# Installation Guide of Goliath Performance Monitor

## Goliath Performance Monitor Prerequisites

### Goliath Server

* Virtual Machine or Physical Server
* Windows Server 2012 R2 – 2022 64bit
  + Windows installation English OS required w/o any language packs installed
* Static IP address defined
* The Goliath server uses IIS. Ensure no additional IIS web sites are running on the Windows server where Goliath is installed. Do not install IIS prior to the technology install.
* The Goliath server must only have 1 enabled NIC card
* For larger environments leveraging VMware or Citrix hypervisor monitoring, and/or the Epic System Pulse module, it is recommended to configure the Goliath VMA on a separate machine.

#### Size Recommendations

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Proof of Concept Evaluation** | **Small** | **Medium** | **Large** | **Extra Large** | **XXL** |
| **Total # of Citrix/VMware Horizon Application & VDI sessions (daily max)** | N/A | Up to 1,500 | Up to 3,000 | Up to 8,000 | Up to 15,000 | Above 15,000 |
| **CPU** | 8vCPU | 8vCPU | 8vCPU | 12vCPU | 16vCPU | Technical discussion required for recommendations |
| **Memory** | 12 GB RAM | 12 GB RAM | 12 GB RAM | 12 GB RAM | 12 GB RAM |
| **Drive space** | 30GB | 50 GB | 50 GB | 100 GB | 100 GB |
| **Separate VMA Server** | N/A | N/A | N/A | Yes | Yes | Yes |

### Database

* Microsoft SQL Server 2016 – 2019
  + Proof of Concept & Product Evaluations use embedded SQL Express 2019 by default. No remote SQL Server or service accounts necessary.
    - Please Note, SQL Express 2019 does not support Windows Server 2012R2.
  + If using an already existing SQL server installation, make note of which listening port is being used by SQL.
* Windows Active Directory Service Account that the installer will grant the database role membership of db\_owner to the Goliath database is required for Remote SQL Server connectivity (on going)
  + This account must also be a Windows Administrator on the Goliath Server
* Windows Active Directory Account with sysadmin rights to the SQL Server required for installation (one time use).
  + This account must also be a Windows Administrator on the Goliath Server
* SQL Server Configuration Recommendations:
  + Set the Max Server Memory value as indicated in the below chart
    - SQL Server Standard editions have a max resource limit of 28 vCPU and 128GB RAM. If the database server requires more than that, Enterprise Edition SQL is needed.
  + A dedicated, not shared, SQL Server is needed. As a monitoring tool GPM is highly transaction requiring dedicated resources.

#### Sizing Recommendations:

(Assumes the SQL Server is remote, dedicated, and the default retention is configured)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Proof of Concept Evaluation** | **Small** | **Medium** | **Large** | **Extra Large** | **XXL** |
| **Total # of Citrix/VMware Horizon Application & VDI sessions (daily max)** | N/A | Up to 1,500 | Up to 3,000 | Up to 8,000 | Up to 15,000 | Above 15,000 |
| **CPU** | N/A | 6vCPU | 8vCPU | 16vCPU | 32vCPU | Technical discussion required for recommendations |
| **Memory** | N/A | 32 GB RAM | 64 GB RAM | 128 GB RAM | 256 GB RAM |
| **# of TempDB’s** | N/A | 6 | 8 | 8 | 8 |
| **Max Server Memory (MB)** | N/A | 25500 | 51245 | 102490 | 245760 |
| **Drive space** | N/A | Please consult our [Database Estimator](https://goliathpm.s3.amazonaws.com/Consulting/GPM-Database-Estimator-Tool.xlsx) document | | | |
| **Drive Type** | N/A | N/A | N/A | SSD drives w/TB of storage | SSD drives w/TBs of storage |
| **SQL Server** | N/A | Shared or Dedicated | Shared or Dedicated | Dedicated | Dedicated | Dedicated |

### Firewall

* Goliath Server
  + Console Access
    - HTTPS 443\* opened inbound to the Goliath Server and outbound from the Goliath Server to the environment
  + Agent Communication
    - HTTPS 443\* opened inbound from the agent location to Goliath Server (agent connectivity)
    - TCP 135, 445, 49164 open outbound from the Goliath Server to the agent location (remote agent installation via web console)
  + Hypervisor Monitoring
    - HTTPS 443 opened outbound from the Goliath Server for connection to VMware vCenter
    - HTTP 80 opened outbound from the Goliath Server for connection to Citrix XenServer Pool Master
    - HTTPS 443\* opened outbound from the Goliath Server to Microsoft Hyper-V Host/VM
  + Epic System Pulse Module
    - HTTPS 443 opened outbound from the Goliath Server to Epic System Pulse
* Goliath Intelligent Agent Location
  + HTTPS 443\* opened outbound from the agent location to the Goliath Server (agent connectivity)
  + TCP 135, 445, 49164 open inbound from the Goliath Server to the agent location (remote agent installation via web console)
* Additional Considerations
  + Goliath makes use of Node.JS for various workflows. In order for this to download properly, the main Goliath server will need internet access (This is only needed during installation of GPM)

\* Default ports listed, these maybe be modified however the server and agent port must be the same.

### Hypervisor Monitoring

#### VMware vSphere

* Versions 4.0 to 8.0 supported
* Service account with Read-Only rights to vCenter (also known as Global Permission) and propagate to children enabled are required

#### Citrix Hypervisor

* Versions 5.5 to 8.2 supported
* Service account with Read Only Rights required
* NVIDIA GRID K1/K2 card monitoring supported

#### Microsoft Hyper-V

* Windows Server 2012 R2 – 2022
* Administrator level Credentials to access the Hyper-V Hosts/Servers

### Application & Desktop Virtualization Monitoring

#### Citrix Virtual Apps and Desktops (CVAD)

* Versions 7.6 to 2209 supported
  + Windows 8-10 (Desktop), 2012 R2 – 2022 (Server)
* Service Account with the following privileges is required for Inventory & Metric Collection:
  + Read-Only Admin within Citrix Studio
  + Windows Administrator on the Delivery Controller
    - requires permission to run a windows service
  + If using Citrix PVS, the service account must also be a member of the PVS Farm Administrator group and have Windows Admin Rights on the Provisioning Servers, also to run a service.
* Citrix OData 3.0 (Check your OData version)
* Citrix Profile Management service is required to be installed and running on the VDA in order to collect Logon Duration metrics.
  + Citrix Profile Manager needs to be installed on the VDA and the service needs to be started even if you are not using User profile Management for managing user profiles.
* PowerShell 3.0 or newer required on the Delivery Controllers and VDAs
* Full Microsoft SQL Server suggested for full implementations of Goliath Performance Monitor
* Support for real-time process metrics can be resource intensive requiring us to determine viability that we would test in the implementation.

#### Citrix DaaS (Cloud)

* Citrix Customer ID
* Citrix Client ID
* Citrix Secret Key
* Citrix Profile Management service is required to be installed and running on the VDA in order to collect Logon Duration metrics.
  + Citrix Profile Manager needs to be installed on the VDA and the service needs to be started even if you are not using User profile Management for managing user profiles.
* PowerShell 3.0 or newer required on the VDA
* Full Microsoft SQL suggested for full implementations of Goliath Performance Monitor
* Support for real-time process metrics can be resource intensive requiring us to determine viability that we would test in the implementation.

#### VMware Horizon

* Versions 6.0 to 8 2209 supported
  + Windows 8-10 (Desktop), 2012 R2 – 2022 (Server)
* Service Account with the following privileges:
  + Read-Only Admin within the Horizon Admin Console
* PowerShell v3.0 or newer required
* Full Microsoft SQL suggested for full implementations of Goliath Performance Monitor
* Support for real-time process metrics can be resource intensive requiring us to determine viability that we would test in the implementation.

### Epic System Pulse Module

* Service Account with Read-Only Rights
* HTTPS w/ Username enabled for Outgoing Data Services via Epic System Pulse Configuration Editor
* HTTPS enabled for Incoming Data Services via Epic System Pulse Configuration Editor
* Valid SSL Certificate applied to Epic System Pulse Server
  + A copy of the SSL Certificate (\*.cer file) is needed for the configuration
* Epic System Pulse Server Address
* Epic resource group name that you'll be connecting to
* Epic resource type id for the above resource group

### Windows Mobile Device/Tablet Monitoring

* Windows 8-10

### Goliath Agent Specifications

* Virtual Machine or Physical Server
  + Windows Server 2012 R2 - 2022
    - Goliath version 11.8.0 and newer
  + Windows 8 - 10
  + Unix/Linux & Mac up to kernel version 5.1x
* Goliath Agent Performance Specs
  + Avg <=2% CPU
    - An additional 2-3% can be added depending on Citrix/Horizon user density by native collection tools e.g., WMI
  + 40 MB on Disk
  + ~ 150 MB RAM
* Citrix DDC agent version 11.8.3.2 must be used for versions of Citrix OData 1.0 and 2.0

### Supported Browsers & Screen Resolutions

The Goliath Performance Monitor user interface is best viewed with a screen resolution of 1920x1280. Minimally, 1200x1080 should be used. For lower resolutions, you will need to use the browser zoom options. For the best experience accessing the Goliath web console, we recommend using the latest version of your preferred browser from the list of supported browsers below.

* Chrome v63 and later
* Firefox v50 and later
* Microsoft Edge v85.x and later

### Supported Languages

Goliath Technologies supports user experience monitoring for the following:

#### Citrix Virtual Apps and Desktops:

* Windows installation English OS, Spanish OS (Unicode not supported)
  + Spanish language pack on English OS supported
* Windows installation of German and French
  + Support for Session details and ICA Latency metrics
  + Partial support for Logon Duration metrics
  + No language pack support

#### VMware Horizon:

* Windows installations English OS

### Antivirus, Security and Network Solution Exclusions

While not a-typical, we have been exposed to client environments which require antivirus and/or endpoint security filtering, or exclusion rules needing to be implemented due to the cybersecurity software conflicting with the Goliath Intelligent Agent (i.e. CrowdStrike, Carbon Black, McAfee, etc). For that reasoning, we recommend implementing exclusion rules which consist of the following. Please Note: Directory level exclusions are required on the machines where the agent is installed due to the fact that some files are created dynamically in the Goliath application directories.

* Main Goliath Server
  + Directory Exclusions:
    - \Program Files\MonitorIT\\*\* – This is the install directory of the Goliath Server, the local Agent, and relevant files (please include all subfolders/files)
    - \Windows\System32\inetsrv\\*\* - This is the install directory of the IIS Web Server
    - Ensure recursive exclusions for the subfolders is allowed
  + Process Exclusions:
    - RPMAgent.exe – This is the process which is launched by the Agent’s Service
    - RPMCCS.exe – This is the process which is launched by the Server’s Service
    - AgentService.exe – Process supporting the Agent’s Windows Service
    - RestartService.exe – Process supporting the Agent’s Windows Service
    - w3wp.exe - This is the process for the IIS Web Server
    - Java.exe – Supports hypervisor API communication
    - MonitorITService.exe - Process supporting the Goliath Server’s Windows Service
    - Stunnel.exe – (Optional component) Used to support sending alerts and notifications via SSL/TLS enabled mail servers
    - LogonSimulator.exe - (Optional Component) Used if GAAM is running locally
* VMs/Servers with Agents on them (Citrix machines, VMs, etc.)
  + Directory Exclusions:
    - Paths: “\Program Files\MonitorIT” & “C:\Users\All Users\Goliath”
    - Ensure recursive exclusions for the subfolders is allowed
  + Process Exclusions:
    - RPMAgent.exe – This is the process which is launched by the Agent’s Service
    - AgentService.exe – Process supporting the Agent’s Windows Service
    - RestartService.exe – Process supporting the Agent’s Windows Service
* Goliath Master Agent:
  + Directory Exclusions:
    - \Program Files\MonitorIT\\*\* - This is the install directory of the Master Agent
    - \Windows\System32\inetsrv\\*\* - This is the install directory of the IIS Web Server
    - Ensure recursive exclusions for the subfolders is allowed
  + File/Process Exclusions:
    - RPMAgent.exe – This is the process which is launched by the Agent’s Service
    - AgentService.exe – Process supporting the Agent’s Windows Service
    - RestartService.exe – Process supporting the Agent’s Windows Service
    - w3wp.exe - This is the process for the IIS Web Server for the agent connections
    - MasterAgentModule.dll - file used for IIS Web Server site
    - Java.exe – Supports hypervisor API communication
    - LogonSimulator.exe - (Optional Component) Used if this is also the GAAM Launch Endpoint

### Goliath Master Agent

* Goliath Master Agent Machine
  + Virtual Machine or Physical Server
  + Windows Server 2012 R2 – 2022 64 bit
  + Static IP address
  + Minimum of 2 vCPU
  + Minimum of 4 GB RAM
  + Minimum of 4 GB Disk Available
  + The Goliath server uses IIS. Ensure no additional IIS web sites are running on the Windows server where Goliath is installed. Do not install IIS prior to the technology install.
* Firewall
  + Goliath Master Agent
    - HTTPS 443 opened outbound for agent connection to the main Goliath Server
    - HTTPS 443 opened inbound for agent connections
    - TCP 135, 445, 49164 open outbound for remote agent installation via web console
  + Goliath Intelligent Agent
    - HTTPS 443 opened outbound for agent connection to the Goliath Master Agent
    - TCP 135, 445, 49164 open inbound for remote agent installation via web console

### Goliath VMA

For larger environments leveraging VMware or Citrix hypervisor monitoring, and/or the Epic System Pulse module, it is recommended to configure the Goliath VMA on a separate machine. Please see the below grid for VMA sizing information.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Proof of Concept Evaluation** | **Small** | **Medium** | **Large** | **Extra Large** | **XXL** |
| **Total # of Citrix/VMware Horizon Application & VDI sessions (daily max)** | N/A | Up to 1,500 | Up to 3,000 | Up to 8,000 | Up to 15,000 | Above 15,000 |
| **CPU** | N/A | N/A | N/A | 8vCPU | 16vCPU | Technical discussion required for recommendations |
| **Memory** | N/A | N/A | N/A | 12 GB RAM | 16 GB RAM |
| **Drive space** | N/A | N/A | N/A | 100 GB | 100 GB |

# 

## Are you ready to install?

Before proceeding, please ensure you have the following items available and prepared:

1. Confirm that all applicable Prerequisites have been completed
2. Goliath Performance Monitor Installation file has been downloaded
3. Your Goliath license key
   1. This should have been provided by Goliath Finance Department upon purchase.
   2. If you do not have your license key, please submit a support ticket and a member of the team will look it up and send it over to you.
4. Is the server you plan to install Goliath on able to connect to the internet?
   1. This is required in order for Node.js and Electron PDF to install properly
5. If you will be using a Full SQL Server, Local or Remote to the Goliath Server, please make sure to run the installer as an account with SQL SYS Admin rights to the SQL Server.

## Goliath Performance Monitor Installation Steps

The Setup program will install the Goliath Performance Monitor (GPM) software on the system you want to be designated as the Goliath Server component. Please note, if the Goliath database will reside on a Full SQL Server the installer must be run as an account with sysadmin rights to the SQL Server.

1. Connect to the system you want to be designated as the Goliath Server component (RDP or Console).
2. Ensure that the Server Role "Web Server (IIS)" is not already installed on the system.
   1. If it is, please uninstall the role and reboot the machine prior to continuing.
3. Exit all programs.
4. To install GPM run the installer executable, GoliathServer.exe
   1. If you will be using Full SQL Server, please run the installer as a user account with sysadmin rights to the SQL Server to which you will be connecting.
   2. If you need a copy of the installer, please open a support ticket
5. The executable will start the install process and display a Welcome screen
6. Click Next to view the End User License Agreement. Read the agreement and if you agree with the terms, select I agree to the terms of this license agreement and click Next. If you do not agree or do not wish to continue, select I do not agree to the terms of this license agreement and click Cancel to exit the installer.
7. Enter your product license key provided by Goliath Technologies and select Next to continue. For Proof of Concept & Product Evaluations, keep the default license key of EVAL and select Next to continue.
8. Please verify and or specify the STATIC IP Address or DNS Name for the Goliath Performance Monitor Server and Web Interface Console Port. When finished select Next to continue
9. Once Next is selected, the wizard will verify that the Console Port is available. If it is, Goliath Performance Monitor will then continue.
10. Select where to install the Goliath Performance Monitor program. When the appropriate location is confirmed or entered, click Next to continue.
    1. The default location is C:\Program Files\MonitorIT.
11. Next, connect Goliath to a SQL server. Click the applicable link below for your desired configuration and it will take you to the relevant section with further instructions for installation:
    1. Install Using a Full SQL Server, Remote or Local
    2. Install Using Embedded SQL Server Express
    3. Connect to a Full SQL Server Manually (local or remote)

## Install Using a Full SQL Server, Remote or Local

The next steps will create the goliath database on your SQL Server and grant the windows service account defined as a database owner. Please note, the installer must be run as an account with sysadmin rights to the SQL Server in order to complete this operation.

1. In order to utilize an existing SQL server, you must have entered a trial/full license key and not have used the default EVAL key
2. Choose either Use existing Local SQL Server or Use existing Remote SQL Server depending on your SQL Server location.
3. Next, define the configuration settings for the SQL Server:
   1. Enter the name of the SQL Server instance or Always On Availability Group where the database will reside.
      1. Please note, if the SQL Server utilizes a listening port other than 1433, the SQL Server should be SQL\_Server\_name:Listening,Port. For example, SVR-SQL01,4454 or SVR-SQL01\PROD,4454.
   2. Enter the name of the Goliath Database
      1. This is defaulted to either GoliathDB or MonitorIT but can be modified if desired.
   3. Windows service account, in the format of domain\user, that has Windows Admin rights to the Goliath Server and will be given the database role membership of db\_owner for on-going SQL connectivity.
      1. Please note, if your SQL Server is local to the Goliath Server you will not be prompted for an username or password.
4. Please verify that the installation settings are correct and click Next.
5. During the installation process, a progress bar displays the installation progress.
6. Once Goliath Performance Monitor is successfully installed the install program will display a message that the installation is complete. Click Finish to exit the install program.
7. For the first time running Goliath post installation, you'll need to use the desktop icon to open Goliath Performance Monitor
   1. Note, the launch may take a few minutes as additional files and services are created at the product's initial start-up
8. Now the installation is complete, please proceed to the Post Installation - Monitor Your Environment section of this article for information on next steps.

## Install Using Embedded SQL Server Express

The Setup program will install the Goliath Performance Monitor (GPM) software and SQL Express 2017 on the system you want to be designated as the Goliath Server component. Please note, SQL Express is not recommended for medium/large deployments of Goliath as there is an 8-10GB data retention limitation.

1. For Proof of Concept & Product Evaluations, please proceed to the next step. If this is a full installation with an official license key, you will see the following options for configuring the database settings. Choose the top option for (Default) Embedded SQL Express.
2. Verify the following installation settings are correct and click Next to proceed.
3. During the installation process, a progress bar will show the installation progress, as seen in the figure below. You will also see the installation of the SQL Express database installation take place if applicable.
   1. Note: At some points during the installation your screen may go blank. This is a normal part of the installation process.
4. Once Goliath Performance Monitor and SQL Express, if applicable, are successfully installed, the install program will display a message that the installation is complete.
5. Click Finish to exit the install program.
6. For the first time running Goliath post installation, you'll need to use the desktop icon to launch Goliath Performance Monitor
   1. Note, the launch may take a few minutes as additional files and services are created at the product's initial start-up
7. Now the installation is complete, please proceed to the Post Installation - Monitor Your Environment section of this article for information on next steps.

## Post Installation - Monitor Your Environment

Now that Goliath Performance Monitor is installed, you’ll want to configure the Inventory Filter before bringing in machines you want to monitor. Please see the appropriate section below for configuring the inventory filter. Failure to setup the Inventory Filter will result in negative user experience. For more details, please review the information at the link below.

### Inventory Filter

* Configure Inventory Filtering

Next you can configure hypervisor monitoring, if desired. If you do not want to monitor the hypervisor, you can skip the "Hypervisor Monitoring" section.

#### Hypervisor Monitoring

* VMware vSphere
* Citrix XenServer
* Microsoft Hyper-V

#### Application & Desktop Virtualization Monitoring

* Citrix Virtual Apps & Desktops
* Citrix Cloud
* VMware Horizon

#### Healthcare Monitoring

* Epic System Pulse