leapwork

Leapwork Enterprise Edition Configuration and Installation Guide

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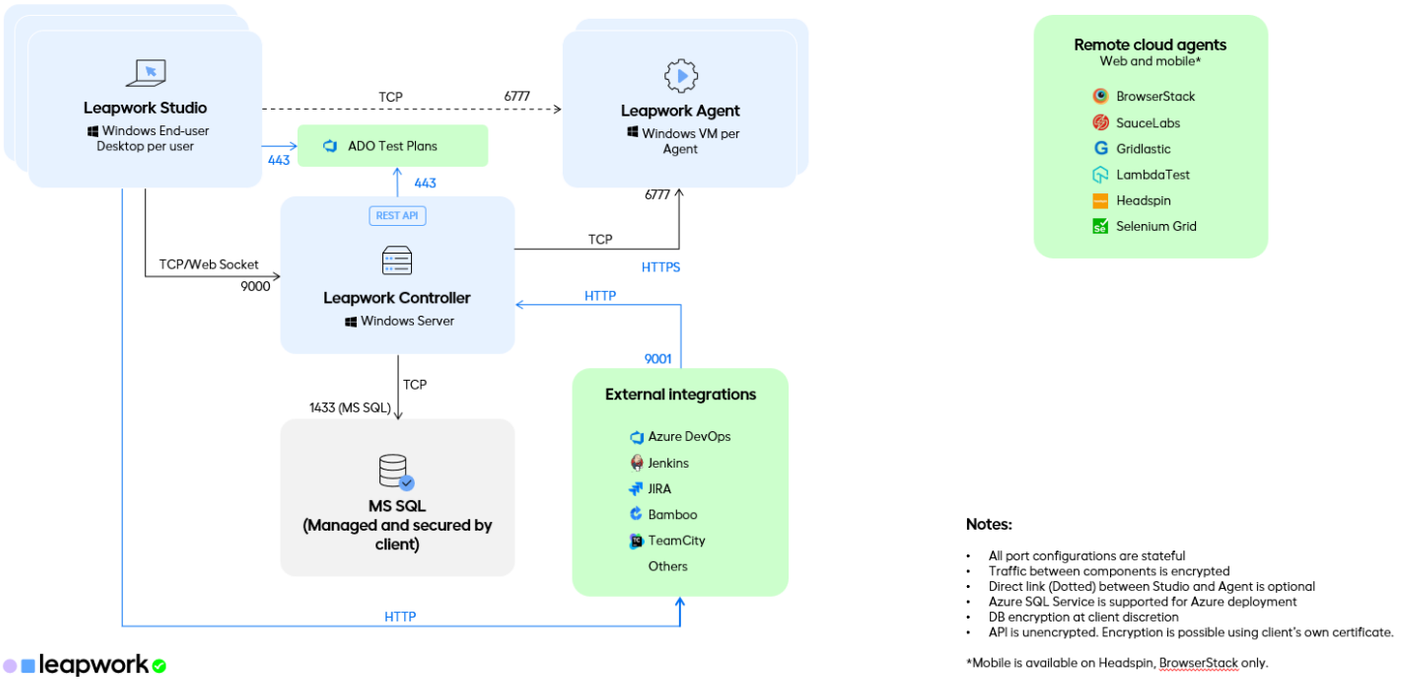
Introduction

The Enterprise edition of Leapwork targets deployment beyond individual teams or projects into the entire organization. The ability to scale in terms of the number of users and execution load and capacity is a main differentiator for the Enterprise edition. This enhanced capacity and scalability are partly made possible by an enhanced database platform.

This guide discusses Leapwork component configuration, architecture, and installation requirements.

Leapwork Architectural Diagrams

To get an overview of the components of the Leapwork Enterprise Automation Platform, please visit the Architecture Overview article.

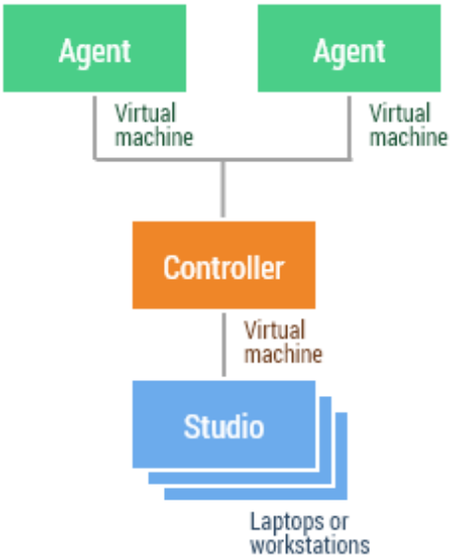


Notes:

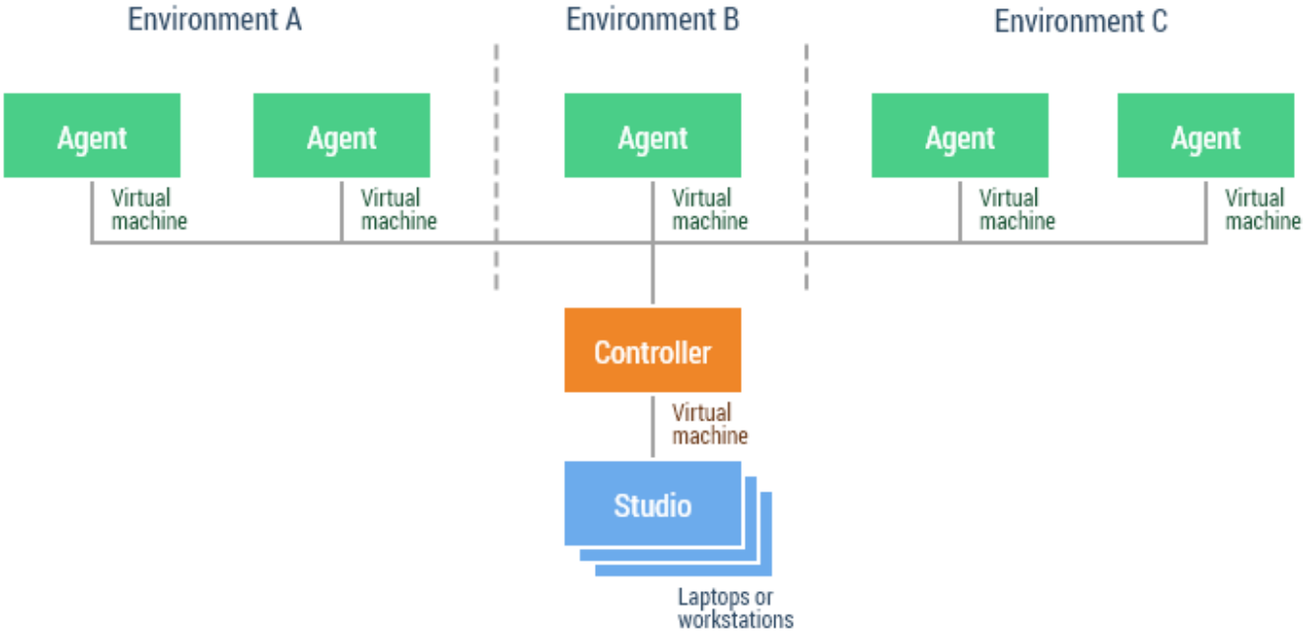
- All port configurations are stateful
- Traffic between components is encrypted
- Direct link (Dotted) between Studio and Agent is optional
- Azure SQL Service is supported for Azure deployment
- DB encryption at client discretion
- API is unencrypted. Encryption is possible using client's own certificate.

*Mobile is available on Headspin, BrowserStack only.

Single Environment Example Diagram



Multi-Environment Example Diagram



Additional information and diagrams on Deployment and Licensing implications can be found here.

System Configuration

For the Enterprise Edition, please be aware that infrastructure configurations vary widely from company to company and may impact system requirements. For example, the performance of Leapwork's software can be significantly impacted by high-latency or low-throughput network conditions, virtual server configurations with noisy neighbors, degraded SAN disk performance at write time, and many other factors.

For this reason, we suggest an agile approach in which one or more environments are initially set up in real-life conditions and adjusted as usage is increased during the first 90 days of operation.

Operating System Supported

Windows 8.1, Windows 10, Windows 11, Windows Server 2008 R2 SP1, Windows Server 2012, Windows Server 2012 R2, Windows Server 2016, Windows Server 2019, Windows Server 2022

Windows core operating systems are not supported

MS SQL Supported

MS SQL (version 13), 2017 (version 14), 2019 (version 15), 2022 (version 16). Azure SQL is also supported.

MS SQL Edition Supported - SQL Enterprise (Recommended), SQL Standard.

The following table shows the suggested hardware configurations for Leapwork's Enterprise Edition Servers, Agents, and MS SQL Server database:

Installation scenario	Leapwork Server	Leapwork Agent	MS SQL Server
Multiple teams, medium usage • 25 users, 500 flows, 10 agents, 2 runs per day • 500 * 10 * 2 = 10,000 flows run per day • 500 keyframes per-flow run, 100 bytes per key-frame = 10,000 * 500 • 100 = 500 MB new run data per day	• 16 GB RAM • 64-bit, 4-8 cores • 500 GB regular drives • Virtual machines are recommended for most scenarios - avoid noisy neighbors	• 4-16 GB RAM • 64-bit, 2-4 cores • 100 GB regular drive • Virtual machines are recommended for most scenarios - avoid noisy neighbors	• 16 GB RAM • 64-bit, 4-8 cores • 1 TB regular drives • Shared MS SQL Server instance recommended - avoid noisy neighbors
Multiple teams, high usage • 25 users, 500 flows, 25 agents, 10 runs per day	• 32 GB RAM • 64-bit, 16 cores • 1 TB SSDs	• 4-16 GB RAM • 64-bit, 2-4 cores • 100 GB regular drive	• 32 GB RAM • 64-bit, 16 cores • 2 TB SSDs

Installation scenario	Leapwork Server	Leapwork Agent	MS SQL Server
• 500 * 25 * 10 = 125,000 flows run per day • 500 keyframes per-flow run, 100 bytes per keyframe = 125,000 * 500 * 100 = 6.5 GB new run data per day	• Physical machine recommended • Consider splitting into multiple servers, depending on the network, disk performance, and spikes in usage	• Virtual machines are recommended for most scenarios - avoid noisy neighbors	• Physical machine recommended • A shared instance may be relevant, depending on spikes in usage
Department, high usage • 50 users, 5,000 flows, 50 agents, 10 runs per day • 5000 * 50 * 10 = 2,500,000 flows run per day • 500 keyframes per-flow run, 100 bytes per keyframe = 2,500,000 * 500 * 100 = 125 GB new run data per day	• 32-64 GB RAM • 64-bit, 16 cores • 1 TB SSDs • Physical machine recommended • High-throughput, low-latency network with Agents and MS SQL Server recommended • Consider splitting into multiple servers, depending on the network, disk performance, and spikes in usage	• 4-16 GB RAM • 64-bit, 2-4 cores • 100 GB regular drive • Virtual machines are recommended for most scenarios - avoid noisy neighbors	• 64 GB RAM • 64-bit, 16 cores • Large disk array Shared instances and virtual machines not recommended • Consider splitting into multiple servers, depending on the network, disk performance, and spikes in usage
Company or site-wide, high usage • 250 users, 15,000 flows, 250 agents, 10 runs per day • 15000 * 250 * 10 = 37,500,000 flows run per day • 500 keyframes per-flow run, 100 bytes per keyframe = 37,500,000 * 500 * 100 = 2 TB new run data per day	• 64 GB RAM • 64-bit, 16 cores • 1 TB SSDs • Physical machine recommended • High-throughput, low-latency network with Agents and MS SQL Server recommended • Multiple (departmental or project-related) servers recommended	• 4-16 GB RAM • 64-bit, 2-4 cores • 100 GB regular drive • Virtual machines recommended for most scenarios - avoid noisy neighbors	• 64 GB RAM • 64-bit, 16 cores • Large disk array • Shared instances and virtual machines not recommended • Consider splitting into multiple servers, depending on the network, disk performance, and spikes in usage

Typically, the Studio is installed on the desktop version. We also recommend this for the Agent.

However, when deploying the Agent in the Data Center, it may not be possible to obtain a Windows desktop version. Therefore, the Agent will also run on a Windows Server with Desktop Experience enabled. The Server is installed on a Windows server.

General Hardware Reminders

- Hardware requirements for Agents are also dependent on the application(s) under test, particularly RAM and CPU. You may find that provisioning the Agent is driven by this instead.
- The more disk space you have, the more data you can store – the alternative is harsh retention policies.
- The more CPU cores you have, the faster processing and parallelization will work.
- Use high-speed SSDs for data storage with high write or read patterns and combine them with extra RAM.

Installation Pre-Requisites

Download Leapwork

- Download the latest version of the Leapwork from the Leapwork release page.
- Keep the downloaded copy of the installer file in all on-prem/remote machines where the Leapwork components installation is to be performed.

.NET Framework

- Download the latest version of the .NET Framework from the following link. Install it on the on-prem/remote machines where Leapwork components installation is to be performed.

Access Required to Perform Installations

- Ensure all local admin rights are available on the controller, agent, and studio machines.
- Ensure availability of access and authentication information like hostname/IP/credentials for connection to the onprem/remote machines.
- Application under test should be accessible from the Agent.

Port and Firewall Opening

- Open ports 9000 & 9001 on the controller machine.
- Open ports port 6777 on all the agent machines. Refer article for more info.
- Static IP Address or Unique Machine name for the controller machine.

SQL Server Configuration

- Purchase an MS SQL server and install it on a Machine accessible via your network.
- Ensure connectivity from the controller to SQL Server, with the right access.
- Check the SQL authentication type – Windows or SQL, if windows the user account used for windows authentication should be a local administrator on the controller machine.

- Install SQL Server Management Studio (SSMS) on the controller machine and download link.
- SQL Server DB Owner Role for Database creation during installation. Refer article.

Leapwork License Credentials

- Make sure you have credentials to log in to the Leapwork license engine.
- Contact your customer success manager if you don't have one.
- **These will be required to successfully complete installation.**

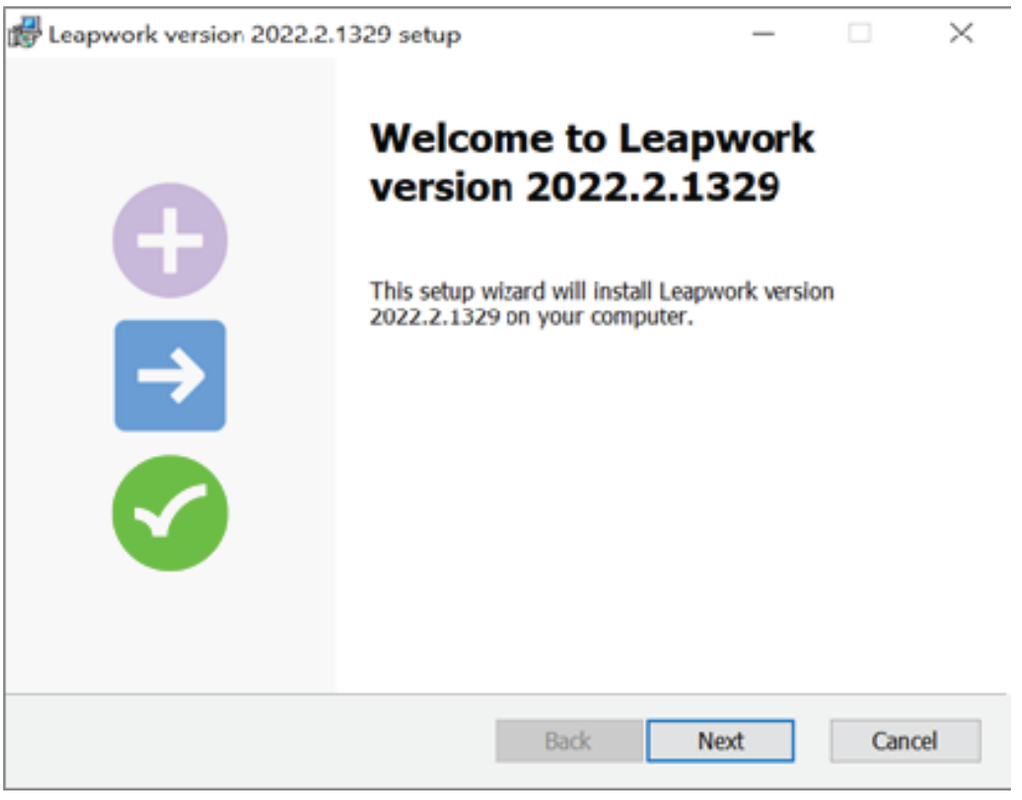
Permissions & Roles

Required to install Leapwork on a windows computer can be found here.

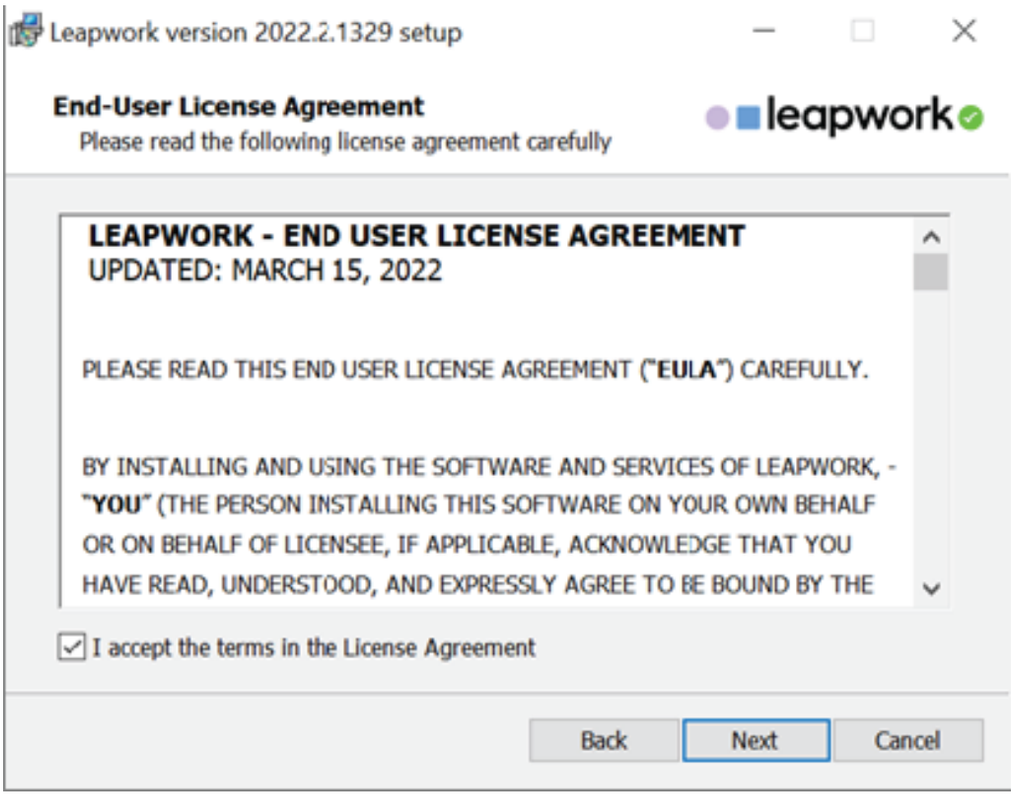
Installation Guide

Controller Installation

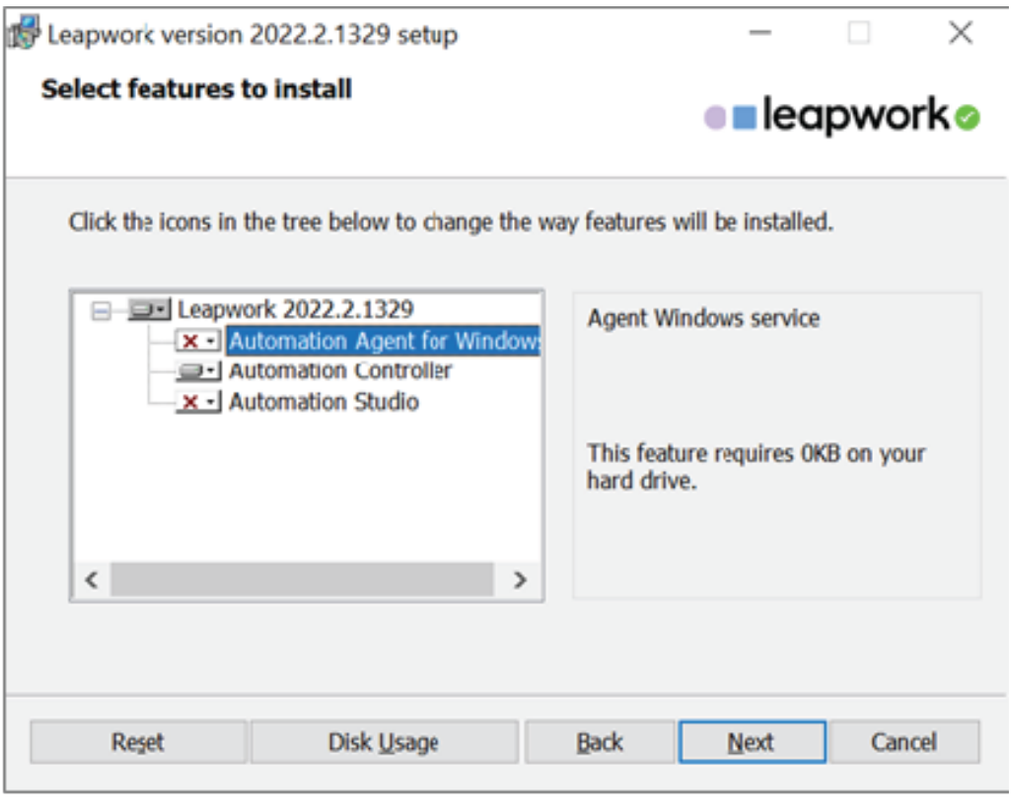
1. Open the MSI file location and double-click the .msi-file to start the installation. The first screen will display the version number.
2. Click '**Next**' to begin the installation.



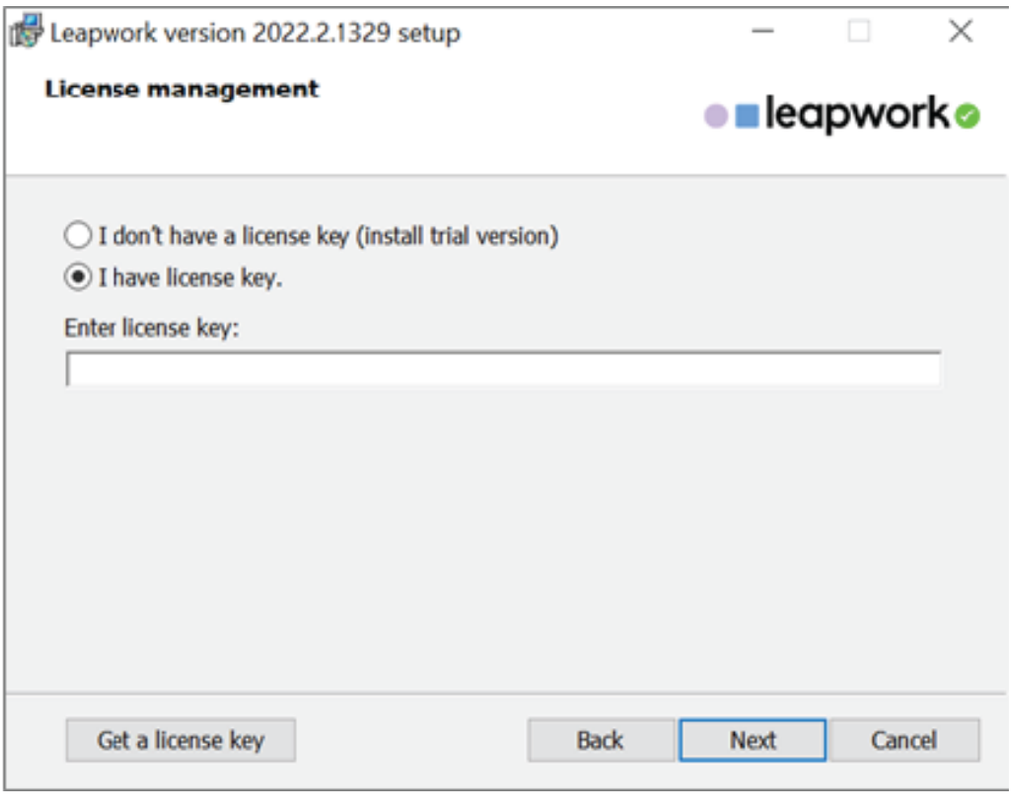
1. Read the end user agreement tick “I accept the terms in the license agreement” checkbox and Click '**Next**' button if you agree.



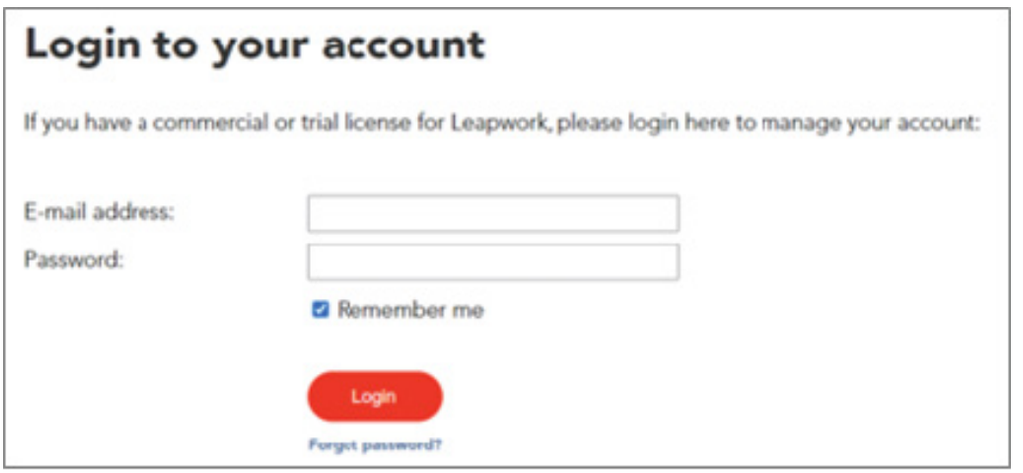
1. Choose Automation Controller and deselect other two, you can keep studio if you want to keep in controller machine, but we do not recommend having agent installed on controller machine.



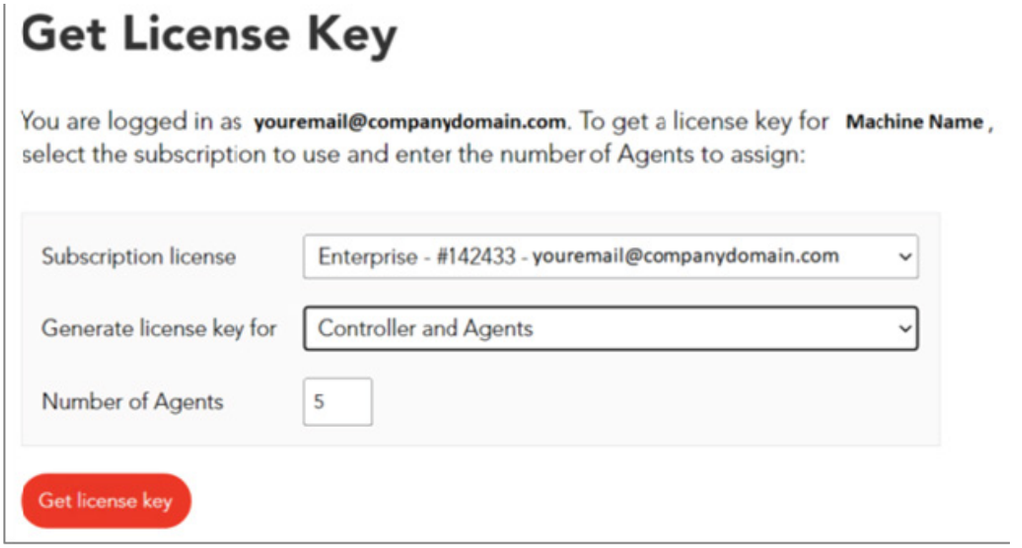
5. Select the second radio button on the screen **I have license key.** Next, click on the **Get a License key.** This will take you to Leapwork license page.



6. On account.leapwork.com, log in using your e-mail and the password provided when signing up on leapwork.com. If you experience problems with the login, please contact Leapwork Customer Support.



7. After successful login, the license management page opens.

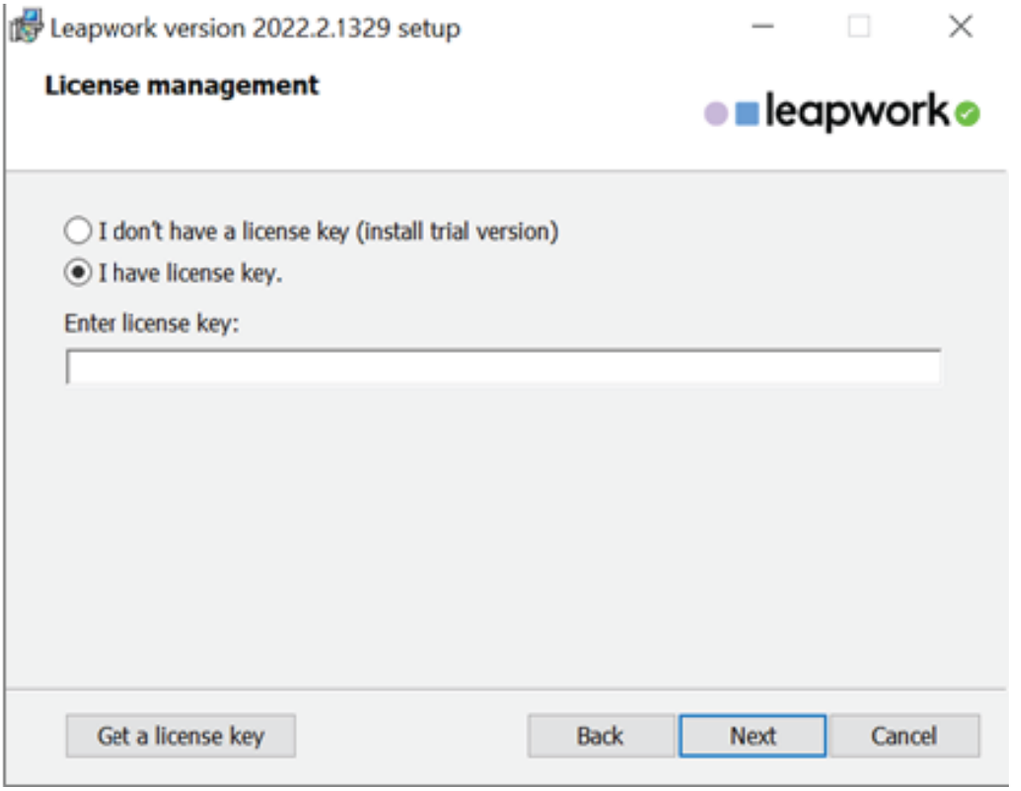


8. Select your Subscription License as:" Enterprise -#XXXXX" from dropdown.
9. Select Generate a license key for options from dropdown.

   - It is possible to activate Controller only.
   - It is possible to generate license keys for Agents.
   - And it is possible to select both Agent and Controller (Recommended).

10. Specify the number of Agents to add to the Controller. If you have only one controller, then put the total numbers of agents you have purchased, if you have more than one Controller than you can split agents between the controllers in this step.
11. Click **Get license key.**
12. Copy the license key by clicking **Copy license key.**

13. Go back to installer and past the keys to Enter license keys section and click **Next** button.



14. Click **Next.** The Controller Configuration page appears.

Controller Port

The Studio and the Controller always communicate using internal API calls, and this requires the use of a TCP port. The default is port 9000, which you can change to any other port number that is not in use by other software on your computer.

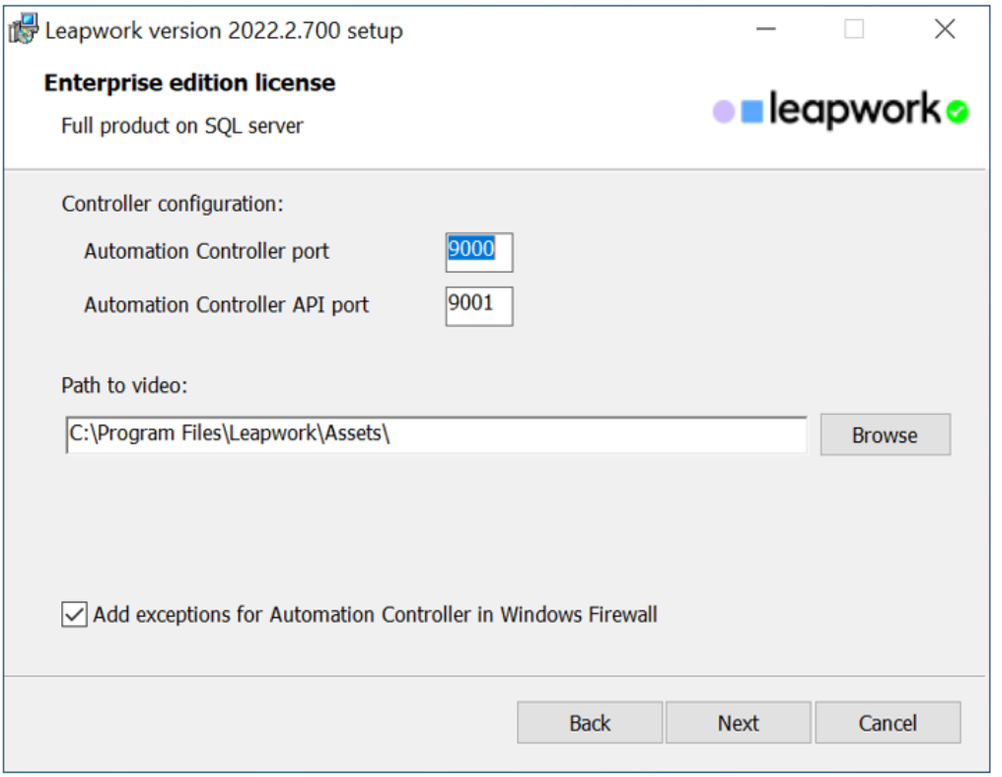
Controller API Port

For any integration effort, access Leapwork open REST API using the default port number 9001, which you can change to any other port number that is not in use by other software on your computer.

NOTE: Unless it is necessary for any reason, we do not recommend changing either the Controller, Controller API port numbers.

Path to Videos

This is the path to the file system folder which contains the videos of test results.



15. Select **Add exceptions for Automation Controller in Windows Firewall.** This will direct the installation process to add a rule to the Windows Firewall to permit all incoming connections to the Controller.
16. Enter information into desired fields and click **Next.** The SQL server Configuration page appears. The following settings are required to connect Controller with SQL Server.

Asset Database Name

By default, it is set to "Assets", but you are free to modify it.

Report Database Name

By default, it is set to "Report", but you are free to modify it.

Server Address

The user can provide the details of their server address. If it's local then it should be localhost, or you can provide the remote IP address or name of that server.

Initial Catalog

Provide the Initial Catalog.

Connection Type

Select the desired connection type. (Standard Security for SQL authentication and Trusted Security for Windows authentication).

Username

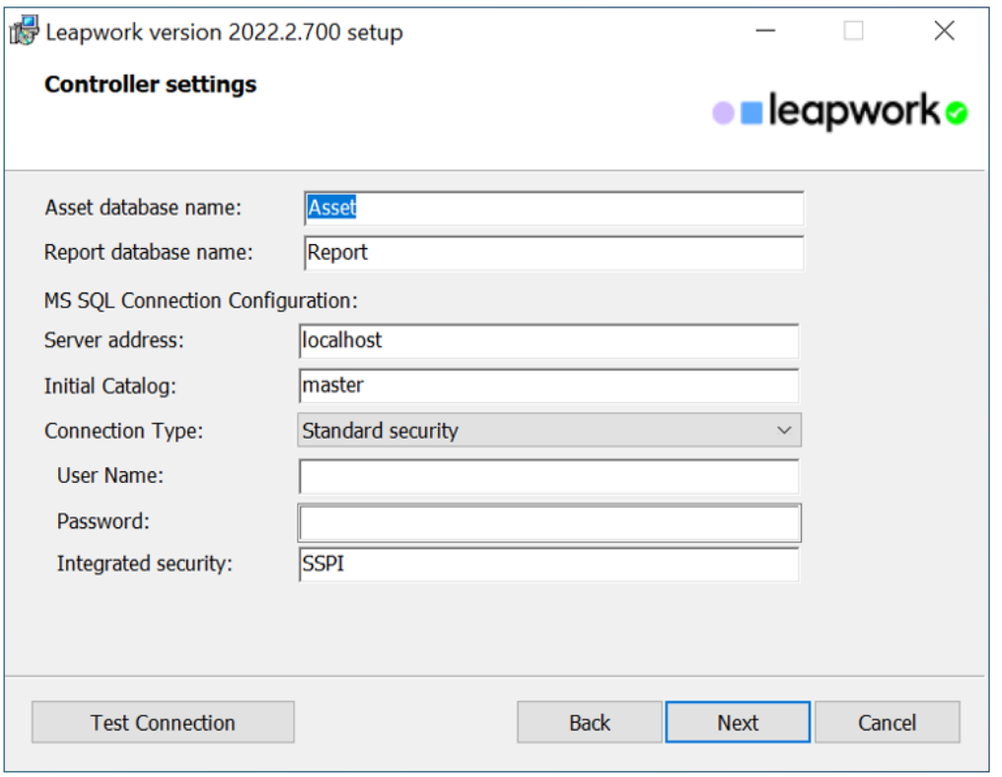
Provide the username of the database.

Password

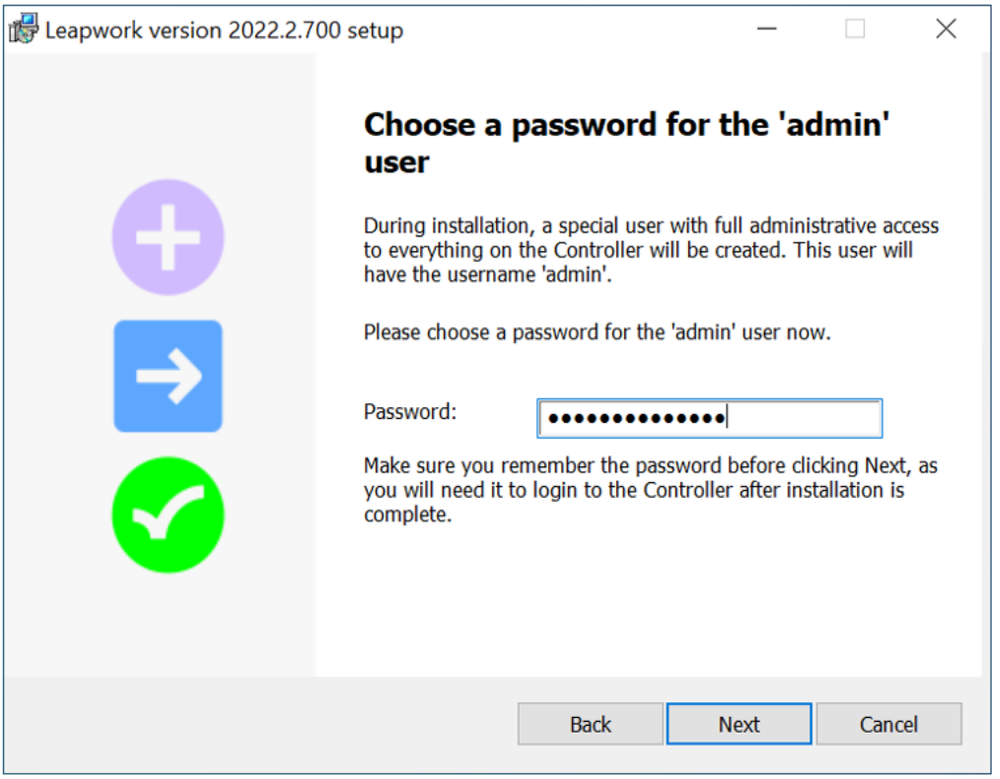
Enter the database password.

Integrated Security

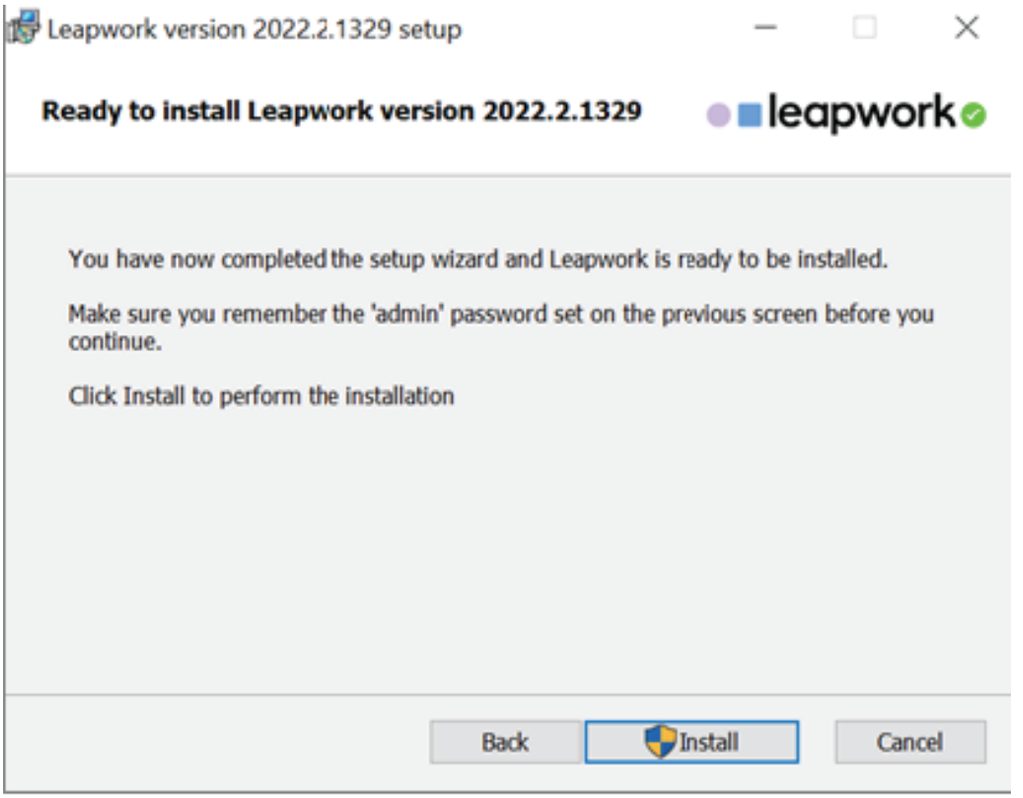
You can enter your integrated security. By default, this is set to SSPI.

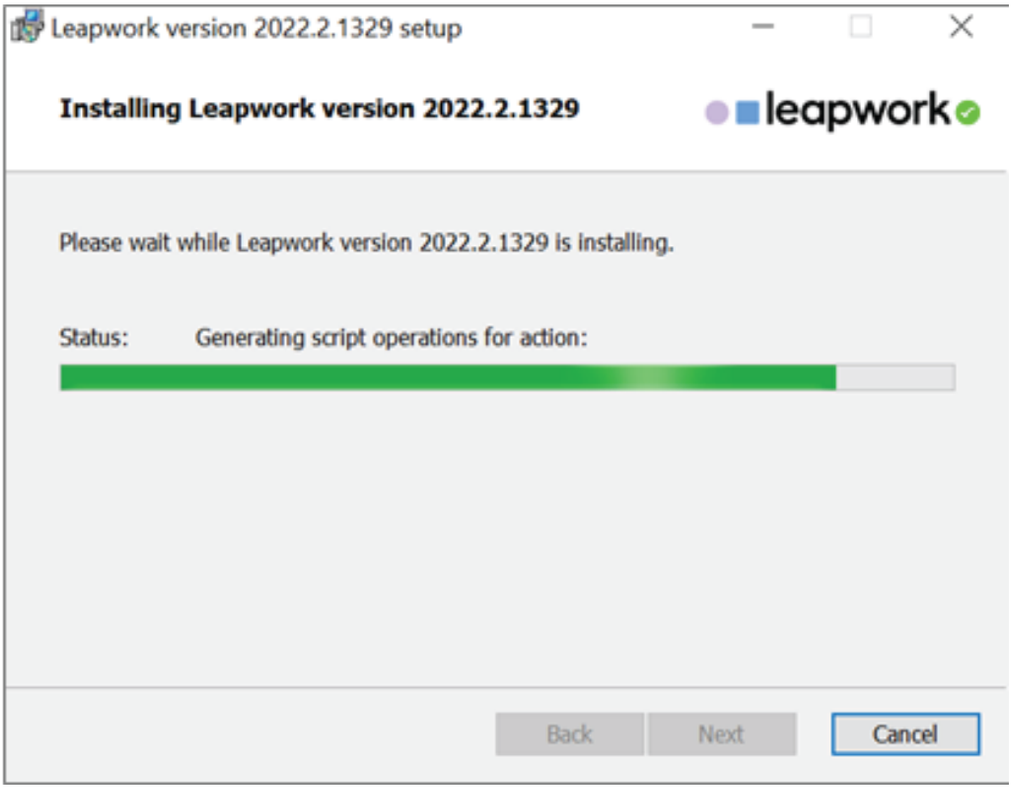


17. After configuring all settings, click on "**Test Connection**" to check everything is correct, if test connection passes, then click "**Next"** on the configuration screen.
18. Specify a password for the default user ("Admin"). The "Admin" user is required for the first login to the Leapwork Studio after installation.**Note:** the password you enter for the admin user is securely located in your local installation only. Leapwork cannot assist in retrieving this password if you forget it, so make sure you remember it or keep in safe place.

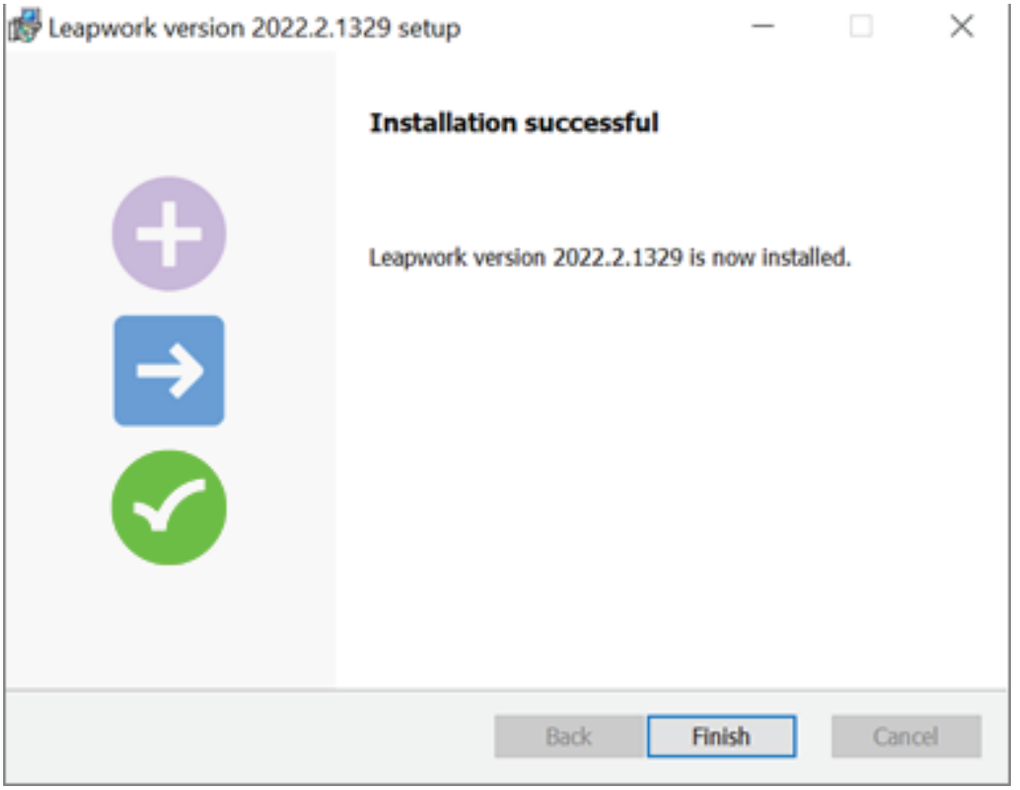


19. Click **Next** after setting the password.
20. Click **Install** on final warning screen to start the installation process.


Leapwork version 2022.2.1329 setup
Ready to install Leapwork version 2022.2.1329
leapwork
You have now completed the setup wizard and Leapwork is ready to be installed.
Make sure you remember the 'admin' password set on the previous screen before you continue.
Click Install to perform the installation
Back
Install
Cancel


Leapwork version 2022.2.1329 setup
Installing Leapwork version 2022.2.1329
leapwork
Please wait while Leapwork version 2022.2.1329 is installing.
Status: Generating script operations for action:
Back
Next
Cancel

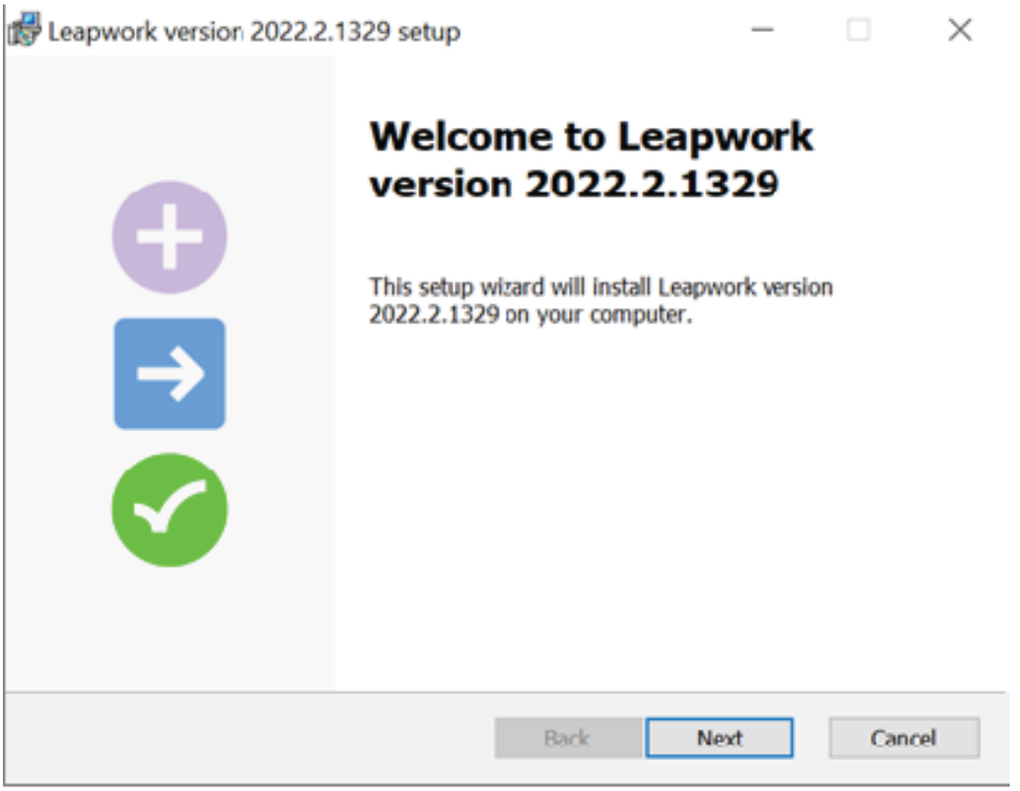
21. Click **Finish** to complete installation process.



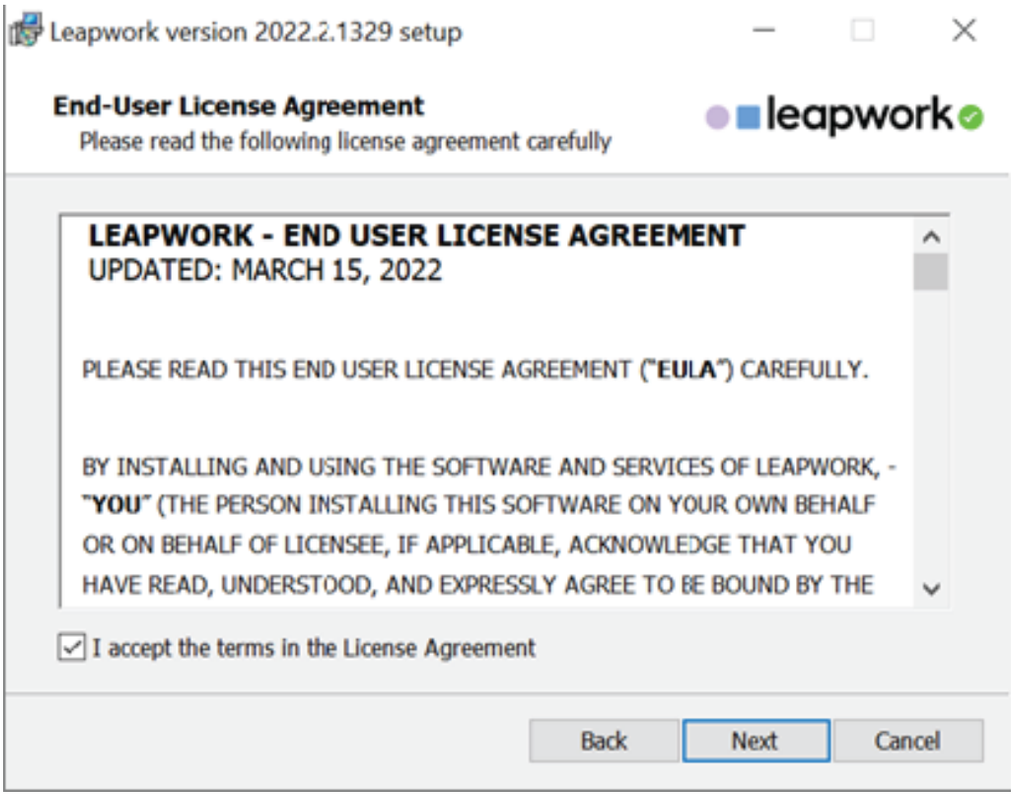
Studio Installation

1. Open the MSI file location and double-click the .msi-file to start the installation. The first screen will display the version number and ensure that the downloaded version fits your computer.

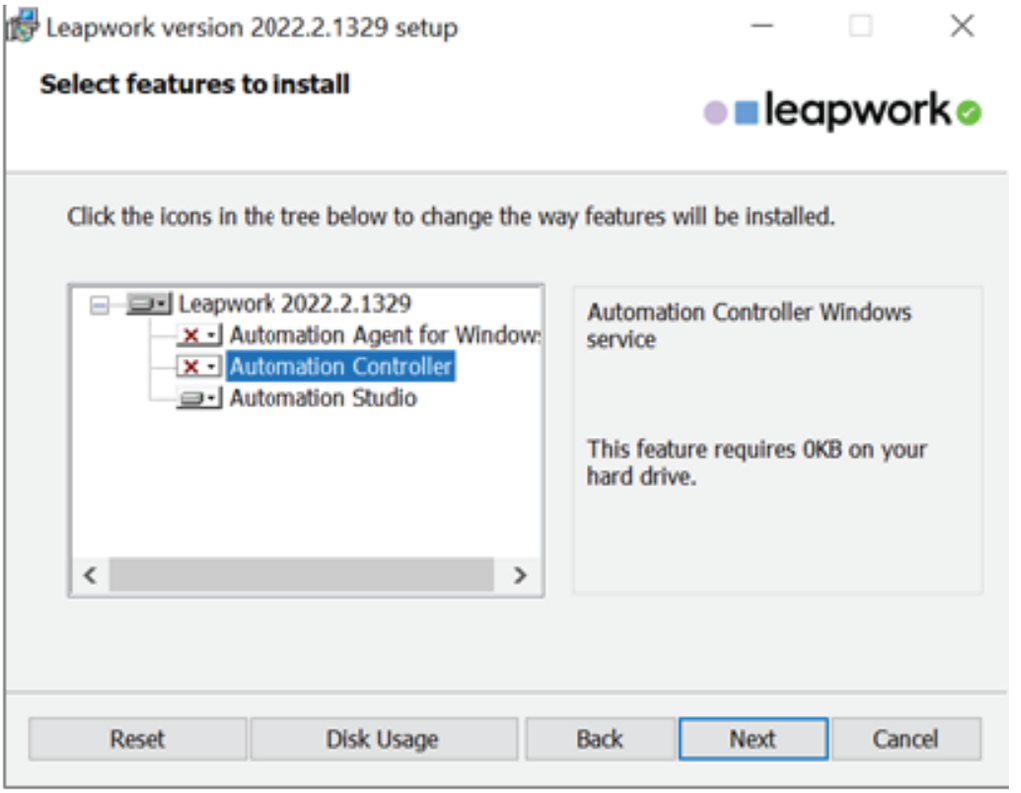
2. Click '**Next**' to begin the installation.



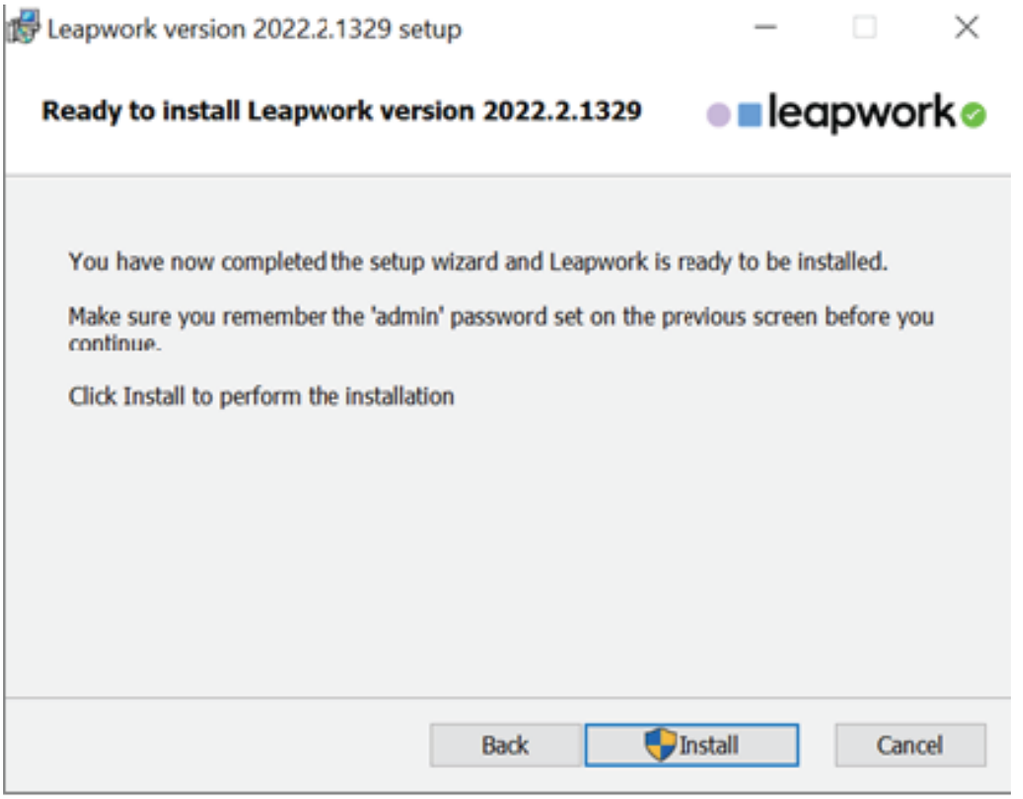
3. Read the end user agreement tick “I accept the terms in the license agreement” checkbox and Click 'Next' button if you agree.



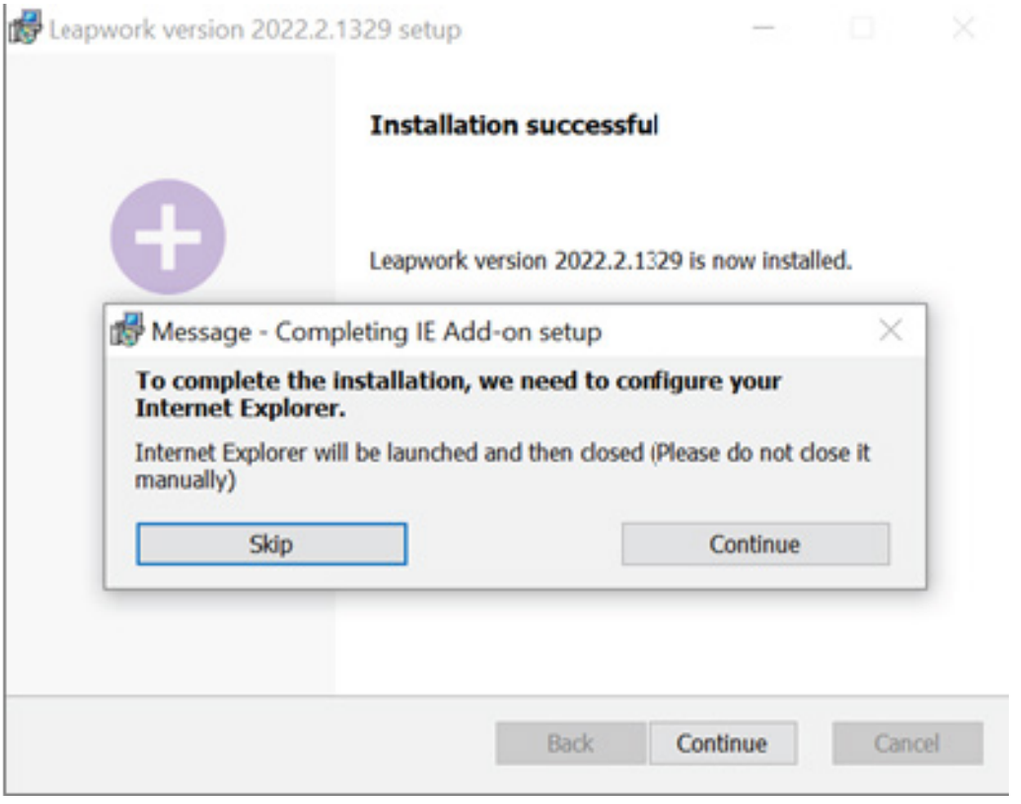
4. Choose Automation Studio and deselect other two, you can keep Agent if you want to keep in same machine, but we do not recommend having agent installed on studio machine.



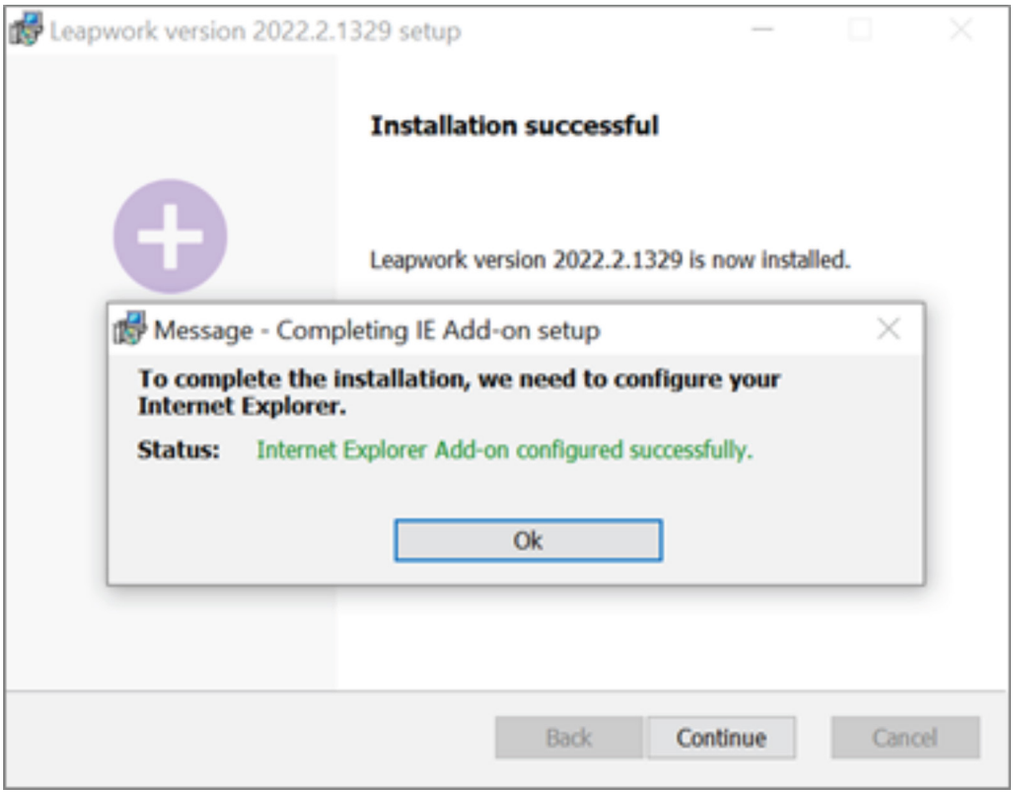
5. Click **Install** to start the installation process.

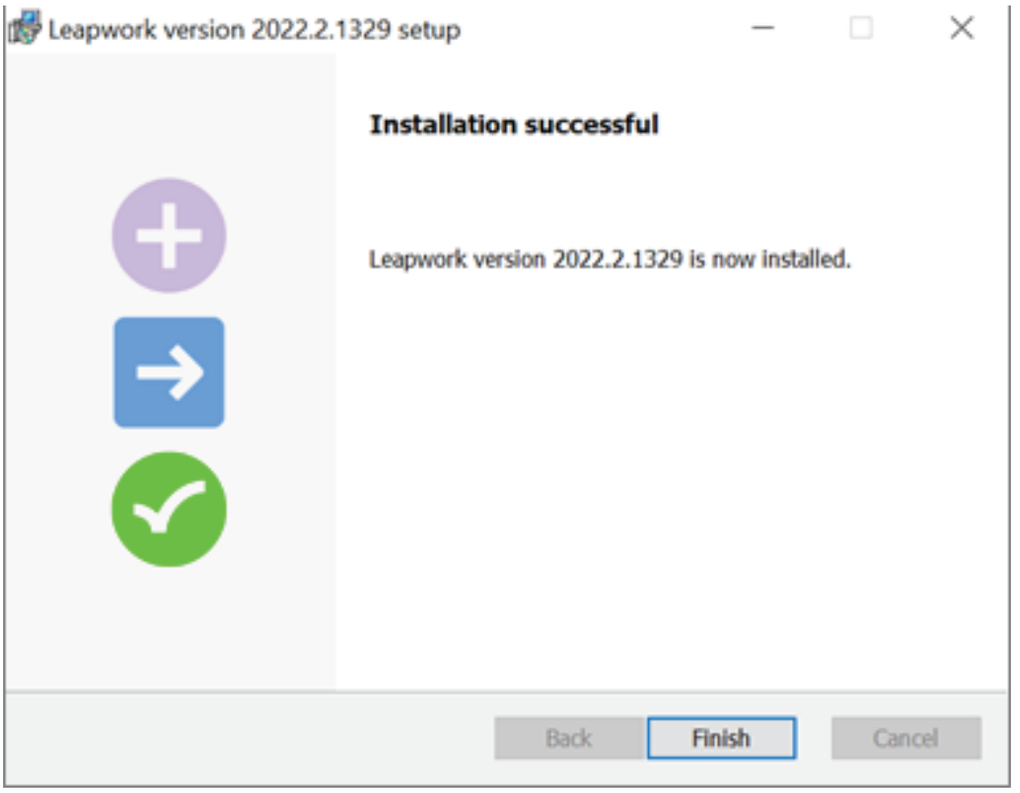


6. Click **Continue** to start the IE Addon installation.



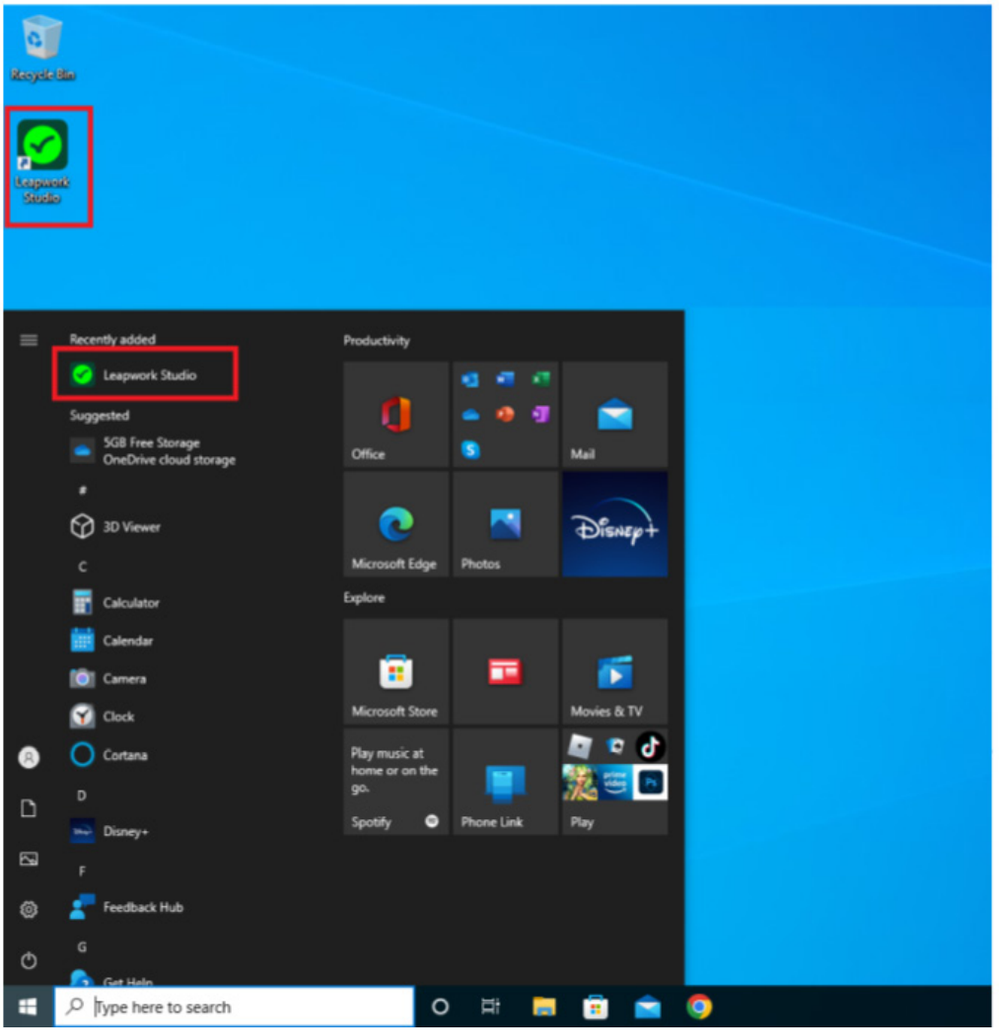
7. Click **Ok** to finish installation.


Leapwork version 2022.2.1329 setup
Installation successful
Leapwork version 2022.2.1329 is now installed.
Message - Completing IE Add-on setup
To complete the installation, we need to configure your Internet Explorer.
Status: Internet Explorer Add-on configured successfully.
Ok
Back
Continue
Cancel

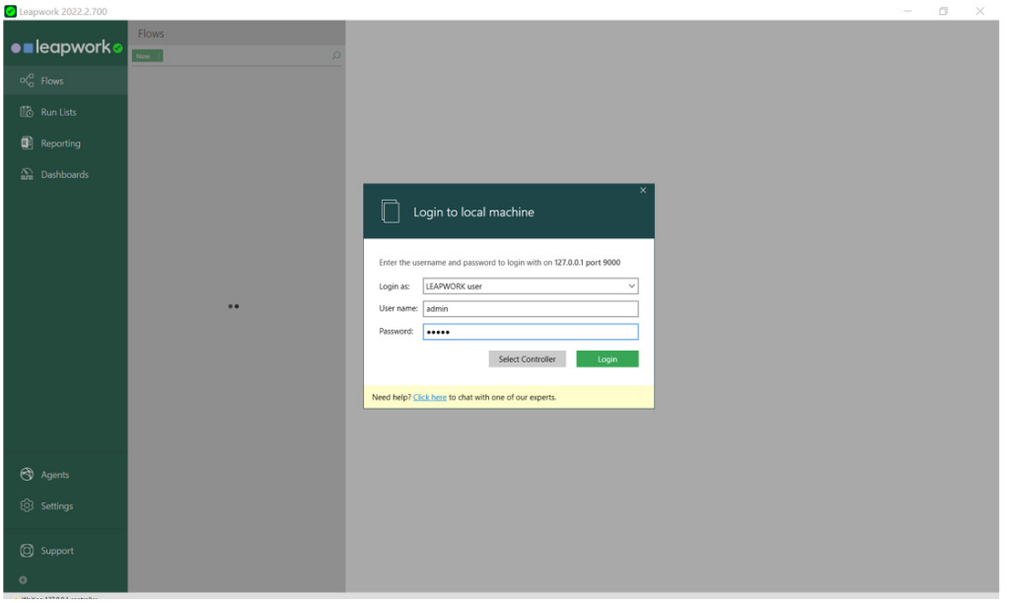

Leapwork version 2022.2.1329 setup
Installation successful
Leapwork version 2022.2.1329 is now installed.
Back
Finish
Cancel

Configuring Studio

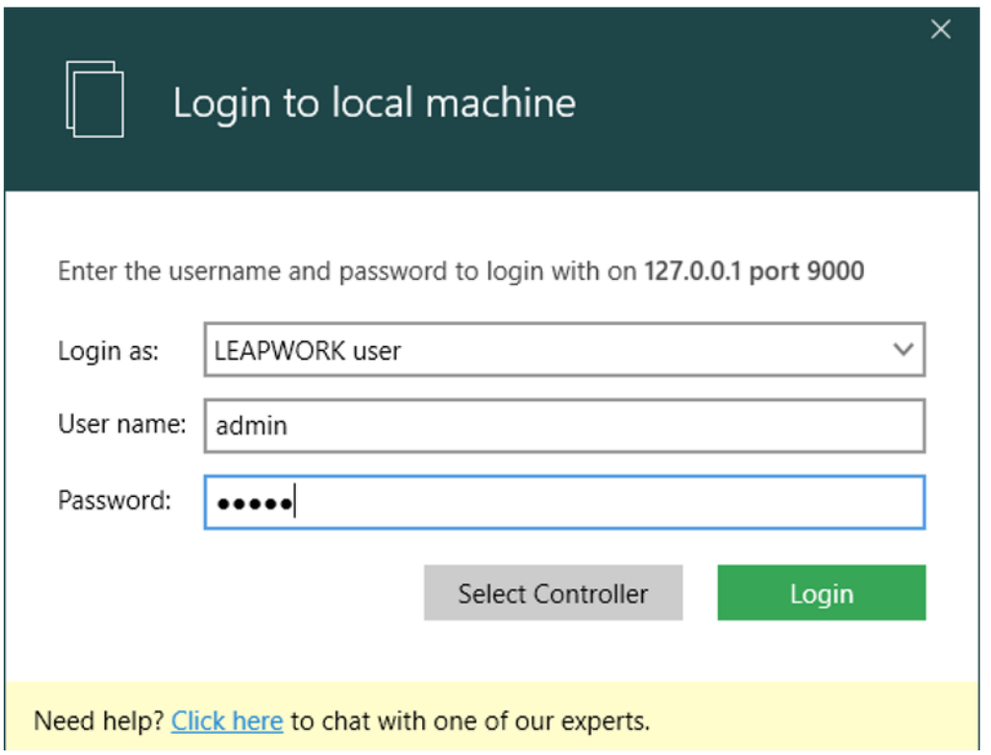
1. Double click on the Studio Icon on the desktop or your start menu to open Leapwork.



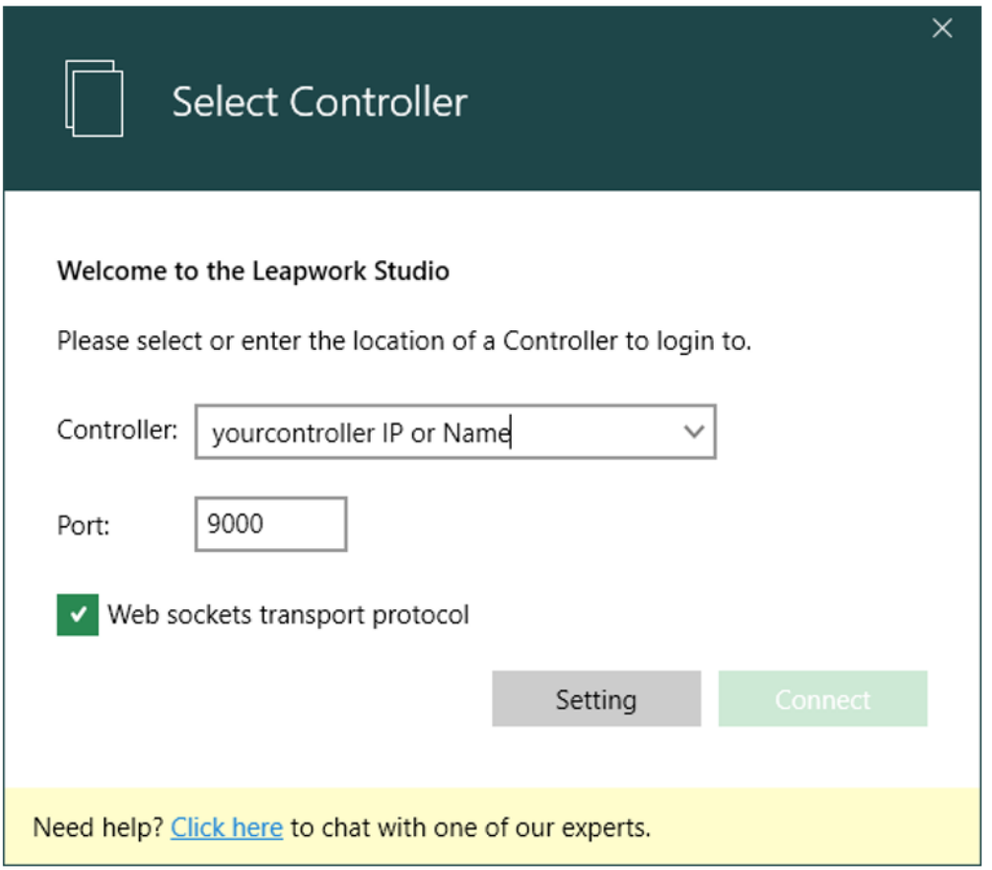
2. Double click on the Studio Icon Will open Leapwork Studio Authentication Window as shown below



3. Click on select Controller button first to select the correct controller in your organization.



4. Click on the Select controller dropdown to find and select your controller installed above (It will appear as IP address or the name of Controller there), if you can't fine the name of controller by default then you can type it manually on the same dropdown control.

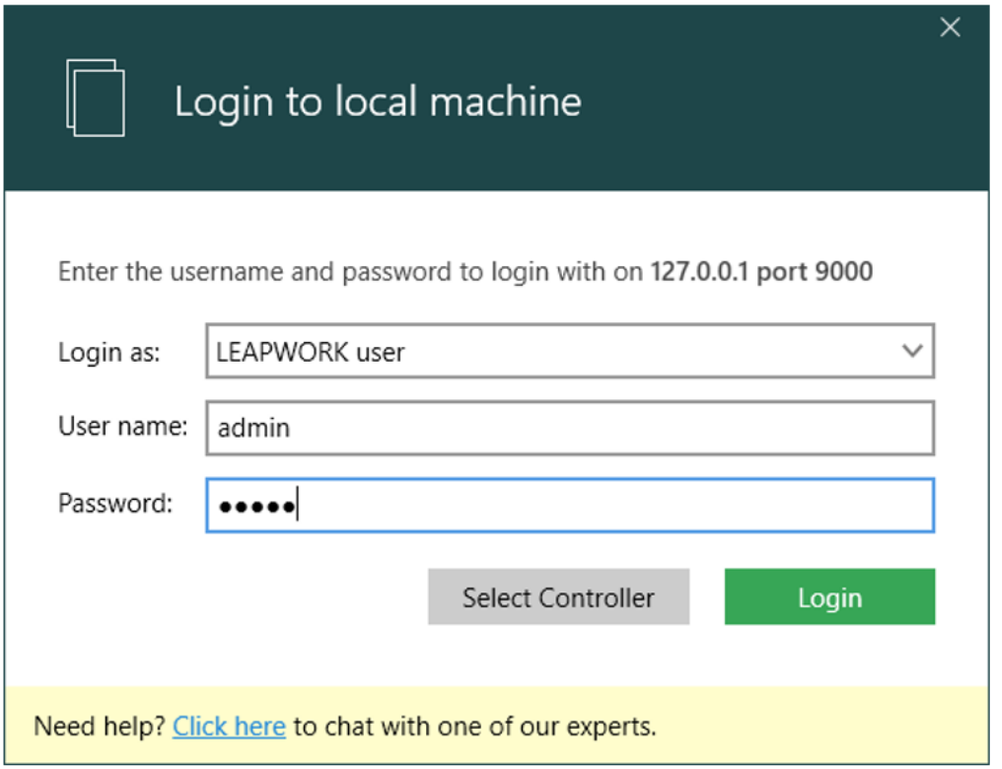


5. Change the port number of controller if you have changed it during controller installation.

6. Select the **Web sockets transport protocol** as it is enables faster communication between Studio, Controller and Agent machines.

7. Once you are done with all above settings, click **Connect.**

8. Click **Connect** will take you back to Leapwork Studio Authentication Window. To log into Leapwork for the first time, you need to use your admin credentials in the Leapwork Studio Authentication Window. Enter the credentials and Press login will let you in to the Leapwork Studio.



Leapwork Administration

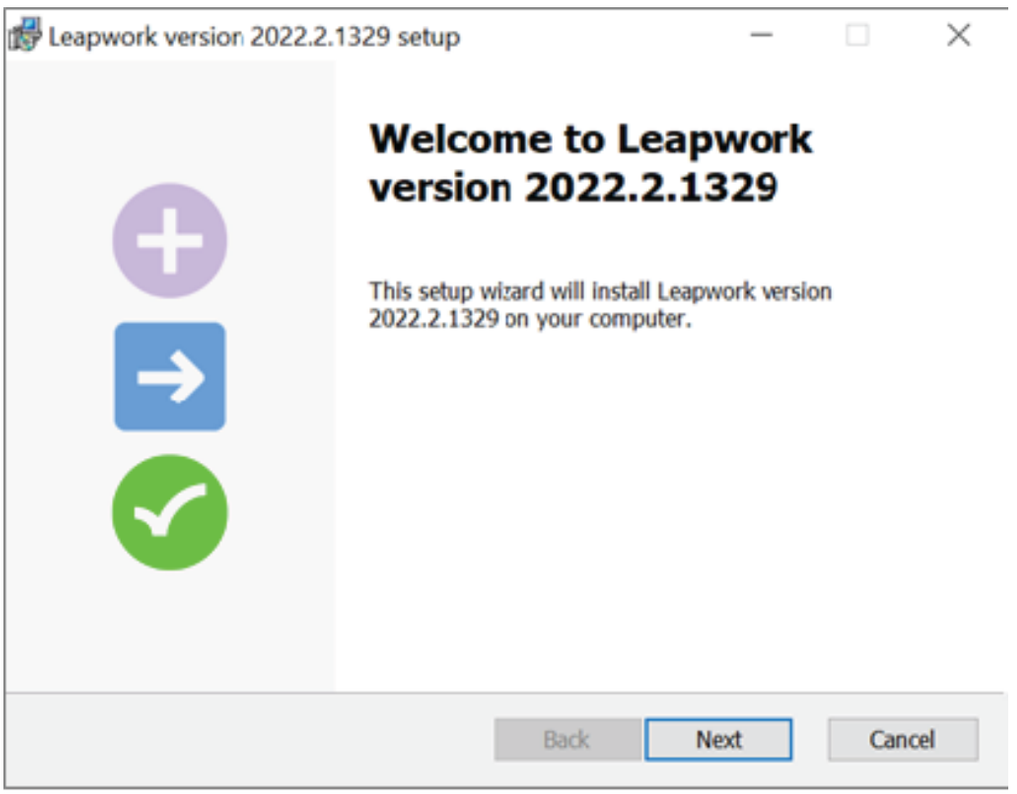
As an Admin you have access to Leapwork Administration, and you can perform actions shown below.

- Controller Settings: Change controller settings
- User Management: Add, Remove, Update Leapwork Users
- Team Management: Add, Remove, Update Leapwork Teams
- Workflow Settings: Edit Workflow settings
- API Access Keys: Generate API Keys
- E-Mail Settings: Update email settings that use to send email from Leapwork
- Proxy Settings: Update Leapwork proxy settings
- Default Automation Flow Settings: Update flow settings
- Capture Settings: Change the way Leapwork captures an object
- Retention Policies: Add, Remove, Update Leapwork retention policies
- License Management: License management, Add, Remove, and Update Leapwork licenses
- Audit Log: Check Audit logs

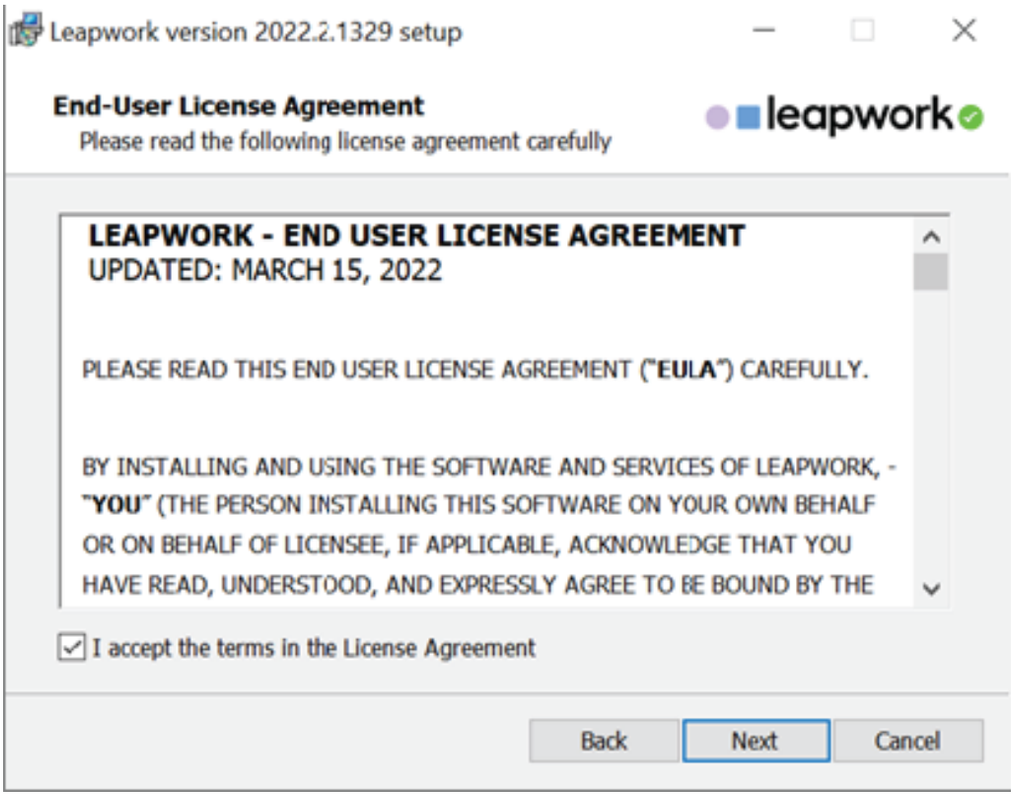
We recommend you add a Team and a few users after installation and check that flow creation is working. Afterward, use the flowing link to import the flows created during the proof of value phase.

Agent Installation

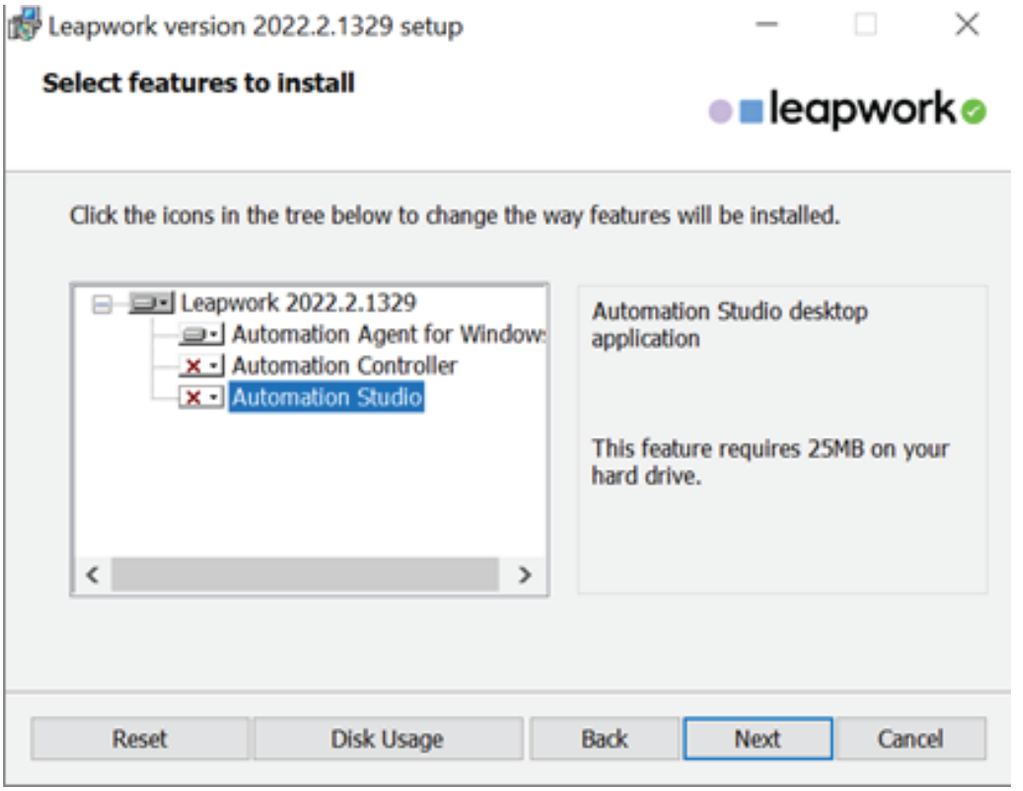
1. Open the MSI file location and double-click the .msi-file to start the installation. The first screen will display the version number and ensure that the downloaded version fits your computer.
2. Click **Next** to begin the installation.



3. Read the end user agreement tick “I accept the terms in the license agreement” checkbox and Click '**Next**' button if you agree.



4. Choose Automation Agent and deselect other two, we do not recommend having Studio or controller installed on Agent machine.



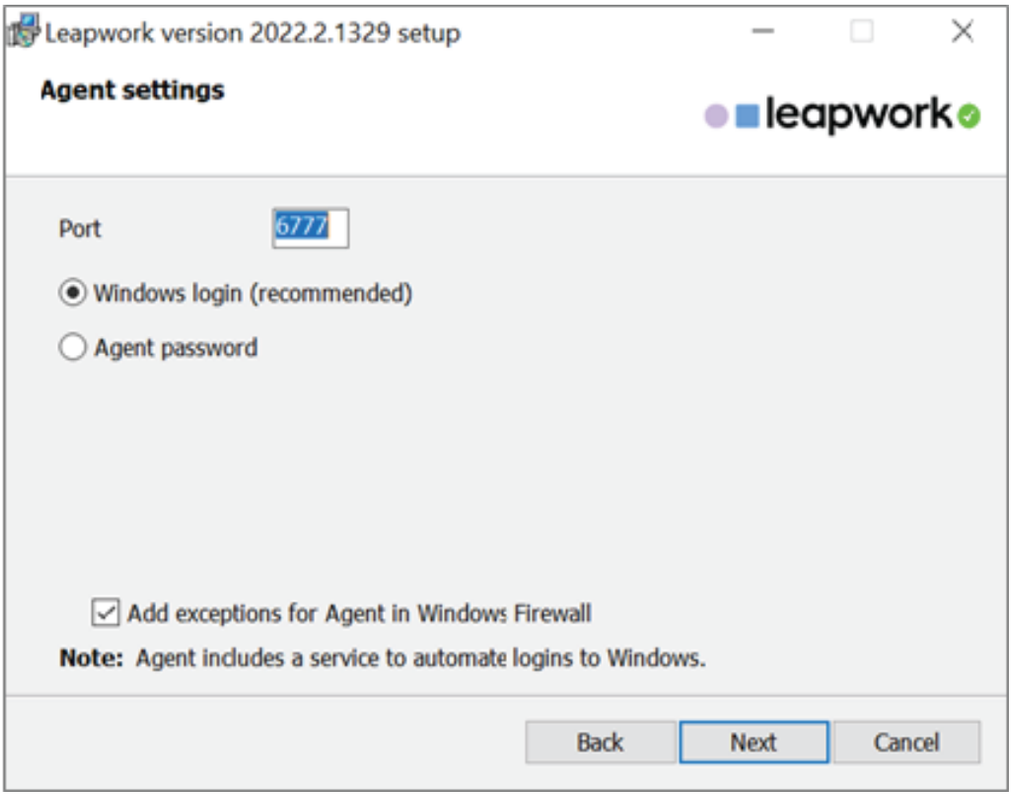
5. The configuration screen contains several settings that you can modify before completing the installation.

Port: Automation flows run in the Agent, which communicates with the Studio and Controller through a closed remote-control protocol on a specific TCP port. The default port is 6777, which you can change to any other port number not in use by other software on the computer. NOTE: Unless it is necessary for any reason, we do not recommend changing either the Controller, Controller API, or Agent port numbers.

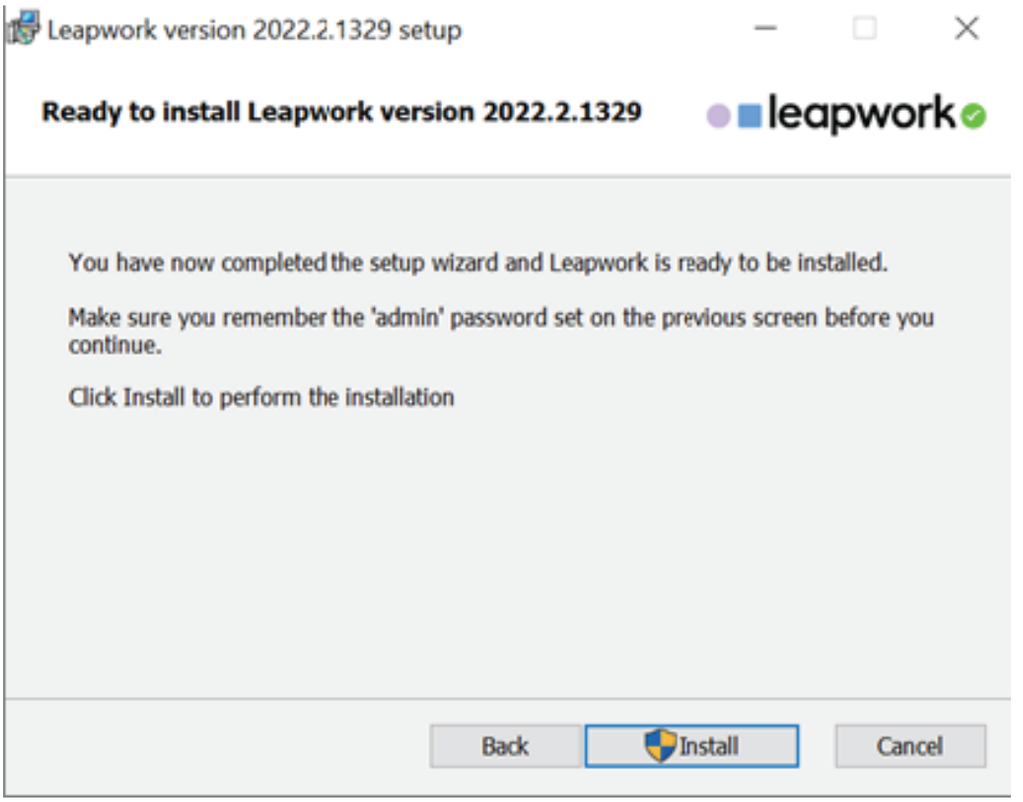
Windows login: Agents includes strong security feature to automate logging in and out of Windows. A user is not required to be logged into their machine to run a flow. Instead, Leapwork can be set up to log in on the user's behalf. Users can also start testing single sign-on between Windows and any other application that reuses the same login credentials. The User must choose Windows login to be able to use Windows credentials to configure the Agent.

Agent password: In case you do not want to use windows login feature then you should use the Agent password to secure your agents. Because the Agent uses a remote-control protocol, we advise that you set a password to prevent unauthorized parties from connecting to it.**Add exceptions for the Agent in Windows Firewall.** A check in this box will direct the installation process to add a rule to the Windows Firewall to permit all incoming connections to the Agent.

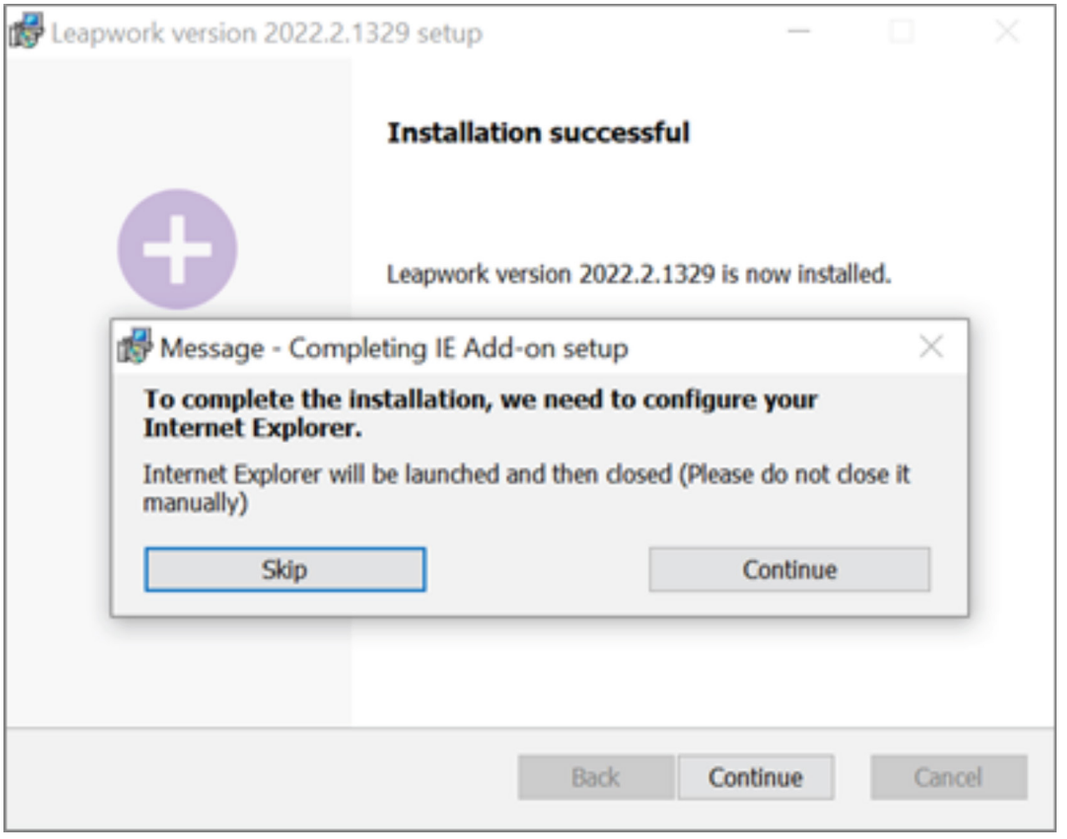
6. Click Next after choosing your desired configuration.



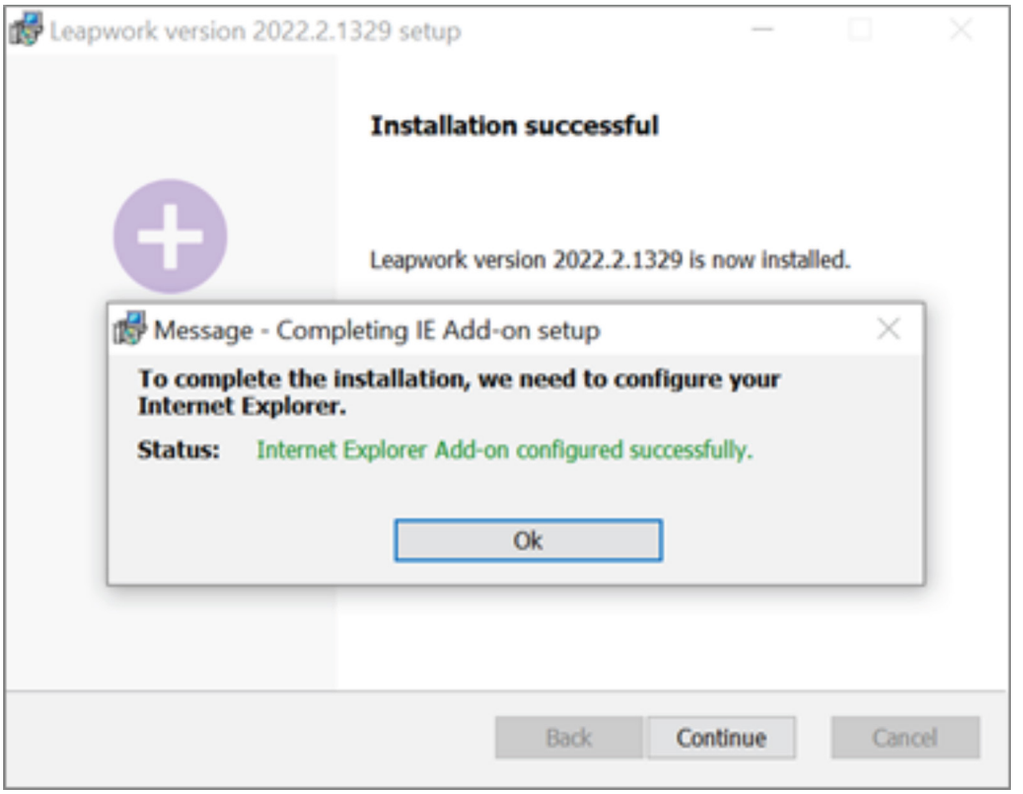
7. Click on **install** button to start the installation process.



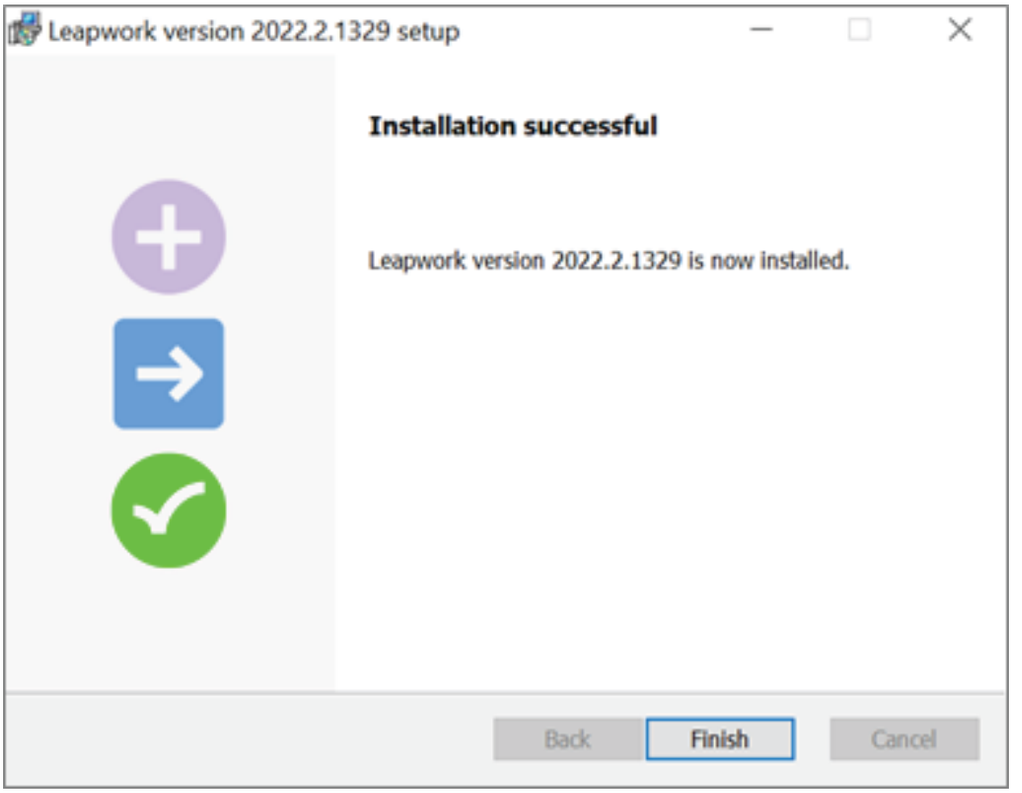
8. Click **Continue** to start the IE Addon installation.



9. Click **Ok** to finish installation.



10. Click on **Finish** to complete the installation.



11. To Configure agent, you have to go to studio machine and configure it using Leapwork Studio here is a link which explains how to configure an agent after installation.

On-Prem vs Cloud

On-Premise Connectivity:

Benefits:

- Direct Control: On-premise connectivity provides direct control over the hardware and network infrastructure.
- Legacy Integration: Seamless integration with existing on-premise systems and applications.
- Compliance Control: Enhanced control over compliance measures and security policies.

Differences:

- Infrastructure Management: On-premise requires active management of physical infrastructure, resulting in higher maintenance costs.
- Scalability Challenges: Limited scalability compared to cloud-based solutions.
- Geographic Flexibility: Less geographical flexibility compared to Azure's globally distributed data centers.

Private Cloud Networking:

Benefits

- Scalability: Cloud networking allows for seamless scalability based on demand.
- Global Reach: Leveraging global data centers provides redundancy and improves disaster recovery capabilities.
- Managed Services: Offloading infrastructure management to allow for a focus on application development. **Differences:**
- Dependency on Cloud Provider: Relying on services means dependence on the cloud provider's infrastructure and services.

Amount of data transfer between agents and controller:

The amount of data transfer between Leapwork agents and the controller depends on factors such as test case complexity, execution frequency, and data generated during test runs.

Use of a proxy server for outbound web access and any extra limitations:

Using a Proxy Server with Leapwork:

Benefits:

- Security: Enhances security by acting as a gateway between Leapwork components and external web resources.
- Compliance: Enables compliance with corporate internet usage policies.
- Logging and Monitoring: Proxy servers facilitate logging and monitoring of web access, aiding in troubleshooting.

Limitations:

- **Configuration Complexity:** Configuring and maintaining a proxy server may introduce complexity.