



INSTALLATION GUIDE — ON-PREMISES DEPLOYMENTS

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Installation Guide — On-Premises Deployments
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Introduction

Document Purpose and Intended Audience

This document provides information that enables you to install or upgrade Vantage DX Monitoring in a standalone deployment. If you are using VDX Monitoring as part of the Vantage DX solution, see the *Vantage DX Deployment Guide*. It is available on the Martello website at:

<https://martellotech.com/documentation/vantage-dx/>

This guide contains system requirements, installation and upgrade procedures, and steps to configure a standalone deployment so that it can retrieve data from your Microsoft workloads.

This document is intended for IT system administrators and anyone responsible for installing and configuring VDX Monitoring software. You must have administrator privileges to perform the procedures in this guide.

Revision History

Document Date	Description
February 20, 2025	Vantage DX Monitoring Installation Guide — On-Premises Deployments, Release 3.20



About Vantage DX Monitoring

VDX Monitoring is a monitoring tool that provides the information you need in order to understand service delivery issues on Microsoft applications and resources. In Microsoft environments, these applications and resources are known collectively as workloads.

Robots located at your critical business sites perform synthetic transactions on workloads—such as Microsoft Exchange, SharePoint, OneDrive, and Teams—while also testing network conditions. These robots continuously test the user experience from where your users are located to help you understand the service quality that you are delivering to your sites and business lines.

Based on these tests, VDX Monitoring provides you with proactive alert notifications so that you can work directly on issues before they become a problem for your business.

Use the information in the following sections to understand the components that make up VDX Monitoring, as well as the security measures that VDX Monitoring uses:

- ["Components" on page 8](#)
- ["Security" on page 11](#)

Components

Use the information in the following sections to understand the components that make up VDX Monitoring:

- ["VDX Monitoring Web UI" on page 8](#)
- ["VDX Monitoring Server" on page 9](#)
- ["Robot Manager Service" on page 9](#)
- ["Robots" on page 9](#)
- ["Workloads" on page 9](#)

VDX Monitoring Web UI

The VDX Monitoring Web UI is an application that displays detailed dashboards, metrics, and alert notifications for the Microsoft workloads that you monitor. The

data it provides helps you measure the experience of your end-users. You can use the VDX Monitoring Web UI to customize how workloads are monitored. For example, you can choose which workloads to monitor, set performance thresholds, and configure how you receive alert notifications.

VDX Monitoring Server

For on-premises deployments, a Windows server hosts the VDX Monitoring Web UI. In this document, the server is referred to as the VDX Monitoring server, to differentiate it from the machines where the Robot Manager service is running.

When you install the VDX Monitoring Web UI on the server, the executable file also installs RabbitMQ. RabbitMQ is a message-queueing software. VDX Monitoring uses RabbitMQ to receive the results of the tests performed by robots located at your critical business sites. The VDX Monitoring server stores the data it collects in a SQL database.

Robot Manager Service

Robot Manager is a Windows service that you install on machines located at critical business sites. It manages the robots that perform synthetic transactions at that site. The Robot Manager service sends the results of the synthetic transactions to the VDX Monitoring server using encrypted communication.

Robots

Robots perform synthetic transactions, which are tests that simulate the activities that your users typically do. The robots perform these tests at the sites where your users are located, to provide you with insight into the user experience at each site. You can use the VDX Monitoring Web UI to configure the activities and workloads that the robots test.

You can add tags to robots for the following purposes:

- Add a location tag to easily identify where the robot is located. For workloads that display in Power BI reports, you must add location tags to view the robot data on the map included in the Power BI report.
- Add a filter tag to apply customized performance thresholds, as defined in a custom status.

Workloads

A workload is an application or a resource that you can monitor. VDX Monitoring allows you to create monitoring configurations for the following workloads:

- ADFS (Active Directory Federation Services)
- Exchange DAG
- Exchange Edge Server
- Exchange Free/Busy
- Exchange Mailbox Server
- Exchange MAPI

- Exchange Online
- Exchange Online Network
- Exchange OWA
- Hybrid Mail Routing
- Internal Mail Routing
- Microsoft Entra Connect (formerly Azure AD Connect)
- Office 365 Health, which includes the following applications (if enabled):
 - Azure Information Protection
 - Dynamics 365
 - Exchange Online
 - Identity Service
 - Microsoft Forms
 - Flow in Microsoft 365
 - Microsoft StaffHub
 - Microsoft Teams
 - Microsoft Intune
 - Office Client Applications
 - Office for the Web
 - Planner
 - PowerApps in Microsoft 365
 - Mobile Device Management for Office 365
 - Yammer Enterprise
 - Office 365 Portal
 - OneDrive for Business
 - Power BI
 - SharePoint Online
- Office 365 Web App, which includes the following applications (if enabled):
 - Azure AD Management
 - Azure Portal
 - Delve
 - Dynamics
 - Excel
 - Office 365 Admin Portal
 - OWA
 - Office365
 - Office Pro Plus Pages
 - OneDrive
 - OneNote
 - Planner
 - Power Apps

- Power Automate
- Power BI
- SharePoint
- Streams
- OneDrive
- Roundtrip Mail Routing
- SharePoint Network
- SharePoint Page
- SMTP Gateways
- Teams
- Teams Advanced
- Teams Network
- Teams Phone
- Teams Video
- URL

Security

When you configure robots in the VDX Monitoring Web UI, you provide credentials that the robots can use to log into various workloads and perform synthetic transactions. Passwords are stored on disk to persist after a system restart and are encrypted and decrypted on-demand using industry standard encryption.

All passwords are kept in memory, and are encrypted and decrypted on-demand.

VDX Monitoring does not store Personally Identifiable Information (PII). It does store the following data:

- Results from synthetic transactions; these results typically include a date, a unique identifier, a statistic identifier, and a value.
- Service accounts—if you have configured them—for accessing monitored servers or third-party systems that VDX Monitoring integrates with.
- Fully qualified domain names (FQDN) for each of the installed Robot Managers.

All stored data is encrypted using AES-256.



Deployment Planning

Use the information in the following sections to understand some of the ways that you can use the data that VDX Monitoring collects to measure end-user experience and plan IT projects:

- ["Data Comparisons" on page 12](#)
- ["Deployment Examples" on page 14](#)

Data Comparisons

You can use the data that VDX Monitoring collects to perform A/B comparisons, or to identify trends by comparing data over time.

A/B comparisons are a test method where you compare two versions of something to determine which one performs better. For example, you can compare two routes to the same endpoint in your network to see which route is the most efficient. You can use VDX Monitoring to collect metrics for each network path, and then compare the data. You can compare performance at different sites in your network, or you can compare network performance at remote sites to the performance at the head office.

This comparative approach allows you to understand how your network impacts the end-user experience. It also helps you assess how changes to your infrastructure will affect performance, so that you can plan IT projects with an understanding of how those changes will impact your end users.

The following table lists some examples of how you can deploy robots to make A/B comparisons.

Table 1: Examples of A/B Comparisons

Workload	User Experience	Example Deployments
Exchange Mailbox	Outlook disconnects Mail is delayed	<p>Use VDX Monitoring to test the connectivity to the Exchange server, check the protocols, and check the status of the services and the transport queue.</p> <p>Robots should be deployed as close as possible to the Exchange server so that the server monitoring the workload is not impacted by the network.</p>
Exchange Online	Outlook is slow	<p>Use VDX Monitoring to test the connection between the Exchange Online service and the end user.</p> <p>In this scenario, you could deploy a pair of robots in any of the following locations:</p> <ul style="list-style-type: none"> • LAN/WiFi —Compare the connection time for LAN users and WiFi users. • VPN/no-VPN—Compare the connection time for users who connect through a VPN to those who do not use a VPN. • MPLS/direct internet— Compare the connection time for users who connect to the service through your MPLS to those who connect directly through the internet.

Workload	User Experience	Example Deployments
OneDrive	Login in slow	<p>OneDrive performance depends on many network factors, such as the distance between the end user and the host, DNS resolution, and proxy connections.</p> <p>In this scenario, you could deploy a pair of robots to make the following comparisons:</p> <ul style="list-style-type: none"> • ISP1/ISP2—Compare the experience of users who connect through one ISP to the experience of users who connect through a different ISP. • Bandwidth/upgraded bandwidth—Compare the experience of users who connect to the OneDrive host through different service levels.

Time-lapse comparisons allow you to identify trends by comparing data over time. This approach allows you to determine a baseline for performance. You can use this information in several ways. For example, time-lapse information helps you to:

- Identify the root cause of recurring incidents.
- Compare the current performance to your performance targets.
- Understand when the demands on your network are at their peak, and whether your current network performance meets the requirements for new applications.
- Identify bottlenecks and to compare the effects of the bottleneck on each site.

Deployment Examples

The following sections describe some example deployments. Use the information in these sections to help you identify the best locations to deploy robots.

- ["Monitor Office 365 Workloads at Critical Locations" on page 15](#)
- ["Monitor the Route from Sites to the Cloud" on page 16](#)
- ["Monitor the Full Route to the Cloud " on page 17](#)
- ["Monitor Performance in an Office Building " on page 18](#)
- ["Monitor Cloud Performance" on page 19](#)

Monitor Office 365 Workloads at Critical Locations

If you have multiple sites that rely on Office 365, you can deploy robots at critical locations to monitor end-user experience.

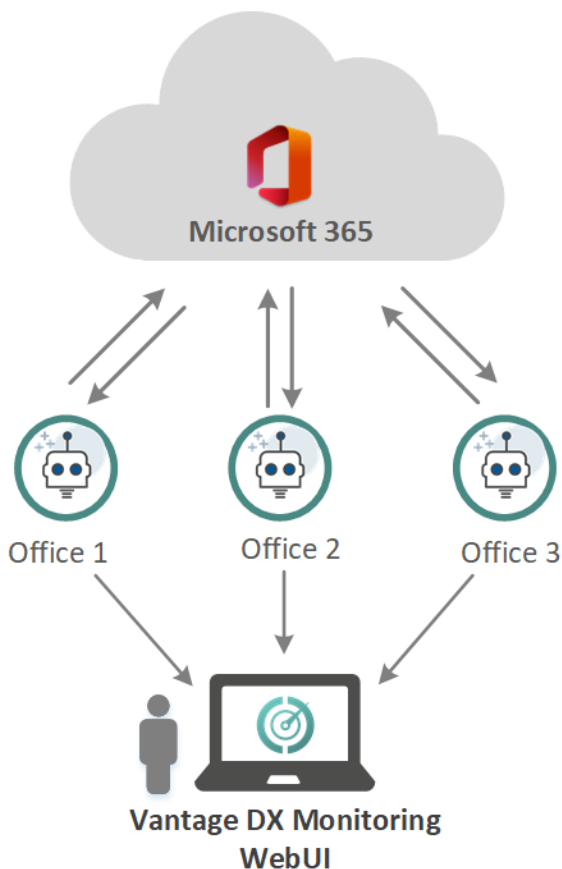
We recommend that you select sites that meet one or more of the following criteria:

- There are a high number of users.
- There are recurring issues.
- There are major IT projects at the site that will improve or affect the user experience.
- You need to measure the user experience to evaluate the return on investment for an IT project.

After you have identified critical locations, deploy one or two Robot Manager services at each site. If you deploy two Robot Manager services, use one to monitor the LAN connection and one to monitor the WIFI connection. This approach allows you to compare the performance of your LAN to the performance of your WIFI connection. If you have a single robot, we recommend that you monitor the LAN connection.

The following image shows an example of this deployment option.

Figure 1: Robot Deployment to Monitor Office 365 at Critical Locations



Monitor the Route from Sites to the Cloud

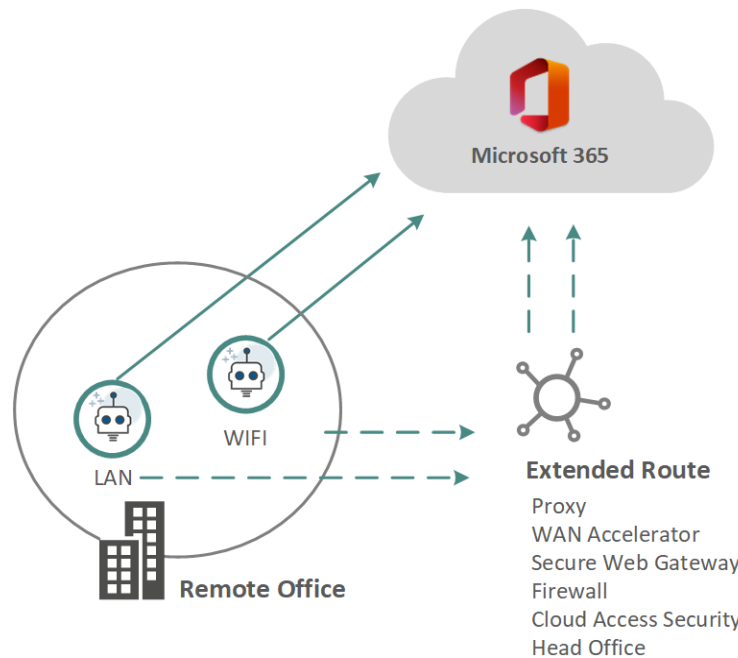
You can use VDX Monitoring to monitor the route between your cloud-based infrastructure and your sites. This type of deployment allows you to analyze remote office connectivity and end-user experience.

To set up this type of deployment, you need to:

- Identify the sites that you want to monitor, and for those sites, identify the components that are part of the local route to the cloud, such as routers, proxy servers, or security gateways.
- Deploy the following robots at the sites:
 - Two robots to monitor the LAN connection: one robot monitors the egress directly to internet, and one robot monitors the route through the components.
 - Two robots to monitor the WIFI connection: one robot monitors the egress directly to internet, and one robot monitors the route through the components.
- Deploy a robot on a virtual machine in your cloud infrastructure.

The following image shows an example of this deployment option.

Figure 2: Robot Deployment to Monitor Routes from Sites to the Cloud



This approach allows you to use the data collected by the robots to compare the performance of your LAN to the performance of your WIFI connection. Comparing the direct egress to the route through the components allows you to understand how your network components impact the end-user experience. This information also helps you assess how changes to your infrastructure will affect users.

After the assessment is complete and you have optimized the route, we recommend that you use only two Robot Manager services at each site: one to monitor the LAN, and one to monitor the WIFI connection. This approach provides basic service quality monitoring at each location.



Note: This option allows you to assess the full route to the cloud; it does not provide information about specific parts of the route. To monitor the full route to the cloud, see ["Monitor the Full Route to the Cloud " on page 17](#).

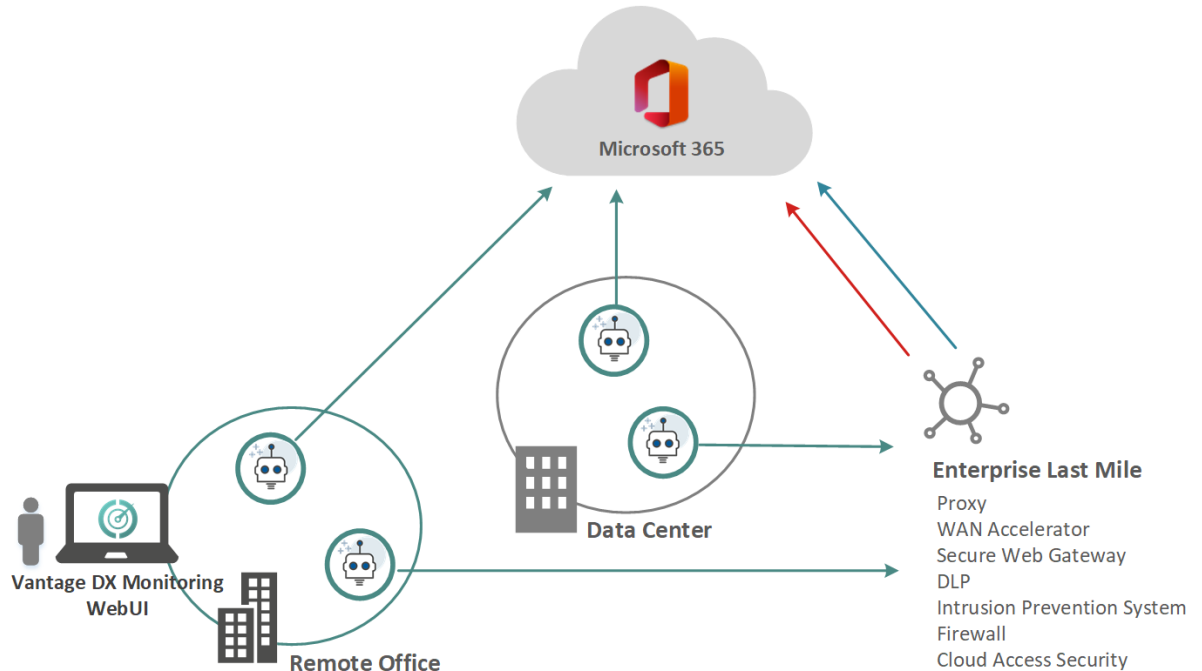
Monitor the Full Route to the Cloud

You can use VDX Monitoring to monitor the route between your cloud-based infrastructure, your head office, and your remote sites. This type of deployment is beneficial if performance improvement is a higher priority than monitoring services geographically.

To set up this type of deployment, you need to:

- Identify the remote sites that you want to monitor, and for those sites, identify the components that are part of the local route to the cloud. For example, identify any routers, proxy servers, or security gateways at each site.
- Identify the components that are part of the route to the cloud at the head office. These components are typically last mile security components, such as proxy servers, WAN accelerators, secure web gateways, data loss prevention, intrusion prevention systems, firewalls, and cloud access security.
- Deploy a robot on a virtual machine in your cloud infrastructure.
- Deploy the following robots at your remotes sites:
 - Two robots to monitor the LAN connection: one robot monitors the egress directly to internet, and one robot monitors the route through the components.
 - Two robots to monitor the WIFI connection: one robot monitors the egress directly to internet, and one robot monitors the route through the components.
- Deploy the following robots at the head office:
 - One robot that accesses Office 365 through your last mile security.
 - One robot that bypasses your last mile security, and instead relies on Office 365 security.

The following image shows an example of this deployment option.

Figure 3: Robot Deployment to Monitor the Full Route to the Cloud

This approach allows you to use the data collected by the robots to make the following assessments:

- **Remote sites**—You can compare the performance of your LAN to the performance of your WIFI connection. You can also compare the direct egress route to the route through your network components. Comparing the direct egress to the route through the components allows you to understand how your network components impact the end-user experience. This information also helps you assess how changes to your infrastructure will affect users.
- **Head office**—Compare the direct egress route to the route through the last mile components. This comparison helps you understand how different layers of security affect the end-user experience.
- **Connectivity between sites**—Compare the routes from your remote sites to the routes from your head office to understand how the MPLS connection affects the end-user experience.

After you have completed the assessment and optimized the routes, we recommend that you use only two robots at each of your remote sites: one to monitor the LAN, and one to monitor the WIFI connection. This approach provides basic service quality monitoring at each location.

Monitor Performance in an Office Building

You can use VDX Monitoring to monitor the performance of workloads on each floor of an office building. This option allows you to analyze how the network on each floor affects the end-user experience. It also simplifies troubleshooting, since the

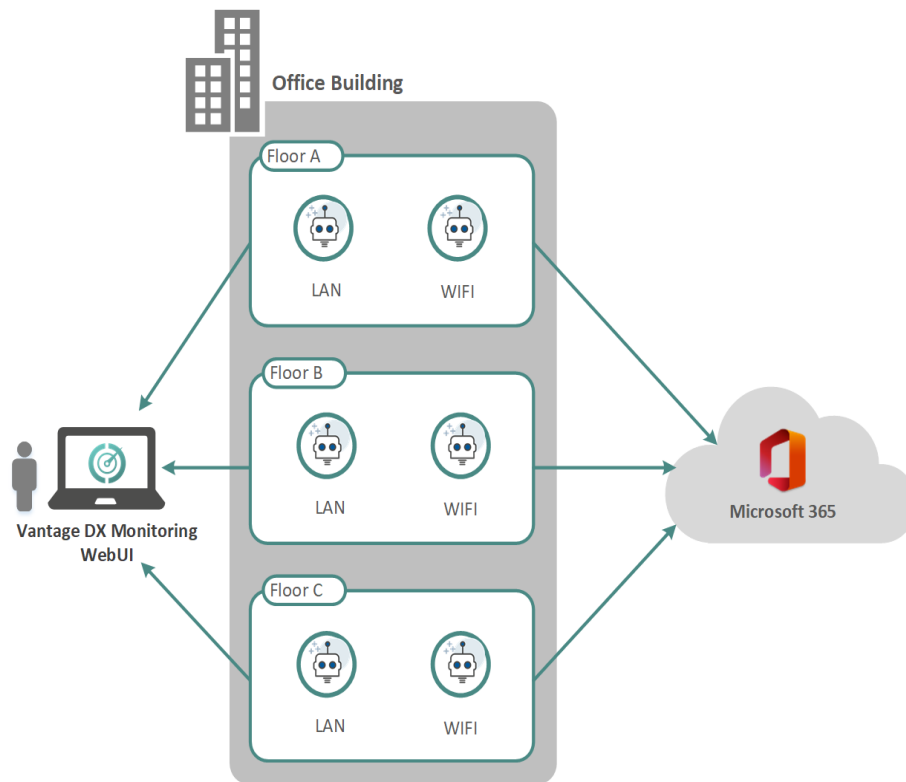
data collected by the robots is specific to each floor. You can extend this deployment to include last mile connectivity checks.

To set up this type of deployment, you need to:

- Identify the office site that you want to monitor, and the floors that you consider critical.
- Identify the workloads that you want to monitor.
- Deploy at least one robot for each floor. We recommend that you deploy two robots for each floor. If you deploy two robots, use one to monitor the LAN connection and one to monitor the WIFI connection. This approach allows you to compare the performance of your LAN to the performance of your WIFI connection.

The following image shows an example of this deployment option.

Figure 4: Robot Deployment in an Office Building

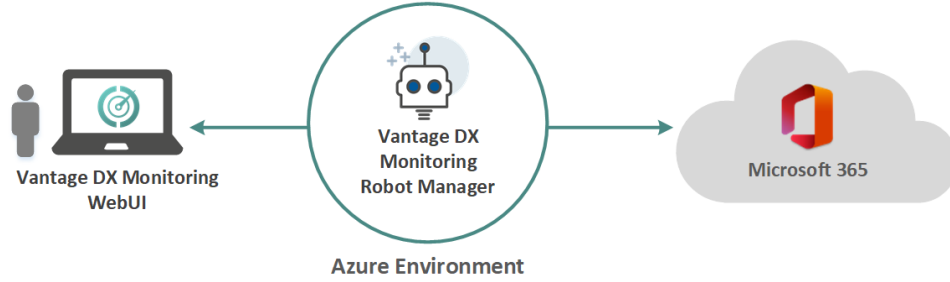


Monitor Cloud Performance

You can use VDX Monitoring to monitor the Microsoft services that are delivered to your sites. This type of deployment allows you to be aware of service degradation immediately, before receiving an alert from Microsoft. It also allows you to understand typical quality of service that you receive.

To set up this type of deployment, you need to deploy a robot on a virtual machine in your cloud-based infrastructure.

The following image shows an example of this deployment option.

Figure 5: Robot Deployment to Monitor Cloud Performance

This deployment option does not test performance from actual user locations.



Requirements

The following sections provide information about the requirements that your system must meet before you can install or upgrade VDX Monitoring.

- ["VDX Monitoring Application Requirements" on page 21](#)
- ["SQL Database Requirements" on page 23](#)
- ["Robot Manager Requirements" on page 24](#)
- ["Workload Requirements" on page 28](#)
- ["Security Requirements" on page 31](#)
- ["Power BI Desktop Requirements" on page 31](#)

VDX Monitoring Application Requirements

The following sections list the requirements that your system must meet before you install the VDX Monitoring application.

- ["Server" on page 21](#)
- ["IIS Roles" on page 22](#)
- ["Antivirus Exclusions" on page 22](#)
- ["Network " on page 23](#)

Server

The VDX Monitoring application runs on a Windows server. The following table lists the minimum requirements and recommendations for the server.

Table 2: VDX Monitoring Server—Requirements and Recommendations

Component	Minimum Requirement	Recommended
Windows Server	2016	2019
Memory	8 GB	16 GB (if Power BI Desktop will import data from this server)
Processors	4	4
Available Drive Disk Space	150 GB	150 GB
.NET Framework	4.6.2 or higher	4.6.2 or higher

IIS Roles

Ensure that you add the roles listed below to your VDX Monitoring server:

- Websocket Protocol Enable
- IIS .Net Core Runtime 3.1 Module (Hosting Bundle)
- IIS URL Rewrite Module
- IIS Application Request Routing Module

Antivirus Exclusions

We recommend that you exclude the processes, directories, and ports listed below from the items scanned by your antivirus software.

Processes:

- Gsx.Microservice.Alert
- Gsx.Microservice.DataTier
- Gsx.Microservice.Preprocessing
- Gsx.Microservice.ScanConfiguration
- Gsx.Microservice.StatusCalculation

Directories:

- C:\ProgramData\GSX Solutions*
- C:\Program Files\GSX Solutions*

Ports:

- 60000-60005

Network

The Robot Manager must be able to reach VDX Monitoring server on the following ports:

- TCP 5671 (5672) for AMQP protocol and connect to RabbitMQ.
- TCP 80 (443) for HTTP communication in order to download .zip files.

Ensure that the machine you are using to access the VDX Monitoring WebUI can reach the following URLs:

- Security Token Service (<https://sts.windows.net/{tenant-id}>)
- Azure sign-in page (<https://login.microsoftonline.com/{tenant-id}>)
- Microsoft graph API (<https://graph.microsoft.com/v1.0/me/transitiveMemberOf/>)

Supported Browsers

Users can use any of the following browsers to access the VDX Monitoring application:

- Chrome
- Firefox
- Edge (Chromium based)

SQL Database Requirements

Ensure that the SQL database meets the following requirements:

- The SQL database server is not collocated on the VDX Monitoring server.
- The version is SQL 2017 or 2019—Standard, Enterprise or Azure SQL.
- SQL Authentication and Windows authentication are supported.
- The database password must not start with a hyphen or special characters.
- The VDX Monitoring server must be able to communicate with the SQL database on port 1433 (the default port).
- A new database is added for use during the installation.
- The database must have the db_owner role assigned to it.
- Optional, but recommended: SQL Management software, such as Azure Data Studio, or SQL Server Management Studio.

RabbitMQ

When you install the VDX Monitoring application, the installer prompts you to install RabbitMQ. The installer uses the FQDN of this server as the host. The default username is `gizmo` and the password based on letters and numbers is randomly generated.

If you have an existing installation of RabbitMQ that you plan to use with VDX Monitoring, ensure that the password does not start with a hyphen or other special characters.

Robot Manager Requirements

The following sections provide information about the requirements for the machine where the Robot Manager is installed.

These requirements apply to all workloads; however, there are additional requirements that apply only if you are monitoring specific workloads. For information about workload-specific requirements, see ["Workload Requirements" on page 1](#).

- ["Machine" on page 1](#)
- ["Network" on page 1](#)
- ["Accounts" on page 1](#)

Machine

Robot Manager is a service that runs on Windows. The following table lists the minimum requirements and recommendations for the machine where the Robot Manager service is installed.

We recommend that you install the Robot Manager service on a machine that is as similar as possible to the machines used by your end users. This practice helps ensure that the performance data collected by the robots is realistic and reflects the experience of your end users. It also helps you determine if anything included in your standard deployment is impacting the performance of the service.

Table 3: Robot Manager Server—Requirements and Recommendations

Component	Minimum Requirement	Recommended
Browser	For Teams Video, Google Chrome is required. Other workloads may use other current browsers.	The current version is recommended; two previous versions are supported.
Operating System	Windows 10 (64-bit) or or Windows Server 2012 R2	Windows 10 22H2 and later, Windows 11 22H2 and later, or Windows Server 2016 (version 1607) and later
Memory	4 GB 8 GB for Teams Video	8 GB or higher is recommended for most environments
Processors	2.5 GHz Dual Core or 4 vCPUs	2.5 GHz Dual Core is acceptable for most workloads, with the exception of Teams Video, SharePoint, and Microsoft 365 Web Apps. These workloads require 4 vCPU or higher.
PowerShell	4.0	4.0 or higher
.NET Framework	4.7.2	4.7.2 or higher
Power settings	Always On	—

Network

Ensure that the machine where Robot Manager is installed can access Microsoft Office 365 URLs and IP addresses. For more information, see the following Microsoft document:

<https://docs.microsoft.com/en-us/microsoft-365/enterprise/urls-and-ip-address-ranges?view=o365-worldwide>

For the connectivity requirements for specific workloads, see "[Workload Requirements](#)" on page 28.

The machine where the Robot Manager is installed must be able to reach the Vantage DX Monitoring server on the following ports:


- TCP 5671/5672
- TCP 80/443

Accounts

The Robot Manager service requires one or more user accounts that are dedicated to monitoring. The account must have a valid Microsoft 365 E3 or E5 license in order to monitor the workloads. To avoid interruptions in data collection, disable multi-factor authentication for these accounts, and do not set a password expiry.

The number of accounts you need depends on the workload that you are monitoring and the number of robots that you deploy:

Workload	Account Information
Exchange Free/Busy	A user account with a provisioned mailbox and a set timezone.
	An attendee user account with a provisioned mailbox and set timezone.
	The first user should have the rights to check the free/busy status of the attendee. If the user accounts are in different organizations, the attendee's organization calendars must be accessible from the organizer's organization.
Exchange Online	Up to 30 robots can use one account. You need a user account with a provisioned mailbox and a set timezone.
Exchange Server	The user account that connects to the Exchange server must be a member of the "View-Only Organization Management" security group in the Active Directory.
Exchange MAPI	A user account with a provisioned mailbox and a set timezone.
	An attendee user account with a provisions mailbox and set timezone.
	The first user should have the rights to check the free/busy status of the attendee. If the user accounts are in different organizations, the attendee's organization calendars must be accessible from the organizer's organization.
Mail Routing	A user account with a provisioned mailbox and a set timezone.

Workload	Account Information
Office 365 Web Apps	<p>A user account with the intended Microsoft 365 application provisioned.</p> <ul style="list-style-type: none"> • The account must be cloud-only (ADFS is not supported) • The account must be licensed for the intended Office 365 application
One Drive	<p>A user account with OneDrive provisioned. Up to 30 robots can use one account.</p>
Teams Advanced	<p>Teams Advanced requires two user accounts. These accounts can be used by up to five robots. If you are deploying more than five robots, you must create additional accounts. The accounts must meet the following requirements:</p> <ul style="list-style-type: none"> • The accounts must be licensed for Teams. • The accounts must belong to same tenant. • A private team is automatically created at the first scan of a robot. The user accounts must be set as the Teams admins. <div>  <p>Tip: If you are monitoring Teams Advanced from multiple regions—for example, if you are using Microsoft 365 Multi-Geo— use separate credentials for the robots at each location.</p> </div>
Teams Phone	<p>This workload requires a Teams user account with a Teams Phone license at each location.</p> <p>The accounts you create must be dedicated to Teams Phone. Teams allows a user to participate in one call at a time; therefore, you cannot use these same credentials to test other workloads.</p> <p>In addition to these accounts, this workload requires an external phone number that is set to auto-answer or Interactive Voice Response (IVR) service. Ensure that the external phone number is not assigned to a Teams user; if it is assigned to a Teams users, Teams will automatically convert the call to cloud call and will not use Teams Phone.</p> <p>The accounts cannot use MFA for this workload.</p>

Workload	Account Information
Teams Video	<p>You need two accounts per robot.</p> <ul style="list-style-type: none"> • The accounts must be cloud only; ADFS is not supported. • The accounts must be licensed for Teams. • The accounts must belong to the same tenant. • The accounts must have provisioned calendars.

Workload Requirements

Vantage DX Monitoring has general requirements for the machine where the Robot Manager is installed. The general requirements apply to all workloads; however, there are additional requirements that apply only to specific workloads. The following sections provide information about workload-specific requirements.

- ["Exchange and Exchange Edge Server Requirements" on page 28](#)
- ["Mail Routing Requirements" on page 29](#)
- ["Microsoft 365 Health Requirements" on page 29](#)
- ["Teams, Teams Advanced, and Teams Video Requirements" on page 29](#)

For information about general requirements, see ["Robot Manager Requirements" on page 24](#).

Exchange and Exchange Edge Server Requirements

This section lists the requirements that your Exchange and Exchange Edge servers must meet so that VDX Monitoring can monitor the workload. These requirements are applicable to on-premises installations.

Ensure that VDX Monitoring can communicate with the Exchange server by meeting at least one of the following conditions:

- The machine where VDX Monitoring is installed and the Exchange server are in the same domain. If the machines are in different domains, ensure that you configure the Exchange server's domain to trust the VDX Monitoring machine's domain.
- The connection relies on SSL authentication.
- The Exchange server is part of the VDX Monitoring station's WinRM trusted hosts:

```
Set-Item wsman:\localhost\client\trustedhosts *
```

where * means all servers.

The following requirements apply to the monitored Exchange Server:

- Make sure the port 5985 (5986 if SSL) is open on the monitored server (Microsoft.PowerShell endpoint).
- Configure the server to receive remote commands:

```
Enable-PSRemoting -Force
```

- Increase the default values of the following throttling policies or set them to unlimited:
 - The `PowerShellMaxRunspaces` policy is closely related to PowerShell sessions initiated on the servers. By default, it is set to 18.
 - The `PowerShellMaxConcurrency` policy defines the maximum number of concurrent PowerShell connections on the server. By default, it is set to 18.

Mail Routing Requirements

The Mail Routing workload is supported on server versions 2016, 2019 and Online.

Microsoft 365 Health Requirements

VDX Monitoring uses the Microsoft Graph API to monitor the Microsoft 365 Health workload. In order to access the API, VDX Monitoring must have tenant-wide admin consent in Azure Active Directory.

To grant admin consent, sign into the URL listed below using an administrator account for the tenant. When you are prompted to grant permissions, click **Accept**.

https://login.microsoftonline.com/common/adminconsent?client_id=76cef7e9-3d12-44f2-bdbe-c894af6b66d5

For more information about tenant-wide admin consent, see the following Microsoft documentation:

<https://docs.microsoft.com/en-us/azure/active-directory/manage-apps/grant-admin-consent>

Teams, Teams Advanced, and Teams Video Requirements

If you are monitoring the Teams, Teams Advanced, or Teams Video workloads, ensure that the machine where you install the Robot Manager meets the general requirements listed in "[Robot Manager Requirements](#)" on page 24, as well as the requirements listed in this section.

- If the operating system is Windows Server edition, ensure the Desktop Experience feature is enabled by entering:
`Add-WindowsFeature Desktop-Experience`
- If the operating system is Windows N or KN, ensure the Media Feature pack is installed. The download is available on the following Microsoft website: <https://www.microsoft.com/en-us/download/details.aspx?id=49919>.

Ensure that the machine where Robot Manager is installed can access the endpoints listed in the following table.

Table 4: Endpoint Connections

Protocol and Port	Endpoint	Description
TCP 443	ecs.communication.azure.com	Robot connection to the Azure Communication Services (ACS) endpoint.
	acsresource<your-tenant-name>.canada.communication.azure.com	Your tenant name is typically based on your company name. If you are unsure of your tenant name, contact Martello support or permit connections to *.communication.azure.com
TCP 443	20.202.0.0/16	Robot connection to a range of ACS public IP addresses. For more information, see the following website: https://learn.microsoft.com/en-us/azure/communication-services/concepts/voice-video-calling/network-requirements#firewall-configuration
UDP 3478 through 3481	20.202.0.0/16	Robot connection to a range of ACS public IP addresses. For more information, see the following website: https://learn.microsoft.com/en-us/azure/communication-services/concepts/voice-video-calling/network-requirements#firewall-configuration

Security Requirements

The machine where the Robot Manager is installed must have a certificate under the Computer Local Certificates. During the Robot Manager installation, a self-signed certificate is automatically installed in the “Personal” certificate store. This certificate is used to encrypt communication between VDX Monitoring and the Robot Manager using the certificate's Private/Public keys.



Note: We recommend that you use the default installation procedure. This ensures that each Robot Manager has a different certificate, which enhances security.

Power BI Desktop Requirements

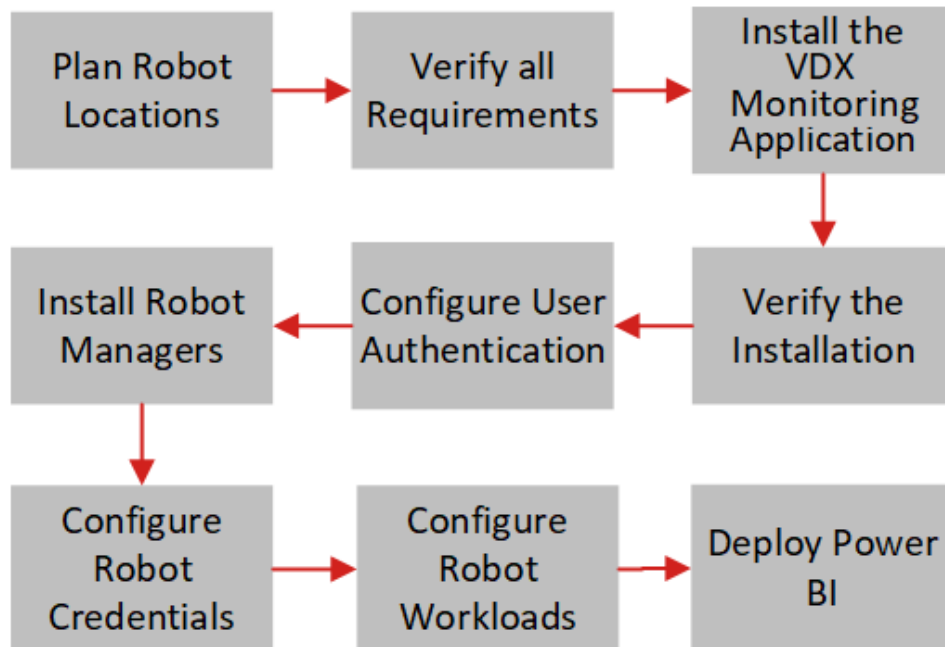
The machine used for Power BI Desktop requires the following:

- 4 CPUs
- 8GB of RAM (16GB recommended for large deployments)

Installation Process

Refer to the following diagram for an overview of the VDX Monitoring installation process.

Figure 6: Installation Process





Install the VDX Monitoring Application

Use the procedures in this section to install the VDX Monitoring application.

Before you Begin

- Ensure that your system meets all the prerequisites listed in ["VDX Monitoring Application Requirements" on page 21](#).
- Log into the Martello Help Center and download the files from the following URL: <https://helpcenter.martellotech.com/s/downloads>

The installation package contains the following:

- Installer
- Validation script
- Migration scripts
- Power BI template

After you download the installation package, complete the following tasks:

Task	Description
"Request a License Code" on page 34	Obtain a license code. We recommend that you perform this procedure several days in advance of your installation.
Choose one of the following options: <ul style="list-style-type: none">• "Install VDX Monitoring—Online" on page 34• "Install VDX Monitoring—Offline" on page 36	Follow the procedure for online installation if the server has internet connectivity; otherwise, follow the procedure for offline installation.
"Validate the Installation" on page 38	Ensure that the installation was successful.

Request a License Code

Use this procedure to obtain a license code.

Before you Begin

Ensure you perform this procedure on the server where the VDX Monitoring application is installed.

1. Open the PowerShell console.
2. Get the VDX Monitoring server's ID using the PowerShell cmdlet `Get-GSXMachineID`.
3. Send the ID via email to your dedicated Martello VDX Monitoring delivery engineer. You will receive a license code in return.
4. Apply this License code using the PowerShell cmdlet `Set-GSXLICENSECODE <license code>` where `<license code>` is the license code that applies on the VDX Monitoring server.
A `True` returned value indicates that the license has been successfully applied.

Install VDX Monitoring—Online

Use this procedure to install VDX Monitoring when the server has internet connectivity. You must have administrator privileges on the server to perform this installation.

If you encounter any error messages during the installation, refer to ["Respond to Error Messages" on page 65](#)

Before you Begin

- Ensure that you have the `Martello.Vantage.DX.Monitoring.<version>.exe` file available.
- Ensure that the server has access to the following URL:
`https://gsxdownloads.blob.core.windows.net/downloads/` This site contains sub-components required for the installation of underlying third-party tools and libraries.
- Ensure that you are logged in with a local user profile and not a roaming profile. A local profile is stored directly on the computer, whereas a roaming profile is stored on a network server.
- Ensure that there are no open PowerShell sessions.



Note: During the installation process, pop-up messages may display and prompt you to open an executable file. If this occurs, click **Cancel** to dismiss the pop-up message and continue to follow the installation wizard.

1. Right-click the `Martello.Vantage.DX.Monitoring.<version>.exe` file and select **Run as Administrator**.

2. Review the **End User License Agreement** and click **Next** to accept it.
3. On the **Install folder** screen, select the location where you want to install VDX Monitoring and click **Next**.
4. On the **Service Account** screen, choose one of the following **Built-in accounts** to run the services and then click **Next**:
 - Local System (Default)
 - Local Service
 - Network Service
 - Other

We recommend that you use the Local System (Default) account. If you use Windows Authentication to access SQL, you must select Other and provide credentials for a user that has permission to access the database.
5. On the **IIS Website** screen, configure the following settings and then click **Next**:
 - **Website name**
 - **Application pool**
 - **Built-in account**—This is the account that runs the IIS Website. Select **Other**.
6. On the **Database Connection** screen, configure the following settings and then click **Next**:
 - **Database Server**—Click **Load** to use the existing database server.
 - **Database**—The newly added SQL database.
 - **User**—The username for the database owner of the newly added database. This can be the SA (SQL Authentication) or the Windows credentials, depending on how the database user was configured.
 - **Password**—The password for the database owner of the newly added database.
 - **Install SQL Server 2017 Express**—For trial versions only. Select the checkbox to install SQL Server 2017 Express. When you select this option, the default username is gizmo and the password is randomly generated.
7. On the **RabbitMQ Connection** screen, configure the following settings and then click **Next**:
 - **Host**
 - **Port**
 - **SSL**—Select the checkbox to use SSL. The default port is 5671.
 - **Virtual Host**
 - **User**
 - **Password**
 - **Install RabbitMQ**—Ensure that you select this checkbox to ensure that you have the correct version of RabbitMQ. The installer uses the FQDN of this server as the host. The default username is gizmo and the password is randomly generated.
8. On the **GSX Downloads** screen, set the locations of the **Downloads** folder and the **Downloads URI** and click **Next**.

We recommend that you use the default values for both of these settings.

9. Review the information on the **Ready to install** screen and click **Install**.
10. When the installation is complete, you must restart the computer for the changes to take affect. We recommend that you wait for up to 2 minutes before you click the **Restart** button or restart the computer manually.
11. Clear the browsing cache in order to display updated data.

Install VDX Monitoring—Offline

You can download the installation files for VDX Monitoring and then perform the installation at a time when the server is offline. Use this procedure if you want to perform an offline installation.

You must have administrator privileges on the server where you are performing the installation. If you encounter any error messages during the installation, refer to ["Respond to Error Messages" on page 65](#)

Before you Begin

- Ensure that you are logged in with a local user profile and not a roaming profile. A local profile is stored directly on the computer, whereas a roaming profile is stored on a network server.
- Ensure that there are no open PowerShell sessions.
- Obtain the installation package from Martello:
<https://helpcenter.martellotech.com/s/downloads>
- After you download the archive, make sure you unblock it before you extract the files:
 - Right-click on the archive file.
 - Click **Properties**.
 - Select the **Unblock** checkbox.
 - Click **OK**.



Note: During the installation process, pop-up messages may display and prompt you to open an executable file. If this occurs, click **Cancel** to dismiss the pop-up message and continue to follow the installation wizard.

1. Right-click the `Martello.Vantage.DX.Monitoring.<version>.exe` file and select **Run as Administrator**.
2. Review the **End User License Agreement** and click **Next** to accept it.
3. On the **Install folder** screen, select the location where you want to install VDX Monitoring and click **Next**.

4. On the **Service Account** screen, choose one of the following **Built-in accounts** to run the services and then click **Next**:

- Local System (Default)
- Local Service
- Network Service
- Other

We recommend that you use the Local System (Default) account. If you use Windows Authentication to access SQL, you must select Other and provide credentials for a user that has permission to access the database.

5. On the **IIS Website** screen, configure the following settings and then click **Next**:

- **Website name**
- **Application pool**
- **Built-in account**—This is the account that runs the IIS Website. Select **Other**.

6. On the **Database Connection** screen, configure the following settings and then click **Next**:

- **Database Server**—Click **Load** to use the existing database server.
- **Database**—The newly added SQL database.
- **User**—The username for the database owner of the newly added database. This can be the SA (SQL Authentication) or the Windows credentials, depending on how the database user was configured.
- **Password**—The password for the database owner of the newly added database.
- **Install SQL Server 2017 Express**—For trial versions only. Select the checkbox to install SQL Server 2017 Express. When you select this option, the default username is gizmo and the password is randomly generated.

7. On the **RabbitMQ Connection** screen, configure the following settings and then click **Next**:

- **Host**
- **Port**
- **SSL**—Select the checkbox to use SSL. The default port is 5671.
- **Virtual Host**
- **User**
- **Password**
- **Install RabbitMQ**—Ensure that you select this checkbox to ensure that you have the correct version of RabbitMQ. The installer uses the FQDN of this server as the host. The default username is gizmo and the password is randomly generated.

8. On the **GSX Downloads** screen, set the locations of the **Downloads** folder and the **Downloads URI** and click **Next**.

We recommend that you use the default values for both of these settings.

9. Review the information on the **Ready to install** screen and click **Install**.

10. When the installation is complete, you must restart the computer for the changes to take affect. We recommend that you wait for up to 2 minutes before you click the **Restart** button or restart the computer manually.
11. Clear the browsing cache in order to display updated data.
During the installation, the wizard prompts you to select files from the archive that you downloaded.
12. Navigate to the `Martello.Vantage.DX.Monitoring.<version>_Offline_Requirements` folder and select the specified .exe file.

Validate the Installation

Use this procedure to ensure that the VDX Monitoring Web UI installed successfully and that the services are running. The validation script that you need for this procedure is included in the installation package.

Before you Begin

- Ensure than any installer windows are closed.
 - If you are using Windows authentication to connect to the SQL server, the validation script must be executed by the same user.
1. Right-click the `Martello Vantage DX Monitoring.<version>.Validation.Script.exe` file and select **Run as Administrator**.
 2. In the PowerShell console, review the results of the validation script:
 - Red—Indicates errors and that the installation was not successful. You need to take actions to address those errors.
 - Yellow—Provides information about the checks performed during the validation. No additional actions are required.
 - Green—Successful.

When the script is complete, all of the information that displayed in the console is saved to a log file.

3. To view the results in the log file, open the following file: `%ProgramData%\GSX Solutions\ValidationScript\<version>\Gsx.Gizmo.<version>_ValidationScriptOutput_<date>.log`.

Configure User Authentication

This section describes the optional authentication features that are available when you use VDX Monitoring in a standalone deployment. If you are using VDX Monitoring as part of the Vantage DX solution, you must configure user authentication in the Vantage DX portal. For more information, see the *Vantage DX Deployment Guide*. It is available on the Martello website at:

<https://martellotech.com/documentation/vantage-dx/>

If you are using VDX Monitoring in a standalone deployment and you want to use Azure Active Directory (AD) to authenticate users and provide role-based access to them, you must also configure single sign-on.

VDX Monitoring users are assigned one of the following roles, based on how they are configured in your Azure AD:

- Viewer—This user has read-only access to dashboards.
- Administrator—This user has read and write access and must be specified as an administrator in Azure AD.

Complete the procedures in the table below to enable authentication with Azure AD. After you complete these tasks, users can sign into VDX Monitoring using Azure AD credentials and security policies.

Task	Description
"Submit Your Domain" on page 40	To allow VDX Monitoring to authenticate with Azure AD, submit your domain to our support team.
"Enable HTTPS" on page 40	Use this procedure to enable HTTPS access to VDX Monitoring.
"Configure Single Sign-On" on page 40	Use this procedure to give VDX Monitoring permission to use your Azure AD instance to authenticate users.
"Configure Role-Based Access" on page 41	Use this procedure to give users access to VDX Monitoring based on their defined role in Azure AD.

Submit Your Domain

To allow communication between Azure AD and VDX Monitoring, our support team must whitelist the domain that you use to access VDX Monitoring. Follow this procedure to submit your domain to our support team.

1. Identify the VDX Monitoring URL used in your environment by end users.
 2. Send this URL to your Delivery Engineer or Customer Success representative. You can also contact the Cloud Team to forward your request.
- You will receive confirmation from your Delivery Engineer when your domain has been whitelisted.



Warning: Do not enable HTTPS until you receive confirmation from your Delivery Engineer that your domain is whitelisted.

Next Steps

- ["Enable HTTPS" on page 40.](#)

Enable HTTPS

Use this procedure to enable HTTPS access to VDX Monitoring. Perform this procedure on the Windows server where VDX Monitoring is installed.

Before you Begin

- Ensure that your server has a valid SSL security certificate.

1. Open the Internet Information Services (IIS) Manager application.
2. Select the **Default Web Site** and click **Bindings...**
3. Click **Add...**
4. In the **Type** list, select **https**.
5. In the **SSL Certificate** list, select your certificate.
6. Click **OK**.
VDX Monitoring is now listed on ports 80 and 443 (HTTP and HTTPS).
7. Restart IIS Manager.

Configure Single Sign-On

Perform this procedure in the VDX Monitoring Web UI. You must be a tenant administrator in Azure AD to perform this procedure.

Before you Begin

- ["Submit Your Domain" on page 40](#)
- ["Enable HTTPS" on page 40](#)

- Ensure that you have received confirmation from the Martello support team that your domain is whitelisted.
1. Click the **Settings** button and select **Authentication**.
 2. On the **Authentication** page, use the toggle to select **Enable Single Sign-On**. You are redirected on Azure AD Login page.
 3. Enter your Azure AD credentials to log in.
A dialog box lists the permissions that VDX Monitoring is requesting.
 4. Click **Accept**.
You are redirected to the VDX Monitoring application.

Configure Role-Based Access

Use this procedure to give users access to VDX Monitoring based on their defined role in Azure AD.

By default, VDX Monitoring provides administrator privileges to users who you add to an Azure AD group called GizmoAdmins. You can specify a different group in Azure AD for administrators, but you must create the GizmoAdmins group before you can edit this setting.

Before you Begin

- In Azure AD, create a group called GizmoAdmins and ensure that you add any users who need to have administrator privileges in VDX Monitoring.
- Ensure that you are logged into VDX Monitoring with an account that is an administrator of the Azure AD tenant and is part of the GizmoAdmins group.
- ["Configure Single Sign-On" on page 40](#)

1. Click the **Settings** button and select **Authentication**.
2. Optional. Perform this step only if you want to use a custom Azure AD group for administrators.
 - Click the edit icon next to **Gizmoadmins** and enter the name of your Azure AD group.
 - Log out of the VDX Monitoring Web UI, and then log in using an account that is an administrator of the Azure AD tenant and that is part of the group you specified.
3. On the Authentication page, click the **Enable Role Based Access** button.
A dialog box prompts you to give VDX Monitoring permission to access Azure AD.
4. Select the checkbox to **Consent on behalf of your organization**.
5. Click **Accept**.
You are redirected to VDX Monitoring.



Install the Robot Manager Service

Use the procedures in this section to install the Robot Manager service.

Complete the following tasks:

Task	Description
"Verify Exchange Server and PowerShell Endpoints" on page 42	Optional. If you are monitoring on-premises Exchange servers, ensure that Robot Manager machines have Exchange server and PowerShell access. Complete this procedure on each machine where you plan to deploy robots.
"Install Robot Manager" on page 43	Install the Robot Manager service. Complete this procedure at each location where you plan to deploy robots.

Verify Exchange Server and PowerShell Endpoints

Perform this procedure only if you are using VDX Monitoring to monitor on-premises Exchange servers. Use this procedure to verify that the machine where you plan to install the Robot Manager can communicate with the Exchange server, and that PowerShell is available.

Perform this procedure on each machine where you plan to deploy robots. You must be an administrator to perform this procedure.

Before you Begin

- Ensure that the user account for the Exchange server is properly configured. See ["Accounts" on page 26](#).
- Review the Exchange server workload requirements. See ["Exchange and Exchange Edge Server Requirements" on page 28](#)

1. Open PowerShell as Administrator.
2. To test the remote PowerShell connection on the Microsoft.Exchange endpoint, enter the following commands:

```
$Cred = Get-Credential <domainname\username>

$SessionOption = New-PSSessionOption -SkipCACheck -SkipCNCheck -
SkipRevocationCheck

$Session = New-PSSession -ConfigurationName Microsoft.Exchange -
ConnectionUrihttp://<YourServerName>/PowerShell -Credential $Cred
-SessionOption $SessionOption -Authentication Kerberos

Invoke-Command -Session $Session -ScriptBlock {Get-ExchangeServer}
```
3. To test the remote PowerShell connection on Microsoft.PowerShell endpoint, enter the following commands:

```
$Cred = Get-Credential <domainname\username>

$SessionOption = New-PSSessionOption -SkipCACheck -SkipCNCheck -
SkipRevocationCheck

$Session = New-PSSession -ConfigurationName Microsoft.PowerShell -
ConnectionUri http://<YourServerName>:5985/wsman -Credential $Cred
-SessionOption $SessionOption -Authentication Kerberos

Invoke-Command -Session $Session -ScriptBlock {Get-WmiObject -
Query "SELECT Name, Description, State, AcceptStop, AcceptPause
FROM Win32_Service"}
```



Tip: Change the port number to 5986 if you are using SSL.

Install Robot Manager

Use this procedure to install the Robot Manager service.

Perform this procedure on each machine where you plan to deploy robots.

1. In a browser, go to <http://<server-fqdn>/downloads/Gsx.RobotManager.zip> where <server-fqdn> is the FQDN of your VDX Monitoring server.
2. Extract the following files:
 - Gsx.RobotManager.msi—This file is used by the script.
 - Install-GsxRobotManager.ps1—This file is the script to run.
 - Transform.mst—This file is used by the script.

No specific location is required.
3. Open PowerShell as Administrator.
4. Enter the cmdlet `Set-ExecutionPolicy RemoteSigned`
5. Choose **[A] Yes to All**.
6. To run the `Install-GsxRobotManager.ps1` script, navigate to the script location path in PowerShell and run the following command:

```
.\Install-GsxRobotManager.ps1
```
7. Choose **[R] Run once** after the Security Warning.

8. In the Web UI, refresh the Robots management page and verify that all Robot Managers display the correct version.



Configure Robot Credentials

Robots require credentials to log into your applications and perform tests. For example, a robot that monitors Office 365 workloads requires credentials for an Office 365 user account.

VDX Monitoring provides placeholders for these credentials. These placeholders are assigned to workloads by default; when you edit them, the workloads are automatically updated to use the correct credentials. The following table lists the placeholders and the workloads that they are assigned to.

Table 5: User Credentials for Robots

Credential	Placeholder	Workload
Office 365 User	myusername@example.com	AAD
		Connect
		ADFS
		Exchange
		Free/Busy
		Exchange
		MAPI
		Exchange
		Online
		Exchange
		OWA
		Hybrid
		Mail
		Routing
		Internal
		Mail
		Routing
		Office 365
		Health
		Office
		3665
		WebApp
		OneDrive
		Roundtrip
		Mail
		Routing
		Sharepoint
		Page
		SMTP
		Gateway
		Teams
		Teams
		Advanced


Credential	Placeholder	Workload
Exchange Mailbox Server Credential	domain\username	Exchange DAG Exchange Mailbox Server
On-Premises User	myusername@example.com	Exchange Free/Busy Hybrid Mail Routing
Exchange Edge Server Credential	domain\username	Exchange Edge Server
Office 365 Echo User	myusername@example.com	Teams Advanced

Use the procedures in this section to edit the placeholders, and to create new credentials if you require additional robot accounts.

Task	Description
"Edit Monitoring Credentials" on page 47	Use the placeholders to create credentials that robots can use to access the applications that you want them to monitor.
"Add Monitoring Credentials" on page 48	Create additional credentials if your deployment requires them.

Edit Monitoring Credentials

Use this procedure to edit credentials that robots use to access workloads. Perform this procedure in the VDX Monitoring Web UI.

1. Select **Settings > Credentials** from the navigation panel.
2. On the credential that you want to edit, click  and select **Edit**.
3. Edit any of the following information as needed, and then click **Save**.
 - **Alias**—Type a brief name or description for the monitoring credential.
 - **Username**—Type the username that the robot will use.
 - **Password**—Type the password associated with the account.
 - **Confirm Password**—Type the password again for confirmation.

Next Steps

- ["Configure Workloads " on page 49](#)

Add Monitoring Credentials

Use this procedure to add credentials that robots can use to access workloads. Perform this procedure in the VDX Monitoring Web UI. For information about the number of monitoring accounts that you need, see ["Accounts" on page 26](#)

1. Select **Settings > Credentials** from the navigation panel.
2. Enter the following information, and then click **Add**.
 - **Alias**—Type a brief name or description for the monitoring credential.
 - **Username**—Type the username that the robot will use.
 - **Password**—Type the password associated with the account.
 - **Confirm Password**—Type the password again for confirmation.

Next Steps

- ["Configure Workloads " on page 49](#)



Configure Workloads

Complete the tasks in the following table.

Task	Description
"Create Monitoring Configurations" on page 49	For each workload that you want to monitor, create a configuration that specifies the parameters for your environment. Parameters include information such as credentials, addresses, port numbers, and other information specific to your network.
"Assign Configurations to Robot Managers" on page 50	Specify the applications that you want the robots to monitor at each site.
"Add Location Tags to Robot Managers" on page 51	Configure location tags to display robots on a map in Power BI.

Create Monitoring Configurations

For each workload that you want to monitor, you need to create a configuration that specifies the parameters for your environment. For example, depending on the workload that you want to monitor, you may need information such as credentials, addresses, port numbers, or other information specific to your network. After you create a configuration, you can assign it to a robot to monitor.

1. Select **Settings > Configurations** and click the **Add** button.
2. From the **Create configuration** panel, select the workload you want to monitor, then click **Next**.
3. Enter a name for the configuration. The name you enter displays on the interface.
4. Complete the settings for the workload. You can click the tooltip to see information about each setting.
5. Click **Save**.



Tip: You can edit a configuration, duplicate it, or remove it by clicking the **Actions** button and selecting an option.

Next Steps

- ["Assign Configurations to Robot Managers" on page 50](#)

Assign Configurations to Robot Managers

Use this procedure to select the applications that you want the robots at each site to monitor.

Before you Begin

- ["Create Monitoring Configurations" on page 49](#)
- This procedure uses local system credentials. If there is a proxy server installed between the Robot Manager machine and the robot test site, which requires authentication, you cannot use local system credentials. In that case, ensure that you use credentials that can authenticate with the proxy server and that can access the Windows service where the monitored application runs.

1. Select **Settings > Robots** and select the Robot Manager that you want to configure.
You can select several Robot Managers at once, or you can check the **Select all in page** box to select all the Robot Managers displayed on the current page.
2. Click **Select configurations**.
3. From the **Configurations** drop-down list, select the workloads that you want to monitor.
4. In the **Windows Service credentials** section, use the **Local system** toggle to select the credentials you want the robot to use:
 - On—The robots use the local system credentials to log into the workloads.
 - Off—Choose this option only if there is a proxy server installed between the Robot Manager machine and the robot test site, which requires authentication. Use the drop-down list to select the credentials that the robots can use to authenticate with the proxy server.
5. Click **Deploy Config**.
The configurations display on the Robots management page. A status is shown for each:
 - Green—Indicates when the last scan occurred.
 - Blue—Pending status. Scanning is in progress.
 - Red—Indicates an issue with the configuration. A tooltip is available for red statuses. Click on it to display information about the issue.



Tip: You can remove a configuration from a Robot Manager by clicking the X on the configuration name.

Next Steps

- ["Add Location Tags to Robot Managers" on page 51](#)

Add Location Tags to Robot Managers

Use this procedure to add a tag that indicates the location of your robots. Tags are required for Power BI to display your robots on a map.

1. Select **Settings > Robots** and select the Robot Manager that you want to configure.
You can select several Robot Managers at once. You can check the **Select all in page** box to select all the Robot Managers displayed on the current page.
2. Click **Add Tags**.
3. In the **Key** field, select **Location**.
4. In the **Value** field, enter the name of a location or select from a list of existing tags. Use the following format when you enter the location: <City, Region, Country> where <Country> is the 2-letter country code. For example: Ottawa, Ontario, CA.
5. Click the **+** button to confirm the tag and then click **Add**.



Deploy Power BI

Use the information in this section to deploy Microsoft Power BI with VDX Monitoring.

Task	Description
"Import the Power BI Template" on page 52	Import the Power BI templates for the workloads that you want to monitor in VDX Monitoring.
"Share a Report Using Power BI Service" on page 53	Share the report created from the Power BI Template with others using the Power BI Service.

Import the Power BI Template

Use the following procedure to import the VDX Monitoring template into Microsoft Power BI and load the report data.



Warning: We strongly recommend that you do not make any changes to this template. Any changes are unsupported and may result in errors or inconsistencies in your reported data, or an inability to retrieve data to populate this report.

Before you Begin

- Download and install the latest version of Power BI. For information and instructions see: <https://docs.microsoft.com/en-us/power-bi/fundamentals/desktop-get-the-desktop>
- Ensure that you have the latest version of the Power BI Template. The template is included in the installer archive.
- Ensure that you have a Power BI license to publish reports. We recommend a Power BI Pro license so that you can share your reports with a team.

1. Double click the `Vantage DX Monitoring Report-<version>.pbix` template file to launch Power BI Desktop and load the template.
2. Click the link at the bottom of the **Welcome** page and enter the Power BI license associated with your Office 365 account.
3. Provide the following information, then click **Load**:
 - Server—The SQL server database to use.
 - Database—The name of the database.
 - Range Start—Use 01/01/2020 or any date prior to the installation of VDX Monitoring.
 - Range End—Use 01/01/2025 or any date later than today's date.
 - Offset hour—If you want the reports to display your local time zone, enter the number of hours that your local time zone is offset from the UTC time zone. For example, if your local time zone is UTC minus 3 hours, enter -3. If your local time zone is UTC plus 4.5 hours, enter 4.5.
4. On the **SQL Server database** window, select the **Database** tab, provide the credentials for the SQL Server database, then click **Connect**.
5. On the **Native Database Query** page, click **Run**.
The template loads the data from SQL Server.

Next Steps

If you want to publish the report, see

Share a Report Using Power BI Service

You can publish reports and dashboards created in Power BI Desktop directly to a workspace using Power BI Service. If you have a free Power BI account, you can publish a report to your own workspace. If you have a Power BI Pro license, you can share a report with others.

Before you Begin

To publish and share reports you must have:

- A workspace created in Power BI. See <https://docs.microsoft.com/en-us/power-bi/collaborate-share/service-create-the-new-workspaces>.
- A Power BI license or a Power BI Pro license.

1. In Power BI Desktop, open the VDX Monitoring report template.
2. From Power BI Desktop Home menu, click **Publish**.
3. Save the report when prompted.
4. Supply your Power BI credentials if prompted.
5. On the **Publish to Power BI** page, click the workspace where you want to share the report, then click **Select**.
6. After the report is generated, click the link to open the report in Power BI. Power BI opens in a browser window and the report is displayed.

7. Click **Share** to send the report by email, or to embed the report in SharePoint or to a website or portal.

**Tip:**

To ensure that the data in your Power BI report is refreshed regularly, use the scheduling feature described in the following article:

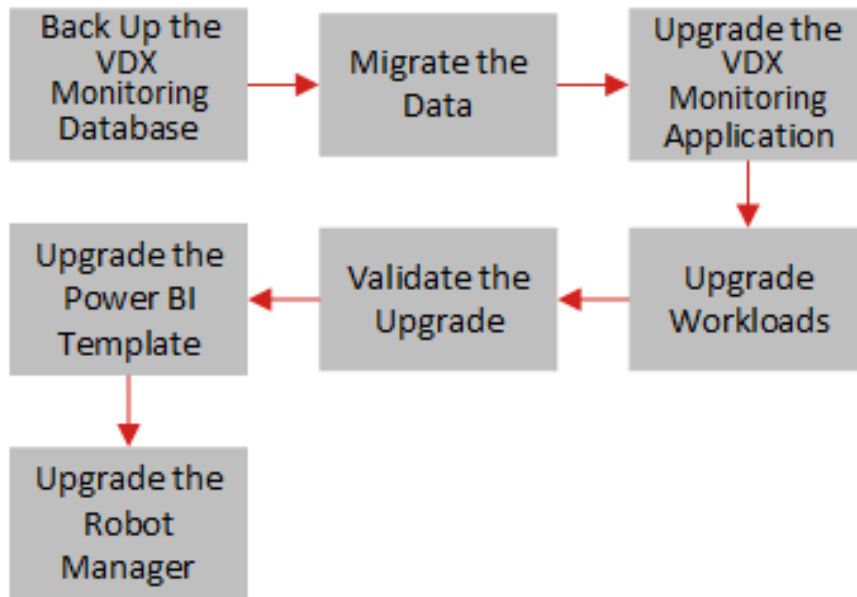
<https://docs.microsoft.com/en-us/power-bi/connect-data/refresh-scheduled-refresh>

We recommend that you schedule a daily backup, before business hours.

Upgrade Process

The following diagram provides an overview of the VDX Monitoring upgrade process.

Figure 7: Upgrade Process



Time Requirements

The time required to perform an upgrade depends on your deployment. Typical upgrades require a maintenance window of 1 to 4 hours.

Supported Upgrade Paths

You can upgrade to VDX Monitoring 3.20 directly from Release 3.15.3.



Upgrade the VDX Monitoring Application

Use the procedures in this section to upgrade the VDX Monitoring application.

Task	Description
"Upgrade Third-Party Components" on page 56	We recommend that you upgrade third-party components that are used by Vantage DX Monitoring; however, this procedure is optional.
"Retrieve Account and Service Information" on page 57	Retrieve service account and IIS user information from the current installation. You need this information during the upgrade process.
"Upgrade the Application" on page 57	Upgrade the VDX Monitoring Web UI.
"Validate the Upgrade" on page 58	Run a script to validate that the upgrade was successful.
"Upgrade the Power BI Template" on page 58	Import the VDX Monitoring templates for the new release into Microsoft Power BI.

Upgrade Third-Party Components

We recommend that you upgrade the third-party components that are used by Vantage DX Monitoring.

Vantage DX Monitoring 3.20 uses RabbitMQ 3.12.6 and Erlang OTP 25.3.2.6. We have provided a script to help you automatically update these components. The script, named `Installer.RabbitMQ.zip`, is included in the archive `vdx-monitoring-offline.zip`. To update the components, you must run the script before you upgrade the Vantage DX Monitoring application.

You can download the archive from the Martello Help Center at:

<https://helpcenter.martellotech.com/s/downloads>

1. On the machine where Vantage DX Monitoring is installed, download the file `Installer.RabbitMQ.zip`.
2. After you download the archive, make sure you unblock it before you extract the files:
 - Right-click on the archive file.
 - Click **Properties**.
 - Select the **Unblock** checkbox.
 - Click **OK**.
3. Open a Powershell session as an Administrator.
4. Navigate to the location where you extracted the files.
5. Launch the script: `./UpgradeRabbitMQ.ps1`
 The script uninstalls the previous versions of RabbitMQ and Erlang, removes unnecessary files and installs the new versions.

Retrieve Account and Service Information

Use this procedure to retrieve the following information from the currently installed version:

- The service account.
- The IIS user.

The wizard prompts you to enter this information when you install the VDX Monitoring Web UI.

1. To retrieve the service account used in the currently installed version, open PowerShell and run the following command:
`Get-WmiObject win32_service -Filter "Name LIKE 'Gsx.%'" | format-table name, startname`
 This command lists the current services in the `name` column and the service account that started each of them in the `startname` column.
2. To retrieve the IIS User, search for IIS and launch it.
3. Double-click on the IIS Server, select Application Pools, and locate the App Pool. The information is in the Identity column.
 The default App Pool name for VDX Monitoring is `DefaultAppPool`.

Upgrade the Application

Use this procedure to upgrade the VDX Monitoring application.

Before you Begin

- Optional. ["Upgrade Third-Party Components" on page 56](#).
- ["Retrieve Account and Service Information" on page 57](#)

- Backup your data.
- Ensure that there are no open PowerShell sessions.
- Sign in as the same user that installed the application initially.
- Ensure that the user is signed in with administrator rights.
- Download the upgrade archive, called `vdx-monitoring-offline.zip`, and extract the files. To download the archive, log into the Martello Help Center and download the files from the following URL:
<https://helpcenter.martellotech.com/s/downloads>

Validate the Upgrade

Use this procedure to ensure that the VDX Monitoring Web UI installed successfully and that the services are running. The validation script that you need for this procedure is included in the installation package.

Before you Begin

- Ensure that any installer windows are closed.
- If you are using Windows authentication to connect to the SQL server, the validation script must be executed by the same user.

1. Right-click the `Martello Vantage DX Monitoring.<version>.Validation.Script.exe` file and select **Run as Administrator**.
2. In the PowerShell console, review the results of the validation script:
 - Red—Indicates errors and that the installation was not successful. You need to take actions to address those errors.
 - Yellow—Provides information about the checks performed during the validation. No additional actions are required.
 - Green—Successful.When the script is complete, all of the information that displayed in the console is saved to a log file.
3. To view the results in the log file, open the following file: `%ProgramData%\GSX Solutions\ValidationScript\<version>\Gsx.Gizmo.<version>_ValidationScriptOutput_<date>.log`.

Upgrade the Power BI Template

Use the following procedure to import the VDX Monitoring templates for the new release into Microsoft Power BI.

Before you Begin

- Download and install the latest version of Power BI. For information and instructions see: <https://docs.microsoft.com/en-us/power-bi/fundamentals/desktop-get-the-desktop>

- Ensure that you have the latest version of the Power BI Template. The template is included in the installer archive.
 - Ensure that you have a Power BI license to publish reports. We recommend a Power BI Pro license so that you can share your reports with a team.
1. Double click the `Vantage DX Monitoring Report-<version>.pbix` template file to launch Power BI Desktop and load the template.
 2. Click the link at the bottom of the **Welcome** page and enter the Power BI license associated with your Office 365 account.
 3. Provide the following information, then click **Load**:
 - Server—The SQL server database to use.
 - Database—The name of the database.
 - Range Start—Use 01/01/2020 or any date prior to the installation of VDX Monitoring.
 - Range End—Use 01/01/2025 or any date later than today's date.
 - Offset hour—If you want the reports to display your local time zone, enter the number of hours that your local time zone is offset from the UTC time zone. For example, if your local time zone is UTC minus 3 hours, enter -3. If your local time zone is UTC plus 4.5 hours, enter 4.5.
 4. On the **SQL Server database** window, select the **Database** tab, provide the credentials for the SQL Server database, then click **Connect**.
 5. On the **Native Database Query** page, click **Run**.
The template loads the data from SQL Server.



Upgrade the Robot Manager Service

The Robot Manager service has been updated for VDX Monitoring Release 3.20. If you are upgrading from a previous release of VDX Monitoring, we strongly recommend that you upgrade your deployments of the Robot Manager service.

You can verify the current version of each Robot Manager on the Robots management page. The Release 3.20 version for the Robot Manager software is 4.6.0.0.

Use the procedure in this section to upgrade the Robot Manager service.

Task	Description
"Upgrade the Robot Manager Service" on page 60	Perform this procedure on each computer where Robot Manager is installed.

Upgrade the Robot Manager Service

Use this procedure to upgrade the Robot Manager service.

Before you Begin

- Optionally, to verify the currently installed version of the Robot Manager service, check the version number for the Robot Managers on the Web UI Robots management page.
- Uninstall the current version of Robot Manager.

1. In a browser, go to `http://<server-fqdn>/downloads/Gsx.RobotManager.zip` where `<server-fqdn>` is the FQDN of your VDX Monitoring server.
2. Extract the following files:
 - `Gsx.RobotManager.msi`—This file is used by the script.
 - `Install-GsxRobotManager.ps1`—This file is the script to run.
 - `Transform.mst`—This file is used by the script.

No specific location is required.

3. Open PowerShell as Administrator.
4. Enter the cmdlet `Set-ExecutionPolicy RemoteSigned`
5. Choose **[A] Yes to All**.
6. To run the `Install-GsxRobotManager.ps1` script, navigate to the script location path in PowerShell and run the following command:
`.\Install-GsxRobotManager.ps1`
7. Choose **[R] Run once** after the Security Warning.
8. In the Web UI, refresh the Robots management page and verify that all Robot Managers display the correct version.

Backup and Restore

Use the information and procedures in this section to perform the following tasks.

Task	Description
"Back up the VDX Monitoring Environment" on page 62	Create a backup of all the components in the VDX Monitoring environment.
"Restore the VDX Monitoring Web UI" on page 62	Restore VDX Monitoring after a server failure, or if you need to move VDX Monitoring from one virtual machine to another.

Back up the VDX Monitoring Environment

To be able to recover your VDX Monitoring environment, you must create backups for the following components:

- **Windows server registry**—On the server that hosts the VDX Monitoring Web UI, export the registry "Computer\HKEY_LOCAL_MACHINE\SOFTWARE\GSX Solutions" in a .reg file.
- **RabbitMQ**—All connection settings to RabbitMQ are stored in the `GizmoRegistry.reg` file. Note that passwords are encoded, not encrypted. Ensure that you have a record of the passwords.
- **SQL database**—All connection settings to the database are stored in the `GizmoRegistry.reg` file. Note that passwords are encoded, not encrypted. Ensure that you have a record of the passwords.
- **Robot Manager Installer**—Create a backup of the Robot Manager Installer, which is available in this default location:
`C:\ProgramData\Gsx Solutions\Downloads\Gsx.RobotManager.zip`

Restore the VDX Monitoring Web UI

Use the following procedure in the event that the machine that hosts VDX Monitoring has failed, or if you need to move VDX Monitoring from one machine to another.

While the server that hosts the VDX Monitoring Web UI is offline, it cannot receive messages from the Robot Manager services. Messages sent by the Robot Manager services during this time are lost. You can find errors related to these messages in the log file. The VDX Monitoring Web UI begins receiving messages from the Robot Manager services as soon as the restore operation is complete and the server is online.

Before you Begin

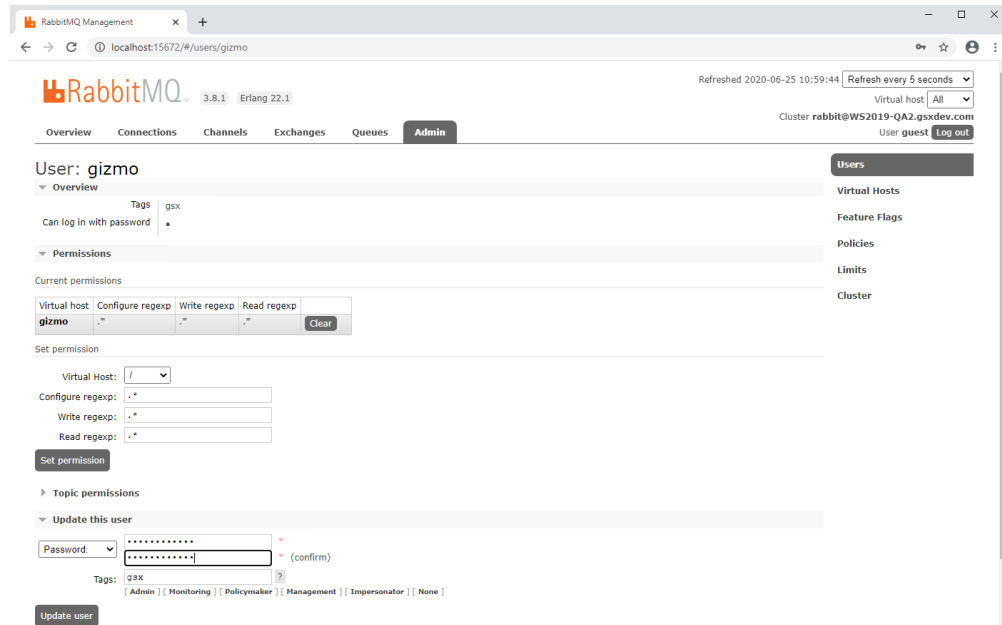
- Right-click the `GizmoRegistry.reg` file and select **Run as Administrator**; this populates the registry as if VDX Monitoring is already installed.
1. Right-click the `Martello.Vantage.DX.Monitoring.<version>.exe` file and select **Run as Administrator**.
 2. Enter the Database Connection settings:
 - Database Server
 - Database
 - Username and Password



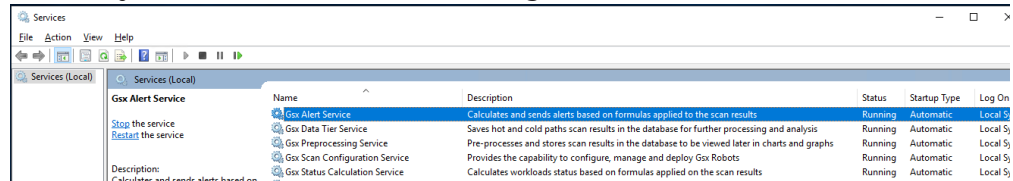
Warning: Do not select “Install SQL Server 2017 Express”.

3. In a case that RabbitMQ has to be installed on the same dedicated machine as VDX Monitoring, select **Install RabbitMQ** in the wizard:

4. Update the VDX Monitoring username and password in the RabbitMQ management web page to match the username and password that was set previously from the machine that was used to create the backup:



5. Replace the download file with the backup one:
C:\ProgramData\Gsx Solutions\Downloads\Gsx.RobotManager.zip
6. Run the GizmoRegistry.reg again to override the RabbitMQ settings.
7. Manually restart all the VDX Monitoring Services.





Troubleshooting

Use the information and procedures in this section to troubleshoot installation issues.

Task	Description
"Respond to Error Messages" on page 65	Respond to error messages that occur during an installation or upgrade.
"Repair an Installation" on page 67	Use the Repair feature to address installation issues.
"Submit a Support Ticket" on page 67	If the installation fails or issues occur that are not addressed by the other procedures in this section, submit a ticket to our support team.

Respond to Error Messages

Use the information in the table below if you encounter error messages during the installation.

Table 6: Error Messages

Error Type	Description
Database connection error	<p>If you select Windows Authentication when the wizard prompts you to configure the Database Connection, you might encounter a failure connecting to the database server. The following error message displays:</p> <p>Failed connecting to DB server The type initializer for 'System.Data.SqlClient.SqlConnection' threw an exception.</p> <p>To fix this issue, click OK on the error message, cancel the installation and then start the installation again.</p>
RabbitMQ connection error	<p>If VDX Monitoring cannot connect to RabbitMQ, the following error message displays:</p> <p>Could not load file or assembly 'RabbitMQ.Client, Version=5.0.0.0, Culture=neutral, PublicKeyToken=89e7d7c5feba84ce' or one of its dependencies. The system cannot find the file specified.</p> <p>To fix this issue, click OK on the error message, cancel the installation and then start the installation again.</p>
IIS download files errors	<p>If VDX Monitoring cannot download IIS files an error message is displayed.</p> <p>To fix this issue, click OK on the error message, cancel the installation and then start the installation again.</p>
Certificate store access error	<p>If VDX Monitoring cannot access the certificate store, an error message is displayed.</p> <p>To fix this issue, click OK on the error message, cancel the installation and then start the installation again.</p>

Error Type	Description
	When you upgrade VDX Monitoring, you may encounter the following error in the installer interface:
Files in use error	<p>Files in use. The following applications are using files that need to be updated by this setup. Click 'Ignore' to continue setup (reboot may be required). Click 'Abort' to abort setup. Click 'Shut down' to close the applications.</p> <p>To resolve this issue, close all PowerShell consoles and click Ignore.</p>
Failure to execute a command during an upgrade	<p>When you upgrade VDX Monitoring, the following error can occur in the installer interface if you do not close your PowerShell sessions first:</p> <pre>Failed executing command "C:\Windows\system32\Windows PowerShell\v1.0\powershell.exe" -Command "& 'C:\Program Files\GSXSolutions\PowerShell\Installer.GsxManagementShell\CopyDependencies.ps1'</pre> <p>To resolve this issue, ensure that all of your PowerShell sessions are closed and then click the Retry button to resume the upgrade.</p>

Repair an Installation

If you encounter issues during the installation, use the Repair feature.

1. In Windows, open the **Control Panel** and select **Programs and Features**.
2. Right-click on VDX Monitoring and select **Change**.
3. In the pop-up window, click **Repair**.

Next Steps

- If this issue is not resolved, ["Submit a Support Ticket" on page 67](#)

Submit a Support Ticket

If the installation fails or issues occur that are not addressed by the Repair feature, submit a support ticket. Use this section to prepare the information that you need to provide when you submit a support ticket.

Collect the following information:

- **Problem description**—Describe the symptom or failure. Include as many details as possible. Indicate whether this was a new installation, or an upgrade.
- **Screen captures**—Provide screen captures of the errors.

- **VDX Monitoring logs**—Collect installation logs and the microservices logs by creating a zip file that includes following folders located at `C:\ProgramData\Gsx Solutions\`:
 - Alert
 - Data Tier
 - Installer Logs; if you are using Windows Server 2019, these logs may be located in the Temp directory.
 - Preprocessing
 - Scan Configuration
 - Status Calculation
 - WebUI
- **Windows logs**—Windows Event Application and System Logs saved as .evtx files.
- **Environment specifics**—Information about the operating environment, such as:
 - The server OS and version.
 - SQL database information, such as location, version, and authentication method.
 - The RabbitMQ version if you have an existing installation and did not use the version in the VDX Monitoring installation package.
 - A list of installed programs.



Note: Ensure that you close the VDX Monitoring install wizard before you create the zip file.

After you have collected all of the information, use the following link to submit a support request:

<https://helpcenter.gsx.com/hc/en-us/requests/new>



Contact

For additional information, please visit our support page at <https://support.martellotech.com>, or email our Support Team at vdx-support@martellotech.com.

Tell Us How We Did

How did we do? Did you find the content you needed? Your feedback will help us improve our documentation.

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