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Multiple Server with HA  
Installation Checklists

## Overview

This document is designed to help confirm that all the different parts of the CORTEX installation process have been completed based on the installation documentation.

These parts have been grouped into three checklists below:

* Requirements – A list of checks that need to be completed before the installation starts
* Pre-Installation - A list of steps that need to be completed at the start of the installation to ready the server
* Installation – A list of steps to complete the installation of CORTEX

As there are different options for the installation to suit the different needs of customer environments, some of the below checklists have “**EITHER** and **OR**” statements. The related checks will be grouped in these statements for clarity

## [Requirements](https://docs.wearecortex.com/docs/latest/getting-started/on-premise/install-innovation-only/multiple-server-with-ha/requirements/)

These requirements checklists will guide you through the requirements needed for a CORTEX Multiple Server with HA installation. If you are installing a Single Server without HA, please see this page - <https://docs.wearecortex.com/docs/latest/getting-started/on-premise/install-innovation-only/single-server-without-ha/>

This document is intended to be run alongside your installation and can be checked off as requirements are met.

#### Hardware Requirements

The following checklist is based on our Hardware Requirements found here

[Hardware Requirements](https://docs.wearecortex.com/docs/latest/getting-started/on-premise/install-innovation-only/multiple-server-with-ha/requirements/#hardware-requirements)

HA Architecture (Bronze Availability) confirmed

3 Windows Servers available for Application Servers

1 Windows Server available for Web Application Server

Hardware meets at least the minimum required specification for each server

A valid Load Balancer is available

**EITHER**

If using provided GoBetween, a separate Windows Server is available

**OR**

3rd Party Load Balancer available:

Supports round robin (or similar) load balancing to specified ports on 3 nodes

Must be able to health check each node by running a predefined batch script

Must be able to access each of the Application Servers via HTTPS

Supports UDP to use the SNMP functionality of the Triggers Service

Highly available to avoid a single point of failure in the system

#### Software Requirements

The following checklist is based on our Software Requirements found here

[Software Requirements](https://docs.wearecortex.com/docs/latest/getting-started/on-premise/install-innovation-only/multiple-server-with-ha/requirements/#software-requirements)

Windows Server 2019/2022 is installed on all servers

.Net Framework 4.7.2 or greater installed on all servers

PowerShell 5.1 installed on all servers [[1]](#endnote-2)

IIS Installed or available on the Web Application server

All Servers are on a Windows-based domain and are **NOT** a domain controller

Active Directory is Windows Server 2003 or later

IPv4 available to use

PTR or reverse lookup records are available in DNS for all servers

Either Chrome, Edge or Firefox web browser is available

Network Discovery and File Sharing has been enabled on all servers

The following Windows services are enabled and running on all servers

Performance Logs & Alerts

Remote Registry

Windows Event Log

A domain user is available to perform the installation, and it is a member of the Local Administrators group on all servers

A domain user is available to run the CORTEX Gateway IIS application pool [[2]](#footnote-2)

This user has **Log on as a service** permission on the Web Application server

This user has **Log on as a batch job** permission on the Web Application server

Antivirus Exclusions have been added as per documentation [[3]](#footnote-3)

Required ports are opened on the server [[4]](#footnote-4)

#### Certificate Requirements

The following checklist is based on our Certificate Requirements found here

[Certificate Requirements](https://docs.wearecortex.com/docs/latest/getting-started/on-premise/install-innovation-only/multiple-server-with-ha/requirements/#certificate-requirements)

A valid certificate is available for the installation

**EITHER**

I am using CORTEX generated Self-Signed Certificate (Non-Production only)

**OR**

I have a CA (Certificate Authority) X.509 certificate in a .PFX file with the full certificate chain

**EITHER**

I am using a multi-domain certificate

My certificate subject name is the FQDN of the Load Balancer OR an Application Server

The SANs lists the FQDNs, hostnames and IPs of all Application Servers

If the same certificate is being used for both the Application Servers and the Web Application Server, the Web Application server FQDN, hostname and IP is also included

**OR**

I am using a wildcard certificate

The certificate subject is a domain wildcard

My certificate file includes the Private Key

My certificate Key Usage extension has a value of **Digital Signature, Key Encipherment (a0)**

My certificate Enhance Key Usage includes **Server Authentication** and **Client Authentication**

I know the password for the .PFX file

## [Pre-Installation](https://docs.wearecortex.com/docs/latest/getting-started/on-premise/install-innovation-only/multiple-server-with-ha/pre-installation/)

Prior to installing to CORTEX, it is required that some steps are taken to prepare the server for the installation.

#### Make Installation Artefacts Available

Make Installation Artefacts available – [Steps here](https://docs.wearecortex.com/docs/latest/getting-started/on-premise/install-innovation-only/multiple-server-with-ha/pre-installation/#make-installation-artefacts-available-on-all-servers)

Cortex Innovation <VERSION> - App Server Install Scripts.zip

Cortex Innovation <VERSION> - App Services.zip

Cortex Innovation <VERSION> - Block Packages.zip

Cortex Innovation <VERSION> - Encryption Key Generator.zip

Cortex Innovation <VERSION> - Encryptor.zip

Cortex Innovation <VERSION> - Gateway.zip

Cortex Innovation <VERSION> - Licence Fingerprint Generator.zip

Cortex Innovation <VERSION> - Web App Server Install Scripts.zip

App Server Install Scripts extracted

Unblocked Pre-Installation Script

Executed the Pre-Installation script

#### Obtain CORTEX Licence

Machine ID and Fingerprints generated

CORTEX Licence and Feature Identifier requested

Obtained a CORTEX Licence and Feature Identifier

#### Generate Encryption Key

Encryption Key Set

Encryption Key Backed up

## Installation

#### Application Servers and Load Balancer

The following checklist is based on installation instructions found here

[Install Application Servers and Load Balancer](http://docs.wearecortex.com/docs/latest/getting-started/on-premise/install-innovation-only/multiple-server-with-ha/installation/install-application-and-loadbalancer-servers/)

.NET Framework 4.7.2 installed

 Recommended Security Measures Applied and Server Restarted

 Antivirus Exclusions Added

**EITHER**

 CORTEX script for Windows Defender used

**OR**

 Manually added to third-party antivirus

Port Usage script run successfully

 Installation Script configured

 AppServicesPath configured

 BlockPackagesPath configured

 ApiGatewayBasicAuthUsername provided

 ApiGatewayBasicAuthPassword provided and encrypted

 CustomerName provided

 ApplicationServerIPv4Addresses configured

 Certificate Parameters configured

**EITHER**

using CA Certificates

 ServerCertificatePath directs to certificate file (.pfx)

 Encrypted password provided for ServerCertificatePassword

 ClientCertificatePath directs to certificate file (.pfx)

 Encrypted password provided for ClientCertificatePassword

**OR**

using Self-Signed Certificate

 UseSelfSignedCertificates parameter included

 If using Alternative Loadbalancer, SkipLoadBalancer parameter included

 Credential parameter left as default

 LDAP Connection Information configured

 LDAP URL configured to point at domain

 UseSSL set to true or false as needed

 Encrypted Username and Password configured for dedicated query account

 AcceptEula parameter left as default

 Installation Script saved

 Installation script tested with -WhatIf switch

 Installation Script run successfully

 Service Fabric available with no errors reported

 Certificate installed into Current User certificate store

 Service Fabric Explorer opened via local browser

 No errors or warnings are reported

 Installation Files are archived for future use

#### Web Application Server

The following checklist is based on installation instructions found here

[Install Web Application Server](https://docs.wearecortex.com/docs/latest/getting-started/on-premise/install-innovation-only/multiple-server-with-ha/installation/install-web-application-server/)

Pre-requisites

 Cortex Licence has been uploaded to the correct location

 Gateway Application Pool user is NOT an Administrator

 Folder permissions granted to Gateway Application Pool user

 System32

 SysWOW64

**EITHER**

Certificate already imported with friendly name assigned

**OR**

Certificate will be imported during installation

Install Flow Debugger

.NET Framework 4.7.2 installed

 Antivirus Exclusions Added

**EITHER**

 CORTEX script for Windows Defender used

**OR**

 Manually added to third-party antivirus

Port Usage script run successfully

 Installation Script configured

 AppServicesPath configured

 BlockPackagesPath configured

 ApiGatewayBasicAuthUsername provided

 ApiGatewayBasicAuthPassword provided and encrypted

 CustomerName provided

 ApplicationIPv4Addresses (singular address) configured

 Certificate Parameters configured

**EITHER**

Using CA Certificates

 ServerCertificatePath directs to certificate file (.pfx)

 Encrypted password provided for ServerCertificatePassword

**OR**

Using Self-Signed Certificate

 UseSelfSignedCertificates parameter included

 SkipLoadBalancer parameter included

 Credential parameter left as default

 LDAP Connection Information configured

 LDAP URL configured to point at domain

 UseSSL set to true or false as needed

 Encrypted Username and Password configured for dedicated query account

 AcceptEula parameter left as default

 Installation Script saved

 Installation script tested with -WhatIf switch

 Installation Script run successfully

 Required permissions added to Windows Crypto folder

 Service Fabric available with no errors reported

 Certificate installed into Current User certificate store

 Service Fabric Explorer opened via local browser

 No errors or warnings are reported

 Installation Files are archived for future use

Install Gateway

CORTEX Gateway Installation script configured

 GatewayPackagePath configured

 FeatureFlags has been configured with Feature Identifier as provided by CORTEX Service Portal

 ServiceFabricAPIGatewayEndpoint configured

 ServiceFabricUsingSelfSignedCertificates Parameter configured

**EITHER**

If using CA Certificates

 ServiceFabricUsingSelfSignedCertificates set to False

**OR**

If using Self Signed Certificates

ServiceFabricUsingSelfSignedCertificates set to True

 ServiceFabricApiGatewayBasicAuthUsername provided and encrypted

ServiceFabricApiGatewayBasicAuthPassword provided and encrypted

 DotNetFlowDebuggerEndpoint configured

 DotNetFlowDebuggerBasicAuthUsername provided and encrypted

DotNetFlowDebuggerBasicAuthPassword provided and encrypted

DotNetFlowDebuggerUsingSelfSignedCertificates set

**EITHER**

If using CA Certificates

 DotNetFlowDebuggerUsingSelfSignedCertificates set to False

**OR**

If using Self Signed Certificates

DotNetFlowDebuggerUsingSelfSignedCertificates set to True

 GatewayApplicationPoolUsername specified

 WebRootFolder configured

WebsitePort configured

ImportCertificate configured

**EITHER**

using already imported CA Certificate

 ImportCertificate set to false

**OR**

using different CA Certificate

ImportCertificate set to True

Certificate Parameters configured

**EITHER**

ImportCertificate is false

 CertificateFilePath left as default

 CertificateFriendlyName configured as per imported certificate

**OR**

ImportCertificate is True

CertificateFilePath configured to .PFX certificate file location

CertificateFriendlyName is configured with required friendly name

 ConfigureSiteRedirect setIf site redirect is required

**EITHER**

 ConfigureSiteRedirect set to True

**OR**

ConfigureSiteRedirect set to False

 Apply Security Measures set to True

 Using Windows Defender set to True if applicable

 All other parameters left as default

Install script saved

Install Script run successfully

CORTEX Gateway opened in a local browser

Additional Folder Permissions granted

 CORTEX Blocks Provider Host

 CORTEX Repo

 IIS Reset performed

 Installation folders archived for future use

Setup Gateway

Default Administrator password changed

LDAP Connection Set

LDAP Connection User is a dedicated service account

LDAP Authorisation Set

#### Try it Out

The following checklist confirms that all the “[Try it out](https://docs.wearecortex.com/docs/latest/getting-started/on-premise/install-innovation-only/single-server-without-ha/try-it-out/)” steps have been completed successfully

Test Debugging Flows

Created a flow

Added and configured blocks

Flow executed and results displayed

Flow committed

Test Publishing Production Flows

Packages page opened

New package created

Package published

Test Executing Production Flows

Suitable HTTP client identified

REST call configured

REST call successfully run

1. Shipped with Windows Server 2019/2022 [↑](#endnote-ref-2)
2. These permissions are granted during install, but may be overridden by Group Policy [↑](#footnote-ref-2)
3. This is done as a part of the installation if using Windows Defender [↑](#footnote-ref-3)
4. These ports are opened as a part of the installation process if using Windows Defender [↑](#footnote-ref-4)