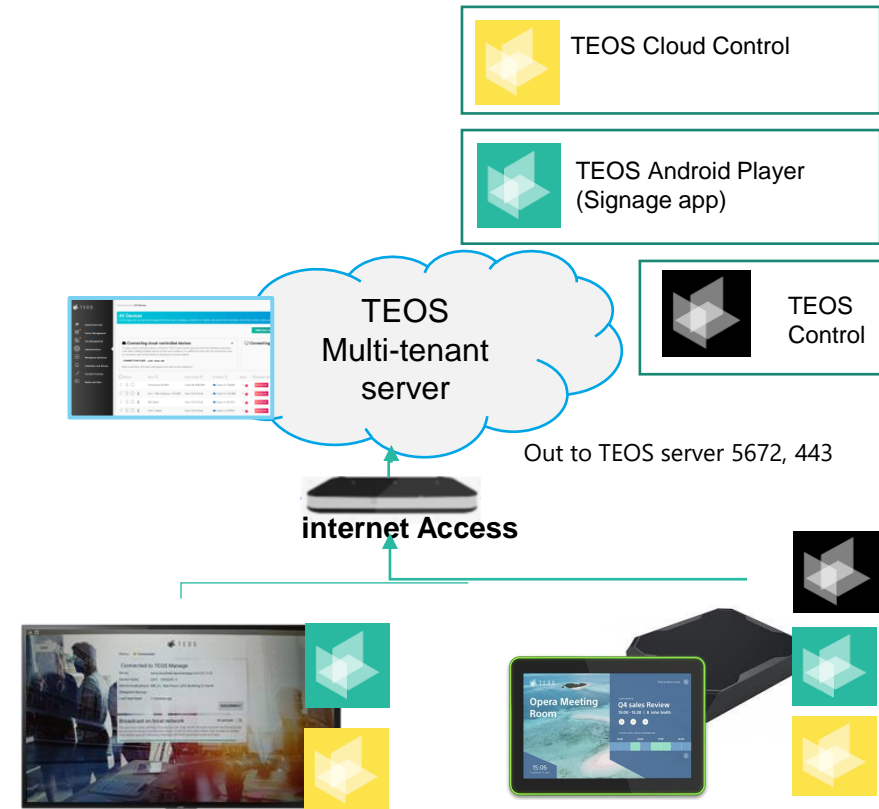
# CLOUD app and device configuration

Platform domain is in teoscloud.com, when purchasing Cloud for TEOS, you will be able to define the first name part like **sony.teoscloud.com**.  
TEOS Cloud server is protected with an SSL certificate

Source IP Address	Destination DV, Env & Tier Info	Destination Host	Protocol & Service	Port Number	Comment/justification / Description
To be done in the different active sites	Sony TEOS AWS CLOUD	"tenantname".teoscloud.com	HTTPS	443	Web traffic to the TEOS Cloud Cluster. Both used for accessing the portal, as well as devices to retrieve presentation information and media.
		cloudbroker.teoscloud.com cloudweb-prod-lb1.teoscloud.com	HTTPS	443	Central point for all device connections, after which they are directed to the correct customer environment
		rabbitmq-prod-lb1.teoscloud.com	TCP	5671	Message queue traffic to control and manage devices
		ufe33ed5.ala.dedicated.aws.emqxcloud.com	TCP	8084	NEW URL needed in case you want to use the new content creation module from TEOS version 3.3 (2024 version)

**Recommended to use URLs** instead of Public IP address to **allow in Firewall**.

If there is no other possibility to allow URL in firewall, you can do an nslookup to the URLs to identify the IP addresses, but IP's can change.



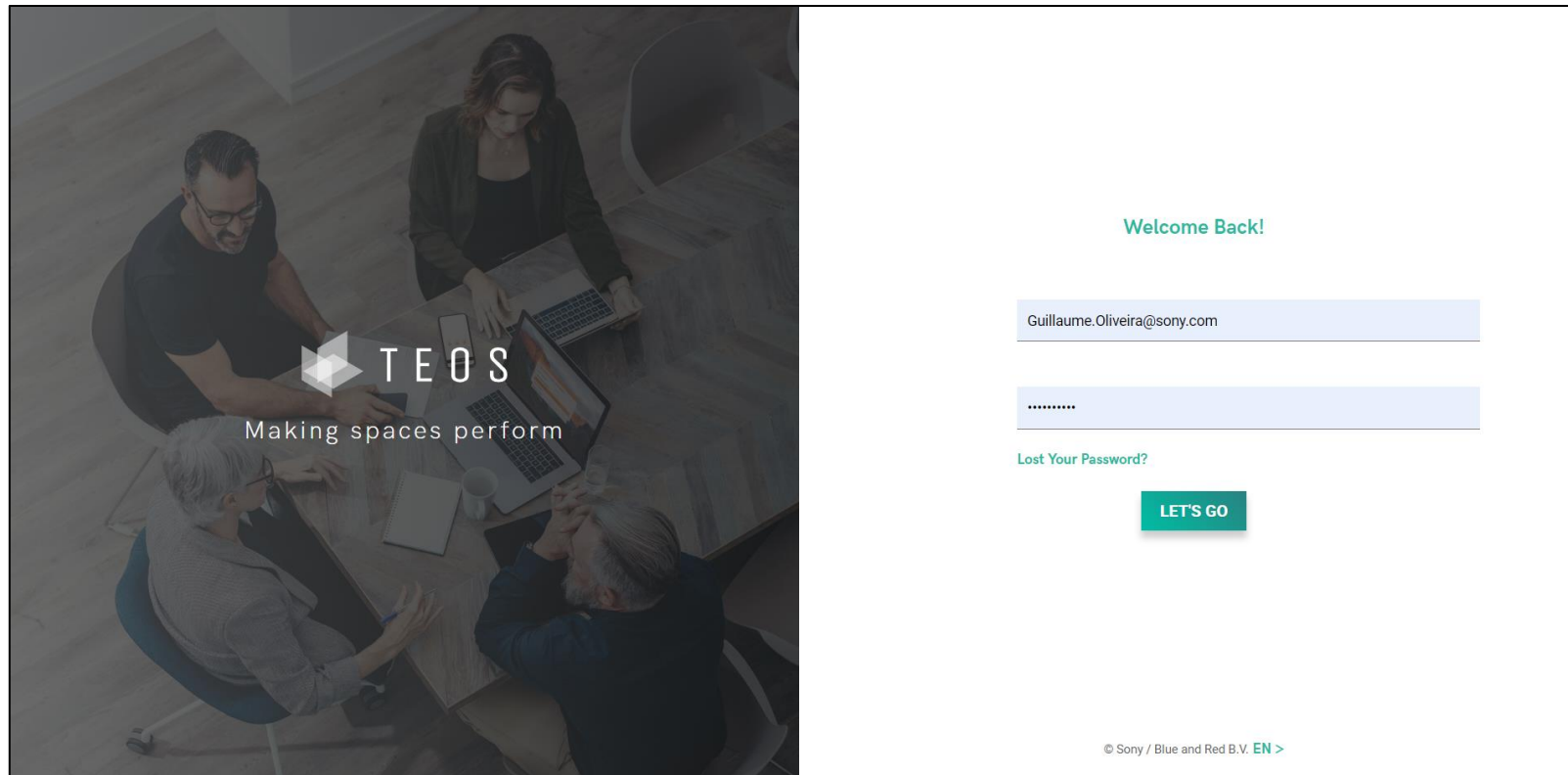
All the configuration of the devices remains the same as it is for on premise installation.  
Please follow the existing installation guides just install on top the TEOS Cloud Control app



# Connect you device to the Cloud for TEOS (1/4)

Please find below the different steps to connect your devices to TEOS

1. Make sure your TEOS Cloud app is installed in your device and all the configuration is done
2. Connect to your CLOUD platform for example <https://sony.teoscloud.com>, default login and password are admin/admin

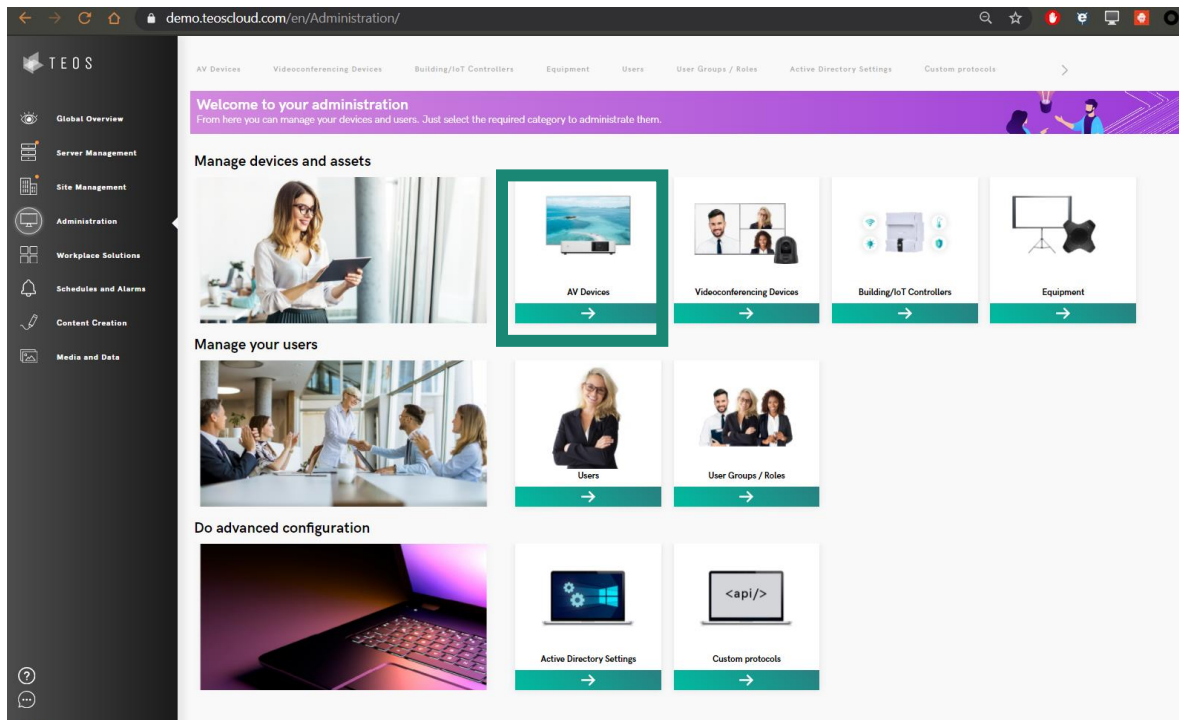




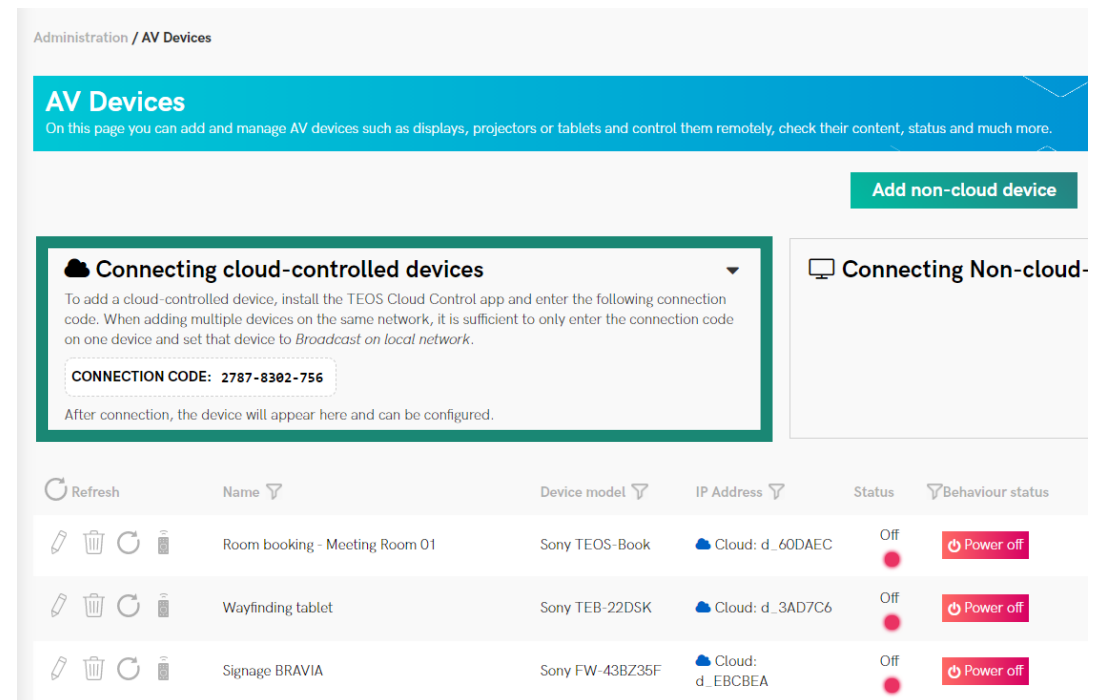
# Connect your device to the Cloud for TEOS (2/4)

Please find below the different steps to connect your devices to TEOS

## 3. Go to Administration > AV Devices



## 4. Under AV Device, drop down the « Connecting cloud-controlled devices Connection Code and copy it into your device TEOS Cloud control App, after opening it in your device

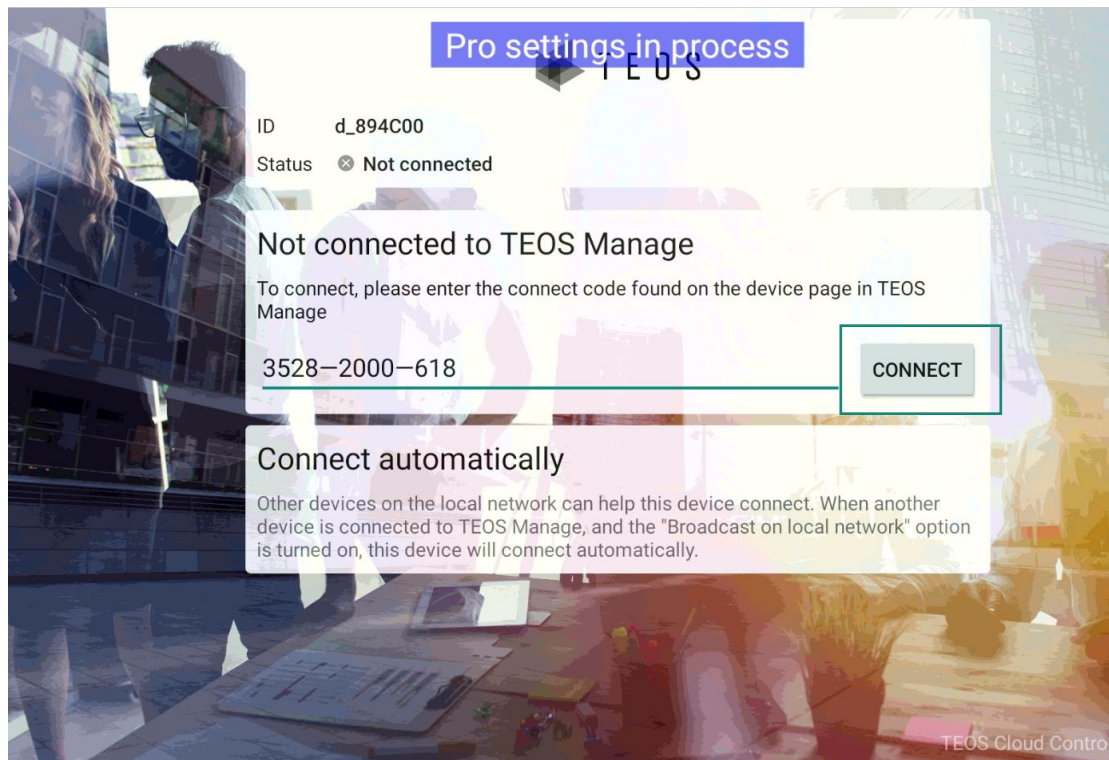




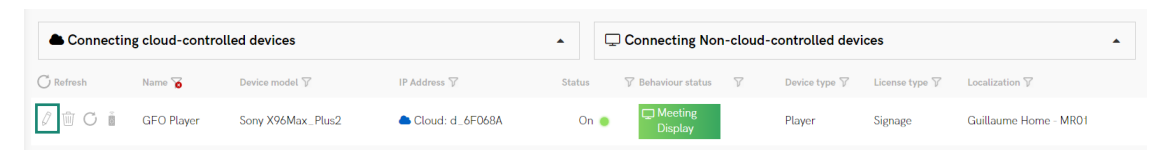
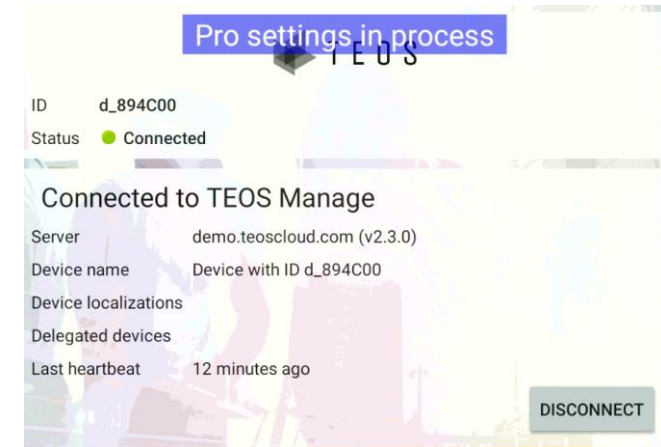
# Connect your device to the Cloud for TEOS (3/4)

Please find below the different steps to connect your devices to TEOS

5. After putting the passcode in your device click « connect »  
Your device will automatically register under your TEOS Server



6. Under AV Device, refresh your web page with F5 key, your device will be then visible in TEOS and ready for configuration and license registration. Next step is to go to device edit





# Connect your device to the Cloud for TEOS (4/4)

Please find below the different steps to configure your devices to TEOS

1. You can finalise your device configuration by assigning his license, defining a device name, linking it with a device localization, etc. Press save when configuration is finished

Administration / AV Devices

**Edit device**  
On this page you can change the settings of your AV device to be used in TEOS.

General   Mirroring Settings   Status

**General**

Name: BRAVIA For Meeting Room 01

Device type: Display

Device brand: Sony

Model: FW-55BZ40H

IP Address: Cloud: d\_72BF48

Sub device: No sub-device

License type: Meeting Room

Ignore schedule: ☐

Block when on external input: ☒

**TEOS App settings**

Rotation (\*): None

Always in front: ☐

**Device Localization**

— Demo Company

— SIT HQ Via Rizzoli

— Building Name

— Ground floor

Parking Company

— First floor

**Meeting Room 01**

Desk 01

Meeting Room 02

Meeting Room 03

Desk 02

Desk 03

Desk 04

Desk 05

Desk 06

Back Save

2. Your device status become green and your device takes your configuration



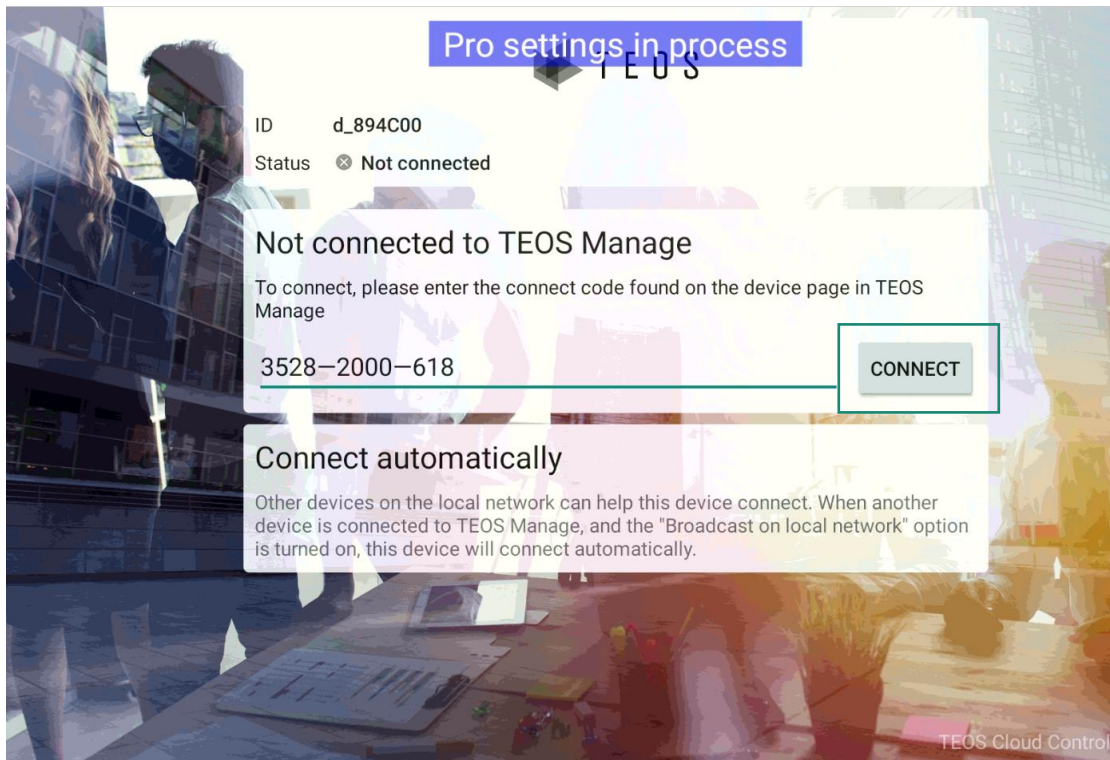


# Connect a third party device to the Cloud for TEOS

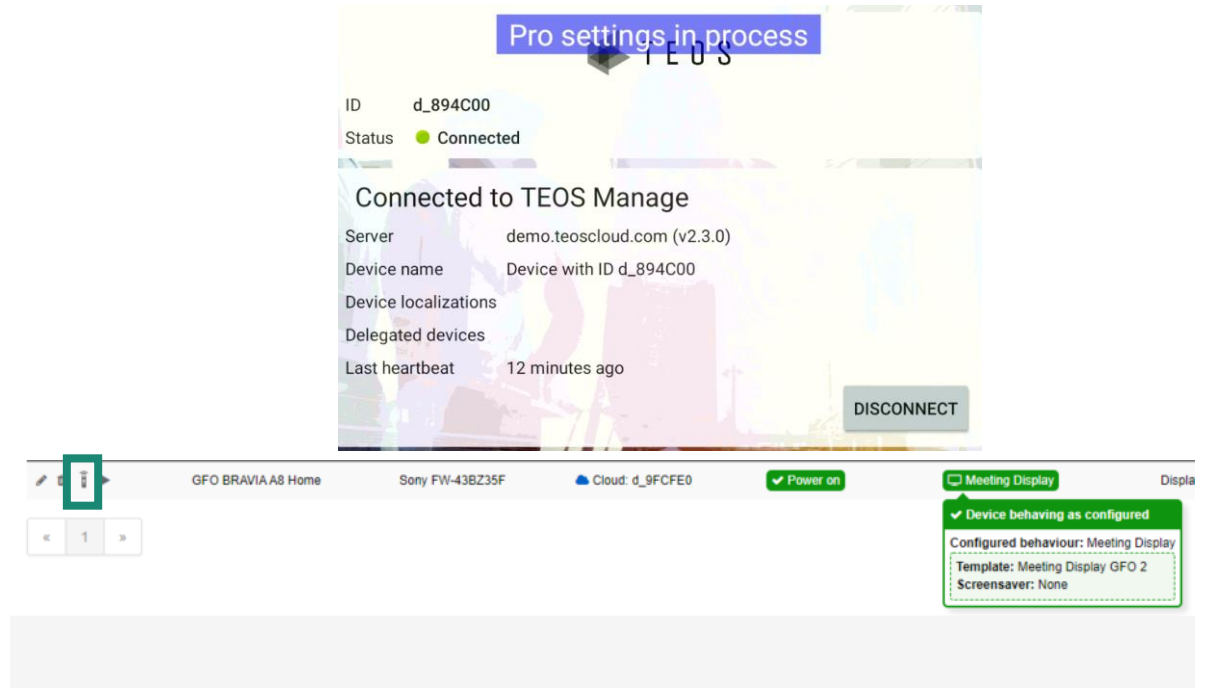
For this Integration you will need a device compatible with TEOS such as BRAVIA Android, tablet for TEOS, and Android player for TEOS.

5. After putting the passcode in your device click « connect »

Your device will automatically register under your TEOS Server



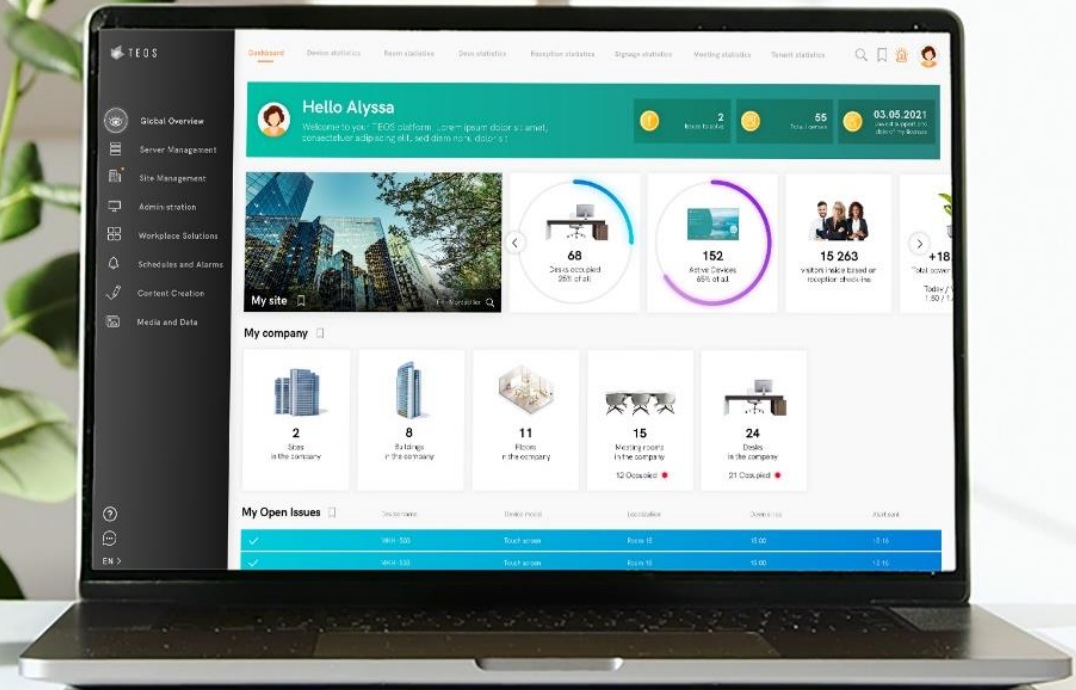
6. Under AV Device, refresh your web page with F5 key, your device will be then visible in TEOS and ready for configuration and license registration. Next step is to go to device edit





# Technical workflow

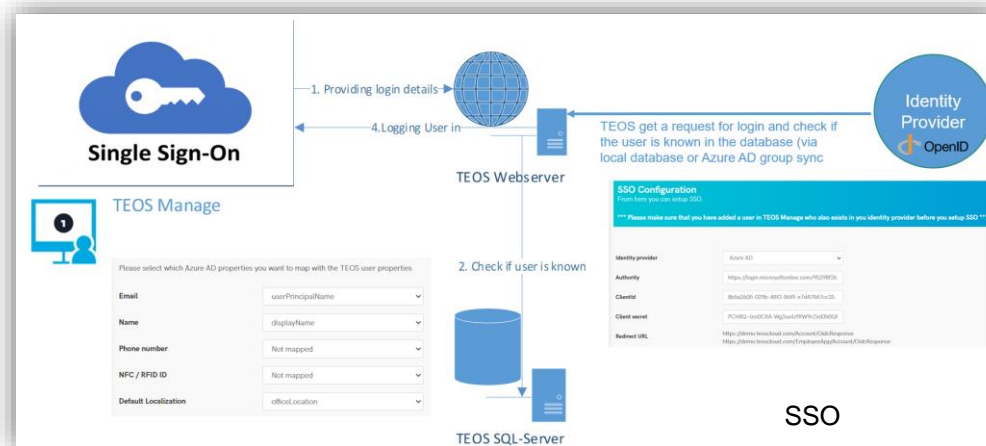
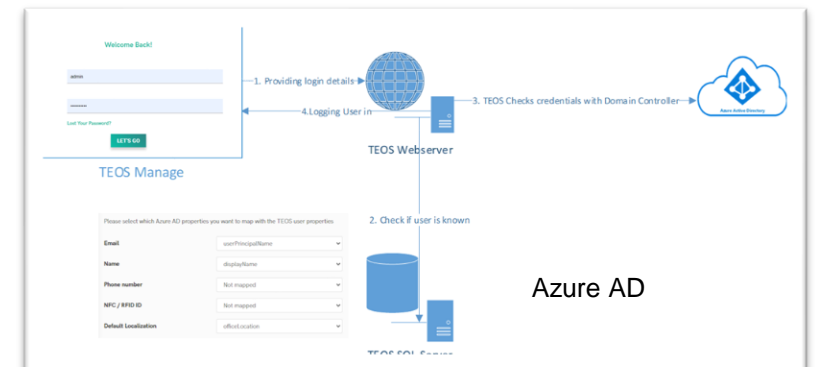
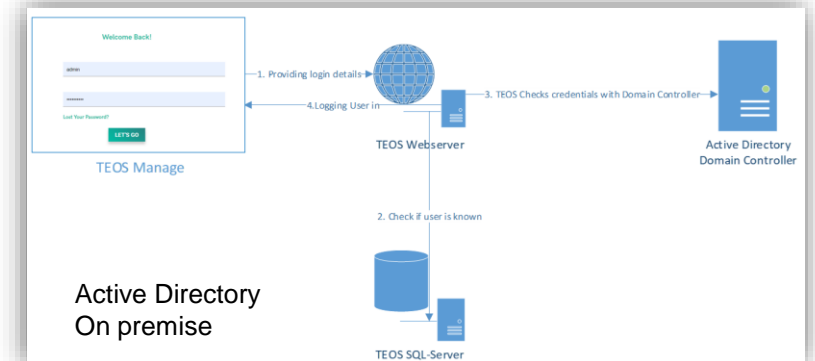
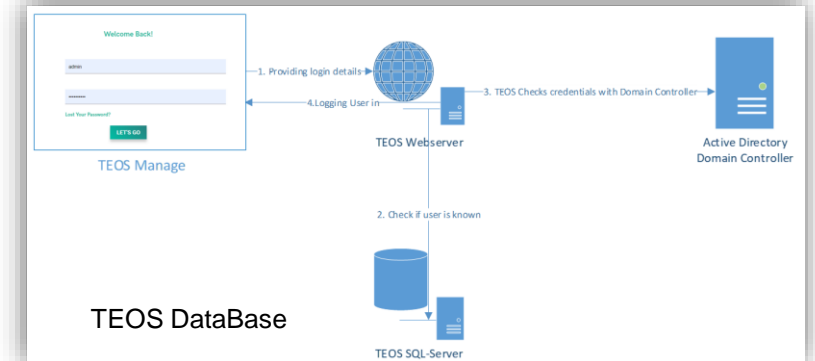
## TEOS Communications





# Manage for TEOS – Login capabilities

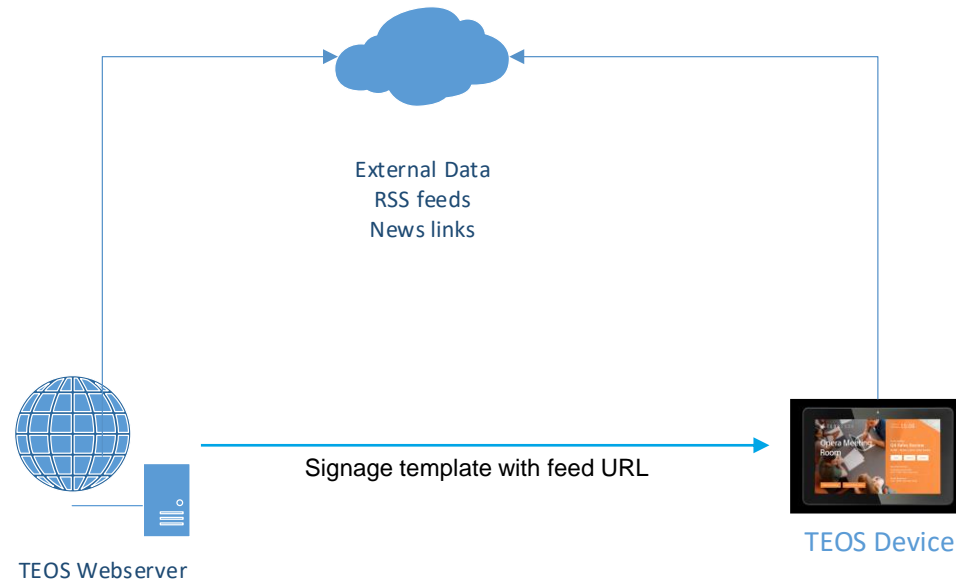
Platform	Login type	Comments
On-premise & CLOUD	Using TEOS DB and defining user email and password to access	Users can be added manually or from an excel import. Policy applied for password: 1 uppercase, 1 lowercase, 1 special character, 1 digit and 8 characters minimum
On-premise & CLOUD	Azure AD with or without MFA	Synchronization thanks to Azure Application. On top of application details object ID of groups or name of groups are required to sync with user roles. MFA taken into account according to the Azure Authentication policy
On-premise & CLOUD	SSO with TEOS DB	Single Sign On is supported from TEOS 3.3 with OpenID Connect, a dedicated procedure is explaining how to configure. Email address of user needs to be registered in TEOS to be able to login
On-premise & CLOUD	SSO with Azure AD	Same as with TEOS Database but a more centralized way to synchronize user roles and groups of users
On-premise Only	Active Directory	For on premise usage. Server must have access to the AD domain
On-premise Only	SSO with machine in Domain (AD)	Configuration done in IIS server being part of the domain to authenticate user with Active Directory





# Manage for TEOS – Datasources

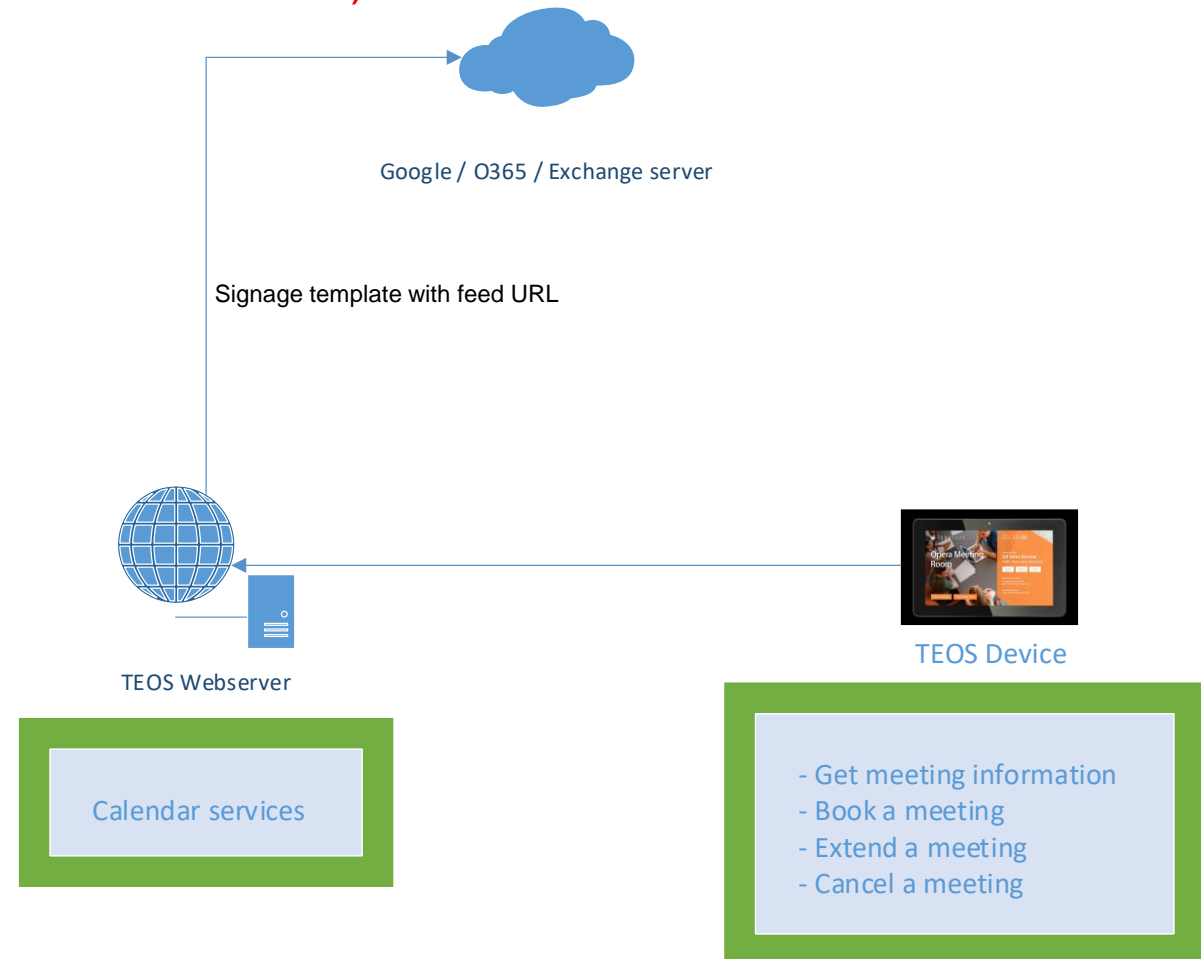
External datasource (Social media, RSS/XML feed), **URL store in device for direct connection** from the device to the feed.



Content Creation



Microsoft 365 (OAuth2), Google(Oauth), Exchange, Calendar Sync (**Via Manage for TEOS Server**)





# Connect for TEOS

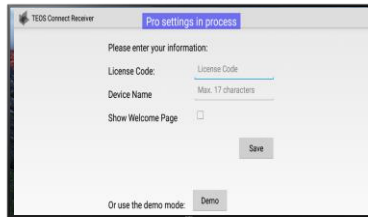
## Technical Flows





# Connect for TEOS License Registration with TEOS Manage

## BRAVIA Android with pro mode or Players for TEOS



Outgoing to Connect for TEOS Receiver  
(Listening port of devices for registration)

- TCP - Port 9020

Push the license

Information if license is assigned

## TEOS servers



SMB  
CLOUD



ENTERPRISE  
CLOUD



ENTRPRISE  
ON-PREMISE

TEOS Server can push the TEOS Connect license but registration is directly from device to registration server (for the serial number)

- TCP - Port 9020
- TCP – Port 443

teosmanage.com  
registration server

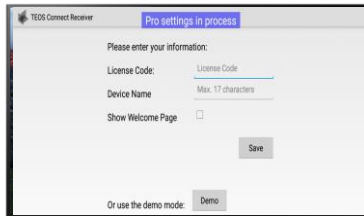
Checking if the license is created and available, getting the device serial number or MAC Address, and register the license

- TCP- 443



# Connect for TEOS License Registration in standalone

## BRAVIA Android with pro mode or Players for TEOS



**Outgoing to Connect for TEOS Receiver  
(Listening port of devices for registration)**

- TCP - Port 9020

Check license availability and push the license

INTERNET  
Or Only firewall open  
port 9020 and DNS  
name teosmanage.com

Information if license is assigned

## teosmanage.com registration server



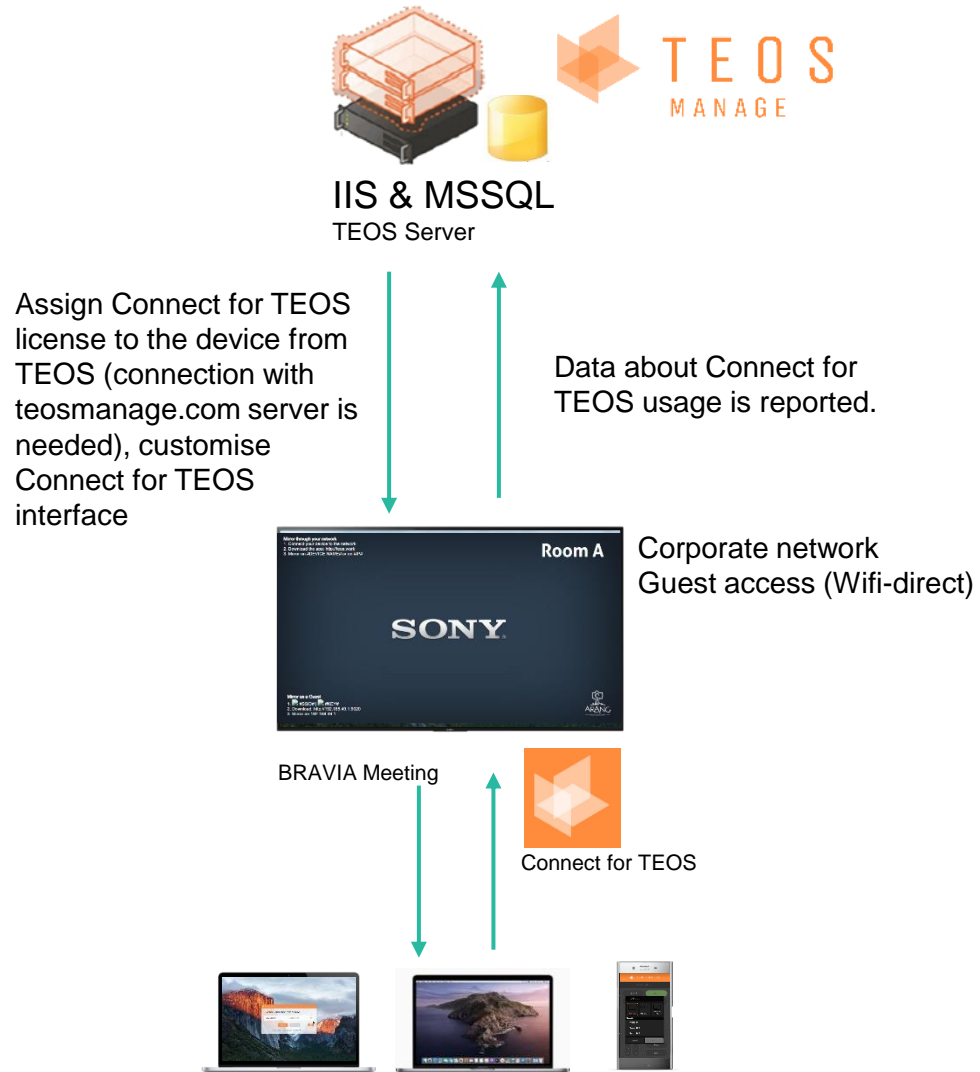
**Checking if the license is created and  
available, getting the device serial number or  
MAC Address, and register the license**

- TCP - Port 9020



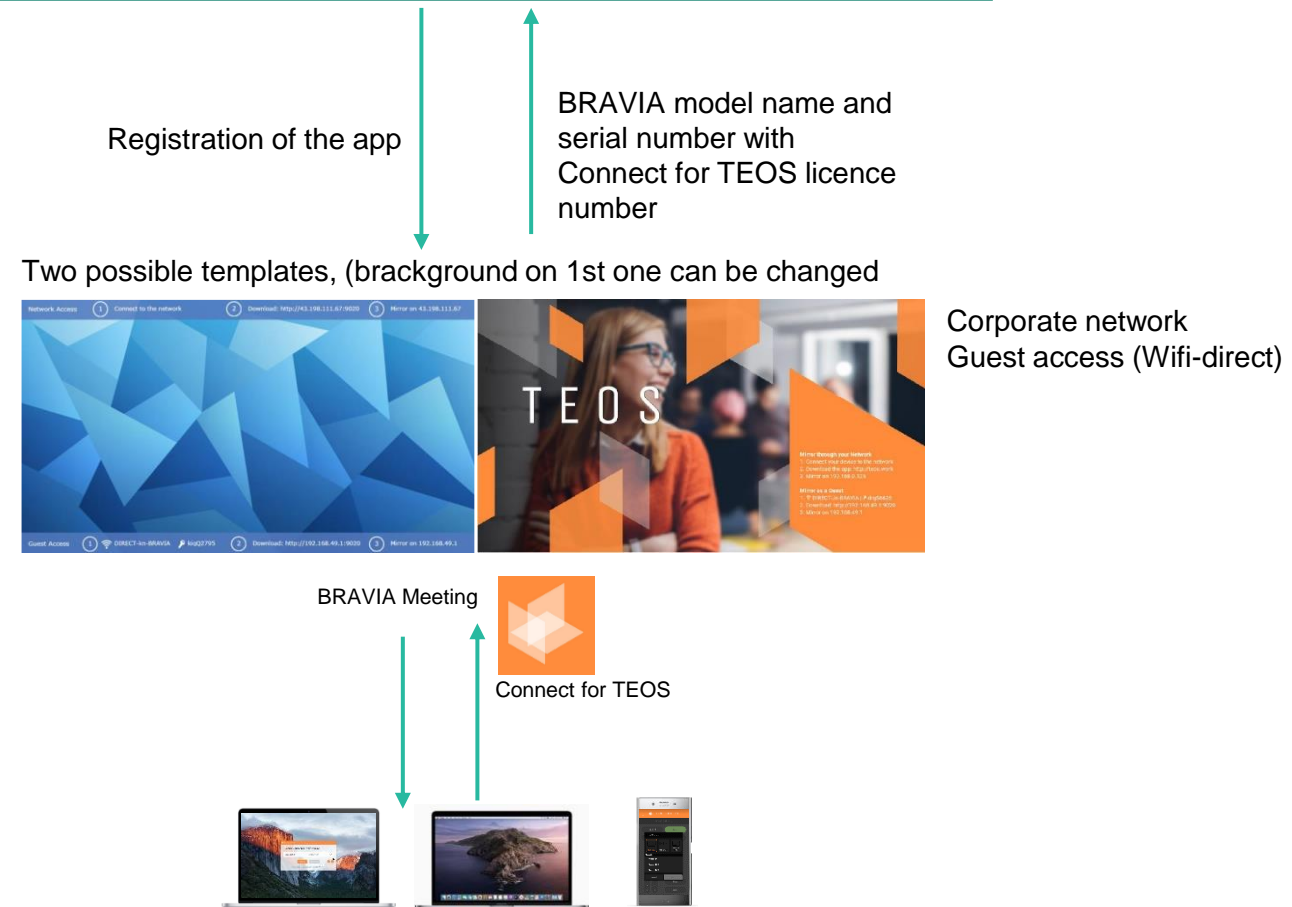
# Connect for TEOS – Workflow

## With Manage for TEOS Server configuration



## Without Manage for TEOS Server configuration

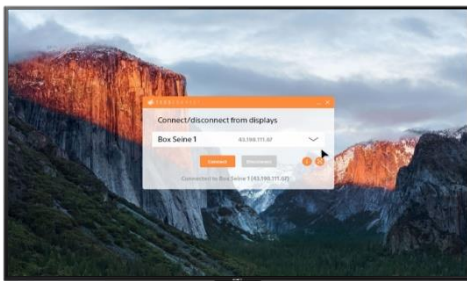
Teosmanage.com server for the registration of the license inserted in Connect for TEOS App first time





# Connect for TEOS on BRAVIA or Player

## BRAVIA Android or TEP-X96 for Connect for TEOS

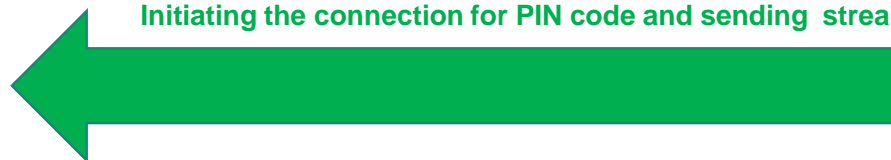


BRAVIA Android models

**Outgoing to Connect for TEOS  
client  
(Listening ports of devices)**

- TCP - Port 80 (Web server)
- TCP - Port 443 (Web server)

Initiating the connection for PIN code and sending stream



**Sending PIN Code, Status, apps (web download)  
and data**



## Windows, MAC, Android, iOS

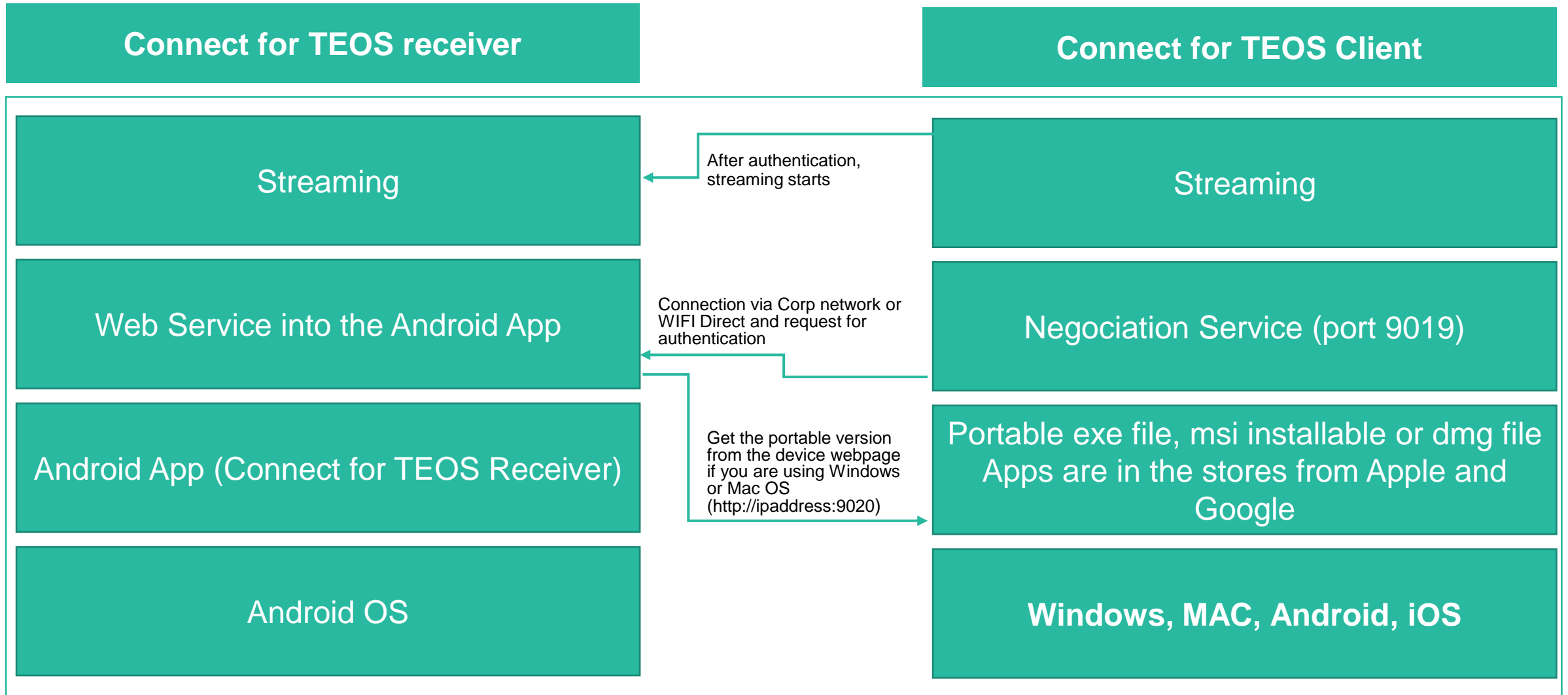


**Outgoing to Bravia from TEOS PC/MAC.. app  
(listening ports on BRAVIA and Player)**

- TCP - Port 9001 (Connect for TEOS Video)
- TCP - Port 9002 (Connect for TEOS Audio)
- TCP - Port 9019 (PIN code verification)
- TCP - Port 9020 (Connect web server)
- TCP - 5555 (for maintenance)



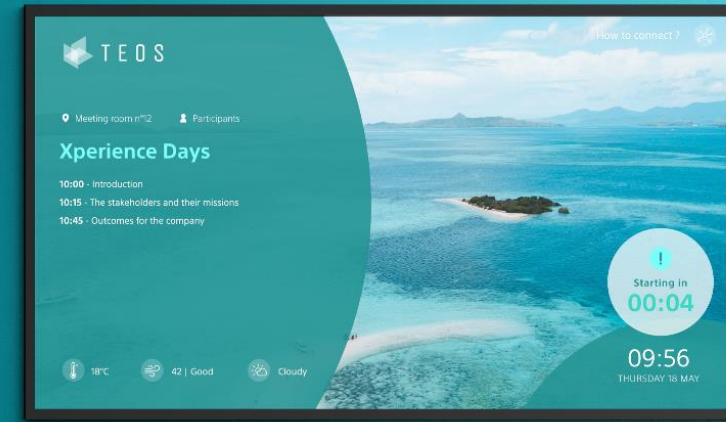
# Connect for TEOS Construction with Clients





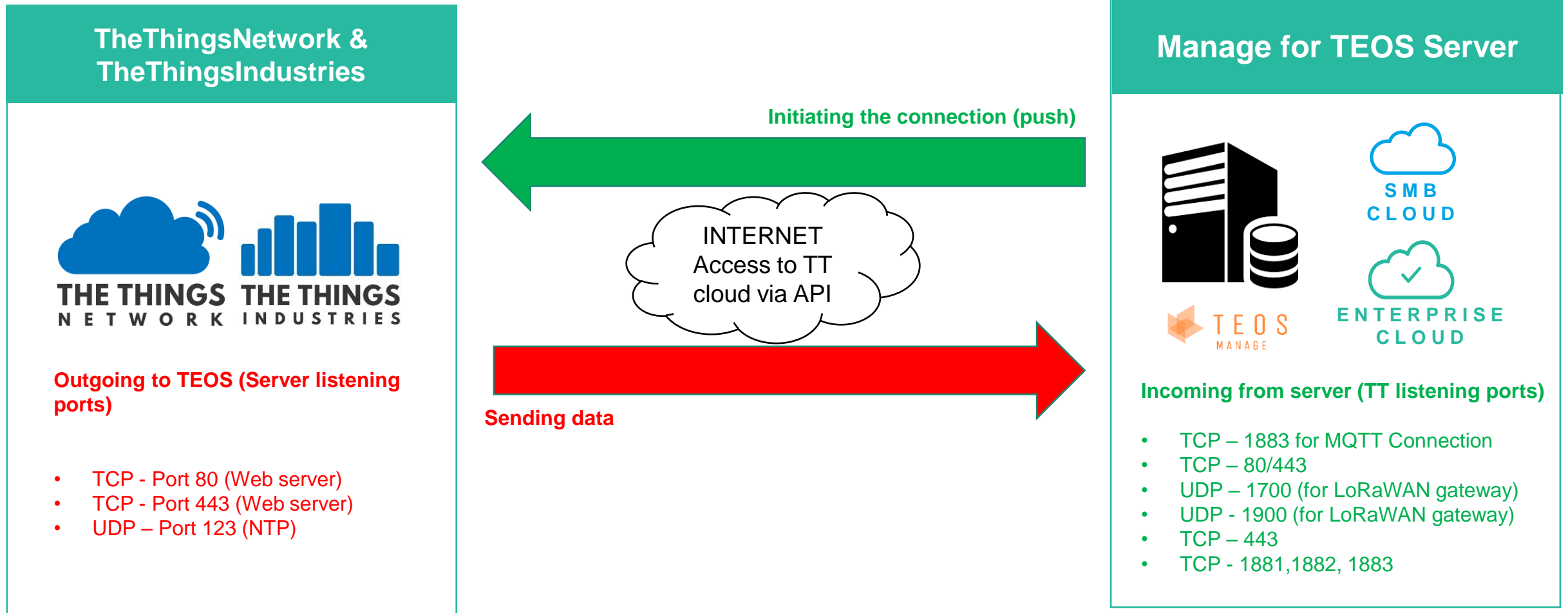
# Technical workflows

## Building Management – LoRaWAN sensors





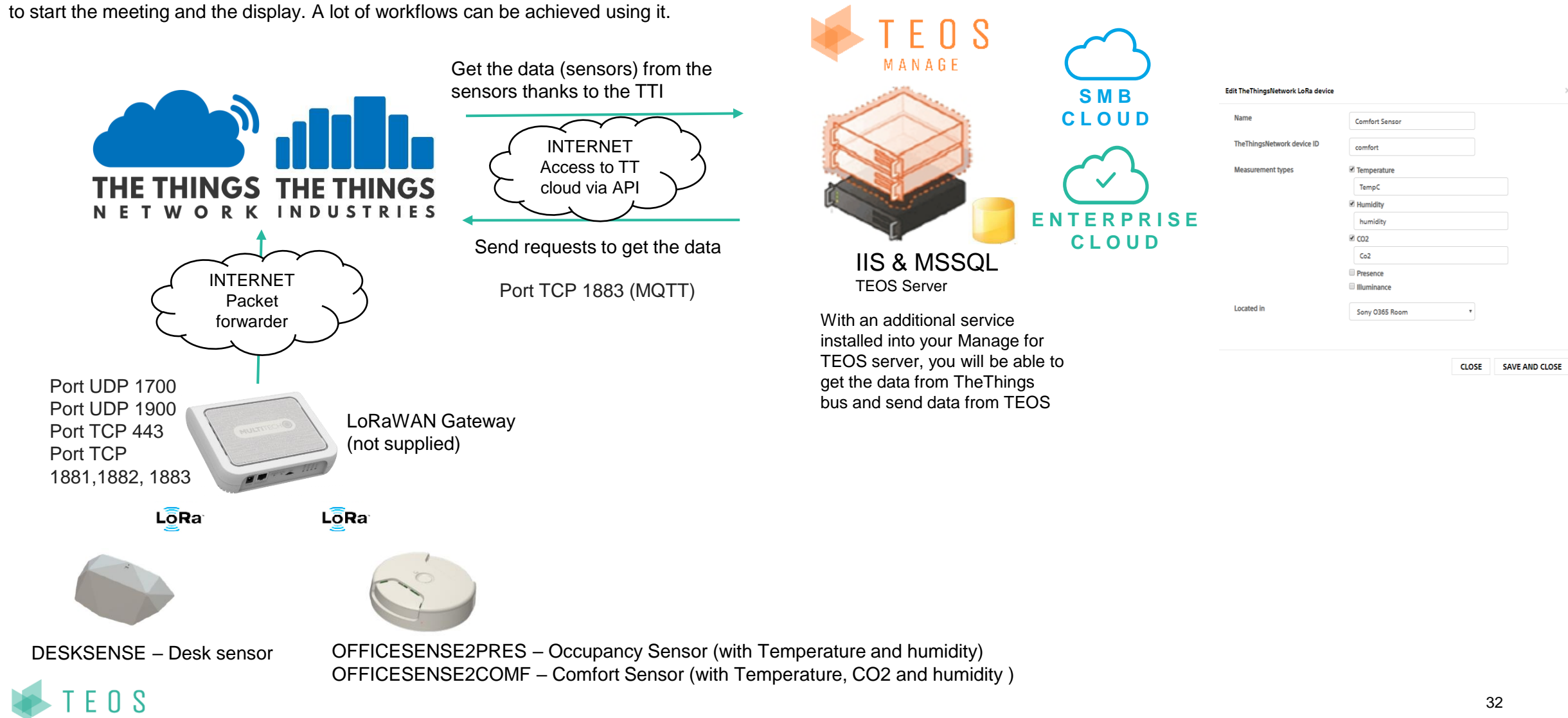
# IoT (Internet of Things - LoRaWAN) port communication





# IoT (InternetofThings - LoRaWAN)

Using the Building & IoT and the automation scenario in TEOS you will be able to use for example the TEOS sensors using LoRaWAN technology data is retrieved into TEOS to start the meeting and the display. A lot of workflows can be achieved using it.





# Third parties

Technical workflow





# CLOUD > Third parties

## Third parties devices



**Outgoing to TEOS Cloud Control (BRAVIA, Tablet and Player)**

- TCP - Port 80 (Web server)
- TCP - Port 443 (Web server)

Initiating the connection



Sending Status and data

## Manage for TEOS Server



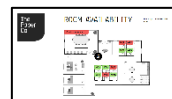
**Incoming TEOS Cloud Control devices (devices listening ports)**

- TCP - Port 80 (Web server & Bravia )
- TCP - Port 443 (Web server)
- TCP – 4352 (PJLink including Sony projector)
- TCP – 5000 (Phillips Monitor IP control)
- TCP – 1515 (Samsung monitors IP control)
- TCP – 10161 (LG Displays IP SNMP protocol)
- TCP – 10162 (LG Displays IP SNMP protocol)
- UDP – 161 (LG Displays IP SNMP protocol)
- UDP – 162 (LG Displays IP SNMP protocol)
- TCP – 4000 and 4001 (Barco Clickshare)
- UDP – 7 and 9 (Wake On Lan)

TEOS compatible  
add-ons via Player



TEOSSIGNAGE



TEOSWAYFINDING



Corporate IPTV



TEOS Videowall



TEOSCONNECT



Rooms Status



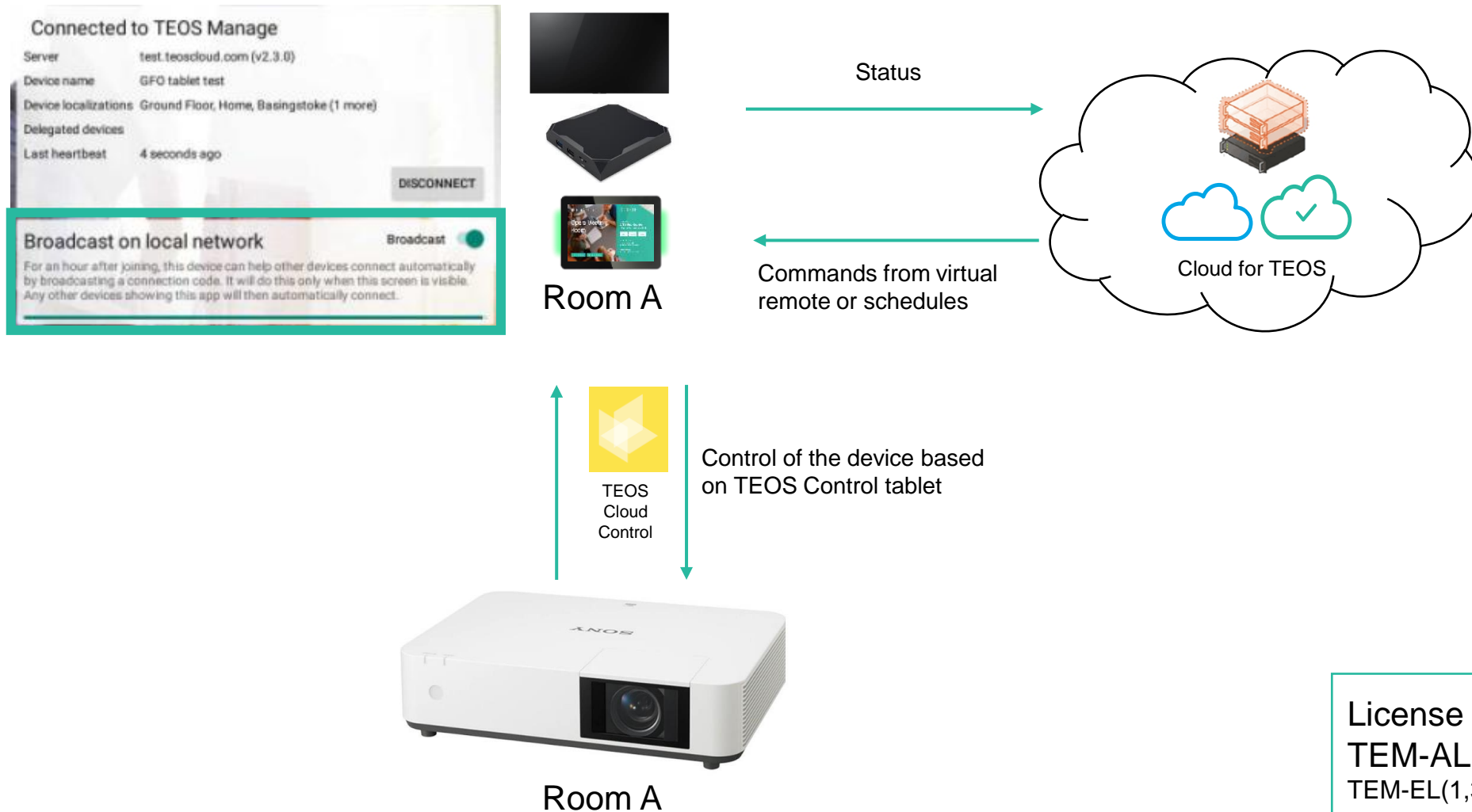
Meeting Display

License for devices used  
TEM-EL(1,3,5)Y IP Control



# CLOUD for TEOS – Workflow example

Meeting participants can take control of connected devices in the room from an interactive digital interface to adjust setting such as power or volume.





# ON-PREMISE > Third parties

## Third parties devices



### Outgoing to server (server listening port)

- TCP - Port 80 (Web server)
- TCP - Port 443 (Web server)
- UDP – Port 123 (NTP)

Initiating the connection



Sending Status and data

## Manage for TEOS Server



### Incoming from server (devices listening ports)

- Type 8 and 0 (icmp)
- TCP - Port 80 (Web server & Bravia )
- TCP - Port 443 (Web server)
- TCP – 4352 (PJLink including Sony Projector)
- TCP – 5000 (Phillips Monitor IP control)
- TCP – 1515 (Samsung monitors IP control)
- TCP – 10161 (LG Displays IP SNMP protocol)
- TCP – 10162 (LG Displays IP SNMP protocol)
- UDP – 161 (LG Displays IP SNMP protocol)
- UDP – 162 (LG Displays IP SNMP protocol)
- TCP – 4000 and 4001 (Barco Clickshare)
- UDP – 7 and 9 (Wake On Lan)

TEOS  
compatible add-  
ons via Player



TEOSSIGNAGE



TEOSWAYFINDING



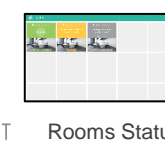
Corporate IPTV



TEOS Videowall



TEOSCONNECT



Rooms Status



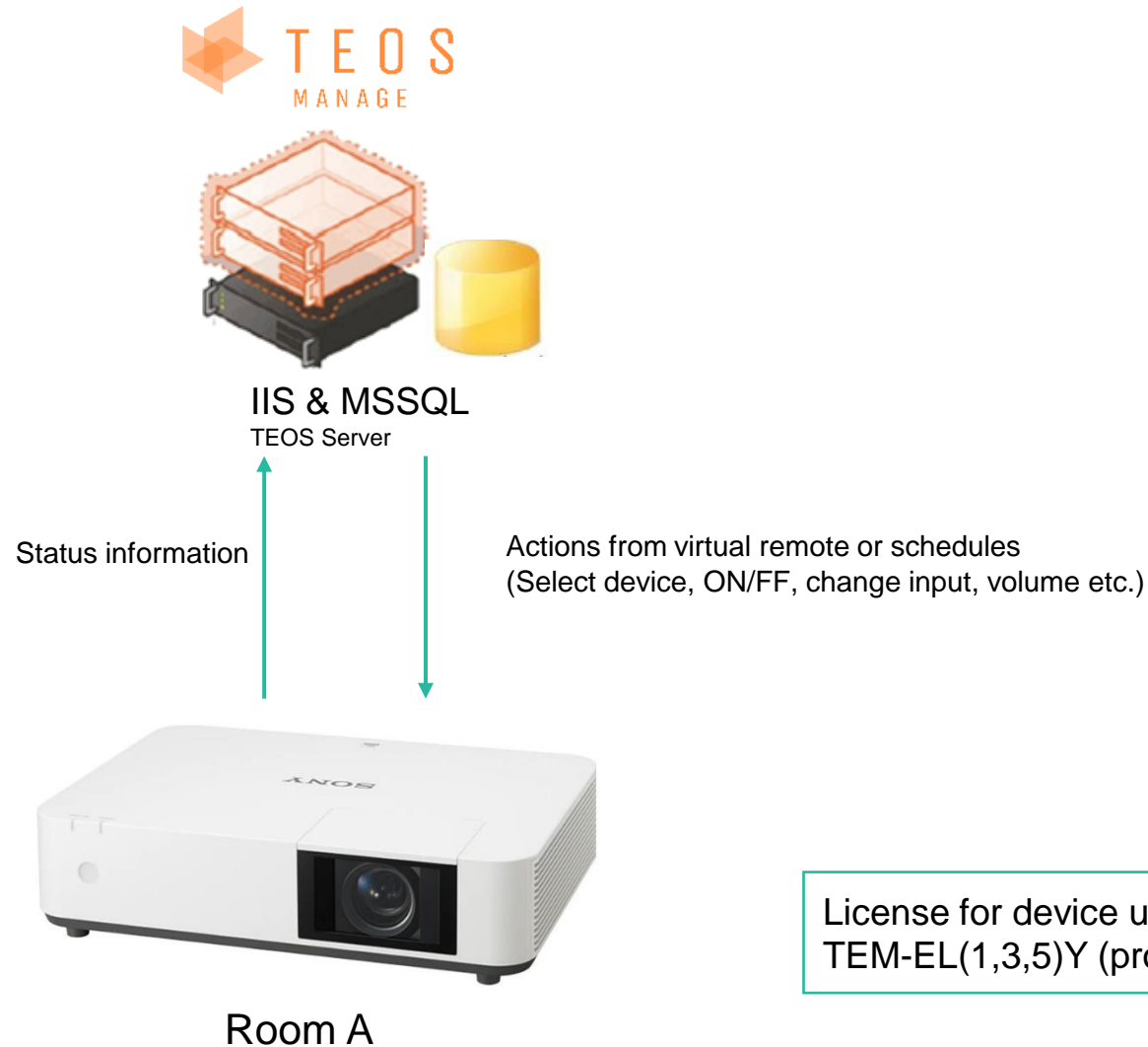
Meeting Display

License for devices  
used  
TEM-EL(1,3,5)Y IP  
Control



# ON-PREMISE > Third party control – Workflow example

Meeting participants can take control of connected devices in the room from an interactive digital interface to adjust setting such as power or volume.





# Third parties

## Third parties devices



### Outgoing to server (server listening port)

- TCP - Port 80 (Web server)
- TCP - Port 443 (Web server)
- UDP – Port 123 (NTP)

Initiating the connection



Sending Status and data

## Manage for TEOS Server



### Incoming from server (devices listening ports)

- TCP - Port 80 (Web server & Bravia )
- TCP - Port 443 (Web server)

TEOS  
compatible add-  
ons directly with  
HTML5

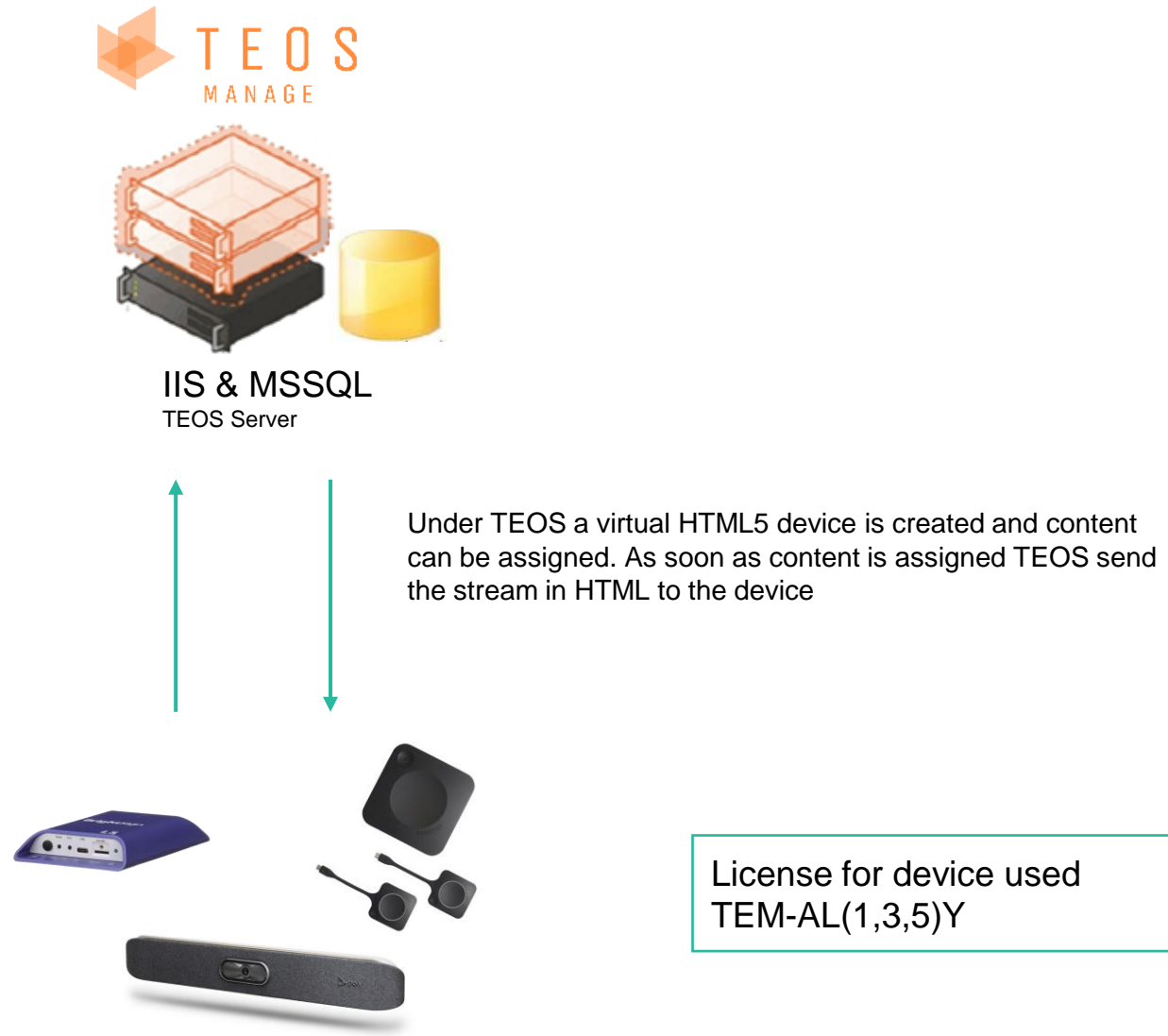


License for devices used  
TEM-AL(1,3,5)Y IP Control



# Third party HTML5 Content – Workflow example

Keep the same message no matter the space is with a centralized content managed by TEOS and sent in HTML to third party devices





<https://teos.solutions>

THANKS

