Description of IT infrastructure

IT Supplement A

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Other applicable documents:

- IT-TK-004a_LKI_FO IT questionnaire for procurements
- IT-TK-004b_HZN_FO IT questionnaire for procurements
- IT-TK-004c_HA_FO IT questionnaire for procurements
- IT-TK-004d_Schwaz_FO IT questionnaire for procurements

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1. General

Product and type designations and procedures described in this document must be considered by the manufacturer/supplier and are valid in their current version.

2. Introduction

The IT department of *tirol kliniken* operates its IT systems in two system rooms. The two system rooms are approx. fifteen kilometres apart and are connected by several fibre optic cables on different routes. All Ethernet and SAN traffic is routed via these fibre optic cables.

Blade servers, which are connected to the tirol kliniken LAN at 40 GBit, are used.

The IT department of the *tirol kliniken* operates a VMware Virtual Infrastructure in which the VMware-HA and VMware-DRS features are used.

The data is stored on different storage systems. Critical data is also replicated synchronously between the storage systems at the Innsbruck site and the system room at the Hall site. Access to the storage is transparent from the server's perspective via storage virtualisation.

The *tirol kliniken* SAN offers a minimum bandwidth of 16 GBit/s. Each storage system and each server is connected to two different fabrics. The operation and configuration of the network, the SAN, the storage systems, the servers and the blade centres are generally the responsibility of the IT department of the *tirol kliniken*.

The *tirol kliniken operates* an Active Directory based on Windows 2019 for clients and servers.

A Clover Leaf is used as a communication server for medical data.

3. Hardware

The following new products are used as standard hardware:

Positions	Additional information
Desktop PC HP EliteDesk 800 G9 Intel i5 (Type: DM/Mini or SFF)	16GB Ram / 256 GB M.2-PCIe-NVME-SSD Windows 10 (64 Bit)
Desktop PC HP EliteDesk 800 G9 Intel i7 (Type: Tower)	32GB Ram / 512 GB SATA SSD Windows 10 (64 bit)
Notebook Dell Latitude 5430 Intel i5	16GB / 512 GB M.2-PCIe-NVME-SSD / 4G / 14" Touch / Windows 10 (64 Bit)
Notebook Dell Latitude 5530 Intel i5	16GB / 256 GB M.2 PCIe NVME SSD / 15.6" Windows 10 (64 bit)
Notebook Dell Latitude 5330 2-in-1 i5	16GB / 256 GB M.2 PCIe NVME SSD / 13.3" Touch / Windows 10 (64 bit)
Laptop trolley Notebook Ergotron EMR SV41-41004	
Server Blade Cisco UCS-X 210 M6	
Server Blade Cisco UCS-X Enclosure	
SAN switch Cisco MDS 16GB	
Monitor LCD Acer B247YBMIPRX "24" WS	Resolution 1920*1080 3-year guarantee
Monitor viewing Eizo MX242 24" WS	Resolution 1920*1080 3-year guarantee
Monitor Diagnostics Eizo RX250 21.3" 2M	Colour
Monitor Diagnostics Eizo RX370 21.2" 3M	Colour
Monitor Diagnostics Eizo GX560 21" 5M	Monochrome
Printer Laser Kyocera P2040dn	40 pages / min 128 MB Ram
Printer Laser Kyocera P3060dn	60 pages / min 256 MB Ram
Kyocera P6230cdn colour laser printer	30 pages / min 512 MB Ram A4 colour
MFP colour laser Kyocera TASKalfa C2553ci	25 pages / min colour A3 2GB Ram 4cassettes
MFP colour laser Kyocera TASKalfa C3554ci	35 pages / min colour A3 2GB Ram 4cassettes
Accessories Fax module Kyocera System Q	
MFP colour laser Kyocera M6630cidn	30 pages / min colour A4 fax 796 MB Ram
MFP B/W Kyocera M2540dn	40 pages / min B/W A4 Fax 256 MB Ram
Scanner document Fujitsu FI-8150 A4	50 pages / min A4 USB
Scanner Document Canon DR-6010C A4	60 pages / min A4 USB
Dictation systems Philips Speech Mike USB LFH 3200	
Dictation systems Philips Speech Mike USB LFH 3500	
Dictation systems Philips Pocket Memo LFH 8300	
C41CCD barcode scanner	
Handheld Terminal Casio DT-X100-10E Wlan Set	Usb cradle, battery and power supply unit

Positions	Additional information
Handheld Terminal Casio DT-X100-20E Wlan Set	Usb cradle, battery and power supply unit, 2D CMOS imager
Network Switch Cisco Catalyst 9300 48 GigE PoE	775 watts
Network GBIC Cisco GLC-SX-MM	Multi Mode Gbic
Network Access Point Cisco C9120I-E-K9	Indoor AC
Network Access Point Cisco C9120E-E-K9	Outdoor AC

3.1 Server

Servers operated by the IT department of tirol kliniken are procured exclusively by the IT department of tirol kliniken. In exceptional cases, third-party devices may be used in the tirol kliniken IT system rooms. A virtualised implementation is preferred for server instances; physical hardware is only used for a server instance in justified cases.

The following server products are in use at *tirol kliniken:*

Identifier	Use
Cisco UCS-X Blade	M6 preferred server hardware for virtual infrastructure
HP DL 3xx	In 19" form factor for special solutions
Dell PowerEdge R6xx	In 19" form factor for special solutions

Generally, 19" servers are only purchased after justification; blade servers are favoured.
The following blade centres are in use:

- Cisco UCS-X

3.2 Storage

The following storage systems are in use at the *tirol kliniken:*

- Hitachi Vantara VSP G700
- Hitachi Vantara VSP E790 - Archive
- NAS HP StoreEasy 16xx

3.3 SAN

New hardware for the SAN is procured exclusively by the IT department of *tirol kliniken*.
The following SAN components are used*:*

-
- Cisco MDS 16GB Series

4. Software

a. Virtualisation

VMware vSphere 7 is currently used. The VMware infrastructure can also be used in principle, but this must be decided on a case-by-case basis. Own VMware installations by third parties are not desired. Products from the *tirol kliniken* hardware catalogue are used to operate the VMware infrastructure.

The following Vmware ESX features are used on an ongoing basis:

- VMware-HA (High Availability)
- VMware-DRS (Dynamic Resource Scheduling)
- VMware Storage vMotion
- Symantec NetBackup for backing up the machines (uses snapshots)

b. Server operating systems

The following server operating systems are used:

Identifier	Use
Microsoft Windows 2022	Preferred, older versions only with justification
Redhat Enterprise Linux 8	only with justification
Oracle Enterprise Linux 8	preferred, older versions only with justification
Ubuntu Server LTS 22.04	preferred, older versions only with justification

Installation is usually carried out by *tirol kliniken*'s IT department in consultation with the manufacturer/supplier.

Every installation should fulfil the following basic principles:

- The operating system should be patched and up to date
- The manufacturer actively supports the operating system
- The operating system should be protected against malware (virus scanners are provided by *tirol kliniken*)
- The operating system should be protected from potential attackers by a local firewall
- The operating system should be equipped with secure access
- The data should be backed up

Unique information on Windows operating systems:

- All Windows servers are members of the *tirol kliniken* domain.
- The Microsoft Windows Defender product is used as a virus scanner on the Windows servers.

- Suppliers receive a domain user for maintenance, who can be a local administrator's group member.
- Only Remote Desktop (RDP) is used as a remote access tool.
- In Windows, the policy must activate the local firewall; exceptions are managed in the policy. Local exceptions are not possible.
- Windows updates are made available internally via WSUS and are installed automatically unless otherwise agreed.
- The language of the operating system installation is English.
- The local administrator password remains with the IT department of *tirol kliniken* and is not given to the supplier.
- Shares may only be created for global or universal groups. No authorisations may be made for "Everyone".
- Policies for the server are managed exclusively by the IT department of *tirol kliniken.*

c. Databases

The following database systems can be made available centrally.

Identifier	Use	Variant	Licence
MS-SQL 2019	Preferred, older versions only with justification	Single Instance	Standard and Express
MariaDB >= 10.x	favoured	Single Instance	Standard and Express
Oracle >= 19c	favoured	Single Instance	Standard on the VMware cluster set up for this purpose

Database licences are generally provided by the IT department of *tirol kliniken.*

d. Storage virtualisation

tirol kliniken currently uses two systems to mirror the storage systems:

- Hitachi Vantara GAD - for Hitachi Vantara Storages

Data can, therefore, be transparently mirrored for the server on two storage systems in the system room at the Innsbruck site and the system room at the Hall site.

Setting up and configuring the SAN connection of a server is carried out exclusively by the IT department of *tirol kliniken*.

e. Client

The following software products are *used* on the standard *tirol kliniken* IT computers:

- Windows 10 X64 version 21H2 current patch level
- Microsoft Edge (Chromium-based) current patch level
- Adobe Acrobat Reader DC Continuous Track
- Office Prof. Plus 2016
- SentinelOne Agent

Software is distributed via Microsoft System Center Configuration Manager for clients in the domain.

5. Remote access

Remote access for maintenance and service to the *tirol kliniken* LAN occurs via a VPN client or a direct network connection using IPSec.

Access to the LAN is via a firewall and is restricted to hosts.