NETWORK REQUIREMENTS
CHECKLIST SALTO PROACCESS SPACE SOFTWARE

ProAccess SPACE 6.0

SALTO provides the partner a document that serves as a checklist for proper preparation of the SALTO Web Software and the requirements of the network. This document is intended for IT / installer parties so they will meet the requirements that are needed for the SALTO software. At the same time it is a document with information for the partner.

It highlights the requirements of the platform and the security considerations to consider when installing the Salto Web software.

SALTO wants to avoid arising confusion on the steps of the installation performed which can have negative effect to the functioning of the system.

For further clarification you can contact SALTO:

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This document contains network requirements to use ProAccess SPACE software of SALTO Systems.

Minimum recommended system requirements for the Hardware / Software:

- ☐ Processor: 1 CPU 2.5 GHz or higher. 32Bits or 64Bits. 4 GB RAM, 1024x768 high-colour 32-bit display
- ☐ Hard disk space required: 10 GB. (Approx. depends on the DB)
- ☐ Net Framework 4.6.2 (included within the installer)
- ☐ SALTO ProAccess SPACE software is strongly recommended with a Windows domain environment
- ☐ DNS Name resolver Server: SPACE uses computer names for internal communication.
- ☐ Microsoft SQL Native Client 11.0 (installed by default when you install SQL Server 2012 or later).

* Recommended hardware for medium / large installations: dedicated machine with at least 2.5 GHz 2 CPU and 8GB of RAM.
(more then 300 IP addresses)

Operating systems   *1 :

- ☐ Windows 7 SP1   32bit - 64bit
- ☐ Windows 8.1   32bit - 64bit   *2
- ☐ Windows 10   32bit - 64bit
- ☐ Windows Server 2008 R2 SP1   32bit - 64bit
- ☐ Windows Server 2012 R2   32bit - 64bit   *1/2
- ☐ Windows Server 2016   32bit - 64bit
- ☐ Windows Server 2019   32bit - 64bit

*1 Strictly speaking, both "Windows Server 2012" and "Window 8" might also be used for hosting the
Salto server. However, these operative systems do not support the browser IE11. Therefore, you would need to use a different
machine that supports IE11 (see Client requirements) to remotely work with the Salto server via web application.
*2 Both "Windows 8.1" and "Windows Server 2012 R2" must have the following Windows updates:
KB2919442 (see https://support.microsoft.com/kb/2919442) and KB2919355 (see https://support.microsoft.com/kb/2919355)

SQL Databases *4 :

- ☐ MS-SQL, MS-SQL 2008 R2   (Express version also possible)
- ☐ MS-SQL, MS-SQL 2012   (Express version also possible)
- ☐ MS-SQL, MS-SQL 2014   (Express version also possible)
- ☐ MS-SQL, MS-SQL 2016   (Express version also possible)
- ☐ MS-SQL, MS-SQL 2017   (Express version also possible)
- ☐ MS-SQL, MS-SQL 2019   (Express version also possible)
- ☐ SQL LocalDB (Express 2012), *This is included in the ProAccess SPACE software.

*4 As of this writing, and according to Microsoft, MS SQL Server cannot be installed on a Windows Server
domain controller (see https://support.microsoft.com/en-us/kb/2032911).

HTML5 Ready version:

- ☐ SPACE 4.0 or higher is fully HTML5-compatible.

(Caution! speed of the software depends on the browser).
* Silverlight is no longer needed.

Web Browser compatibility:

Browser (Windows)	HTTP connection	HTTPS connection
IE	FLASH plugin required	FLASH plugin required
Safari	FLASH plugin required	FLASH plugin required
Firefox	No FLASH plugin required	No FLASH plugin required
Edge	No FLASH plugin required	No FLASH plugin required
Chrome	Not supported	No FLASH plugin required

A webcam may require the Adobe Flash Player plugin depending on the type of browser and HTTP
connection.

Important technical warnings/exceptions

- ☐ No mirror system / testing environment
- ☐ Network connections are 10Mbit / 100Mbit, Half duplex
- ☐ There should only be <u>one</u> active SALTO ProAccess SPACE service installed on a computer / server in the network.
- ☐ I/OBridge is not compatible with ThinClients and cannot be used in a Terminal or virtual environment.
- ☐ Reboot mandatory after installation of .NET framework
- ☐ SALTO Technical support will not support problems on MAC iOS devices or tablets.
    The Space front-end is designed for desktop machines. While it works well on iOS or Android mobile devices, the user interface in this type of device is not optimal.
- ☐ The date and time of the server machine must be correctly configured before the Space software is started. Otherwise, the performance of the online devices (such as RF locks) might be negatively affected.

Network ports that must be open for SALTO products (* See diagram below)

- ☐ UDP **1100** for IP peripherals   (Not able to modify "Default")
- ☐ **5000** to **10000** UDP or a fixed port in this range
    This port is used for the communication between online the service and the IP devices
     (card encoders, control units, gateways, etc.)
- ☐ TCP **8099** or another port number in the 8000 range
    This is used for communication between the ProAccess SPACE service and the Graphical Mapping.
- ☐ **1433** TCP & **1434** UDP
    These need to open for editing the database, these are the default MSSQL communication ports
     (SALTO ProAccess SPACE -> SQL Server)
- ☐ **8100** TCP for the SALTO Web authentication
    Browsers must connect to this port for accessing to the ProAccess SPACE windows.
    The default URL is: http://(machine_name):8100 (note: https can also be used).
- ☐ **8102** TCP for the SALTO IObridge communication
    Certain SALTO clients, such as the ProAccess SPACE webapp or the Local I/OBridge utility,
- ☐ connects to this port for getting real-time notifications.
- ☐ HTTP endpoint port **50000-51000** range for the communication between the Webapp and I/OBridge
- ☐ Silabs USBXpress for reading & write to the USB-Ports
    This is a Windows NT service that must be installed in only those client machines to
    which Salto USB devices must be connected.
- ☐ PMS Port: Micros-Fidelio Oracle & Industry Standard protocol, The SALTO software opens a listening TCP / IP
    port that the PMS is connected. Serial RS232 connection is also supported in place of TCP / IP.
- ☐ SHIP Port: The SALTO software opens a listening TCP / port to which SHIP integrations connection.
- ☐ Schindler elevators: "PORT" protocol, The SALTO software establishes a TCP/IP connection to the Schindler server.
- ☐ Thyssenkrupp liften: "Thyssenkrupp protocol" (proprietary), A dedicated NIC for the elevator network is required.
    -Listening ports: **8039** UDP & **8040** UDP
    -Destination ports: **8038** UDP & **8041** UDP
- ☐ HTTP webhook: The SALTO software establishes a HTTP connection to a 3rd -party endpoint for sending notifications.
- ☐ SALTO Cloud: REST protocol, The SALTO service connects to the SALTO cloud via the following URL:
    - https://justin.saltowebservices.com
    - https://justin-msvn.saltowebservices.com
    - In het algemeen: https: //*.saltowebservices.com
    - Possible set mail server port

Permissions and security:

- ☐ The ProAccess Service Configurator requires local Administrator rights for setup the config and install the service configuration. (Only required on the server)
- ☐ The user that starts the SALTO ProAccess SPACE service must have db_owner rights.
- ☐ IObridge & installation ProAccess SPACE must be carried out under administrator rights.

  The SALTO folders are protected for security reasons in such a way that only administrator users can read from and/or write on them. This is why the Salto service must run under an administrator account. If this is not the case, then the SALTO service will not work properly. In summary, make sure that the account under which the SALTO service is
  running has administrator privileges (like the built-in "Local system").
  (low-privileged built-in account "NT SERVICE\ProAccessSpaceService")

Connection with SQL: (only for access to Graphical Mapping) :

1. Add a windows / domain user to the SQL server and give this user SALTO db_owner rights. Or add a (domain) user group to the SQL server and give this group SALTO db_owner rights.
2. Create a SQL user authentication to the SQL server and give it a name and password. Example "Salto" & "Salto12" Give this user SALTO db_owner rights.

   The two sign-in processes are available for SALTO ProAccess SPACE *, Graphical Mapping.
   * For the ProAccess SPACE service we recommend using the local system if the database and the ProAccess SPACE service are on the same computer.

Firewall and Virus scanner:

- ☐ Firewall or virus should be correctly configured on the ports above in both directions.
- ☐ The following programs should be not blocked.
  - ProAccess Space Configurator.exe

*Firewall consideration:

some firewalls are configured to automatically shut down tcp/ip connections that have a long period of inactivity, resulting in communication problems within the system.
In order to avoid communication problems, make sure the firewall in place does not automatically shut down tcp/ip connections when the inactivity is shorter than:
5 minutes for websocket connections.
105 seconds for Micros-Fidelio (PMS) protocol.

Proxy:

Proxy with or without authentication is now supported when the Space software is accessing
to the Internet. Certain functions in the Space software require access to the Internet
(E.g. connection with the JustIN cloud for mobile keys). From the Space version 5.1 this access had to be
be direct **without** authentication. Form version 5.2 it is possible to access to the internet
via a proxyserver **with** authentication.

Cliënt : Technical Requirements

Web Browser compatibility:

- ☐ OS: Microsoft Windows 7 SP1 32bit - 64bit, Windows 8.1 32bit - 64bit, Windows 10 32bit - 64bit, Windows Server 2008 R2 SP1, Windows Server 2012 R2 SP1, Windows Server 2016 or higher.
- ☐ Processor: 1 GHz or higher. 32Bits or 64Bits. min. 1 GB RAM
- *6 You can modify the URL or port at any time (using the configurator), further it is possible to activate HTTPS.

The Space front-end has been designed for desktop machines. Although it may perfectly work in iOS or Android mobile devices, the UX experience in this type of devices is far from optimal.

Warning: for the network connection to the server:

☐ The Space software has been designed for LAN environments, where endpoints are not publicly exposed to the Internet. Although you could make it work in cloud-based environments, you should avoid exposing the Space endpoints directly to the Internet, the reason being that the Space software is not actually prepared for it in terms of security and performance considerations. For example, the software is not yet robust enough against DoS (denial of service) attacks. If you need the Space web pages to be accessible from remote points, We refer to the use of a secured and tunneled VPN connection.

Virtual machine considerations

In principle, the Space service (and its DB) may be installed and executed in virtual machines. What follows are the most considerations to bear in mind:

☐ Make sure that enough CPU and RAM resources are dedicated. and the latency times are correspondingly low.

☐ NIC Teaming settings: **Hyper-V Port** - If your server is a Hyper-V host with multiple running VMs, this load balancing mode is normally preferred in most situations. When using "Hyper-V Port" load balancing, VM's will be distributed across the network team and each VM's **outbound and inbound traffic** will be handled by a specific active NIC.
https://blogs.technet.microsoft.com/keithmayer/2012/10/16/nic-teaming-in-windows-server-2012-do-i-need-to-configure-my-switch/

☐ In case your host machine is equipped with more than one physical NIC (network interface adapter), make sure that all the IP traffic from/to the Space software flows through the same physical NIC (otherwise you may have communication issues with online devices).
If you have communication issues between the Space server and the Salto IP devices, consider disabling the VMQ (Virtual Machine Queue) feature on NICs. See the following link for further details:
http://www.dell.com/support/article/us/en/19/sln132131/windows-server--slow-network-performance-on-hyper-v-virtual-machines-with-virtual-machine-queue--vmq--enabled?lang=en

Local I/OBridge:

☐ The installation file of the "Local IO Bridge" program can be downloaded from the Space web app (Web browser). Alternatively, the installer can also be found in the ".. \ dist" folder on the server.

☐ The "Local IO Bridge" requires .NET 4.0 (this installation will be executed automatically if it is missing). The OS must be Windows 7, 8, 8.1, 10, Server 2008, Server 2012, Server 2016 or higher.

☐ The Local IO Bridge can be installed in silent mode from the command line, , in unattended mode 6. This is for automated implementation of I / O Bridge in client machines. To do this, you must use both the "quiet" and "installDir" switches, as shown in the example below:

> ☐ C: \ setup_saltolocaliobridge.exe -quiet -InstallDir = "C: \ SALTO \Local IO Bridge "
> Where the "installDir" switch must be followed by the destination folder path.
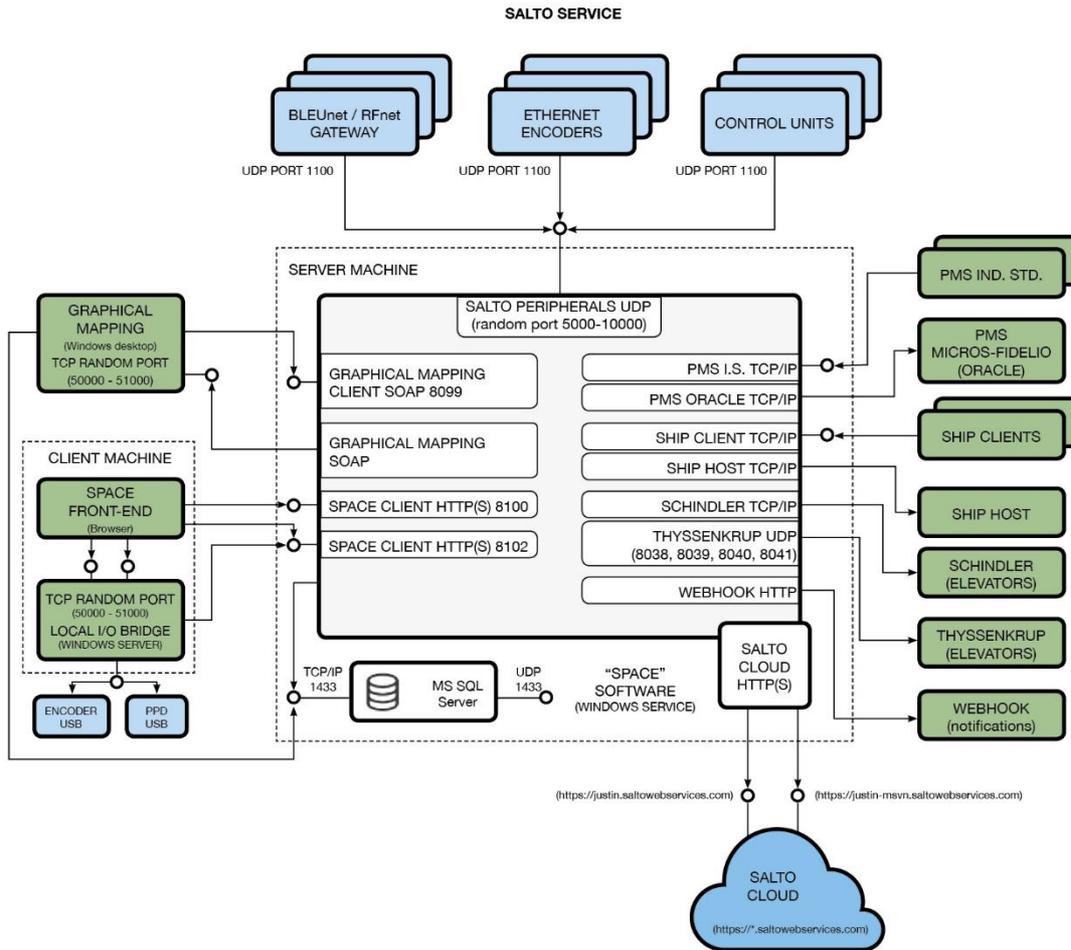
Port Communication Overview:

Please note that all the port numbers for the tcp/ip ports specified in the Diagram below are not fixed values but default ones and can be changed to any other value as desired. On the contrary, the UDP port 1100 opened by Salto peripherals is fixed and cannot be modified.
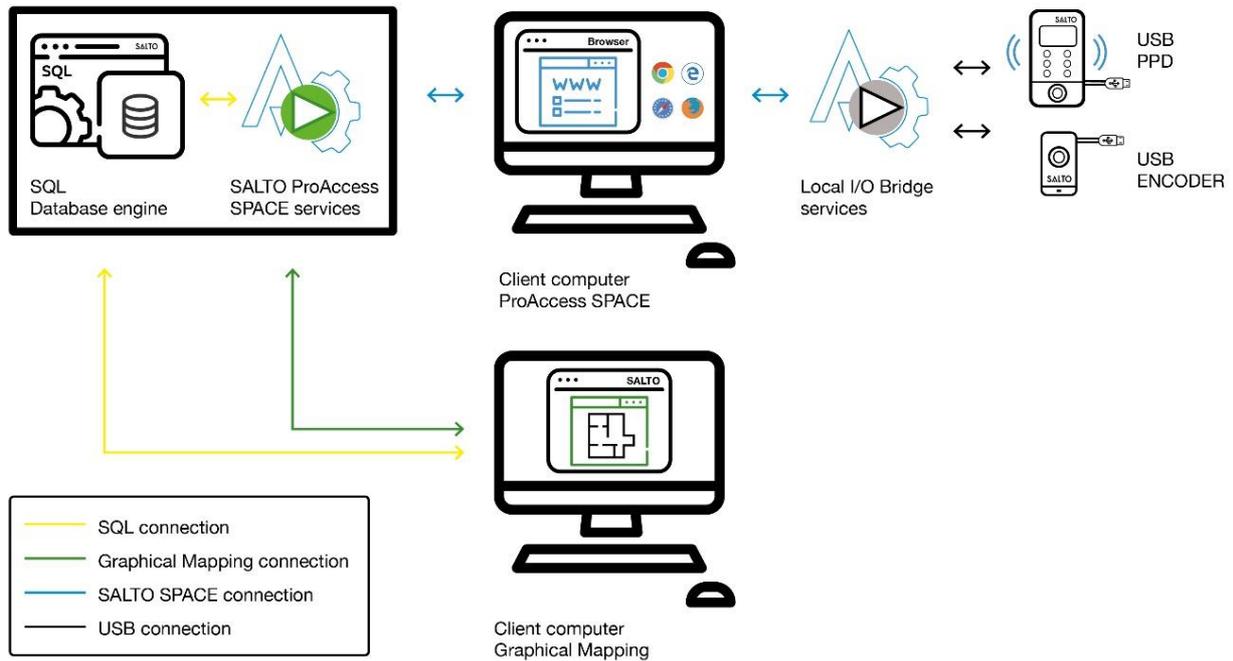
The arrows showing TCP / IP connection, It shows who is starting the communication.
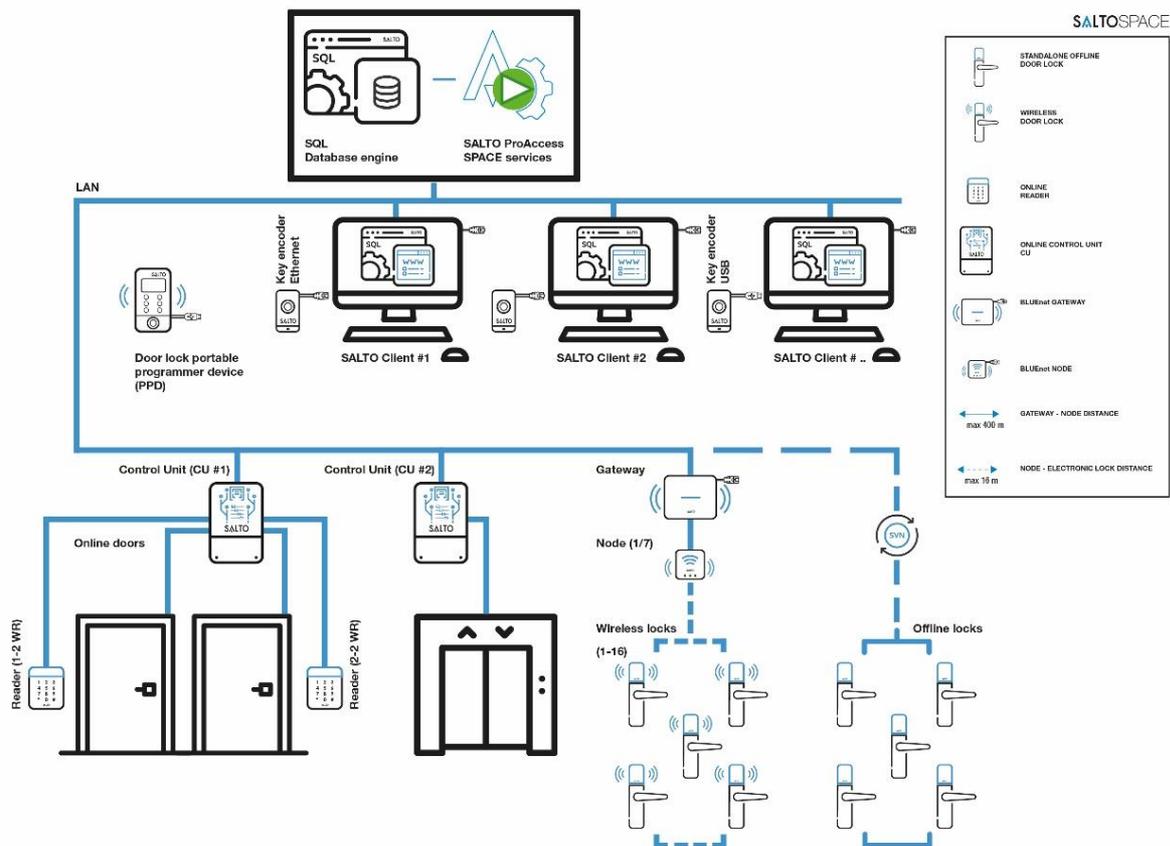All of the ports are bidirectional communication.

21-08-2019

System Overview:

SQL Database engine

SALTO ProAccess SPACE services

Browser

Local I/O Bridge services

USB PPD

USB ENCODER

Client computer ProAccess SPACE

Client computer Graphical Mapping

SQL connection
Graphical Mapping connection
SALTO SPACE connection
USB connection

System Architecture:

SQL Database engine — SALTO ProAccess SPACE services

LAN

Key encoder Ethernet

Key encoder USB

Door lock portable programmer device (PPD)

SALTO Client #1

SALTO Client #2

SALTO Client # ..

Control Unit (CU #1)

Control Unit (CU #2)

Gateway

Online doors

Node (1/7)

Reader (1-2 WR)

Reader (2-2 WR)

Wireless locks (1-16)

Offline locks

SALTOSPACE

STANDALONE OFFLINE DOOR LOCK

WIRELESS DOOR LOCK

ONLINE READER

ONLINE CONTROL UNIT CU

BLUEnet GATEWAY

BLUEnet NODE

GATEWAY - NODE DISTANCE
max 400 m

NODE - ELECTRONIC LOCK DISTANCE
max 16 m

The requirements are or will be provided.

Name:

Company:

Located:

Date:

Signature: _____