

Software Installation Guide

erwin DATA INTELLIGENCE (DI)

Version 13.0

Linux Installation Guide

This document provides the instructions to install the new 13.0 version of erwin Data Intelligence Suite on a Linux OS.

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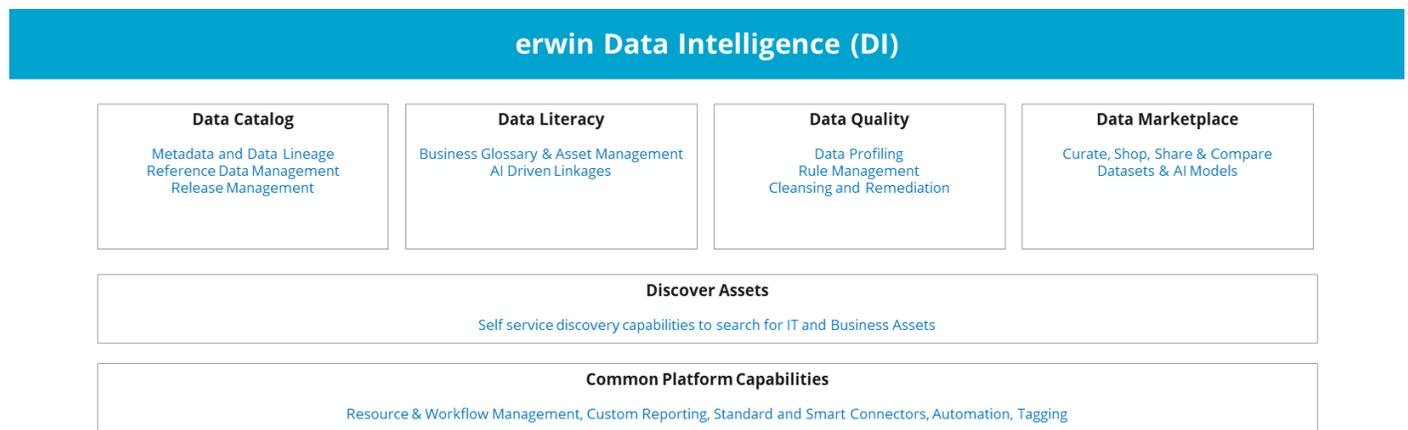
About this Guide

This document describes the installation process of the erwin Data Intelligence Suite application on a dedicated on-premises physical or virtual server, as well as cloud based virtual machines. It provides the software installation procedure for a basic HTTP installation of erwin Data Intelligence Suite, configuration tasks, and troubleshooting information. This document also describes the technical specifications and the pre-requisites required for the successful installation of Data Intelligence software on a supported Linux Distribution.

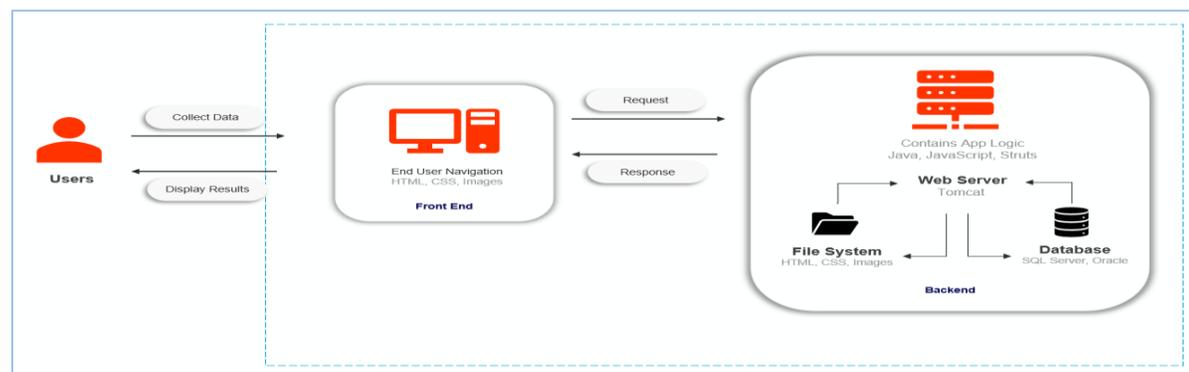
Software Solution Architecture

Key Components

The following diagram shows a high-level modular architecture of the application.

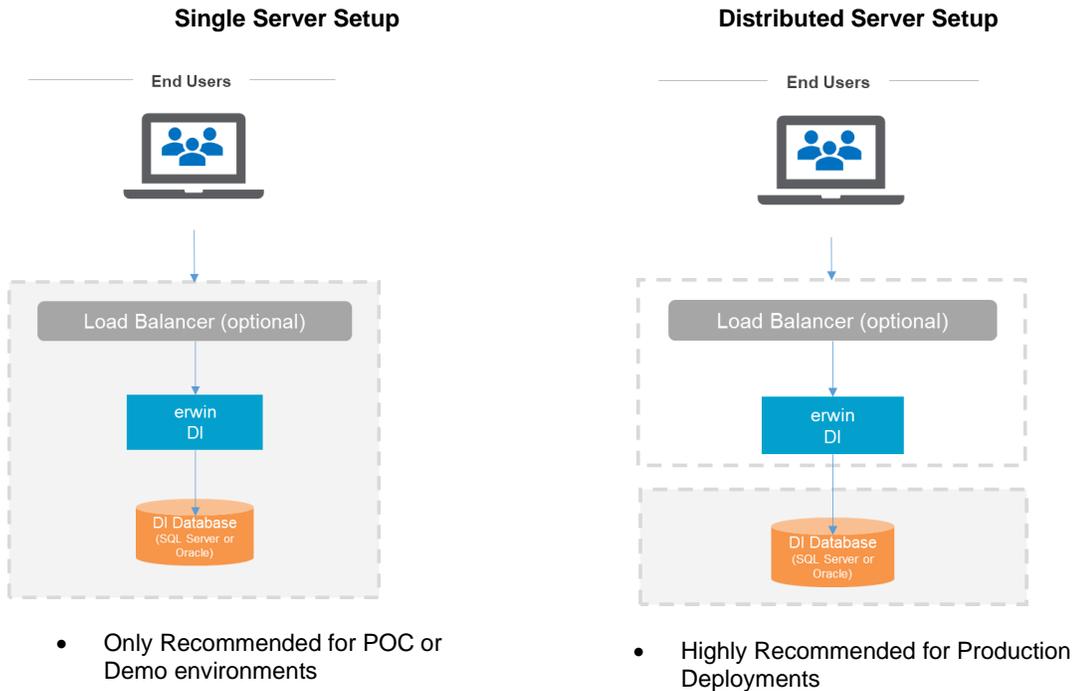


Web Application Architecture



Tiers

The erwin Data Intelligence application supports both single server (application and database on the same server) and distributed (application and database on the different servers) architectures.



Technology Stack and Components

The erwin DI Suite application follows multi-tier architecture consisting of Presentation, Application, Data Access, and Resource layers. The following is a high-level diagram depicting these layers.



System Specifications and Software Requirements

Important Note: Please note that the following specifications are for the erwin Data Intelligence application only and do not include the specifications for the erwin Data Quality module (DQLabs). We recommend that the erwin Data Quality (DQLabs) be installed on a separate server. For the erwin Data Quality (DQLabs) specifications, please refer to this [document](#).

For Production Deployments

Application Tier - Minimum Compute & Software Requirements	
Node Options	Single / Multi
Operating System	Windows Server / Linux Server
Processor	64 Bit
CPU Cores / vCPUs / RAM ¹	4 Cores / 8 vCPUs / 64 GiB RAM recommended (32 GiB RAM Minimum)
Local Storage	100 -200 GB
Java JDK	Eclipse Temurin Adoptium JDK version 17.0.7 certified for erwin DI v13
Java Servlet Container / Web Server	Apache Tomcat version 9.0.73, 9.0.74, 9.0.75 or 9.0.76 certified for erwin DI v13
Web Browsers	MS Edge (v86.0+), Google Chrome (v86.0+), Firefox (v82.0+)
<ul style="list-style-type: none"> ¹ RAM GiB required is based on the number of concurrent users that will use the application. For optimal performance, we recommend about a minimum of 0.5 GB space per login user on the application server. If you have 30 users logging in concurrently, the application will need to have a minimum of 15 GB (30*0.5=15) free RAM space allocated to it. This is not the RAM of the server machine. It is the physical RAM allocated to the application server (tomcat JVM) itself. 	

Database Tier - Minimum Compute & Software Requirements	
Database Server	MS SQL Server: 2016, 2017, 2019, 2022 Oracle Database: 18c, 19c
Processor	64 Bit
CPU Cores / vCPUs / RAM	4 Cores / 8 vCPUs / 64 GiB RAM recommended (32 GiB RAM Minimum)
Database Storage	200 GB storage is recommended as minimum starting size. Oracle Table Space 100 GB recommended as minimum starting size.
<ul style="list-style-type: none"> erwin DI Suite requires a dedicated database/schema, NOT a dedicated server instance. The storage/tablespace allocated initially will need to increase over time based on product usage and data growth. Azure Cloud databases supported: Azure SQL Managed Instance, Azure SQL Database (PaaS) or SQL Server in a VM. AWS Cloud databases supported: AWS RDS SQL or AWS RDS Oracle. 	

Operating Systems Supported			
Microsoft Windows		Windows Server 2016 and above	
Linux Distribution	Versions	Linux Distribution	Versions
Amazon Linux	2023	Red Hat Enterprise Linux	8.x, 9.x
CentOS	11	openSUSE Leap	15.4
Debian	11.7, 12.0	SUSE Linux	15 sp4
Fedora	28, 34, 37	Ubuntu	20.04 LTS, 22.04 LTS
<ul style="list-style-type: none"> Server class operating system is recommended for production deployments. Choice of operating system should be based on customer's skill set and ability to support, manage, maintain the server. 			

Suggested Cloud Instance Sizing			
Azure VM Series		Amazon EC2 Instance Types	
Intel	(8vCPU/64 GiB) Standard_E8s_v5, Standard_E8ds_v5 (8vCPU/32 GiB) Standard_D8s_v5, Standard_D8ds_v5	Intel	(8vCPU/64 GiB) r6i.2xlarge, r6id.2xlarge, r5.2xlarge, r5d.2xlarge (8vCPU/32 GiB) m6i.2xlarge, m6id.2xlarge, m5.2xlarge, m5d.2xlarge
AMD	(8vCPU/64 GiB) Standard_E8as_v5, Standard_E8ads_v5 (8vCPU/32 GiB) Standard_D8as_v5, Standard_D8ads_v5	AMD	(8vCPU/64 GiB) r5a.2xlarge, r5ad.2xlarge, r6a.2xlarge (8vCPU/32 GiB) m6a.2xlarge, m5a.2xlarge, m5ad.2xlarge
Azure E-series memory optimized VM types recommended. Azure Application Gateway or third-party Layer 7 load balancer required for multi-node deployments.		AWS r-family memory optimized instance types recommended. Application Load Balancer or third-party Layer 7 load balancer required for multi-node deployments.	
Suggested cloud instance sizes are a starting point only. Upsizing may be required based on concurrent usage and performance needs.			

Note: We highly recommend that you stay compliant with the above-mentioned system requirements for the best experience. In case you need to use a software (database version, browser etc.) that is not listed in the above system requirements, we recommend that you reach out to your erwin support or professional services contact so we can provide a recommendation on the compatibility.

For Proof of Concepts

Important Note: The specifications shown below are suitable for **Proof of Concept / Test environments** only. Such environments typically have a limited number of concurrent users, and limited ingestion of metadata. If you experience performance issues, we recommend sizing your environment for production use, as shown on prior page.

Application Tier – Minimum Compute & Software Requirements – For Proof of Concepts	
Node Options	Single / Multi
Operating System	Windows Server / Linux Server
Processor	64 Bit
CPU Cores / vCPUs / RAM ¹	2 Cores / 4 vCPUs / 32 GiB RAM recommended (16 GiB RAM Minimum)
Local Storage	100 -200 GB
Java JDK	Eclipse Temurin Adoptium JDK version 17.0.7 certified for erwin DI v13
Java Servlet Container / Web Server	Apache Tomcat version 9.0.73, 9.0.74, 9.0.75 or 9.0.76 certified for erwin DI v13
Web Browsers	MS Edge (v86.0+), Google Chrome (v86.0+), Firefox (v82.0+)
<ul style="list-style-type: none"> ¹ RAM GiB required is based on the number of concurrent users that will use the application. For optimal performance, we recommend about a minimum of 0.5 GB space per login user on the application server. If you have 30 users logging in concurrently, the application will need to have a minimum of 15 GB (30*0.5=15) free RAM space allocated to it. This is not the RAM of the server machine. It is the physical RAM allocated to the application server (tomcat JVM) itself. 	

Database Tier – Minimum Compute & Software Requirements – For Proof of Concepts	
Database Server	MS SQL Server: 2016, 2017, 2019, 2022 Oracle Database: 18c, 19c
Processor	64 Bit
CPU Cores / vCPUs / RAM	2 Cores / 4 vCPUs / 32 GiB RAM recommended (16 GiB RAM Minimum)
Database Storage	100 GB storage is recommended as minimum starting size. Oracle Table Space 75 GB recommended as minimum starting size.
<ul style="list-style-type: none"> erwin DI Suite requires a dedicated database/schema, NOT a dedicated server instance. The storage/tablespace allocated initially will need to increase over time based on product usage and data growth. Azure Cloud databases supported: Azure SQL Managed Instance, Azure SQL Database (PaaS) or SQL Server in a VM. AWS Cloud databases supported: AWS RDS SQL or AWS RDS Oracle. 	

Operating Systems Supported			
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Linux Distribution	Versions	Linux Distribution	Versions
Amazon Linux	2023	Red Hat Enterprise Linux	8.x, 9.x
CentOS	11	openSUSE Leap	15.4
Debian	11.7, 12.0	SUSE Linux	15 sp4
Fedora	28, 34, 37	Ubuntu	20.04 LTS, 22.04 LTS
<ul style="list-style-type: none"> Server class operating system is recommended for production deployments. Choice of operating system should be based on customer's skill set and ability to support, manage, maintain the server. 			

Suggested Cloud Instance Sizing – For Proof of Concepts			
Azure VM Series		Amazon EC2 Instance Types	
Intel	(4vCPU/32 GiB) Standard_E4s_v5, Standard_E4ds_v5	Intel	(4vCPU/32 GiB) r6i.xlarge, r6id.xlarge r5.xlarge, r5d.xlarge
	(4vCPU/16 GiB) Standard_D4s_v5, Standard_D4ds_v5		(4vCPU/16 GiB) m6i.xlarge, m6id.xlarge, m5.xlarge, m5d.xlarge
AMD	(4vCPU/32 GiB) Standard_E4as_v5, Standard_E4ads_v5	AMD	(4vCPU/32 GiB) r5a.xlarge, r5ad.xlarge, r6a.xlarge
	(4vCPU/16 GiB) Standard_D4as_v5, Standard_D4ads_v5		(4vCPU/16 GiB) m6a.xlarge, m5a.xlarge, m5ad.xlarge
Azure E-series memory optimized VM types recommended. Azure Application Gateway or third-party Layer 7 load balancer required for multi-node deployments.		AWS r-family memory optimized instance types recommended. Application Load Balancer or third-party Layer 7 load balancer required for multi-node deployments.	
Suggested cloud instance sizes are a starting point only. Upsizing may be required based on concurrent usage and performance needs.			

Pre-requisites to install erwin Data Intelligence Suite

Eclipse Temurin Adoptium JDK and Tomcat webserver are standard prerequisites to deploy the erwin Data Intelligence Suite.

erwin Data Intelligence 13.0 software is certified to run on the following versions of Apache Tomcat and Java JDK.	
Apache Tomcat (Java Servlet / Web Server)	9.0.73, 9.0.74, 9.0.75, 9.0.76
Java JDK	Eclipse Temurin Adoptium JDK 17.0.7
<p>Important Note: erwin Data Intelligence v13.0 has been officially certified on Tomcat 9.0.73/.74/.75/.76. We recommend that you install only a certified tomcat version to avoid any compatibility issues.</p> <p>If you are on the older Tomcat 8.5x version, it is mandatory that you upgrade to Tomcat 9.0. 73/74/75/76 for security compliance and to avoid any unexpected compatibility issues.</p>	

Additional Note: We recommend that you use the certified versions of Tomcat and Java for the best experience. In case you need to use a point version that is above or below the certified versions, the product might still work as expected on the non-conformant point versions, but we recommend that you reach out to your erwin support or professional services contact so we can provide a recommendation on the compatibility.

Memory Allocation to Tomcat JVM (web server)

Allocate memory as high as possible to the tomcat web server based on the RAM size of the server.

E.g., If the application server has 32 GiB RAM, the Tomcat JVM needs to be allocated 50% of the RAM as a minimum. For best performance 75% is recommended. The higher the memory allocation, the better performance for application.

An example of the recommended Memory allocation to Tomcat would look as follows:

RAM available on Server (Physical or VM)	Memory to Allocate to Tomcat JVM
16 GiB	8 - 12 GiB
32 GiB	16 - 28 GiB
64 GiB	48 - 54 GiB

End User Machine / Laptop Specifications

End User Machine / Laptop Configuration	
Processor	i3 and above
Minimum RAM	8 GiB
Minimum Available Free RAM	1-2 GiB free
<ul style="list-style-type: none"> The end user machine should have a minimum of 1-2 GiB free memory available when accessing erwin Data Intelligence Suite via a web browser. If you have 4 GiB of physical RAM in the laptop, and no free memory available, the erwin Data Intelligence Suite web pages will render poorly or may not load at all until some physical memory is freed up and made available. 	

Installing the erwin Data Intelligence Suite software

Installing erwin Data Intelligence Suite on Linux OS is easy and straight forward by following these 7 high level steps:

- Step 1:** Install latest Linux OS patches and security updates.
- Step 2:** Create Linux user 'erwindis' for tomcat service account.
- Step 3:** Install certified version Adoptium OpenJDK from Eclipse Foundation.
- Step 4:** Download and Install certified version of Apache Tomcat v9.0.73/74/75/76.
- Step 5:** Download and Deploy erwin Data Intelligence Suite v13 GA.
- Step 6:** Create and Configure the database for erwinDISuite v13.
- Step 7:** Access the erwin DI Suite Login screen.

Detailed Walkthroughs for Installation of erwin Data Intelligence Suite on Linux OS

Detailed walkthroughs of the 7 high-level steps and their related sub-tasks are organized into separate chapters for each supported Linux distribution.



Pause for an installation readiness check!

Before proceeding with installation...

Verify all system requirements are met.

Review the minimum system requirements for: CPU, RAM, Storage, and supported Linux OS version before proceeding.

Verify Internet Access is available.

The Linux server will require Internet access to download Linux OS updates, and the various packages and components required for completing the installation.

Linux 'sudo' access rights required.

Before beginning, verify your Linux user account can elevate its privileges using 'sudo' to allow commands to execute as the root user.

Additional Administrator rights.

During installation you will need to create a database schema and execute DDL scripts to configure the schema for the application. You will require DBA admin rights to complete this step.

You may also require an administrator to assist with updating firewall rules, create a DNS hostname, create TLS/SSL certificates, or perform other tasks requiring Administrator rights.

Are you ready?

Skip to the chapter page for your chosen Linux distribution to continue the installation. Let's go!

1 - Red Hat Enterprise Linux 8 & 9

1.1 - Update Linux OS repos, install patches, security updates and other packages.

```
sudo dnf upgrade -y
```

1.2 - Create Linux user 'erwindis' for tomcat service account.



As a security best practice, Apache Tomcat should never be run under "root" user account. We recommend creating a Linux system account user that is restricted from shell login.

With security best practices in mind, using the commands below we will create a system account user named: **'erwindis'** with home folder path **/opt/erwindis** and the user is restricted with no shell access.

```
sudo useradd -r -c "erwinDIS service" -m -d /opt/erwindis -s /sbin/nologin -U erwindis
```

1.2.1 - Set up additional folders in the erwindis home folder.

The following will create some folders in /opt/erwindis used by erwin Data Intelligence Suite. The folders will be owned by the user and group 'erwindis' which is the service account used by Tomcat.

Note: the '\n' indicates a multiline shell command. Be sure to copy/paste the entire text block to your shell.

```
sudo -u erwindis mkdir -p \  
/opt/erwindis/Downloads \  
/opt/erwindis/DISTemp \  
/opt/erwindis/discover_assets \  
/opt/erwindis/iccdocuments
```

1.3 - Install certified Adoptium OpenJDK from Eclipse Foundation

Quest\erwin recommends installing the certified version of JDK 17 using the package manager for your chosen Linux distribution. The instructions below provide the steps to install Adoptium JDK using Linux (RPM/DEB) installer packages.

The Adoptium JDK 17 installer updates the Linux 'alternatives' system to set the default java. We do not need to set the JAVA_HOME environment variable as we will configure that in a later step for the tomcat systemd unit file.



For additional information about installing Adoptium OpenJDK please refer to the official documentation from the Adoptium site at the following URL:

<https://adoptium.net/installation/linux/>

1.3.1 - Add the Adoptium repository to your Linux distribution.

Note: Be sure to copy/paste the entire text block to your shell.

```
sudo tee -a /etc/yum.repos.d/adoptium.repo >/dev/null << EOF
[Adoptium]
name=Adoptium
baseurl=https://packages.adoptium.net/artifactory/rpm/${DISTRIBUTION_NAME:-$(. /etc/os-release; echo $ID)}\^{\$releasever}\$basearch
enabled=1
gpgcheck=1
gpgkey=https://packages.adoptium.net/artifactory/api/gpg/key/public
EOF
```

1.3.2 - Update the repository cache.

```
sudo dnf upgrade --repo Adoptium
```

1.3.3 - Install the specific version of Adoptium JDK certified for erwin Data Intelligence

```
sudo dnf install -y temurin-17-jdk-17.0.7.0.0.7-1
```

1.3.4 - Disable the Adoptium repository.

To prevent unintended future JDK 17 version updates, Quest\erwin recommends disabling the Adoptium repository to prevent unintended installation of future JDK 17 version updates.



This step is optional but recommended.

Installing uncertified versions of JDK 17 may cause unexpected results.

Disabling the repository will avoid potential problems.

```
sudo dnf config-manager --disable Adoptium
```

1.3.4.1 - Verify the Adoptium repository is disabled.

```
dnf repolist Adoptium
```

The output should show the repository status is disabled. Preventing unintended updates.

```
[erwin@rhe18 ~]$ dnf repolist Adoptium
Not root, Subscription Management repositories not updated
repo id                repo name                status
Adoptium               Adoptium                 disabled
[erwin@rhe18 ~]$ |
```

1.3.4.1.1 - Enable the repository again if needed for update.

If you require installing a newer JDK from the Adoptium repository, you can enable the repo again with the following command:

```
sudo dnf config-manager --enable Adoptium
```

1.4 - Download and Install Apache Tomcat v9.0.(73|74|75|76)

Quest\erwin QA has certified specifically Apache Tomcat versions 9.0.73, 9.0.74, 9.0.75 and 9.0.76 for use with the erwin Data Intelligence Suite v13 GA release. It is strongly recommended to install only a certified version of Apache Tomcat.

1.4.1 - Download the Apache Tomcat tar to /opt/erwindis/Downloads directory.

Note: the '\ ' indicates a multiline shell command. Be sure to copy/paste the entire text block to your shell.

```
sudo -u erwindis wget -P /opt/erwindis/Downloads \  
https://archive.apache.org/dist/tomcat/tomcat-9/v9.0.75/bin/apache-tomcat-9.0.75.tar.gz
```

1.4.1.1 - Unpack the tar to erwindis home directory.

```
sudo -u erwindis tar -xvf /opt/erwindis/Downloads/apache-tomcat-9.0.75.tar.gz \  
-C /opt/erwindis && sudo rm /opt/erwindis/Downloads/apache-tomcat-9.0.75.tar.gz
```

1.4.1.2 - Create a symbolic link for the apache-tomcat-9.0.75 path.

Creating a symbolic link will make it easier to reference the tomcat installation path, and to manage future upgraded versions.

```
sudo -u erwindis ln -s /opt/erwindis/apache-tomcat-9.0.75 /opt/erwindis/tomcat
```

1.4.1.3 - Verify the contents of the erwindis home directory to see the results.

```
sudo ls -l /opt/erwindis/
```

Your output should now match the following example:

```
[erwin@rhel8 ~]$ sudo ls -l /opt/erwindis/  
total 4  
drwxr-xr-x. 9 erwindis erwindis 4096 Jun 13 17:32 apache-tomcat-9.0.75  
drwxr-xr-x. 2 erwindis erwindis   6 Jun 13 16:58 discover_assets  
drwxr-xr-x. 2 erwindis erwindis   6 Jun 13 16:58 DISTemp  
drwxr-xr-x. 2 erwindis erwindis   6 Jun 13 17:32 Downloads  
drwxr-xr-x. 2 erwindis erwindis   6 Jun 13 16:58 iccdocuments  
lrwxrwxrwx. 1 erwindis erwindis  34 Jun 13 17:34 tomcat -> /opt/erwindis/apache-tomcat-9.0.75  
[erwin@rhel8 ~]$ |
```

1.4.2 - Configure a systemd service unit file to manage starting/stopping tomcat as a service.

We recommend managing the start/stop/restart of apache tomcat service with the built in Linux SYSTEMD system. We use the 'tee' command below to create a new **systemd** service unit file named **erwindis.service** located in /etc/systemd/system.



Caution!

The example below sets the JAVA_HOME path, and assumes the tomcat install path to be /opt/erwindis/tomcat and will allocate **24 GiB RAM** for the Java Virtual Machine (JVM).

Review the paths and the settings below, and modify if needed, to set correct values for your environment. It is recommended to set the -Xms and -Xmx settings to 75% of the server's memory.

-Xms and -Xmx should be set to equal RAM values for efficient java garbage collection.

1.4.2.1 - Create the /etc/systemd/system/erwindis.service file.

Copy/Paste the entire text block to your shell to create the service unit file using the 'tee' command.

Note: Be sure to copy/paste the entire text block to your shell.

```
sudo tee -a /etc/systemd/system/erwindis.service >/dev/null << EOF
[Unit]
Description=Tomcat 9.0.75 servlet container
Wants=network.target
After=syslog.target network.target

[Service]
Type=forking
Restart=always
RestartSec=0
TimeoutStartSec=500
TimeoutStopSec=0

User=erwindis
Group=erwindis

# Allow tomcat to bind to ports below 1024 without running it as root
# Port 443 is a privileged port on Linux OS
# Uncomment the next line to allow 443 instead of 8443 for ssl connector
#AmbientCapabilities=CAP_NET_BIND_SERVICE

# Set JAVA_HOME path for Adoptium temurin-17-jdk
Environment="JAVA_HOME=/usr/lib/jvm/temurin-17-jdk/"

# Setting the java.security.egd system property to use/dev/urandom configures
# the Tomcat JVM to use /dev/urandom as the source of entropy for the SecureRandom
# class to avoid potential delays during startup.
Environment="JAVA_OPTS=-Djava.security.egd=file:///dev/urandom"

Environment="CATALINA_BASE=/opt/erwindis/tomcat"
Environment="CATALINA_HOME=/opt/erwindis/tomcat"
Environment="CATALINA_PID=/opt/erwindis/tomcat/temp/tomcat.pid"
Environment="CATALINA_OPTS=-Xms24G -Xmx24G -server -XX:+UseParallelGC"

# erwinDIS v13 requires additional Java parameter options to be set
# These are being added using separate Environment entries for readability
Environment="JAVA_OPTS=$JAVA_OPTS --add-opens=java.base/java.lang=ALL-UNNAMED"
Environment="JAVA_OPTS=$JAVA_OPTS --add-opens=java.base/java.io=ALL-UNNAMED"
Environment="JAVA_OPTS=$JAVA_OPTS --add-opens=java.base/java.util=ALL-UNNAMED"
Environment="JAVA_OPTS=$JAVA_OPTS --add-opens=java.rmi/sun.rmi.transport=ALL-UNNAMED"
Environment="JAVA_OPTS=$JAVA_OPTS --add-opens=java.base/java.net=ALL-UNNAMED"
Environment="JAVA_OPTS=$JAVA_OPTS --add-opens=java.management/sun.management=ALL-UNNAMED"
Environment="JAVA_OPTS=$JAVA_OPTS --add-opens=java.base/java.nio=ALL-UNNAMED"
Environment="JAVA_OPTS=$JAVA_OPTS --add-opens=java.base/sun.nio.ch=ALL-UNNAMED"
Environment="JAVA_OPTS=$JAVA_OPTS --add-opens=java.base/java.lang.invoke=ALL-UNNAMED"
Environment="JAVA_OPTS=$JAVA_OPTS --add-opens=java.base/java.lang.reflect=ALL-UNNAMED"
Environment="JAVA_OPTS=$JAVA_OPTS --add-opens=java.base/java.util.regex=ALL-UNNAMED"
Environment="JAVA_OPTS=$JAVA_OPTS --add-opens=java.base/java.net=ALL-UNNAMED"

ExecStart=/opt/erwindis/tomcat/bin/startup.sh
ExecStop=/opt/erwindis/tomcat/bin/shutdown.sh

[Install]
```

```
WantedBy=multi-user.target  
EOF
```

1.4.2.2 - Reload systemd daemons.

```
sudo systemctl daemon-reload
```

1.4.2.3 - Enable the erwindis.service file to start tomcat during server reboots.

```
sudo systemctl enable erwindis.service
```

1.4.2.4 - Verify the unit file is enabled.

```
sudo systemctl status erwindis.service
```

1.4.2.5 - Start the tomcat server using the erwindis.service unit file with the following command.

```
sudo systemctl start erwindis.service
```

1.4.2.6 - Check status to view the result.

Verify tomcat is running using the erwindis.service unit file.

```
sudo systemctl status erwindis.service
```

Your result should be like:

```
[erwin@rhel8 ~]$ systemctl status erwindis.service
● erwindis.service - Tomcat 9.0.75 servlet container
   Loaded: loaded (/etc/systemd/system/erwindis.service; enabled; vendor preset: disabled)
   Active: active (running) since Tue 2023-06-13 22:03:18 CDT; 47min ago
     Process: 2569 ExecStop=/opt/erwindis/tomcat/bin/shutdown.sh (code=exited, status=0/SUCCESS)
     Process: 2605 ExecStart=/opt/erwindis/tomcat/bin/startup.sh (code=exited, status=0/SUCCESS)
    Main PID: 2612 (java)
       Tasks: 34 (limit: 203708)
      Memory: 383.0M
     CGroup: /system.slice/erwindis.service
            └─2612 /usr/lib/jvm/temurin-17-jdk/bin/java -Djava.util.logging.config.file=/opt/

Jun 13 22:03:18 rhel8.localdomain systemd[1]: Starting Tomcat 9.0.75 servlet container...
Jun 13 22:03:18 rhel8.localdomain startup.sh[2605]: Tomcat started.
Jun 13 22:03:18 rhel8.localdomain systemd[1]: Started Tomcat 9.0.75 servlet container.
lines 1-14/14 (END)
```

If you see Active: active (running) we are good to go. Leave tomcat running as we will soon need it when deploying the erwin Data Intelligence webapp WAR file.

1.4.3 - Configure the RHEL 8 firewall to allow inbound port tcp/8080.

This section covers opening tcp ports on the default firewall included with RHEL 8, firewalld. If you are employing a different type of firewall, please refer to your firewall's instructions to create the allow rule required to open access to the tomcat connector on port 8080/tcp.

1.4.3.1 - Open port 8080/tcp and make the rule persistent across reboots.

```
sudo firewall-cmd --permanent --zone=public --add-port=8080/tcp
```

1.4.3.2 - Reload the firewall configuration.

```
sudo firewall-cmd --reload
```

1.5 - Download and Deploy erwin Data Intelligence Suite v13.

Customers should download the latest v13 GA release zip file from <http://support.quest.com> to ensure they are obtaining the latest GA release.

1.5.1 - Download the erwin_Data_Intelligence_v13 zip file.

The following command block downloads the zip file from the <https://support.quest.com> site. Then unzips the file and copies the erwinDISuite.war file to the /opt/erwindis/tomcat/webapps/ directory.

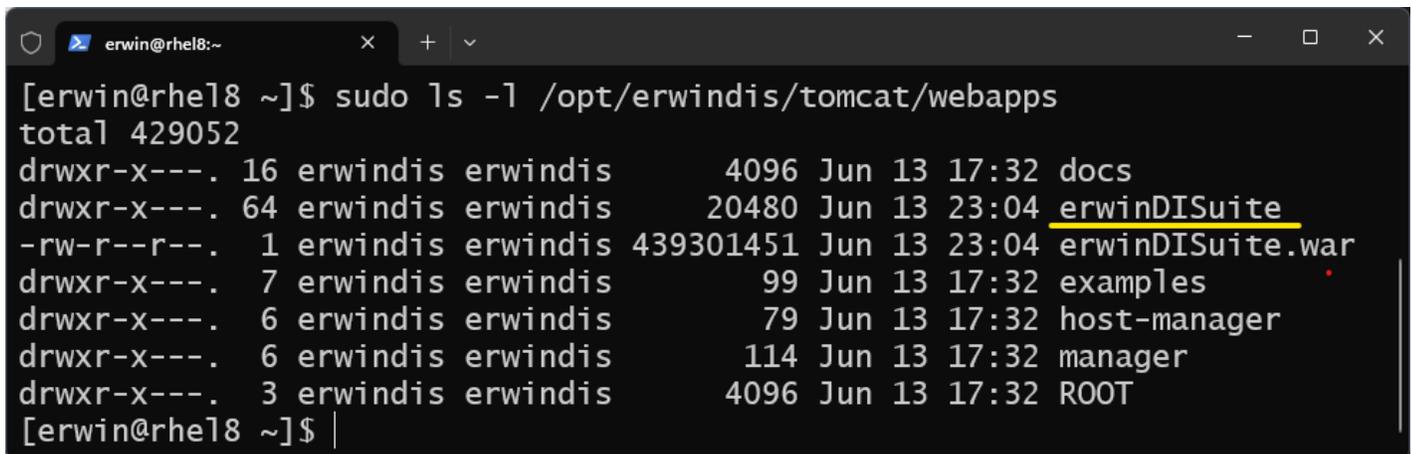
Note: The “\” indicates a multiline shell command. Be sure to copy/paste the entire text block to your shell.

```
sudo -u erwindis wget -P /opt/erwindis/Downloads \
https://erwin-us.s3.amazonaws.com/Support/ADS/v13.0/erwinDI_v13.0.zip \
&& sudo -u erwindis unzip /opt/erwindis/Downloads/erwinDI_v13.0.zip \
-d /opt/erwindis/Downloads/erwinDIS_v13.0 \
&& sudo -u erwindis cp /opt/erwindis/Downloads/erwinDIS_v13.0/WAR/erwinDISuite.war \
/opt/erwindis/tomcat/webapps/erwinDISuite.war
```

1.5.1.1 - Verify the erwinDISuite.war has expanded to create its project folder.

```
sudo ls -l /opt/erwindis/tomcat/webapps
```

Your result should be like this example directory listing showing the erwinDISuite project folder has expanded from erwinDISuite.war after being deployed by Tomcat.



```
erwin@rhe18:~$ sudo ls -l /opt/erwindis/tomcat/webapps
total 429052
drwxr-x---. 16 erwindis erwindis      4096 Jun 13 17:32 docs
drwxr-x---. 64 erwindis erwindis     20480 Jun 13 23:04 erwinDISuite
-rw-r--r--.  1 erwindis erwindis 439301451 Jun 13 23:04 erwinDISuite.war
drwxr-x---.  7 erwindis erwindis      99 Jun 13 17:32 examples
drwxr-x---.  6 erwindis erwindis      79 Jun 13 17:32 host-manager
drwxr-x---.  6 erwindis erwindis     114 Jun 13 17:32 manager
drwxr-x---.  3 erwindis erwindis     4096 Jun 13 17:32 ROOT
erwin@rhe18:~$
```

1.5.2 - Stop the tomcat service: erwindis.

We can shut down Tomcat for now. The next few steps will walk you through creating and configuring the application database, and edits to the erwin Data Intelligence Suite application properties files.

```
sudo systemctl stop erwindis
```

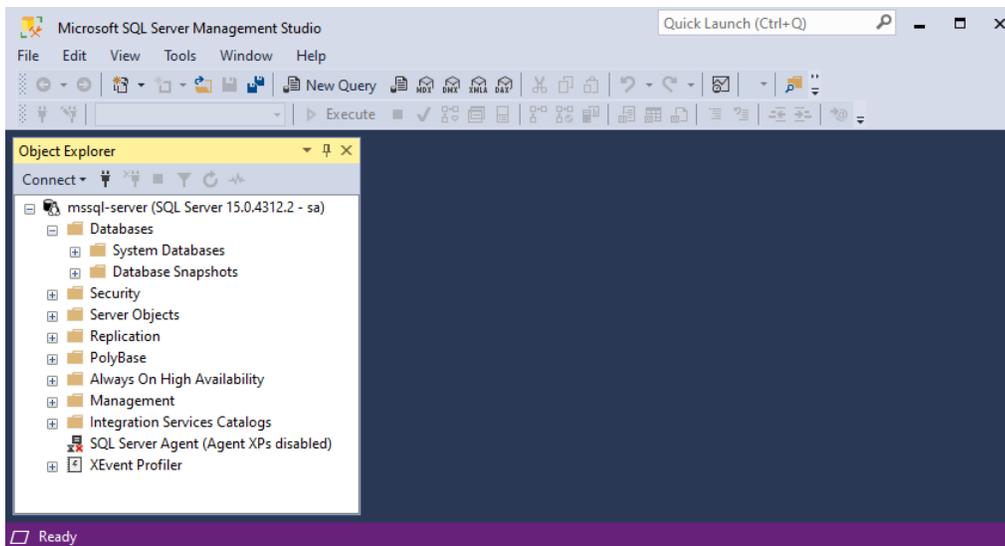
1.6 - Create and configure the database for erwin Data Intelligence Suite v13.

1.6.1 - Create the erwin DI database for MS SQL Server

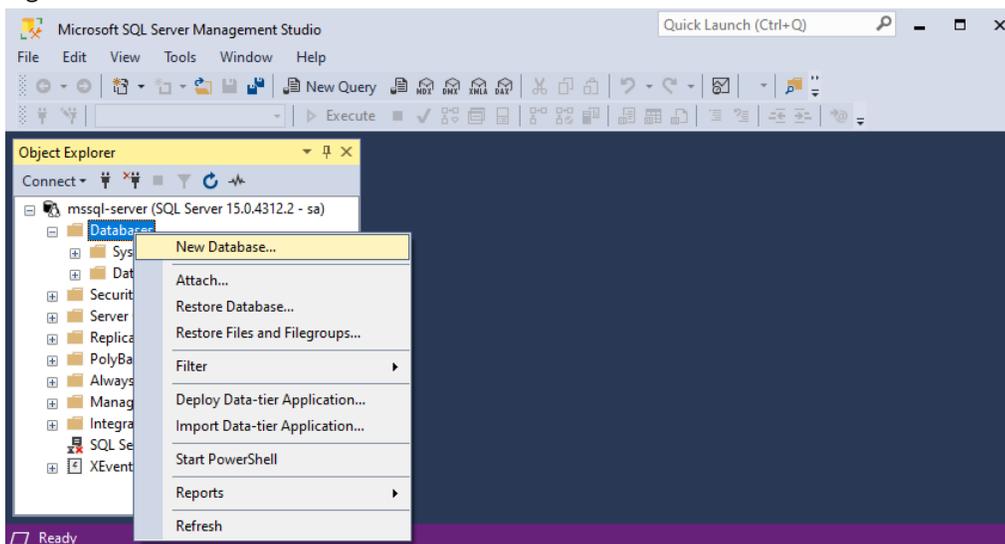
The following steps are for an MS SQL Server. You will require SQL Server Administrative rights to complete the steps for this section. We will use Windows SQL Server Management Studio application to complete the following steps. If you prefer, could also use SQL Server command-line tools 'sqlcmd' to create the database schema and to execute the required DDL script. Using sqlcmd is out of scope for this document, please consult with your SQL DBA to determine the best method to use for your organization.

1.6.1.1 - Using SSMS, create a new database/schema for erwin DI Suite.

Please consult with your SQL DBA to determine which SQL user and type of authentication method is required for your organization. In this example we have logged in to our MSSQL-SERVER using the 'sa' user, and as you can see no databases have been created yet.

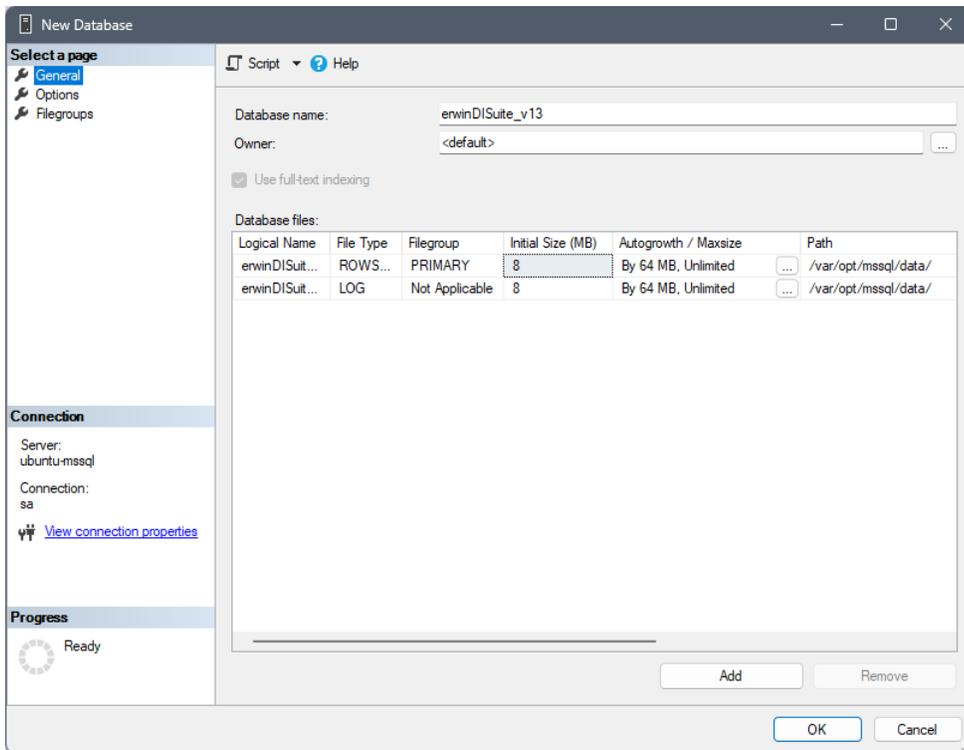


Right Click on Databases and select New Database from the context menu.



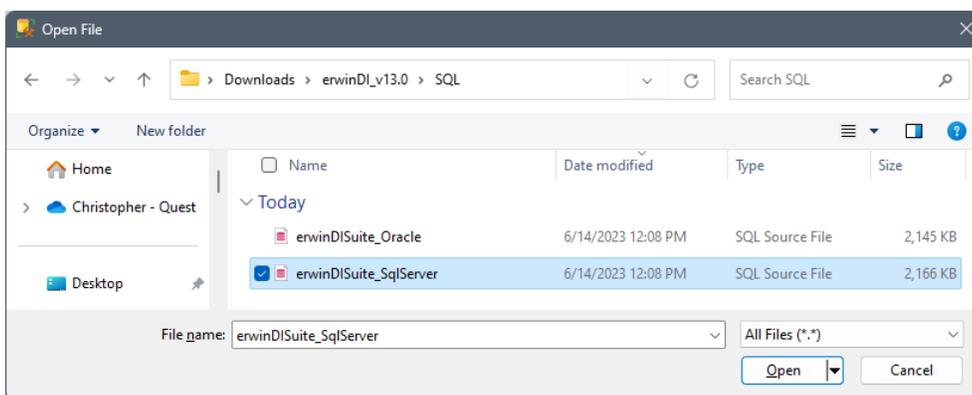
1.6.1.2 - Create the database with your preferred name. e.g., 'erwinDISuite_v13'

You should consult with your SQL DBA to verify other settings, and path locations for your database. For this example we will accept the defaults and continue to next step.



1.6.1.3 - Execute the provided erwinDISuite_SqlServer.sql DDL script.

Using 'Ctrl-O' to bring up the Open File window, navigate to where you have downloaded and unzipped the erwinDISuite v13 'SQL' folder. Find the DDL file named 'erwinDISuite_SqlServer.sql' and click Open.

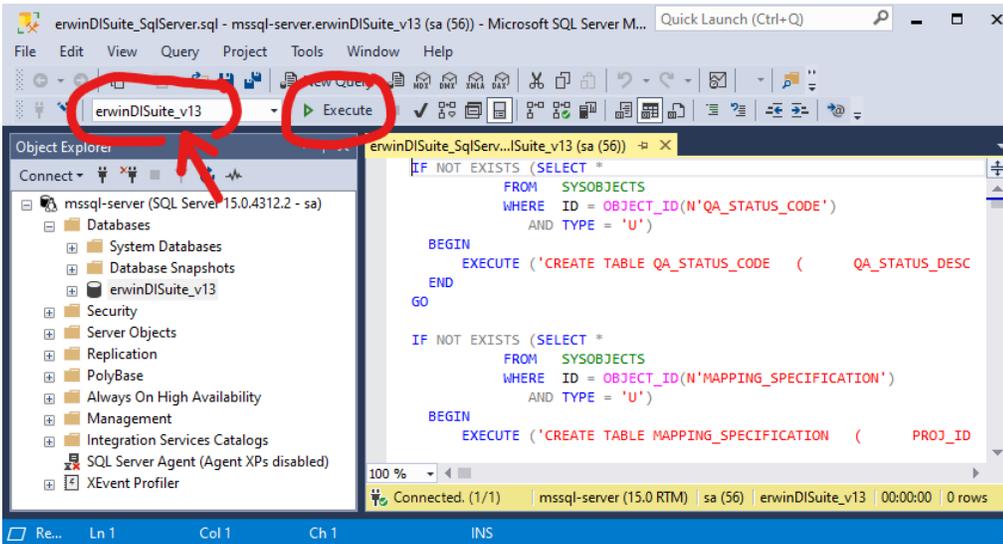


1.6.1.4 - Once the DDL file is opened, verify the correct database is selected, execute the DDL script.

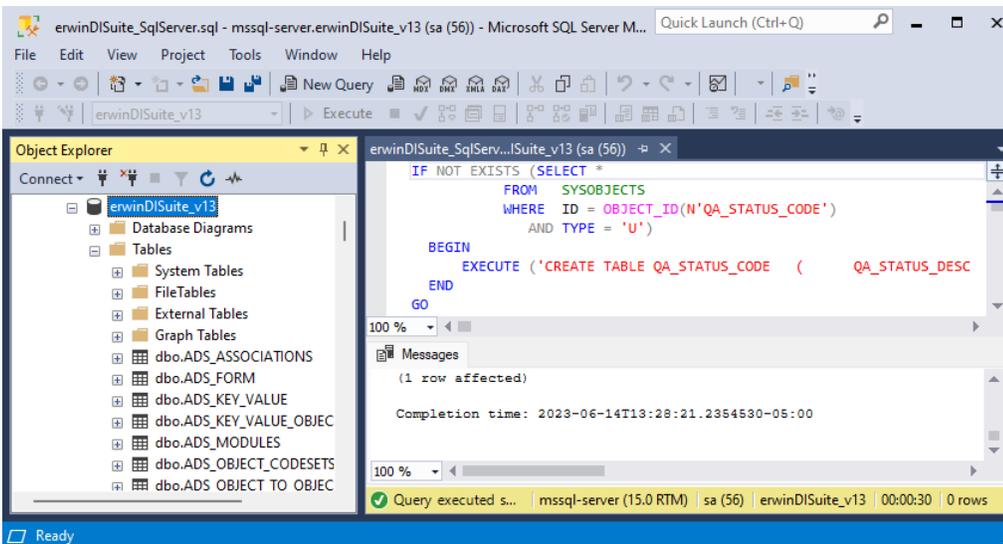
**** IMPORTANT !! **** A dedicated database is required for erwinDISuite.

The DDL needs to be executed against this database. The DDL should **NOT** be executed against the **MASTER** schema.

Once you have confirmed the correct database schema has been selected, click the 'Execute' button to run the DDL script. Allow the script execution to complete. The required database tables for erwinDISuite v13 will be created in the database.



When complete you can refresh the SSMS object Explorer pane to see the newly created tables.



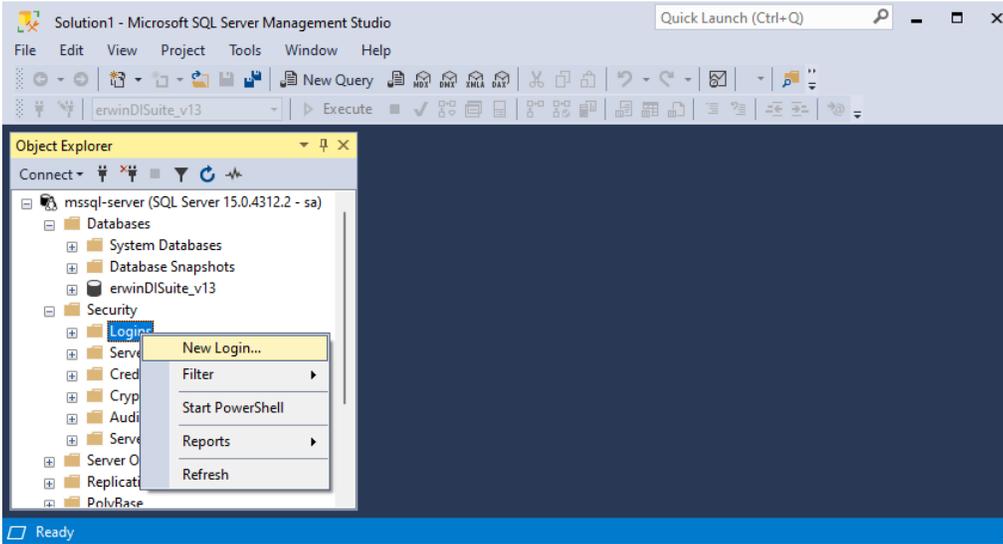
Continue to the next step to create a dedicated SQL DB user account for the erwinDISuite_v13 database.

1.6.1.5 - Create a dedicated SQL DB user account for the erwinDISuite_v13 database.

For this example, we will create a new login using SQL Authentication.

Note: Windows Authentication mode is also supported. The database configuration file has a section dedicated to entering the connectivity parameters that support windows authentication.

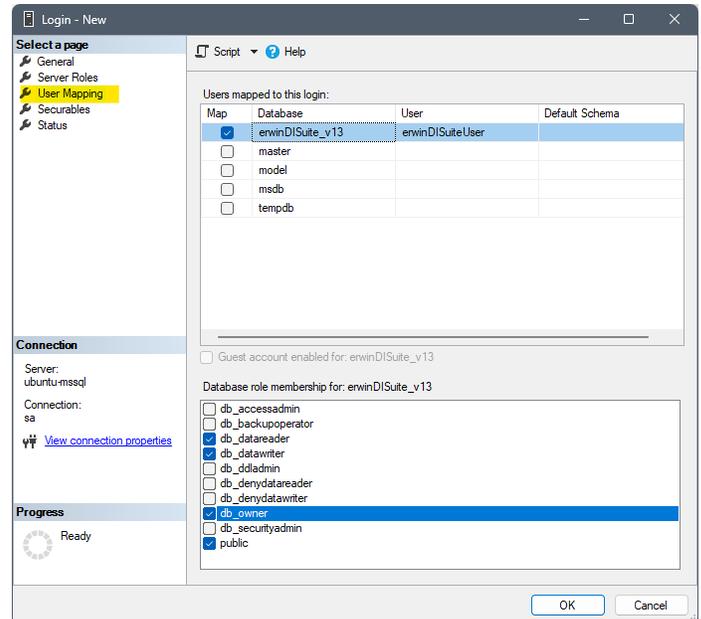
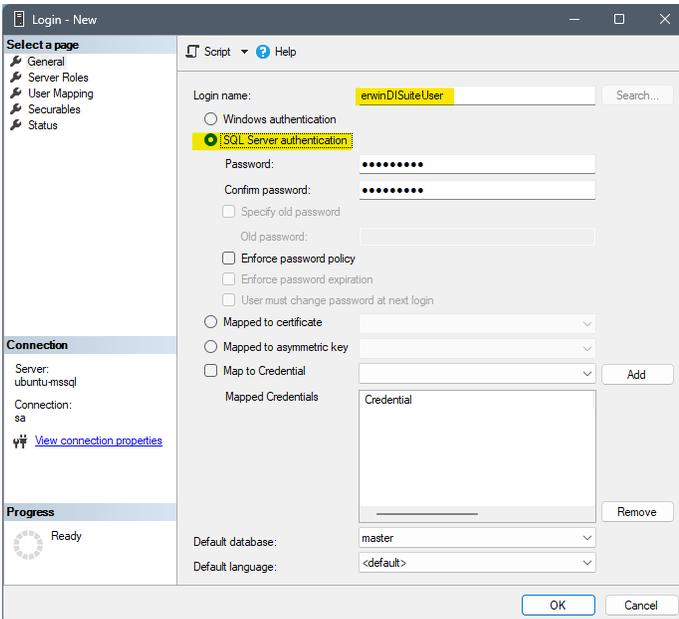
Expand the MS SQL server's Security folder, then right click on the Login folder, and select 'New Login' from the menu.



Provide your preferred login name for the new user account.

Be sure to select SQL Server Authentication. Set your password settings to conform to your organization's security and password policies. Then click on 'User Mapping' and grant the following roles for the user on the erwinDISuite_v13 database.

Grant roles: Public, db_owner, data_reader, data_writer



1.7 - Configuring the 'database.properties' file

1.7.1 - Configuring the 'database.properties' file for MS SQL Server database

Return to your RHEL server and open the database.properties file with the editor of your choice. In this example we will edit the file with the nano editor using elevated privileges via sudo.

```
sudo nano /opt/erwindis/tomcat/webapps/erwinDISuite/WEB-INF/database/database.properties
```

1.7.1.1 - SQL Authentication Mode

If necessary, uncomment the SQL Server section by removing the # at the beginning of each line (between SQL SERVER BEGIN and SQL SERVER END section) and enter the following parameters for your SQL Server environment.

- Server Name
- Port # (default 1433)
- Database Name
- UserName
- Password
- PasswordEncrypted = false

The parameters you will need to edit are indicated below in red.

```
erwin@rhel8:~$ nano /opt/erwindis/tomcat/webapps/erwinDISuite/WEB-INF/database/database.properties
### SQL Server Begin
DriverName=com.microsoft.sqlserver.jdbc.SQLServerDriver
URL=jdbc:sqlserver://<servername/ipaddress>:<port>;databaseName=<databasename>;encrypt=true;trustServerCertificate=true
UserName=uid
Password=pwd
PasswordEncrypted=false
DBType=SQLSERVER
ConnectionPartitions=1
MinimumConnectionsPerPartition=50
MaximumConnectionsPerPartition=150
#ConnectionPoolType=BONECP
ConnectionPoolType=HIKARI
#ConnectionPoolType= C3P0
### SQL Server End

^G Get Help      ^O Write Out    ^W Where Is     ^K Cut Text      ^J Justify      ^C Cur Pos      M-U Undo        M-A Mark Text
^X Exit          ^R Read File    ^\ Replace      ^U Uncut Text   ^T To Spell     ^_ Go To Line    M-E Redo        M-G Copy Text
```

Once your edits are complete. Save the file and skip to the step: **Configuring the application documents repository path.**

1.7.1.2 - Windows Authentication Mode

If you require using Windows Authentication mode, you will first need to comment out all rows between **SQL Server Begin** and **SQL Server End** section as shown in the example screen below.

```

GNU nano 2.9.8 /opt/erwindis/tomcat/webapps/erwinDISuite/WEB-INF/database/database.properties Modified

### SQL Server Begin
#DriverName=com.microsoft.sqlserver.jdbc.SQLServerDriver
#URL=jdbc:sqlserver://<servername/ipaddress>:<port>;databaseName=<databasename>;encrypt=true;trustServerCertificate=true
#UserName=uid
#Password=pwd
#PasswordEncrypted=false
#DBType=SQLSERVER
#ConnectionPartitions=1
#MinimumConnectionsPerPartition=50
#MaximumConnectionsPerPartition=150
#ConnectionPoolType=BONECP
#ConnectionPoolType=HIKARI
#ConnectionPoolType=C3PO
### SQL Server End

^G Get Help      ^O Write Out    ^W Where Is     ^K Cut Text     ^J Justify     ^C Cur Pos     M-U Undo       M-A Mark Text
^X Exit         ^R Read File   ^L Replace      ^U Uncut Text  ^T To Spell    ^_ Go To Line   M-E Redo       M-6 Copy Text
  
```

Then scroll down to the **SQL Server Windows Authentication** section and uncomment the section by removing the # at the beginning of each line between **SQL SERVER Windows Authentication BEGIN** and **SQL SERVER Windows Authentication END** section as shown in the example below. Then enter the following parameters for your SQL Server environment.

- SERVER NAME or IP Address
- Database Name
- Domain
- UserName
- Password
- PasswordEncrypted = false

The parameters you will need to edit are indicated below in red.

```

GNU nano 2.9.8 /opt/erwindis/tomcat/webapps/erwinDISuite/WEB-INF/database/database.properties Modified

### SQL Server Windows Authentication Begin
DriverName=net.sourceforge.jtds.jdbc.Driver
URL=jdbc:jtds:sqlserver://<servername/ipaddress>/<databaseName>;domain=<domainname>
UserName=uid
Password=pwd
PasswordEncrypted=false
DBType=SQLSERVER
ConnectionPartitions=1
MinimumConnectionsPerPartition=50
MaximumConnectionsPerPartition=150
##ConnectionPoolType=BONECP
ConnectionPoolType=HIKARI
TestConnectionQuery=SELECT 1
### SQL Server Windows Authentication End

^G Get Help      ^O Write Out    ^W Where Is     ^K Cut Text     ^J Justify     ^C Cur Pos     M-U Undo       M-A Mark Text
^X Exit         ^R Read File   ^L Replace      ^U Uncut Text  ^T To Spell    ^_ Go To Line   M-E Redo       M-6 Copy Text
  
```

1.8 - Configuring the application documents repository path

1.8.1 - Update the 'iccdocuments.properties' file.

Return to your RHEL server and open the 'iccdocuments.properties' file with the editor of your choice. In this example we will edit the file with the nano editor using elevated privileges via sudo.

```
sudo nano -l /opt/erwindis/tomcat/webapps/erwinDISuite/WEB-INF/configuration/properties/iccdocuments.properties
```

Note: The -l switch will cause the nano editor to display line numbers.

Once the file is open, notice that lines 1, 2, and 4 contain Windows filesystem paths. We will need to edit these lines to point to the correct Linux filesystem paths.

```

/opt/erwindis/tomcat/webapps/erwinDISuite/WEB-INF/configuration/properties/iccdocuments.properties
1 DocumentsPath=C:/MappingManager
2 DiscoverAssetsPath=C:/MappingManager
3 ApplicationURL=http://localhost:8080/erwinDISuite
4 ApplicationTempPath=C:/DISTemp
5 WhitelistFileExtension=(empty),xsd,json,csv,xml,uml,xmi,mdb,xlsx,xls,txt,dsv,tsv,tab,pdf,png,jpeg,z$
6
[ Read 5 lines (Converted from DOS format) ]
^G Get Help      ^O Write Out    ^W Where Is    ^K Cut Text    ^J Justify    ^C Cur Pos    M-U Undo
^X Exit          ^R Read File    ^_ Replace     ^U Uncut Text  ^T To Spell   ^_ Go To Line  M-E Redo
  
```

Edit the lines to match the correct paths for your Linux environment. In the example below, we are using the paths previously created when we created additional folders in the erwindis home /opt/erwindis folder.

```

../windis/tomcat/webapps/erwinDISuite/WEB-INF/configuration/properties/iccdocuments.properties Modified
1 DocumentsPath=/opt/erwindis/iccdocuments
2 DiscoverAssetsPath=/opt/erwindis/discover_assets
3 ApplicationURL=http://localhost:8080/erwinDISuite
4 ApplicationTempPath=/opt/erwindis/DISTemp
5 WhitelistFileExtension=(empty),xsd,json,csv,xml,uml,xmi,mdb,xlsx,xls,txt,dsv,tsv,tab,pdf,png,jpeg,z$
6
^G Get Help      ^O Write Out    ^W Where Is    ^K Cut Text    ^J Justify    ^C Cur Pos    M-U Undo
^X Exit          ^R Read File    ^_ Replace     ^U Uncut Text  ^T To Spell   ^_ Go To Line  M-E Redo
  
```

1.8.1.1 - Explanation of Paths

- Line 1: **DocumentsPath** – This is used by erwinDISuite connectors, smart connectors, and the Business Glossary for storing Rich Media files or Policy documents that may have been ingested into the tool.
- Line 2: **DiscoverAssetsPath** – This is used by the erwinDISuite 'Discover Assets' module. The folder contains Apache Lucene indices for global search within Discover Assets. The contents are temporary and rebuilt when the application is restarted. You could opt to point this path to the same path as ApplicationTempPath if desired.
- Line 3: **ApplicationURL** – If you have configured TLS/SSL and a DNS name you need to change the URL to use <https://<yourDNShostname>:8443/erwinDISuite>. If you deployed the erwinDISuite.war file with a different application name, you need to change the /path to match the deployed application name.
- Line 4: **ApplicationTempPath** – This path is used to store all temp files uploaded into the application

1.8.2 - Start the tomcat server using the erwindis.service unit file.

```
sudo systemctl start erwindis.service
```

1.8.3 - Check status to view the result.

Verify tomcat is running using the erwindis.service unit file.

```
sudo systemctl status erwindis.service
```

1.9 - Access the erwin Data Intelligence Suite Login Screen

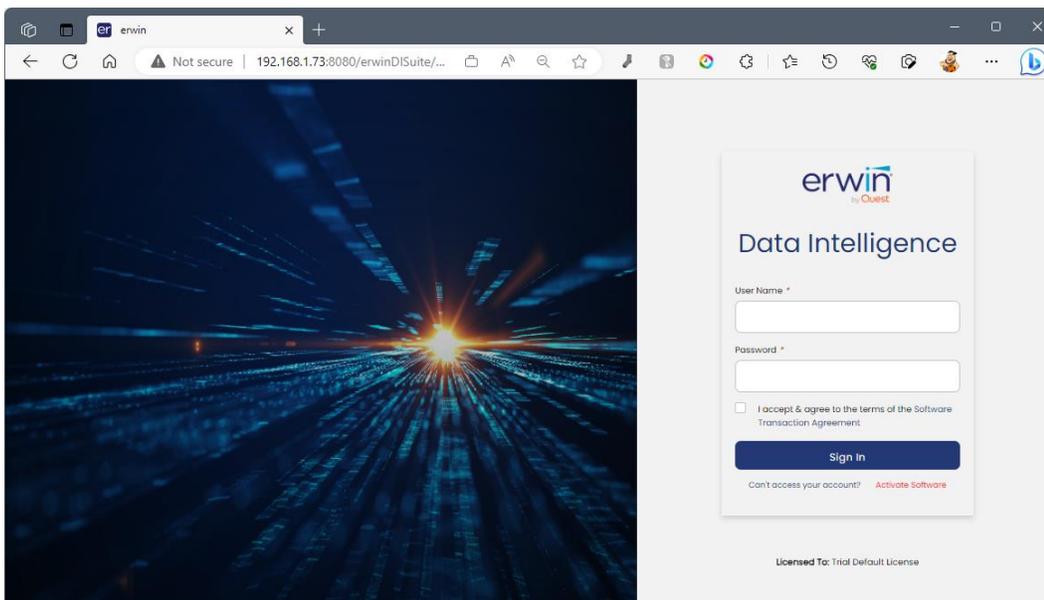
Now it is time to test your work. If you have faithfully completed all the steps outlined in this chapter, you should now be able to access the erwin Data Intelligence Suite Login screen from your local browser.

1.9.1 - Open a web browser and type the URL for your server.

The URL format is **http://<ip-address/hostname>:8080/erwinDISuite**

- Replace **<ip-address/hostname>** with your correct IP address or DNS hostname.
- Port **'8080'** is the default port used earlier when configuring Tomcat. If you changed the port used during Tomcat configuration, remember to use the correct port for your environment.
- URI path **'/erwinDISuite'** is the default application name and URI path.
If you deployed the war file with a different name, use the correct /path for your environment.

If all was steps were completed accurately, and the correct URL is used your browser should display the erwin Data Intelligence Suite login screen:



1.9.2 - Activate the software.

A license key is required to activate the software. Login to the application will not work until the license key has been applied. If you do not have a license key, please reach out to your Quest\erwin sales contact to obtain your license key.

Once the license key has been obtained, return to the login screen, and click the **'Activate Software'** link under the Sign in button.

2 - Ubuntu Server, and Debian

2.1 - Update Linux OS repos, patches, security updates and other packages.

```
sudo apt update ; sudo apt upgrade -y ; sudo apt install -y apt-transport-https zip
```

2.2 - Create Linux user 'erwindis' for tomcat service account.



As a security best practice, Apache Tomcat should never be run under "root" user account.

We recommend creating a Linux system account user that is restricted from shell login.

With security best practices in mind, using the commands below we will create a system account user named: '**erwindis**' with home folder path **/opt/erwindis** and the user is restricted with no shell access.

```
sudo useradd -r -c "erwinDIS service" -m -d /opt/erwindis -s /usr/sbin/nologin -U erwindis
```

2.2.1 - Set up additional folders in the erwindis home folder.

The following will create some folders in /opt/erwindis used by erwin Data Intelligence Suite. The folders will be owned by the user and group 'erwindis' which is the service account used by Tomcat.

Note: the '\n' indicates a multiline shell command. Be sure to copy/paste the entire text block to your shell.

```
sudo -u erwindis mkdir -p \  
/opt/erwindis/Downloads \  
/opt/erwindis/DISTemp \  
/opt/erwindis/discover_assets \  
/opt/erwindis/iccdocuments
```

2.3 - Install certified Adoptium OpenJDK from Eclipse Foundation

Quest\erwin recommends installing the certified version of JDK 17 using the package manager for your chosen Linux distribution. The instructions below provide the steps to install Adoptium JDK using Linux (RPM/DEB) installer packages.

The Adoptium JDK 17 installer updates the Linux 'alternatives' system to set the default java. We do not need to set the JAVA_HOME environment variable as we will configure that in a later step for the tomcat systemd unit file.



For additional information about installing Adoptium OpenJDK please refer to the official documentation from the Adoptium site at the following URL:

<https://adoptium.net/installation/linux/>

2.3.1 - Download the Eclipse Adoptium GPG Key

Note: Be sure to copy/paste the entire text block to your shell.

```
sudo mkdir -p /etc/apt/keyrings
sudo wget -O - https://packages.adoptium.net/artifactory/api/gpg/key/public | sudo tee \
/etc/apt/keyrings/adoptium.asc
```

2.3.2 - Add the Adoptium repository to your Linux distribution.

Note: Be sure to copy/paste the entire text block to your shell.

```
echo "deb [signed-by=/etc/apt/keyrings/adoptium.asc] \
https://packages.adoptium.net/artifactory/deb $(awk -F= '/^VERSION_CODENAME/{print$2}' \
/etc/os-release) main" | sudo tee /etc/apt/sources.list.d/adoptium.list
```

2.3.3 - Update the repository cache.

```
sudo apt update
```

2.3.4 - Install the specific version of Adoptium JDK certified for erwin Data Intelligence

```
sudo apt install -y temurin-17-jdk=17.0.7.0.0+7 -V
```

2.3.5 - Disable the Adoptium repository.

To prevent unintended future JDK 17 version updates, Quest\erwin recommends disabling the Adoptium repository to prevent unintended installation of future JDK 17 version updates.



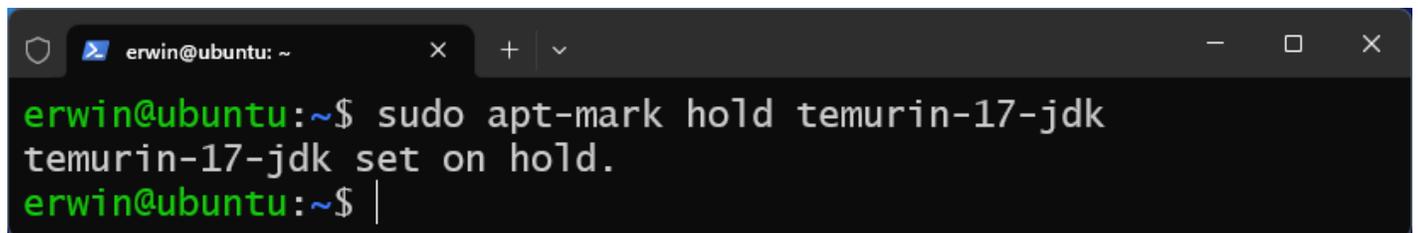
This step is optional but recommended.

Installing uncertified versions of JDK 17 may cause unexpected results.

Disabling the repository will avoid potential problems.

```
sudo apt-mark hold temurin-17-jdk
```

The output should show 'temurin-17-jdk set on hold' indicating the repository is on hold. Preventing unintended updates.



```
erwin@ubuntu:~$ sudo apt-mark hold temurin-17-jdk
temurin-17-jdk set on hold.
erwin@ubuntu:~$
```

2.3.5.1 - Enable the repository again if needed for update.

If you require installing a newer JDK from the Adoptium repository, you can enable the repo again with the following command:

```
sudo apt-mark unhold temurin-17-jdk
```

2.4 - Download and Install Apache Tomcat v9.0.(73 | 74 | 75 | 76)

Quest\erwin QA has certified specifically Apache Tomcat versions 9.0.73, 9.0.74, 9.0.75 and 9.0.76 for use with the erwin Data Intelligence Suite v13 GA release. It is strongly recommended to install only a certified version of Apache Tomcat.

2.4.1 - Download the Apache Tomcat tar to /opt/erwindis/Downloads directory.

Note: the '\ ' indicates a multiline shell command. Be sure to copy/paste the entire text block to your shell.

```
sudo -u erwindis wget -P /opt/erwindis/Downloads \  
https://archive.apache.org/dist/tomcat/tomcat-9/v9.0.75/bin/apache-tomcat-9.0.75.tar.gz
```

2.4.1.1 - Unpack the tar to erwindis home directory.

```
sudo -u erwindis tar -xvf /opt/erwindis/Downloads/apache-tomcat-9.0.75.tar.gz \  
-C /opt/erwindis && sudo rm /opt/erwindis/Downloads/apache-tomcat-9.0.75.tar.gz
```

2.4.1.2 - Create a symbolic link for the apache-tomcat-9.0.75 path.

Creating a symbolic link will make it easier to reference the tomcat installation path, and to manage future upgraded versions.

```
sudo -u erwindis ln -s /opt/erwindis/apache-tomcat-9.0.75 /opt/erwindis/tomcat
```

2.4.1.3 - Verify the contents of the erwindis home directory to see the results.

```
sudo ls -l /opt/erwindis/
```

Your output should now match the following example:

```
erwin@ubuntu:~$ sudo ls -l /opt/erwindis/  
total 20  
drwxrwxr-x 9 erwindis erwindis 4096 Jun 17 20:51 apache-tomcat-9.0.75  
drwxrwxr-x 2 erwindis erwindis 4096 Jun 17 20:16 discover_assets  
drwxrwxr-x 2 erwindis erwindis 4096 Jun 17 20:16 DISTemp  
drwxrwxr-x 2 erwindis erwindis 4096 Jun 17 20:51 Downloads  
drwxrwxr-x 2 erwindis erwindis 4096 Jun 17 20:16 iccdocuments  
lrwxrwxrwx 1 erwindis erwindis  34 Jun 17 20:52 tomcat -> /opt/erwindis/apache-tomcat-9.0.75  
erwin@ubuntu:~$ |
```

2.4.2 - Configure a systemd service unit file to manage starting/stopping tomcat as a service.

We recommend managing the start/stop/restart of apache tomcat service with the built in Linux SYSTEMD system. We use the 'tee' command below to create a new **systemd** service unit file named **erwindis.service** located in /etc/systemd/system.



Caution!

The example below sets the JAVA_HOME path, and assumes the tomcat install path to be /opt/erwindis/tomcat and will allocate **24 GiB RAM** for the Java Virtual Machine (JVM).

Review the paths and the settings below, and modify if needed, to set correct values for your environment. It is recommended to set the -Xms and -Xmx settings to 75% of the server's memory.

-Xms and -Xmx should be set to equal RAM values for efficient java garbage collection.

2.4.2.1 - Create the /etc/systemd/system/erwindis.service file.

Copy/Paste the entire text block to your shell to create the service unit file using the 'tee' command.

Note: Be sure to copy/paste the entire text block to your shell.

```
sudo tee -a /etc/systemd/system/erwindis.service >/dev/null << EOF
[Unit]
Description=Tomcat 9.0.75 servlet container
Wants=network.target
After=syslog.target network.target

[Service]
Type=forking
Restart=always
RestartSec=0
TimeoutStartSec=500
TimeoutStopSec=0

User=erwindis
Group=erwindis

# Allow tomcat to bind to ports below 1024 without running it as root
# Port 443 is a privileged port on Linux OS
# Uncomment the next line to allow 443 instead of 8443 for ssl connector
#AmbientCapabilities=CAP_NET_BIND_SERVICE

# Set JAVA_HOME path for Adoptium temurin-17-jdk
Environment="JAVA_HOME=/usr/lib/jvm/temurin-17-jdk-amd64"

# Setting the java.security.egd system property to use/dev/urandom configures
# the Tomcat JVM to use /dev/urandom as the source of entropy for the SecureRandom
# class to avoid potential delays during startup.
Environment="JAVA_OPTS=-Djava.security.egd=file:///dev/urandom"

Environment="CATALINA_BASE=/opt/erwindis/tomcat"
Environment="CATALINA_HOME=/opt/erwindis/tomcat"
Environment="CATALINA_PID=/opt/erwindis/tomcat/temp/tomcat.pid"
Environment="CATALINA_OPTS=-Xms24G -Xmx24G -server -XX:+UseParallelGC"

# erwinDIS v13 requires additional Java parameter options to be set
# These are being added using separate Environment entries for readability
Environment="JAVA_OPTS=$JAVA_OPTS --add-opens=java.base/java.lang=ALL-UNNAMED"
Environment="JAVA_OPTS=$JAVA_OPTS --add-opens=java.base/java.io=ALL-UNNAMED"
Environment="JAVA_OPTS=$JAVA_OPTS --add-opens=java.base/java.util=ALL-UNNAMED"
Environment="JAVA_OPTS=$JAVA_OPTS --add-opens=java.rmi/sun.rmi.transport=ALL-UNNAMED"
Environment="JAVA_OPTS=$JAVA_OPTS --add-opens=java.base/java.net=ALL-UNNAMED"
Environment="JAVA_OPTS=$JAVA_OPTS --add-opens=java.management/sun.management=ALL-UNNAMED"
Environment="JAVA_OPTS=$JAVA_OPTS --add-opens=java.base/java.nio=ALL-UNNAMED"
Environment="JAVA_OPTS=$JAVA_OPTS --add-opens=java.base/sun.nio.ch=ALL-UNNAMED"
Environment="JAVA_OPTS=$JAVA_OPTS --add-opens=java.base/java.lang.invoke=ALL-UNNAMED"
Environment="JAVA_OPTS=$JAVA_OPTS --add-opens=java.base/java.lang.reflect=ALL-UNNAMED"
Environment="JAVA_OPTS=$JAVA_OPTS --add-opens=java.base/java.util.regex=ALL-UNNAMED"
Environment="JAVA_OPTS=$JAVA_OPTS --add-opens=java.base/java.net=ALL-UNNAMED"

ExecStart=/opt/erwindis/tomcat/bin/startup.sh
ExecStop=/opt/erwindis/tomcat/bin/shutdown.sh

[Install]
```

```
WantedBy=multi-user.target
EOF
```

Reload systemd daemons.

```
sudo systemctl daemon-reload
```

2.4.2.2 - Enable the `erwindis.service` file to start tomcat during server reboots.

```
sudo systemctl enable erwindis.service
```

2.4.2.3 - Verify the unit file is enabled.

```
sudo systemctl status erwindis.service
```

2.4.2.4 - Start the tomcat server using the `erwindis.service` unit file with the following command.

```
sudo systemctl start erwindis.service
```

2.4.2.5 - Check status to view the result.

Verify tomcat is running using the `erwindis.service` unit file.

```
sudo systemctl status erwindis.service
```

Your result should be like:

```
● erwindis.service - Tomcat 9.0.75 servlet container
   Loaded: loaded (/etc/systemd/system/erwindis.service; enabled; vendor preset: enabled)
   Active: active (running) since Sat 2023-06-17 21:00:09 UTC; 3min 38s ago
     Process: 715 ExecStart=/opt/erwindis/tomcat/bin/startup.sh (code=exited, status=0/SUCCESS)
    Main PID: 782 (java)
      Tasks: 31 (limit: 38374)
     Memory: 237.6M
        CPU: 2.518s
    CGroup: /system.slice/erwindis.service
           └─782 /usr/lib/jvm/temurin-17-jdk-amd64/bin/java -Djava.util.logging.config.file
Jun 17 21:00:09 ubuntu systemd[1]: Starting Tomcat 9.0.75 servlet container...
Jun 17 21:00:09 ubuntu startup.sh[715]: Existing PID file found during start.
Jun 17 21:00:09 ubuntu startup.sh[715]: Removing/clearing stale PID file.
lines 1-14
```

If you see Active: active (running) we are good to go. Leave tomcat running as we will soon need it when deploying the erwin Data Intelligence webapp WAR file.

2.4.3 - Optional: configure the Ubuntu firewall

This section covers opening tcp ports on the default 'ufw' firewall included with Ubuntu. 'ufw' is disabled by default. If you wish to enable ufw, the instructions below open port 8080/tcp for Tomcat, and port 22/tcp for OpenSSH. If you are employing a different type of firewall, please refer to your firewall's instructions.

2.4.3.1 - Open Tomcat port 8080/tcp, and ssh port 22/tcp

Note: A rule allowing OpenSSH (port 22/tcp) is added to avoid interrupting existing ssh connections and losing access to the server. Verify the ports you need to allow before proceeding. Verify rules with your security or firewall administrator to ensure rules created are in compliance with your organization's security policies.

```
sudo ufw allow OpenSSH; sudo ufw allow 8080/tcp; sudo ufw enable; sudo ufw reload
```

2.5 - Download and Deploy erwin Data Intelligence Suite v13.

Customers should download the latest v13 GA release zip file from <http://support.quest.com> to ensure they are obtaining the latest GA release.

2.5.1 - Download the erwin_Data_Intelligence_v13 zip file.

The following command block downloads the zip file from the <https://support.quest.com> site. Then unzips the file and copies the erwinDISuite.war file to the /opt/erwindis/tomcat/webapps/ directory.

Note: The “\” indicates a multiline shell command. Be sure to copy/paste the entire text block to your shell.

```
sudo -u erwindis wget -P /opt/erwindis/Downloads \  
https://erwin-us.s3.amazonaws.com/Support/ADS/v13.0/erwinDI_v13.0.zip \  
&& sudo -u erwindis unzip /opt/erwindis/Downloads/erwinDI_v13.0.zip \  
-d /opt/erwindis/Downloads/erwinDIS_v13.0 \  
&& sudo -u erwindis cp /opt/erwindis/Downloads/erwinDIS_v13.0/WAR/erwinDISuite.war \  
/opt/erwindis/tomcat/webapps/erwinDISuite.war
```

2.5.1.1 - Verify the erwinDISuite.war has expanded to create its project folder.

```
sudo ls -l /opt/erwindis/tomcat/webapps
```

Your result should be like this example directory listing showing the erwinDISuite project folder has expanded from erwinDISuite.war after being deployed by Tomcat.

```
total 429056  
drwxr-x--- 16 erwindis erwindis      4096 Jun 17 20:51 docs  
drwxr-x--- 64 erwindis erwindis     28672 Jun 17 21:32 erwinDISuite  
-rw-rw-r--  1 erwindis erwindis 439301451 Jun 17 21:32 erwinDISuite.war  
drwxr-x---  7 erwindis erwindis      4096 Jun 17 20:51 examples  
drwxr-x---  6 erwindis erwindis      4096 Jun 17 20:51 host-manager  
drwxr-x---  6 erwindis erwindis      4096 Jun 17 20:51 manager  
drwxr-x---  3 erwindis erwindis      4096 Jun 17 20:51 ROOT  
erwin@ubuntu:~$
```

2.5.2 - Stop the tomcat service: erwindis.

We can shut down Tomcat for now. The next few steps will walk you through creating and configuring the application database, and edits to the erwin Data Intelligence Suite application properties files.

```
sudo systemctl stop erwindis
```

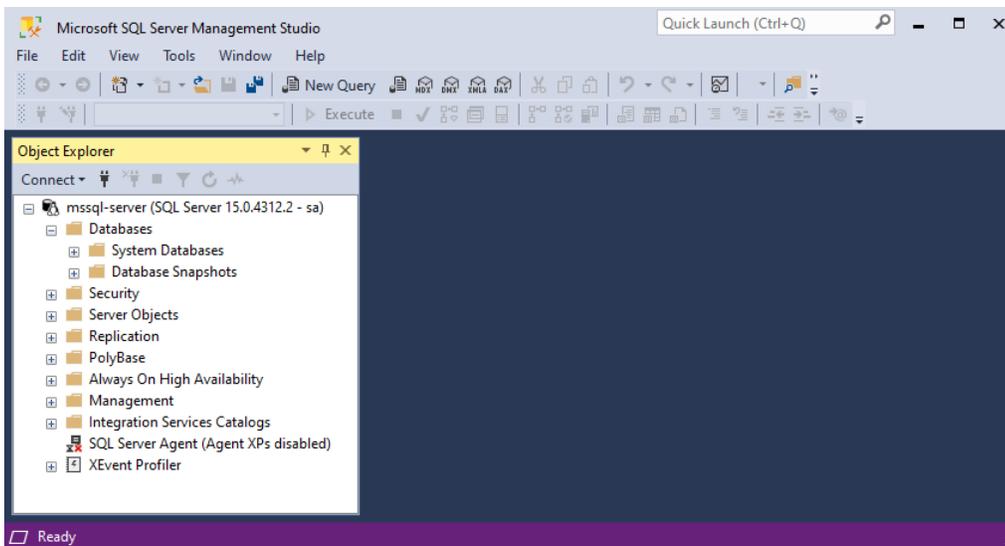

2.6 - Create and configure the database for erwin Data Intelligence Suite v13.

2.6.1 - Create the erwin DI database for MS SQL Server

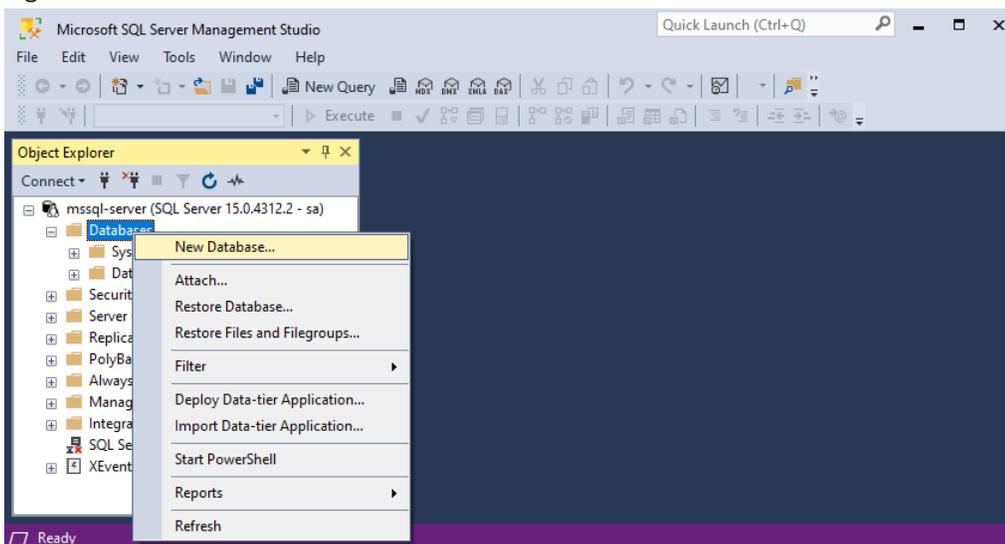
The following steps are for an MS SQL Server. You will require SQL Server Administrative rights to complete the steps for this section. We will use Windows SQL Server Management Studio application to complete the following steps. If you prefer, could also use SQL Server command-line tools 'sqlcmd' to create the database schema and to execute the required DDL script. Using sqlcmd is out of scope for this document, please consult with your SQL DBA to determine the best method to use for your organization.

2.6.1.1 - Using SSMS, create a new database/schema for erwin DI Suite.

Please consult with your SQL DBA to determine which SQL user and type of authentication method is required for your organization. In this example we have logged in to our MSSQL-SERVER using the 'sa' user, and as you can see no databases have been created yet.

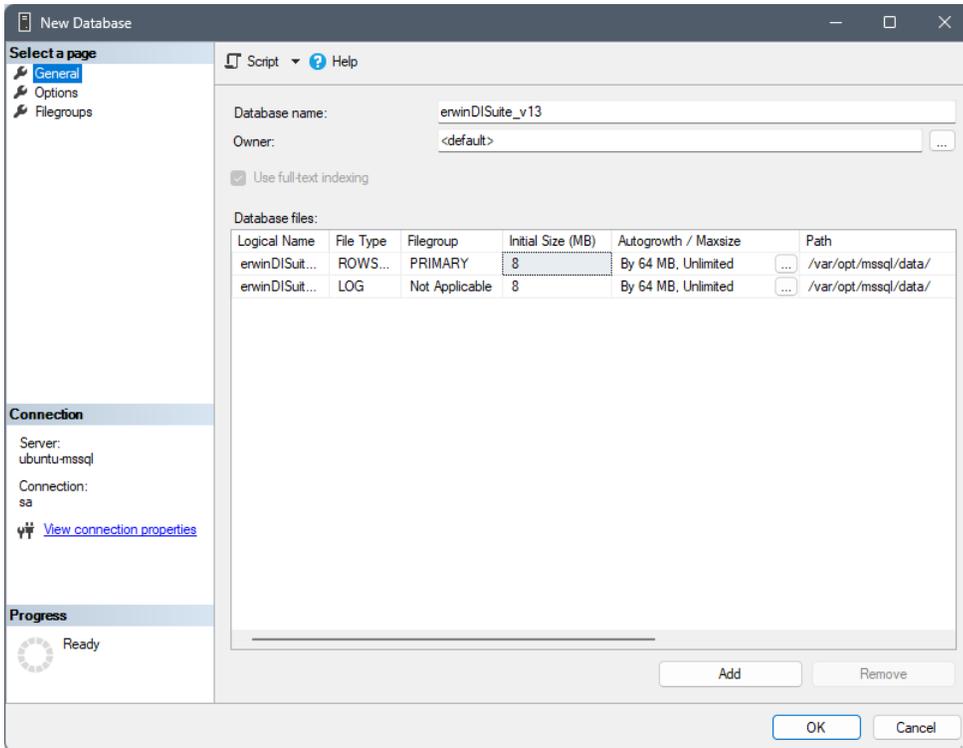


Right Click on Databases and select New Database from the context menu.



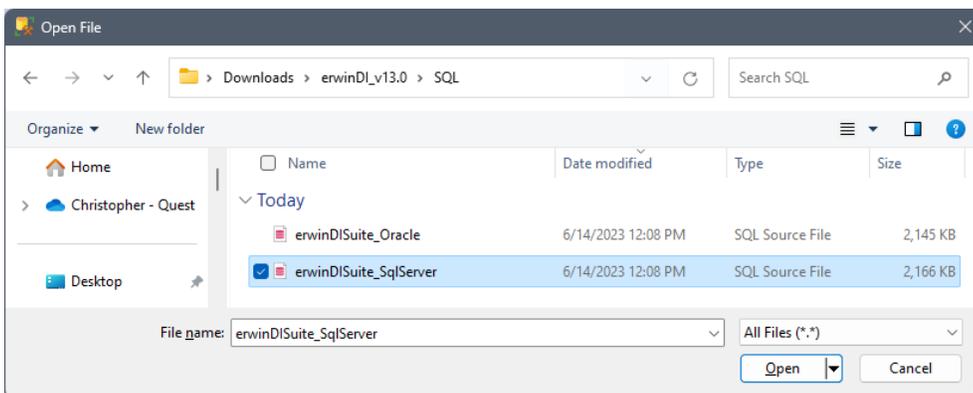
2.6.1.2 - Create the database with your preferred name. e.g., 'erwinDISuite_v13'

You should consult with your SQL DBA to verify other settings, and path locations for your database. For this example we will accept the defaults and continue to next step.



2.6.1.3 - Execute the provided erwinDISuite_SqlServer.sql DDL script.

Using 'Ctrl-O' to bring up the Open File window, navigate to where you have downloaded and unzipped the erwinDISuite v13 'SQL' folder. Find the DDL file named 'erwinDISuite_SqlServer.sql' and click Open.

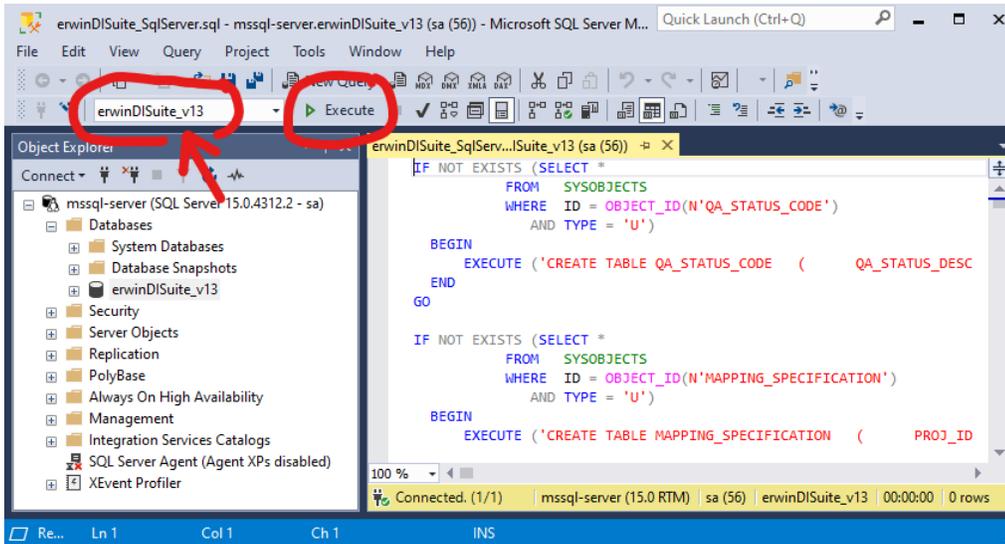


2.6.1.4 - Once the DDL file is opened, verify the correct database is selected, execute the DDL script.

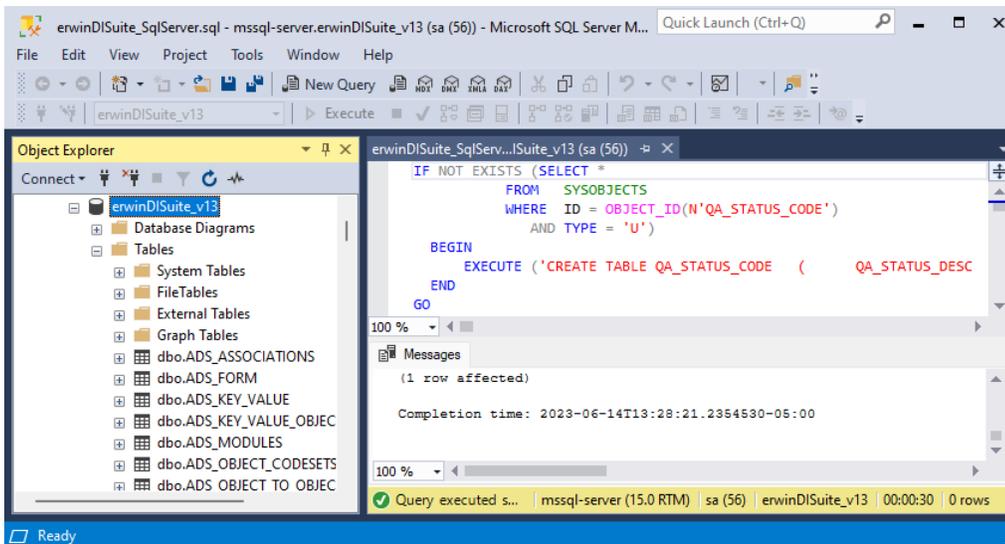
**** IMPORTANT !! **** A dedicated database is required for erwinDISuite.

The DDL needs to be executed against this database. The DDL should **NOT** be executed against the **MASTER** schema.

Once you have confirmed the correct database schema has been selected, click the 'Execute' button to run the DDL script. Allow the script execution to complete. The required database tables for erwinDISuite v13 will be created in the database.



When complete you can refresh the SSMS object Explorer pane to see the newly created tables.



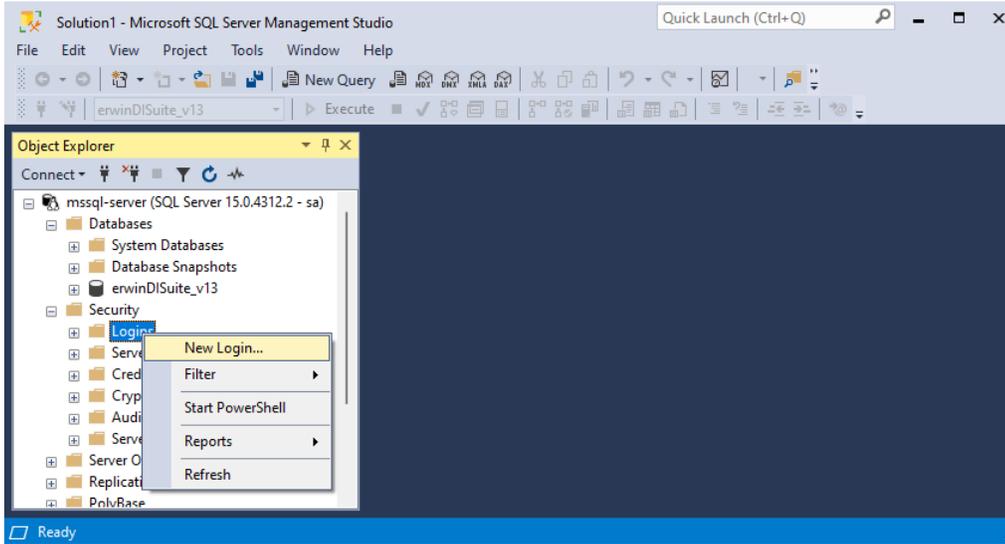
Continue to the next step to create a dedicated SQL DB user account for the erwinDISuite_v13 database.

2.6.1.5 - Create a dedicated SQL DB user account for the erwinDISuite_v13 database.

For this example, we will create a new login using SQL Authentication.

Note: Windows Authentication mode is also supported. The database configuration file has a section dedicated to entering the connectivity parameters that support windows authentication.

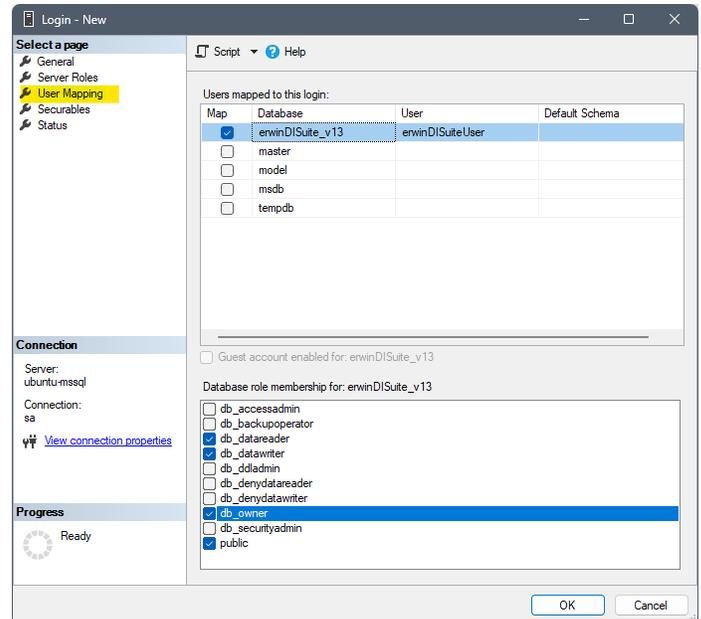
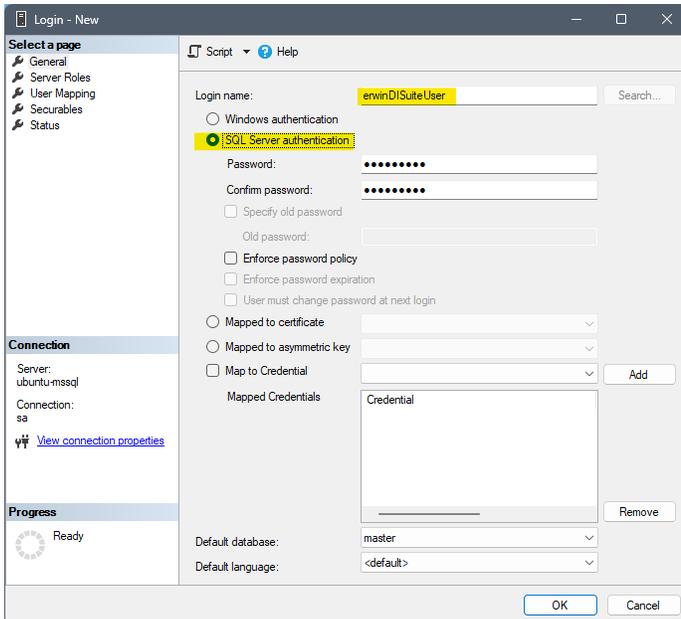
Expand the MS SQL server's Security folder, then right click on the Login folder, and select 'New Login' from the menu.



Provide your preferred login name for the new user account.

Be sure to select SQL Server Authentication. Set your password settings to conform to your organization's security and password policies. Then click on 'User Mapping' and grant the following roles for the user on the erwinDISuite_v13 database.

Grant roles: Public, db_owner, data_reader, data_writer



2.7 - Configuring the 'database.properties' file

2.7.1 - Configuring the 'database.properties' file for MS SQL Server database

Return to your UBUNTU server and open the database.properties file with the editor of your choice. In this example we will edit the file with the nano editor using elevated privileges via sudo.

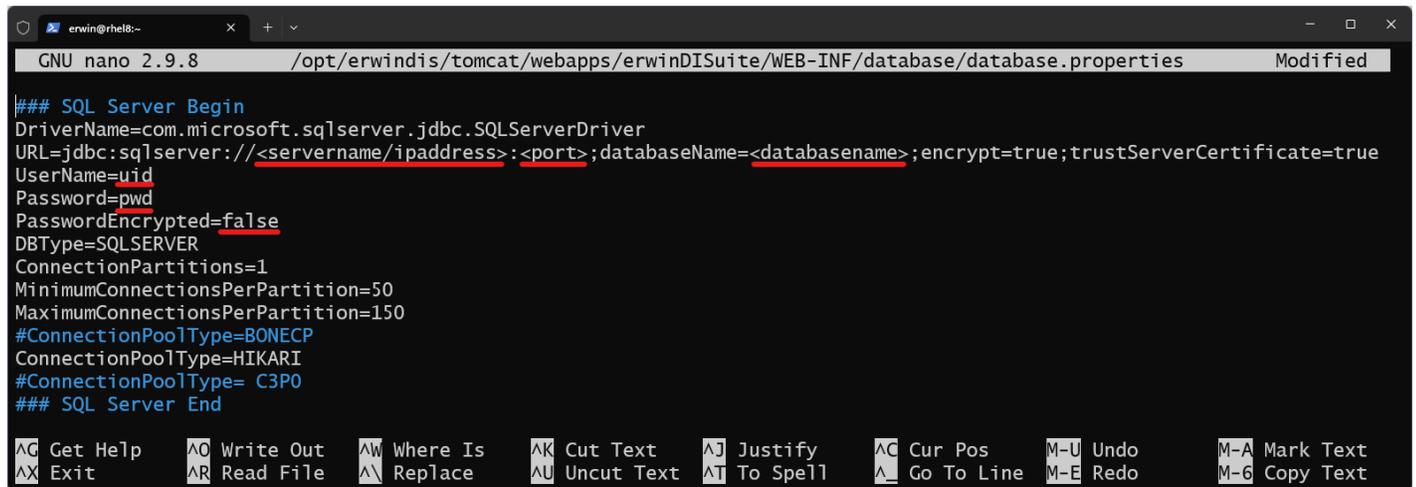
```
sudo nano /opt/erwindis/tomcat/webapps/erwinDISuite/WEB-INF/database/database.properties
```

2.7.1.1 - SQL Authentication Mode

If necessary, uncomment the SQL Server section by removing the # at the beginning of each line (between SQL SERVER BEGIN and SQL SERVER END section) and enter the following parameters for your SQL Server environment.

- Server Name
- Port # (default 1433)
- Database Name
- UserName
- Password
- PasswordEncrypted = false

The parameters you will need to edit are indicated below in red.



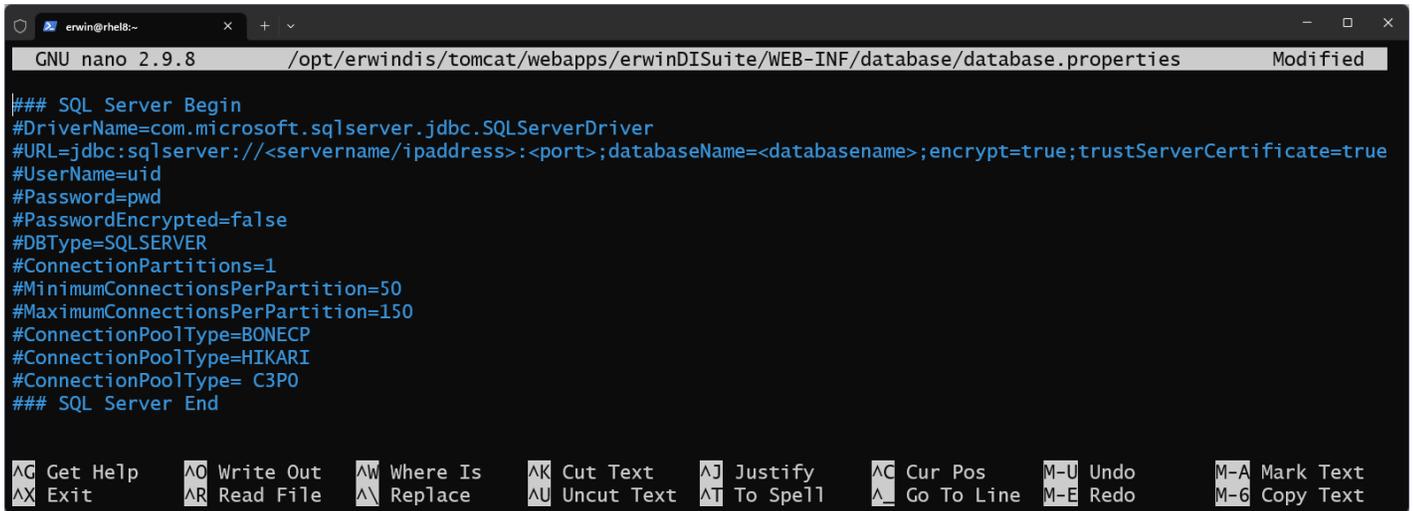
```
erwin@rhel8:~$ sudo nano /opt/erwindis/tomcat/webapps/erwinDISuite/WEB-INF/database/database.properties
### SQL Server Begin
DriverName=com.microsoft.sqlserver.jdbc.SQLServerDriver
URL=jdbc:sqlserver://<servername/ipaddress>:<port>;databaseName=<databasename>;encrypt=true;trustServerCertificate=true
Username=uid
Password=pwd
PasswordEncrypted=false
DBType=SQLSERVER
ConnectionPartitions=1
MinimumConnectionsPerPartition=50
MaximumConnectionsPerPartition=150
#ConnectionPoolType=BONECP
ConnectionPoolType=HIKARI
#ConnectionPoolType= C3P0
### SQL Server End

^G Get Help      ^O Write Out    ^W Where Is     ^K Cut Text      ^J Justify      ^C Cur Pos      M-U Undo        M-A Mark Text
^X Exit          ^R Read File    ^\ Replace      ^U Uncut Text   ^T To Spell     ^_ Go To Line    M-E Redo        M-G Copy Text
```

Once your edits are complete. Save the file and skip to the step: **Configuring the application documents repository path.**

2.7.1.2 - Windows Authentication Mode

If you require using Windows Authentication mode, you will first need to comment out all rows between **SQL Server Begin** and **SQL Server End** section as shown in the example screen below.



```

GNU nano 2.9.8 /opt/erwindis/tomcat/webapps/erwinDISuite/WEB-INF/database/database.properties Modified

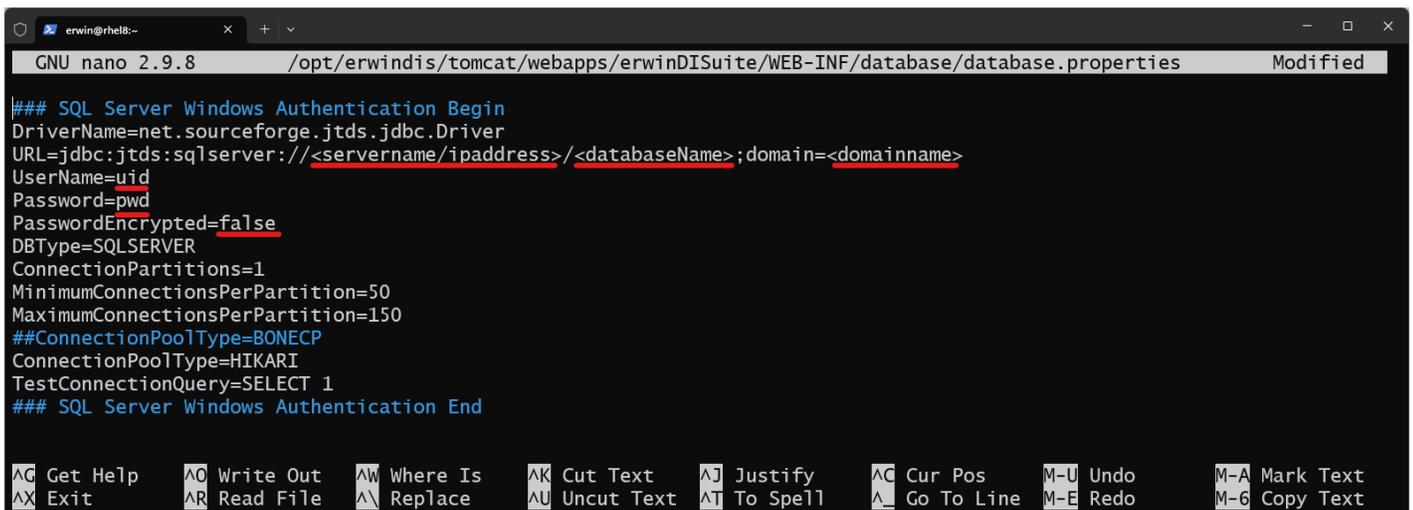
### SQL Server Begin
#DriverName=com.microsoft.sqlserver.jdbc.SQLServerDriver
#URL=jdbc:sqlserver://<servername/ipaddress>:<port>;databaseName=<databasename>;encrypt=true;trustServerCertificate=true
#UserName=uid
#Password=pwd
#PasswordEncrypted=false
#DBType=SQLSERVER
#ConnectionPartitions=1
#MinimumConnectionsPerPartition=50
#MaximumConnectionsPerPartition=150
#ConnectionPoolType=BONECP
#ConnectionPoolType=HIKARI
#ConnectionPoolType=C3PO
### SQL Server End

^G Get Help      ^O Write Out    ^W Where Is     ^K Cut Text     ^J Justify     ^C Cur Pos     M-U Undo       M-A Mark Text
^X Exit         ^R Read File   ^_ Replace      ^U Uncut Text  ^T To Spell    ^_ Go To Line  M-E Redo      M-6 Copy Text
  
```

Then scroll down to the **SQL Server Windows Authentication** section and uncomment the section by removing the # at the beginning of each line between **SQL SERVER Windows Authentication BEGIN** and **SQL SERVER Windows Authentication END** section as shown in the example below. Then enter the following parameters for your SQL Server environment.

- SERVER NAME or IP Address
- Database Name
- Domain
- UserName
- Password
- PasswordEncrypted = false

The parameters you will need to edit are indicated below in red.



```

GNU nano 2.9.8 /opt/erwindis/tomcat/webapps/erwinDISuite/WEB-INF/database/database.properties Modified

### SQL Server Windows Authentication Begin
DriverName=net.sourceforge.jtds.jdbc.Driver
URL=jdbc:jtds:sqlserver://<servername/ipaddress>/<databaseName>;domain=<domainname>
UserName=uid
Password=pwd
PasswordEncrypted=false
DBType=SQLSERVER
ConnectionPartitions=1
MinimumConnectionsPerPartition=50
MaximumConnectionsPerPartition=150
##ConnectionPoolType=BONECP
ConnectionPoolType=HIKARI
TestConnectionQuery=SELECT 1
### SQL Server Windows Authentication End

^G Get Help      ^O Write Out    ^W Where Is     ^K Cut Text     ^J Justify     ^C Cur Pos     M-U Undo       M-A Mark Text
^X Exit         ^R Read File   ^_ Replace      ^U Uncut Text  ^T To Spell    ^_ Go To Line  M-E Redo      M-6 Copy Text
  
```

2.8 - Configuring the application documents repository path

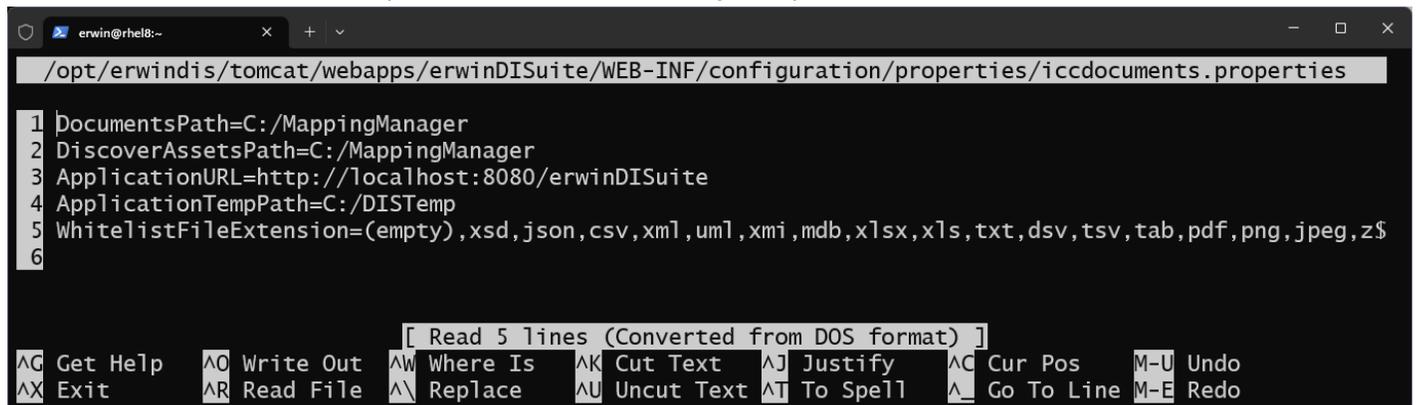
2.8.1 - Update the 'iccdocuments.properties' file.

Return to your UBUNTU server and open the 'iccdocuments.properties' file with the editor of your choice. In this example we will edit the file with the nano editor using elevated privileges via sudo.

```
sudo nano -l /opt/erwindis/tomcat/webapps/erwinDISuite/WEB-INF/configuration/properties/iccdocuments.properties
```

Note: The -l switch will cause the nano editor to display line numbers.

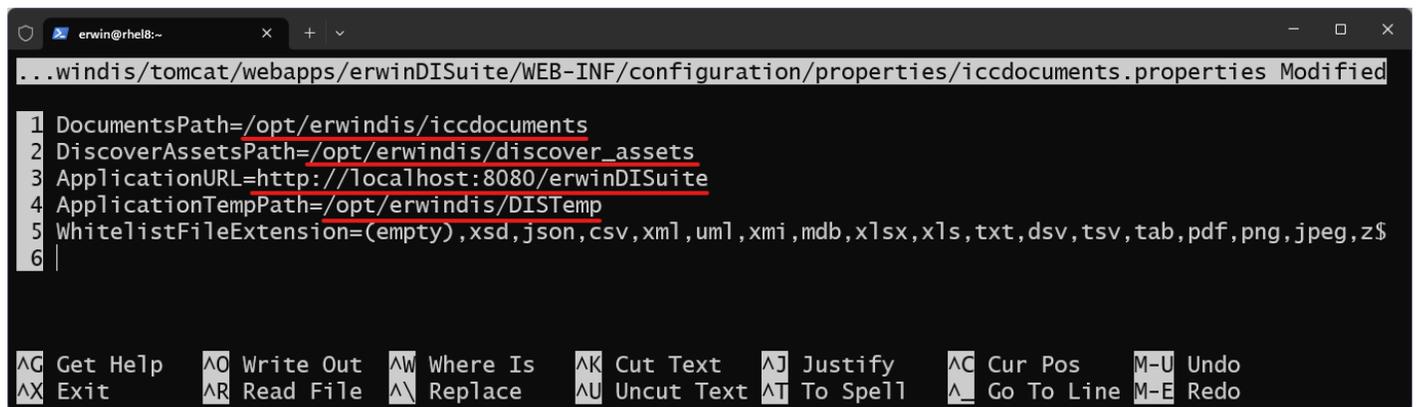
Once the file is open, notice that lines 1, 2, and 4 contain Windows filesystem paths. We will need to edit these lines to point to the correct Linux filesystem paths.



```

/opt/erwindis/tomcat/webapps/erwinDISuite/WEB-INF/configuration/properties/iccdocuments.properties
1 DocumentsPath=C:/MappingManager
2 DiscoverAssetsPath=C:/MappingManager
3 ApplicationURL=http://localhost:8080/erwinDISuite
4 ApplicationTempPath=C:/DISTemp
5 WhitelistFileExtension=(empty),xsd,json,csv,xml,uml,xmi,mdb,xlsx,xls,txt,dsv,tsv,tab,pdf,png,jpeg,z$
6
[ Read 5 lines (Converted from DOS format) ]
^G Get Help      ^O Write Out    ^W Where Is    ^K Cut Text    ^J Justify    ^C Cur Pos    M-U Undo
^X Exit          ^R Read File    ^_ Replace     ^U Uncut Text ^T To Spell   ^_ Go To Line M-E Redo
  
```

Edit the lines to match the correct paths for your Linux environment. In the example below, we are using the paths previously created when we created additional folders in the erwindis home /opt/erwindis folder.



```

../windis/tomcat/webapps/erwinDISuite/WEB-INF/configuration/properties/iccdocuments.properties Modified
1 DocumentsPath=/opt/erwindis/iccdocuments
2 DiscoverAssetsPath=/opt/erwindis/discover_assets
3 ApplicationURL=http://localhost:8080/erwinDISuite
4 ApplicationTempPath=/opt/erwindis/DISTemp
5 WhitelistFileExtension=(empty),xsd,json,csv,xml,uml,xmi,mdb,xlsx,xls,txt,dsv,tsv,tab,pdf,png,jpeg,z$
6
^G Get Help      ^O Write Out    ^W Where Is    ^K Cut Text    ^J Justify    ^C Cur Pos    M-U Undo
^X Exit          ^R Read File    ^_ Replace     ^U Uncut Text ^T To Spell   ^_ Go To Line M-E Redo
  
```

2.8.1.1 - Explanation of Paths

- Line 1: **DocumentsPath** – This is used by erwinDISuite connectors, smart connectors, and the Business Glossary for storing Rich Media files or Policy documents that may have been ingested into the tool.
- Line 2: **DiscoverAssetsPath** – This is used by the erwinDISuite 'Discover Assets' module. The folder contains Apache Lucene indices for global search within Discover Assets. The contents are temporary and rebuilt when the application is restarted. You could opt to point this path to the same path as ApplicationTempPath if desired.
- Line 3: **ApplicationURL** – If you have configured TLS/SSL and a DNS name you need to change the URL to use <https://<yourDNShostname>:8443/erwinDISuite>. If you deployed the erwinDISuite.war file with a different application name, you need to change the /path to match the deployed application name.
- Line 4: **ApplicationTempPath** – This path is used to store all temp files uploaded into the application

2.8.2 - Start the tomcat server using the erwindis.service unit file with the following command.

```
sudo systemctl start erwindis.service
```

2.8.3 - Check status to view the result.

Verify tomcat is running using the erwindis.service unit file.

```
sudo systemctl status erwindis.service
```

2.9 - Access the erwin Data Intelligence Suite Login Screen

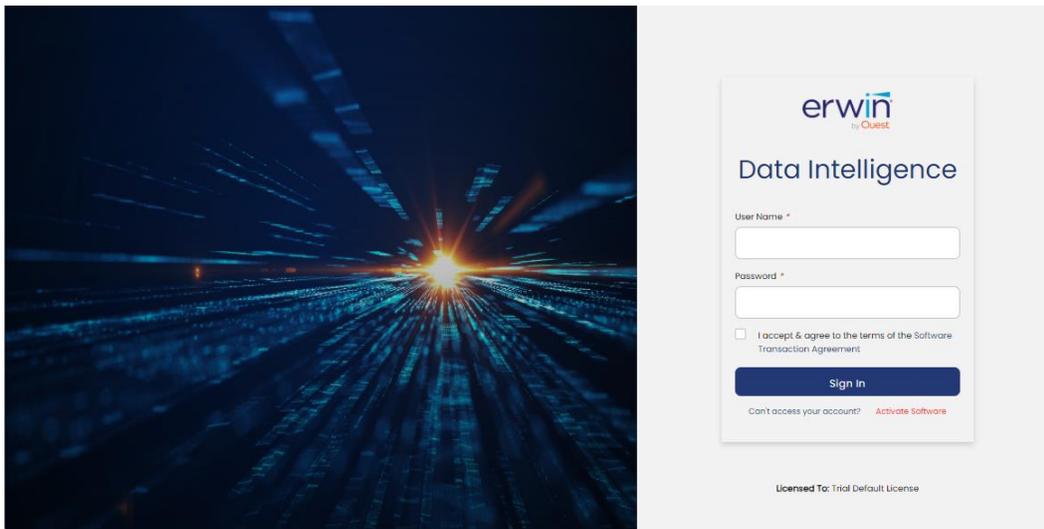
Now it is time to test your work. If you have faithfully completed all the steps outlined in this chapter, you should now be able to access the erwin Data Intelligence Suite Login screen from your local browser.

2.9.1 - Open a web browser and type the URL for your server.

The URL format is **http://<ip-address/hostname>:8080/erwinDISuite**

- Replace **<ip-address/hostname>** with your correct IP address or DNS hostname.
- Port **'8080'** is the default port used earlier when configuring Tomcat. If you changed the port used during Tomcat configuration, remember to use the correct port for your environment.
- URI path **'/erwinDISuite'** is the default application name and URI path.
If you deployed the war file with a different name, use the correct /path for your environment.

If all steps were completed accurately, and the correct URL is used your browser should display the erwin Data Intelligence Suite login screen:



2.9.2 - Activate the software.

A license key is required to activate the software. Login to the application will not work until the license key has been applied. If you do not have a license key, please reach out to your Quest\erwin sales contact to obtain your license key.

Once the license key has been obtained, return to the login screen, and click the **'Activate Software'** link under the Sign in button.

3 - Appendix

Product Documentation and Software Downloads

Complete documentation for erwin Data Intelligence Suite can be found online at our support portal:

[Click Here](#)

The software downloads are also available here on the support portal here:

[Click Here](#)