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unbelievably efficient

Philips Pinnacle³ SmartEnterprise specifications

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1. Introduction

Compact yet powerful, the new SmartEnterprise configuration leverages thin client technology to centralize your Pinnacle³ radiation therapy planning system.

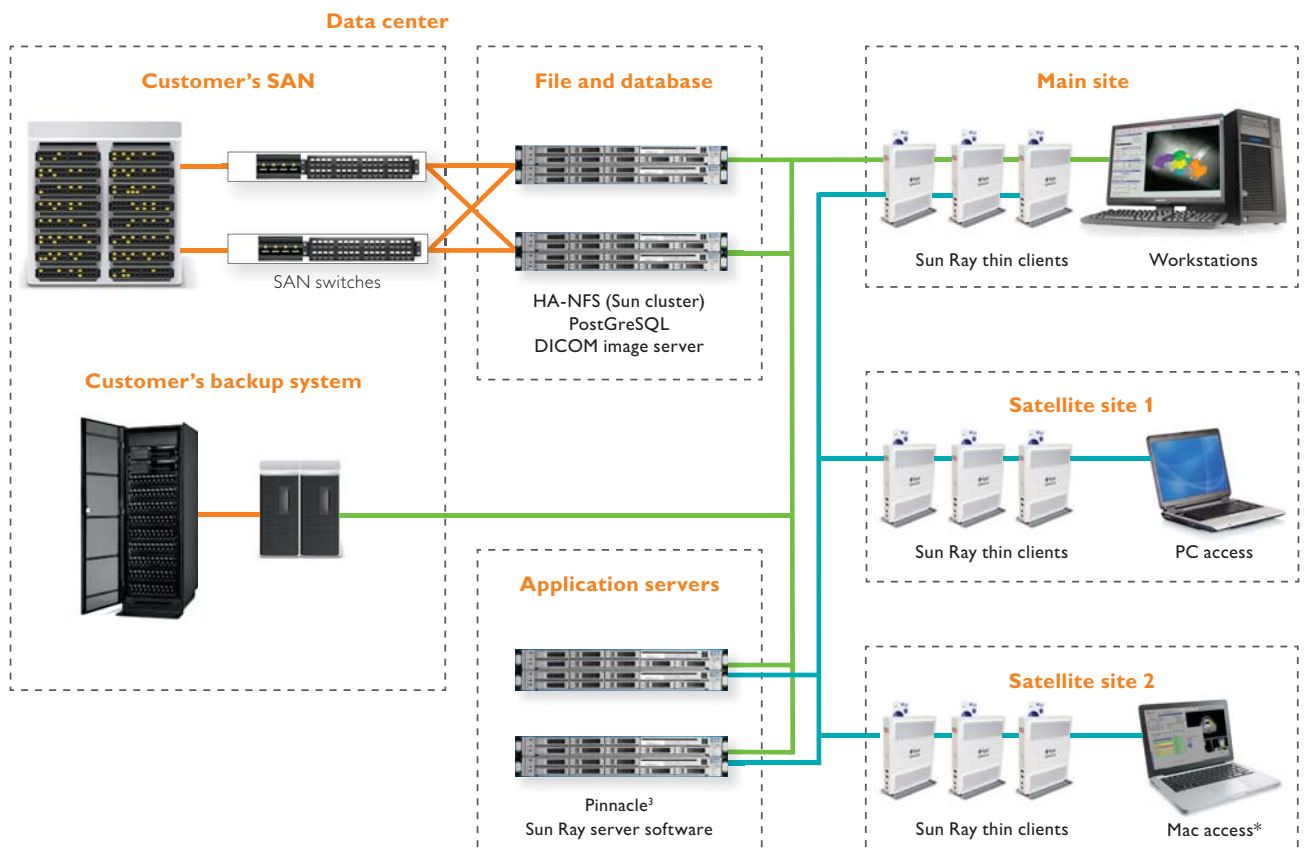
All computing power and data storage is moved from the desktops in your department to the SmartEnterprise servers in your data center, enhancing accessibility while reducing maintenance and management of the system. The Pinnacle³ application is displayed on cost-effective and space-efficient thin client desktop devices and PCs.

The system is made up of four key components

1. **Server cluster** – Philips-supplied file servers with automatic failover capability
2. **Application servers** – Philips-supplied application servers that run the Pinnacle³ application
3. **Access points** – Thin client devices or customer-supplied PCs or Macs* where the end users sit to access the Pinnacle³ application
4. **Data storage** – On a customer-supplied SAN

* Mac support for English, French, German, and Dutch localized keyboards only.

Pinnacle³ SmartEnterprise deployment



Network switching and routing is provided by customer and is assumed throughout this diagram. All pictured data center network connections can use IPMP or aggregation for redundancy.

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

2. System specifications

	Server nodes (fileserver)	Pinnacle ³ application server
OEM model	Oracle* X3-2	Oracle X3-2
CPU	Single 2.4 GHz 4-core Intel Xeon* E5-2609	Dual 2.9 GHz 8-core Intel Xeon E5-2690
RAM	32 GB	160 GB
Clustering software	Oracle Solaris Cluster (Sun Cluster)	N/A
OS	Oracle Solaris 10 – Update 10	Oracle Solaris 10 – Update 10
Intel turbo boost and hyperthreading	Yes	Yes
Virtual CPUs for Pinnacle ³ multi-threading	N/A	(2) 8-core CPUs 32 threads
HBA	StorageTek SG-XPLIE2FC-EM8-N dual port HBA (Sun/Oracle-branded Emulex LPe12002-S)	N/A
HBA ports and supported speeds	2 ports per server node 2 GB/s, 4 GB/s, 8 GB/s	N/A
Hard drives	2x 300 GB 10K RPM SAS system drives (mirrored/RAID 1)	
Ethernet ports	2x 10,000 Mbps 4x 1,000 Mbps 1x 10/100 Mbps ILOM port (for remote management/support)	4x 10,000 Mbps 1x 10/100 Mbps ILOM port (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	
Size	1 U Height: 4.4 cm (1.746 in) Width: 42.6 cm (16.75 in) Depth: 71.4 cm (28.125 in) Weight: 18.6 kg (41 lb)	1 U Height: 4.4 cm (1.746 in) Width: 42.6 cm (16.75 in) Depth: 71.4 cm (28.125 in) Weight: 18.6 kg (41 lb)
Rack mounting	Slide rail kit and cable management arm included	
Peak heat load	897 BTU/hour	1,497 BTU/hour
Peak power	263 W	439 W
Operating environment	5°C to 31°C (41°F to 88°F); 10%–93%, 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	2.4 A @ 110 VAC 1.2 A @ 220 VAC	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)	

3. SmartEnterprise storage requirements and specifications

Compatible SANs	<p>Refer to the following Oracle web pages for the most up-to-date SAN compatibility: For non-Oracle storage solutions: http://www.oracle.com/technetwork/server-storage/solaris-cluster/partnerprogram-cluster-168135.pdf For Oracle storage solutions: http://www.oracle.com/technetwork/server-storage/solaris-cluster/overview/sysreq-cluster-166689.pdf</p> <ol style="list-style-type: none"> Storage solutions MUST indicate compatibility with Oracle's X3-2 servers. Storage solutions that require a Solaris Operating System patch are NOT compatible.
Currently known support storage frames	<ul style="list-style-type: none"> • Compellent: Storage Center 4.2.3 and above • EMC: Clarion AX4-5, CX3, CX4; Symmetrix DMX-2, DMX-3, DMX-4, 8000, VMAX • Hitachi: AMS 200, 500, 1000, 2100, 2300, 2500; Tagmstore USP 100, 600, 1100, NSC55; Lightning 9910, 9960, 9970V, 9980V; Thunder 9500V; USP-V • HP: XP 48, 512, 128, 1024, 10000, 12000, 20000, 24000; EVA 3000, 5000, 4000, 6000, 8000, 4100, 6100, 8100, 4400, 6400, 8400; MSA 2312FC, 2324FC, P2000 G3FC • IBM: SVC 2145 v 4.3.1.x or higher; ESS 800; DS 3400, 4000, 4300, 4500, 4700, 4800, 5000, 6000, 8000; XIV 2810; N 3700, 3000, 5000, 6000, 7000 • NetApp: FAS 2XX, 20XX, 3XXX, 8XX, 9XX, 60XX; V30XX; GF9XX; R200
Supported storage connection type	Only fiber-connected storage is supported
Optical connector type	LC
Number of virtual disks/LUNs	1

4. Access points

Sun Ray thin client desktop unit	Oracle Sun Ray 3+
Philips Sun Ray kit contents	1 Sun Ray 3+ desktop unit (DTU); 1 24" LCD display; 1 USB keyboard; 1 USB mouse
Ethernet port	1x 1000 Mbps
Bandwidth	A minimum bandwidth of 10 MBit/sec to the Pinnacle ³ application server must be available for basic performance
Network latency	A maximum average of 15 ms is suggested for satisfactory performance
IP address	Static address or DHCP supported
Dimensions	Sun Ray 3+ DTU with/without stand: Width: 75.3 mm (2.95 in) / 28 mm (1.09 in) Depth: 180 mm (7.09 in) / 180 mm (7.09 in) Height: 221 mm (8.70 in) / 215 mm (8.46 in) Weight: 1 kg (2.2 lb) / 0.75 kg (1.64 lb)
DTU peripheral connectivity	4 USB 2.0 connectors (2 front, 2 back); 2 DVI-I connectors; 1 serial port; 1 stereo audio microphone in; 1 audio headphone/line-out; 1 cable lock slot
DTU card reader	ISO-7816 SmartCard reader (use of SmartCards is optional)
Ethernet port	10/100/1000 Gigabit Ethernet (RJ-45)

4. Access points (continued)

Ergonomics	The Sun Ray 3+ DTU product has been tested and found to comply with all applicable GS ergonomic requirements
Energy consumption	Energy Star 5.0 qualified External 36 W worldwide auto-sensing power supply (100-240 VAC) Idle state: 13.75 – 14.15 W Off state: 0.31 – 0.35 W BTU/hour, Idle state: 42.28 – 47.29 BTU/hour, Off State: 1.04 – 1.20 NOTES: The actual power consumption at your location could vary and is dependent on many factors including, but not limited to, attached peripherals and environmental factors. Heat dissipation is calculated based on known energy consumption at one hour of operation.
Acoustic	<3.5 B, <28 dBA (operator), ISO 9296
Monitor	LCD display 1920 x 1200, dual monitor support for a total desktop area of 3840 x 1200
Virtual Client Connection (VCC)	
The user provides the PC or MAC hardware	
Minimum specifications	<ul style="list-style-type: none">• Windows* 7, XP and Vista (32 and 64 bit) enabled PCs: PC must meet minimum specifications to run Microsoft Windows• Apple Macintosh: Macintosh capable of running Mac OSX version 10.6 or later. Supports English, French, German, and Dutch localized keyboards only• Requires ~100 MB available disk space• 1280 x 1024 (or better) high-resolution graphics display system and monitor; dual monitor support• 10/100/1000 Ethernet; 100 MB, full duplex Ethernet interface with switched network hub

5. Firewalls and ports

General	The Pinnacle ³ SmartEnterprise system 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 ³ 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.
Sun Ray thin client and PC access point ports	The following ports are required between Sun Ray thin clients and each Pinnacle ³ application server: <ul style="list-style-type: none">• Sun Ray server software: TCP and UDP ports 7009• Sun Ray load-balancing: TCP and UDP ports 7011• Sun Ray graphics: TCP and UDP ports 32768 – 65535• ICMP: ICMP (recommended to be enabled for troubleshooting)

5. Firewalls and ports (continued)

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) <p>For web-based interface to manage the Sun Ray server software on the Pinnacle³ application servers:</p> <ul style="list-style-type: none">• HTTP/HTTPS:TCP ports 1660 and 1661 (HTTP automatically redirects to HTTPS)
DICOM import and export	<p>The firewall must be open to allow devices to push images into the Pinnacle³ system. By default the Pinnacle³ DICOM listener will operate on the server cluster virtual IP address, using TCP port 104. The firewall must be open to allow the Pinnacle³ system to push data into record and verify systems, other treatment planning systems, and so on. The firewall must allow each Pinnacle³ application server and each Pinnacle³ workstation to initiate connections to all such devices. By default the DICOM protocol operates on TCP port 104, although this may be different depending on the configuration of the customer-owned target system.</p>
Printing	<p>The firewall must allow each Pinnacle³ application server and each Pinnacle³ workstation to initiate connections to all printers. The ports used for printing will depend on the protocol used to access the customer-owned printers.</p>
Enterprise backup	<p>The firewall must allow the server cluster nodes (and virtual IP address) to communicate with the customer's enterprise backup system. The required ports are dependent on the enterprise backup system deployed.</p>
Data transfer at installation	<p>For existing customers with data to be migrated from a workstation server onto the server cluster, the firewall will need to be opened between the server cluster (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.</p>
Remote support	<p>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:</p> <ul style="list-style-type: none">• Server cluster node: TCP port 22 (for the server cluster nodes only, not the virtual IP)• Pinnacle³ application server(s): TCP port 22• ILOM ports: TCP ports 443, 5121, 5555, 5556, 6481, 7578• Workstation (thick-client): TCP port 22 (TCP 23, telnet, for older workstations that do not support SSH (Sun Fire V250 and earlier)• Sun Rays: Remote support connectivity to Sun Ray thin clients is not required

6. Workstations (thick clients) and PC access points

General	Pinnacle ³ workstations and PC access points are installed in the clinic (e.g., dosimetry and physics rooms). Each workstation or PC access point has a one gigabit network connection. A minimum bandwidth of 100 MBit/sec to the server cluster nodes must be available for basic performance, 1000 Mbps is recommended.
IP address	Static IP addresses are required
PC access point requirements	PC hardware is supplied by the customer. PC must meet the minimum specifications for running Microsoft Windows* XP Pro. 1280 x 1024 or better display resolution is required for running Pinnacle ³ . About 100 MB of hard disk space is required to load third-party emulation application (Reflection X).

7. Backup

The recommended method to back up data on the PROS SmartEnterprise server cluster is to install the appropriate backup agent so that the customer can use their existing enterprise backup system. To accomplish this, the customer must provide the appropriate backup agent to the Philips installation representative. Once the Philips installation representative has installed the backup agent on the server cluster nodes, it is the responsibility of the customer to create schedules and to handle all operational responsibilities (e.g., monitoring backups and rotating tapes).

The following is a list of backup agents that are supported with the PROS SmartEnterprise server cluster.

(This list is not exhaustive, and additional backup agents may be supported.)

- EMC Legato Networker
- HP Data Protector
- IBM Tivoli Storage Manager
- Symantec Veritas Backup Exec* (see note)
- Symantec Veritas NetBackup*

Note: Symantec Veritas Backup Exec version 12.5 or higher is required to support the RALUS agent. Also, a full restore may need to be performed to an intermediate storage location due to the inability of some versions of Backup Exec to restore directly to the Solaris ZFS file system.

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