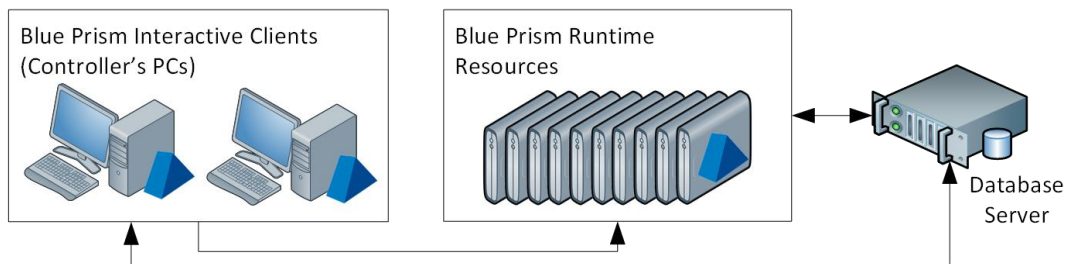


Infrastructure Overview – NHS Edition

This data sheet provides technical guidance regarding the specification and configuration of environments for Blue Prism. It is intended as a guide for indicative sizing and configuration, however specific environments will vary depending on the profile of the Blue Prism implementation.

More detailed information can be obtained from the Blue Prism Infrastructure Reference Guide, available on request.

Implementation Profile



A Blue Prism implementation consists of a database server coupled with any number of Interactive Clients and Runtime Resources, depending on the business application.

The components perform the following functions:

- **Blue Prism Interactive Client**
A physical or virtual machine with Blue Prism installed which facilitates the development, configuration and monitoring of Blue Prism processes.
- **Blue Prism Runtime Resource**
A physical or virtual machine with Blue Prism installed that runs automated processes against target applications, often referred to as the robot.
- **SQL Server Database**
Blue Prism repository for processes, logs, audit and user info.

It is common for most components to be deployed into a production strength virtual infrastructure, however for pilot processes or small projects there is the option to deploy the solution on a desktop model.

Blue Prism Interactive Client

Blue Prism Interactive Clients are used to configure and control the environment and to monitor the Blue Prism Resources as processes are executed – they can be thought of as Development or Administration machines.

Each Blue Prism Interactive Client requires the installation of Blue Prism along with the necessary software prerequisites.

In development environments the Interactive Clients are used to develop and maintain the processes - therefore access to each of the target applications and any associated pre-requisites or thick clients will also need to be deployed and configured on these devices.

These pre-requisites may include the Java Access Bridge, SAP Scripting, Adobe Acrobat Professional and certified Terminal Emulator software for mainframe automation. Local Administrator privilege is usually required in order to install these pre-requisites and the Blue Prism runtime.

Processes and objects are stored in the database server (or, for non-production use, in a local copy of SQL Express).

Interactive Clients communicate with each connected Runtime Resource in order to ascertain its' status.

Typically Interactive Clients communicate with the database via a direct database connection.

Blue Prism Runtime Resources

Blue Prism Runtime Resources are responsible for executing the processes that are allocated to them – they are run unattended and are often referred to as Robots.

This commonly requires the process definition to be retrieved from the central repository; interact with, and automate various third-party applications via the user interface; and generate the necessary log information.

Each Blue Prism Runtime Resource requires the installation of Blue Prism along with the necessary software prerequisites. In addition, each will need to be configured with access to each of the target applications and any associated pre-requisites. Relevant thick clients will also need to be deployed.

Typically Runtime Resources communicate with the database via a direct database connection.

Minimum Requirements

- Intel Processor
- 2GB RAM
- Minimum 10GB free disk space (after install of Operating System and standard software)
- Windows 7 SP1, 8.1, 10 Anniversary Update. 32-bit or 64-bit versions.
- Windows Server 2008 R2 SP1, 2012, 2012 R2, 2016. 64-bit versions only.
- .NET Framework 4.7

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- Intel Processor
- 2GB RAM
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- Windows Server 2008 R2 SP1, 2012, 2012 R2, 2016. 64-bit versions only.
- .NET Framework 4.7
- Access to in-scope applications

The specification of the **Interactive Clients** (used for development) and the **Runtime Resources** must meet the collective recommendations of the in-scope target applications. (E.g. SAP, Office, Kana etc.)

A useful indicator is to base the specification on an equivalent PC used by an end-user to automate those same applications.

Database Server

Underpinning the Blue Prism platform is a Microsoft SQL Server database which holds not only the process and object repository, but also user credentials, audit information and production process log data – a transaction log of each production process running in the environment.

Communication between the Blue Prism Runtime Resources and Database is typically moderate to high in volume, and transactional in nature as records are frequently inserted into the session log, along with look-ups and updates being performed within workflow tables.

Consideration should be given to the proximity of the Database Server to the Interactive Clients and Runtime Resources, particularly when implemented across large or multi-site networks. Where network latency is an issue, it will be made more prominent by the frequency of the queries performed.

Commonly the Blue Prism database will receive direct connections only from each Blue Prism component which will be configured to establish a direct database connection. This will be subject to the application of appropriate routing, authorization and access settings.

The number of connections that will be established by each directly connecting device is managed by the .NET Framework through use of SQL connection pools.

As with many database applications, Blue Prism can occupy shared space in a data center should suitable database servers already be available. Likewise where there are multiple segregated Blue Prism environments such as for Dev, Test, Production, or for different parts of the business (HR, Finance, Operations), each will have its own dedicated database. If required, these schemas can co-exist within the same SQL Server instance.

See also the specific data sheets available for Provisioning and Maintaining a Blue Prism Database Server.

Database Disk Space Requirements

Best-practise should be followed in relation to the performance and allocation of disk arrays and their use by both Microsoft SQL Server and the underlying operating system.

The amount of disk space that is required by Blue Prism in the database is largely dependent on the number of connected Runtime Resources, although it will also be dependent on the data retention policy. For production environments the amount of space required is:

- Minimum 10GB data file per connected Runtime Resource
- Minimum 5GB log file per connected Runtime Resource (50% of the value allocated to the data file)

In addition to the above metrics, the minimum amount of disk space allocated to the database data file for a production environment should be no less than 100GB (+ 50GB for logs). For Dev/Test environments this minimum should be no less than 50GB (+25GB for logs)

Regular archiving of the Blue Prism logs, as well as frequent database server maintenance and housekeeping can be used to control the amount of space used overtime.

High Availability and Redundancy

The platform can be connected to SQL databases which are configured for SQL high-availability or redundancy. This includes those that are configured for clustering or mirroring and those hosted by SQL Availability Groups.

Minimum Requirements

- Intel Quad Xeon Processor
- 4GB RAM
- SQL Server 2012, 2012 R2, 2014, 2016. 32-bit or 64-bit versions.
- Case insensitive, 1252 code page SQL Collation
- Non-clustered or clustered architecture (includes support for AlwaysOn Availability Groups)
- Allocate 10GB Data File per connected Runtime Resource (min 100GB)
- Allocate 5GB Data Log File per connected Runtime Resource (min 50GB)
- High performance disk array

Deploying Blue Prism to a Virtual Environment

For some smaller implementations where there is less demand for scalability or where virtualization is not feasible, Blue Prism can be deployed to a wholly physical environment and can largely make use of existing desktops - albeit in a secured environment.

Virtualization however, is commonly the recommend approach as it more easily provides benefits which include physical security and scalability. Many virtualization technologies also simplify the rollout of software updates and the implementation of disaster recover capabilities.

The core Blue Prism components can be deployed to persistent virtualized Windows devices and there are two main approaches:

- **Use of an existing virtualization technology**

Where organizations already have access to virtualization technologies such as VMWare, Citrix XenDesktop or Microsoft Azure, there may be the capability to utilize these to provide the virtual machines which will host the required Blue Prism components.

Due to the requirement for the Blue Prism Runtime Resource listeners to be started and available irrespective of whether there is an active (remote) user connected to the device, it is not possible to use an on-demand virtual instance (e.g. one provided by XenApp) to provide these components.

- **Provision a dedicated virtualization host**

Virtualization can be provided by provisioning a new dedicated server (or set of servers) on which new virtual machines are configured and used to host the required Blue Prism components. These typically use technologies such as Microsoft Hyper-V or VMware ESX although others are available.

When deploying to this type of host machine it is important to ensure that the specification of the host machine is sufficient to not only cater for the underlying operating system, but also provide the appropriate resources and performance for each of the virtual machines that will be configured.

Dedicated Virtual Host (Example)

10-15 Blue Prism Runtime Resources

- Dual Socket Virtualization hosts:
- Quad Intel Xeon Quad Core Processors
- 32GB RAM (minimum)
- 450GB available space after applying RAID to arrayed disks
- 2 physical 1000Mbit NIC
- Operating System appropriate to technology (e.g. Hyper-V, ESX)

On-demand Virtualization

Due to the requirement for the Blue Prism Runtime Resource listeners to be started and available irrespective of whether there is an active (remote) user connected to the device, it is not possible to use an on-demand virtualization technology, such as XenApp, to provide these components.

User Profile Settings

The following settings will need to be configured on each of the **Blue Prism Interactive Clients** used for developing processes and each **Blue Prism Runtime Resource**. Explicitly the settings will need to be applied for user accounts that will be used to develop and configure processes; and for the accounts used by the Runtime Resources to access the network and authenticate with third-party applications.

- **Power saver options.** To reduce the required complexity of the processes, screen-locking and screensavers should be disabled.
- **Prerequisites for the target applications.** Connectivity and prerequisites for each of the target applications that will be automated need to be configured. (e.g. network connectivity, thick-clients, client-side technologies etc.).
- **Screen Resolutions.** The screen resolution settings should be consistently applied across the Runtime Resources and the Interactive Clients used for development.
- **Region settings.** To reduce complexity, ensure that all devices are configured to use the same region settings which should be set to UK.
- **Font-smoothing.** Where target applications are presented using thin-client technology such as Citrix, font-smoothing will need to be disabled for the users.
- **Aero/Glass Themes.** The display theme should be set to not use transparent or opaque window borders.
- **SAP GUI Scripting.** This settings should be enabled for the appropriate users if automating SAP via the GUI.