

Technical specifications and requirements

Manage for TEOS Version 3.3 – Revision 1.0

Description



Manage for TEOS is an advanced workplace and campus management solution. This document outlines the minimum technical specifications required to install and run Manage for TEOS software. It covers deployment on Cloud (SAAS offer), servers, virtual machines running on-premise or hosted in a data center that have network connectivity to on-premise devices.

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1. Server offer

From version 3.3 a Cloud hosted version (SAAS) is proposed on top of the on-premise version.:

		
Device Control	Yes	Yes
Apps installations & Updates	Yes	Yes
Issue report	Yes	Yes
Badge printer (for reception)	Yes (email to print)	Yes
User rights management	Yes	Yes
Custom protocols	Yes (virtual devices only)	Yes (virtual devices & custom commands)
Users access simultaneous accesses	Yes	Yes (depending on server specifications)
Content rights management	Selectable (depending if basic or advanced signage mode is used)	Selectable (depending if basic or advanced signage mode is used)
Schedule management	Yes	Yes
Workplace solutions (room booking, etc.)	Yes	Yes
Signage	Selectable (Basic or advanced)	Selectable (Basic or advanced)
Analytics & Site overview	Yes	Yes
Data Export	Yes	Yes
Active Directory & SSO	SSO (using OpenID connect)	Yes
Azure AD & MFA	Yes	Yes
Building Management	Yes (LoRaWAN only)	Yes (KNX, DALI, LoRaWAN)
Mirroring (using TEOS Connect)	Yes	Yes

2. Cloud requirements

You can find below in this section the details and requirements to use TEOS on our Sony cloud (hosted in AWS Europe)

2.1. Domain Name option (DNS Records)

The Domain Name of TEOS in the Cloud (website) is partially configurable when purchasing the solution.

Server name (prefix) will **[company selectable name].teoscloud.com**. You will be able to choose the name you want for the first part of the URL (company selectable name). Only one prefix can be used to define company

TEOS Web Service	DNS Record	DNS record example
Main website client access	[company selectable name].teoscloud.com	sony.teoscloud.com

“sony” can be replaced by your own name

TEOS Cloud Server is in https by default (ssl certificate included).

2.2. Network specification

On Cloud TEOS architecture as changed to simplify the communication with the devices. When it comes now to TEOS Android compatible devices, communication is in a pull method when it is push on the on-premise version. The pull method will allow the communication with TEOS in the cloud with a simple internet connexion (no more inbound connections which require to open firewall port from the internet but only on outbound if your network is secured on the external communications. Please find below the list of port when using TEOS direct compatible devices

Device	outgoing port to server
BRAVIA Android with pro mode, Android player for TEOS and Tablets for TEOS (using TEOS Cloud control App) Web Portal	80 TCP -Web server
	443 TCP - Web server
	5671 TCP – TEOS Message queuing system
	8084 – TCP Content
TEOS Employee App, mobile App	80 TCP -Web server
	443 TCP - Web server

Please find more details on the graphs in the next page

TEOS in his Cloud version can still work with third party devices as the on-premise version (only KNX, DALI cannot be communicated from the cloud).

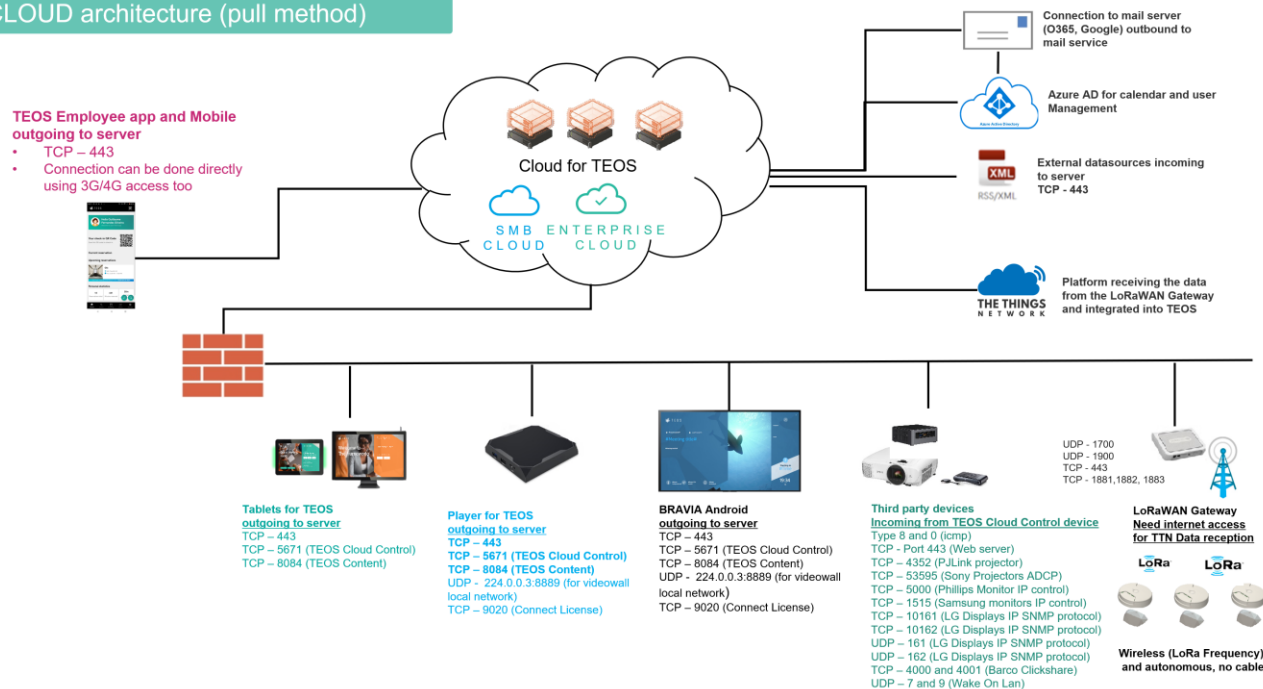
The communication with those third parties devices can be done thanks to the TEOS Android devices compatible and the TEOS Cloud Control app which is able to broadcast a command from the device to the internal network. Taking that point in consideration, the ports used for that control are the same shown in the on-premise section.

You will need to open the ports if your BRAVIA for example or tablet need to send the command to a projector in another VLAN, otherwise if they are in the same network, ports don't need to be opened.

2.3. Technical flow on CLOUD

Make sure if Manage for TEOS Server is connected to the internet, **your server is protected and go through a router, firewall etc.** Please refer to the TEOS Technical Flowchart for more details.

CLOUD architecture (pull method)

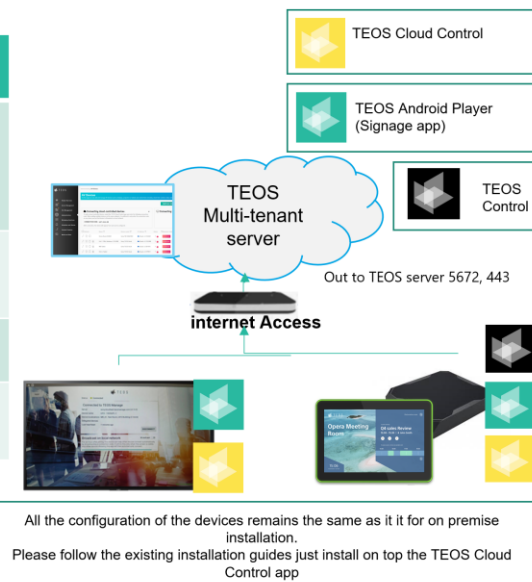


Platform domain is in teoscloud.com, when purchasing Cloud for TEOS, you will be able to define the first name part like sony.teoscloud.com. TEOS Cloud server is protected with an SSL certificate

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	HTTPS	443	Central point for all device connections, after which they are directed to the correct customer environment
		cloudweb-prod-lb1.teoscloud.com	HTTPS	443	
		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.



3. On-premise requirements

To ensure that your system runs optimally, it's important to know the minimum requirements for the Manage for TEOS server. The requirements for the Manage for TEOS server are the following:

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.

3.1. Operating system requirements

The Manage for TEOS application supports Windows server 2019 and above version.

Category	Software versions
Operating systems tested	Microsoft Windows Server 2019 Datacenter
	Microsoft Windows Server 2019 Standard

NOTE: The Windows server machine must have the **latest Microsoft update**

NOTE: Essential edition of Microsoft Windows Server is **not recommended**

NOTE: English language (for keyboard also) recommended for support purpose

3.2. Component requirements

The operating system roles and features (listed below) are required by the Manage for TEOS application to communicate with the devices and operate them.

The **roles that need to be installed** on TEOS server are:

- **Web Server (IIS) role:**
 - **Webserver:** Common HTTP Features, Default Document, Directory Browsing, HTTP Errors, Static Content, HTTP Redirection
 - **Health and Diagnostics:** HTTP Logging, Custom Logging, Logging Tools, Tracing
 - **Performance:** Static Content Compression, Dynamic Content Compression

- **Security:** Request Filtering, Windows Authentication
 - **Application Development:** .NET Extensibility 3.5, .NET Extensibility 4.5 Application Initialization ASP, ASP.NET 3.5, ASP.NET 4.5, CGI
 - **ISAPI Extensions:** ISAPI Filters, Server Side Includes WebSocket Protocol
- **NET Framework 3.5:**
 - NET Framework 3.5 (Includes .NET 2.0 and 3.0), HTTP Activation
 - **NET Framework 4.5 (for Server 2012R2), 4.6 (for Server 2016), 4.7 (for Server 2019)**
 - HTTP Activation, Message Queuing (MSMQ) Activation, Named Pipe Activation, TCP Activation, TCP Port Sharing
 - **NET Framework 4.8 (mandatory):**
 - After installing 4.5 download and install .NET framework 4.8 from the Microsoft website. This step is done when installing SQL Management Studio as well. TEOS installers will not start installation if it is not

3.3. SQL Database (Microsoft SQL Server)

Manage for TEOS needs a Microsoft SQL server to work properly. You can use the 2017 Express version or above.

Software versions tested	Microsoft SQL Server 2019 Express and above Microsoft SQL Server 2020 and above
SQL Configuration	Enable the SA (SQL authentication, sysadmin permissions*) account and set a password (needed during TEOS installaton). Port 1433 (IPAll), "Shared Memory", "Named Pipes" and "TCP/IP" needs to be enabled
SQL language	All language are compatible, only be sure that collation SQL server configuration is SQL_Latin1_General_CP1_CI_AS
SQL Architecture	SQL Server can be local or remote from TEOS Server
SQL Troubleshooting	We recommend to install SQL Management Studio

***SA account is mandatory for the installation/updates to create the databases and users. Account is not anymore mandatory during the usage of TEOS.**

3.4. Domain Name Configuration (DNS Records)

The Domain Name of the server (website) is configurable during the installation of the TEOS application.

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

teos.sony.com can be replaced by your own domain name.

If you are using ssl certificate, please consider directly the full TEOS name to generate the certificate

3.5. Network specification

The server software will run on IIS on the basic web ports 80 or 443. Port 80 will use the http protocol and is not secured. If you want to use a secured connection than you should use port 443.

3.5.1. Manage for TEOS & TEOS devices

Device	Incoming port from server	Outgoing port to server
TEOS and other servers or Employee app	80 TCP -Web server	80 TCP -Web server
	443 TCP - Web server	443 TCP - Web server
	123 UDP – NTP	123 UDP – NTP
	143, 993 POP3 ports	25, 465, 587,2525 for SMTP server
Professional BRAVIA*	Type 8 and 0 ICMP - ICMP (PING)	80 TCP -Web server
	20332 TCP – BRAVIA meeting API	443 TCP - Web server
	20060 TCP – BRAVIA meeting API	123 UDP – NTP
	20335 TCP – BRAVIA Firmware API	5555 TCP – Maintenance
	443 TCP - BRAVIA meeting API	
	80 TCP - Sony display IP Control	
	6541 TCP - Signage application	
	9020 TCP – Connect for TEOS licensing	
	8889 UDP – Multicast 224.0.0.3 videowall	
	5555 TCP – Maintenance	
TEOS Tablets / Players	Type 8 and 0 ICMP - ICMP (PING)	80 TCP -Web server
	6541 TCP - Signage application	443 TCP - Web server
	5544 & 5545 TCP – Control for TEOS API	123 UDP – NTP
	5555 TCP – Maintenance	5555 TCP – Maintenance
	8889 UDP – Multicast 224.0.0.3 videowall	

* IP Control for devices run on port 80 and can be protected with a password.

* **When Adding a BRAVIA to TEOS an ADB allowance need to be done with the TV remote or using virtual remote and IP control (enter > right arrow > enter). For the player this procedure can only be done with the remote. No need to do this action for the tablet.**

3.5.2. Connect for TEOS & Client devices (Windows, MAC, Android, iOS)

Device	Incoming port from user PC
Professional BRAVIA TEOS Players	8888 UDP - App multicast discovery
	9001 TCP - Connect for TEOS Video
	9002 TCP - Connect for TEOS Audio
	9017 TCP – touch feedback to client
	9018 TCP – touch feedback to client
	9019 TCP - PIN/Code verification
	9020 TCP - Integrated web server

3.5.3. Manage for TEOS & Projectors

Devices	Incoming port from server	Outgoing port to server
	53595 TCP - ADCP	443 TCP - Web server 80 TCP -Web server
	Type 8 and 0 ICMP - ICMP	123 UDP – NTP
NEC, Panasonic, Epson, Optoma, BenQ, Other PLink compatible	4352 TCP - PLink	80 TCP -Web server
	Type 8 and 0 ICMP - ICMP	443 TCP - Web server
		123 UDP – NTP

3.5.4. Manage for TEOS & third-party monitors

Device	Incoming port from server	Outgoing port to server
Samsung (SSSP2 to SSSP6)	Type 8 and 0 ICMP	80 TCP -Web server
	1515 TCP - for control/status	443 TCP - Web server
		123 UDP – NTP
LG (SNMP)	Type 8 and 0 ICMP - ICMP	80 TCP -Web server
	161 UDP - IP Control using SNMP for control/status	443 TCP - Web server
	162 UDP - IP Control using SNMP for control/status	123 UDP – NTP
	10161 TCP - IP Control using SNMP (Secure) for control/status	
	10162 TCP - IP Control using SNMP (Secure) for control/status	

Philips (IP control)	5000 TCP - for control/status	80 TCP -Web server
		443 TCP - Web server
		123 UDP – NTP

3.5.5. Manage for TEOS & third-party devices

Devices	Incoming port from server	Outgoing port to server
BARCO Clickshare	4000 TCP – IP Control (ON/OFF, reboot)	80 TCP -Web server
	4001 TCP – IP Control (ON/OFF, reboot)	443 TCP - Web server
		123 UDP – NTP
Vision Exchange & Windows devices	80 TCP – Web request (shutdown)	80 TCP -Web server
	Wake on Lan (Power ON)	443 TCP - Web server
		123 UDP – NTP
Cisco Visioconference system	80 TCP – Web request	80 TCP -Web server

*port can be disabled in case of SSL only

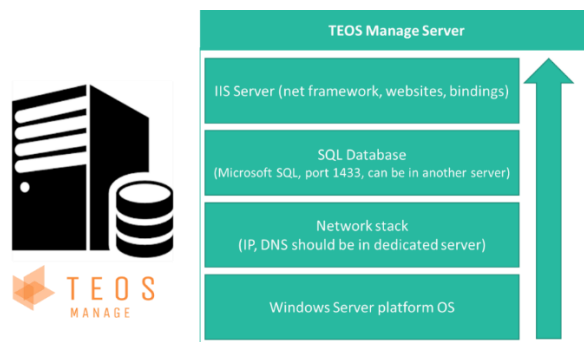
**Outgoing ports are used to connect to the devices

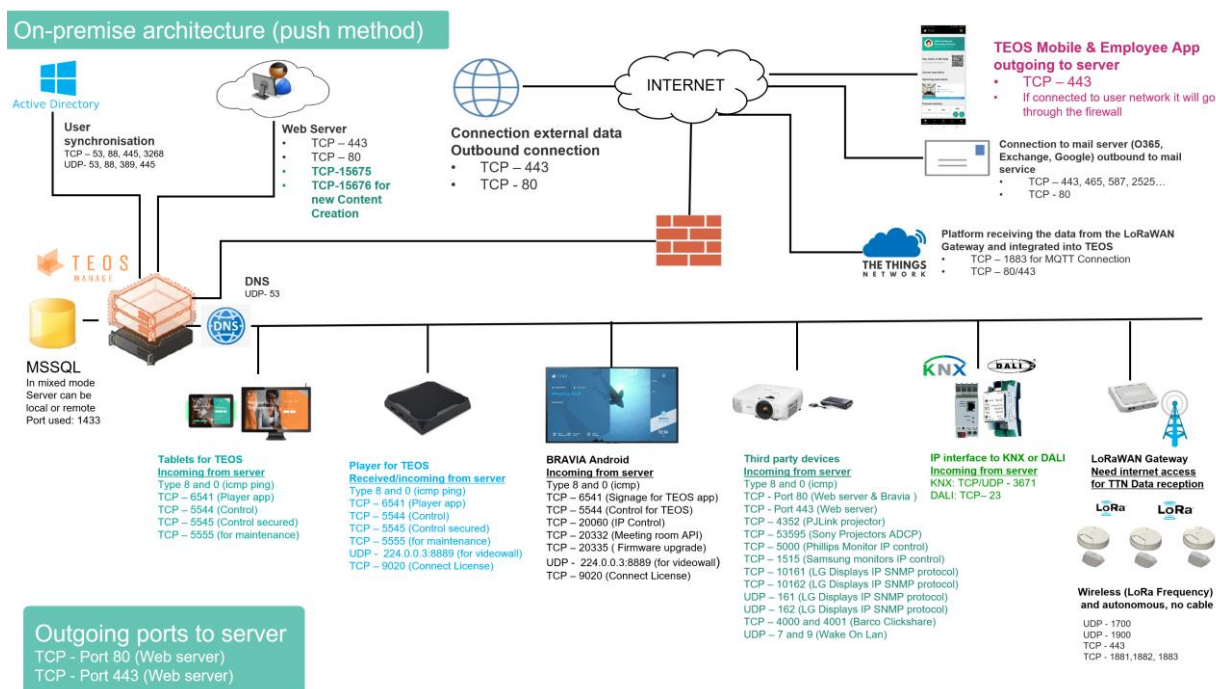
3.5.6 Manage for TEOS & Web Server

Devices	Incoming port to server	Outgoing port to server
Web Interface User	TCP-15675	80 TCP -Web server
	TCP-15676	443 TCP - Web server
	80 TCP -Web server	
	443 TCP - Web server	
Device access to Content	TCP-15675	80 TCP -Web server
	TCP-15676	443 TCP - Web server
	80 TCP -Web server	
	443 TCP - Web server	

3.6. Technical flow

Make sure if Manage for TEOS Server is connected to the internet, **your server is protected and go through a router, firewall etc.** Please refer to the TEOS Technical Flowchart for more details.





4. Building management with TEOS

TEOS Version 2.2 has released integration with building management. For more details please consult the technical documentations created.

The 3 new building interfaces/gateway integrated into TEOS are:



	KNX	DALI	LoRaWAN
Integration with TEOS	Using KNX to IP interface (not supplied), connection to Address groups	Using DALI to IP interface (not supplied), connection to group, devices and scenes	Using LoRa Gateway and ThethingsNetwork (EU, ASIA, BRAZIL, US-WEST), (not supplied)
End devices compatible	Switchs (including sensors) and actuators	Device (relay, light.), Group Scene	Sensors for TEOS and other sensors
integrated Data type (DTP) in TEOS	1 (0,1), 5 (0...255), 6 (-128...127), 7, 8, 9, 12, 13, 14, 29	Light (ON/OFF), Lights (Dim level)	Temperature, Humidity, CO2, Presence
Communication with TEOS	3671 TCP/UDP - Com 80/443 TCP - Web service	23 TCP - Communication 80/443 TCP - Web service	1883 TCP - MQTT Connection 80/443 TCP - Web service

On the Cloud version of TEOS only LoRaWAN sensors can be integrated (connection to LoRaWAN server using MQTT) when both KNX and DALI integration in TEOS are based in an SDK which need communication on internal network, which means that only the on-premise TEOS version can support communication with KNX and DALI.

5. Client requirements

5.1. For Manage for TEOS access (CLOUD and on-premise)

The Manage for TEOS platform can be accessed by a "light access" which means that the user **doesn't need to install software** on their PC or MAC to be able to access Manage for TEOS. The compatible web browsers to access the Manage for TEOS interface are:

- Google Chrome, Mozilla Firefox

Google Chrome is the recommended web browser for TEOS

5.2. For Employee App access

Employee App, a meeting management tool for employees known as Mobile for TEOS, can be accessed from the same web browsers as detailed above but can be also installed on Android Smartphones (from version 8) and iOS devices (from version 12). It can be downloaded on both app stores (play store for Android and iTunes on IOS).

5.3. For Connect for TEOS Mirroring

For mirroring, Connect for TEOS can be downloaded in a portable version on Windows 10 and Mac OS (10.15 and higher) Mac OS with Arm processor is not yet validated. This download is accessible from the Connect for TEOS receiver or visiting the site <http://teos.work>

For IT departments, an .msi is available to deploy the Connect for TEOS client for employees (please contact Sony to get this file).

Connect for TEOS is available on Android Platforms (you can find it in the play store) and will be compatible soon with IOS.

6. Software & security specification

The complete software suite is developed in Microsoft .Net and will run as server software.

TEOS Server can be connected to other systems:

SMTP Services (incl TLS/SSL encryption)
Microsoft Active Directory (AD), Azure AD
Microsoft Exchange 2010 R2 (minimum)
Web services (RSS,XML, with/without auth etc)

IMAP/POP3 services (incl TLS/SSL)
Office365 (OAuth2 and HTTPS)
Google Calendar (OAuth2 and HTTPS)
Single Sign ON

Administrator/service account with high permission are required for AD synchronisation and other synchronisations such as Office 365, Google Calendar, Exchange etc.

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**.

Public SSL certificates for Manage 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.

TEOS Add-on	External platform compatible	SSL Certificate Required*	Default ports for communication
Manage for TEOS	Single Sign On	NO	TCP – 135, 50000 - 50200
Wayfinding for TEOS	Office365	NO (OAuth 2.0)	TCP – 80,443
	Google Calendar	YES (OAuth 2.0)	TCP – 80,443
	Microsoft Exchange	NO	TCP – 80,443
	Calendar for TEOS	NO	TCP – 80,443
	RSS/XML	NO	TCP – 80,443
	RSS (SOCIAL MEDIAS)	YES	TCP – 80,443
	MAP	NO	TCP – 80,443
	Weather	NO	TCP – 80,443
Reception for TEOS	Office365	NO IMAP	TCP – 80,443,25,53 UDP- 53
	Outlook (from 2010)	NO IMAP	TCP – 80,443,25,53 UDP- 53
	SMTP	NO	TCP – 25, 465, 587,2525
	SMS service	NO	TCP – 80,443
	Active Directory	NO	TCP – 53, 88, 445, 3268 UDP- 53, 88, 389, 445
Signage for TEOS	IMAP (email to signage)	NO	TCP – 143, 993
	RSS/XML	NO	TCP – 80,443
	RSS (SOCIAL MEDIAS)	YES	TCP – 80,443
	Office365	NO (OAuth 2.0)	TCP – 80,443
	Google Calendar	YES (OAuth 2.0)	TCP – 80,443
	Microsoft Exchange	NO	TCP – 80,443
	Calendar for TEOS	NO	TCP – 80,443
Corporate TV for TEOS	RTMP	NO	TCP - 1935
	HLS	NO	TCP – 80,443
	UDP	NO	
Book for TEOS	Office365	NO (OAuth 2.0)	TCP – 80,443
	Google Calendar	YES (OAuth 2.0)	TCP – 80,443
	Microsoft Exchange	NO	TCP – 80,443
	Calendar for TEOS	NO	TCP – 80,443
	Active Directory	NO	TCP – 53, 88, 445, 3268 UDP- 53, 88, 389, 445
Class check-in for TEOS	Web services	NO	TCP – 80,443
Meeting Interface / Meeting display / Rooms status	Office365	NO (OAuth 2.0)	TCP – 80,443
	Google Calendar	YES (OAuth 2.0)	TCP – 80,443
	Microsoft Exchange	NO	TCP – 80,443
	Calendar for TEOS	NO	TCP – 80,443
Employee App/ Outlook Add-in (only with Office365)	Office365	YES	TCP – 80,443
	Google Calendar	YES	TCP – 80,443
	Calendar for TEOS	YES	TCP – 80,443
	Microsoft Exchange	YES	TCP – 80,443
	Single Sign On	YES	TCP – 135, 50000 - 50200

Please contact us for any custom integration requests

To use Room booking solution, we recommend to use Active Directory synchronization for the users being able to book the meeting room with their name. If the user is not identified into TEOS (using TEOS Database or AD synchronization), he will not be able to book the meeting room via the tablet interface.

For reception for TEOS, Office365 environment must be used to be able to use the add-in on Office 365 account or using Outlook in order to generate the 4 digits pin code and invite the visitor.

Depending on the operating environment, unauthorized third parties on the network may be able to access the system.

We strongly recommend configuring all of the passwords for security purposes.

6.1. Backup specification

You can create regular back-ups of your server with **back-up software** which is capable of creating regular and MSSQL backups.

We **recommend to backup** also your machine using **Microsoft tools** or your **Virtual machines** options (automatic **snapshots**, backups and restores options)

On top of that a **manual backup** of all the configuration, devices, content can be done by client administration **using an windows application developed**. **Due to limitations, the backup and restore on the web interface has been removed.** Options are for a punctual backup and not for High availability.

SONY



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