# The power of centralized computing at your fingertips

## Philips Pinnacle$^3$ Professional specifications

# The power of centralized computing in a scalable offering for mid-size clinics

### Experience the advantages of Professional

- Centralized computing combined with thin client technology simplifies system installation and ongoing maintenance
- Integrated Lights Out Management provides proactive management of the system increasing uptime
- Thin clients virtually eliminate the need for desktop maintenance"

### Professional helps reduce costs

- VCC software enables existing Windows and Apple Macintosh* computers to act as Pinnacle³ access points

### Professional provides fast and flexible access to Pinnacle³

- Easy to add additional access points providing access from virtually anywhere
- All Pinnacle³ licenses are available at any access point
- Improved performance across low bandwidth connections

### The system is made up of two key components:

1. **Professional server** – provides server processes, compute power and 2 TB data storage for Pinnacle³
2. **Access points** – Virtual Client Connections (VCC) or customer-supplied PCs from which the end users access the Pinnacle³ application

## Pinnacle³ Professional deployment

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

# System specifications[1]

| Pinnacle[3] Professional application server | |
|---|---|
| OEM model | Sun Fire X4-2 server supplied by Oracle* |
| CPU | Dual 3.0 GHz 10-Core Intel Xeon* E5-2690 |
| RAM | 160 GB |
| Clustering software | N/A |
| OS | Oracle Solaris 10 – Update 10 |
| Intel* turbo boost and hyperthreading | Yes |
| Virtual CPUs for Pinnacle[3] multi-threading | Two (2) 10-Core Intel Xeon E5-2690 (3.0 GHz, 20 MB level 3 cache) processors, 40 threads |
| HBA | N/A |
| HBA ports and supported speeds | N/A |
| Hard drives | 5x 1.2TB 10K RPM SAS system drives (RAID 5) |
| Primary NIC Ethernet Ports: | 4x 10,000/1,000/100 Mbps |
| Remote Management Port (ILOM) | 1x 100/10 Mbps (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 | External TEAC drive |
| 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: 18.0kg (40.0lb) |
| Rack mounting | Slide rail kit and cable management arm included |
| Peak heat load | 1,497 BTU/hour |
| Peak power | 439 W |
| Operating environment | 5°C to 31°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 | 7.6 B operating, 7.6 B 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. |
| Optical drive | DVD+/-RW SATA-based drive (for use by Philips technical support only) |
| 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[3] binaries, and user home directories. Patient data, home directories, and the Pinnacle[3] 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 | Pinnacle³ 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 Pinnacle³ 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. |
| ILOM management port requirements | 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:<br>• HTTP/HTTPS: TCP ports 80 and 443 (HTTP automatically redirects to HTTPS)<br>• SSH: TCP port 22<br>• Console – CD Redirection: TCP port 5120<br>• Console – Keyboard and mouse: TCP port 5121<br>• Console – Encryption: TCP ports 5555 and 5556<br>• Service Tag Daemon: TCP port 6481<br>• Console – Video: TCP port 7578<br>• ICMP: ICMP (recommended to be enabled for troubleshooting) |
| DICOM import and export | The firewall must be open to allow devices to push images into the Pinnacle³ system. The Pinnacle³ DICOM listener will operate on the server cluster virtual IP address by default, using TCP port 104.<br>The firewall must additionally be open to allow each Pinnacle³ 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. |
| Data sharing between Professional and thick clients | All ports pertaining to NIS/YP and NFS are required if firewalls exist between the Professional server and any attached clients.<br>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. |
| Printing | The firewall must allow each Pinnacle³ application server and each Pinnacle³ workstation to initiate connections to all printers.<br>The ports used for printing will depend on the protocol used to access the customer-owned printers. |
| Enterprise backup | The firewall must allow Pinnacle³ 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 | For faster problem resolution, a significant number of support calls can be resolved remotely via the Philips Remote Services Network (RSN). 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:<br>• Pinnacle³ Professional server: TCP port 22<br>• Pinnacle³ application server(s): TCP port 22<br>• ILOM ports: TCP ports 443, 5121, 5555, 5556, 6481, 7578<br>• Workstation (thick-client): TCP port 22 (TCP 23, telnet, for older workstations that do not support SSH) (Sun Fire V250 and earlier) |

# Access points

| Virtual Client Connection (VCC) | |
|---|---|
| PC/Macintosh hardware | Not included (user provided) |
| Minimum specifications | • Windows: minimum specifications as required by Microsoft Windows 7*, XP or Vista (32 and 64 bit)<br>• Macintosh: OS X v10.6 (Snow Leopard) or later. English, French, German, and Dutch localized keyboards only<br>• Disk space: 100 MB to load emulation application<br>• Display resolution: 1280 x 1024 or better with dual monitor support<br>• Ethernet: 10/100/1000; 100 MB full duplex interface with switched network hub |

# Workstations (thick clients)

| | |
|---|---|
| General | The Professional platform supports only one 810X Workstation with full planning capabilities. The Workstation has a one-gigabit network connection. A minimum bandwidth of 100 MBit/sec to the Professional server must be available for basic performance, 1000 Mbps is recommended. |
| IP address | Static IP addresses are required |

# 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[3] is operating properly after backup agent installation.

**Compatible backup agents:**[2]

- EMC Legato Networker
- HP Data Protector
- IBM Tivoli Storage Manager
- Symantec Veritas Backup Exec*[3]
- Symantec Veritas NetBackup*[3]
- Bakbone Netvault

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1. Pinnacle[3] 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.
2. 100 MB of available disk space is required.
3. Symantec Veritas Backup Exec version 12.5 or higher required to support RALUS agent. Full restore to intermediate storage location may be required due to inability of some versions of Backup Exec to restore directly to Solaris ZFS file system.

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