

# Windows Installation

## ⚠ NetVizura needs dedicated server

For security reason, make sure that your server or VM doesn't have anything installed on it before NetVizura installation. Other software or services running on the same server can impact installation.

## ⚠ NetVizura needs correct time

Before installing NetVizura make sure to set the time on your server correctly. Time change after the installation will invalidate the license!

## ⚠ NetVizura installation needs internet access

NetVizura requires working connection to the internet to install required dependent software. After installation is successful you can turn off internet access for NetVizura server.

📘 Before installing NetVizura you will have to install: **Java 1.8, Tomcat 7 or higher and PostgreSQL 12 or higher**, in that order. The installation process has been tested on Windows Server 2008 R2 (64bit), Windows Server 2012 R2 (64bit), Windows Server 2016 R2 (64bit) and Windows Server 2019 (64bit) and Windows Server 2022 (64bit).

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⚠ For the NetVizura 5.x, having MS Edge, Firefox or Chrome browser is **mandatory requirement**.

## Installation Steps

To install NetVizura on Windows follow these steps:

**Step 1:** Download and install Oracle Java 8 from Oracle official website [www.oracle.com/technetwork/java/javase/downloads/index.html](http://www.oracle.com/technetwork/java/javase/downloads/index.html), or if you don't have support agreement with Oracle, you can download openJDK build from <https://github.com/adoptopenjdk/openjdk-build>. In openJDK case, you should download .msi file eg. [https://github.com/adoptopenjdk/openjdk-build/releases/download/1.8.0.212-1/java-1.8.0-openjdk-1.8.0.212-1.b04.openjdk.windows.x86\\_64.msi](https://github.com/adoptopenjdk/openjdk-build/releases/download/1.8.0.212-1/java-1.8.0-openjdk-1.8.0.212-1.b04.openjdk.windows.x86_64.msi).

Only 64-bit Java is supported, so choose Windows x64 installer. We recommend JDK package because it helps with troubleshooting.

**Step 2:** Download and install Tomcat 7 - 9 (Tomcat 10 is not supported currently) as a service from Tomcat official website [tomcat.apache.org](http://tomcat.apache.org). [32-bit/64-bit Windows Service Installer](#) is available on the downloads page.

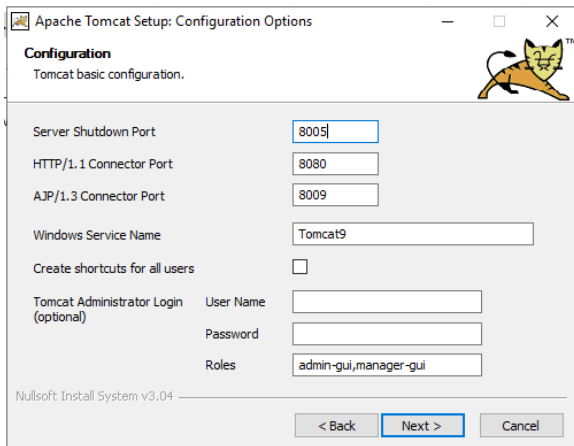
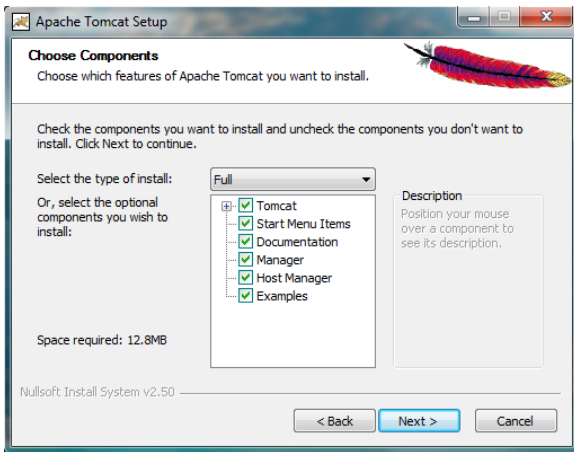


- Make sure to install Tomcat as a service, otherwise NetVizura installation won't be able to complete successfully.
- Make sure you have exactly one version of Tomcat installed on your system, otherwise application might not work as expected.

When prompted for the installation type, choose Full installation. This will enable Tomcat to start on boot. Server Shutdown port should be set to 8005.

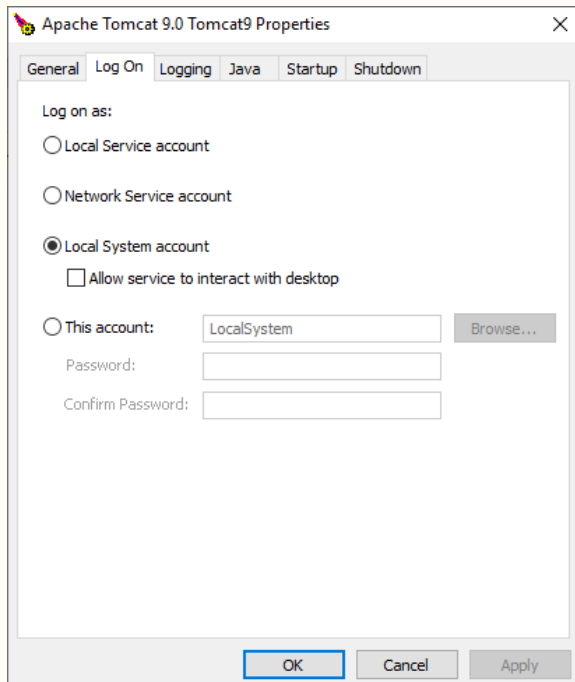


Note that NetVizura demands postgresql installer which includes Microsoft Visual C++ pre-installation. Make sure that the postgresql installer you have downloaded installs Microsoft Visual C++ before postgres installation starts. Otherwise, you will need to install it manually.



### Windows 2019 users

After the installation is complete you need to set Local System account for the application, and restart it.



**Step 3:** Download and install PostgreSQL 12 or higher version from PostgreSQL official website <https://www.enterprisedb.com/downloads/postgres-postgresql-downloads>



- While installing PostgreSQL you will be prompted for password; make sure that you type in **postgres**
- Make sure you have exactly one version of PostgreSQL installed on your system, otherwise NetVizura might not work as expected or at all.

**Step 4:** Install Elasticsearch

Download the Elasticsearch installer from: <https://www.netvizura.com/files/products/general/downloads/elasticsearch-7.17.8.exe>

Execute the file with run as admin , and follow the installation.

**Step 5:** Download NetVizura Windows Installer from [NetVizura website](#) and run installer with administrative privileges

**Step 6:** Follow the installation steps

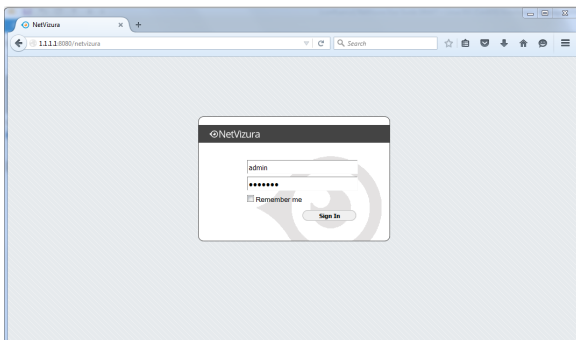
**Step 7:** Verify installation

Now you can go to NetVizura web interface [http://<netvizura\\_server\\_ip>:8080/netvizura](http://<netvizura_server_ip>:8080/netvizura).

Default login credentials:

- Username: **admin**
- Password: **admin01**

For example, if your server IP is 1.1.1.1 then point your browser to <http://1.1.1.1:8080/netvizura> like in the screenshot below:



## Post Install Steps

After installation tweaking of configuration files is required in order to utilize the installed RAM to the fullest extent. The main consumers of RAM are operating system, PostgreSQL database and Tomcat. General rule for distributing memory is to split it in ratio 2:1 between PostgreSQL and Tomcat with 1 GB or more reserved for operating system. For instance:

Installed RAM	PostgreSQL	Tomcat	OS
4 GB	2 GB	1 GB	1 GB
16 GB	10 GB	5 GB	1 GB

## Tweaking PostgreSQL

Tweaking PostgreSQL for best performance is a topic on which many books were written, but the following are some common sense suggestions. For the curious ones recommended reads (among countless others) are [PostgreSQL Optimization Guide](#) and [PostgreSQL Tuning Guide](#).

In order to apply following tweaks edit file `postgresql.conf`, this file is usually located in PostgreSQL data folder. You will need to **restart** the PostgreSQL service after done editing. Almost all of the following parameters are commented with carron character (#). Be aware that if you comment out the parameter that has been changed, PostgreSQL will revert to the default value.

In the following example it is assumed that 4 GB of RAM is allocated for PostgreSQL.



Before changing any parameters in postgresql configuration read the provided comments in the table below for more information regarding specific parameter.

parameter	recommended value	comment
max_connections	30	NetVizura rarely uses more than 10 connections simultaneously, but it is good to have some reserve.
shared_buffers	1024MB	The recommended amount is $RAM/4$ .
effective_cache_size	2048MB	The recommended amount is $RAM/2$ , possibly even $RAM * 3/4$ .
checkpoint_completion_target	0.7	This parameter can take values between 0 and 1. Default is set to 0.5, which means that the write phase of checkpoint process will take half of the checkpoint timeout time. Increasing this value will provide more time for checkpoint write phase to finish, thus decreasing IO usage.
work_mem	32-64MB	The formula used is $max\_connections * work\_mem \leq RAM/4$ , but using a bit more is still fine.
maintenance_work_mem	256MB	Speeds up DB self clean process. Usually $4 * work\_mem$ or something in that ballpark
wal_buffers	16MB	Increasing <code>wal_buffers</code> is helpful for write-heavy systems. Usually this is 16MB.
min_wal_size	1GB	If WAL files are under this size, files will be recycled for future checkpoints.
max_wal_size	2GB	Maximum size of WAL files, after that CHECKPOINT command is issued and files are written to disk.
effective_io_concurrency	2	Number of simultaneous request that can be handled efficiently by disk subsystem.
full_page_writes	off	Turning this parameter off speeds up normal operation, but might lead to either unrecoverable data corruption, or silent data corruption, after power outage, OS or HDD failure. The risks are similar to turning off <code>fsync</code> , though smaller.
fsync	off	Don't wait for HDD to finish previous <i>write</i> operation. This brings the most benefit, but if there is power outage, OS or HDD failure in exact instant when PSQL issues write command to HDD, that data will be lost and the DB itself could be corrupted. On the other hand, DB can issue several magnitude more write commands in the same time period and consider all these done, thus improving write performance immensely.
synchronous_commit	off	Similarly to "fsync" but with less benefit.
Parallel system optimization (PSQL => 9.6)		
max_workers	2	Number of cores
max_parallel_workers_per_gather	1	Number of cores/2
(PSQL > 9.6) max_parallel_workers	2	Number of cores

## Elasticsearch Memory Optimization

By default, we set memory limit for Elasticsearch to 30% of RAM. If you need to set it to any other value, edit the file: /etc/elasticsearch/jvm.options and set values -Xms and Xmx to desired size. After that restart the Elasticsearch and Tomcat services.

## Tomcat Memory Allocation

During installation NetVizura automatically allocates memory for Tomcat process. The amount allocated to Tomcat process is calculated according to the formula:

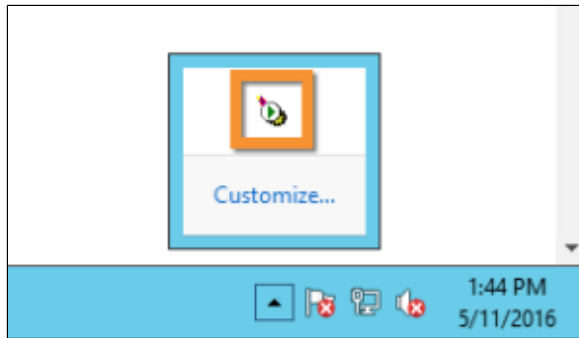
$$(RAM_{total} - 1GB) / 3 \text{ but no less than } 1GB.$$

For instance:

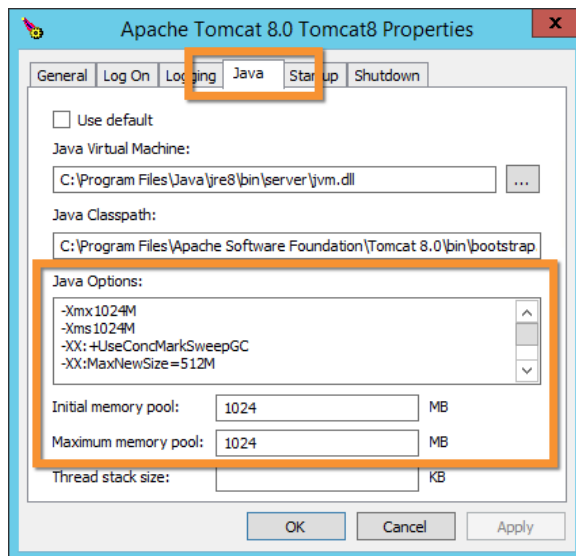
Total RAM	Tomcat
3 GB	1 GB
4 GB	1 GB
16 GB	5 GB

However, if you need to tweak Tomcat RAM allocation differently (the example for 2048MB):

1. Double click on Apache Tomcat Properties in system tray



2. In Java tab under Java options modify the -Xmx parameter to allocate additional memory to Tomcat. Additionally, set parameter -Xms to the same amount. Also set Initial memory pool and Maximum memory pool to the same amount. This should look like on picture below.



3. Back to the General tab, click Stop and Start to restart Tomcat.