



Data sheet

syngo Virtual Cockpit

siemens-healthineers.com/syngo-virtual-cockpit



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This document describes the product features and provides an overview of the hardware, software, network and further requirements for *syngo* Virtual Cockpit (sVC) version VA16A.

Intended Use

The *syngo* Virtual Cockpit is a non-medical device designed for remote assisting, standardizing and monitoring of scanner equipment, or for the training of medical personnel who are working on the scanners.

syngo Virtual Cockpit

Move knowledge, not staff.

Remote scanning assistance software that allows you to transform the care delivery of your business, by seamlessly sharing the talents and techniques of your most skilled technologists across your entire fleet.

Highlights

Relieve cost pressure by enhancing flexibility.

You can achieve higher productivity, greater diagnostic consistency, and generate additional revenue by offering advanced procedures at every location.

Boost confidence by sharing in-house expertise.

You can rethink teamwork, increase workforce productivity, bridge bottlenecks, and ensure high-quality care. All the while, staff members feel more confident and competent. Remote scanning assistance to help every technologist work like an expert.

Enhance patient satisfaction by improving availability.

You can offer the highest quality care at all locations: your experts are virtually available everywhere. Patients gain more convenient access and may receive appointments more quickly.

Connect experts with up to three scans simultaneously.

Simultaneously support or scan multiple exams at the same time to help drive an efficient schedule. A case mix of complex and simple procedures can be supported.

Streamline communication over multiple channels.

Offering multiple communication methods such as voice-chat, texting, video and screen sharing, ensures your technologists and experts can correspond in the fashion most conducive to their work environment, leading to an increase in productivity and comfort levels.

Reduce the travel needs of patients, technologists, and radiologists.

Reduce transportation costs for patients travelling to sites where the examination is offered. Support special examinations without needing to be onsite and improve retention of staff.

Protect your most valuable assets.

Enable your technologist to access the scanner remotely from isolated areas or from home.

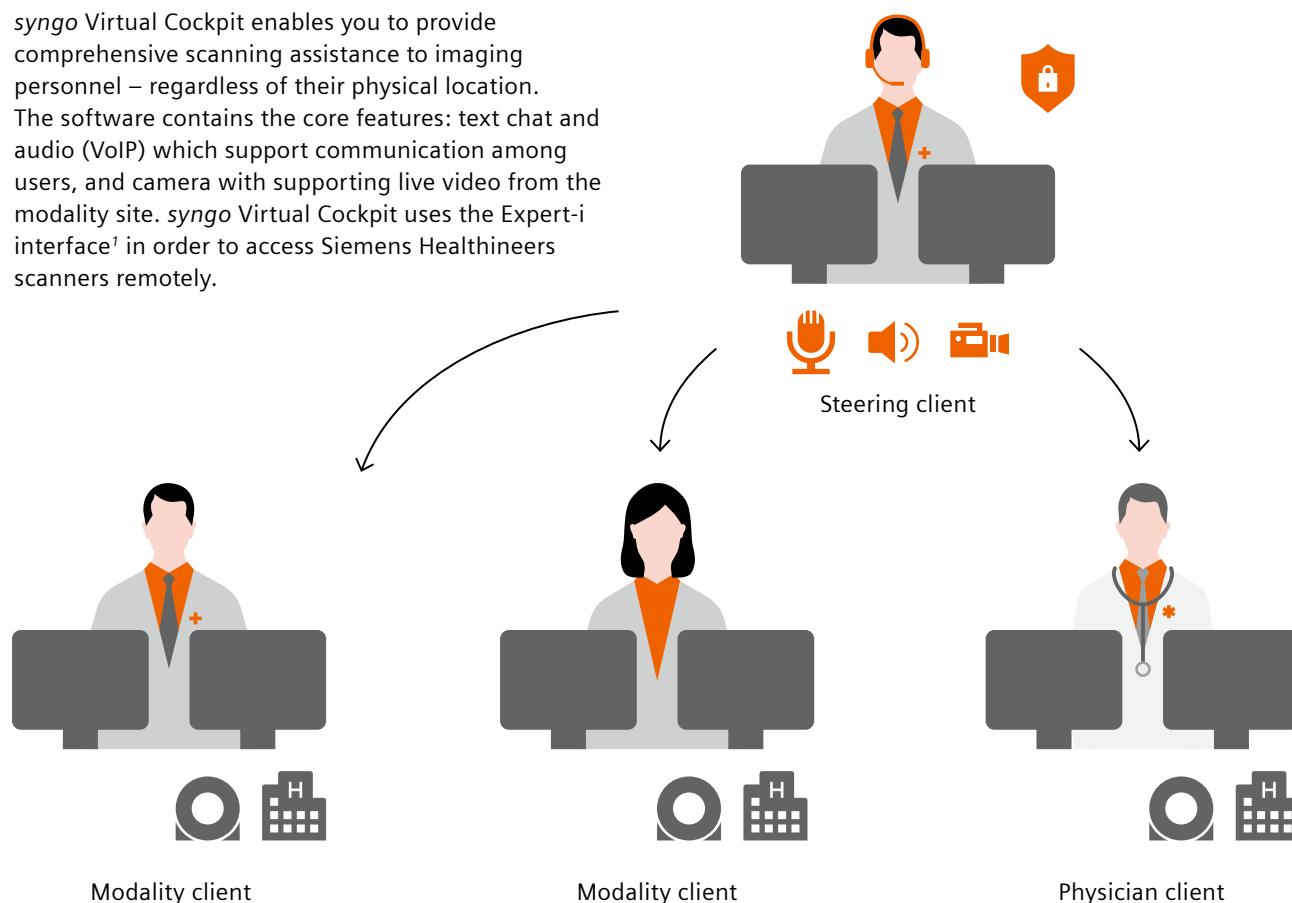
Provide high quality diagnostics independent of the availability of your on-site staff.

The WeScan service is an extension of the syngo Virtual Cockpit that offers you remote scanning for MR imaging. Easily book experienced technologists outside of your organization and request an MRI scan to be remotely performed or choose remote scan coaching for on-the-job learning.¹

¹ WeScan is not commercially available in all countries and/or for all modalities. If this service is not marketed in countries due to regulatory or other reasons, the service offering cannot be guaranteed. Please contact your local Siemens Healthineers organization for further details.

Product Features

syngo Virtual Cockpit enables you to provide comprehensive scanning assistance to imaging personnel – regardless of their physical location. The software contains the core features: text chat and audio (VoIP) which support communication among users, and camera with supporting live video from the modality site. syngo Virtual Cockpit uses the Expert-i interface¹ in order to access Siemens Healthineers scanners remotely.



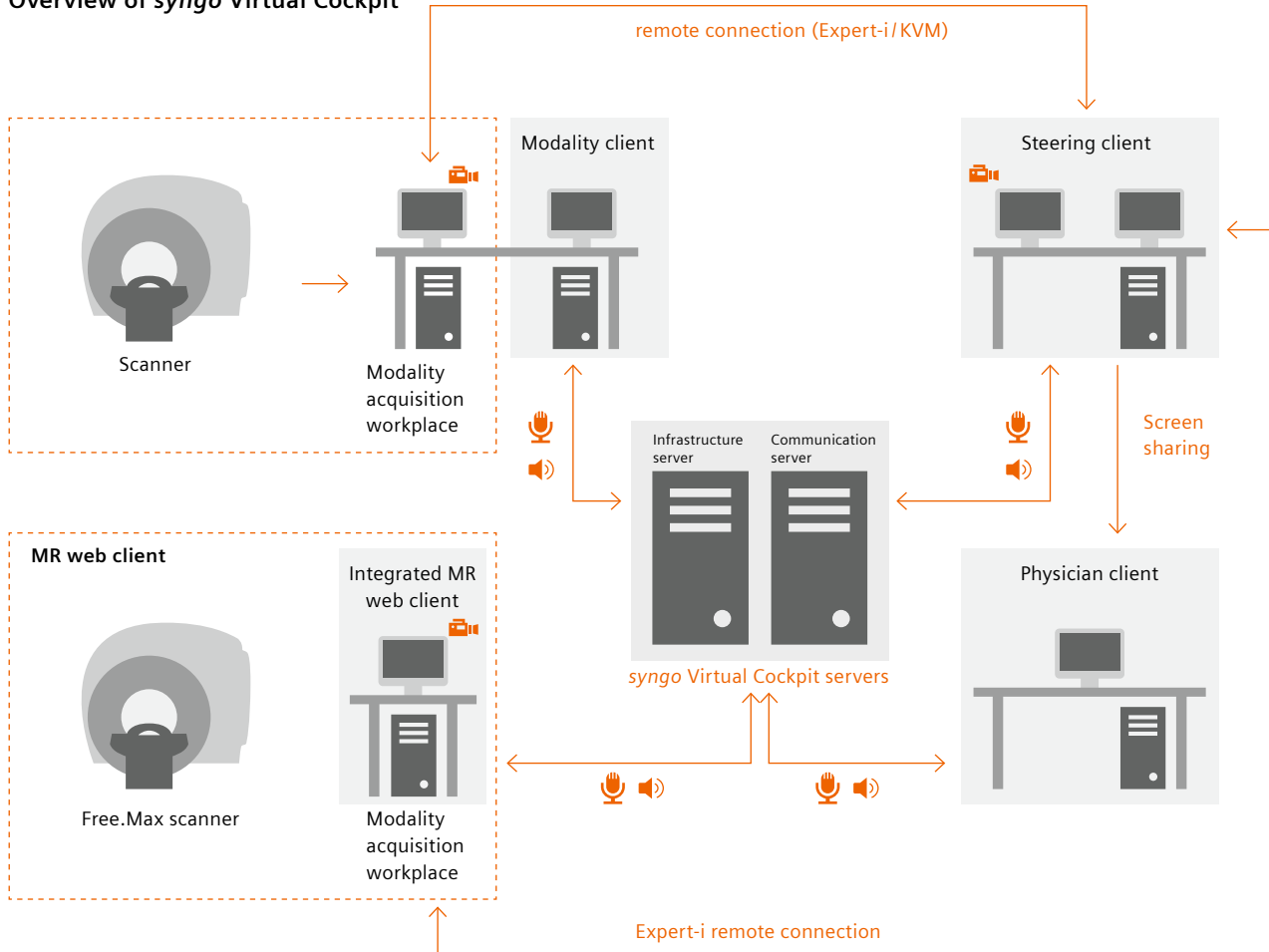
Core features:

- **Contact list:** Displaying available users and groups
Enabling quick access to the knowledge across your scanner network.
- **Chat:** Text based communication with syngo Virtual Cockpit users
Enhanced chat functionality with quick presets to speed up workflow.
- **VoIP:** Audio call with a person
Share clinical insights and expert knowledge simply without occupying the internal phone network.
- **Screen sharing:** Enabling the technologist to share the modality segment with other users (physician/modality technologist)
- **Camera¹:** Assisting live video from cameras at the modality site
Be virtually in the scanner console room, with full visualization of the patient position on the scanner and the contrast injector console.
- **Expert-i¹:** Remote connectivity to the modality desktop with keyboard and mouse control. The connection is possible in full control or in read-only mode.
Secure and seamless interaction with the scanners.
- **Vendor Agnostic:** Remotely access and steer non-Siemens Healthineers scanners with syngo Virtual Cockpit. The connection is possible in full control or read-only mode.

¹ Cameras and Expert-i are not included in the syngo Virtual Cockpit delivery

Solution Description

Overview of syngo Virtual Cockpit



- Clients:** The steering client (1) offers the possibility to connect to the modality (scanner) console via Expert-i. In order to connect up to three modalities at the same time, it is equipped with two monitors. It displays the live video from up to 6 cameras installed on the modality sites. The modality client (2) is installed next to the modality console. Both modality (2) and physician client (3) are often installed on a RIS or PACS computer.
- Modalities:** One syngo Virtual Cockpit system supports up to 100 modality (scanner) connections. For more information about the supported scanner models please refer to chapter Modality Compatibility.
- syngo Virtual Cockpit server:** The server interconnects the clients, modalities and IP cameras and provides the backend infrastructure for the product features. On one sVC system up to 100 Siemens Healthineers modalities can be configured. It consists of two parts.
- The communication server and the infrastructure server provide the backend for the contact list, chat, VoIP and camera functionality; the infrastructure server in addition hosts the user management, admin portal and serviceability functionality. It also supports the integration into the clinical domain and integration of the clinical users (Active Directory). Connecting the infrastructure server to SRS (Siemens Healthineers Smart Remote Services) is mandatory to ensure remote customer service.

Hardware/OS Requirements

syngo Virtual Cockpit server

The server can be installed either as a physical setup A) or as a virtualized setup B). It is highly recommended ordering the Care Pack (e.g. 5 years support) for the server from the hardware vendor.

Both in the physical setup A) and in the virtualized setup B), a Windows server operating system provided by the customer is required for the syngo Virtual cockpit server.

A) Physical server hardware setup

Minimum requirements

- Intel CPU: min. 6 Cores, 64-bit architecture, processor with Intel VT-x technology
- RAM: 32 GB
- Network adapter: 1 GB/s.
- RAID array (either with SAS or SSD disks) resulting in data storage
- 2 volumes:
 - C: 512 GB (system partition with min. 400 GB, preferred 500 GB),
 - S: (service partition with 100 GB)
- RSB/ILO with advanced license

Setup details

In a physical server setup, the server provides both the functions of the communication and infrastructure server. The infrastructure server is hosted on the Windows OS. The Hyper-V feature is enabled, which hosts the Red Hat Linux Virtual Machine (VM) with the communication server.

B) Virtualized server setup

Minimum requirements

- A virtual environment (supporting Windows and Red Hat Linux) for example, VMWare vSphere.
- 6 vCores
- 32 GB vRAM
- 512 GB vDisk storage
- This setup considers 2 virtual machines (VM), and the virtual resources are totals for both VMs which need to be deployed on the hypervisor

Setup details

In case of Virtual Sever setup, there will be two separate VMs (Virtual Machines):

- Communication server (VM with Red Hat Linux 7)
- Infrastructure server (VM with Windows Server 2016 or Windows Server 2019)

The distribution of CPU RAM and disk resources between both VMs will be decided at the time of installation.

Operating systems

For a syngo Virtual Cockpit server in both physical setup A) or virtualized setup B), a Windows server operating system, provided by the customer, is necessary. There are two possibilities:

- A) Microsoft Windows Server 2016, Standard Edition
- B) Microsoft Windows Server 2019, Standard Edition.

The Windows OS must be in EN-US language version. The Windows CAL (client access licenses) must be provided at the customer site.

The communication server with the Linux operating system will be provided by Siemens Healthineers and is part of the syngo Virtual Cockpit delivery.

Hardware/OS Requirements

Modality client/physician client

Minimum hardware requirements

- CPU: Intel i3, 64-bit architecture
- RAM: 4 GB
- Hard disk: 20 GB free space
- Monitor: 1280x1024 pixels
- USB optical scroll mouse and standard keyboard
- Preferably: A sound card with analog line-in shall be included in the client.
- Audio device → see below

Supported operating systems

Microsoft Windows 10

Steering client

Recommended

- CPU: Intel i7, 64-bit architecture
- RAM: 16 GB
- Hard disk: 256 GB SSD with 100 GB free space
- Network adapter: 1 GB/s
- 2 monitors: **2560 x 1440 pixels** (typically 27 inches) or **1920 x 1200 pixels** (typically 24 inches)

Note: For connecting Numaris X and Somaris X scanners (see also page 9 “Modality Compatibility”) e.g. MAGNETOM Vida/Sola we highly recommend using monitors with resolution: 2560 x 1440 pixels. Graphic card resolution support may limit monitor resolution. Graphic card output number may limit multiple monitor use. For optimal performance, it is recommended that the steering client is installed on dedicated hardware (and not combined with other software like *syngo.via* or PACS systems). Specific modality keyboard¹ e.g. Siemens MR key layout, may be connected to the steering client in order to use the modality functions more intuitively, however, is not required.

Minimum hardware requirements

- CPU: Intel i5, 64-bit architecture
- RAM: 8 GB
- Hard disk: 256 GB SSD with 100 GB free space
- Monitor: 1920x1200 (typically 24 inches)
- USB optical scroll mouse and standard keyboard
- Audio device → see below

Supported operating systems

Microsoft Windows 10, 64-bit edition

Audio devices (for both steering and modality clients)

Any headset that is supported by the computer and Windows OS will be compatible with *syngo* Virtual Cockpit.

IP cameras

syngo Virtual Cockpit works with IP cameras which support ONVIF and RTSP streaming. The cameras are not part of the *syngo* Virtual Cockpit product.

syngo Virtual Cockpit was tested with following camera types:

- Hikvision (DS 2DE2204IW-DE3/W and DS-2DE2A404IW-DE3 models)

IP camera positioning and connectivity

Preferably, the IP cameras shall be connected over wired LAN and must be reachable from the clients/server. The IP cameras require a power plug.

Security note: IP camera data security is outside the scope of *syngo* Virtual Cockpit and as such is the responsibility of the customer.

KVM switch

To connect to non-Siemens Healthineers scanners, a KVM switch needs to be provided. *syngo* Virtual Cockpit currently only supports Raritan Dominion KX IV – 101. The KVM switch is not part of the *syngo* Virtual Cockpit product.

Security note: KVM switch data security is outside the scope of *syngo* Virtual Cockpit and as such is the responsibility of the customer.

¹ Keyboard sold as separate option.

Network Requirements

General requirements

Server, clients, IP cameras, KVM switches (if connected), and modalities should be preferably located in the same network. When they are in different networks, there must be a defined routing among the networks. The network should be segmented and protected LAN (by firewalls and controlled points of access). When a connection over the Internet is needed, (e.g. working from home) VPN must be provided. TCP ports required by the sVC for the communication among clients, servers, cameras and modalities are listed in *syngo Virtual Cockpit Security White paper*.

The requirements on the network (bandwidth, latency) are dependent on the *syngo Virtual Cockpit* use case. The connection from sVC steering client towards the modality acquisition workplace is where the latency and bandwidth matter the most as this path is used for the desktop duplication by Expert-i. Following four scenarios have been defined. Enough network bandwidth needs to be accomplished for downlink. Lower bandwidth is also acceptable for the uplink than stated here. Network latency is a round trip time delay that can be measured with the ping command.

Minimum requirements with one modality (1 Expert-i connection, chat, VoIP, no camera)

Network bandwidth ≥ 40 Mbps, latency ≤ 30 ms

1 modality – training use case

(1 Expert-i connection, chat, VoIP, 2 cameras)

Network bandwidth: ≥ 50 Mbps, latency ≤ 20 ms

2 modalities – routine use case

(2 Expert-i connections, chat, VoIP, 4 cameras)

Network bandwidth: ≥ 100 Mbps, latency ≤ 15 ms

3 modalities – routine use case

(3 Expert-i connections, chat, VoIP, 6 cameras)

Network bandwidth: ≥ 150 Mbps, latency ≤ 15 ms

Name resolution requirements

Communication establishment between *syngo Virtual Cockpit* nodes (clients, servers and KVM switches (if connected)) depends on proper DNS (Domain Name System) setup ensuring consistent lookup of servers fully qualified domain names across the network. Mainly on the sVC clients it is essential that the server names can be resolved properly to the IP addresses.

Room Requirements

Operator room/scanner room

The modality client shall be located next to the modality workstation (so that the modality technician can type on both *syngo Virtual Cockpit* and modality keyboard).

The IP cameras can be directed to the scanner gantry and/or on the contrast media injector monitor.

The cameras can either be positioned on the table, the scanner room window, or can be mounted on the wall.

- MR scanning rooms: The IP cameras must be installed outside the scanner room.
- CT scanner room: It is possible to install the camera inside the CT scanning room.

syngo Virtual Cockpit room

syngo Virtual Cockpit steering client computers equipped with one or two monitors shall be placed on a separate table (in order to prevent interruptions from audio devices).

Modality Compatibility

syngo Virtual Cockpit can connect up to 100 Siemens Healthineers scanners which have Expert-i on-board. Following scanner models and versions are supported:

Compatible MR scanners, MAGNETOM systems and software versions:

CI, Concerto, Harmony, Sonata, Symphony	syngo MR A35 and syngo MR A40 line
Avanto, Espree, Symphony a Tim System, Trio a Tim System, Verio	syngo MR B17 and syngo MR B19 line
C2I, ESSENZA, ESSENZA Mobile	syngo MR C15 line
Aera, Avanto, ESSENZA	syngo MR D13 and syngo MR D14 line
Aera, Amira, Avanto, Avanto ^{fit} , Biograph mMR, ESSENZA, Prisma, Prisma ^{fit} , Sempra, Skyra, Skyra ^{fit} , Spectra, Terra, Verio	syngo MR E11 line
Altea, Amira, Amira Biomatrix, Lumina, Sempra, Sola, Sola ^{fit} ¹ , Vida, Vida ^{fit} ¹	syngo MR XA10, syngo MR XA11 and syngo MR XA20 ¹ line, syngo MR XA12 for Amira, Sempra
Aera, Skyra, Prisma, Prisma ^{fit}	syngo MR XA30 (with Expert-i version 11)
Free.Max	syngo MR XA40 (with Expert-i version 11) ²

Compatible CT scanners and software versions:

SOMATOM Perspective, SOMATOM Scope, SOMATOM Emotion	Somaris 5-VC50
SOMATOM Force, SOMATOM Drive, SOMATOM Flash, SOMATOM Confidence RT Pro, SOMATOM Edge Plus, SOMATOM Definition Edge, SOMATOM Definition AS	Somaris 7-VB20
SOMATOM go.Now, SOMATOM go.Up, SOMATOM go.All, SOMATOM go.Top, SOMATOM X.cite	Somaris X-VA30
NAEOTOM Alpha, SOMATOM X.cite, SOMATOM X.ceed, SOMATOM go.Now, SOMATOM go.Up, SOMATOM go.All, SOMATOM go.Top, SOMATOM go.Sim, SOMATOM go Open Pro	Somaris 10-VA40 (Expert-i version 11)

Compatible MI scanners and versions:

PET/CT scanners	
Biograph Horizon	from version VJ2X
Biograph mCT	from version VG7x
Biograph Vision	from version VG7X
Biograph Vision Quadra	from version VR1x
SPECT and SPECT/CT scanners	
SPECT: Symbia S, Symbia E, SymbiaEvo, Evo Excel	from version VB22
SPECT/CT: SymbiaT/T2/T6/T16, IntevoExcel/2/6/16, Intevo Bold	from version VB22

¹ The products are not commercially available in all countries.
Due to regulatory reasons their future availability cannot be guaranteed.

² In order to use the MR integrated web client on MAGNETOM Free.Max
MR XA40 scanner the compatible version of sVC is VA14A. The audio
is supported in the web clients first with MR XA50 version.

Hardware Recommendation



syngo Virtual Cockpit server

Technical specifications

Server: 1x HPE ProLiant ML30 Gen10 server

Processor Type: 1x Intel Xeon E-2176G 3.7 GHz (6 Core) CPU

Memory: 1x 64 GB RAM

Disks: 2x 480 GB SATA SSD (RAID 1)

RAID Controller: 1x Smart Array E208i-p SR Gen10

Networking: 2x 1 GbE Network Adapter

iLO: Dedicated iLO management port

Optical Device: DVD-RW/DVD-ROM Optical Drive

Graphical Interface: Intel UHD Graphics

Accessories: USB Optical Scroll Mouse, USB Standard International Keyboard

Physical specifications

Dimensions (H x W x D):

36.83 x 17.5 x 47.5 cm (14.5 x 6.89 x 18.7 inch)

Form Factor: 4U Tower

Total Weight: max. 17.6 kg (38.7 lbs)

Power Consumption: 350 W

Heat Emission: max. 1544 BTU/hr

Acoustic Noise: Up to 28 dB

Technical details are subject to change without notice. The hardware described herein is off-the-shelf hardware. Siemens Healthcare GmbH is not Legal Manufacturer of the hardware.



syngo Virtual Cockpit client

Technical specifications

Client hardware: 1x HP Z2 Mini G4 Entry

Processor Type: 1x Intel Core i7 8700 3.1 GHz (6 Core) CPU

Memory: 16 GB RAM (2x 8 GB)

Disks: 1x 256 GB M.2 TLC SSD

Networking: 1x 1 Gbit/s Network Interface on board

Graphical Interface: Intel UHD Graphics P630

Display Output: 2x Display Port 1.2

Operating System: Windows 10 Pro 64 (EN-US)

Accessories: no CD/DVD

Physical specifications

Dimensions (H x W x D):

58 x 216 x 216 mm (2.28 x 8.5 x 8.5 inch)

Total Weight: 2.08 kg (4.59 lb)

Power Supply: 135 W (230 VAC)

Z2 Mini G4 Entry based. Technical details are subject to change without notice. The hardware described herein is off-the-shelf hardware. Siemens Healthcare GmbH is not Legal Manufacturer of the hardware.

IT Care Plan

Acquiring best-in-class medical equipment is just the first step to remaining competitive in a constantly changing healthcare environment. The management of healthcare IT solutions, including their associated resources, can be both time-consuming and costly.

To address these challenges, the IT Care Plan from Siemens Healthineers enables you to:

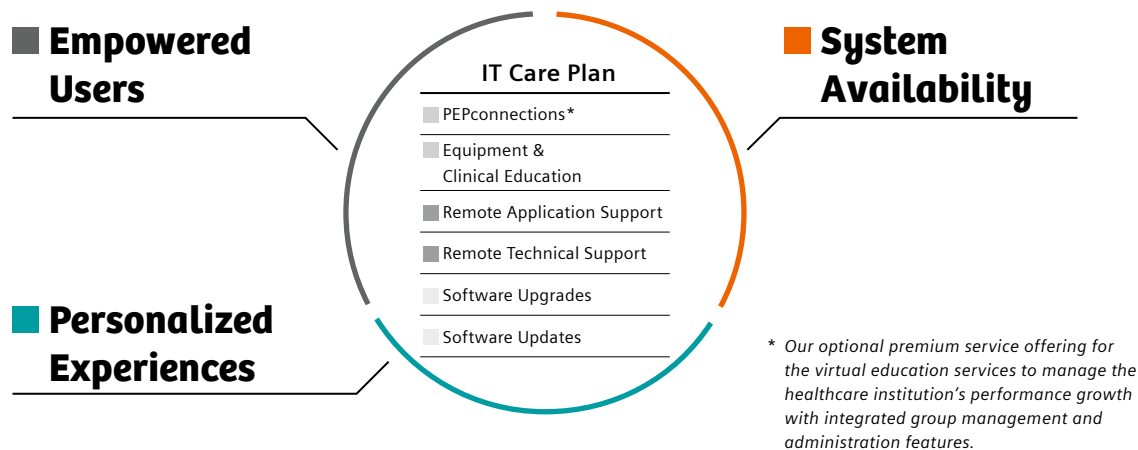
- **Increase your system availability**

by minimizing IT-related downtime over the entire serviceable lifetime through continuous remote support. Regular remote software updates and

upgrades keep your IT solutions reliable and secure, protecting your investment.

- **Increase your staff competency, efficiency, and productivity**

with a personalized education and performance experience, designed for healthcare professionals. With an IT Care Plan, you can increase your return on invest knowing that you have a reliable partner who helps you improve your efficiency and productivity throughout the entire serviceable lifetime of your healthcare IT solutions.

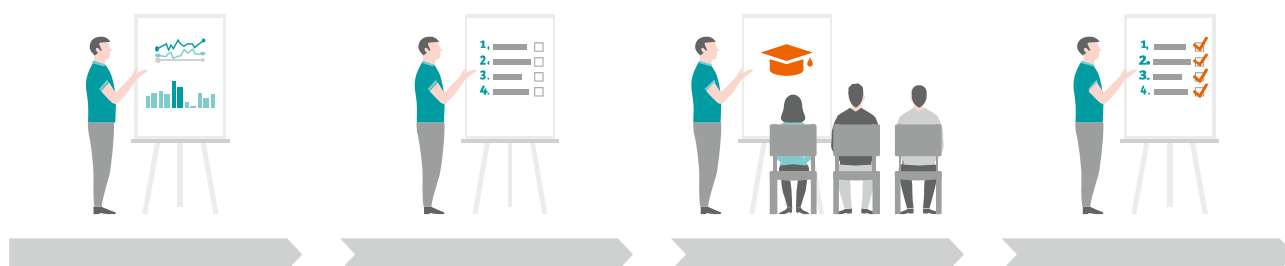


	Includes ...	Consisting of ...
Education Elements	■ PEPconnections	Personalized learning experience allowing you to increase workforce productivity, deliver high quality results and increase performance
	■ Equipment & Clinical Education	Tailored training allowing you to improve workflow productivity and diagnostic accuracy, adapted to the learning styles and needs of clinical staff
	■ Remote Application Support	Immediate remote support and guidance for application-related requests to empower users and improve daily operations
	■ Remote Technical Support	Immediate remote technical and phone support for technical requests to optimize system availability and daily operations
	■ Software Upgrades	Regular distribution of new software versions for increased productivity with enhanced features, better performance and application innovations
Core Elements	■ Software Upgrades	Regular distribution of software updates for optimized performance, reliability and security

Note: All IT Care Plans require a connection to Smart Remote Services (SRS).

Optimize Virtual Workflow comprises four steps to the most effective adoption of *syngo* Virtual Cockpit

Tailored consulting program targeted to operationalize, enhance, and enable the virtual clinical workflow using *syngo* Virtual Cockpit



Analysis

- Current work practices
- Advisory on operational measures
- Optimal introduction of a virtual scanning workflow with *syngo* Virtual Cockpit

Definition

- Target state of an individual training plan
- Blended learning techniques e.g., pre-installation online user training and onsite soft skills education

Implementation

- Optimization of virtual scanning techniques
- Hands-on approach
- State-of-the-art coaching measures
- Assistance on interaction between the remote and onsite personnel

Closure

- Monitoring and fine-tuning of operations
- Enablement of a fully integrated optimized virtual workflow
- Closure of consulting project



Holistic approach to optimize virtual scanning, focusing on both people and processes

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