PHILIPS

PerformanceBridge

Technical Data Sheet

Unify data, unlock actionable insights

and enable continuous operational improvement

Specification relates to all offerings under the PerformanceBridge Portfolio including Radiology, Cardiology, and Basic configurations
This document is intended to provide hospital IT teams with technical details on PerformanceBridge suite of applications, integration into the hospital IT network and requirements related to this installation.

Common Configurations and Specifications

Included are some common configurations for reference. All configurations within this guide have been tested and approved by Philips. Philips has found the system performance to be acceptable when the given specifications have been met. However, the specifications can be altered to meet customer specification, and such changed must be carefully reviewed/approved with Philips personnel for the desired performance.
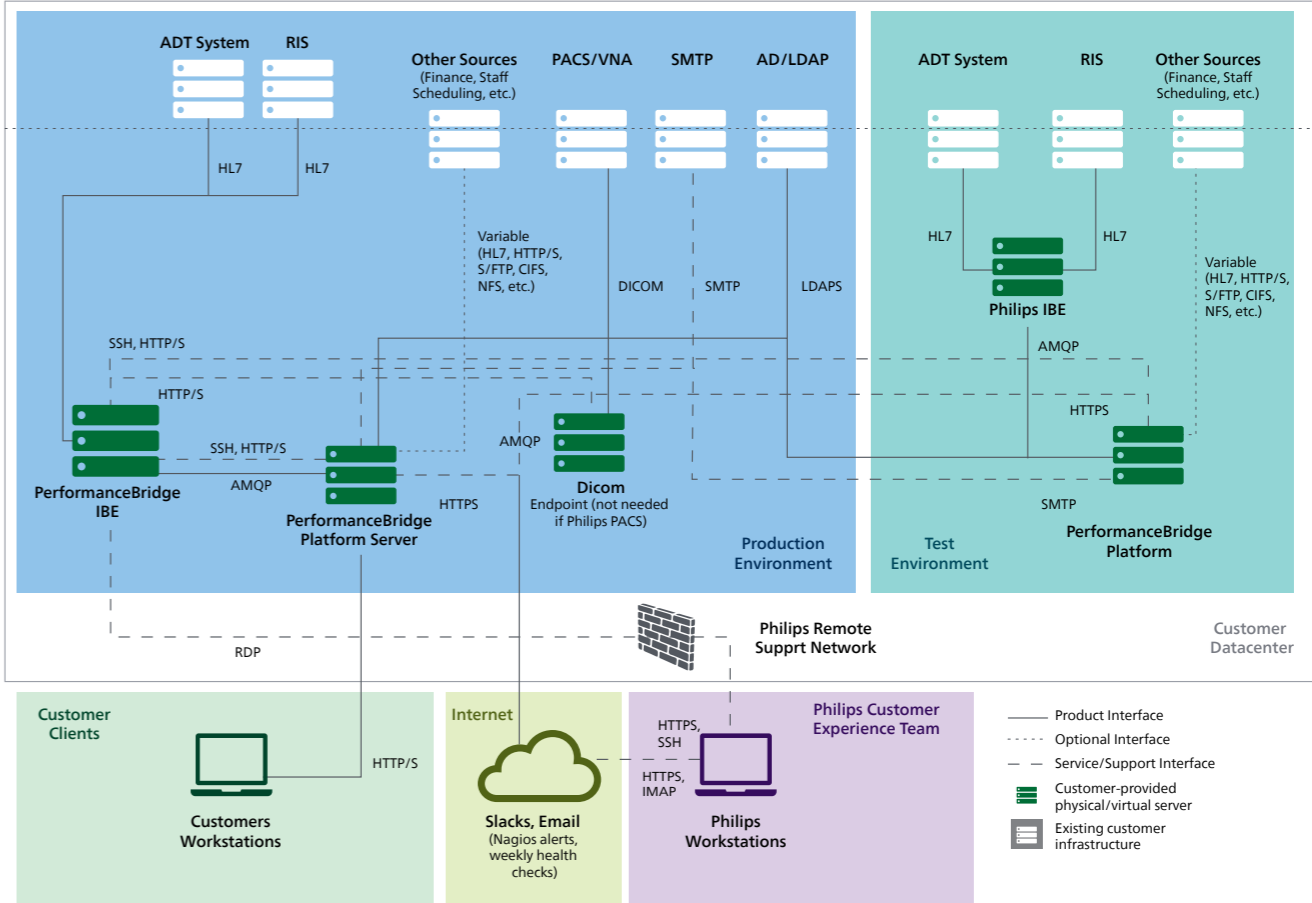
Server Specifications

	OS	Annual Exam Vol	vCPU (GB)	Memory (GB)	OS (GB)	Storage (GB)	DB high-IOPS (GB)
PerformanceBridge Platform Test	Redhat Enterprise Linux 8	Any	2	32	150	100	100
Philips Interface/ Support[1]	MS Windows Server 2019	Any	2	8	30	50	200
PerformanceBridge Platform Production[2]	Redhat Enterprise Linux 8	<50 K	2	32	150	100	250
		50-200K	8	64	150	100	500
		200-1M	16	64	150	100	750
		1-5M	16	128	150	100	1.5T
PerformanceBridge DICOM Endpoint[3]	Redhat Enterprise Linux 8	<50 K	2	16	150	150	
		50-200K	2	16	150	200	
		200-1M	2	16	150	250	
		1-5M	2	16	150	300	
PerformanceBridge Practice	MS Windows Server 2019	<200K	8	32	150	250	
		200K-5M	16	64	150	500	

Network Diagrams

The below diagrams show Philips products interoperating with hospital external systems.

Applications (without Practice)

1 Assumes a new IBE is installed as part of PB install. Support is facilitated through the IBE node. IBE Storage needs 10K IOPS. Minimum specification is provided above. Exact IBE specifications will be decided at the time of project scoping.
  • Radiology Basic Analytics: IBE is not needed. Windows PACS server may be used to land during PRS.
  • For Cardio- Invasive and Non-Invasive offering customers: A minimum IBE version of B.17 is required. Follow <50K specs for PB Platform Production.
2 The storage and memory requirements represented here are for a single node configuration. For distributed multi-node configuration, additional specifications will be divided among the nodes appropriately based on the number of apps, study volume etc. The vCPU requirement may increase for multi-node configuration.
3 Only needed for non-Philips PACS

Applications with practice
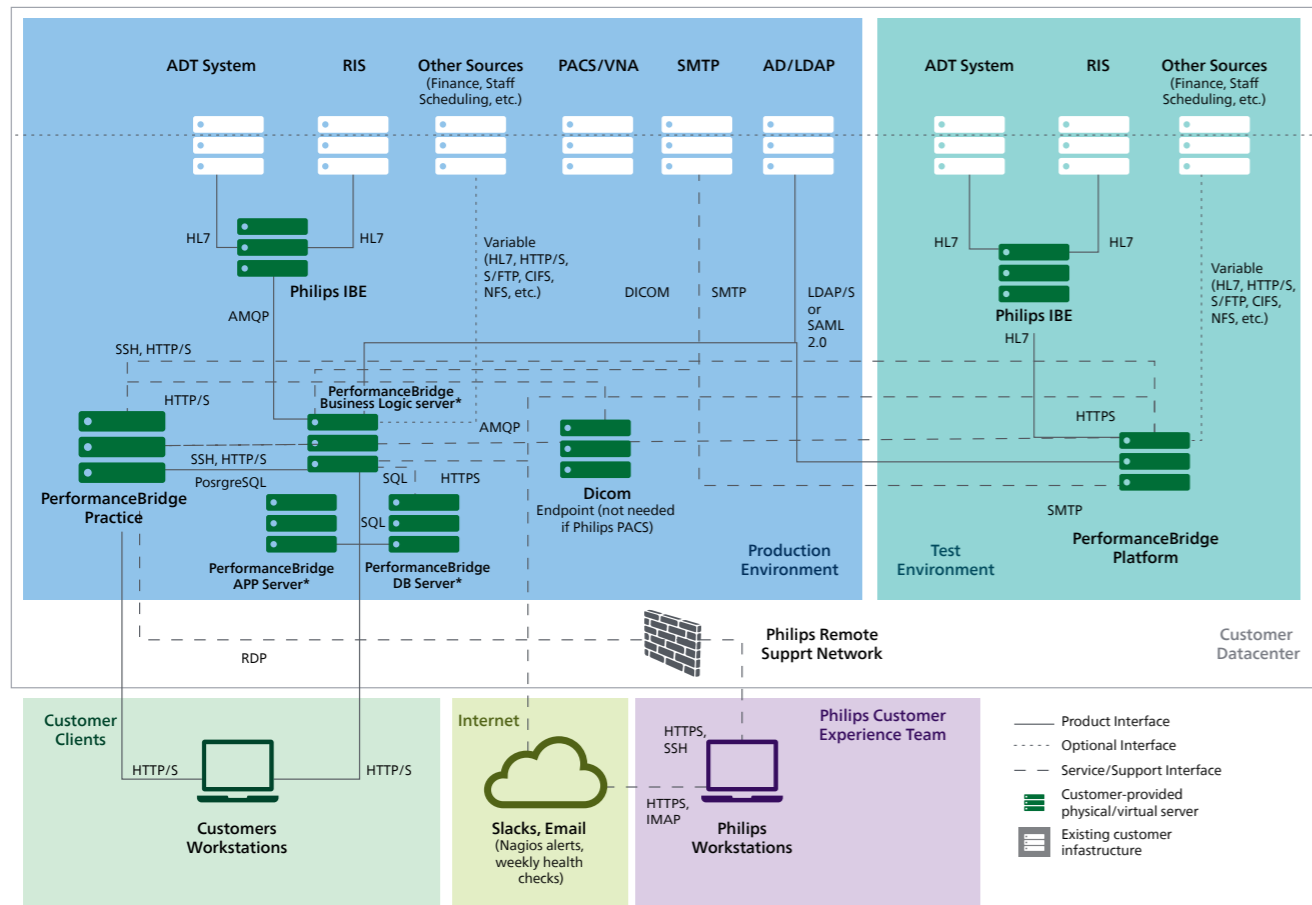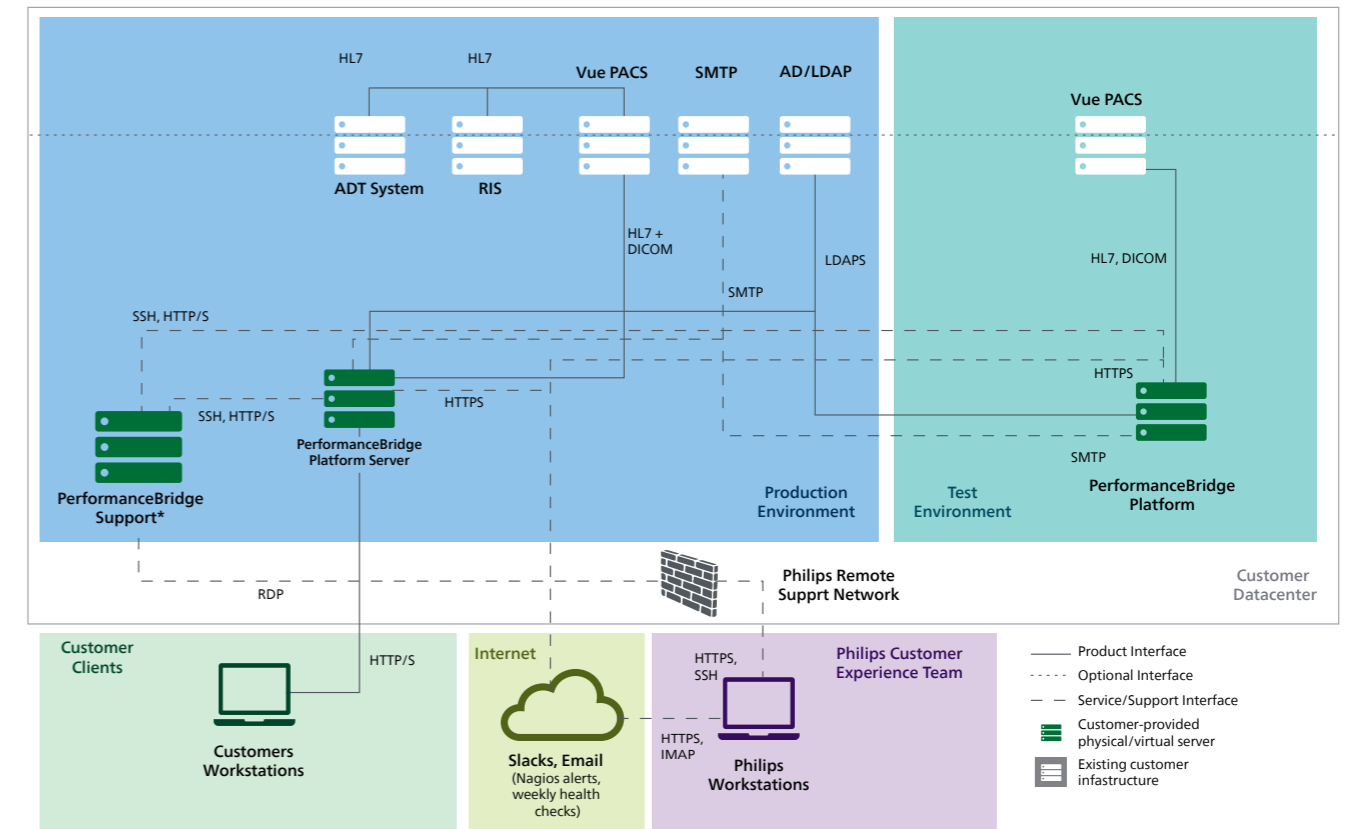
This network diagram demonstrates a multi-node configuration. PB with Practice can be run in a single node configuration too. For single node configuration, the Business Logic server, DB server and App servers will be combined to a single platform server as demonstrated in the PB Applications (without Practice) network diagram.

Production Environment

ADT System | RIS | Other Sources (Finance, Staff Scheduling, etc.) | PACS/VNA | SMTP | AD/LDAP

HL7 | HL7
Philips IBE
Variable (HL7, HTTP/S, S/FTP, CIFS, NFS, etc.)
DICOM | SMTP | LDAP/S or SAML 2.0
AMQP
SSH, HTTP/S
PerformanceBridge Business Logic server*
HTTP/S
AMQP
PerformanceBridge Practice
SSH, HTTP/S
PosrgreSQL | SQL | HTTPS
Dicom Endpoint (not needed if Philips PACS)
SQL
PerformanceBridge APP Server*
PerformanceBridge DB Server*

Test Environment

ADT System | RIS | Other Sources (Finance, Staff Scheduling, etc.)
HL7 | HL7
Philips IBE
HL7
HTTPS
Variable (HL7, HTTP/S, S/FTP, CIFS, NFS, etc.)
SMTP
PerformanceBridge Platform

RDP
Philips Remote Supprt Network
Customer Datacenter

Customer Clients
HTTP/S
HTTP/S
Customers Workstations

Internet
Slacks, Email (Nagios alerts, weekly health checks)
HTTPS, IMAP
HTTPS, SSH
Philips Customer Experience Team
Philips Workstations

——— Product Interface
········· Optional Interface
— — Service/Support Interface
Customer-provided physical/virtual server
Existing customer infastructure

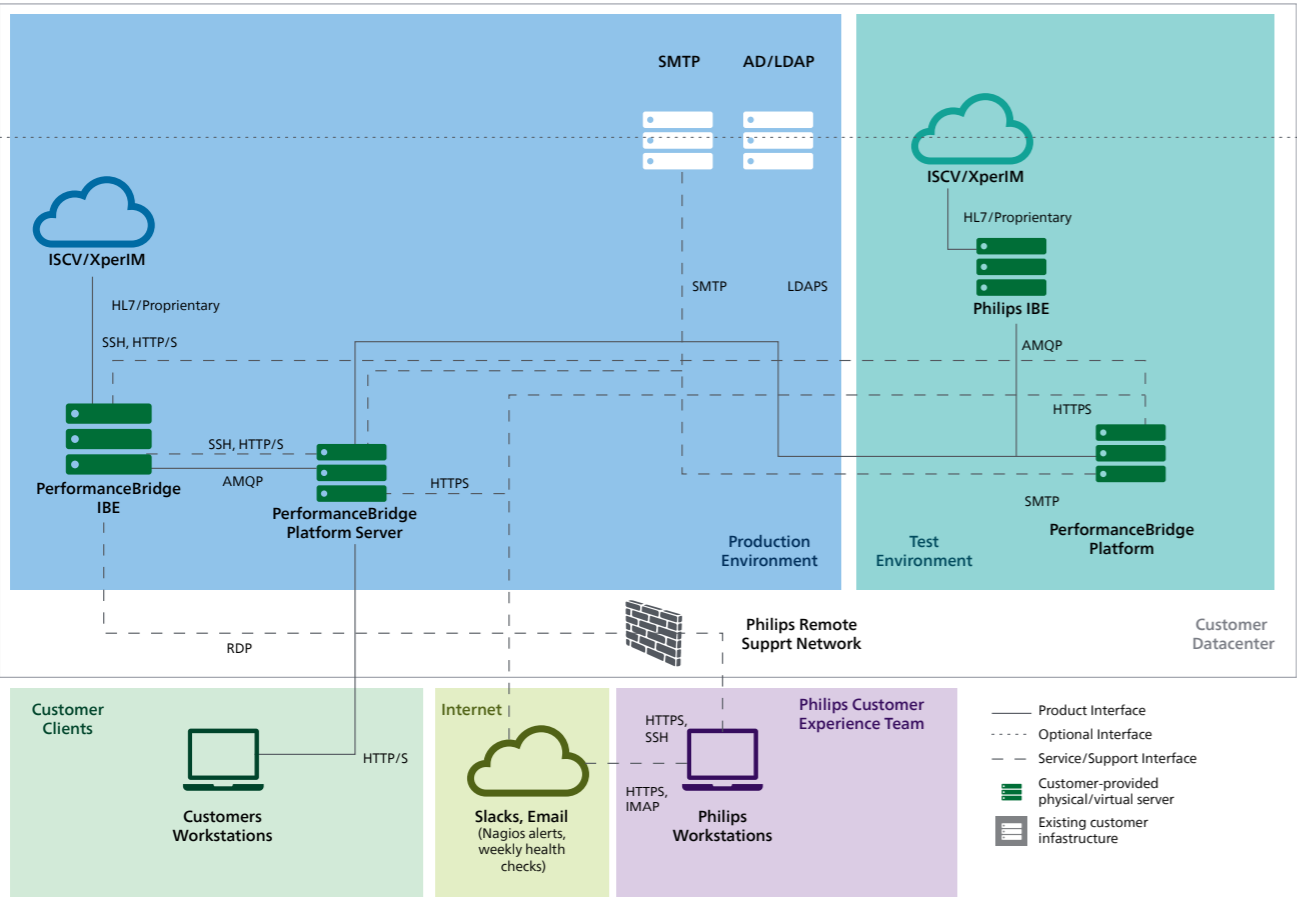* Optionally DB, Business Logic and App servers can be combined into a single platform server

Radiology Basic Analytics (Philips only - Vue PACS Analytics)

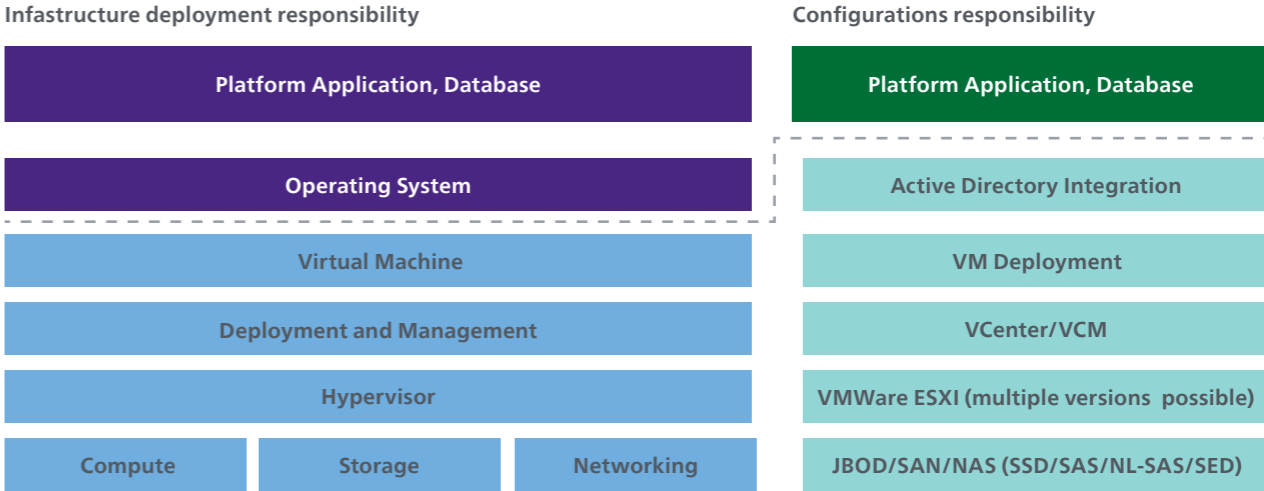Available to VuePACS 12.x and higher, customers only

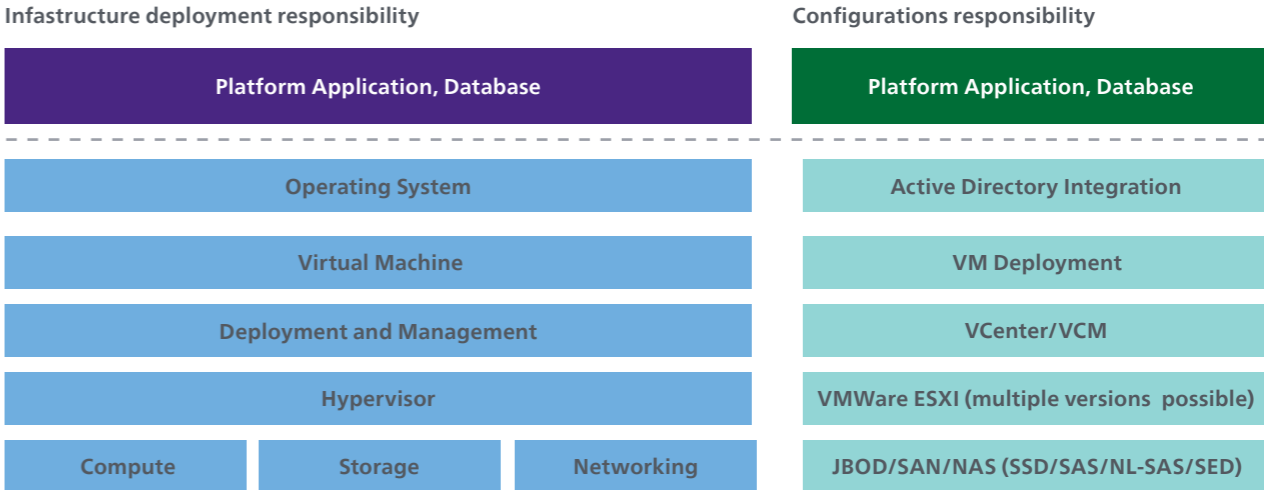HL7 | HL7 | Vue PACS | SMTP | AD/LDAP
ADT System | RIS
Vue PACS

HL7 + DICOM
SMTP
LDAPS
HL7, DICOM
SSH, HTTP/S
HTTPS
PerformanceBridge Platform Server
SSH, HTTP/S
HTTPS
SMTP
PerformanceBridge Support*
PerformanceBridge Platform

Production Environment
Test Environment

RDP
Philips Remote Supprt Network
Customer Datacenter

Customer Clients
HTTP/S
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Internet
Slacks, Email (Nagios alerts, weekly health checks)
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——— Product Interface
········· Optional Interface
— — Service/Support Interface
Customer-provided physical/virtual server
Existing customer infastructure

Responsibility Models

Cardio Invasive and Non-invasive Analytics
(Philips only - Cardiology Informatics)

Customer Datacenter

SMTP AD/LDAP

ISCV/XperIM

ISCV/XperIM

HL7/Proprienty

Philips IBE

HL7/Proprienty

SSH, HTTP/S

SMTP LDAPS

AMQP

HTTPS

PerformanceBridge IBE

SSH, HTTP/S

AMQP

PerformanceBridge Platform Server

HTTPS

SMTP

PerformanceBridge Platform

Production Environment

Test Environment

RDP

Philips Remote Supprt Network

Customer Clients

HTTP/S

Customers Workstations

Internet

HTTPS, SSH

HTTPS, IMAP

Slacks, Email
(Nagios alerts, weekly health checks)

Philips Workstations

Philips Customer Experience Team

—— Product Interface
···· Optional Interface
— — Service/Support Interface

Customer-provided physical/virtual server

Existing customer infastructure

Responsibility model for Platform server

Infastructure deployment responsibility

Configurations responsibility

Platform Application, Database				Platform Application, Database
Operating System				Active Directory Integration
Virtual Machine				VM Deployment
Deployment and Management				VCenter/VCM
Hypervisor				VMWare ESXI (multiple versions possible)
Compute	Storage	Networking		JBOD/SAN/NAS (SSD/SAS/NL-SAS/SED)

Responsibility model for Practice server

Infastructure deployment responsibility

Configurations responsibility

Platform Application, Database				Platform Application, Database
Operating System				Active Directory Integration
Virtual Machine				VM Deployment
Deployment and Management				VCenter/VCM
Hypervisor				VMWare ESXI (multiple versions possible)
Compute	Storage	Networking		JBOD/SAN/NAS (SSD/SAS/NL-SAS/SED)

■ Philips deployed
■ Customer deployed
■ Philips responsibility
■ Customer responsibility

Note: VM Creation, antivirus (AV), and data back-up is the customer's responsobility. Philips does not provide hosting services.

Network Requirements

Inbound

TCP Port	Server	Service	Configurable?
22	Platform & DICOM Endpoint	SSH	yes
2222	Platform	Optional SFTP	yes
104	DICOM Endpoint	DICOM SCP	yes
443	Platform & Practice	HTTPS	no
5432	Platform	PostgreSQL	no
31001	IBE Unified Solution	HL7 listener	yes
60001	Patient Index	HL7 listener (Cardio only)	yes
21042	Orders Inbound	HL7 listener	yes
21201	PB - Radiology	HL7 service	yes
21202	PB - Cardiology	HL7 service	yes
3389	Practice & Support	Remote Access	no

Outbound

TCP Port	Site	Description	Install	Ongoing Support	Upgrades/ Updates
443	https://philips.mizecx.com/	Philips installation Files and Updates	x		x
443	*.philips.com	Philips installation Files and Updates	x	x	x
443	hooks.slack.com	Philips Remote Monitoring Alerts	x	x	
443	Api.slack.com	Philips Remote Monitoring Alerts	x	x	
443	Github.com	Configuration Repository	x	x	x

HL7 interfaces: The table shows default examples, PerformanceBridge Application Suite supports multiple message types in a single interface (if required) and supports additional interfaces integrating with multiple clinical data sources.

HTTPS: Customer must provide certificates to enable HTTPS. Philips requires all customers deploy certificates to secure all services.

NOTE: Unless specifically deployed to work in an offline mode, all PerformanceBridge servers must be able to access public internet resources to set up to allow outbound email support notifications.

FAQS

Do I need to buy hardware or is this a software-only solution?

Depending on a customer's IT environment and specific configuration needs, PerformanceBridge Application Suite and Practice will be delivered as software-only solutions where the customer provides hardware and Philips loads software remotely.

How many servers are needed and what services do they provide?

Each deployment requires both Windows and Linux servers, a minimum of two Linux servers (production and test environments) and one Windows server (IBE and Practice solution). Additional servers are required if the Linux infrastructure cannot be hosted in an all-in-one configuration (a modular deployment can be supported). Must support PostgreSQL 13.

How much storage and what type is recommended?

Storage requirements scale to server sizing and requirements. Generally, Philips recommends anywhere from 100GB to 1TB of high-IOPS storage (NAS/SAN/SSD) for database IO and a smaller volume (50GB to 500GB) of mirrored local storage for the OS and application software. Backup solutions may require additional space, depending on goals and interoperability with any existing backup infrastructure.

Do you support high availability and what is your recommended solution?

There are several options for providing high availability services as well as business continuity / disaster recovery environments. The option with the highest redundancy is a parallel set of instances in separate data centers, with each instance having an independent production HL7 messaging feed. This is an active-passive configuration that can be put behind a load-balancer and/or managed through DNS.

Other options would include 3rd-party tools like VMware High Availability or distributing individual platform components such as the database, application server, etc.

What type of backup software do you support?

Philips can export the database periodically. We maintain our own, securely hosted copy of all configuration files should the system need to be restored. We support three common approaches to backup solutions, with a recommended frequency of daily backups for any strategy:

1 Backup agent license and software provided by customer, supported by PostgreSQL 13, and deployed by Philips

2 Virtual machine snapshots managed by customer

3 Philips exports database snapshot to CIFS or NFS network file shared provided by customer. If storage / availability is a concern, raw HL7 message files can also be backed up as an alternative to the database (although this is a smaller backup, the restore time is limited to reprocessing those messages which could take several days to weeks depending on message volume).

Do we need SSL certificates?

Philips requires PerformanceBridge be deployed with valid (not self-signed) SSL certificates.

Is the solution designed for concurrent use?

PerformanceBridge supports up to 50 concurrent users in a typical configuration at any solution scale. If access is needed for more than 50 concurrent users, additional web application servers may be deployed to support an additional 50 users per web application server. Consult with a PerformanceBridge engineer for specifications particular to the deployment.

Sample Checklist

- ✓ Philips provides project plan, server worksheet(s), data dictionary worksheet, HL7 spec-guide

- ✓ Project meetings scheduled, customer resources assigned

- ✓ Workflow discussion between customer experts and Philips integration team

- ✓ Server VMs provisioned

- ✓ Customer adds servers to the Philips Remote Support Network

- ✓ Customer returns server worksheet(s) and data dictionary worksheet

- ✓ Philips provides CSR to customer.

- ✓ Customer returns both the Signed Certificate and CA Certificate files in PEM format.

- ✓ Philips configures server

- ✓ Philips and customer validate workflow, interfaces, and configuration data

- ✓ Go-live and application training

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How to reach us
Please visit www.philips.com
healthcare@philips.com