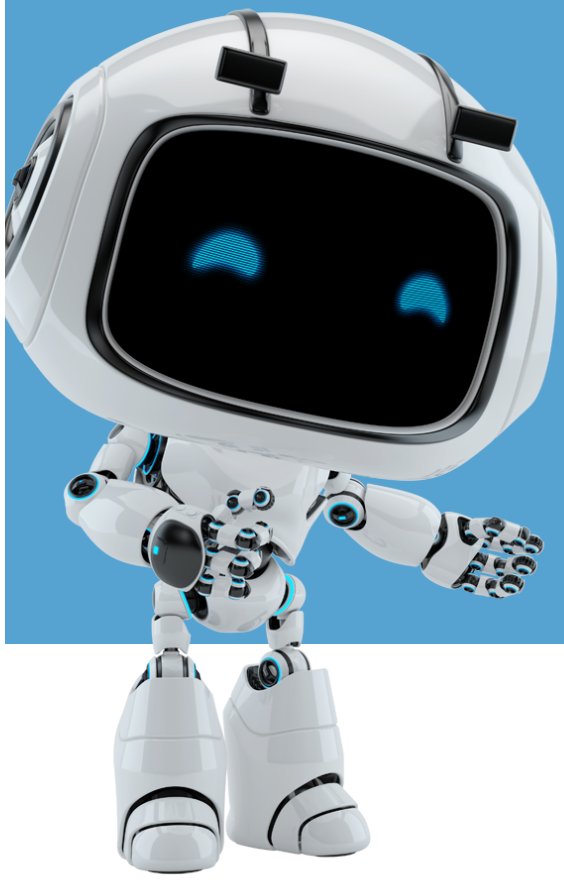
UiPath

Robotic Process Automation



Server Platform Architecture

Revision History

Date	Version	Author	Description
31st May 2016	2.0	M.B.	Applied Template
7th June 2016	2.0	M.B.	Updated Hardware Requirements

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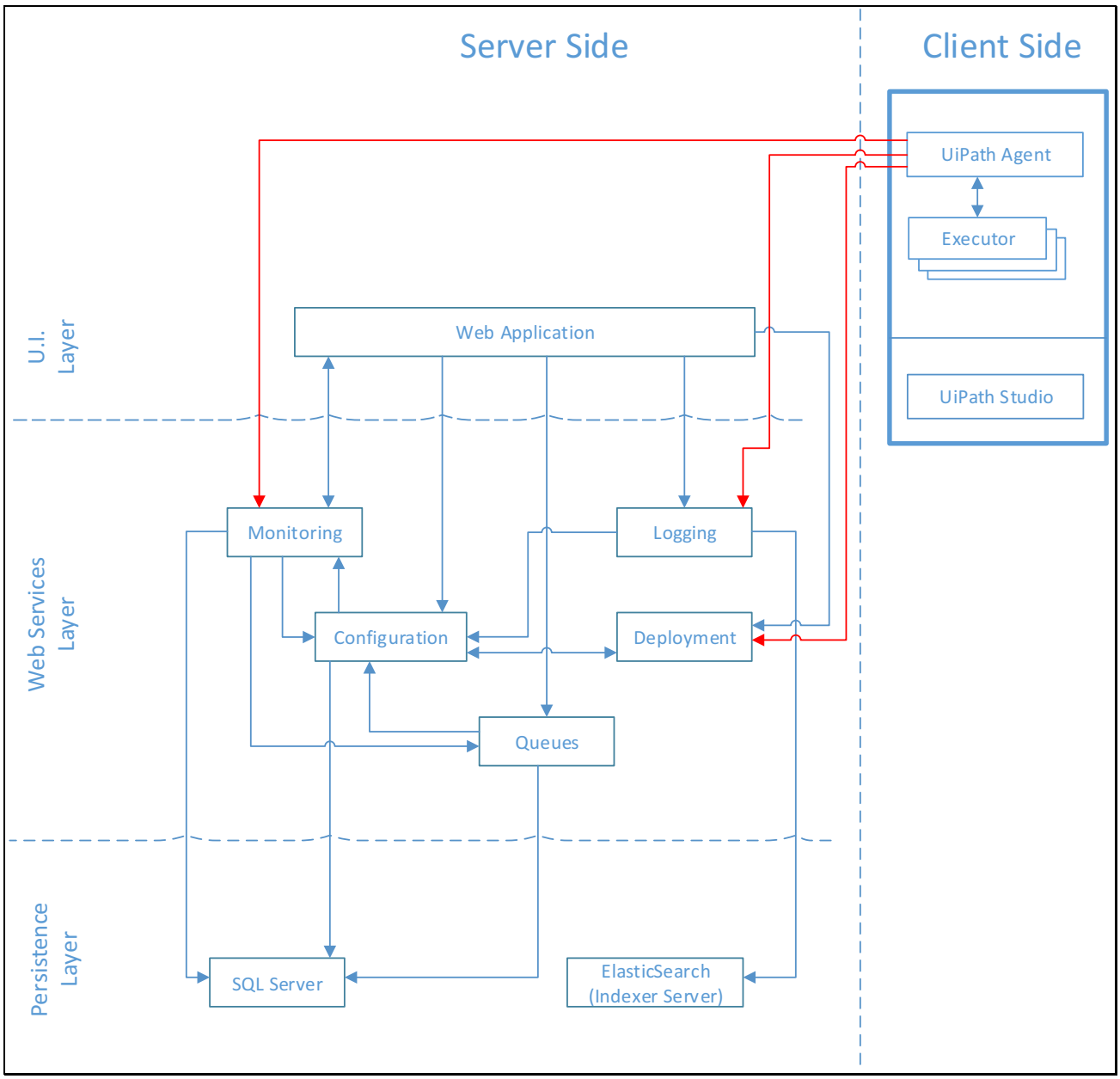
Server Platform Architecture

UiPath Server is designed to monitor, log and control the execution of Robots on client computers.

1. Logical Decomposition

The UiPath Server Platform has the following logical components, grouped in three layers:

1. User Interface Layer
    - Web Application
2. Web Services Layer
    - Monitoring Service
    - Logging Service
    - Deployment Service
    - Configuration Service
    - Queues Service
3. Persistence Layer
    - SQL Server
    - ElasticSearch



The **Web Application** is the visual layer of the Server Platform. The user interacts with its web pages for the purpose of controlling and monitoring of the robots - creating robot groups and assigning robots to them, assigning processes to groups, analyzing logs per robot or per process, starting and stopping of the robots. It is connected to all the five Web Services. This

component is hosted by Internet Information Services (IIS) version 7.0 and up. It requires Microsoft .NET Framework 4.5.

The services in the **Web Services Layer** are also hosted by Internet Information Services (IIS) version 7.0 and up and require Microsoft .NET Framework 4.5.

The five web services and their roles are presented below:

- **Monitoring Service** is responsible for registering the Agents (the supervisor of one or more robots on client computer) and maintaining a session ID, delivering the configuration settings and the list of processes an Agent can execute and receiving notifications from Agents. It reads robot identification data from the database.
- **Configuration Service** is created to maintain and deliver the configuration – which robots belong to which groups, what are the processes that each group can execute. It reads and writes the configuration settings and changes from the database.
- **Logging Service** is the interface between the Agent and the collection of logs, stored and indexed on the search engine (ElasticSearch).
- **Deployment Service** assures the delivery of the required version of a process to a robot to execute.
- **Queues Service** is responsible for the management of queues and queue items – adding data to the queue, obtaining a transaction item from the queue, setting the status of a transaction item.

Persistence Layer is composed of:

1. **SQL Server**, used:
    - On one hand, to store the configuration of robots, robot groups and associated processes – information managed through the Web Application component.
    - On another hand, to manage the queues and the queue items.
2. **Indexer Server** (at this time implemented with ElasticSearch) whose role is to store and index the information logged by robots.

The SQL Server versions supported are SQL Server 2008, SQL Server 2012 and SQL Server 2014, including the SQL Server Express edition. If the SQL Server is not installed on a separate

machine, we recommend **to install it along with the Web Application Component**. This leaves the Indexer Server alone, on a separate machine, due to resources requirements.

The **Indexer Server** uses the ElasticSearch (an open source project) full-text search engine. All the messages logged by the robots (using activities like Log Message, Write Line) are sent through the **Logging Service** to the Indexer Server where they are indexed for future utilization.

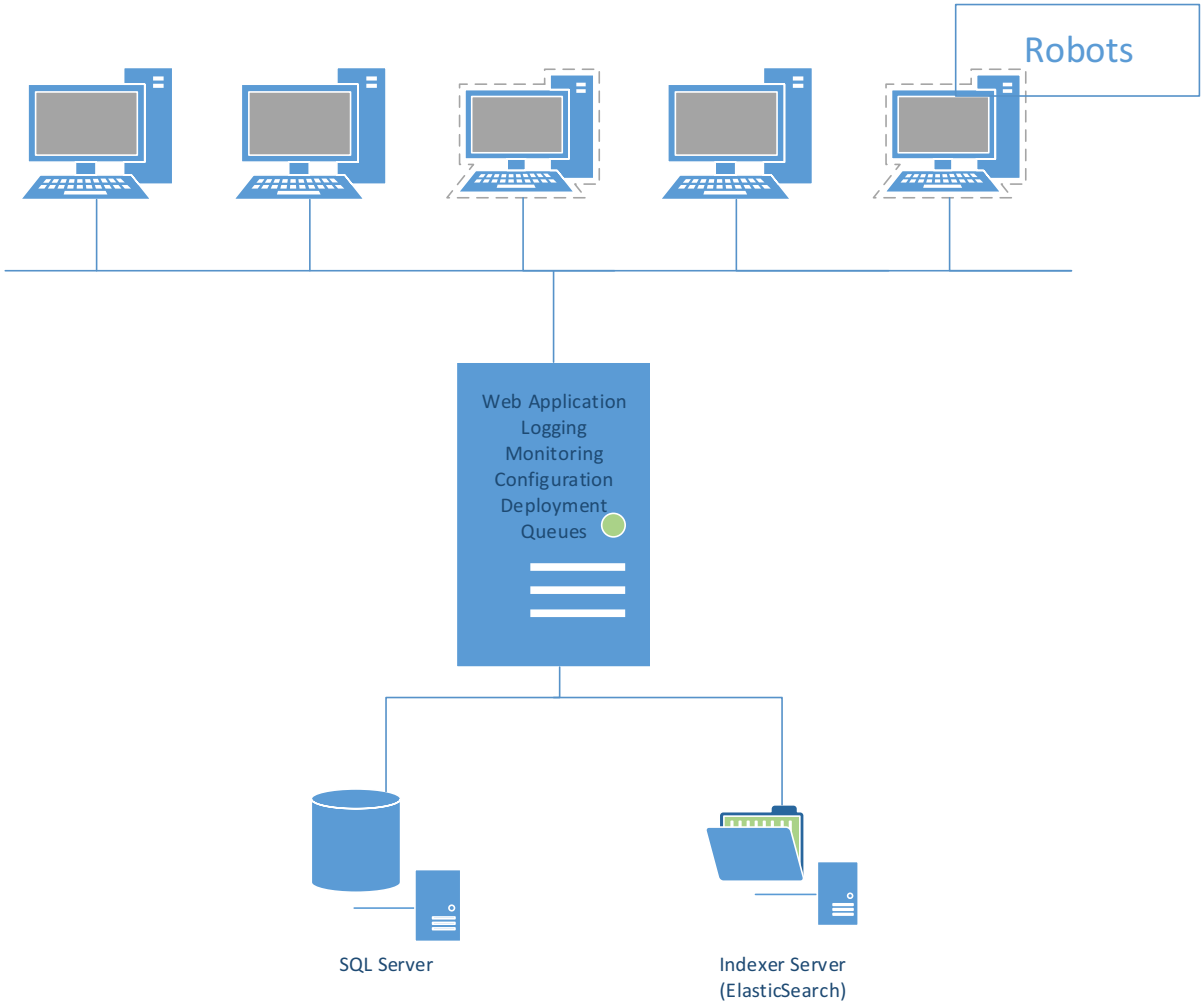
On the client computer a running robot is represented in the above diagram as an **Executor**. There can be several business projects running simultaneously, each project having a corresponding Executor. The **UiPath Agent** (a Windows service) is the single point of contact for all the Executors, through which all the messages are logged to the **Logging Service**, which persists them further on the **Indexer Server**.

The **UiPath Agent** is also responsible for sending the status of the robot (to **Monitoring Service**) and downloading the required version of the package to be executed (from **Deployment Service**).

1.1. Physical Deployment Options

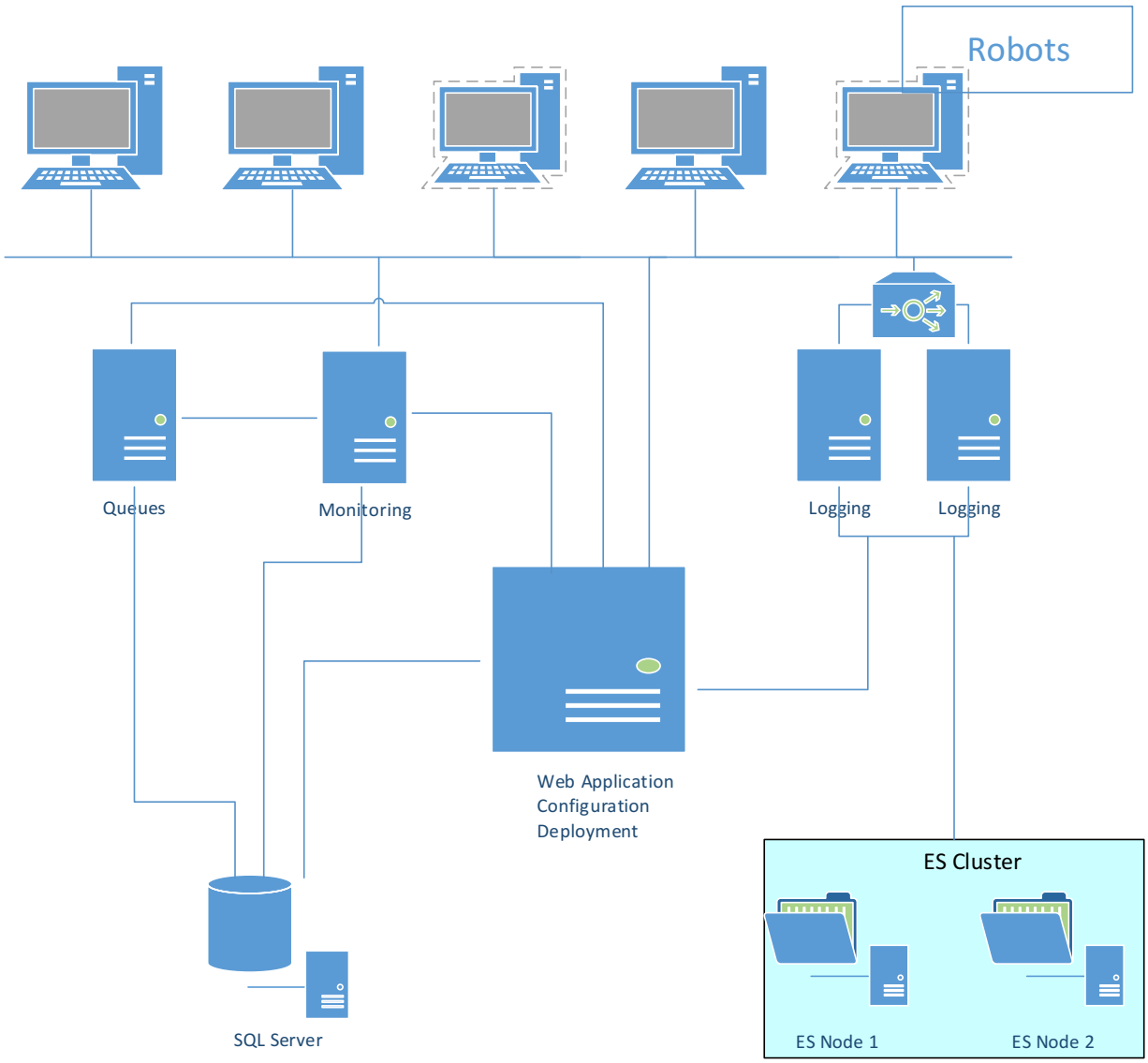
1.1.1. Option 1 – Web Application and Web Services on one single machine

Recommended for medium scale deployment of robots (10-50 robots)



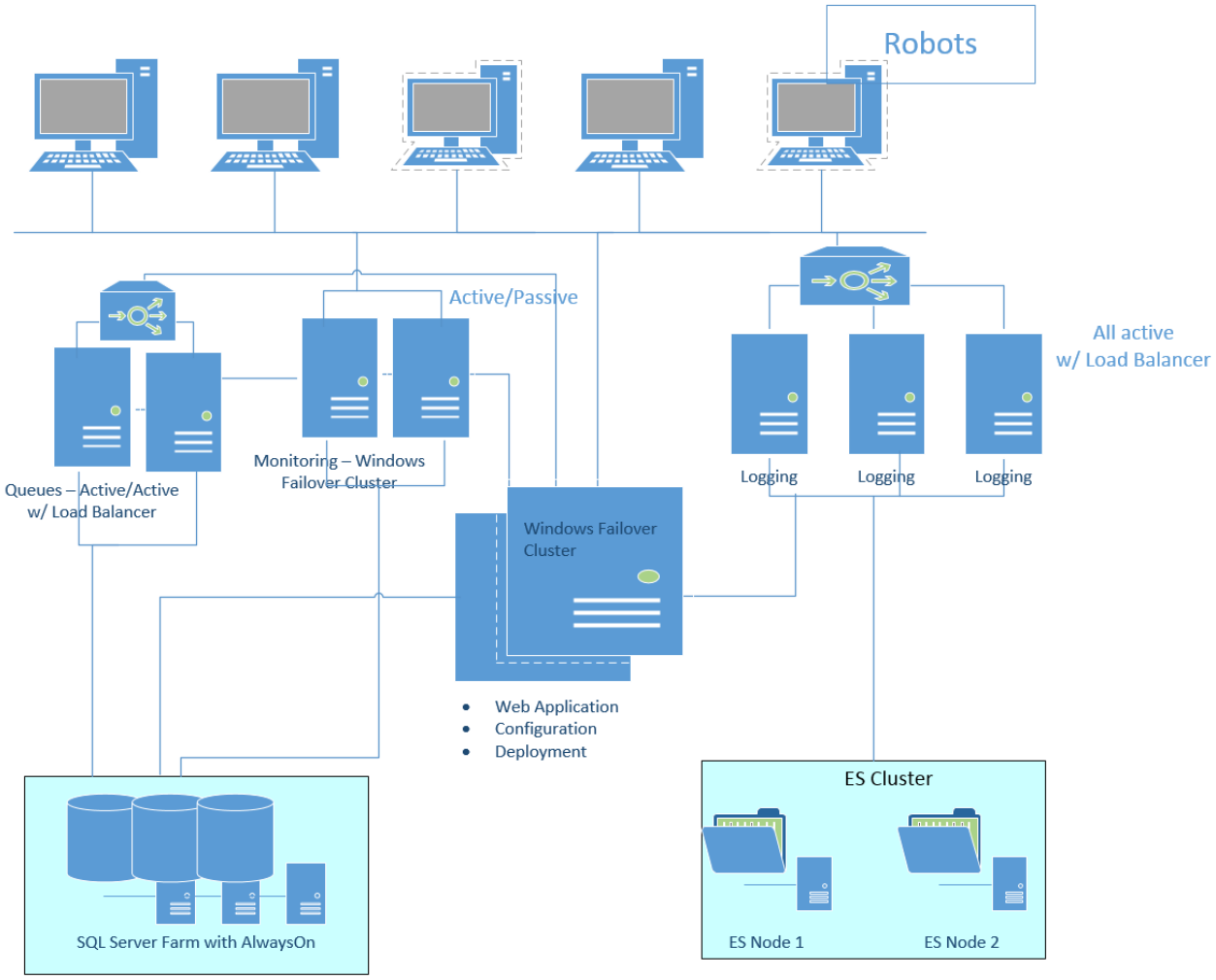
1.1.2. Option 2 – Separate process-intensive services

Recommended for large scale deployments of the robots (100 – 200 robots)



1.1.3. Option 3 – Deployment for Scalability and High-Availability

Recommended for 24/7 operation; includes high-availability for all the components.



1.2. Security considerations

Web Services can be protected following the rules used to protect a REST API:

- Authentication should be implemented at the following levels:
  - Web Application
  - Configuration
  - Monitoring (*)
- Authorization should be implemented at the following levels:
  - Web Application
  - Configuration

(*) The starting and stopping of the robots is initiated from the **Web Application** and is implemented in the **Monitoring** Service, therefore this web service should require authentication to not allow a start/stop to be called directly from a web service method.

The **Configuration** web service requires authentication and authorization because it exposes a method used to set the Login Assets.

All the web services are SSL Enabled. The communication can be over HTTP or HTTPS with any of the Web Services and with the Web Application.

1.3. Infrastructure requirements

The minimum requirements for the server platform OS are:

- Windows Server 2008 R2 SP1 or
- Windows Server 2012 R2
- Windows Server 2014

The SQL Server supported versions are:

- SQL Server 2008 Standard Edition with at least SP1
- SQL Server 2012 Standard Edition
- SQL Server 2014 Standard Edition

The Customer is responsible for the licenses of the Windows Operating System and SQL Server.

1.4. Hardware requirements

1.4.1.1. For Demo, Dev and Test environment (10 – 50 robots)

These hardware requirements apply to Option 1.

V1 – 3 servers

Web App and Web Services server

	10-50 robots	
	Min	**Recommended**
CPU	2 X 1.8Ghz cores	4 X 2.4Ghz cores
RAM	8GB	16GB
HDD	100GB	250GB
OS	Windows Server 2008 R2 OR Windows Server 2012 R2 OR Windows Server 2014	

SQL Server

	10-50 robots	
	Min	**Recommended**
CPU	2 X 1.8Ghz cores	4 X 2.4Ghz cores
RAM	8GB	16GB
HDD	200GB	500GB
OS	Windows Server 2008 R2 OR Windows Server 2012 R2 OR Windows Server 2014	
Relational DB	SQL Server 2008 R2 Standard Edition w/ Service Pack 3 OR SQL Server 2012 R2 Standard Edition OR SQL Server 2014 Standard Edition	

ElasticSearch Server

	10-50 robots	
	Min	**Recommended**
CPU	2 X 1.8Ghz cores	4 X 2.4Ghz cores
RAM	8GB	16GB
HDD	250GB	500GB
OS	Windows Server 2008 R2 OR Windows Server 2012 R2 OR Windows Server 2014	

V2 – 2 Servers

Web App and Web Services Server

	10-50 robots	
	Min	**Recommended**
CPU	2 X 1.8Ghz cores	4 X 2.4Ghz cores
RAM	8GB	16GB
HDD	100GB	250GB
OS	Windows Server 2008 R2 OR Windows Server 2012 R2 OR Windows Server 2014	

SQL Server and ElasticSearch

	10-50 robots	
	Min	**Recommended**
CPU	2 X 1.8Ghz cores	4 X 2.4Ghz cores
RAM	8GB	16GB
HDD	500GB	1TB
OS	Windows Server 2008 R2 OR Windows Server 2012 R2 OR Windows Server 2014	
Relational DB	SQL Server 2008 R2 Standard Edition w/ Service Pack 3 OR SQL Server 2012 R2 Standard Edition OR SQL Server 2014 Standard Edition	

1.4.2. Production environment, without Failover for High Availability (10 – 100 robots)

These hardware requirements apply to Option 2.

Web Application, Configuration Web Service, Deployment Web Service

	10-100 robots	
	Min	**Recommended**
CPU	4 X 2.4Ghz cores	8 X 2.4Ghz cores
RAM	16GB	32GB
HDD	250GB	500GB
OS	Windows Server 2008 R2 OR Windows Server 2012 R2 OR Windows Server 2014	

SQL Server

	10-100 robots	
	Min	**Recommended**
CPU	8 X 2.4Ghz cores	16 X 2.4Ghz cores
RAM	32GB	64GB
HDD	1TB	2TB
OS	Windows Server 2008 R2 OR Windows Server 2012 R2 OR Windows Server 2014	
Relational DB	SQL Server 2008 R2 Standard Edition w/ Service Pack 3 OR SQL Server 2012 R2 Standard Edition OR SQL Server 2014 Standard Edition	

ElasticSearch Server

	10-100 robots	
	Min	**Recommended**
CPU	8 X 2.4Ghz cores	16 X 2.4Ghz cores
RAM	32GB	64GB
HDD	1TB	2TB
OS	Windows Server 2008 R2 OR Windows Server 2012 R2 OR Windows Server 2014	

Logging Web Service

	10-100 robots	
	Min	**Recommended**
CPU	8 X 2.4Ghz cores	16 X 2.4Ghz cores
RAM	32GB	64GB
HDD	250GB	250GB
OS	Windows Server 2008 R2 OR Windows Server 2012 R2 OR Windows Server 2014	

Queues Web Service

	10-100 robots	
	Min	**Recommended**
CPU	8 X 2.4Ghz cores	16 X 2.4Ghz cores
RAM	32GB	64GB
HDD	250GB	250GB
OS	Windows Server 2008 R2 OR Windows Server 2012 R2 OR Windows Server 2014	

Monitoring Web Service

	10-100 robots	
	Min	**Recommended**
CPU	8 X 2.4Ghz cores	16 X 2.4Ghz cores
RAM	32GB	64GB
HDD	250GB	250GB
OS	Windows Server 2008 R2 OR Windows Server 2012 R2 OR Windows Server 2014	

1.4.3. Production environment, with Failover for High Availability and NLB for scalability (10 – 200 robots)

These hardware requirements apply to Option 3.

The Monitoring Web Service is installed on a Windows Failover Cluster (Active / Passive).

The Web Application, the Configuration Web Service and the Deployment Web Service are installed on a Windows Failover Cluster (Active / Passive).

A Network Load Balancer (hardware or even software NLB, like NGINX) is required for the Queues Web Service cluster (Active / Active) and for the Logging Web Service cluster (Active / Active).

SQL Server:

- may be deployed using the “AlwaysOn” feature, as indicated in the diagram in Option 3, which requires SQL Server 2012 Enterprise Edition (feature not available in the Standard Edition) or SQL Server 2014 Standard Edition.

The AlwaysOn feature does not require external storage, but requires at least 3 SQL Server nodes.

- may be deployed using a classical Windows Failover Cluster (Active / Passive) which requires External Storage for the database files.

The hardware requirements for each machine are the same as for the Production environment, without Failover for High Availability.

2. Client Hardware requirements

	Minimum	Recommended
Hardware	PC	PC
CPU	1GHz 32-bit (x86)	Dual Core 64-bit (x64)
RAM	1GB	4GB
Software		
UiPath Studio		
OS	Windows 7	Windows 7+
.NET	4.5	4.6
UiPath Robot		
OS	Windows 7	Windows 7+
.NET	4.5	4.6

Setup Size on Disk*	Archived	Installed
	70MB	180MB

* For both **UiPath Studio** and **UiPath Robot** (one single installer).