



PHILIPS

Radiation oncology

Treatment Planning

Pinnacle Professional

Centralized computing platform

X6-2 specifications sheet

A fast and flexible server solution for demanding small to mid-size clinics

Compact and powerful, Pinnacle Professional moves treatment planning **from the desktop to the data center**, enhancing accessibility, reliability and performance, while reducing maintenance and management of the system.

Key advantages

Centralized computing performance

Designed for multiple users with, parallel, simultaneous workflows

Distributed access

Access Pinnacle wherever and whenever it is needed

Reduced operational costs

Simplify software installation and ongoing maintenance

The power of **centralized computing** in a **scalable solution**

Centralized computing performance

Designed for the demands of multiple, parallel, simultaneous workflows, each user has the same processing power to get their work done as efficiently as possible.

Distributed Access

Pinnacle is accessed through the existing Windows or Macintosh PCs* of the clinic with a Virtual Client Connection (VCC). A VCC is a low bandwidth, small footprint, remote client that allows clinicians the flexibility to work from wherever they are needed. Adding another access point for a Pinnacle user is as easy as installing a VCC.

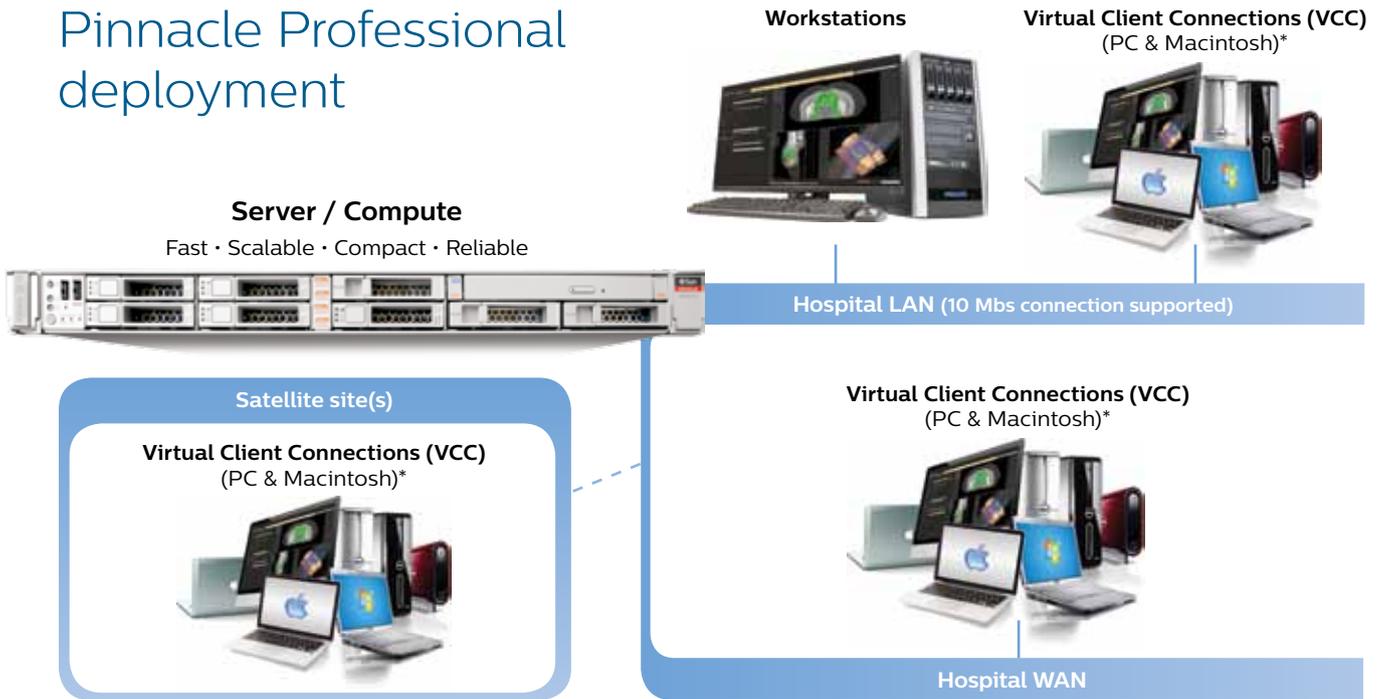
Reduced operational costs

A centralized server simplifies software installation and updates, and ongoing maintenance, virtually eliminating the need for individual maintenance of desktops. As new licenses are added to the Pinnacle system, because it's a centralized server, those users gain access to that functionality immediately.

The system is made up of two key components:

- 1. Professional server** – Provides the computational power for Pinnacle, as well as image and plan storage.
- 2. Virtual Client Connections (VCC)** – Access points to Pinnacle installed on the existing Windows or Macintosh PCs* of the clinic.

Pinnacle Professional deployment



* Supports English, French, German, and Dutch localized keyboards only.

System specifications¹

Pinnacle Professional	
OEM model	X6-2 server supplied by Oracle*
CPU	Dual Intel® Xeon® E5-2699 v4 22-core 2.2 GHz processor
RAM	64GB DDR4: upgradable to 384GB
Operating system	Oracle Solaris 11.3
Intel* turbo boost and hyperthreading	Yes
Hard drives	5x 1.2TB 10k RPM SAS-3 (RAID 5)
Primary NIC Ethernet Ports:	4x 10,000/1,000/100 Mbps Base-T Ethernet ports
Remote Management Port (ILOM)	1x 1,000/100 Mbps Base-T Ethernet ports (for remote management/support)
Required Ethernet switch ports (customer provided)	1 or 2 for network connections (2 if using recommended redundant network configuration); 1 for ILOM port
DVD drive	Internal
Remote administration	Network-based remote power control and console capability (ILOM)
Size	1 U, Height: 42.6mm (1.7in), Width: 436.5mm (17.2in), Depth: 737.0mm (29.0in, Weight: 18.1kg (40.0lb)
Rack mounting	Tool-less slide rail kit and cable management arm included
Peak heat load	1,497 BTU/hour
Peak power	550 W
Operating environment	5°C to 35°C (41°F to 95°F); 10%–90%, non-condensing. Up to 3,000 m, maximum ambient temperature is derated by 1°C per 300 m above 900 m
Acoustic noise	7.0 Bels A-weighted operating, 7.0 Bels A-weighted idling; 63.1 dBA operating, 60.5 dBA idling; systems must be acoustically isolated from staff work areas.
Power supply	Dual-redundant Sun 760W AC HE Gold Power Supplies 100–240 VAC, 50 or 60 Hz; IEC 320-C13 power connector
Current draw	4.0 A @ 110 VAC, 2.0 A @ 220 VAC
Power cords	Philips will supply power cords to match the local power outlet, or jumper cables to fit IEC 320-C14 rack PDU power sockets.
Data storage specifics	Five (5) 1.2TB hard disk drives; configured in a RAID storage array with a single hot-spare hard drive. This configuration will yield roughly 2.9 TB of usable space, which will contain the Solaris Operating Environment, storage for patient data, Pinnacle binaries, and user home directories. Patient data, home directories, and the Pinnacle software are stored on the RAID-5 internal storage system
File systems	The /PrimaryPatientData, /export, and /files file systems will use the ZFS file system. Additional archival space can be provided by most non-Windows NFS systems (requires additional configuration).

Firewalls and ports

General	Pinnacle Professional can function correctly in an environment with firewalls, provided that the necessary ports are opened between the systems. The production network connections between server cluster nodes and Pinnacle application servers must be on the same subnet, with no firewalls between these systems. Connectivity in and out of these systems is described in later sections.
<i>VCC and Thin Clients</i>	<p>Sun Ray server software: TCP and UDP ports 7009, 7013, 7777</p> <p>Sun Ray load-balancing: TCP and UDP ports 7011</p> <p>Sun Ray graphics: TCP and UDP ports 32768 – 65535 – 69/udp (for firmware updates)</p> <p>ICMP: ICMP (recommended to be enabled for troubleshooting)</p> <p>contact Philips technical support for further questions</p>
ILOM management port requirements	<p>The management network connection requires the following ports to be open between the client (a web browser on the health care facility network) and the Integrated Lights-Out Management interface on the server:</p> <ul style="list-style-type: none"> • HTTP/HTTPS: TCP ports 80 and 443 (HTTP automatically redirects to HTTPS) • SSH: TCP port 22 • Console – CD Redirection: TCP port 5120 • Console – Keyboard and mouse: TCP port 5121 • Console – Encryption: TCP ports 5555 and 5556 • Service Tag Daemon: TCP port 6481 • Console – Video: TCP port 7578 • ICMP: ICMP (recommended to be enabled for troubleshooting)
DICOM import and export	<p>The firewall must be open to allow devices to push images into the Pinnacle system. The Pinnacle DICOM listener will operate on the server cluster virtual IP address by default, using TCP port 104.</p> <p>The firewall must additionally be open to allow each Pinnacle application server and workstation to initiate connections to push data into record and verify systems and other treatment planning systems. The DICOM protocol operates on TCP port 104 by default, although this may vary depending on the configuration of the customer-owned target system.</p> <p>All ports pertaining to NIS/YP and NFS are required if firewalls exist between the server and any attached clients.</p> <p>TCP/UDP 111, TCP/UDP 4045, TCP/UDP 2049, and stateful RPC packet inspection which can monitor client requests for NFSv3 and NIS ports, dynamically opening the associated random ports.</p> <p>The firewall must allow each Pinnacle application server and each Pinnacle workstation to initiate connections to all printers.</p> <p>The ports used for printing will depend on the protocol used to access the customer-owned printers.</p>
Enterprise backup	The firewall must allow Pinnacle Professional server (and virtual IP address) to communicate with the customer's enterprise backup system. The required ports are dependent on the enterprise backup system deployed.
Data transfer at installation	For existing customers with data to be migrated from a workstation server onto the Professional server, the firewall will need to be opened between the Professional server (individual nodes and virtual IP) and the customer's existing server. This requirement is temporary, unless the customer will be keeping the workstation and converting it into a client to the newly installed system.
Remote support	<p>For faster problem resolution, a significant number of support calls can be resolved remotely via the Philips Remote Services (PRS). This is a VPN-based connection accomplished with either a Philips-provided router, or a configuration to an existing customer-managed VPN concentrator. The following systems and ports must be authorized for Philips to provide remote support:</p> <ul style="list-style-type: none"> • Pinnacle Professional server: TCP port 22 • ILOM ports: TCP ports 443, 5121, 5555, 5556, 6481, 7578 • Workstation (thick-client): TCP port 22

Advanced Connectivity

Active Directory	Philips recommends the server installation of a compatible Solaris active LDAP agent (not included) to allow the use of your existing active directory servers. All LDAP vendors are subject to approval for use by Philips customer support.
SMB Sharing Services	Share files and directories to Windows devices. Contact Philips customer support for further details.

Access points

Virtual Client Connection (VCC)	
PC/Macintosh hardware	Not included (user provided)
Minimum specifications	<ul style="list-style-type: none">• Windows: minimum specifications as required by Microsoft Windows 7*, XP or Vista (32 and 64 bit)• Macintosh: OS X v10.6 (Snow Leopard) (English, French, German, and Dutch localized keyboards only)• Disk space: 100 MB to load emulation application• Display resolution: 1280 x 1024 or better with dual monitor support• 10 Mb/s network with less than 15 ms latency

Backup

Philips recommends the server installation of a compatible backup agent (not included) to allow the use of your existing enterprise backup system. You will be required to create schedules and handle all operational responsibilities regarding backup (e.g., monitoring backups and rotating tapes).

Support can be provided by the Philips installation representative, and Philips will provide an acceptance verification procedure to ensure that Pinnacle is operating properly after backup agent installation.

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1. Pinnacle Professional is designed to be installed in a data center environment or a suitable mobile enclosure. Backup and disaster recovery systems are not included. Specifications subject to change.

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