

INFOWATCH

InfoWatch Traffic Monitor 7.10

Installation Guide

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1 Introduction

This guide contains information on installation, configuration, update and uninstallation of InfoWatch Traffic Monitor (IW TM).

1.1 Who Should Read this Guide

This document is intended for InfoWatch company technical support service and support engineers of InfoWatch partner companies.

1.2 Set of Documents

For more information see the following documents:

- «*InfoWatchTraffic Monitor. Installation Guide*».

The document describes how to install, configure, update, and uninstall the InfoWatch Traffic Monitor.

- «*InfoWatch Traffic Monitor. Administration Guide*».

Contains information on System administration (database, server-end).

- «*InfoWatch Traffic Monitor. User Guide*».

The document describes operation with InfoWatch Traffic Monitor: configuration setting, data export/import, creating policies for objects processing.

- «*InfoWatch Traffic Monitor. Configuration files guide*».

The document describes the frequently used configuration files.

1.3 Technical Support

If you cannot resolve issues which arise when using the System or have questions regarding the use of the System, you can contact the Technical Support Service:

- If you purchased the product from an InfoWatch partner, contact the Technical Support Service of this partner company.
- If you purchased the product directly from InfoWatch, you can contact our Technical Support Service at support@infowatch.com.

Technical Support Service is available to assist you Mon-Fri, 7 AM – 9 PM (Moscow time, GMT+3), except weekends and public holidays in Russian Federation.

You can also visit online support at our website at: http://infowatch.com/support.

Before contacting the Technical Support Service, please refer to the Knowledge Base at our web-site: https://kb.infowatch.com/. The knowledge base may already contain the answer to your question or a description of the problem you are having.

2 Getting Ready to Install

In this chapter, you can find information on:

- System Deployment Schemes and Installation Types;
- Hardware and Software Requirements;
- Operating System and Network Configuration Requirements;
- Configuring Remote Database.

2.1 System Deployment Schemes and Installation Types

InfoWatch Traffic Monitor (referred to as TM) System can be delivered in several variants. The features depend on the installation mode, the database in use (Oracle, PostgreSQL or Postgres Pro Enterprise), and the edition (Standard/Enterprise).

Traffic Monitor editions

The following typical solutions can be:

- **InfoWatch Traffic Monitor Standard** is a solution for companies using up to 500 workstations. It has a set of restrictions as compared to Enterprise version (for details, see the Knowledge Base article: "Differences between Enterprise and Standard Traffic Monitor editions"). The solution is deployed on a single server.
- **InfoWatch Traffic Monitor Enterprise** is an integrated scalable solution with a flexible configuration of components. The most extensive configuration can include the following components:
  - **Separate Traffic Monitor Servers with functional roles:**
    - **Database**
    - **Indexer service**
    - **Web console**
    - **Traffic interceptors**

      > **Note:**
      >
      > You should not install or run applications (especially server ones) on servers or use a computer as a file server.

  - **Device Monitor**, an interception module designed as server part with Management console and Agents deployed to workstations of a company. See the description of this module in *"InfoWatch Device Monitor. User Guide"*.
  - **Adapters**, a set of interception modules for integration with external systems.
  - **Vision**, a module for visualization of incident investigation based on data provided by InfoWatch Traffic Monitor.
  - **Activity Monitor**, a module for employee actions monitoring.
  - **Data Discovery**, a module for confidential information search on shared network resources, workstations, servers, and in document storages.
  - **Data Storage**, an external storage of binary data.

Also, in every Traffic Monitor edition, without purchasing an additional license, you have access to:

- **Autolinguist**, a technology for analysing text data. For details, see "*InfoWatch Traffic Monitor. User Guide*", section "Interface of Traffic Monitor Management Console" -> "Technologies Section", the "Autolinguist" article.

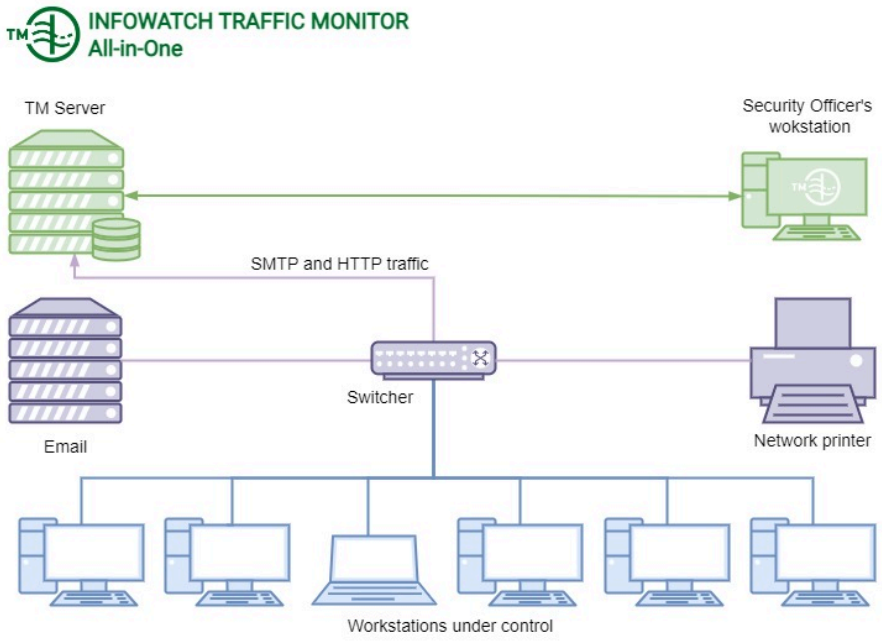
- **Data Explorer**, a software product, allowing you to automate the process of forming DLP system policies by allocating thematic clusters of documents in your company information flows.
- Exporting data from Traffic Monitor to InfoWatch Investigation Centre.

> **Note:**
>
> Token for integration between Investigation Centre and Traffic Monitor is available immediately after Traffic Monitor installation. You can find it in the **Administration** -> **Plugins** section of the Traffic Monitor Management Console, on the **Tokens** tab of the **InfoWatch Investigation Centre** preinstalled plugin.

Traffic Monitor installation types

You can install Traffic Monitor in one of the modes:

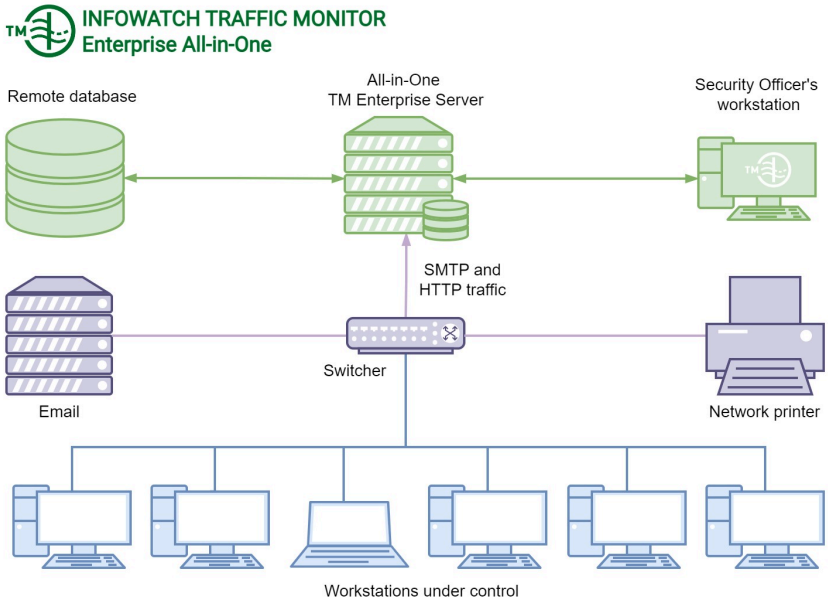
- **All-in-One Installation** involves installing all the System components and DBMS on the same server. This installation type is used if, with respect to the assumed load, the server has resources for both DBMS and TM services. The scheme below illustrates all-in-one deployment:



All-in-One installation is supported for both Traffic Monitor editions:

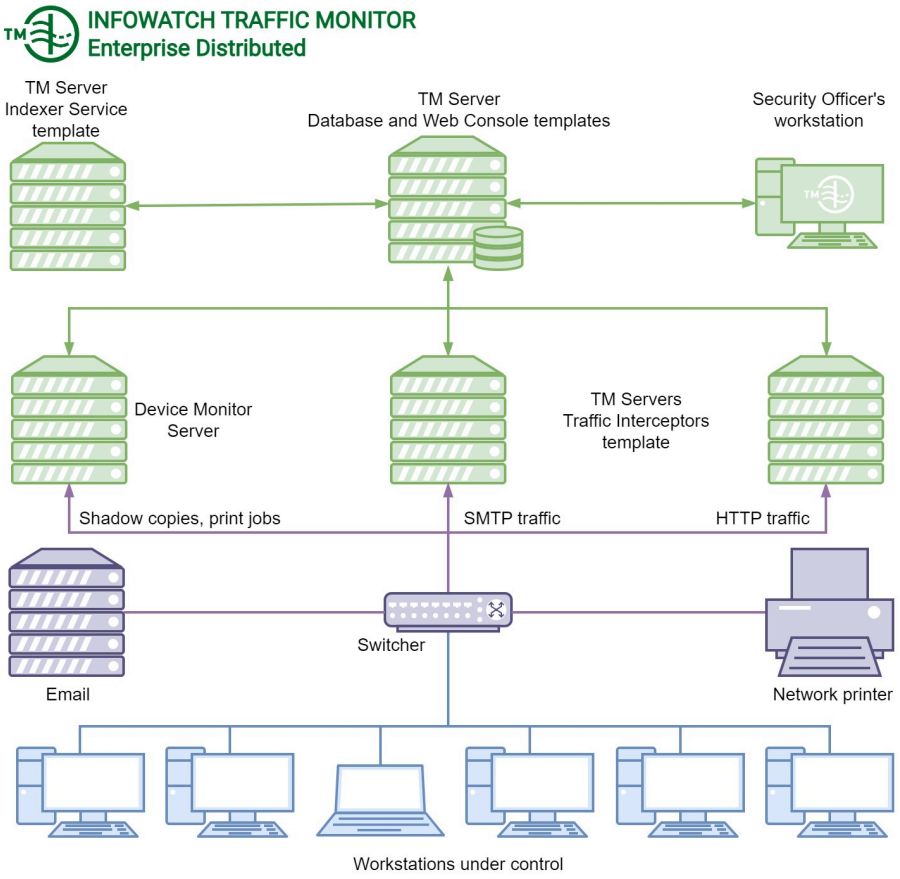
- when deploying Traffic Monitor **Standard** edition in **All-in-One** mode, you can only install PostgreSQL DBMS, which is provided in the package;
- when deploying Traffic Monitor **Enterprise** edition in **All-in-One** mode, you can:
  - select between PostgreSQL and Oracle DBMS, which are provided in the package,
  - or connect to an already deployed Oracle, PostgreSQL or Postgres Pro Enterprise DBMS. You can use a DBMS which is deployed:
    - on one server with TM;
    - on a separate server. In both cases, DBMS is considered remote.

The scheme illustrates an example of Traffic Monitor Enterprise deployment in All-in-One mode connected to a remote database:

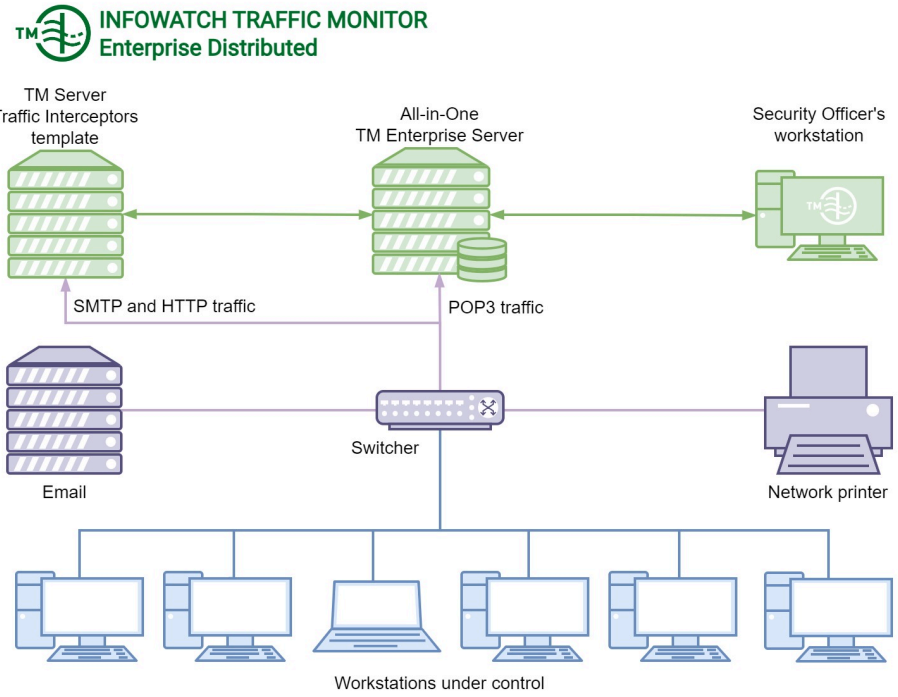


- **Distributed Installation** involves installing Traffic Monitor components and DBMS on different computers according to their functional roles. This installation type is available for **Enterprise** edition only and and enables you to enhance the performance of Traffic Monitor services and DBMS by allocating them to different servers with respect to the assumed load. Functional roles of servers are defined with the help of templates. Below is an example of multi-server System

demployment:



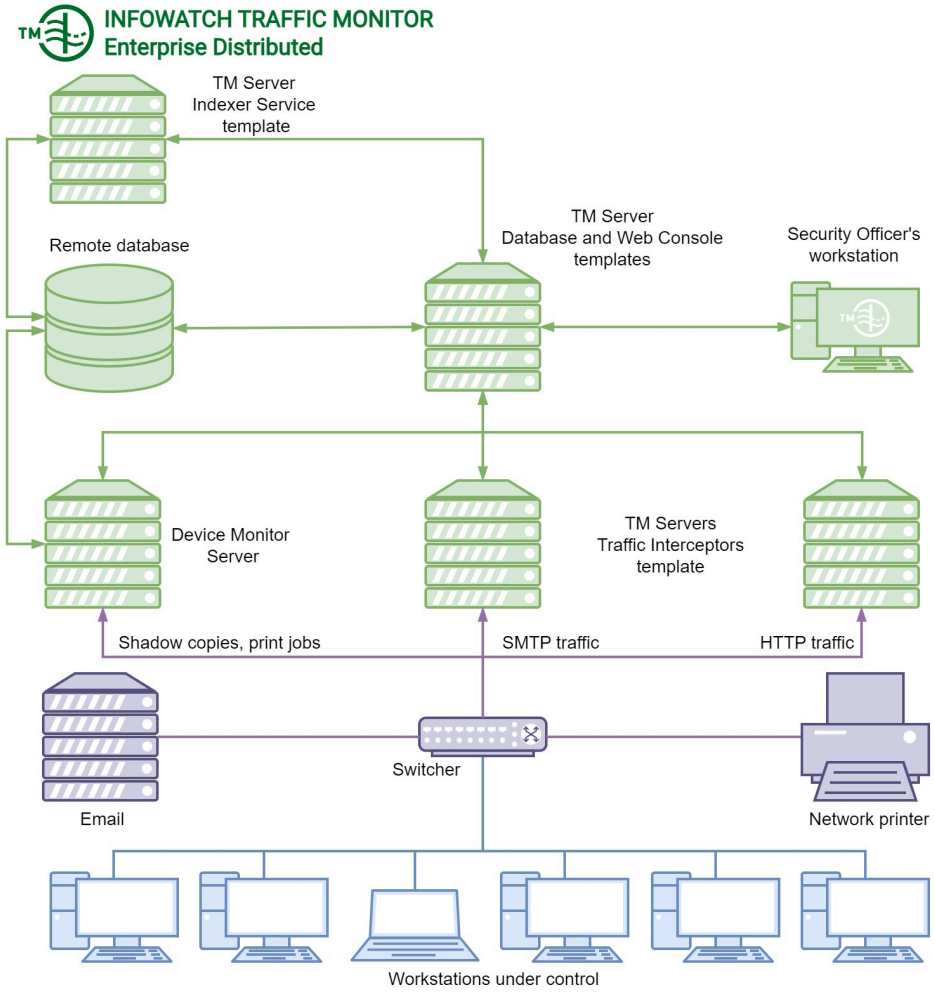
When deploying distributedly, you can also use an All-in-One TM Enterprise Server as one of the System components. In the example below, the All-in-One Server is extended with the interception server:



When installing TM Enterprise in Distributed mode, you can:

- select between PostgreSQL and Oracle DBMS, which are provided in the package,
- or connect to an already deployed Oracle, PostgreSQL or Postgres Pro Enterprise DBMS.

The scheme shows a distributed deployment example for TM Enterprise connected to a remote database:



In addition to a database, you can install an external storage of binary data – Data Storage. It performs the following functions:

- Optimizes data storing;
- Increases DBMS productivity;
- Accelerates Traffic Monitor updating process;
- Significantly reduces the load on DB when operating with large amounts of data.

You can install Data Storage and Traffic Monitor on the same server or on different ones. If there are more than 2000 workstations in a company, it is recommended to install the storage on a separate server.

> **Warning!**
>
> It is recommended to test Data Storage performance on the pilot group of workstations and not to install Data Storage in critical infrastructure.

Installation templates

Traffic Monitor installation kit contains installation templates. Each template is a set of components to be activated after the System is deployed. Sets of components are consistent with server functional roles. Server roles identified

at installation stage facilitate the System deployment plan, reduce the time of installation and make it easy to operate. Using templates also makes it easier to maintain a large-scale System.

Regardless the template selected, Traffic Monitor server will have all components installed and the template is used to define a set of components activated. If needed, you can change the set of activated components on a particular server after the installation.

One server can have several templates installed at the same time. All-in-One installation is equivalent to installing all templates on a single server.

A complex of servers, allocated for System deployment, compose a cluster.

There are four templates available to install:

- **Database**
- **Indexer Service**
- **Web Console**
- **Traffic Interceptors**

> **Important!**
>
> The **Database**, **Indexer Service** and **Web Console** templates should be in a single copy within one cluster.

In all templates, the following services will be started after the installation:

- `iwtm-consul` provides service-to-service cooperation;
- `iwtm-nagios` is a set of sensors to control the System state.

Database template

The template includes a DBMS and modules to control the server state.
The DBMS provides storage of data analisys results, information about intercepted objects and applied policies. If you are going to connect to an already deployed database, then a DBMS client will be installed on the server with the **Database** template. Using this client, components of other templates will send data to a remote database.

The following processes belong to the **Database** template:

Process name	Brief purpose description
`iw_agent`	Required to manage the configuration of the System
`iw_system_check`	Controls the System state
`iw_space_manager`	Manages tablespaces

> **Warning!**
>
> The process should be in a single copy within one cluster. Otherwise, there will be data inconsistencies in the System.

Indexer Service template

The template includes components to index text of objects intercepted by System and stored in the database. Also, the template components are used to index metadata of interception and audit events. The template modules allow using queries to search by events. To perform fulltext search, the Sphinx engine is used.

The following processes belong to the **Indexer Service** template:

Process name	Brief purpose description
`iw_agent`	Required to manage the System's configuration
`iw_indexer`	Performs fulltext search on events
`iw_is`	Performs metadata indexing
`iw_metainfo_fetcher`	Data sampling for indexing from the database
`iw_system_check`	Controls the System state

Warning!

The following processes should be in a single copy within one cluster:

- `iw_indexer`
- `iw_is`

Otherwise, there will be data inconsistencies in the System.

Web Console template

The template includes components of the Traffic Monitor Management console – graphical user interface. Also, this template includes text and graphical object classifiers and license components.

With Management console, you can administrate and manage Traffic Monitor: monitor summary, create policies and protected objects, add contacts, review events, export data and create reports.

The following processes belong to the **Web Console** template:

Process name	Brief purpose description
`iw_adlibitum`	Provides integration with LDAP catalogues
`iw_agent`	Required to manage System's configuration
`iw_blackboard`	Responsible for: • Adding/removing status to persons/workstations from policies; • Adding new contacts; • Adding new applications to automatic tips search; • Adding notifications from policies to queue.
`iw_bookworm`	Used as System directory

Process name	Brief purpose description
`iw_configerator`	Builds configuration for Device Monitor Agents regarding data protection policies on agents
`iw_deliver`	Dispatches email messages from quarantine as per Security officer decision, when working "in-line"
`iw_image_autoling`	Automatic classification of graphical objects
`iw_kicker`	Component interacts with other services and is required to/for: • Import/export configuration; • Add sample documents; • Operation of `iw_image_autoling` and `iw_text_autoling` processes; • Make notifications; • Reports and queries operation.
`iw_licensed`	License management
`iw_sample_compiler`	Makes digital fingerprints from downloaded sample documents
`iw_system_check`	System state control
`iw_tech_tools`	Auxiliary utilities for content analysis module
`iw_text_autoling`	Automatic classification of text objects
`iw_updater`	Downloads configuration from database
`iw_warpd`	Manages data extraction from objects loaded via web interface

Warning!

Each of the following processes should be the only one as per one cluster:

- `iw_adlibitum`
- `iw_bookworm`
- `iw_configerator`
- `iw_deliver`
- `iw_image_autoling`
- `iw_kicker`
- `iw_licensed`
- `iw_text_autoling`

Otherwise, there will be data inconsistencies in the System.

Traffic Interceptors template

The template includes the modules responsible for data collection and analysis, policies appliance. The template components ensure in-stream/at-the-gateway traffic interception sent via protocols:

- SMTP
- POP3
- HTTP
- HTTPS
- OSCAR
- NRPC
- IMAP
- ICAP

In order for the template to receive data from a range of external systems, use dedicated adapters. See the document *"InfoWatch Traffic Monitor. Administration Guide"*, article "Processing Traffic Received from Third-party Systems" for details.

In case the *load average* indicator approximates to the number of kernels, we recommend that you scale out servers with **Traffic Interceptors** role.

The following processes are included to **Traffic Interceptors** template:

Process name	Brief purpose description
`iw_agent`	Required to manage System's configuration
`iw_analysis`	Is used for content analysis of: • Objects from external systems; • HTTP and ICQ traffic from Sniffer module; • Objects in Device Monitor events that do not relate to mail protocols.
`iw_blackboard`	Responsible for: • Adding/removing status to persons/workstations from policies; • Adding new contacts; • Adding new applications to automatic tips search; • Adding notifications from policies to queue.
`iw_capstack`	Processes traffic sent via POP3, IMAP, NRPC protocols. Disabled by default
`iw_cas`	Intercepted data content analysis
`iw_icap`	HTTP traffic processing, which was received from ICAP client
`iw_messed`	Used to process SMTP messages and objects in Device Monitor events that relate to mail protocols
`iw_pas`	Service to process data after analysis
`iw_proxy_icq`	Receives copy of ICQ traffic in copy mode from Sniffer. Disabled by default

Process name	Brief purpose description
`iw_proxy_http`	Receives copy of HTTP traffic in copy mode from Sniffer. Disabled by default
`iw_proxy_smtp`	Receives copy of SMTP traffic in copy mode from Sniffer. Disabled by default
`iw_qmover_client`	Client part of module to send objects to remote database. Disabled by default
`iw_sniffer`	Receives copy from switcher's SPAN port. Disabled by default
`iw_smtpd`	Receives SMTP messages
`iw_system_check`	System state control
`iw_updater`	Downloads configuration from database
`iw_warpd`	Manages data extraction from intercepted objects
`iw_xapi_xapi`	Receives objects from InfoWatch Device Monitor and Data Discovery
`iw_xapi_puppy`	Receives objects from external systems
`iw_x2db`	Downloads objects to database
`iw_x2x`	Converts objects from interceptors to standart format. Resends modified data to `iw_x2db` process

Note:

See the description of processes in "*InfoWatch Traffic Monitor. Administration Guide*", "List of Traffic Monitor Server End Processes".

Warning!

After installation, the Administrator configures the System depending on implementation purposes (see "*InfoWatch Traffic Monitor. Administration Guide*", "Configuring the System after Installation").

2.2 Hardware and Software Requirements

Hardware requirements for Traffic Monitor Server are defined based on the installation type, the estimated load on the System and parameters of the network, where the System is installed. Therefore, the equipment specification is determined individually in each case.

Variants of the System deployment schemes are described in "System Deployment Schemes and Installation Types". According to the article, there can be the following elements to install:

- **Server for "All-in-one" installation** is used for the following editions:
  - TM Standard – the Standard solution installation. *See the requirement for standalone TM Enterprise server*.
  - TM Enterprise – the Enterprise solution is installed in "All-in-one" mode. *See the requirements for standalone TM Enterprise server.*
- **Traffic Monitor Server** – standalone server or cluster of TM Enterprise servers. *See the requirements below.*
- **Database Server** – server for Oracle, PostgreSQL DBMS or Postgres Pro Enterprise. You should not install or run applications (especially server ones) on it or use this computer as a file server. *See the requirements below.*
- **Adapters** – their requirements are listed in the documentation supplied with adapters software.
- **Device Monitor Server and Device Monitor Agents** – the module, containing the agents on Windows and Linux systems. See the requirements in *"InfoWatch Device Monitor. Installation, Configuration and Administration Guide"*.
- **Management Console** is automatically installed together with Traffic Monitor Server and does not impose any additional hardware or software requirements for the server. To access Management Console, you should use Google Chrome or Mozilla Firefox browser of the actual version.
- **External storage of binary data - Data Storage** – can be installed on the same server with Traffic Monitor or on different ones. *See the requirements below.*

The Traffic Monitor Server hardware and software requirements are varied in a great range. So, the minimal configuration supposes the following constraints:

- OCR is disabled for all interceptors;
- the server does not accept data from Device Monitor.

A significant difference in the load on a certain interception channel can also influence the number and role of Traffic Monitor Servers: for example, the efficient traffic processing from Device Monitor you need to dedicate separate servers for **iw_xapi_xapi** processes.

Estimated minimal software and hardware requirements are listed in the following table. We strongly recommend you to make a detailed configuration computation with the assistance of InfoWatch experts or specialists of partner company from which you have purchased the product.

Disk subsystem	**Processor**	**RAM**	**Software**	Additional requirements
TM Standard server				
RAID-array with fault tolerance: 300 GB	2CPU 6xC, 2,6 GHz	24 GB	• OS Red Hat Enterprise Linux 7.x (the latest version) with subscription, required for the update; • OS Oracle Linux 7.x	The server should have a network interface with the assigned IP address. If interceptors are used on the server, requirements imposed by the interceptors

Disk subsystem	**Processor**	**RAM**	**Software**	Additional requirements
			starting from version 7.7.	should be fulfilled*
TM Enterprise server, less than 10 GB per day				
RAID-array with fault tolerance: 600 GB	2CPU 8xC + Hyper-threading (Intel® Xeon® Processor E5-2640 v3 - 2,6 Hz)	24 GB	• OS Red Hat Enterprise Linux 7.x (the latest version) with subscription, required for the update; • OS Oracle Linux 7.x starting from version 7.7.	The server should have a network interface with the assigned IP address. Requirements imposed by the interceptors should be fulfilled*
TM Enterprise server, from 10 GB per day to 50 GB per day				
RAID-array with fault tolerance	2SRVx2CPU 10xC	32-48 GB for each server	• OS Red Hat Enterprise Linux 7.x (the latest version) with subscription, required for the update; • OS Oracle Linux 7.x starting from version 7.7.	The server should have a network interface with the assigned IP address. If interceptors are used on the server, requirements imposed by the interceptors should be fulfilled*
TM Enterprise server, more than 50 GB per day				
RAID-array with fault tolerance	Calculated on demand	From 32GB for each server	• OS Red Hat Enterprise Linux 7.x (the latest version) with subscription, required for the update;	The server should have a network interface with the assigned IP address. If interceptors are used on the server, requirements imposed by the interceptors

Disk subsystem	**Processor**	**RAM**	**Software**	Additional requirements
			• OS Oracle Linux 7.x starting from version 7.7.	should be fulfilled*
Oracle DB, PostgreSQL or Postgres Pro Enterprise server (Provides storage for traffic of 1-2 thousand users by 3 months; in case OCR and Device Monitor are used, the requirements are to be calculated on demand)				
RAID-array with fault tolerance: 500 GB To store logs (`redo log` for Oracle, `xlog` for PostgreSQL) it is required to provide `u01` directory with additional space equal to RAM of DBMS server. In case RAM is lower than 20 GB, 20 GB should be provided for logs storage.	2CPU от 6xC, 2,6 GHz	16GB and more depending on data volume, insertion and processing speed	• OS Red Hat Enterprise Linux 7.x (the latest version) with subscription, required for the update; • OS Oracle Linux 7.x starting from version 7.7.	Work on Postgres Pro Enterprise is supported only for Red Hat Enterprise Linux and only for remote database installation mode.
External storage of binary data - Data Storage				
When using Data Storage, the requirements to the Traffic Monitor disk subsystem given above are divided into Traffic Monitor database and Data Storage in the ratio of 15% to 85%. When installing Traffic Monitor and Data Storage on the same server, you do not need the additional space for data storing. **Example:** Traffic Monitor and Data Storage are to be installed on the different servers. The requirements for Traffic Monitor disk subsystem: 400 GB. Then you need 60 GB for database on the Traffic Monitor server and 340 GB	–	–	• OS Red Hat Enterprise Linux 7.x (the latest version) with subscription, required for the update; • OS Oracle Linux 7.x starting from version 7.7.	To use Data Storage, you should install Platform version 2.0.0 or higher.

Disk subsystem	**Processor**	**RAM**	**Software**	Additional requirements
for binary data storing on the Data Storage server.				

> **Note:**
>
> Oracle 19c and PostgresSQL 15 DBMS, delivered together with Traffic Monitor, do not require installation, separate from the product.

> **Note:**
>
> You can install the System to the virtual environment: VMware, MS Hyper-V, or other virtualization systems.

* Traffic Monitor server can use interceptors which impose additional requirements:

- **iw_sniffer** can get a traffic copy from a switch with SPAN / Port Mirroring function (Cisco Catalyst 2960 Series is recommended) with a port configured for TRx mode (BOTH – receiving and sending within the same connection).
- **iw_icap** handles ICAP client built in any proxy server confirming RFC 3507 standard (for example SQUID 3.4.x or higher, Cisco IronPort S10 and Blue Coat SG Series). Please consult with InfoWatch support service before using a certain model to confirm the compatibility with the IW ICAP module. The proxy server should contain ICAP license; enabling ICAP support is performed according to support documentation of a certain proxy server.

2.3 Operating System and Network Server Configuration Requirements

To install the System successfully, the server should meet the following requirements:

- Server should have
  Red Hat Enterprise Linux OS 7.x (last version)

  > **Note:**
  >
  > You can also install the System on Oracle Linux OS. Thus use all the following instructions on System installation and operation.

  > **Warning!**
  >
  > When loading Oracle Linux OS, please select Red Hat Compatible Kernel (RHCK), namely Oracle Linux Server, Kernel 3.10.0-xxxx.el7.x86_64
  >
  > After loading Oracle Linux OS:

- Remove the UEK kernel by running the command:
  `yum remove kernel-uek-<kernel_version>`
  For example, in OS Oracle Linux 7.9, remove the *uek-5.4.17* kernel:
  `yum remove kernel-uek-5.4.17`
- Disable the *uek-ol7.repo* repository:
  `sed -i -e "s/enabled=.*/enabled=0/g" /etc/yum.repos.d/uek-ol7.repo`

- OS repositories should be configured to install the following packages:
  - `redhat-lsb-core`;
  - `lshw`;
  - `ntp`;
  - `ntpdate`;
  - `tuned`;
  - `postfix`;
  - `perl-Dist-CheckConflicts`;
  - `perl-List-MoreUtils`;
  - `urw-base35-fonts-legacy`;
  - `python3-psycopg2`;
  - `libzstd`;
  - `redis`.

  See how to configure a local repository on the Red Hat Enterprise Linux official website.

  > **Note:**
  >
  > If you install Traffic Monitor on the server with no internet access, please make sure the offline access to specified repositories was provided.
  >
  > For example, you can configure local repositories mirrors.
  >
  > See how to configure a local repository mirror on the Red Hat Enterprise Linux official website.

- The following common repositories should be available depending on the operating system:
  - For OS Red Hat Enterprise Linux:
    - `os`;
    - `updates`;
    - `optional`;
  - For OS Oracle Linux:
    - `ol7_latest`;
    - `ol7_optional_latest`;
    - `ol7_developer_EPEL`.
- Minimum Swap space is 500 Mb (for recommendations, see "Recommendations to Partition Server Disk Space during Installation in Different Modes").
  You may see the information on Swap space by entering the command:
  `swapon -s`
  How to configure the swap space you may read on the Red Hat Enterprise Linux official website;
- Mount points options should not contain `nosuid` and `noxattr` command options (you can check this when opening the file `/etc/fstab`);
- The server settings should be done correctly as follows (if you have network problems, please contact your system administrator):

- External DNS server should resolve your hostname into IP address which is specified on one of server network interfaces;
- IP address should belong to the range of private IP addresses:
  10.0.0.0 – 10.255.255.255 (RFC1918);
  172.16.0.0 – 172.31.255.255 (RFC1918);
  192.168.0.0 –192.168.255.255 (RFC1918).
- The following command should be run:
  `ping -c 1 <hostname>`
  where `<hostname>` is your hostname.
  As a result of running command the package is successfully installed.

- Antivirus on the server should be configured to operate together with the System (see the knowledge base article "Antivirus configuration for Traffic Monitor server").

2.4 Configuring Remote Database

If you plan using a database, which is already deployed, you have to do the following:

1. Make sure the version of your database is supported by Traffic Monitor:
   - Oracle Enterprise 19c
   - PostgreSQL 15
   - Postgres Pro Enterprise 15

   > **Note:**
   >
   > If required, update the DBMS to supported version. To do this, use the official instructions.

2. In case you use PostgreSQL or Postgres Pro Enterprise DBMS, make the preliminary configuration.

> **Warning!**
>
> Working with Postgres Pro Enterprise DBMS is supported only on Red Hat Enterprise Linux OS.

2.4.1 Configuring DBMS

To prepare a remote database for installation of Traffic Monitor components, the following actions should be taken on database server:

For PostgeSQL DBMS

1. Install additional packages, running the commands:
   `rpm -Uhv pgagent_15-4.2.2-3.rhel7.x86_64.rpm`
2. Stop `postgresql` and `pgagent` services operation using the commands:
   `systemctl stop postgresql-15`
   `systemctl stop pgagent-15`
3. Create a file `/etc/systemd/system/postgresql-15.service.d/override.conf` or add the following content to it:

```
[Service]
Environment=PGDATA=/u01/postgres
```

4. To apply changes to service configuration, run the command:
   `systemctl daemon-reload`
5. Create directories for files and archives, initialize the database and change the directory's owner as well as the group to `postgres`:
   `mkdir -p /u01/postgres`
   `chown postgres:postgres /u01/postgres`
   `export PGSETUP_INITDB_OPTIONS=" --encoding=UTF8"`
   `sudo -u postgres /usr/pgsql-15/bin/initdb --encoding=UTF8 --locale=en_US.UTF-8 -D /u01/postgres/`
   `mkdir -p /u01/postgres/tmp`
   `chown postgres:postgres /u01/postgres/tmp`
   `mkdir -p /u02/pgdata`
   `chown postgres:postgres /u02/pgdata`
   `mkdir -p /u02/pgdata1`
   `chown postgres:postgres /u02/pgdata1`
   `mkdir -p /u02/arch`
   `chown postgres:postgres /u02/arch`
6. Create a configuration file `/u01/postgres/iwtm-postgres.conf`. For example, use the command as follows:
   `touch /u01/postgres/iwtm-postgres.conf`
7. Add to file `/u01/postgres/iwtm-postgres.conf` the following content:

```
# ------------------------------
# PostgreSQL configuration file
# ------------------------------
#
# IWTM custom values
listen_addresses = '*'
port = 5433
max_connections = 1000 # (change requires restart)
tcp_keepalives_idle = 60 # TCP_KEEPIDLE, in seconds'
tcp_keepalives_interval = 20 # TCP_KEEPINTVL, in seconds'
tcp_keepalives_count = 2 # TCP_KEEPCNT
shared_buffers = kB
huge_pages = try # on, off, or try
max_locks_per_transaction = 512
temp_buffers =  MB
work_mem = MB
effective_cache_size = MB
min_wal_size = MB
max_wal_size = MB
log_min_duration_statement = 120000 # -1 is disabled, 0 logs all statements
track_activity_query_size = 32768 # (change requires restart)
log_autovacuum_min_duration = 30000 # -1 disables, 0 logs all actions and
# stats_temp_directory = '/u01/postgres/pg_stat_tmp'
autovacuum_max_workers = 5
```

```
autovacuum_naptime = 20
maintenance_work_mem = GB
autovacuum_freeze_max_age = 1000000000
shared_preload_libraries = 'pg_stat_statements'
track_io_timing = on
track_activity_query_size = 32768
constraint_exclusion = off # on, off, or partition
```

Important!

The configuration file's content above contains empty value fields as per parameters:

- `shared_buffers`
- `work_mem`
- `maintenance_work_mem`
- `effective_cache_size`
- `temp_buffers`
- `min_wal_size`
- `max_wal_size`

Configure these parameters according to official instructions.

8. Change the configuration file's owner and group to `postgres`:
   `chown postgres:postgres /u01/postgres/iwtm-postgres.conf`
9. Add to `/u01/postgres/postgresql.conf` a link to `iwtm-postgres.conf` file using the command:
   `echo "include = 'iwtm-postgres.conf'" >> /u01/postgres/postgresql.conf`
10. Configure the access file `pg_hba.conf` using the commands:
    ```
    sed -i "s|local[[:space:]]*all[[:space:]]*all[[:space:]]*peer|local   all
              all                                     trust|" /u01/postgres/
    pg_hba.conf
    sed -i "s|
    host[[:space:]]*all[[:space:]]*all[[:space:]]*127.0.0.1/32[[:space:]]*ident
    |host    all             all             127.0.0.1/32            trust|" /
    u01/postgres/pg_hba.conf
    sed -i "s|
    host[[:space:]]*all[[:space:]]*all[[:space:]]*::1/128[[:space:]]*ident|
    host    all             all             ::1/128                 trust|" /
    u01/postgres/pg_hba.conf
    echo "# Enable not local access" >> /u01/postgres/pg_hba.conf
    echo "host    postgres        all             0.0.0.0/0               md5"
    >> /u01/postgres/pg_hba.conf
    ```
11. Run `postgresql` service and check its status using the commands:
    ```
    systemctl enable postgresql-15
    systemctl start postgresql-15
    systemctl status postgresql-15
    ```
12. Change the DB administrator's default password:
    ```
    su - postgres
    psql -p 5433
    alter user postgres password 'xxXX1234';
    ```
13. Create all required expansions running the queries below:

```
create extension if not exists adminpack;
create extension if not exists dblink;
create extension if not exists lo;
create extension if not exists xml2;
create extension if not exists tablefunc;
create extension if not exists intarray;
create extension if not exists file_fdw;
create extension if not exists "uuid-ossp";
create extension if not exists pgcrypto;
create extension if not exists pgrowlocks;
create extension if not exists autoinc;
create extension if not exists hstore;
create extension if not exists pg_stat_statements;
create extension if not exists pg_buffercache;
create extension if not exists pgagent;
```

14. To exit, enter the commands:
    ```
    \q
    exit
    ```
15. To configure `pgagent` user in OS, run the commands:
    ```
    touch /home/pgagent/.pgpass
    echo "127.0.0.1:5433:postgres:postgres:xxXX1234" > /home/pgagent/.pgpass
    chmod 0600 /home/pgagent/.pgpass
    chown pgagent:pgagent /home/pgagent/.pgpass
    usermod –s /bin/bash pgagent
    ```
16. Create or edit the file `/etc/sudoers.d/pgagent`, so that the content looks as follows:

    ```
    # allow pgagent to execute any command
    pgagent ALL = (postgres) NOPASSWD: ALL
    Defaults:pgagent !requiretty
    ```

17. Change the privileges, owner and group as per `/etc/sudoers.d/pgagent` running the commands:
    ```
    chmod 440 /etc/sudoers.d/pgagent
    chown root:root /etc/sudoers.d/pgagent
    ```
18. Run `pgagent` and check its status using the commands:
    ```
    systemctl enable pgagent_15
    systemctl start pgagent-15
    systemctl status pgagent-15
    ```

Finalising the configuration, make sure there are no critical errors in `/var/log/pgagent-15.log` and database logs.

For Postges Pro Enterprise DBMS

1. Stop `postgrespro` and `pgagent` services operation using the commands:
   ```
   systemctl stop postgrespro-ent-15.service
   ```
2. Copy to `/var/lib/pgpro/ent-15/data` the existing configuration file **`iwtm-postgres.conf`** or create in this directory a new file with the following content:

   ```
   # ----------------------------
   ```

```
# Postgres Pro configuration file
# ------------------------------
#
# IWTM custom values

listen_addresses = '*'
port = 5433
max_connections = 1000                  # (change requires restart)
tcp_keepalives_idle = 60                # TCP_KEEPIDLE, in seconds'
tcp_keepalives_interval = 20            # TCP_KEEPINTVL, in seconds'
tcp_keepalives_count = 2                # TCP_KEEPCNT

shared_buffers = 128kB

huge_pages = try                        # on, off, or try

max_locks_per_transaction = 512
temp_buffers = 32MB
work_mem = 16MB
effective_cache_size = 4096MB

min_wal_size = 6144MB
max_wal_size = 6144MB
lc_messages = 'en_US.UTF-8'             # locale for system error message
log_directory = 'pg_log'
log_filename = 'postgresql.log'         # log file name pattern
log_rotation_age = 0                    # Automatic rotation of logfiles will happen
after that time. 0 disables.
log_rotation_size = 0                   # Automatic rotation of logfiles will happen
after that much log output. 0 disables.
log_min_duration_statement = 120000     # -1 is disabled, 0 logs all statements
track_activity_query_size = 32768       # (change requires restart)
log_autovacuum_min_duration = 30000     # -1 disables, 0 logs all actions and
# stats_temp_directory = '/var/lib/pgpro/ent-15/data/pg_stat_tmp'

autovacuum_max_workers = 5
autovacuum_naptime = 20
maintenance_work_mem = 1GB
autovacuum_freeze_max_age = 10000000000

shared_preload_libraries = 'pg_stat_statements'
track_io_timing = on
track_activity_query_size = 32768

constraint_exclusion = off              # on, off, or partition
standard_conforming_strings = on
```

Important!

The configuration file's content above contains example values as per parameters:

- `shared_buffers`
- `work_mem`
- `maintenance_work_mem`
- `effective_cache_size`
- `temp_buffers`
- `min_wal_size`
- `max_wal_size`

Configure these parameters according to official instructions.

3. Add to configuration file `/var/lib/pgpro/ent-15/data/postgresql.conf` the link to the file **`iwtm-postgres.conf`**.
   You can do it using the command:
   `echo "include = 'iwtm-postgres.conf'" >> /var/lib/pgpro/ent-15/data/postgresql.conf`
4. Edit the access file `/var/lib/pgpro/ent-15/data/`**`pg_hba.conf`**:
   a. After the strings:

```
# IPv6 local connections:
host    all             all             ::1/128                 md5
```

   add a string:

```
host    postgres        all             0.0.0.0/0               md5
```

> **Note:**
>
> The provided values are for Traffic Monitor installation with default parameters. In case you are going to use different values during Traffic Monitor installation, specify them here.

   b. Replace the strings using the commands:

```
sed -i "s|host[[:space:]]*all[[:space:]]*all[[:space:]]*127.0.0.1/32[[:space:]]*md5|host    all             all             127.0.0.1/32            trust|" /var/lib/pgpro/ent-15/data/pg_hba.conf
sed -i "s|local[[:space:]]*all[[:space:]]*all[[:space:]]*peer|local     all             all                                     trust|" /var/lib/pgpro/ent-15/data/pg_hba.conf
```

5. Create a directory `/var/lib/pgpro/ent-15/data/ tmp` and assign its owner and group using the commands:
   `mkdir -p /var/lib/pgpro/ent-15/data/tmp`
   `chown postgres:postgres /var/lib/pgpro/ent-15/data/tmp`
6. Start the service `postgrespro`:
   `systemctl start postgrespro-ent-15.service`
7. Follow the link to load the package `pgagent_15-4.2.2-3.rhel7.x86_64.rpm`.
8. Install the package using the command:
   `yum install pgagent_15-4.2.2-3.rhel7.x86_64.rpm`

9. Change the default password of database administrator:
   ```
   su - postgres
   psql -p 5433
   alter user postgres password 'xxXX1234';
   ```
10. Create all required expansions running the queries below:
    ```
    create extension if not exists adminpack;
    create extension if not exists dblink;
    create extension if not exists lo;
    create extension if not exists xml2;
    create extension if not exists tablefunc;
    create extension if not exists intarray;
    create extension if not exists file_fdw;
    create extension if not exists "uuid-ossp";
    create extension if not exists pgcrypto;
    create extension if not exists pgrowlocks;
    create extension if not exists autoinc;
    create extension if not exists hstore;
    create extension if not exists pg_stat_statements;
    create extension if not exists pg_buffercache;
    create extension if not exists pgagent;
    ```
11. To exit, enter the commands:
    ```
    \q
    exit
    ```
12. To configure `pgagent` user in OS, run the commands:
    ```
    touch /home/pgagent/.pgpass
    echo "127.0.0.1:5433:postgres:postgres:xxXX1234" > /home/pgagent/.pgpass
    chmod 0600 /home/pgagent/.pgpass
    chown pgagent:pgagent /home/pgagent/.pgpass
    usermod -s /bin/bash pgagent
    ```
13. Create `/etc/sudoers.d/iw-pgagent` with the following content:

    ```
    # allow pgagent to execute any command
    pgagent ALL = (postgres) NOPASSWD: ALL
    Defaults:pgagent !requiretty
    ```

14. Change the privileges, owner and group as per `/etc/sudoers.d/iw-pgagent`:
    ```
    chmod 440 /etc/sudoers.d/iw-pgagent
    chown root:root /etc/sudoers.d/iw-pgagent
    ```
15. Edit the configuration file `/etc/pgagent/pgagent_15.conf` using the commands:
    ```
    sed -i --follow-symlinks "s/DBPORT=5432/DBPORT=5433/" /etc/pgagent/pgagent_15.conf
    echo "LD_LIBRARY_PATH=/opt/pgpro/ent-15/lib" >> /etc/pgagent/pgagent_15.conf
    ```
16. Enable the service `pgagent`, run it and check its status using the commands:
    ```
    systemctl enable pgagent_15
    systemctl start pgagent_15
    systemctl status pgagent_15
    ```
17. Create a directory `/u02`:
    ```
    mkdir /u02
    ```
18. Mount disk storage in the `/u02` directory.

19. Create the directories for table spaces and their owner and group to `postgres`:
    ```
    mkdir /u02/pgdata
    mkdir /u02/pgdata1
    mkdir /u02/arch
    chown -R postgres:postgres /u02
    ```

When you finish, make sure that there are no critical errors in `/var/log/pgagent_15.log` and the database logs.

3 Installing the System

This section contains instructions for each type of System installation.

You can find the instruction for installation of the external storage of binary data – Data Storage in the "Installing Data Storage" article.

Details on deployment this schemes in the existing infrastructure are described in «InfoWatch Traffic Monitor. Administration Guide».

Warning!

Before starting the installation, make sure that the environment, where the System will be deployed meets software and hardware requirements (see "Hardware and Software Requirements").

Installation of the server components of the InfoWatch Traffic Monitor system is performed using kickstart installer.

Note:

Traffic Monitor installation is not supported when connecting to server via HP Integrated Lights Out (ILO).

Traffic Monitor installer contains installation templates. Depending on the server purpose, a different set of components is to be installed.

See information on how to choose the installation type in "System Deployment Schemes and Installation Types".

Besides the installation from server console a graphical mode of installation is available. How to run the installer in graphical mode you can find in related installation articles.

You can also install Traffic Monitor in silent mode using a paremeters file `.options`. You can prepare the files where all required parameters are specified. Then you should copy these files together with Traffic Monitor distribution kits to servers where the System is planned to deploy. After this, you can run the installation on servers in silent mode, specifying the proper parameters files. Using it together with installation templates you can reduce the user role in System's primary deployment.

You can find the information on the desired installation type in the following articles:

- Installing Traffic Monitor Server and Database
  - All-in-one Installation Mode of TM Enterprise and TM Standard
  - Distributed Installation of TM Enterprise
  - Installing the System in silent mode using parameter file

Note:

InfoWatch Device Monitor installation is described in *"InfoWatch Device Monitor. Installation, Configuration and Administration Guide"*.

Note:

During IW Traffic Monitor installation the operations that require sysdba rights will be performed:

Oracle DBMS

- Creation of iwtm_logon_trg trigger which is used to provide iwtm_linux and iwtm_web users access to objects of iwtm scheme;
- Creation of sp_iwtm_execute_os_command procedure to run OS commands when creating, removing, archiving and restoring table space files;
- Setting user profile by default (password lifetime, password change limit and connection attempts limit);
- Setting sevice windows of dbms_scheduler;
- Disabling access to XDB using http protocol;
- Disabling dispatcher, as a particular server is used;
- Providing iwtm user with:
    - DB installation, update and uninstallation rights;
    - Daily tablespaces creation, removing, archiving and restoring rights;
    - Rights that are used in InfoWatch Traffic Monitor code;
    - Rights to access DB statistics.

PostgreSQL and Postgres Pro DBMS

- Creation of wraper function to read files, stop and break sessions, create table spaces and provide iwtm with rights for them;
- Removing all views and functions from iwtm scheme in order to create the required ones later during update to a new version;
- Providing iwtm user with:
    - Rights to create DB objects;
    - Rights to install, update, ininstall DB scheme;
    - Rights to create, remove, archive and restore tablespaces;
    - Rights to clear postgres server statistics that are used in pgstat diagnostics script;
    - Rights for statistic views and tables to collect statistics of DB operation;
    - Rights that are used in InfoWatch Traffic Monitor code;
    - Rights to view DB statistics;
    - Rights for pgagent scheme to create and manage jobs.

For information on pre-installed accounts, see "Pre-installed Server Settings".

When the installation of server components is finished, the Management console is available through the browser window by entering the URL:

- of the Traffic Monitor Server – if All-in-one installation mode is used;
- of the primary Traffic Monitor Server (server, where `web-gui` pack is installed) – if the System components are installed on different computers.

3.1 Installing Data Storage

External storage of binary data - Data Storage - is a part of Platform. To use Data Storage, install Platform. You can do it in one of the following ways:

- Install a Platform product. In this case Platform will be installed automatically.
  You can find installation description in this product documentation. Also there you can find information about possibilty of installing Traffic Monitor and the Platform product on the same server.
- Install Platform without products. This type of installation is described below:
    1. Preparing the server for installing Platform
    2. Installing Platform

After installation of Platform:

- You can start installing Traffic Monitor. During the installation you can specify parameters of connection to Data Storage.
  One of these parameters is the Data Storage authorization token.

  > **Warning!**
  >
  > To improve security, it is not recommended to use the default value of the token.

  You can check the actual value of the token:
  - On the Data Storage server, via the command line. For this:
    1. Go to the directory where the Platform distribution kit was extracted.
    2. Run the command:
       `./setup.py tokens list`
       As a result, you will see a list of tokens for connecting to the Platform. The actual Data Storage authorization token will be displayed opposite the *DataStorageUser* identity.
    3. If the token has the default value: `1exwo92iwpczl1hy6jxy` , refresh it by running the command:
       `./setup.py tokens refresh DataStorageUser`
  - In the Platform product management console, in the **Token for Data Storage User** field of the **Global settings** section.
    Available if the Platform product with web interface is installed on the server with Data Storage and the web interface contains such a setting.
    In this case, you can refresh the token by pressing the button  .
- If Platform is installed on the server where Traffic Monitor was already installed, make sure that IP address of the Traffic Monitor server is specified in the `/opt/iw/tm5/etc/consul/consul.json` configuration file, in the " `bind_addr` " field.
- If Platform is installed after Traffic Monitor, configure the connection between Traffic Monitor and Data Storage. For the details, see " *InfoWatch Traffic Monitor . Administration Guide* ", "Configuring Connection with Data Storage" article.

  > **Note:**
  >
  > You can configure the connection between Traffic Monitor and Data Storage in case of All-in-one installation type or server installation with the help of Database template.

3.1.1 Preparing the server for installing Platform

Before installing Platform, you need to prepare the server:

1. The installation program is written in Python version 2.7. So to install the Platform, you need to install the Python 2.7 interpreter first. The Service distribution kit does not include the interpreter package.
2. In Red Hat Enterprise Linux and RED OS environments, update the SELinux policies. To do this, download and install the `container-selinux` package.
   You can install the package using the command:
   `yum install container-selinux`

3. On a server running Red Hat Enterprise Linux and RED OS, disable the SELinux access control system. For this:
   a. Run the following commands as `root`:
      ```
      setenforce 0
      sed -i 's/SELINUX=enforcing/SELINUX=disabled/g' /etc/selinux/config
      ```
   b. Restart the server using the command:
      ```
      reboot
      ```
   c. Check status of the SELinux system using the command:
      ```
      sestatus
      ```
4. Configure POD network rules or disable the firewall (for details, see "Firewalld and Kubernetes interaction conflicts" and "Firewall complete shutdown"). Otherwise, you will not be able to install the Platform.
5. If you are using an antivirus, configure it to work with the Platform (see the Knowledge Base article: "Antivirus configuration for Platform products").
6. Platform uses the Kubernetes component. For correct installation of the Platform and operation of Kubernetes, the `conntrack` package must be installed on the server.
   Make sure that the package is installed. For this, at the command line, enter:
   ```
   conntrack
   ```
   You will see information about working with the `conntrack` module and the module version.

```
Command line interface for the connection tracking system. Version 1.4.4
Usage: conntrack [commands] [options]

Commands:
  -L [table] [options]          List conntrack or expectation table
  -G [table] parameters         Get conntrack or expectation
  -D [table] parameters         Delete conntrack or expectation
  -I [table] parameters         Create a conntrack or expectation
  -U [table] parameters         Update a conntrack
  -E [table] [options]          Show events
  -F [table]                    Flush table
  -C [table]                    Show counter
  -S                            Show statistics

Tables: conntrack, expect, dying, unconfirmed

Conntrack parameters and options:
  -n, --src-nat ip                      source NAT ip
  -g, --dst-nat ip                      destination NAT ip
  -j, --any-nat ip                      source or destination NAT ip
  -m, --mark mark                       Set mark
  -c, --secmark secmark                 Set selinux secmark
  -e, --event-mask eventmask            Event mask, eg. NEW,DESTROY
  -z, --zero                            Zero counters while listing
  -o, --output type[,...]               Output format, eg. xml
  -l, --label label[,...]               conntrack labels

Expectation parameters and options:
  --tuple-src ip        Source address in expect tuple
  --tuple-dst ip        Destination address in expect tuple

Updating parameters and options:
  --label-add label     Add label
  --label-del label     Delete label

Common parameters and options:
  -s, --src, --orig-src ip              Source address from original direction
  -d, --dst, --orig-dst ip              Destination address from original direct
ion
  -r, --reply-src ip            Source addres from reply direction
  -q, --reply-dst ip            Destination address from reply direction
  -p, --protonum proto          Layer 4 Protocol, eg. 'tcp'
  -f, --family proto            Layer 3 Protocol, eg. 'ipv6'
  -t, --timeout timeout         Set timeout
  -u, --status status           Set status, eg. ASSURED
  -w, --zone value              Set conntrack zone
  --orig-zone value             Set zone for original direction
  --reply-zone value            Set zone for reply direction
  -b, --buffer-size             Netlink socket buffer size
  --mask-src ip                 Source mask address
  --mask-dst ip                 Destination mask address
```

   If the module is not installed, install it using the following command:
   ```
   yum install conntrack
   ```

If the package is not available in the repository, then download the package, go to the directory where it has been downloaded and install the package manually using the command:
`rpm -Uhv ./<package_name>`

7. If you are installing Platform on the server where Traffic Monitor with local database is already installed, then disable Huge Pages. For this:
    a. Stop the System by running the command:
    `iwtm stop`
    b. Stop the DBMS:
        - If you use the PostgreSQL DBMS, run the commands of the following type:
        `systemctl stop pgagent-15`
        `systemctl stop postgresql-15`
        - If you use the Oracle DBMS:
            i. Open Oracle SQL*Plus and connect as the **sysdba** user:
            `sqlplus / as sysdba`
            ii. Run the command:
            `dbshut $ORACLE_HOME`
    c. Set the null value for the Huge Pages parameter:
    `sysctl -w vm.nr_hugepages=0`

    > **Note:**
    >
    > You can view the current Huge Pages value by running the command:
    > `sysctl -a | grep 'huge*page'`

    d. Start the DBMS.
        - For PostgreSQL DBMS, run the commands of the following type:
        `systemctl start pgagent-15`
        `systemctl start postgresql-15`
        - If you use the Oracle DBMS:
            i. Open Oracle SQL*Plus and connect as the **sysdba** user:
            `sqlplus / as sysdba`
            ii. Run the command:
            `dbstart $ORACLE_HOME`
    e. Start the System:
    `iwtm start`

3.1.2 Installing Platform

> **Important!**
>
> Before the installation, be sure to prepare the server (see "Preparing the server for installing Platform").

Platform is installed manually via the command line.

To install the Service, use the `iw_platform.tar.xz` archive from the Traffic Monitor distribution kit. The archive contains a full set of binary modules of container images that are necessary for deploying Platform without access to the Internet. The archive also includes the installation program.

Platform have two installation modes:

- **`central` (central node)**
- **`office` (office node)**

The central and office nodes of the Platform are combined into a cluster.

Installation in the central mode

To install Platform in the `central` mode:

1. Create a new directory on the disk (e.g. Platform):
   `mkdir Platform`
2. Copy the **`iw_platform.tar.xz`** archive to this directory.
3. Open the directory where you have pasted the archive.
4. Unpack the archive with Platform distribution kit to this directory:
   `tar -xvf iw_platform.tar.xz`
5. Run the Platform installation program:
   `./setup.py install`
   If you want to store archived daily tablespaces on the slow disk of the Data Storage server, then run the Platform installation program with the `--dsslowdatapath` parameter:
   `./setup.py install --dsslowdatapath=/root/slowdisk`
   where `/root/slowdisk` is the way to the slow disk.
   For details on tablespaces, see:
   - "*InfoWatch Traffic Monitor . Administration Giude*", the "Database Administration" chapter, the "Archiving Daily Tablespaces" article
   - "*InfoWatch Traffic Monitor. User Guide*", the "Managing Tablespaces" article
6. Enter the IP address of the network interface to communicate with the cluster and press **Enter**. The IP address should be in IPv4 format: " `xxx.xxx.xxx.xxx` ".

   > **Note:**
   >
   > If you specify `0.0.0.0` as the IP address, then all available network interfaces will be used.
   >
   > Hereinafter, to use the default values, press **Enter** without entering values.

7. Allocate RAM to host Clickhouse data (by default, `80%`) and press **Enter**.
8. Specify the path to place Clickhouse data (by default, `/mnt/chdata`) and press **Enter**.
9. Specify the path to place PostgreSQL data (by default, `/mnt/pgdata`) and press **Enter**.
10. Specify the path to place NATS data (by default, `/mnt/natsdata`) and press **Enter**.
11. Specify the path to place binary data (by default, `/mnt/dsdata`) and press **Enter**.
12. Specify the port for connecting to the Platform web interface and press **Enter**.

    > **Important!**
    >
    > When installing on the same server with Traffic Monitor, specify port different than 443 because port 443 is used by default for connecting to the Traffic Monitor web interface.

13. Wait for the installation of Platform to complete.
14. Read the Platform installation report. The **`web ui`** column contains the address and port to connect to the Platform web interface:

```
###Result###
Install product: Infowatch Platform(platform) Version: 2.0.0.1090
Install manifest section: central
Install node label: central
installed 41 components
updated   0 components
add ref   0 components
web ui:
https://10.60.25.54:444
```

15. To display information about Platform, use the command:
    `./setup.py showproducts`
16. Make sure that all services are running. For this, use the command:
    `kubectl get pods -n infowatch`
    The list of services will be displayed. Each service should have the `Running` status.

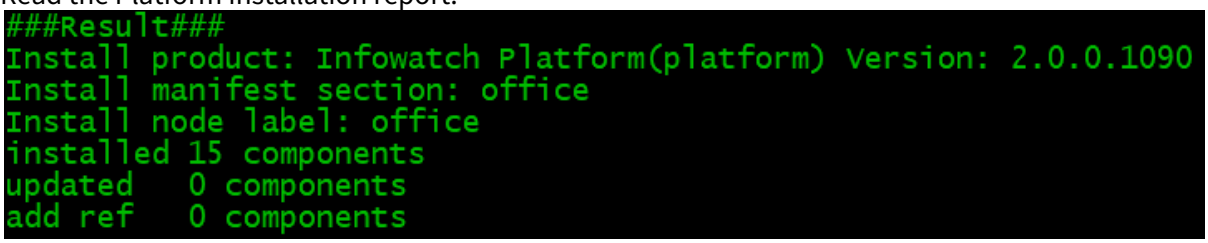
Installation in the office mode

To install Platform in the `office` mode:

1. Create a new directory on the disk (e.g. Platform):
   `mkdir Platform`
2. Copy the **`iw_platform.tar.xz`** archive to this directory.
3. Open the directory where you have pasted the archive.
4. Unpack the archive with Platform distribution kit to this directory:
   `tar -xvf iw_platform.tar.xz`
5. Run the Platform installation program:
   `./setup.py install --nodemode=office`
   If you want to store archived daily tablespaces on the slow disk of the Data Storage server, then run the Platform installation program with the `--dsslowdatapath` parameter:
   `./setup.py install --nodemode=office --dsslowdatapath=/root/slowdisk`
   where `/root/slowdisk` is the way to the slow disk.
   For details on tablespaces, see:
   - "*InfoWatch Traffic Monitor . Administration Giude*", the "Database Administration" chapter, the "Archiving Daily Tablespaces" article
   - "*InfoWatch Traffic Monitor. User Guide*", the "Managing Tablespaces" article
6. Enter the address of the central node. You can specify it as an IP address or domain name (e.g., `192.0.2.0` or `host.example.com`).
7. Specify a token to connect to the central node.
   To get the token:
   a. Connect to the central node server.
   b. On the server command line, run the following command to get the token:
      `kubeadm token list`
      The token will be displayed on the screen:
      ```
      TOKEN

      3wcvoz.zh2ccxzil1hiz7iy
      ```
      Here the token is as follows: `3wcvoz.zh2ccxzil1hiz7iy`
8. Specify the node label (the default value is `office`) and press **Enter**.
   The label may consist of letters of the Latin alphabet and/or numbers. Label length must not exceed 32 characters.
9. Allocate RAM to host Clickhouse data (by default, `80%`) and press **Enter**.

10. Specify the path to place Clickhouse data (by default, `/mnt/chdata`) and press **Enter**.
11. Specify the path to place PostgreSQL data (by default, `/mnt/pgdata`) and press **Enter**.
12. Specify the path to place NATS data (by default, `/mnt/natsdata`) and press **Enter**.
13. Specify the path to place binary data (by default, `/mnt/dsdata`) and press **Enter**.
14. Wait for the installation of the Platform to complete.
15. Read the Platform installation report.



16. To display information about Platform, use the command:
    `./setup.py showproducts`
17. Make sure that all services are running. For this, use the command:
    `kubectl get pods -n infowatch`
    The list of services will be displayed. Each service should have the `Running` status.

After installing Platform, follow the further instructions in the "Installing Data Storage" article.

See also in this section:

- Installing Platform in silent mode

Installing Platform in silent mode

To reduce a user's role in the Platform installation process there is a silent mode of installation.

To start the installation in silent mode:

1. Create a new directory on the disk (e.g. `Platform`):
   `mkdir Platform`
2. Copy the **`iw_platform.tar.xz`** archive to this directory.
3. Go to the directory where you have pasted the archive.
4. Unpack the archive to this directory:
   `tar -xvf iw_platform.tar.xz`
5. Run the command `./setup.py install` with the specified installation parameters.

You can specify the following parameters:

Параметр	Описание
`--nodemode`	The mode of installation: `central` or `office`. To install the Platform in the office mode, specify the `office` value for this parameter. For the installation in the central mode, you do not need to specify this parameter.
`--advertise`	IP address of the network interface to communicate with the cluster. The default value: `0.0.0.0` Do not specify in case of installation in the office mode.

Параметр	Описание
`--chmemsize`	RAM to host Clickhouse data. The default value: `80%`
`--chdbpath`	The path for placing Clickhouse data. The default value: `/mnt/chdata`
`--pgdbpath`	The path for placing PostgreSQL data. The default value: `/mnt/pgdata`
`--natspath`	The path for placing NATS data. The default value: `/mnt/natsdata`
`--dsdatapath`	The path for placing binary data. The default value: `/mnt/dsdata`
`--guiport`	The port for connecting to the web interface. The default value: `443.` Do not specify in case of installation in the office mode. **Important!** When installing on the same server with Traffic Monitor, specify port different than 443 because port 443 used by default for connecting to the Traffic Monitor web interface.
`--cluster`	The address of central node in cluster. Specify in case of office mode of installation.
`--clustertoken`	A token to connect to the central office. Specify in case of office mode of installation. In the central office you can: • get a connection token by running the command: `kubeadm token list` • create a token using the command: `kubeadm token create`
`--nodelabel`	The node label. Specify in case of office mode of installation. The label may consist of letters of the Latin alphabet and/or numbers. Label length must not exceed 32 characters.
`--dsslowdatapath`	The way to the slow disk if you plan to store archived daily tablespaces on it. Example: `--dsslowdatapath=/root/slowdisk`

Example:

```
./setup.py install \
--advertise=0.0.0.0 \
--chmemsize=60% \
--chdbpath=/mnt/chdata \
--pgdbpath=/mnt/pgdata \
--natspath=/mnt/natsdata \
```

```
--dsdatapath=/mnt/dsdata \
--guiport=444
```

After the installation, make sure that all services are running. For this, use the command:
`kubectl get pods -n infowatch`
The list of services will be displayed. Each service should have the `Running` status.

3.2 Installing Traffic Monitor Server and Database

You can find information on installing Traffic Monitor on OS Red Hat Enterprise Linux and OS Oracle Linux in the following sections:

- All-in-one Installation Mode of TM Enterprise and TM Standard
- Distributed Installation of TM Enterprise
- Installing the System in silent mode using parameter file

3.2.1 All-in-one Installation Mode of TM Enterprise and TM Standard

All-in-one installation mode allows you to install all components of the System on the same computer. This type of installation is similar to all templates installation on the same computer. The packages unpack will start before the installation process after all the perameters are specified.

> **Warning!**
>
> By default you are not allowed to install the System on server which has numbers at the beginning of its name. If you need to allow the server's name to begin with a number, use the command line to specify the value `1` of the parameter `--allow_digits_at_hostname_begin`.
>
> Herewith, make sure that the network check is active – the parameter `--skip_check_network` should have the value `0` (the check is active by default).

The Traffic Monitor installer can work in two modes involving user:

- text mode in server console;
- graphical mode.

The installation steps and its sequence is similar in both modes.

Regardless the selected mode of installation, please take the following common actions:

1. To log into the System, enter login and password (you should enter as a `root` user).

   > **Warning!**
   >
   > Before running the installation make sure that the server complies with the OS and network settings requirements.
   >
   > If you plan using a remote Oracle, PostgreSQL or Postgres Pro Enterprise database (deployed locally or on a separate server), you should prepare it first.
   >
   > Working with Postgres Pro Enterprise is supported only for Red Hat Enterprise Linux and only in case of installation as remote database.

Before installing, in order to clear memory, it is recommended to reboot the server on which database will be deployed.

2. Connect external or local OS repositories.
   For example, you can find instructions on how to configure local Red Hat Enterprise Linux repository at the official web page.
   If you install Traffic Monitor on OS Oracle Linux with no internet access:
   a. Make sure that, in operating system, the current kernel is Red Hat Compatible Kernel (RHCK), namely Oracle Linux Server Kernel 3.10.0-xxxx.el7.x86_64, and the UEK kernel is removed. For details, see Operating System and Network Server Configuration Requirements.
   b. Disable external repositories by running the following command:
   `find /etc/yum.repos.d/ -iname "*.repo" -exec sed -i -e "s/enabled=.*/enabled=0/g" {} \;`
   c. Connect the disk with the OS Oracle Linux distributive to the server.
   d. Mount the disk with the OS Oracle Linux distributive, using the following command:
   `mkdir -p /media/cdrom/ && mount /dev/cdrom /media/cdrom/`
   e. Create the `/etc/yum.repos.d/cdrom.repo` file specifying the mounted disk as a repository. For this, run the following command:
   ```
   cat << EOF > /etc/yum.repos.d/cdrom.repo
   [cdrom]
   name=cdrom
   baseurl=file:///media/cdrom/
   enabled=1
   gpgcheck=0
   EOF
   ```
   f. Remove temporary files and make sure that repository list contains the repository from the disk:
   `yum clean all && yum repolist`
   g. Install `Perl`:
   `yum install perl`
   h. Install the following packages:
      - `perl-List-MoreUtils-0.33-9.el7.x86_64.rpm` (you can download the package from the official Oracle Linux 7 Latest repository)
      - `perl-Dist-CheckConflicts-0.06-2.el7.noarch.rpm` (you can download the package from the official Oracle Linux 7 Optional Latest repository)
      - `urw-base35-fonts-legacy-20170801-10.el7.noarch.rpm` (you can download the package from the official Oracle Linux 7 Optional Latest repository)
      - `python3-psycopg2-2.7.7-2.el7.x86_64.rpm` (you can download the package from the official Oracle Linux 7 EPEL repository)
      - `libzstd-1.5.5-1.el7.x86_64.rpm` (you can download the package from the official Oracle Linux 7 EPEL repository)

      For this:
      i. Download the listed packages from the official Oracle Linux repositories.
      ii. Copy them to the server where Traffic Monitor is to be installed.
      iii. Go to the directory where you copied the packages.
      iv. Run the following command for each package:
      `rpm -ivh <package_name>`

> **Note:**
>
> Optionally you can install tools for work in operating system by running the command:
> `yum install mc vim screen telnet bind-utils mlocate net-tools iptraf sysstat iotop rsync`

i. Make sure you have correctly configured network settings (see Operating System and Network Server Configuration Requirements) and the `/etc/hosts` file contains the hostname resolving setting. If it does not, run the command:
`sh -c "echo '<IP_address> `hostname -f` `hostname -s`' >> /etc/hosts"`

3. Create a directory to locate the InfoWatch Traffic Monitor installer. For example, to create a directory named `distr` in the root of the file system run the following command:
`mkdir /distr`
4. Copy the files from InfoWatch Traffic Monitor distributive into the created directory.
   - **`iwtm-installer-x.x.x.xxx-rhel7`** - for installation on Red Hat Enterprise Linux or Oracle Linux (where x.x.x.xxx is a number of build);
   - **`iwtm-postgresql-15.5-x.x.x.xxx-rhel7.tar.gz`** - if you use PostgreSQL on Red Hat Enterprise Linux and Oracle Linux or Postgres Pro Enterprise DBMS;
   - **`iwtm-oracle-19.0.0.0.0-x.xx.x.tar.gz`** - if you use Oracle DBMS.

As per our example:
   - **`iwtm-installer-7.10.0.97-rhel7`** - for installation on Red Hat Enterprise Linux or Oracle Linux;
   - **`iwtm-postgresql-15.5-7.10.0.97-rhel7.tar.gz`** - if you use PostgreSQL DBMS on Red Hat Enterprise Linux or Oracle Linux or Postgres Pro Enterprise DBMS;
   - **`iwtm-oracle-19.0.0.0.0-7.10.0.97.tar.gz`** - if you use Oracle DBMS.

> **Warning!**
>
> The following instruction describes installation using installer for Red Hat Enterprise Linux.

> **Note:**
>
> If you are using **Oracle DBMS** and Network File System (NFS), follow the steps below:

- **in case you are using Oracle Real Application Clusters (RAC)**

  Set mount options according to the article from official website.

- **in case you are not using RAC:**

  Check in mount point settings (by default `/etc/fstab`), that `noac` option is not used and `actimeo` parameter does not have `0` value.

  For details, see the article on the official website.

5. Enter the command to shift to Traffic Monitor distributive directory.
   As per our example:
   `cd /distr`
6. Before running the installation make the installer file executable. To do this use the following command:
   `chmod u+x ./iwtm-installer-x.x.x.xxx-rhel7`

As per our example:

```
chmod u+x ./iwtm-installer-7.10.0.97-rhel7
```

Installing in text mode using server console

To install Traffic Monitor Enterprise or Traffic Monitor Standard in All-in-one mode, take the following steps:

1. Start the Traffic Monitor installer running the command:

   ```
   ./iwtm-installer-x.x.x.xxx-rhel7
   ```

   Our example command:

   ```
   ./iwtm-installer-7.10.0.97-rhel7
   ```

   Preparations will be made to start the installation. At this stage the unpacking of Traffic Monitor installation files is not performed.

   Warning!

   If available configured OS repositories are missing, the preparation process will stop with the following error message:

   ```
   Preparing installation.../Warning: Failed to prepare installation:
   Missing OS repos or unsupported OS. Please mount and/or enable OS packages
   repository and try once again.

   For details refer to
   /var/log/infowatch/install/iwtm-installation_20211007114106.log or
   /tmp/installbuilder_installer_11672.log if the first doesn't exist
   Press [Enter] to continue:
   ```

   To fix this error press **Enter** to exit, connect the standard OS repository, EPEL repository and restart the installer.

For more details on the error refer to the log files, specified in the error message.

After the unpacking is finished, a welcoming window will be displayed:



2. You must accept the terms of the License Agreement before continuing with the installtion. Select one of the following options. For this, type the figure specified next to it and press **Enter**:
   - `Show the License Agreement` - to view the License Agreement;
     If this option is selected:
     a. Select language to display the License Agreement:
        - `English`
        - `Russian`
     b. Read the License Agreement. To go to the next page, press **Enter**.
     c. Accept the License Agreement. For this, type **y** and press **Enter**.
   - `I accept the License Agreement` – to accept the License Agreement without preview;
   - `I do not accept the License Agreement` – to not accept the License Agreement and abort the installation process.

   > **Note:**
   >
   > When installing via server console, you can see the default value which is specified in square brackets next to input field. This value will be used in case of leaving the field empty and pressing **Enter**.
   >
   > **Example:**
   >
   > If you do not input a value as per picture above and press Enter, the item `[1] Show the License Agreement` will be selected.

3. Select Traffic Monitor edition type:
   - `Traffic Monitor Enterprise (TME)` to install Enterprise edition;
   - `Traffic Monitor Standard (TMS)` to install Standard edition.

> **Warning!**

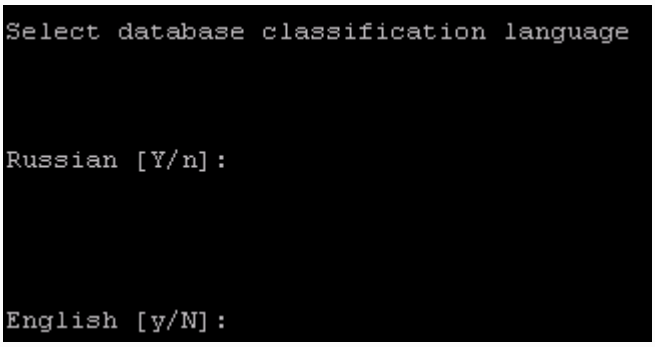
When you install **Traffic Monitor Standard (TMS)** edition, you can select only PostgreSQL database.

4. If **Traffic Monitor Enterprise (TME)** edition was selected, in the window of installation type select **All-in-one**.
5. Then select the main language of user interface management console, as well as date and time displaying format and preset configuration language:
   - **Russian**;
   - **English**.
6. Select the classification base language. A classification base includes preset policies, elements of technology configuration and protected objects. Yor can select few languages at once. Options will be consistently displayed. To use an option type **Y**, to refuse it type **N**, to confirm selected option press **Enter**.

   Note:

   When installing via server console you can see the default value which is specified in square brackets next to input field. This value will be used in case of leaving the field empty and pressing **Enter**.

   Default value using example

   The following languages are available to select:
   - **Russia**;
   - **English**;
   - **Malay**.

   If you do not require to install a classification base, do not select any language.
7. Select the database storage type:
   - **Install database server locally** – to install locally on current server;
   - **Use remote database server** – to use on remotely deployed database. In this case the Traffic Monitor scheme will be added to remote database.

> **Note:**
>
> Only **`Use remote database server`** is supported for Postgres Pro Enterprise DBMS.

8. In case **Enterprise** edition is selected, select a database the System to operate with:
   - **`Oracle Database Enterprise Edition`**
   - **`PostgreSQL`**

> **Note:**
>
> If you use Postgres Pro Enterprise DBMS, select **`PostgreSQL`**.

9. If you use a remote database, please enter consistently:
   a. IP address and database server domain name.

> **Важно!**
>
> To install Traffic Monitor on the same server with an already deployed DBMS, specify the address `127.0.0.1`.

   b. Connection port
   c. The name of database to be used, where the scheme is to be added.
10. If required you can change the default values of DB authentication parameters.
    In case of positive answer the following parameters will be offered to change:
    - Password of user account having sysdba permissions;
    - Name of database schema owner;
    - Password of database schema owner's account;
    - Name of Linux services user account;
    - Password of Linux services account;
    - Name of web services user account;
    - Password of web services account;
    - Name of nagios user account;
    - Password of nagios account.
11. Select a data storage mode:
    - **`Normal`** – switching to the following partition (when it is specified) happens after the previous one is overflow.
    - **`Fast/Slow disks`** – dividing pools into fast and slow ones. Recent data are to be kept in fast pool and to be relocated to the slow ones in a number of days specified. Slow pool operates in `normal` mode.
    - **`Rotate`** – switching to the following partition happens every day once the previous one is overflow.
12. You can change the default values of database storage parameters.
    In case of positive answer you may change the following parameters:
    - **`Main tablespaces path`** – path to main tablespaces data storage directory;
    - If you've selected **`Fast/Slow disks`** mode:

- **Fast disk path** – path to daily tablespace data storage directory in **F ast/Slow disks** mode;
- **Number of days to store daily tablespaces on fast disk** - number of days to store in fast tablespaces in **F as t/Slow disks** mode;

- **Number of daily tablespaces paths** – number of daily tablespaces paths, a number from 1 to 10;

> **Note:**
>
> If you specify the value which is more than 1, then you should specify consistently the relevent number of pathes to daily tablespaces.

- **Daily tablespaces paths** – path to daily tablespace data storage directory.

13. For daily tablespaces you can change the default values of archiving parameters.
In case of positive answer:
    - **Path to archiving** – path to archived tablespaces files storage directory.

    The query to use each of the following parameters will be displayed in advance:
    - **Archive non-violation events** – enable the automatic deletion of events that are considered non-violations. If enabled, please specify the the number of days after which the event will be automatically archived, by default – 45 days.
    - **Archive violation events** – enable the automatic archiving of events that are considered violations. If enabled, please specify the number of days after which the event will be automatically archived, by default – 45 days.
    - **Archive screenshots** – enable the automatic archiving of screenshots received from Device Monitor Agents. If enabled, please specify the number of days after which the event will be automatically archived, by default – 45 days.
14. Similar to previous point you can configure the deletion parameters for daily tablespaces. If enabled, the default value for all the parameters – 90 days.
15. You can enable using external storage of binary data – Data Storage.
In case of positive answer, specify the parameters for connecting to external storage:
    - **Data Storage hostname** – hostname or IP address of the server on which the storage is installed
    - **Data Storage port** – port for connecting to Data Storage. The 40731 port is used by default
    - **Data Storage access token** – Data Storage authorization token

    You can find the actual value of the token:
    - On the Data Storage server, via the command line. For this:
        a. Go to the directory where the Platform distribution kit was extracted.
        b. Run the command:
        `./setup.py tokens list`

As a result, you will see a list of tokens for connecting to the Platform. The actual Data Storage authorization token will be displayed opposite the *DataStorageUser* identity.

- In the Platform product management console, in the **Token for Data Storage User** field of the **Global settings** section. Available if the Platform product with web interface is installed on the server with Data Storage and the web interface contains such a setting.

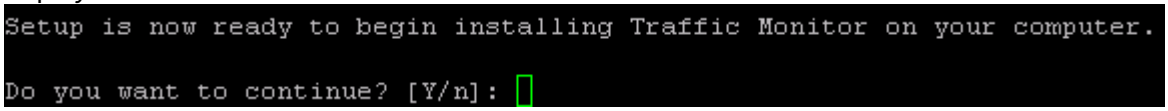
16. Specify the parameters to connect to Consul service:
    a. `Network interface address` - select IP address of network interface.
    b. `Datacenter name` input name of Consul data center.
17. Select the server to be used to synchronize the time (NTP-server):
    - `Use system NTP-server`;
    - `Set manually` - you can manually specify NTP server name. If selected, you should input IP address or NTP server available.
18. Then you can enable indexing of words exact match for Sphinx service.

> **Warning!**
>
> Enabling the indexing of words exact match will increase the size of index two times minimum.

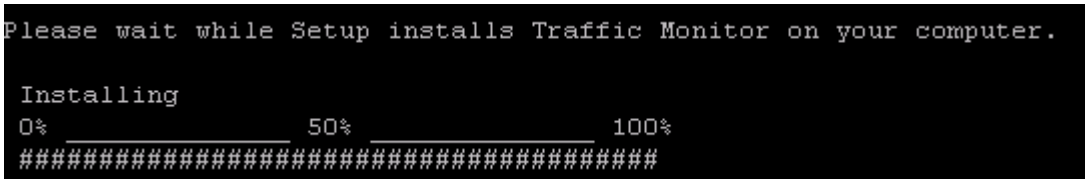
19. If required, you can change the standard configuration of Sphinx service operation. In this case an offer to set a list of languages including morphological support will be displayed. Indexing will be performed according to selected languages. You can specify few languages using a space to separate them.

> **Note:**
>
> The language priority is in accordance with sequence of selected languages. English is to be added by default and it has the highest priority.

20. You can enable OCR technology. In this case you should select one system to be used:
    - `ABBYY FineReader`;
    - `Tesseract`.
21. If ABBYY Finereader is selected as OCR extractor:
    a. Select a recognition mode:
        - `Quick` – a fast mode;
        - `Quality` – a detailed mode providing higher quality of recognition.
    b. Confirm that you have an active license to use ABBYY Finereader. In case you have no active license, type **N** and press **Enter**. In this case ABBYY Finereader will be installed with no license. To use ABBYY Finereader you can manually add an active license later. For more details, please see "*InfoWatch Traffic Monitor. Administation Guide*" "Configuring OCR Extractors " article.
22. After all the parameters were set a message to start the installation and query to continue will be displayed.



Type **Y** to start the installation and press **Enter**.
The unpacking of Traffic Monitor installation files will start. Implementation progress will be displayed.



The process may take some time.

23. After the installation is complete you can delete the packages created to install the System. When installation is successfully completed the data is recommended to delete.

> **Note:**
>
> If Consul service is configured incorrectly, the following warning message will be displayed:
>
> 
>
>
> To finish installation press **Enter**.
>
> **For correct work of System check and configure Consul service cluster**
>
> a. Start Consul service with the command:
> `service iwtm-consul start`
> To check the service status enter the command:
> `service iwtm-consul status`
>
> b. To check Consul enter the command:
> i. To display IP address of main server (leader) of cluster:
> `curl --noproxy 127.0.0.1 http://127.0.0.1:8500/v1/status/leader ; echo`
> ii. To display information about cluster members:
> `consul members`
>
> c. If the IP address of cluster leader is not displayed, configure cluster of Consul service.
> After configuration is complete, repeat checking (step ii).
>
> If the error occurs, the installer will not launch Traffic Monitor services when the installation is finished, so you need to start them manually.

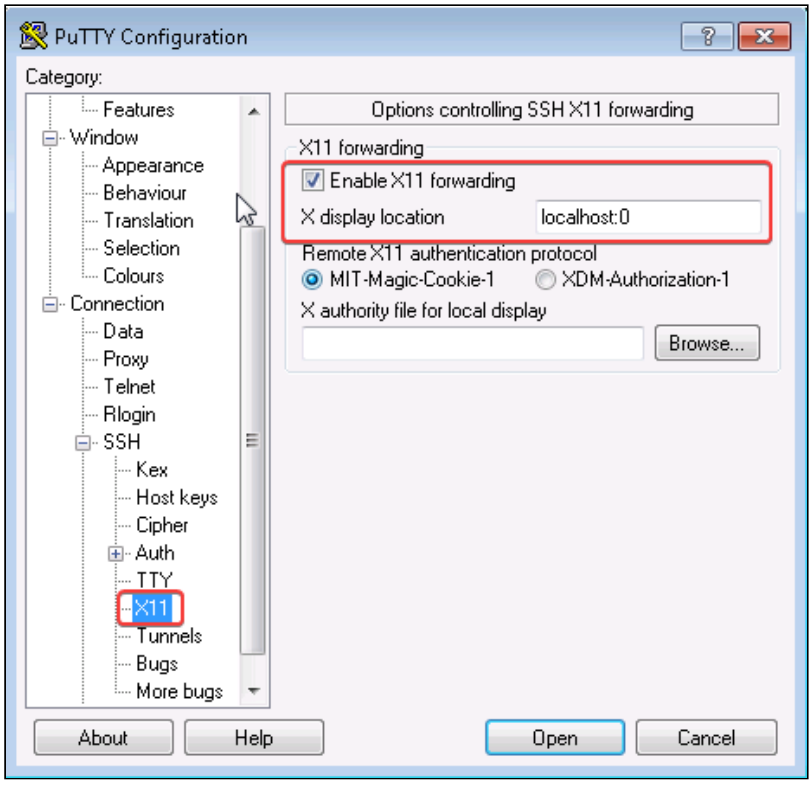
24. To apply the environment change you should certainly log off the System and log in again or restart the server.
25. If you require the list of Traffic Monitor services to be displayed enter the command as follows:
`iwtm status`

Installing in graphical mode

X Window System uses a client - server model. To run the installer in the graphical mode **X11 Forwarding** is used to forward the graphical output of remote system. This let you work directly with Linux graphical applications on the computer which is connected to server. This mode is implemented via SSH connection.

To install Traffic Monitor Enterprise or Traffic Monitor Standard in All-in-one mode using graphical mode of installation, take the folowing steps:

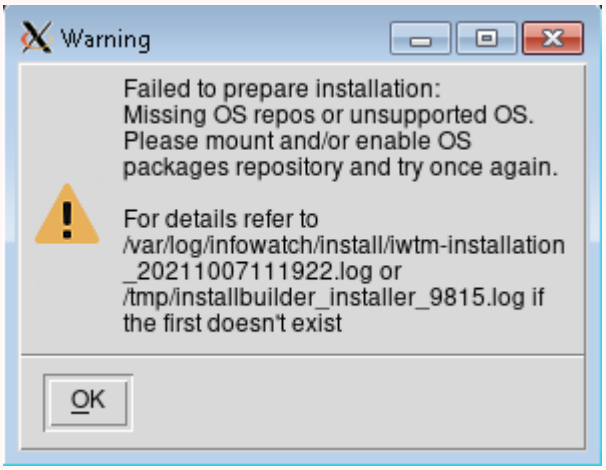
1. On the server, where Traffic Monitor components are planned to install:
   a. Install XAuth utility using the command:
      `yum install xauth`
   b. In `/etc/ssh/sshd_config` configuration file uncomment the line "`X11Forwarding yes`". To do this, delete `#` placed before the line.
   c. Save changes in configuration file.
   d. Restart SSH service using the command:
      `systemctl restart sshd`
2. On the computer, where the graphical mode is to be used:
   a. To connect to Traffic Monitor installation server you will require a SSH client with enabled X11 Forwarding option, e.g. PuTTY.
   b. To start the installer in the graphical mode you will require an application configured to access to X Window System, for example:
      - Xming application – for OS MS Windows;
      - Gnome 3 shell – for OS Linux.
3. Run the application client which was previously configured to access to X Window System.
4. Connect to server, where Traffic Monitor components are planned to install, using selected SSH client.
   Example of PuTTY configuration window used to connect



5. To install Traffic Monitor, run the installer using the command:
   `./iwtm-installer-x.x.x.xxx-rhel7`
   As per our example:
   `./iwtm-installer-7.10.0.97-rhel7`
   Preparations will be made to start the installation. At this stage the unpacking of Traffic Monitor installation files is not being performed.

Warning!

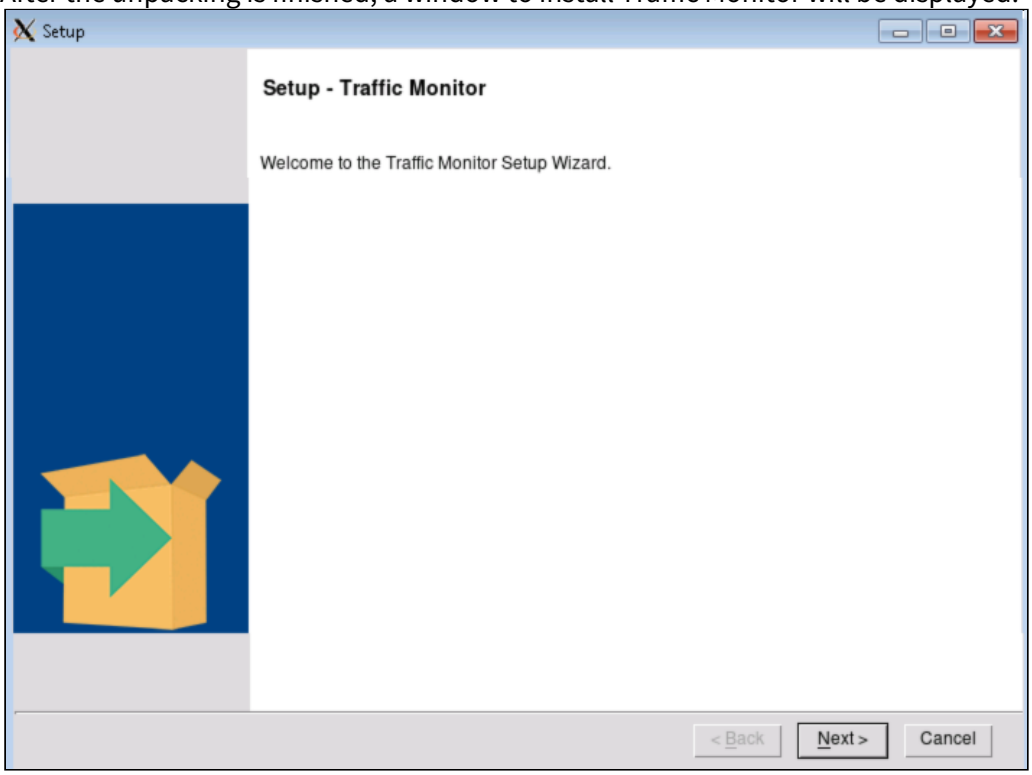
If available configured OS repositories are missing, the preparation process will stop with the following alert box:



To fix this error, press **OK** to dismiss, connect the standard OS repository, EPEL repository and restart the installer.

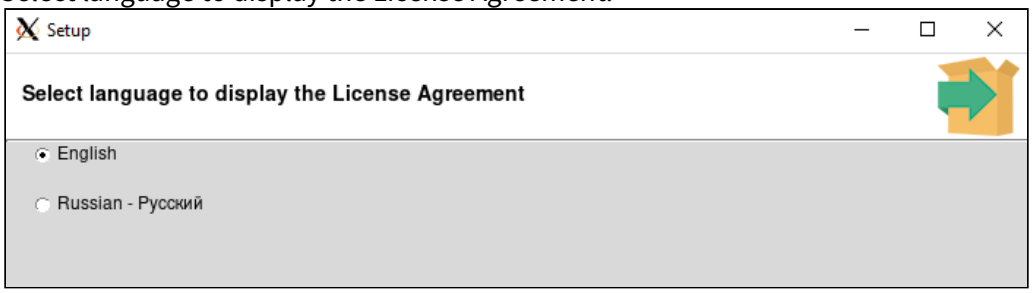
For more details on the error refer to the log files specified in the alert box.

After the unpacking is finished, a window to install Traffic Monitor will be displayed:



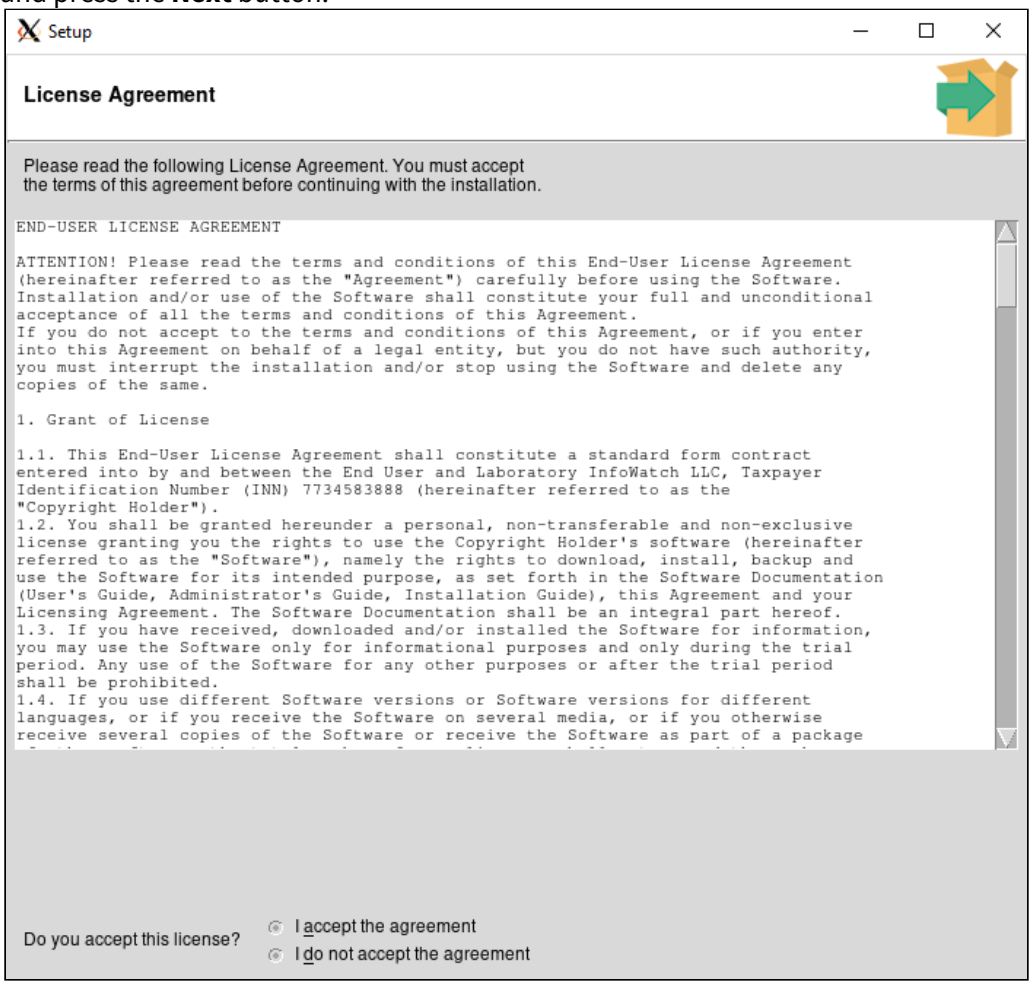
To go to the next parameter, press **Next** button, to go back press - **Back**. To exit, the installer press **Cancel** button.

6. You must accept the terms of the License Agreement before continuing with the installation. For this:
    a. Select language to display the License Agreement:



- `English`
- `Russian`

    b. Select one of the following options. For this, click in the checkbox next to the required value and press the **Next** button:



- `I accept the agreement` – to accept the License Agreement and continue the installation process;
- `I do not accept the agreement` – to not accept the License Agreement and abort the installation process.

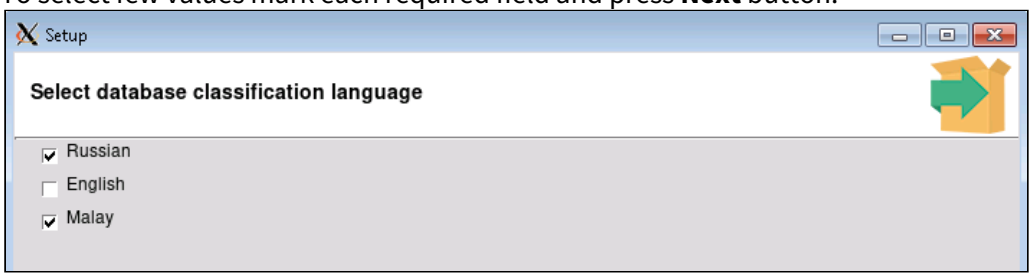
7. Select Traffic Monitor edition type:



- `Traffic Monitor Enterprise (TME)` to install Enterprise edition;
- `Traffic Monitor Standard (TMS)` to install Standard edition.

> **Warning!**
>
> When you install `Traffic Monitor Standard (TMS)` edition, you can select only PostgreSQL database.

8. If `Traffic Monitor Enterprise (TME)` edition was selected, in the window of installation type select `All-in-one`.
9. Then select the main language of user interface management console, as well as date and time displaying format and preset configuration language:
   - `Russian`;
   - `English`.
10. Select the classification base language. A classification base includes preset policies, elements of technology configuration and protected objects. Yor can select few languages at once.
    To select few values mark each required field and press **Next** button.

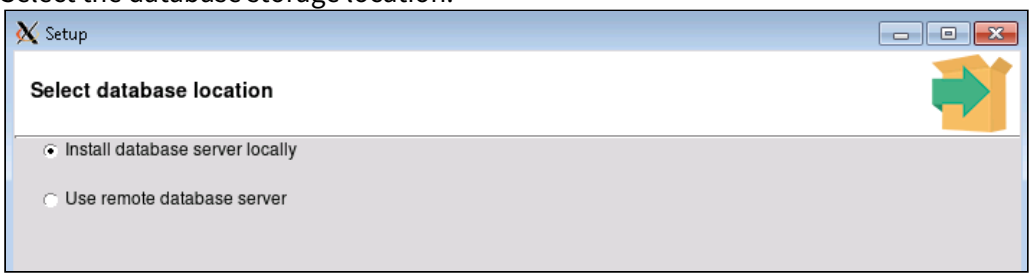


The following languages are available to select:

- `Russian`;
- `English`;
- `Malay`.

If you do not require to install a classification base, do not select any language.

11. Select the database storage location:



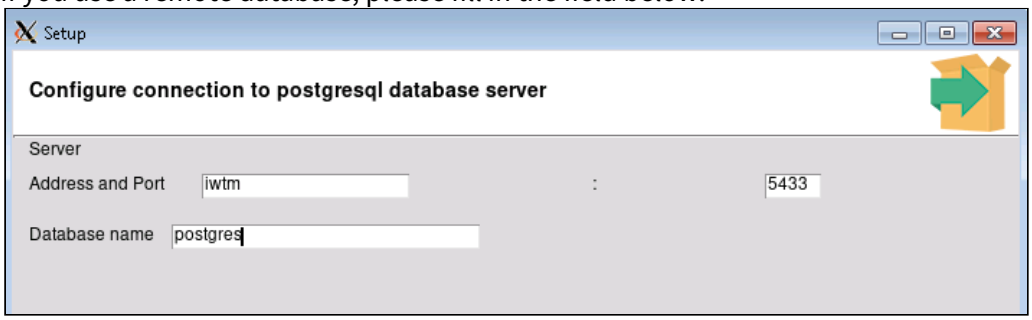
- `Install database server locally` – to install locally on current server;
- `Use remote database server` – to use on remotely deployed database. In this case the Traffic Monitor scheme will be added to remote database.

> **Note:**
>
> Only `Use remote database server` is supported for Postgres Pro Enterprise DBMS.

12. In case **Enterprise** edition is selected, select a database the System to operate with:
    - `Oracle Database Enterprise Edition`
    - `PostgreSQL`

> **Note:**
>
> If you use Postgres Pro Enterprise DBMS, select PostgreSQL.

13. If you use a remote database, please fill in the field below:



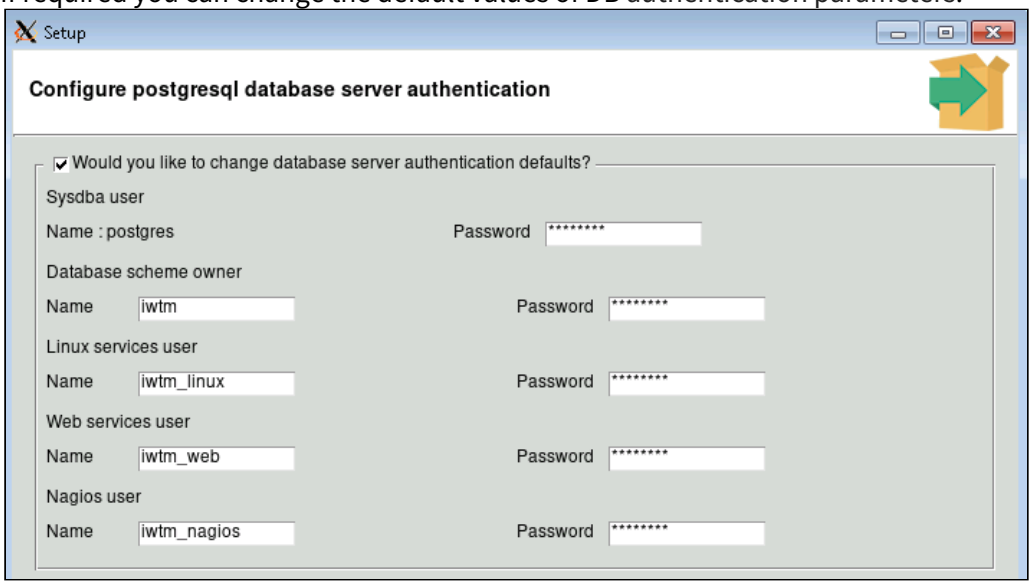
a. `Address and Port` - IP address or database server domain name and c onnection port.

> **Важно!**
>
> To install Traffic Monitor on the same server with an already deployed DBMS, specify the address `127.0.0.1`.

b. **Database name** – The name of database to be used, where the scheme is to be added.

> **Note:**
>
> In the graphical mode active fields contain the default values.

14. If required you can change the default values of DB authentication parameters.

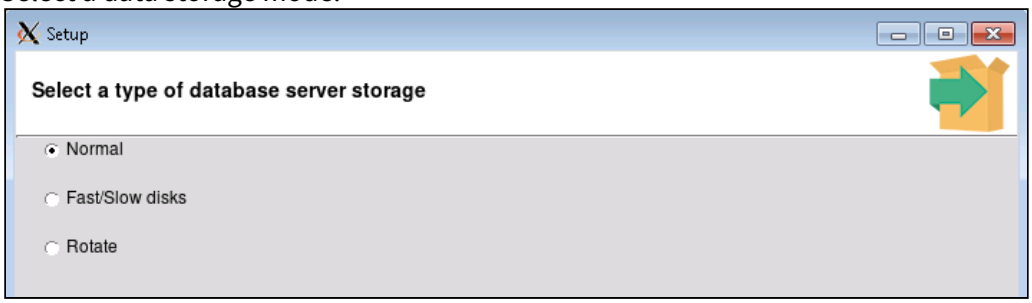


To edit the values mark the field next to question. This will let you edit the following sections:

- **Sysdba user** – Password of user account having sysdba permissions;
- **Database scheme owner** – Name and password of database schema owner;
- **Linux services user** – Name and password of Linux services user;
- **Web services user** – Name and password of web services user;
- **Nagios user** – Name and password of nagios user.

To leave the default values please do not mark the field and press **Next** button. In this case the fields cannot be edited and the installer will use the default parameters.

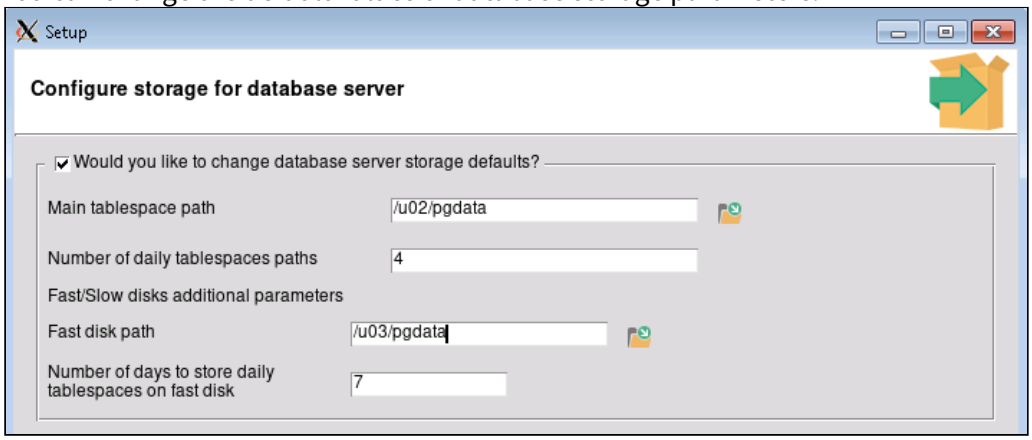
15. Select a data storage mode:



- **Normal** – switching to the following partition (when it is specified) happens after the previous one is overflow.

- **Fast/Slow disks** – dividing pools into fast and slow ones. Recent data are to be kept in fast pool and to be relocated to the slow ones in a number of days specified. Slow pool operates in normal mode.
- **Rotate** – switching to the following partition happens every day once the previous one is overflow.

16. You can change the default values of database storage parameters.

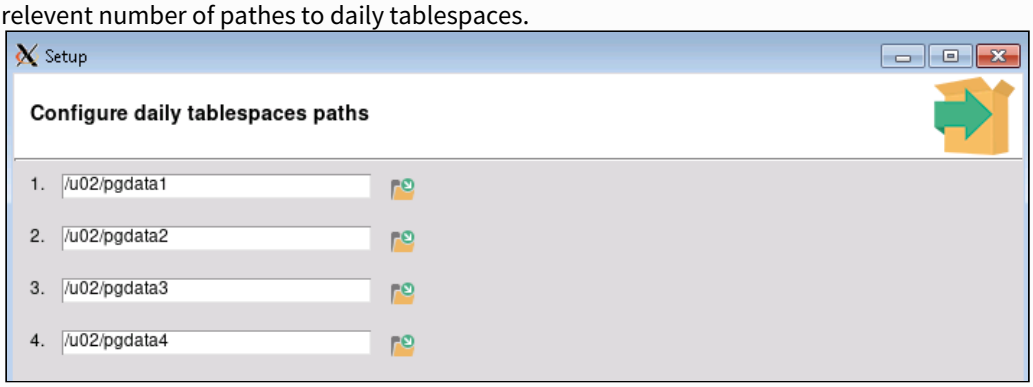


- **Main tablespaces path** – path to main tablespaces data storage directory;

  You can add the path to the field or specify it via file manager window using  button.
- If you've selected **Fast/Slow disks** mode:
  - **Fast disk path** – path to daily tablespace data storage directory in **Fast/Slow disks** mode;
  - **Number of days to store daily tablespaces on fast disk** – number of days to store in fast tablespaces in **Fast/Slow disks** mode;
- **Number of daily tablespaces paths** – number of daily tablespaces paths, a number from 1 to 10;

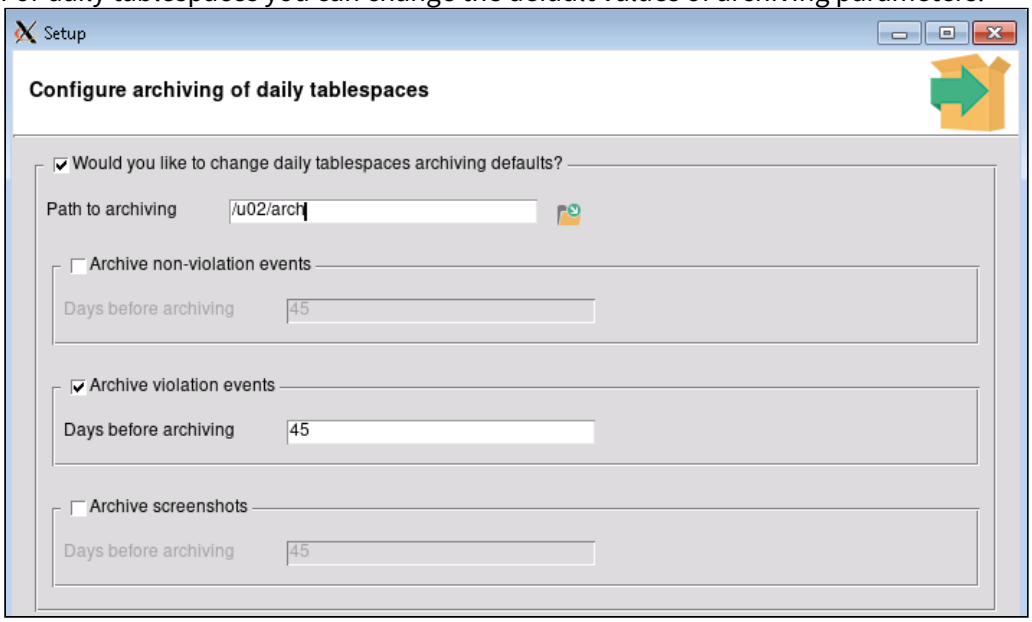
  Note:

If you specify the value which is more than 1, then you should specify consistently the relevent number of pathes to daily tablespaces.



- **Daily tablespaces paths** – path to daily tablespace data storage directory.

17. For daily tablespaces you can change the default values of archiving parameters.



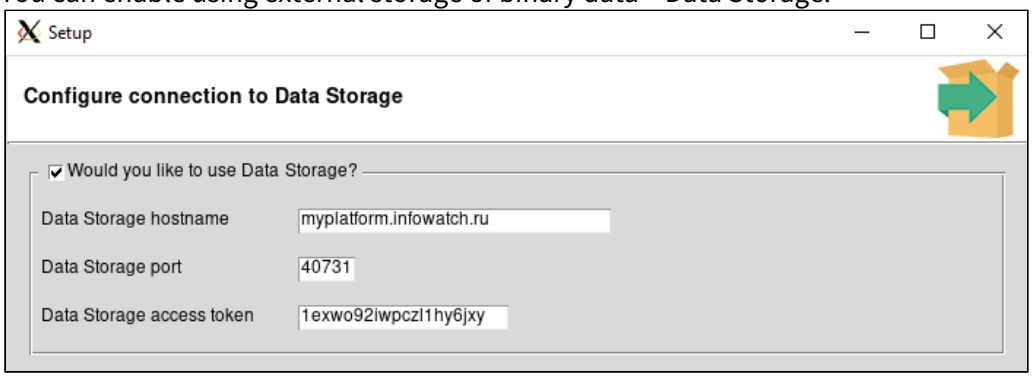
- **Path to archiving** – path to archived tablespaces files storage directory.

To use any parameter you should enable it:

- **Archive non-violation events** – enable the automatic deletion of events that are considered non-violations. If enabled, please specify the the number of days after which the event will be automatically archived, by default – 45 days.
- **Archive violation events** – enable the automatic archiving of events that are considered violations. If enabled, please specify the number of days after which the event will be automatically archived, by default – 45 days.
- **Archive screenshots** – enable the automatic archiving of screenshots received from Device Monitor Agents. If enabled, please specify the number of days after which the event will be automatically archived, by default – 45 days.

18. Similar to previous point you can configure the deletion parameters for daily tablespaces. If enabled, the default value for all the parameters – 90 days.

19. You can enable using external storage of binary data – Data Storage.



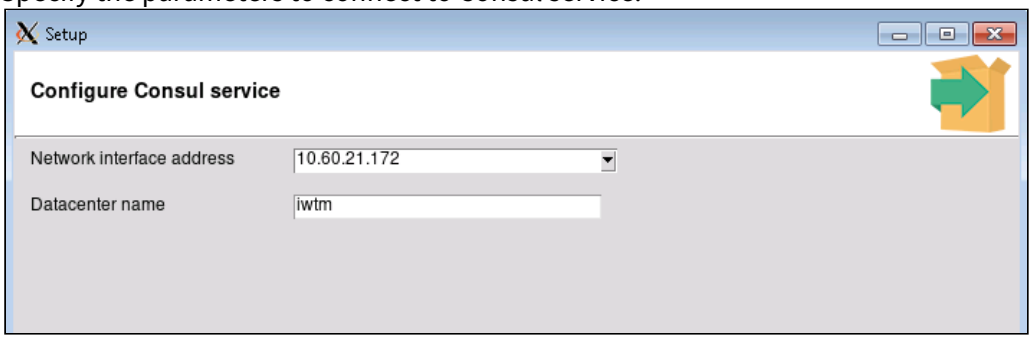
For this, mark the field next to question and specify the parameters for connecting to external storage:

- **`Data Storage hostname`** – hostname or IP address of the server on which the storage is installed
- **`Data Storage port`** – port for connecting to Data Storage. The 40731 port is used by default
- **`Data Storage access token`** – Data Storage authorization token

You can find the actual value of the token:

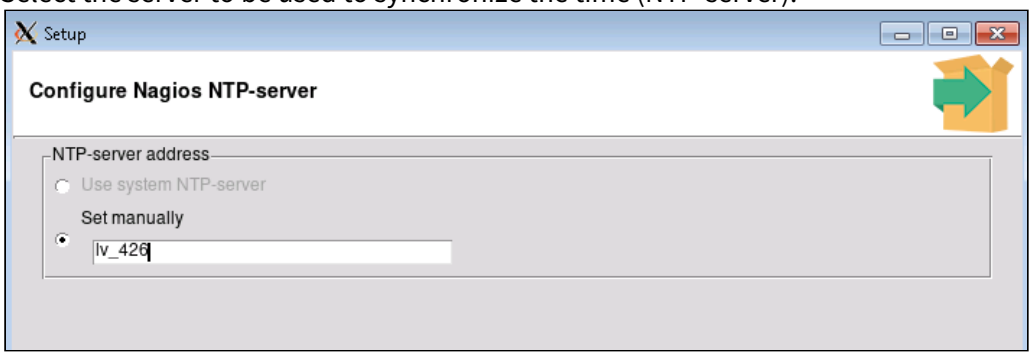
- On the Data Storage server, via the command line. For this:
  a. Go to the directory where the Platform distribution kit was extracted.
  b. Run the command:
  `./setup.py tokens list`
  As a result, you will see a list of tokens for connecting to the Platform. The actual Data Storage authorization token will be displayed opposite the *DataStorageUser* identity.
- In the Platform product management console, in the **Token for Data Storage User** field of the **Global settings** section. Available if the Platform product with web interface is installed on the server with Data Storage and the web interface contains such a setting.

20. Specify the parameters to connect to Consul service:



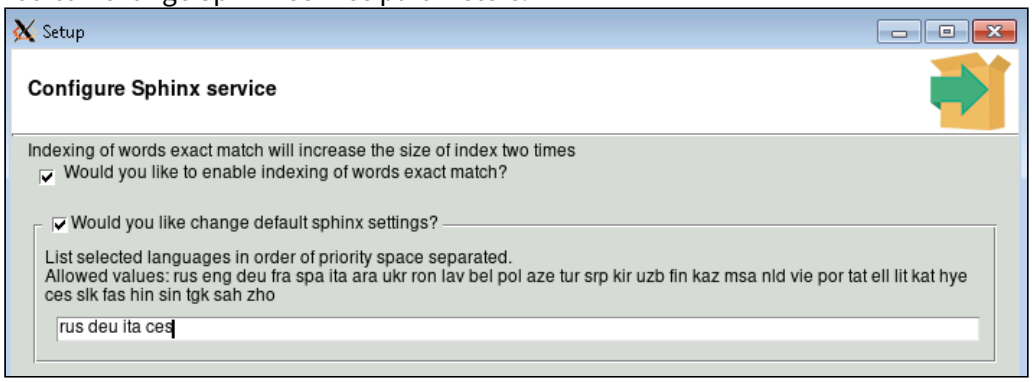
a. **`Network interface address`** – select IP address of network interface.
To select from the list of parameters click ▼ and select the required value.
b. **`Datacenter name`** – input name of Consul data center.

21. Select the server to be used to synchronize the time (NTP-server):



- `Use system NTP-server`;
- `Set manually` – you can manually specify NTP server name. If selected, you should input IP address or NTP server available.

22. You can change Sphinx service parameters:



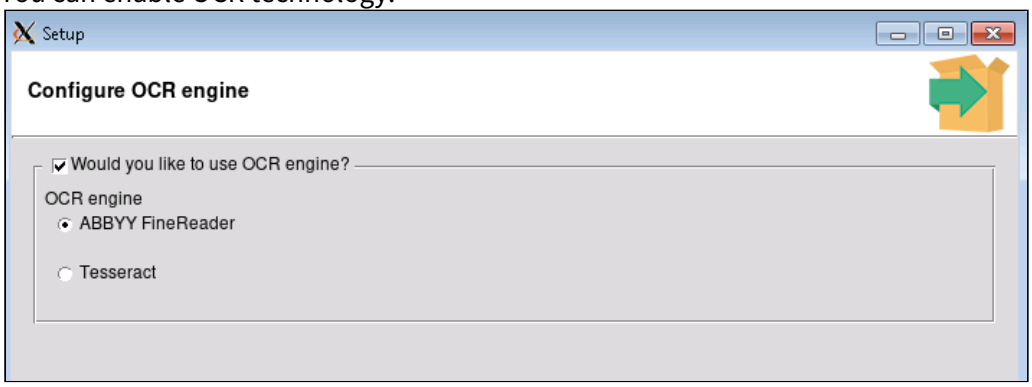
- `Enable indexing of words exact match`;

> **Warning!**
>
> Enabling the indexing of words exact match will increase the size of index two times minimum.

- If required, you can change the standard configuration of Sphinx service operation (`default sphinx setting`). In this case specify a list of languages including morphological support. Indexing will be performed according to selected languages. You can specify few languages using a space to separate them.

> **Note:**
>
> The language priority is in accordance with sequence of selected languages. English is to be added by default and it has the highest priority.

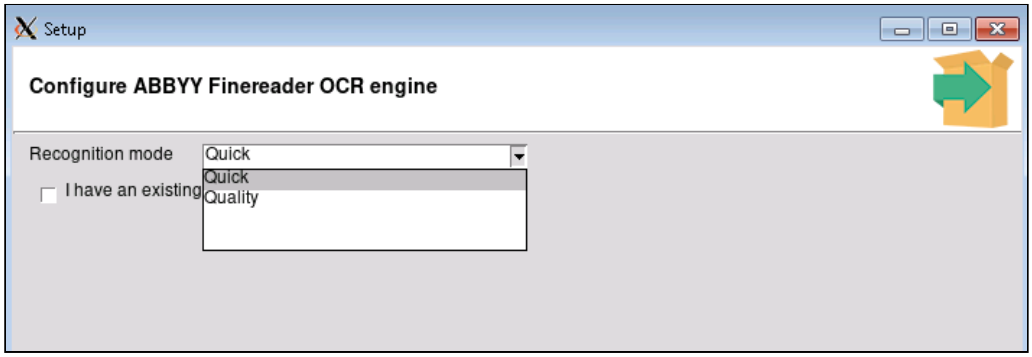
23. You can enable OCR technology.



In this case you should select one system to be used:

- `ABBYY FineReader`;
- `Tesseract`.

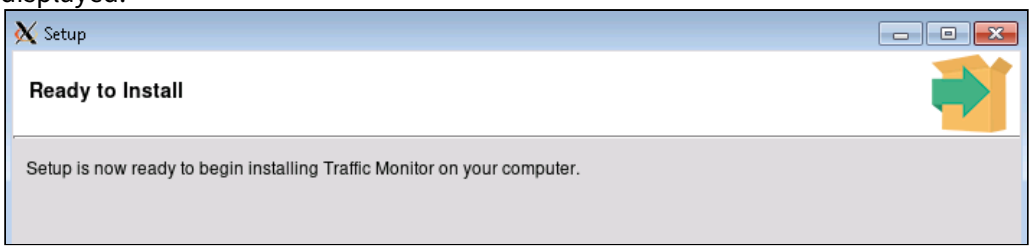
24. If ABBYY Finereader is selected as OCR extractor:



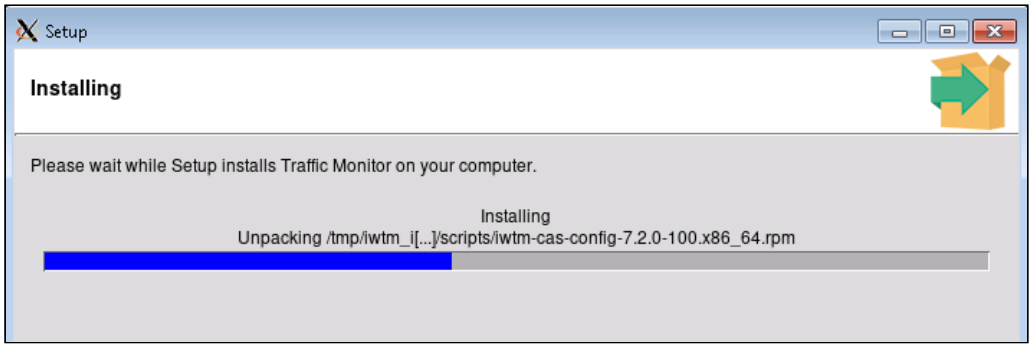
a. Select a recognition mode:
   - `Quick` – a fast mode;
   - `Quality` – a detailed mode providing higher quality of recognition.

b. Confirm that you have an active license to use ABBYY Finereader.
   In case you have no active license, leave the box empty. In this case ABBYY Finereader will be installed with no license. To use ABBYY Finereader you can manually add an active license later. For more details, please see "*InfoWatch Traffic Monitor. Administation Guide*", "Configuring OCR Extractors" article.

25. After all the parameters were set a message to start the installation and query to continue will be displayed.



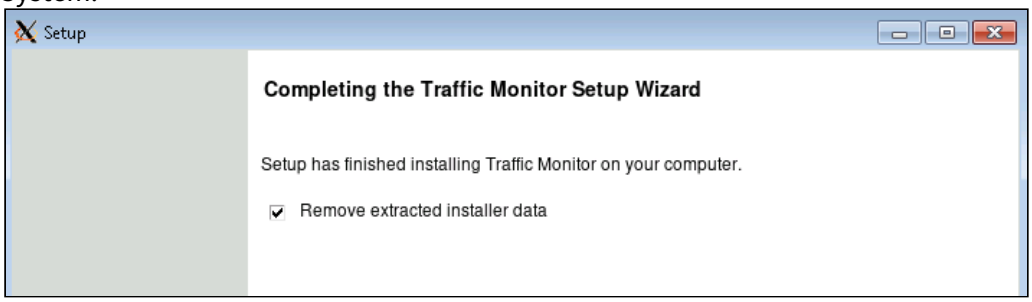
To start the installation and press **Next**.
The unpacking of Traffic Monitor installation files will start. Implementation progress will be displayed.



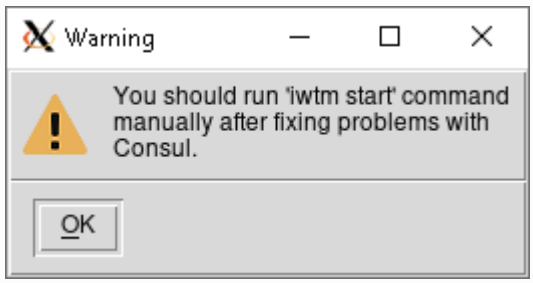
The process may take some time.

> **Note:**
>
> If for any reason the installation process was interrupted, eliminate the cause and restart the installer. The installation will continue from the last step that was successfully completed.

26. When installation is successfully completed you can delete the packages created to install the System.



This data is recommended to delete. To do this mark the field **`Remove extracted installer data`**.

> **Note:**
>
> If Consul service is configured incorrectly, the following warning message will be displayed:
>
> 
>
>
> To finish installation press **OK**.
>
> **For correct work of System check and configure Consul service cluster**
>
> a. Start Consul service with the command:
> `service iwtm-consul start`
> To check the service status enter the command:

```
service iwtm-consul status
```

b. To check Consul enter the command:
   i. To display IP address of main server (leader) of cluster:
   `curl --noproxy 127.0.0.1 http://127.0.0.1:8500/v1/status/leader ; echo`
   ii. To display information about cluster members:
   `consul members`
c. If the IP address of cluster leader is not displayed, configure cluster of Consul service.
   After configuration is complete, repeat checking (step ii).

If the error occurs, the installer will not launch Traffic Monitor services when the installation is finished, so you need to start them manually.

27. To finalise the installation press **Finish**.
28. To apply the environment change you should certainly log off the System and log in again or restart the server.
29. If you require the list of Traffic Monitor services to be displayed enter the command as follows:
    `iwtm status`

As a result of installation, the System creates accounts listed in "Pre-installed Server Settings".

After the completion of installation the Management console is available through a browser: enter the URL of the Traffic Monitor Server.

The procedure of further System configuration is described in the document «*InfoWatch Traffic Monitor. Administration Guide*».

3.2.2 Distributed Installation of TM Enterprise

The Enterprise edition of the Traffic Monitor allows you to deploy the System, so that DBMS modules or web console were installed on different servers. Such installation is used if Traffic Monitor services and DBMS cannot efficiently operate on the same server with respect to the supposed load.

Important!

By default you are not allowed to install the System on server which has numbers at the beginning of its name. If you need to allow the server's name to begin with a number, use the command line to specify the value `1` of the parameter `--allow_digits_at_hostname_begin`.

Herewith, make sure that the network check is active – the parameter `--skip_check_network` should have the value `0` (the check is active by default).

To install the Traffic Monitor components easily on few servers there is a Traffic Monitor installer, containing installation templates which are used to distribute the load effectively and plan the deployment. For more details about templates please see "System deployment schemes and installation types".

There are four templates available to install:

- **Database**;
- **Indexer service**;
- **Web console**;
- **Traffic interceptors**.

The templates can be installed in random order.

> **Note:**
>
> We recommend installing the templates as per one cluster in the following order:
>
> 1. Database.
> 2. Indexer service.
> 3. Web console.
> 4. Interceptors.

One server can have few templates installed at the same time. Installing all the templates on one server is consistent with "All-in-one installation mode".

> **Warning!**
>
> **Database**, **Indexer service** and **Web console** templates should be the only one as per one cluster. **Interceptors** template can be used few times as per one cluster according to the planned System load.

The Traffic Monitor installer can work in two modes involving user:

- Text mode in server console;
- Graphical mode.

The installation steps and its sequence is similar in both modes.

Regardless the selected mode of installation, please take the following common actions:

1. To log into the System, enter login and password (you should enter as a **root** user).

   > **Warning!**
   >
   > Before running the installation make sure that the server complies with the OS and network settings requirements. Each server should have unique and correct FQDN.
   >
   > If you plan using a remote Oracle, PostgreSQL or Postgres Pro Enterprise database (deployed locally or on a separate server), you should prepare it first.
   >
   > Working with Postgres Pro Enterprise is supported only for Red Hat Enterprise Linux and only in case of installation as remote database.
   >
   > Before installing, in order to clear memory, it is recommended to reboot the server on which database will be deployed.

2. Connect external or local OS repositories.
   For example, you can find instructions on how to configure local Red Hat Enterprise Linux

repository at the official web page.

If you install Traffic Monitor on OS Oracle Linux with no internet access:

a. Make sure that, in operating system, the current kernel is Red Hat Compatible Kernel (RHCK), namely Oracle Linux Server Kernel 3.10.0-xxxx.el7.x86_64, and the UEK kernel is removed. For details, see Operating System and Network Server Configuration Requirements.
b. Disable external repositories by running the following command:
```
find /etc/yum.repos.d/ -iname "*.repo" -exec sed -i -e "s/enabled=.*/enabled=0/g" {} \;
```
c. Connect the disk with the OS Oracle Linux distributive to the server.
d. Mount the disk with the OS Oracle Linux distributive, using the following command:
```
mkdir -p /media/cdrom/ && mount /dev/cdrom /media/cdrom/
```
e. Create the `/etc/yum.repos.d/cdrom.repo` file specifying the mounted disk as a repository. For this, run the following command:
```
cat << EOF > /etc/yum.repos.d/cdrom.repo
[cdrom]
name=cdrom
baseurl=file:///media/cdrom/
enabled=1
gpgcheck=0
EOF
```
f. Remove temporary files and make sure that repository list contains the repository from the disk:
```
yum clean all && yum repolist
```
g. Install `Perl`:
```
yum install perl
```
h. Install the following packages:
   - `perl-List-MoreUtils-0.33-9.el7.x86_64.rpm` (you can download the package from the official Oracle Linux 7 Latest repository)
   - `perl-Dist-CheckConflicts-0.06-2.el7.noarch.rpm` (you can download the package from the official Oracle Linux 7 Optional Latest repository)
   - `urw-base35-fonts-legacy-20170801-10.el7.noarch.rpm` (you can download the package from the official Oracle Linux 7 Optional Latest repository)
   - `python3-psycopg2-2.7.7-2.el7.x86_64.rpm` (you can download the package from the official Oracle Linux 7 EPEL repository)
   - `libzstd-1.5.5-1.el7.x86_64.rpm` (you can download the package from the official Oracle Linux 7 EPEL repository)

   For this:
   i. Download the listed packages from the official Oracle Linux repositories.
   ii. Copy them to the server where Traffic Monitor is to be installed.
   iii. Go to the directory where you copied the packages.
   iv. Run the following command for each package:
   ```
   rpm -ivh <package_name>
   ```

   Note:

Optionally you can install tools for work in operating system by running the command:
`yum install mc vim screen telnet bind-utils mlocate net-tools iptraf sysstat iotop rsync`

i. Make sure you have correctly configured network settings (see Operating System and Network Server Configuration Requirements) and the `/etc/hosts` file contains the hostname resolving setting. If it does not, run the command:
`sh -c "echo '<IP_address> `hostname -f` `hostname -s`' >> /etc/hosts"`

3. Create a directory to locate the InfoWatch Traffic Monitor installer. For example, to create a directory named `distr` in the root of the file system run the following command:
`mkdir /distr`
4. Copy the files from InfoWatch Traffic Monitor distributive into the created directory.
   - **`iwtm-installer-x.x.x.xxx-rhel7`** - for installation on Red Hat Enterprise Linux or Oracle Linux (where x.x.x.xxx is a number of build);
   - **`iwtm-postgresql-15.5-x.x.x.xxx-rhel7.tar.gz`** - if you use PostgreSQL DBMS on OS Red Hat Enterprise Linux and Oracle Linux or Postgres Pro Enterprise DBMS;
   - **`iwtm-oracle-19.0.0.0.0-x.xx.x.tar.gz`** - if you use Oracle DBMS.

   As per our example:
   - **`iwtm-installer-7.10.0.97-rhel7`** - for installation on Red Hat Enterprise Linux or Oracle Linux;
   - **`iwtm-postgresql-15.5-7.10.0.97-rhel7.tar.gz`** - if you use PostgreSQL DBMS on OS Red Hat Enterprise Linux and Oracle Linux or Postgres Pro Enterprise DBMS;
   - **`iwtm-oracle-19.0.0.0.0-7.10.0.97.tar.gz`** - if you use Oracle DBMS.

> **Warning!**
>
> The following instruction describes installation using installer for Red Hat Enterprise Linux. It is also valid for Oracle Linux.

> **Note:**
>
> If you are using **Oracle DBMS** and Network File System (NFS), before running the installer:
>
> **In case you are using Oracle Real Application Clusters (RAC)**

Set mount options according to the article from official website.

In case you are not using RAC:

Check in mount point settings (by default `/etc/fstab`), that `noac` option is not used and `actimeo` parameter does not have `0` value.

For details, see the article on the official website.

5. Enter the command to shift to Traffic Monitor distributive directory.
   As per our example:
   ```
   cd /distr
   ```
6. Before running the installation make the installer file executable. To do this use the following command:
   `chmod u+x ./iwtm-installer-x.x.x.xxx-rhel7`
   As per our example:
   `chmod u+x ./iwtm-installer-7.10.0.97-rhel7`

Installing in text mode using server console

To install Traffic Monitor Enterprise in the text mode using server console, take the following steps:

1. Start the Traffic Monitor installer running the command:
   `./iwtm-installer-x.x.x.xxx-rhel7`
   Our example command:
   `./iwtm-installer-7.10.0.97-rhel7`
   Preparations will be made to start the installation. At this stage the unpacking of Traffic Monitor installation files is not performed.

   Warning!

   If available configured OS repositories are missing, the preparation process will stop with the following error message:

   ```
   Preparing installation.../Warning: Failed to prepare installation:
   Missing OS repos or unsupported OS. Please mount and/or enable OS packages
   repository and try once again.

   For details refer to
   /var/log/infowatch/install/iwtm-installation_20211007114106.log or
   /tmp/installbuilder_installer_11672.log if the first doesn't exist
   Press [Enter] to continue:
   ```

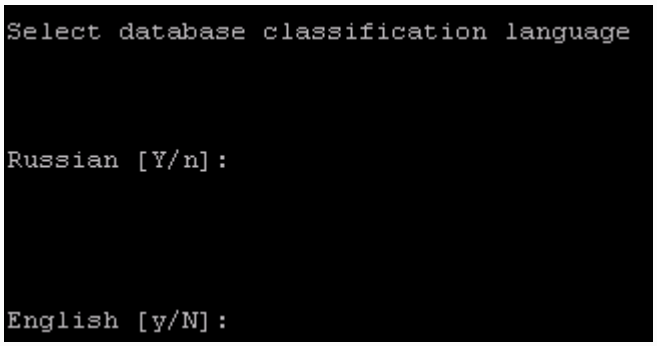
   To fix this error press **Enter** to exit, connect the standard OS repository, EPEL repository and restart the installer.

   For more details on the error refer to the log files, specified in the error message.

   After the unpacking is finished, a welcoming window will be displayed:



2. You must accept the terms of the License Agreement before continuing with the installtion. Select one of the following options. For this, type the figure specified next to it, and press **Enter**:
   - `Show the License Agreement` - to view the License Agreement;
     If this option is selected:
     a. Select language to display the License Agreement:
        - `English`
        - `Russian`
     b. Read the License Agreement. To go to the next page, press **Enter**.
     c. Accept the License Agreement. For this, type **y** and press **Enter**.
   - `I accept the License Agreement` – to accept the License Agreement without preview;
   - `I do not accept the License Agreement` – to not accept the License Agreement and abort the installation process.

> **Note:**
>
> When installing via server console, you can see the default value which is specified in square brackets next to input field. This value will be used in case of leaving the field empty and pressing **Enter**.
>
> **Example:**
>
> If you do not input a value as per picture above and press Enter, the item `[1] Show the License Agreement` will be selected.
> Also, the default value, which is in square brackets, can be specified with a capital letter.
>
> **Example:**
>
> 
>

3. Select `Traffic Monitor Enterprise (TME)` to install Enterprise edition.
4. In the window of installation type select `Distributed`.

5. Then selecting templates you can consistently specify which sets of components are to be used on current server after the installation.

Warning!

Sets of required components, template combinations and number of servers are specified in accordance with expected system loads and environment. In case remote database is used, install Database template together with at least one another template.

Note:

If Consul service is configured incorrectly, the following warning message will be displayed:

```
\Warning: You should run 'iwtm start' command manually after fixing problems with
Consul.
Press [Enter] to continue:
```

To finish installation press **Enter**.

Check and configure Consul service cluster for correct work of System

a. Start Consul service with the command:
`service iwtm-consul start`
To check the service status enter the command:

```
service iwtm-consul status
```

b. To check Consul enter the command:
   i. To display IP address of main server (leader) of cluster:

```
curl --noproxy 127.0.0.1 http://127.0.0.1:8500/v1/status/leader ; echo
```

   ii. To display information about cluster members:
   `consul members`

c. If the IP address of cluster leader is not displayed, configure cluster of Consul service.
After configuration is complete, repeat checking (step ii).

If the error occurs, the installer will not launch Traffic Monitor services when the installation is finished, so you need to start them manually.

Below you can find the instructions how to install each template on a separate server.

Installing Database template

If you've selected Database installation template:

1. Select the main language of user interface management console, as well as the date and time displaying format and preset configuration language:
   - **`Russian`**;
   - **`English`**.

2. Select classification base language. A classification base includes preset policies, elements of technology configuration and protected objects. Yor can select few languages at once. Options will be consistently displayed.
   The following languages are available to select:
   - **Russian**;
   - **English**;
   - **Malay**.

   If you do not require to install a classification base, do not select any language.
3. Select database storage type:
   - **Install database server locally** - to install locally on current server;
   - **Use remote database server** - to use on remotely deployed database. In this case the Traffic Monitor scheme will be added to remote database.

     > **Note:**
     >
     > Only **Use remote database server** is supported for Postgres Pro Enterprise DBMS.

4. Select database the System to operate with:
   - **Oracle Database Enterprise Edition**
   - **PostgreSQL**

     > **Note:**
     >
     > If you use Postgres Pro Enterprise DBMS, select **PostgreSQL**.

5. I f you use a remote database, please enter consistently:
   a. IP address and database server domain name.

     > **Important!**
     >
     > To install Traffic Monitor on the same server with an already deployed DBMS, specify the address `127.0.0.1`.

   b. Connection port.
   c. The name of database to be used, where the scheme is to be added.
6. If required you can change the default values of DB authentication parameters.
   In case of positive answer the following parameters will be offered to change:
   - Password of user account having `sysdba` permissions;
   - Name of database schema owner;
   - Password of database schema owner's account;

- Name of Linux services user account;
- Password of Linux services account;
- Name of web services user account;
- Password of web services account;
- Name of Nagios user account;
- Password of Nagios account.

7. Select data storage mode:
   - **Norma** l - (regular) - switching to the following partition (when it is specified) happens after the previous one is overflow.
   - **Fast/Slow disks** - dividing pools into fast and slow ones. Recent data are to be kept in fast pool and to be relocated to the slow ones in a number of days specified. Slow pool operates in normal mode.
   - **Rotate** - switching to the following partition happens every day once the previous one is overflow.
8. You can change the default values of database storage parameters:
   In case of positive answer you can change the following parameters:
   - **Main tablespaces path** - path to main tablespaces data storage directory;
   - If you've selected **Fast/Slow disks** mode:
     - **Fast disk path** - path to daily tablespace data storage directory in **F ast/Slow disks** mode;
     - **Number of days to store daily tablespaces on fast disk** - number of days to store in fast tablespaces in **F as t/Slow disks** mode;
   - **Number of daily tablespaces paths** - number of daily tablespaces paths, a number from 1 to 10;

     > **Note:**
     >
     > If you specify the value which is more than 1, then you should specify consistently the relevent number of pathes to daily tablespaces.

   - **Daily tablespaces paths** - path to daily tablespace data storage directory.
9. For daily tablespaces you can change the default values of archiving parameters.
   In case of positive answer:
   - **Path to archiving** - path to archived tablespaces files storage directory.

   The query to use each of the following parameters will be displayed in advance:
   - **Archive non-violation events** - enable the automatic deletion of events that are considered non-violations. If enabled, please specify the the number of days after which the event will be automatically archived, by default - 45 days.
   - **Archive violation events** - enable the automatic

archiving of events that are considered violations. If enabled, please specify the number of days after which the event will be automatically archived, by default - 45 days.

- **Archive screenshots** - enable the automatic archiving of screenshots received from Device Monitor Agents. If enabled, please specify the number of days after which the event will be automatically archived, by default - 45 days.

10. Similar to previous point you can configure the deletion parameters for daily tablespaces. If enabled, the default value for all the parameters - 90 days.
11. You can enable using external storage of binary data – Data Storage.
    In case of positive answer, specify the parameters for connecting to external storage:
    - **Data Storage hostname** – hostname or IP address of the server on which the storage is installed
    - **Data Storage port** – port for connecting to Data Storage. The 40731 port is used by default
    - **Data Storage access token** – Data Storage authorization token

    You can find the actual value of the token:
    - On the Data Storage server, via the command line. For this:
      a. Go to the directory where the Platform distribution kit was extracted.
      b. Run the command:
      `./setup.py tokens list`
      As a result, you will see a list of tokens for connecting to the Platform. The actual Data Storage authorization token will be displayed opposite the *DataStorageUser* identity.
    - In the Platform product management console, in the **Token for Data Storage User** field of the **Global settings** section. Available if the Platform product with web interface is installed on the server with Data Storage and the web interface contains such a setting.
12. Specify the parameters to connect to Consul service:
    a. **Network interface address** - select IP address of network interface.
    b. Consul operation mode. Two modes are available:
    - **Server**
    - **Client**

    > **Warning!**
    >
    > One cluster must have an odd number of Consul servers, but not more than 5.

    c. **Datacenter name** - input name of Consul data center.
    d. **Node name** - server name, where Traffic Monitor components are installed.
    e. **Consul retryjoin servers** - list of Consul servers, which are required to connect to. Input values via comma separated list. If you have one Consul server per one cluster on the current computer, leave thy field empty.
    f. **Consul retryjoin port –** connection port to specified Consul servers.
13. Select the server to be used to synchronize the time (NTP-server):
    - **Use system NTP-server**;
    - **Set manually** - you can manually specify NTP server name. If selected, you should input IP address or NTP server available.
14. After all the parameters were set a message to start the installation and query to continue will be displayed.

```
Setup is now ready to begin installing Traffic Monitor on your computer.

Do you want to continue? [Y/n]:
```

Type **Y** to start the installation and press **Enter**.
The unpacking of Traffic Monitor installation files will start. Implementation progress will be displayed.

```
Please wait while Setup installs Traffic Monitor on your computer.

 Installing
 0% ______________ 50% ______________ 100%
 ########################################
```

The process may take some time.

> **Note:**
>
> If for any reason the installation process was interrupted, eliminate the cause and restart the installer. The installation will continue from the last step that was successfully completed.

15. After the installation is complete you can delete the packages created to install the System. When installation is successfully completed the data is recommended to delete.
16. To apply the environment change you should certainly log off the System and log in again or restart the server.
17. If you require the list of Traffic Monitor services to be displayed enter the command as follows: `iwtm status`

Installing Indexer template

If you've selected Indexer service installation template:

1. Select a database the System to operate with:

- **`Oracle Database Enterprise Edition`**
- **`PostgreSQL`**

> **Note:**
>
> DBMS type should comply with selected Database template.

- Specify consistently the database connection parameters:
  a. IP address and database server domain name
  b. Connection port
  c. The name of database to be used, where the scheme is to be added.
- If required you can change the default values of DB authentication parameters.
  In case of positive answer the following parameters will be offered to change:
  - Password of user account having sysdba permissions;
  - Name of Linux services user account;
  - Password of Linux services account;
  - Name of web services user account;
  - Password of web services account;
  - Name of Nagios user account;
  - Password of Nagios account.

- Specify the parameters to connect to Consul service:
  a. **Network interface address** - select IP address of network interface.
  b. Consul operation mode. Two modes are available:
    - **Server**
    - **Client**

    > **Warning!**
    >
    > One cluster must have an odd number of Consul servers, but not more than 5.

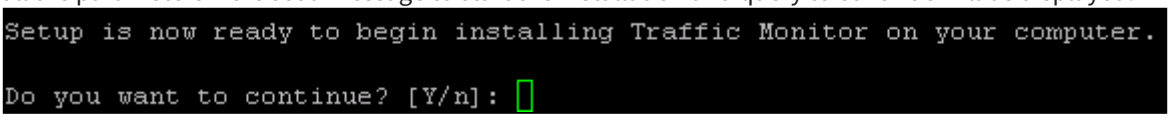
    c. **Datacenter name** - input name of Consul data center.
    d. **Node name** - server name, where Traffic Monitor components are installed.
    e. **Consul retryjoin servers** - list of Consul servers, which are required to connect to. Input values via comma separated list. If you have one Consul server per one cluster on the current computer, leave thy field empty.
    f. **Consul retryjoin port –** connection port to specified Consul servers.
- Select the server to be used to synchronize the time (NTP-server):
  - **Use system NTP-server**;
  - **Set manually** - you can manually specify NTP server name. If selected, you should input IP address or NTP server available.
- Then you can enable indexing of words exact match for Sphinx service.

> **Warning!**
>
> Enabling the indexing of words exact match will increase the size of index two times minimum.

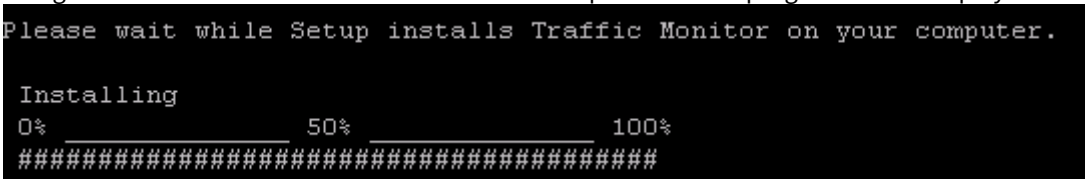
- If required, you can change the standard configuration of Sphinx service operation. In this case specify a list of languages including morphological support. Indexing will be performed according to selected languages. You can specify few languages using a space to separate them.

> **Note:**
>
> The language priority is in accordance with sequence of selected languages. English is to be added by default and it has the highest priority.

- After all the parameters were set a message to start the installation and query to continue will be displayed.



Type **Y** to start the installation and press **Enter**.
The unpacking of Traffic Monitor installation files will start. Implementation progress will be displayed.



The process may take some time.

> **Note:**
>
> If for any reason the installation process was interrupted, eliminate the cause and restart the installer. The installation will continue from the last step that was successfully completed.

- After the installation is complete you can delete the packages created to install the System. When installation is successfully completed the data is recommended to delete.
- To apply the environment change you should certainly log off the System and log in again or restart the server.
- If you require the list of Traffic Monitor services to be displayed enter the command as follows:
  `iwtm status`

Installing Web console template

If you've selected Web console installation template:

1. Select a database the System to operate with:
   - **`Oracle Database Enterprise Edition`**
   - **`PostgreSQL`**

   > **Note:**
   >
   > DBMS type should comply with the one selected for Database template.

2. Specify consistently the database connection parameters:
   - IP address and database server domain name.
   - Connection port
   - The name of database to be used, where the scheme is to be added.
3. If required you can change the default values of DB authentication parameters.
   In case of positive answer the following parameters will be offered to change:
   - Password of user account having `sysdba` permissions;
   - Name of database schema owner;
   - Name of Linux services user account;
   - Password of Linux services account;
   - Name of web services user account;
   - Password of web services account;
   - Name of Nagios user account;
   - Password of Nagios account.
4. Specify the parameters to connect to Consul service:
   a. **`Network interface address`** - select IP address of network interface.
   b. Consul operation mode. Two modes are available:
   - **`Server`**
   - **`Client`**

   > **Warning!**
   >
   > One cluster must have an odd number of Consul servers, but not more than 5.

   c. **`Da tacenter name`** - input name of Consul data center.
   d. **`Node name`** - server name, where Traffic Monitor components are installed.
   e. **`Consul retryjoin servers`** - list of Consul servers, which are required to connect

to. Input values via comma separated list. If you have one Consul server per one cluster on the current computer, leave thy field empty.
f. **`Consul retryjoin port –`** connection port to specified Consul servers.

5. Select the server to be used to synchronize the time (NTP-server):
   - **`Use system NTP-server`**;
   - **`Set manually`** - you can manually specify NTP server name. If selected, you should input IP address or NTP server available.
6. Then you can e nable indexing of words exact match for Sphinx service.

> **Note:**
>
> If you install Indexer and Web console templates on one server this parameter will not be requested by installer.

7. You can enable OCR technology.

> **Note:**
>
> OCR extractor can be selected when installing Interceptors template.

8. After all the parameters were set a message to start the installation and query to continue will be displayed.

```
Setup is now ready to begin installing Traffic Monitor on your computer.

Do you want to continue? [Y/n]:
```

Type **Y** to start the installation and press **Enter**.
The unpacking of Traffic Monitor installation files will start. Implementation progress will be displayed.

```
Please wait while Setup installs Traffic Monitor on your computer.

 Installing
 0% _____________ 50% _____________ 100%
 ########################################
```

The process may take some time.

> **Note:**
>
> If for any reason the installation process was interrupted, eliminate the cause and restart the installer. The installation will continue from the last step that was successfully completed.

9. After the installation is complete you can delete the packages created to install the System. When installation is successfully completed the data is recommended to delete.
10. To apply the environment change you should certainly log off the System and log in again or restart the server.
11. If you require the list of Traffic Monitor services to be displayed enter the command as follows: `iwtm status`

Installing Interceptors template

If you've selected Interceptors installation template:

1. Select a database the System to operate with:
   - **`Oracle Database Enterprise Edition`**
   - **`PostgreSQL`**

   > **Note:**
   >
   > DBMS type should comply with the one selected for Database template.

2. Specify consistently the database connection parameters:
   - IP address and database server domain name.
   - Connection port
   - The name of database to be used, where the scheme is to be added.
3. If required you can change the default values of DB authentication parameters.
   In case of positive answer the following parameters will be offered to change:
   - Password of user account having `sysdba` permissions;
   - Name of Linux services user account;
   - Password of Linux services account;
   - Name of web services user account;
   - Password of web services account;
   - Name of Nagios user account;
   - Password of Nagios account.
4. Specify the parameters to connect to Consul service:
   a. **`Network interface address`** - select IP address of network interface.
   b. Consul operation mode. Two modes are available:
   - **`Server`**
   - **`Client`**

   > **Warning!**
   >
   > One cluster must have an odd number of Consul servers, but not more than 5.

   c. **`Da tacenter name`** - input name of Consul data center.
   d. **`Node name`** - server name, where Traffic Monitor components are installed.
   e. **`Consul retryjoin servers`** - list of Consul servers, which are required to connect to. Input values via comma separated list. If you have one Consul server per one cluster on the current computer, leave thy field empty.
   f. **`Consul retryjoin port –`** connection port to specified Consul servers.
5. Select the server to be used to synchronize the time (NTP-server):
   - **`Use system NTP-server`**;
   - **`Set manually`** - you can manually specify NTP server name. If selected, you should input IP address or NTP server available.
6. You can enable OCR technology. In this case you should select one system to be used:
   - **`ABBYY FineReader`**;
   - **`Tesseract`**.

> **Note:**
>
> For OCR operation you should enable the technology when installing Web console template.

7. If ABBYY Finereader is selected as OCR extractor:
   a. Select a recognition mode:
   - `Quick` – a fast mode;
   - `Quality` – a detailed mode providing higher quality of recognition.

   b. Confirm that you have an active license to use ABBYY Finereader. In case you have no active license, type **N** and press **Enter**. In this case ABBYY Finereader will be installed with no license. To use ABBYY Finereader you can manually add an active license later. For more details, please see "*InfoWatch Traffic Monitor. Administation Guide*", "Configuring OCR Extractors" article.
8. After all the parameters were set a message to start the installation and query to continue will be displayed.

```
Setup is now ready to begin installing Traffic Monitor on your computer.

Do you want to continue? [Y/n]:
```

   Type **Y** to start the installation and press **Enter**.The unpacking of Traffic Monitor installation files will start. Implementation progress will be displayed.

```
Please wait while Setup installs Traffic Monitor on your computer.

 Installing
 0% _____________ 50% _____________ 100%
 ########################################
```

   The process may take some time.

> **Note:**
>
> If for any reason the installation process was interrupted, eliminate the cause and restart the installer. The installation will continue from the last step that was successfully completed.

9. After the installation is complete you can delete the packages created to install the System. When installation is successfully completed the data is recommended to delete.
10. To apply the environment change you should certainly log off the System and log in again or restart the server.
11. If you require the list of Traffic Monitor services to be displayed enter the command as follows:
    `iwtm status`

Installing in graphical mode

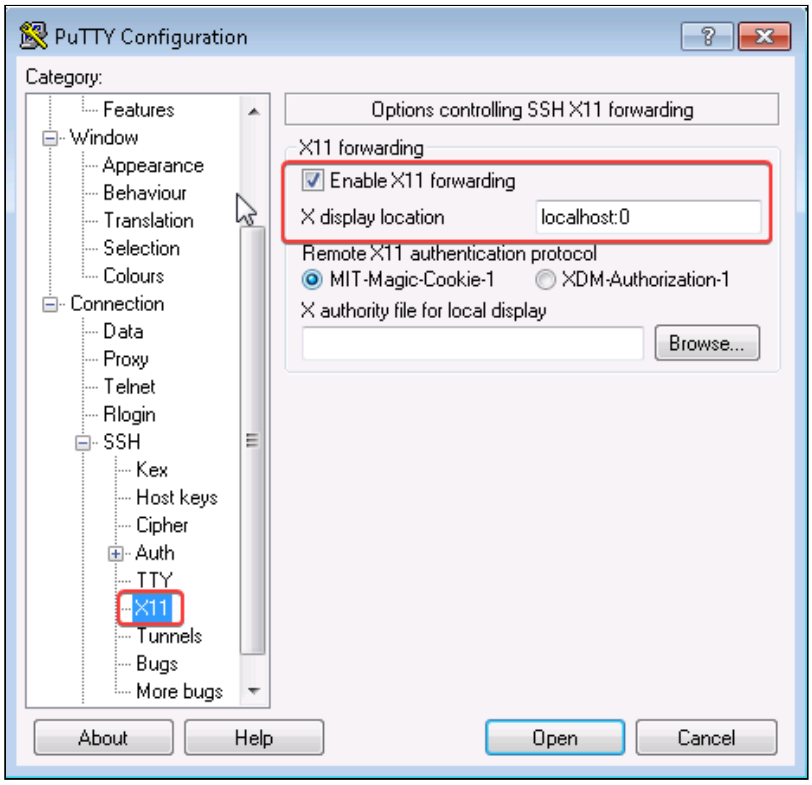
X Window System uses a client - server model. To run the installer in the graphical mode **X11 Forwarding** is used to forward the graphical output of remote system. This let you work directly with Linux graphical applications on the computer which is connected to server. This mode is implemented via SSH connection.

To install Traffic Monitor Enterprise or Traffic Monitor Standard in All-in-one mode using graphical mode of installation, take the folowing steps:

1. On the server, where Traffic Monitor components are planned to install:
   a. Install xauth utility using the command:

`yum install xauth`
b. In `/etc/ssh/sshd_config` configuration file uncomment the line "`X11Forwarding yes`".
To do this, delete `#` placed before the line.
c. Save changes in configuration file.
d. Restart SSH service using the command:
`systemctl restart sshd`

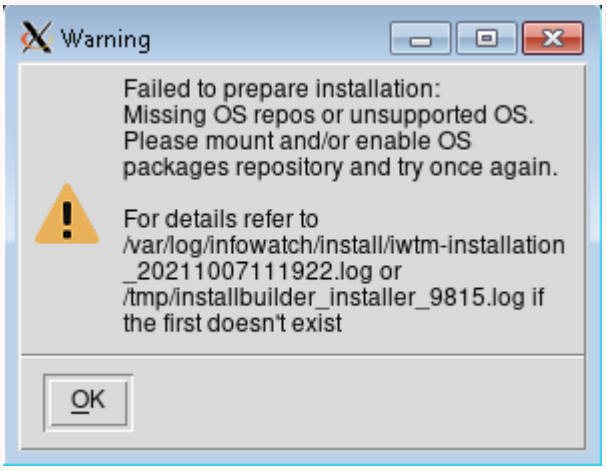
2. On the computer, where the graphical mode is to be used:
a. To connect to Traffic Monitor installation server you will require a SSH client with enabled X11 Forwarding option, e.g. PuTTY.
b. To start the installer in the graphical mode you will require an application configured to access to X Window System, for example:
    - Xming application - for OS MS Windows;
    - Gnome 3 shell - for OS Linux.
3. Run the application client which was previously configured to access to X Window System.
4. Connect to server, where Traffic Monitor components are planned to install, using selected SSH client.
Example of PuTTY configuration window used to connect



5. To install Traffic Monitor run the installer using the command:
`./iwtm-installer-x.x.x.xxx-rhel7`
As per our example:
`./iwtm-installer-7.10.0.97-rhel7`
Preparations will be made to start the installation. At this stage the unpacking of Traffic Monitor installation files is not being performed.

Warning!

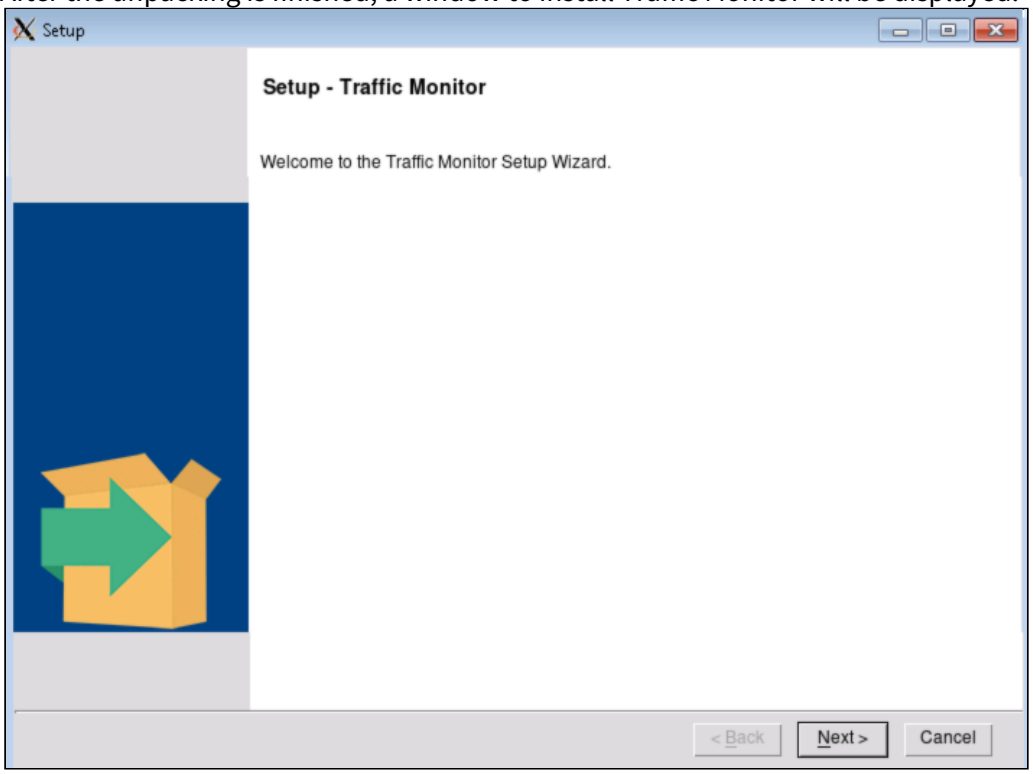
If available configured OS repositories are missing, the preparation process will stop with the following alert box:



To fix this error, press **OK** to dismiss, connect the standard OS repository, EPEL repository and restart the installer.

For more details on the error refer to the log files specified in the alert box.

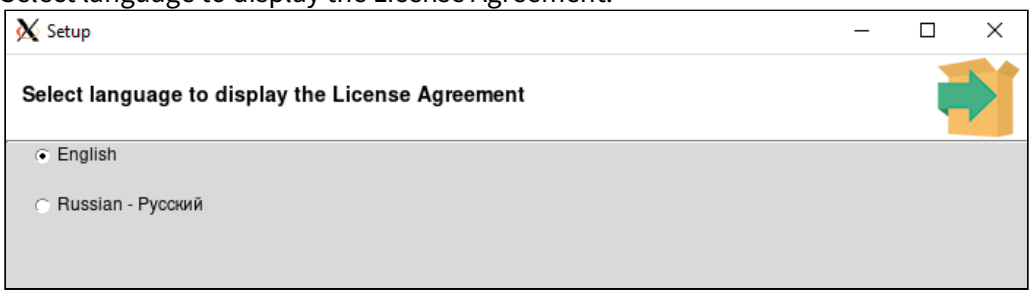
After the unpacking is finished, a window to install Traffic Monitor will be displayed:



To go to the next parameter, press **Next** button, to go back, press - **Back**. To exit the installer, press **Cancel** button.

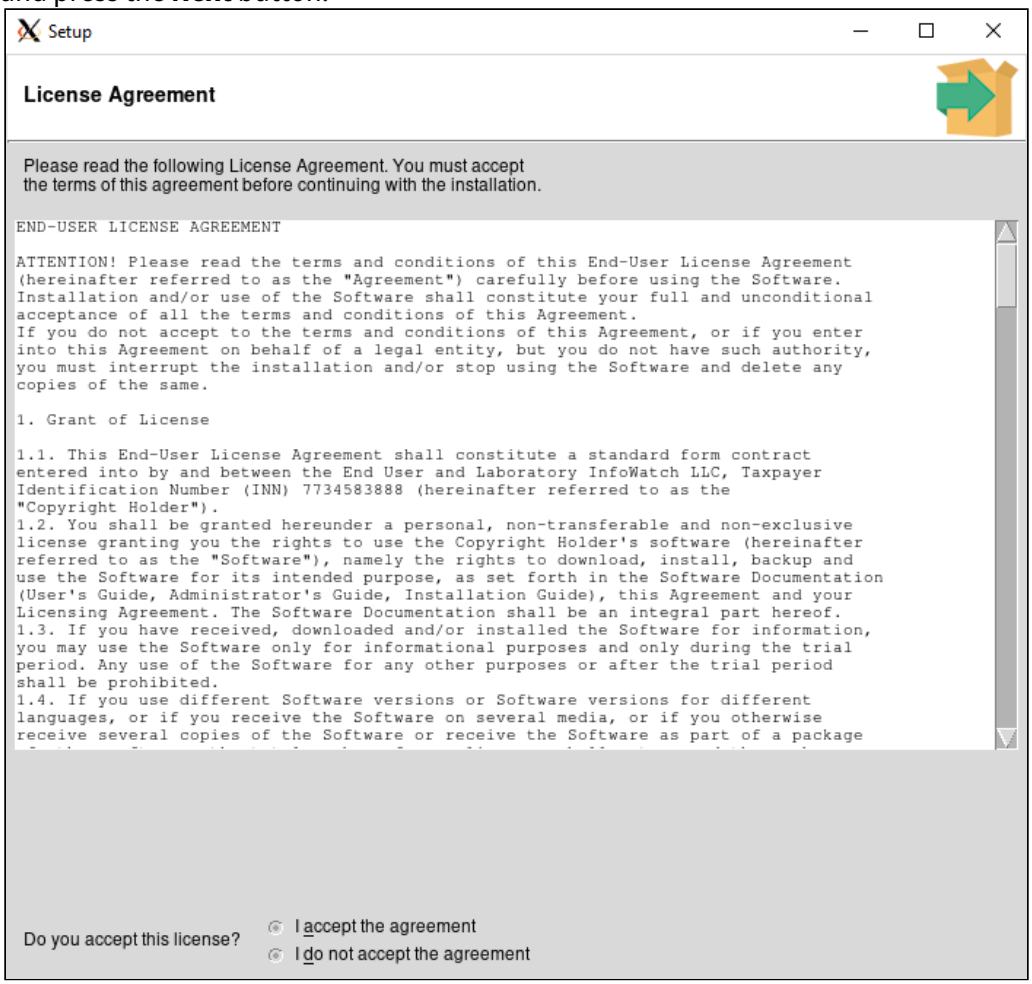
6. You must accept the terms of the License Agreement before continuing with the installation. For this:

a. Select language to display the License Agreement:



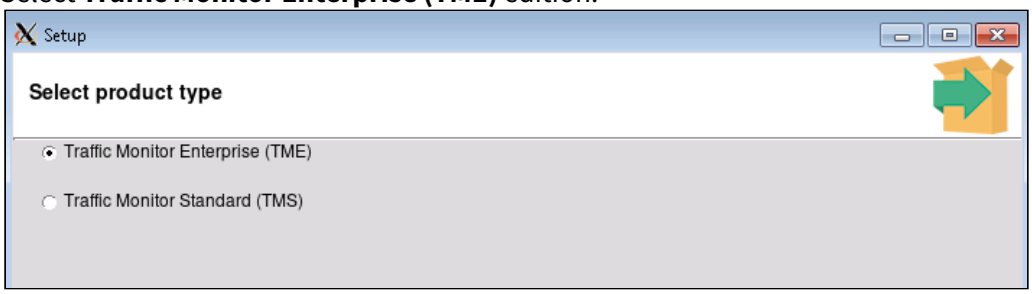
- `English`
- `Russian`

b. Select one of the following options. For this, click in the checkbox next to the required value and press the **Next** button:



- `I accept the agreement` – to accept the License Agreement and continue the installation process;
- `I do not accept the agreement` – to not accept the License Agreement and abort the installation process.

7. Select **Traffic Monitor Enterprise (TME)** edition.



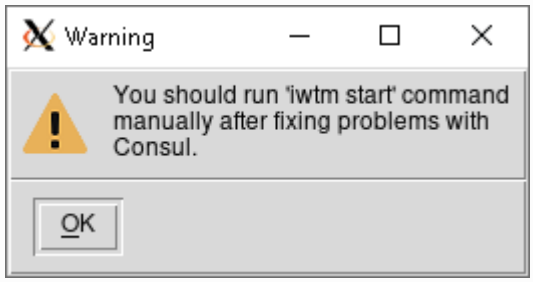
In the window of installation type select `Distributed`.

8. Then selecting templates you can consistently specify which sets of components are to be used on current server after the installation.



To select few values mark each required field and press **Next** button.

> **Warning!**
>
> Sets of required components, template combinations and number of servers are specified in accordance with expected system loads and environment.
>
> In case remote database is used, install Database template together with at least one another template.

> **Note:**
>
> If Consul service is configured incorrectly, the following warning message will be displayed:
>
> 
>
>
> To finish installation press **OK**.
>
> **For correct work of System check and configure Consul service cluster**
>
> a. Start Consul service with the command:
> `service iwtm-consul start`
> To check the service status enter the command:

```
service iwtm-consul status
```

b. To check Consul enter the command:
   i. To display IP address of main server (leader) of cluster:
   ```
   curl --noproxy 127.0.0.1 http://127.0.0.1:8500/v1/status/leader ; echo
   ```
   ii. To display information about cluster members:
   ```
   consul members
   ```
c. If the IP address of cluster leader is not displayed, configure cluster of Consul service.
   After configuration is complete, repeat checking (step ii).

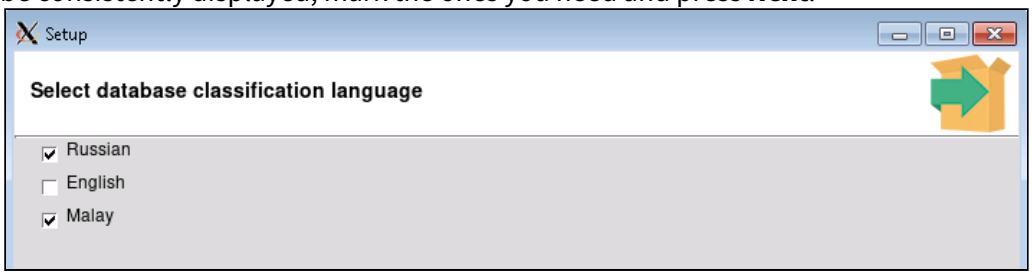
If the error occurs, the installer will not launch Traffic Monitor services when the installation is finished, so you need to start them manually.

Below you can find the instructions how to install each template on a separate server.

Installing Database template

If you've selected Database installation template:

1. Select the main language of user interface management console, as well as date and time displaying format and preset configuration language:
   - **Russian**;
   - **English**.
2. Select the classification base language. A classification base includes preset policies, elements of technology configuration and protected objects. Yor can select few languages at once. Options will be consistently displayed, mark the ones you need and press **Next**.

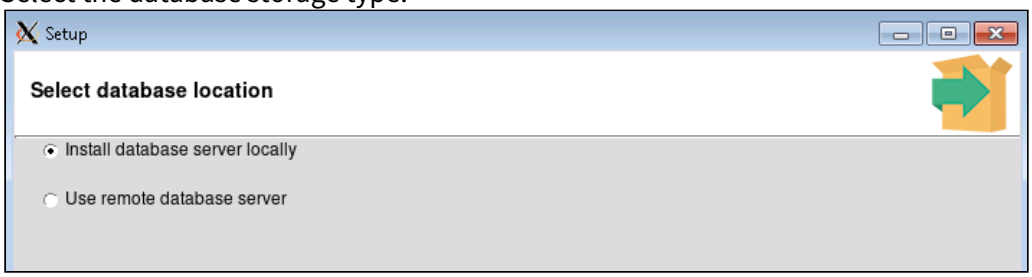


The following languages are available to select:

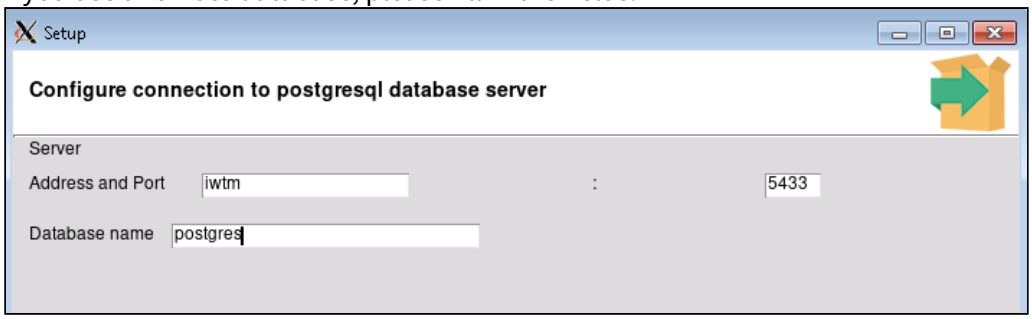
- **Russian**;
- **English**;
- **Malay**.

If you do not require to install a classification base, do not select any language.

3. Select the database storage type:



   - `Install database server locally` - to install locally on current server;
   - `Use remote database server` - to use on remotely deployed database. In this case the Traffic Monitor scheme will be added to remote database.
4. Select a database the System to operate with:
   - `Oracle Database Enterprise Edition`
   - `PostgreSQL`
5. If you use a remote database, please fill in the fields:



   - `Address and Port` - IP address and database server domain name and connection port.

     Important!

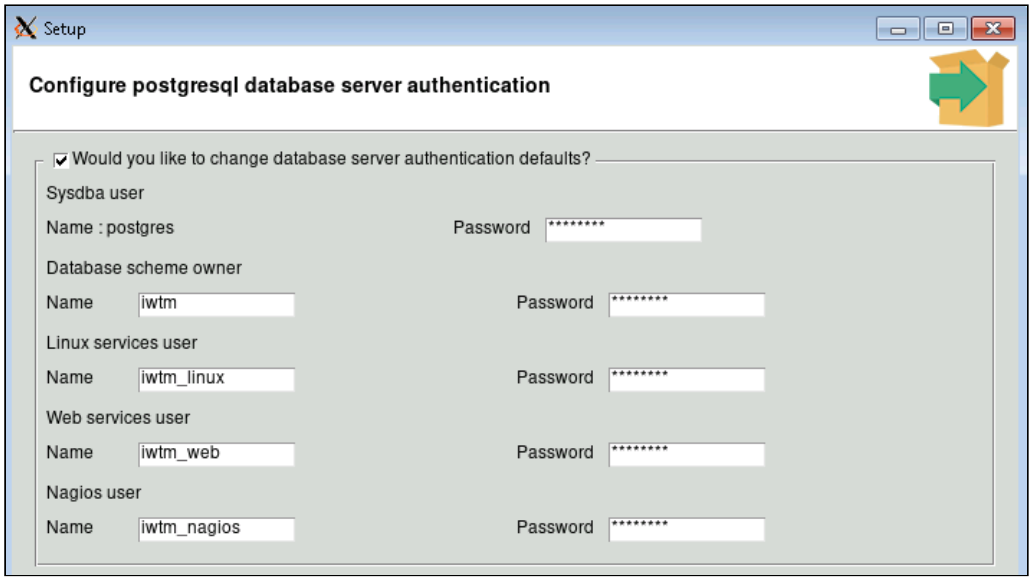
     To install Traffic Monitor on the same server with an already deployed DBMS, specify the address `127.0.0.1`.

   - `Database name` - The name of database to be used, where the scheme is to be added.

     Note:

     In the graphical mode active fields contain the default values.

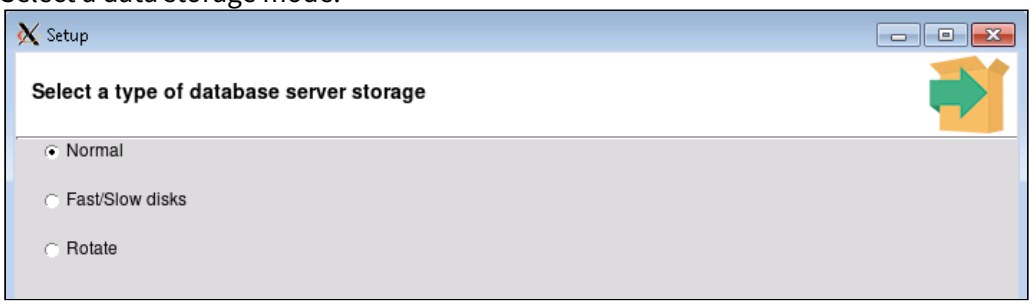
6. If required you can change the default values of DB authentication parameters.



To edit the values mark the field next to question. This will let you edit the following sections:

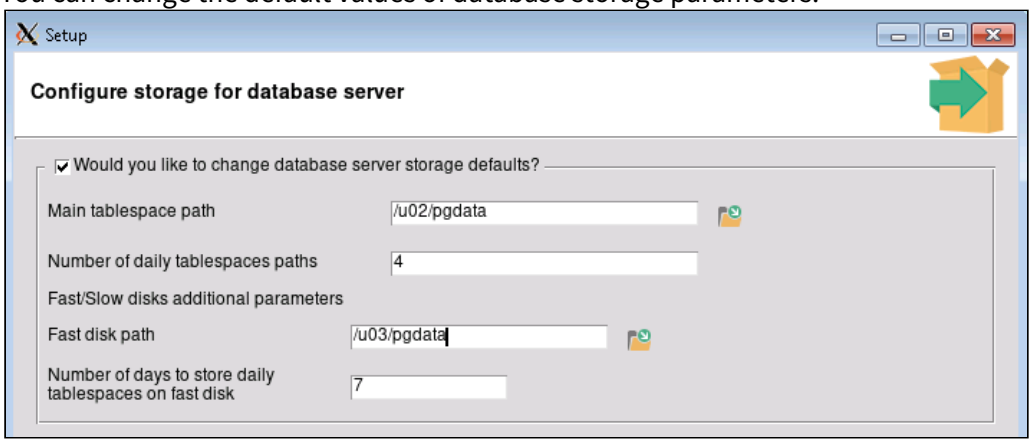
- **`Sysdba user`** - Password of user account having sysdba permissions;
- **`Database scheme owner`** - Name and password of database schema owner;
- **`Linux services user`** - Name and password of Linux services user;
- **`Web services user`** - Name and password of web services user;
- **`Nagios user`** - Name and password of Nagios user.

7. Select a data storage mode:



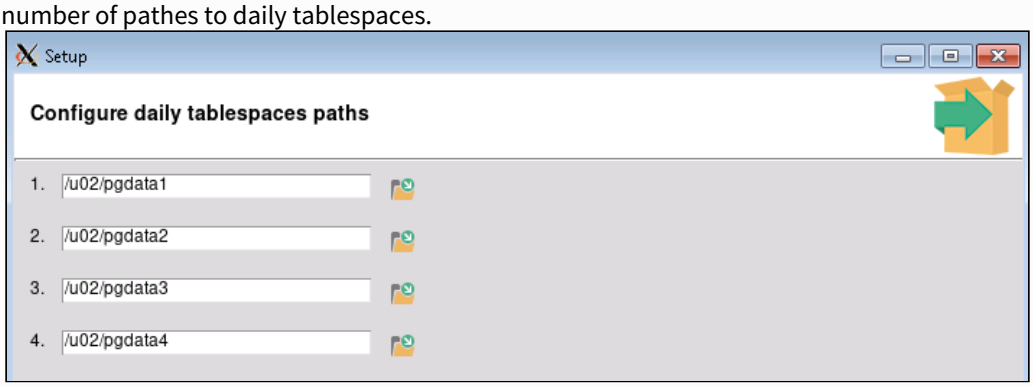
- **`Norma`**l - (regular) - switching to the following partition (when it is specified) happens after the previous one is overflow.
- **`Fast/Slow disks`** - dividing pools into fast and slow ones. Recent data are to be kept in fast pool and to be relocated to the slow ones in a number of days specified. Slow pool operates in normal mode.
- **`Rotate`** - switching to the following partition happens every day once the previous one is overflow.

8. You can change the default values of database storage parameters.



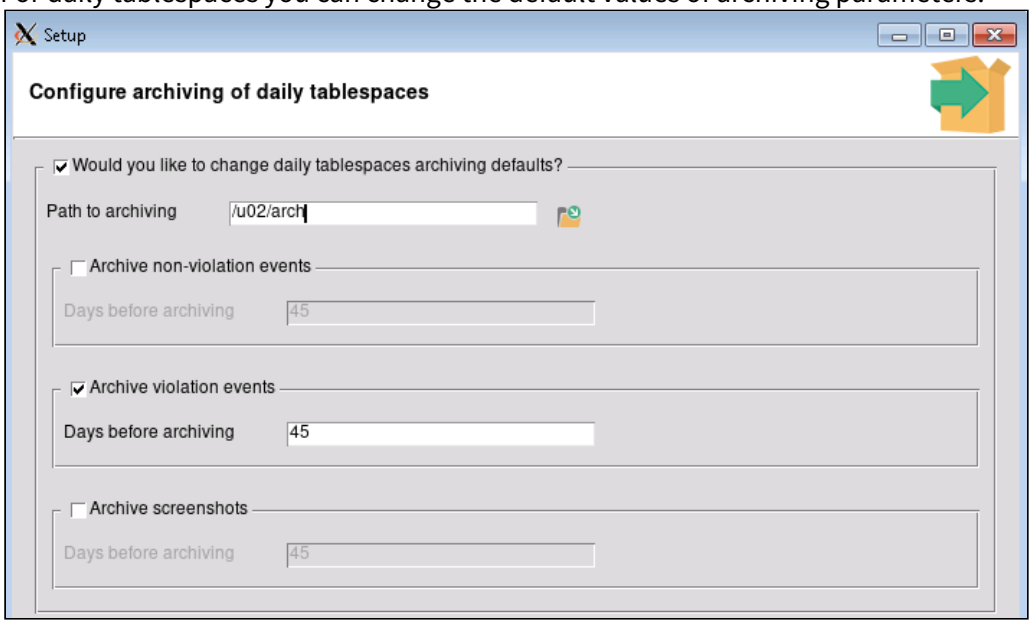
- **`Main tablespaces path`** - path to main tablespaces data storage directory;

  You can add the path to the field or specify it via file manager window using  button.
- If you've selected **`Fast/Slow disks`** mode:
  - **`Fast disk path`** - path to daily tablespace data storage directory in **`F ast/Slow disks`** mode;
  - **`Number of days to store daily tablespaces on fast disk`** - number of days to store in fast tablespaces in **`F ast/Slow disks`** mode;
- **`Number of daily tablespaces paths`** - number of daily tablespaces paths, a number from 1 to 10;

> **Note:**
>
> If you specify the value which is more than 1, then you should specify consistently the relevent number of pathes to daily tablespaces.
>
> 
>

  - **`Daily tablespaces paths`** - path to daily tablespace data storage directory.

9. For daily tablespaces you can change the default values of archiving parameters.

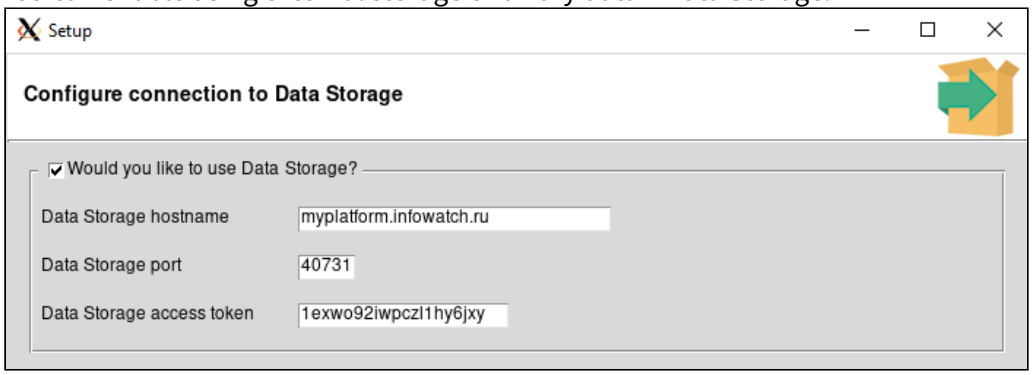


- **`Path to archiving`** - path to archived tablespaces files storage directory.

To use any parameter you should enable it:

- **`Archive non-violation events`** - enable the automatic deletion of events that are considered non-violations. If enabled, please specify the the number of days after which the event will be automatically archived, by default - 45 days.
- **`Archive violation events`** - enable the automatic archiving of events that are considered violations. If enabled, please specify the number of days after which the event will be automatically archived, by default - 45 days.
- **`Archive screenshots`** - enable the automatic archiving of screenshots received from Device Monitor Agents. If enabled, please specify the number of days after which the event will be automatically archived, by default - 45 days.

10. Similar to previous point you can configure the deletion parameters for daily tablespaces. If enabled, the default value for all the parameters - 90 days.
11. You can enable using external storage of binary data – Data Storage.



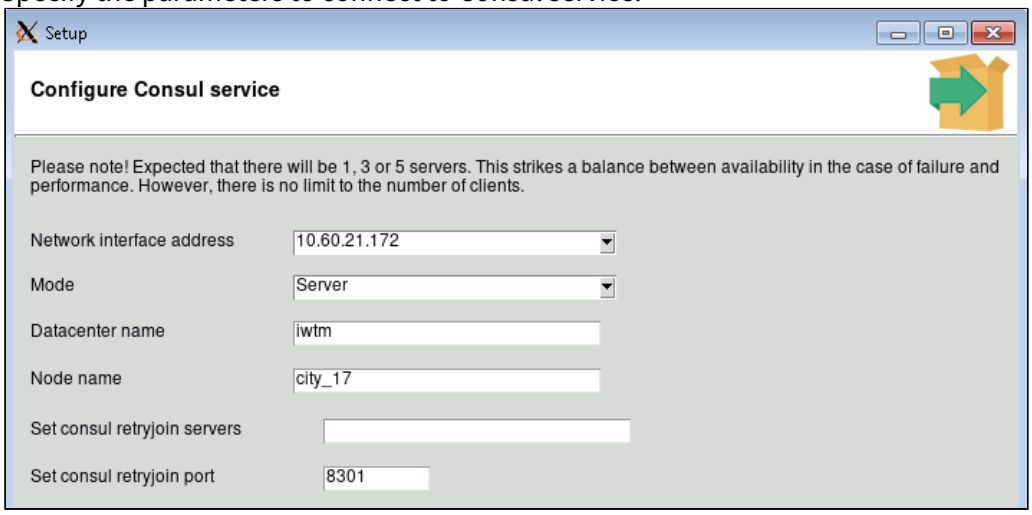
For this, mark the field next to question and specify the parameters for connecting to external storage:

- **`Data Storage hostname`** – hostname or IP address of the server on which the storage is installed
- **`Data Storage port`** – port for connecting to Data Storage. The 40731 port is used by default
- **`Data Storage access token`** – Data Storage authorization token

You can find the actual value of the token:

- On the Data Storage server, via the command line. For this:
  a. Go to the directory where the Platform distribution kit was extracted.
  b. Run the command:
  `./setup.py tokens list`
  As a result, you will see a list of tokens for connecting to the Platform. The actual Data Storage authorization token will be displayed opposite the *DataStorageUser* identity.
- In the Platform product management console, in the **Token for Data Storage User** field of the **Global settings** section. Available if the Platform product with web interface is installed on the server with Data Storage and the web interface contains such a setting.

12. Specify the parameters to connect to Consul service:



a. **`Network interface address`** - select IP address of network interface.
To select from the list of parameters click ▼ and select the required value.
b. Consul operation mode. Two modes are available:
   - **`Server`**
   - **`Client`**

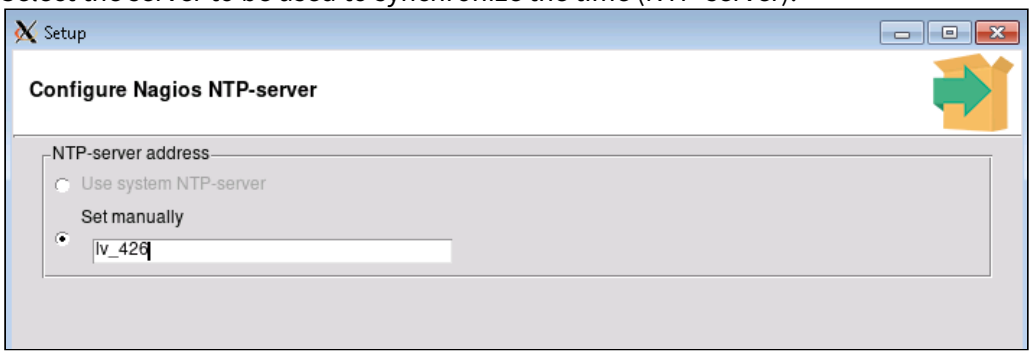
> **Warning!**
>
> One cluster must have an odd number of Consul servers, but not more than 5.

c. **`Database name`** - The name of database to be used, where the scheme is to be added.
d. **`Node name`** - server name, where Traffic Monitor components are installed.

e. `Consul retryjoin servers` - list of Consul servers, which are required to connect to. Input values via comma separated list. If you have one Consul server per one cluster on the current computer, leave thy field empty.

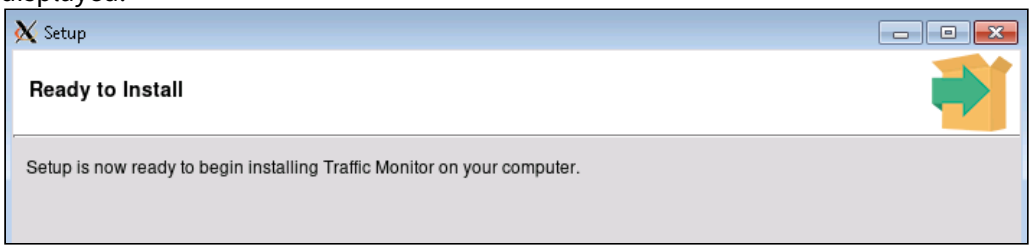
f. `Consul retryjoin port –` connection port to specified Consul servers.

13. Select the server to be used to synchronize the time (NTP-server):

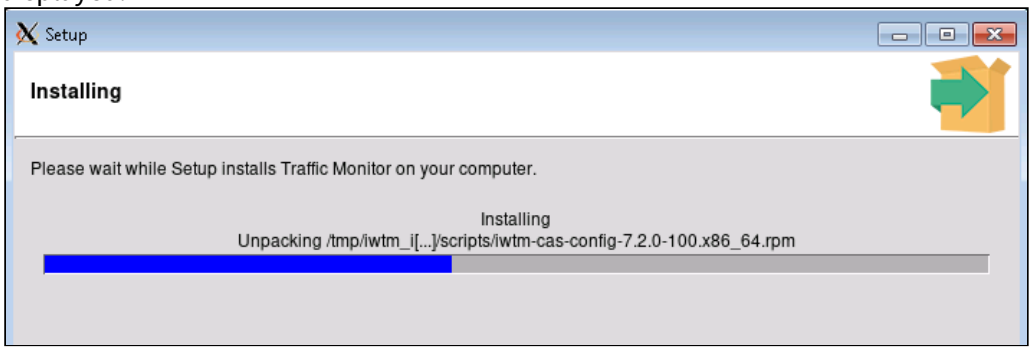


- `Use system NTP-server`;
- `Set manually` - you can manually specify NTP server name. If selected, you should input IP address or NTP server available.

14. After all the parameters were set a message to start the installation and query to continue will be displayed.



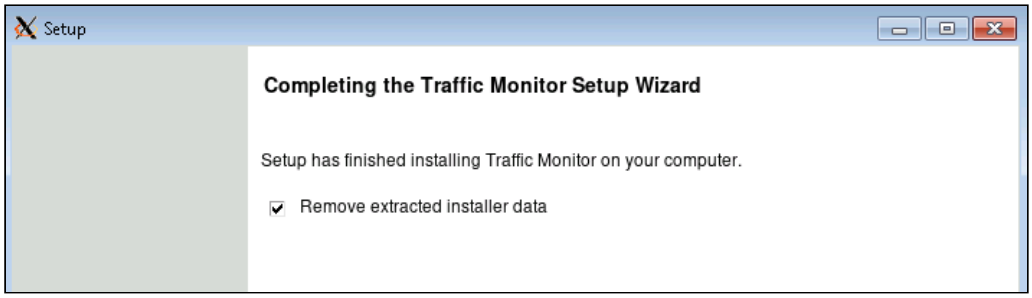
To start the installation and press **Nex**t
The unpacking of Traffic Monitor installation files will start. Implementation progress will be displayed.



The process may take some time.

> **Note:**
>
> If for any reason the installation process was interrupted, eliminate the cause and restart the installer. The installation will continue from the last step that was successfully completed.

15. When installation is successfully completed you can delete the packages created to install the System.



This data is recommended to delete. To do this mark the field **`Remove exctracted installer data`**.

16. To finalise the installation press **Finish**.
17. To apply the environment change you should certainly log off the System and log in again or restart the server.
18. If you require the list of Traffic Monitor services to be displayed enter the command as follows: `iwtm status`

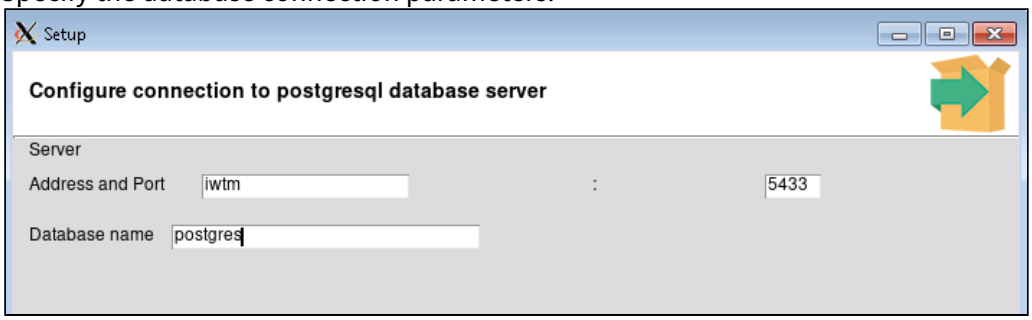
Installing Indexer template

If you've selected Indexer service installation template:

1. Select a database the System to operate with:
   - **`Oracle Database Enterprise Edition`**
   - **`PostgreSQL`**

   > **Note:**
   >
   > DBMS type should comply with the one selected for Database template.

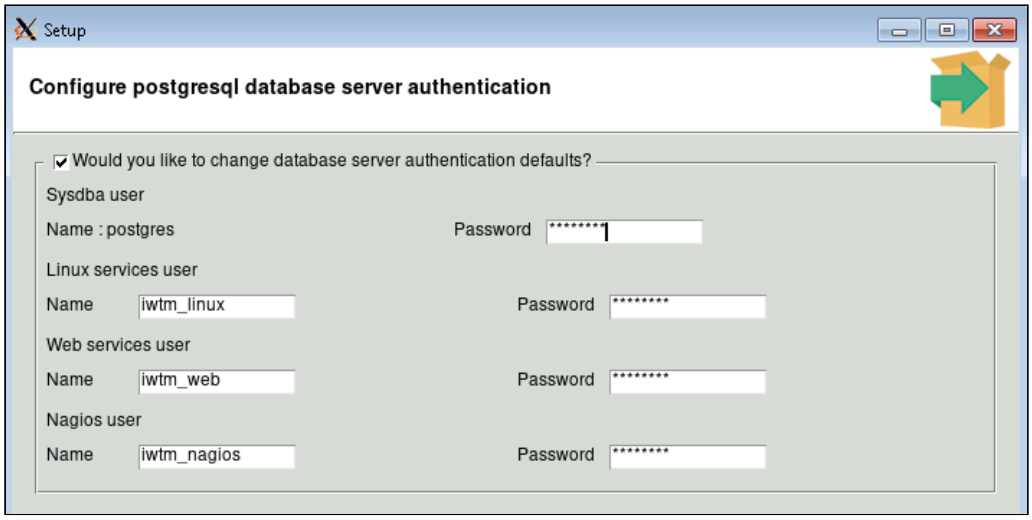
2. Specify the database connection parameters:



   - **`Address and Port –`** IP address, database server domain name and connection port.
   - **`Database name`** - The name of database to be used, where the scheme is to be added.

   > **Note:**
   >
   > In the graphical mode active fields contain the default values.

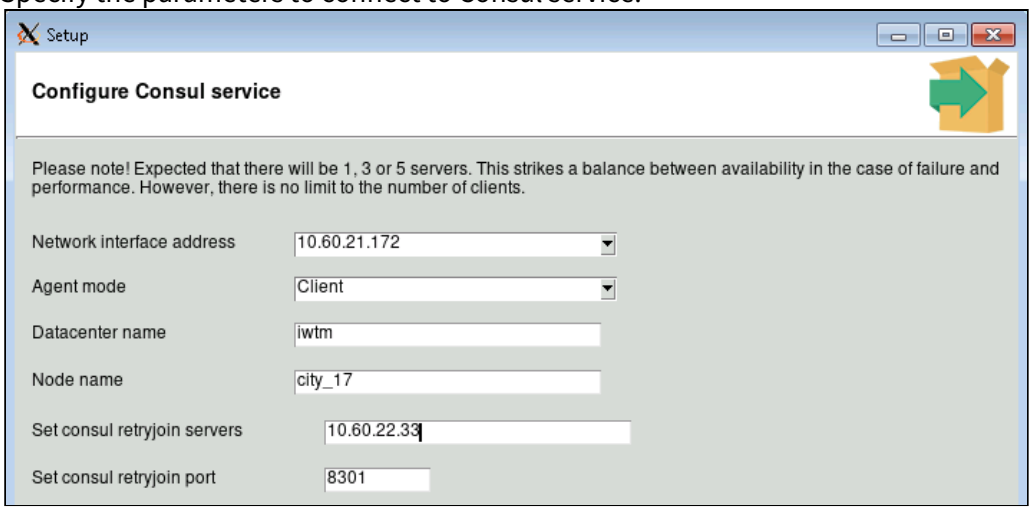
3. If required you can change the default values of DB authentication parameters.



To edit the values mark the field next to question. This will let you edit the following sections:

- **Sysdba user** - Password of user account having sysdba permissions;
- **Linux services user** - Name and password of Linux services user;
- **Web services user** - Name and password of web services user;
- **Nagios user** - Name and password of Nagios user.

4. Specify the parameters to connect to Consul service:



a. **Network interface address** - select IP address of network interface. To select from the list of parameters click ▼ and select the required value.
b. Consul operation mode. Two modes are available:
   - **Server**
   - **Client**

> **Warning!**
>
> One cluster must have an odd number of Consul servers, but not more than 5.

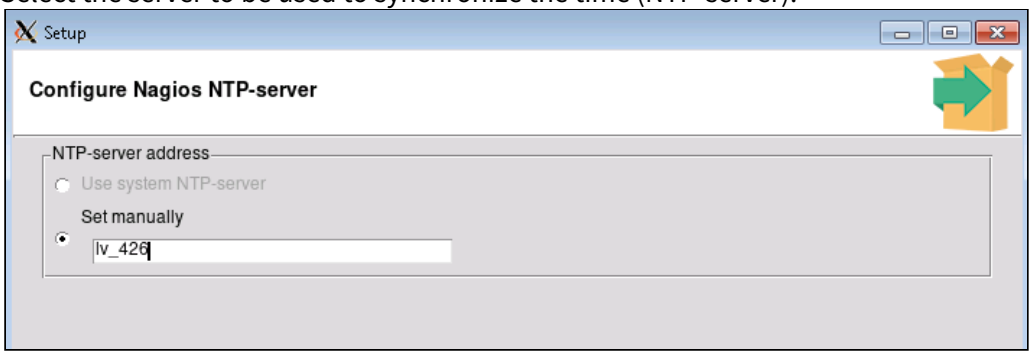
c. **Database name** - The name of database to be used, where the scheme is to be added.

d. **Node name** - server name, where Traffic Monitor components are installed.

e. **Consul retryjoin servers** - list of Consul servers, which are required to connect to. Input values via comma separated list. If you have one Consul server per one cluster on the current computer, leave thy field empty.

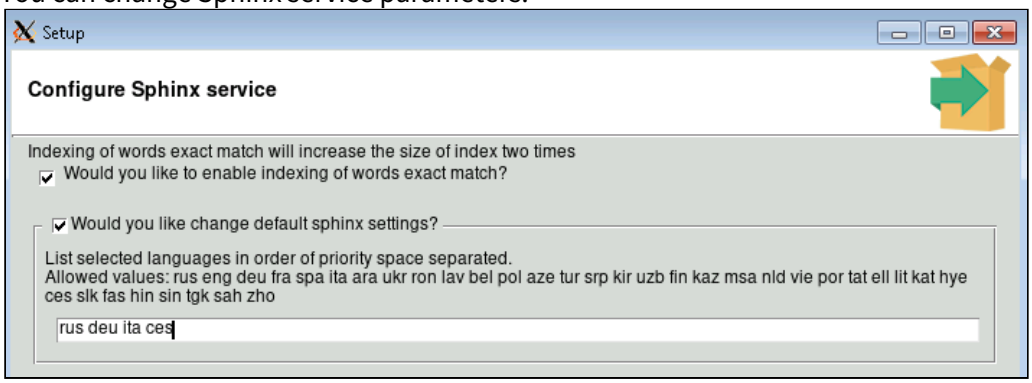
f. **Consul retryjoin port –** connection port to specified Consul servers

5. Select the server to be used to synchronize the time (NTP-server):



- **Use system NTP-server**;
- **Set manually** - you can manually specify NTP server name. If selected, you should input IP address or NTP server available.

6. You can change Sphinx service parameters:



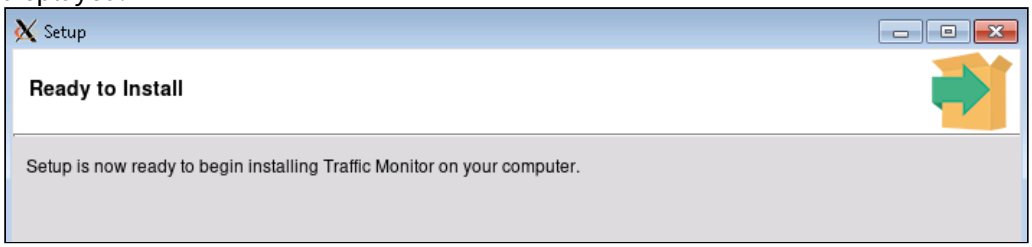
- **Enable indexing of words exact match**;

> **Warning!**
>
> Enabling the indexing of words exact match will increase the size of index two times minimum.

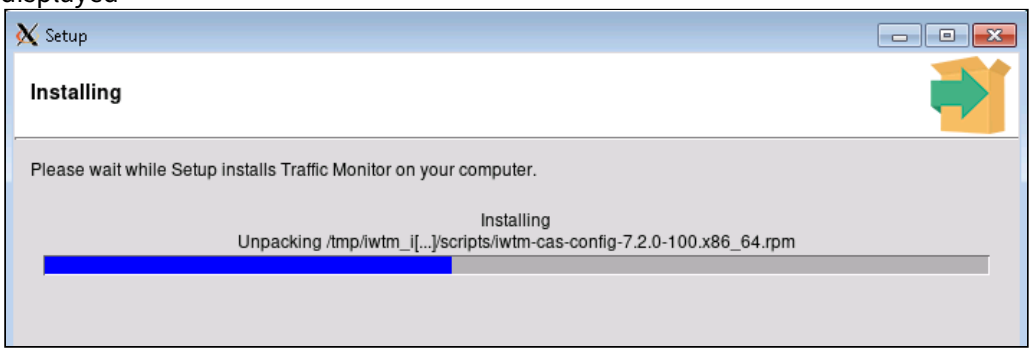
- If required, you can change the standard configuration of Sphinx service operation (`default sphinx settings`). In this case specify a list of languages including morphological support. Indexing will be performed according to selected languages. You can specify few languages using a space to separate them.

> **Note:**
>
> The language priority is in accordance with sequence of selected languages. English is to be added by default and it has the highest priority.

7. After all the parameters were set a message to start the installation and query to continue will be displayed.



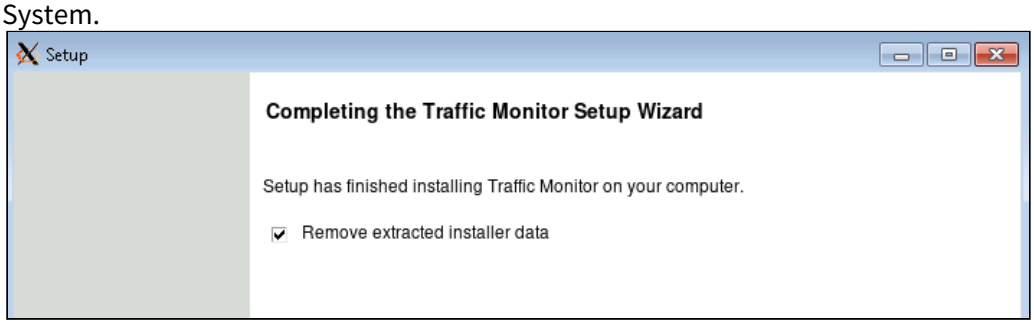
To start the installation and press **Nex**t
The unpacking of Traffic Monitor installation files will start. Implementation progress will be displayed



The process may take some time.

> **Note:**
>
> If for any reason the installation process was interrupted, eliminate the cause and restart the installer. The installation will continue from the last step that was successfully completed.

8. When installation is successfully completed you can delete the packages created to install the System.



This data is recommended to delete. To do this mark the field **`Remove exctracted installer data`**.

9. To finalise the installation press **Finish**.
10. To apply the environment change you should certainly log off the System and log in again or restart the server.
11. If you require the list of Traffic Monitor services to be displayed enter the command as follows: `iwtm status`

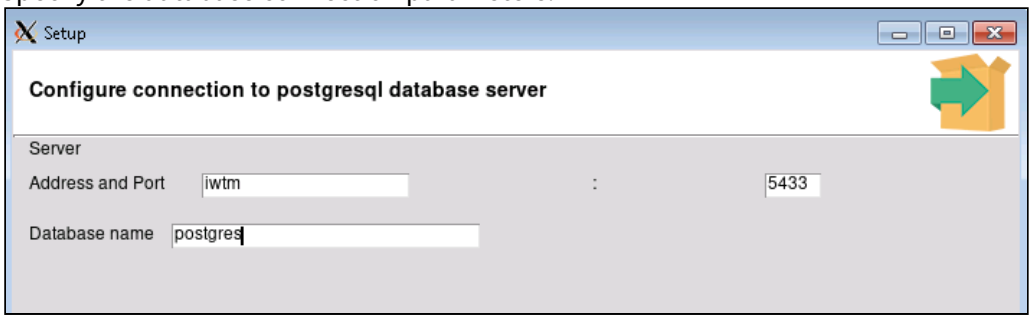
Installing Web console template

If you've selected Interceptors installation template:

1. Select a database the System to operate with:
   - **`Oracle Database Enterprise Edition`**
   - **`PostgreSQL`**

   > **Note:**
   >
   > DBMS type should comply with the one selected for Database template.

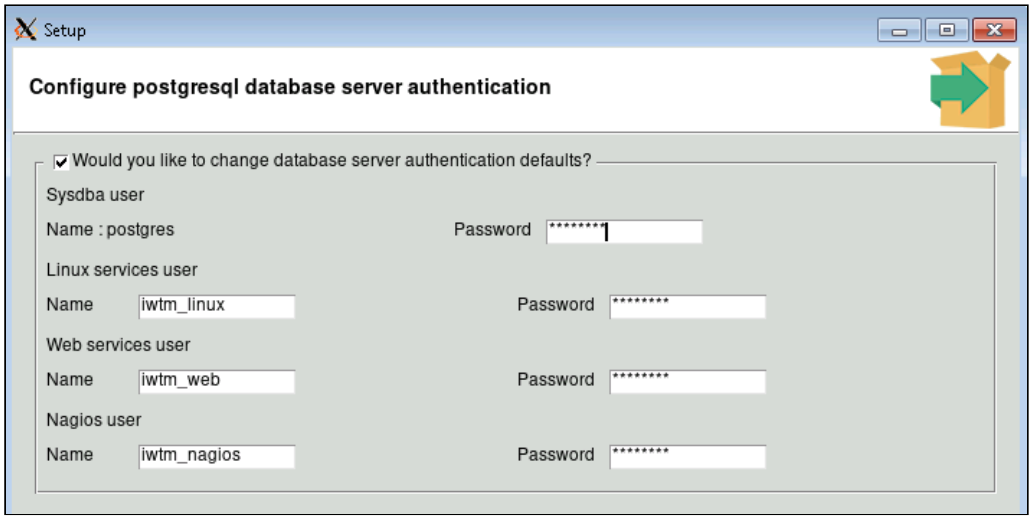
2. Specify the database connection parameters:



   - **`Address and Port –`** IP address, database server domain name and connection port.
   - **`Database name`** - The name of database to be used, where the scheme is to be added.

     > **Note:**
     >
     > In graphical mode active fields contain the default values.

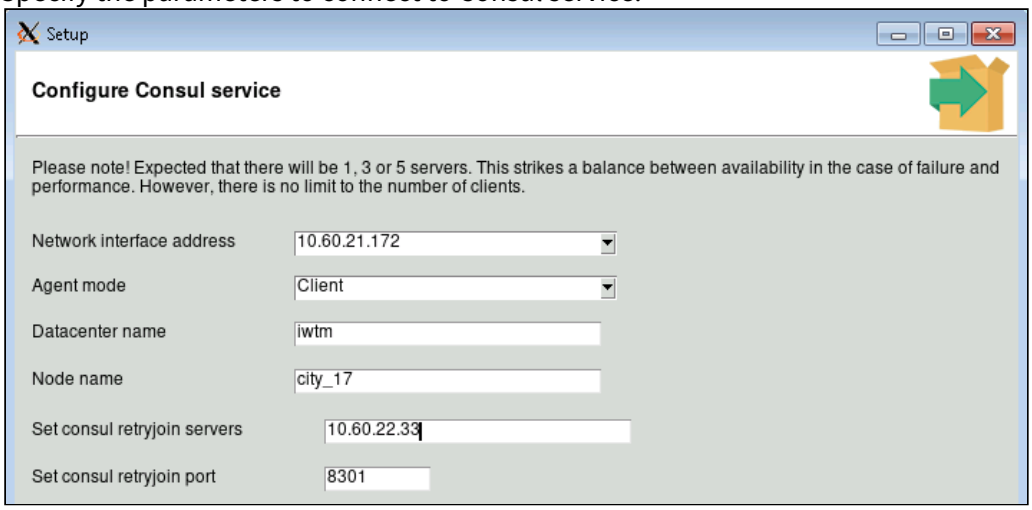
3. If required you can change the default values of DB authentication parameters.



To edit the values mark the field next to question. This will let you edit the following sections:

- **Sysdba user** - Password of user account having sysdba permissions;
- **Database scheme owner** - Name of database owner;
- **Linux services user** - Name and password of Linux services user;
- **Web services user** - Name and password of web services user;
- **Nagios user** - Name and password of nagios user.

4. Specify the parameters to connect to Consul service:

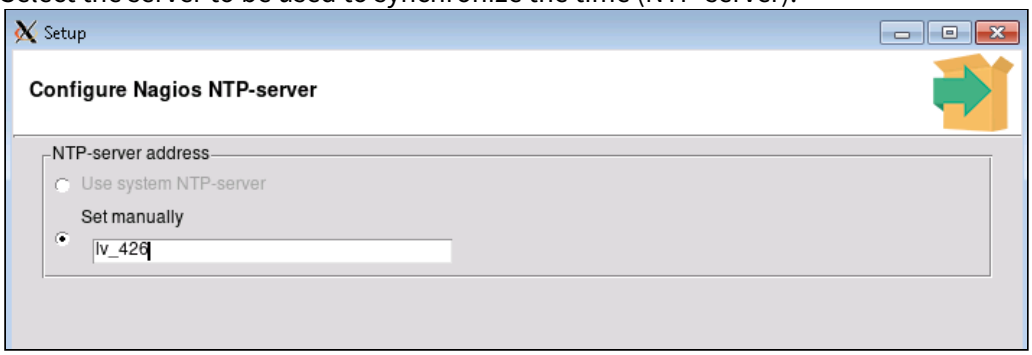


- **Network interface address** - select IP address of network interface. To select from the list of parameters click ▼ and select the required value.
- Consul operation mode. Two modes are available:
  - **Server**
  - **Client**

> **Warning!**
>
> One cluster must have an odd number of Consul servers, but not more than 5.

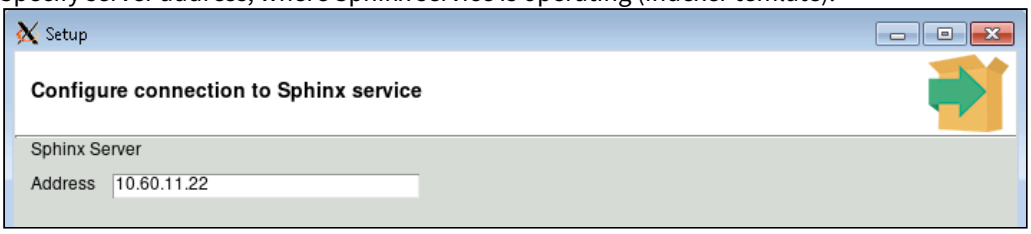
- `Database name` - The name of database to be used, where the scheme is to be added.
- `Node name` - server name, where Traffic Monitor components are installed.
- `Consul retryjoin servers` - list of Consul servers, which are required to connect to. Input values via comma separated list. If you have one Consul server per one cluster on the current computer, leave thy field empty.
- `Consul retryjoin port –` connection port to specified Consul servers

5. Select the server to be used to synchronize the time (NTP-server):



- `Use system NTP-server`;
- `Set manually` - you can manually specify NTP server name. If selected, you should input IP address or NTP server available.

- Specify server address, where Sphinx service is operating (Indexer temlate).



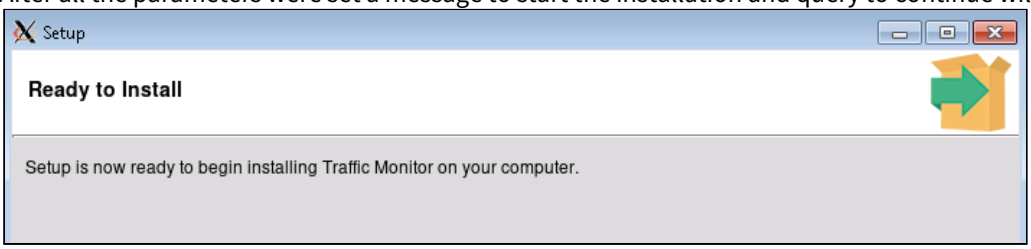
> **Note:**
>
> In case Indexer and Web console templates are installed on one server, this parameter will not be requested by installer.

- You can enable OCR technology.

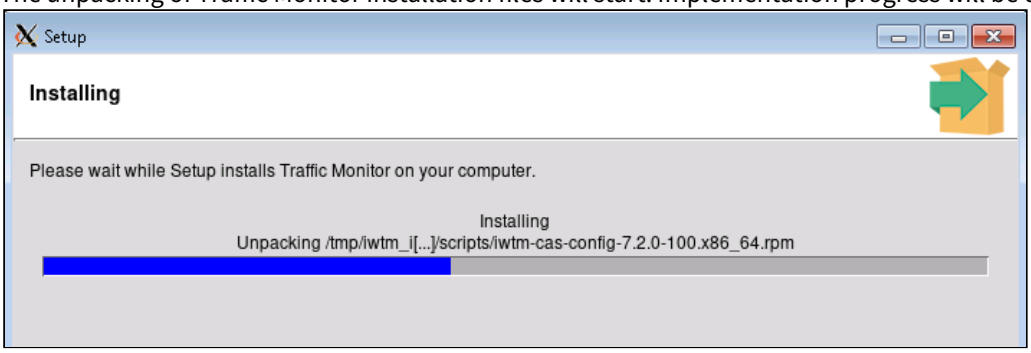


> **Note:**
>
> OCR is to be selected when installing Interceptors template.

- After all the parameters were set a message to start the installation and query to continue will be displayed.



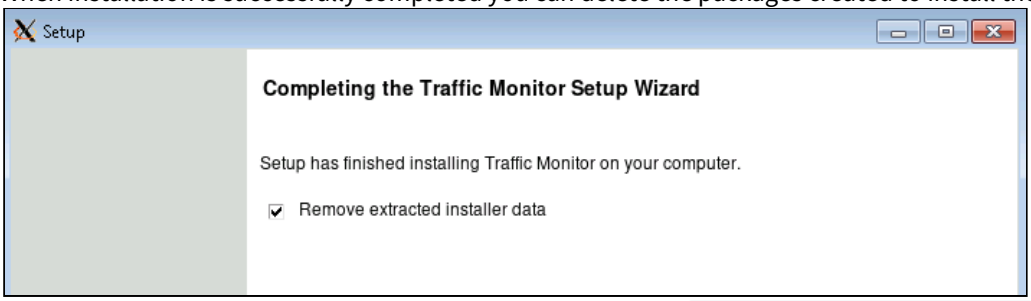
To start the installation and press **Nex**t
The unpacking of Traffic Monitor installation files will start. Implementation progress will be displayed



The process may take some time.

> **Note:**
>
> If for any reason the installation process was interrupted, eliminate the cause and restart the installer. The installation will continue from the last step that was successfully completed.

- When installation is successfully completed you can delete the packages created to install the System.



  This data is recommended to delete. To do this mark the field **`Remove exctracted installer data`**.
- To finalise the installation press **Finish**.
- To apply the environment change you should certainly log off the System and log in again or restart the server.
- If you require the list of Traffic Monitor services to be displayed enter the command as follows:
  `iwtm status`

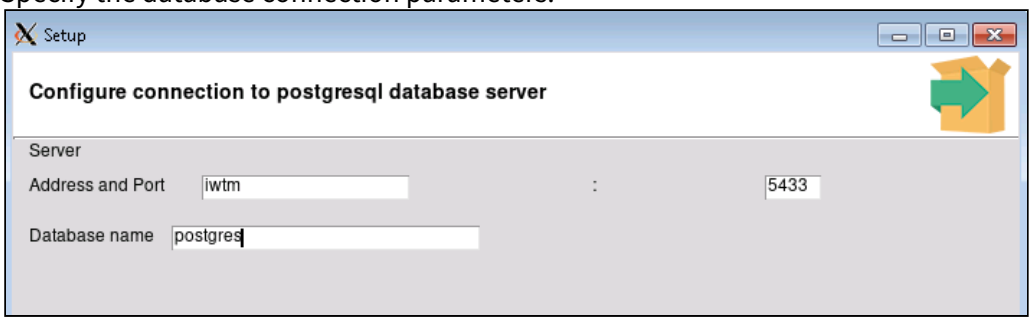
Installing Interceptors template

If you've selected Interceptors installation template:

1. Select a database the System to operate with:
   - **`Oracle Database Enterprise Edition`**
   - **`PostgreSQL`**

   > **Note:**
   >
   > DBMS type should comply with the one selected for Database template.

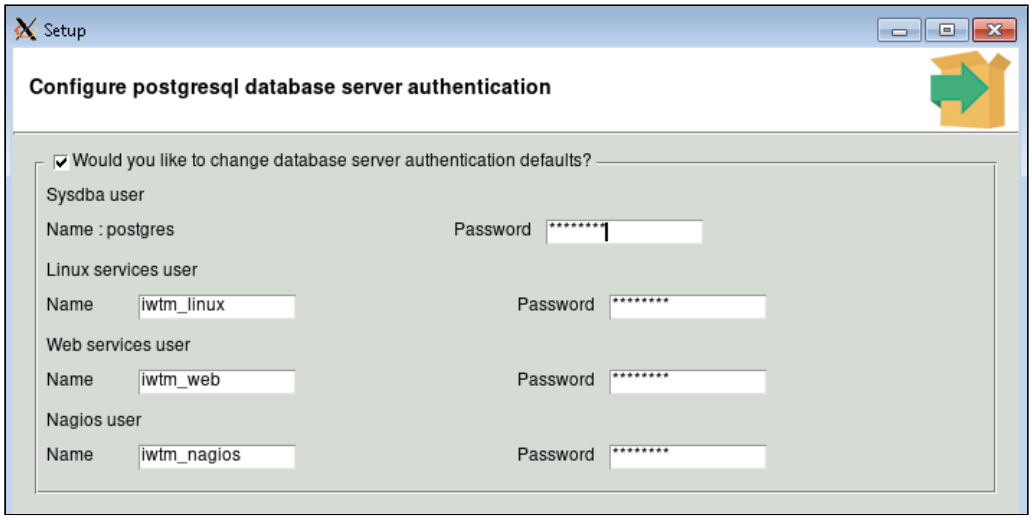
2. Specify the database connection parameters:



   - **`Address and Port –`** IP address, database server domain name and connection port.
   - **`Database name`** - The name of database to be used, where the scheme is to be added.

   > **Note:**
   >
   > In graphical mode active fields contain the default values.

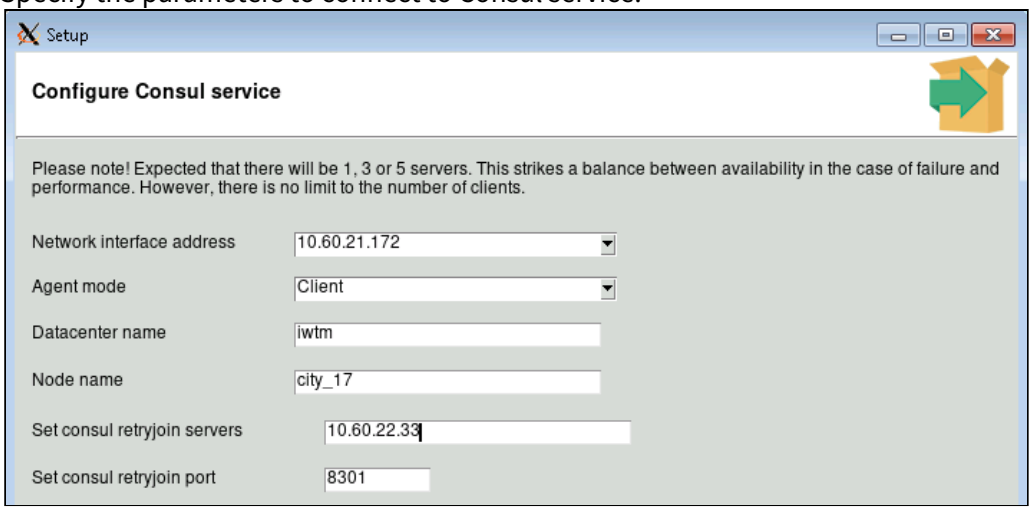
3. If required you can change the default values of DB authentication parameters.



To edit the values mark the field next to question. This will let you edit the following sections:

- **Sysdba user** - Password of user account having sysdba permissions;
- **Linux services user** - Name and password of Linux services user;
- **Web services user** - Name and password of web services user;
- **Nagios user** - Name and password of Nagios user.

4. Specify the parameters to connect to Consul service:

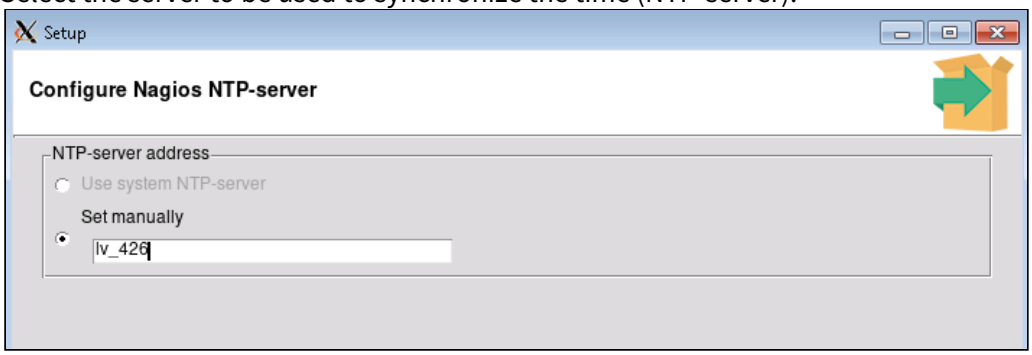


- **Network interface address** - select IP address of network interface. To select from the list of parameters click ▼ and select the required value.
- Consul operation mode. Two modes are available:
  - **Server**
  - **Client**

> **Warning!**
>
> One cluster must have an odd number of Consul servers, but not more than 5.

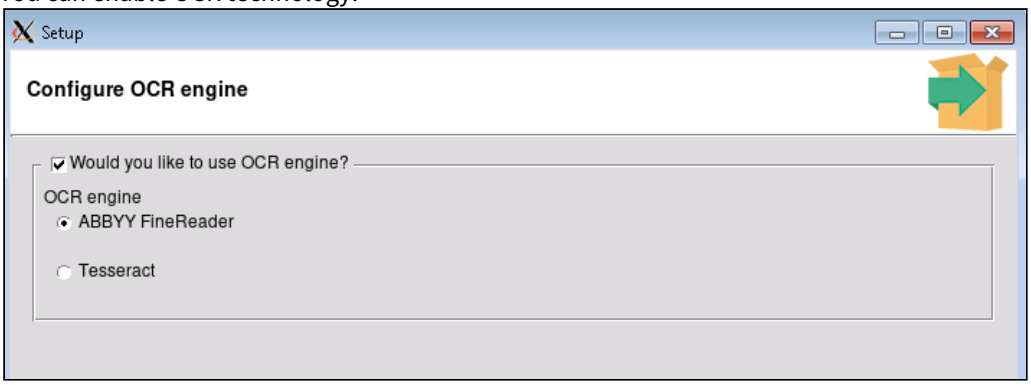
- **Database name** - The name of database to be used, where the scheme is to be added.
- **Node name** - server name, where Traffic Monitor components are installed.
- **Consul retryjoin servers** - list of Consul servers, which are required to connect to. Input values via comma separated list. If you have one Consul server per one cluster on the current computer, leave thy field empty.
- **Consul retryjoin port –** connection port to specified Consul servers

5. Select the server to be used to synchronize the time (NTP-server):



- **Use system NTP-server**;
- **Set manually** - you can manually specify NTP server name. If selected, you should input IP address or NTP server available.

- You can enable OCR technology.

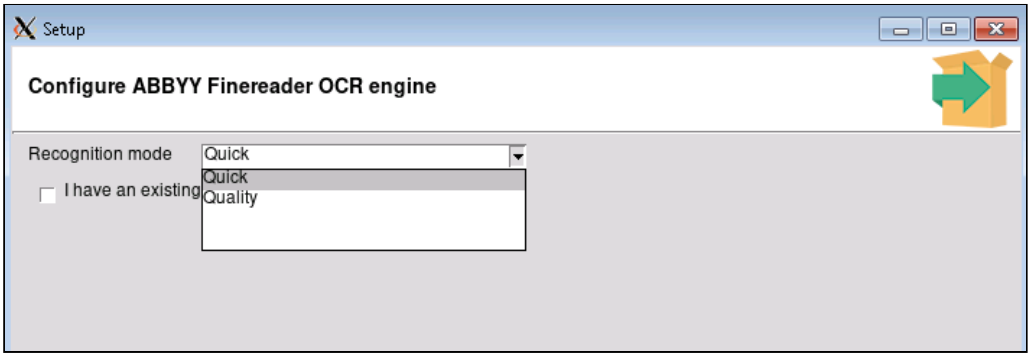


In this case you should select one system to be used:

- **ABBYY FineReader**;
- **Tesseract**.

> **Note:**
>
> For OCR operation you should enable the technology when installing Web console template.

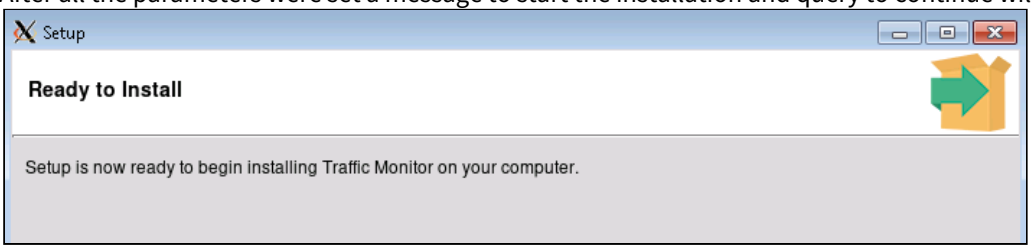
- If ABBYY Finereader is selected as OCR extractor:



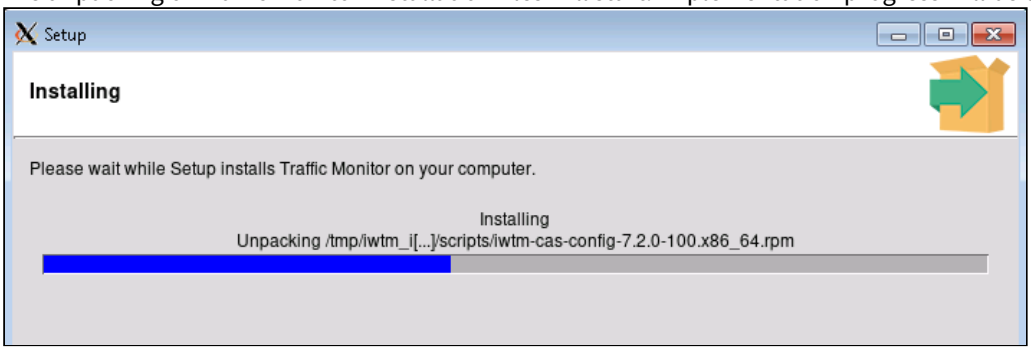
a. Select a recognition mode:
  - `Quick` – a fast mode;
  - `Quality` – a detailed mode providing higher quality of recognition.

b. Confirm that you have an active license to use ABBYY Finereader. In case you have no active license, type **N** and press **Enter**. In this case ABBYY Finereader will be installed with no license. To use ABBYY Finereader you can manually add an active license later. For more details, please see "*InfoWatch Traffic Monitor. Administation Guide*", "Configuring OCR Extractors" article.

- After all the parameters were set a message to start the installation and query to continue will be displayed.



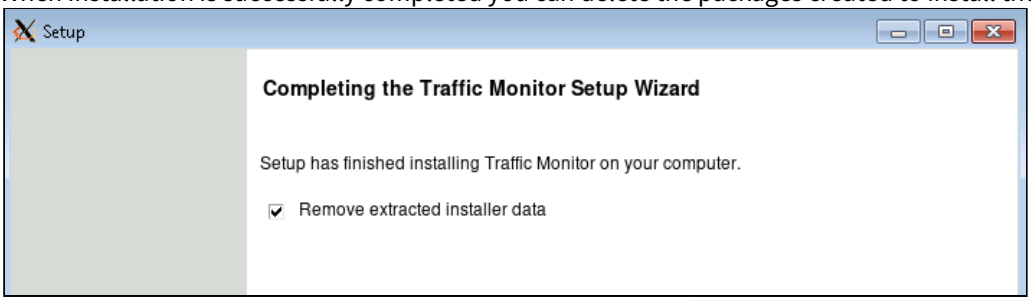
To start the installation and press **Next**.
The unpacking of Traffic Monitor installation files will start. Implementation progress will be displayed.



The process may take some time.

> **Note:**
>
> If for any reason the installation process was interrupted, eliminate the cause and restart the installer. The installation will continue from the last step that was successfully completed.

- When installation is successfully completed you can delete the packages created to install the System.



  This data is recommended to delete. To do this mark the field **`Remove exctracted installer data`**.
- To finalise the installation press **Finish**.
- To apply the environment change you should certainly log off the System and log in again or restart the server.
- If you require the list of Traffic Monitor services to be displayed enter the command as follows:
  `iwtm status`
  As a result of installation, the System creates accounts listed in "Pre-installed Server Settings".

  After the completion of installation the Management console is available through a browser: enter the URL of the Traffic Monitor Server.

  The procedure of further System configuration is described in the document «*InfoWatch Traffic Monitor. Administration Guide*».

> **Note:**
>
> If you require expand the System after is was installed anв add some additional servers you should register each of them in Consul cluster. For more details, please see «*InfoWatch Traffic Monitor. Administration Guide*», "Distributed installation" of "Service-to-service cooperation setup (Consul service)" section.

The list of processes to be run on one server onsly is described in «*InfoWatch Traffic Monitor. Administration Guide*», "Check of Process Autostart" article. More details on how to enable and disable processes autostart please see "Enabling and Disabling Process Autorun" article. You can read more about the processes in «*InfoWatch Traffic Monitor. Administration Guide*», "List of Traffic Monitor Server End Processes" article.

3.2.3 Installing the System in silent mode using parameter file

To reduce a user's role in the System installation process there is a silent mode of installation. In this mode Traffic Monitor can be installed using default parameters.

An options file is realized to be used as a parameter file. In this file you can set required installation parameters. When starting the installation via parameter file, the values specified in this file will be considered the default parameters.

Before starting the installation make sure the common actions are performed:

1. To log into the System, enter login and password (you should enter as a **root** user).

> **Warning!**
>
> Before running the installation make sure that the server complies with the OS and network settings requirements.

If you plan using a remote Oracle, PostgreSQL or Postgres Pro Enterprise database (deployed locally or on a separate server), you should prepare it first.

Working with Postgres Pro Enterprise is supported only for Red Hat Enterprise Linux and only in case of installation as remote database.

Before installing, in order to clear memory, it is recommended to reboot the server on which database will be deployed.

Warning!

By default you are not allowed to install the System on server which has numbers at the beginning of its name. If you need to allow the server's name to begin with a number, use the command line to specify the value 1 of the parameter `--allow_digits_at_hostname_begin`.

Herewith, make sure that the network check is active – the parameter `--skip_check_network` should have the value `0` (the check is active by default).

2. Connect external or local OS repositories.
   For example, you can find instructions on how to configure local Red Hat Enterprise Linux repository at the official web page.
   If you install Traffic Monitor on OS Oracle Linux with no internet access:
   a. Make sure that, in operating system, the current kernel is Red Hat Compatible Kernel (RHCK), namely Oracle Linux Server Kernel 3.10.0-xxxx.el7.x86_64, and the UEK kernel is removed. For details, see Operating System and Network Server Configuration Requirements.
   b. Disable external repositories by running the following command:
   `find /etc/yum.repos.d/ -iname "*.repo" -exec sed -i -e "s/enabled=.*/enabled=0/g" {} \;`
   c. Connect the disk with the OS Oracle Linux distributive to the server.
   d. Mount the disk with the OS Oracle Linux distributive, using the following command:
   `mkdir -p /media/cdrom/ && mount /dev/cdrom /media/cdrom/`
   e. Create the `/etc/yum.repos.d/cdrom.repo` file specifying the mounted disk as a repository. For this, run the following command:
   ```
   cat << EOF > /etc/yum.repos.d/cdrom.repo
   [cdrom]
   name=cdrom
   baseurl=file:///media/cdrom/
   enabled=1
   gpgcheck=0
   EOF
   ```
   f. Remove temporary files and make sure that repository list contains the repository from the disk:
   `yum clean all && yum repolist`
   g. Install `Perl`:
   `yum install perl`
   h. Install the following packages:
      - `perl-List-MoreUtils-0.33-9.el7.x86_64.rpm` (you can download the package from the official Oracle Linux 7 Latest repository)

- `perl-Dist-CheckConflicts-0.06-2.el7.noarch.rpm` (you can download the package from the official Oracle Linux 7 Optional Latest repository)
- `urw-base35-fonts-legacy-20170801-10.el7.noarch.rpm` (you can download the package from the official Oracle Linux 7 Optional Latest repository)

For this:

i. Download the listed packages from the official Oracle Linux repositories.
ii. Copy them to the server where Traffic Monitor is to be installed.
iii. Go to the directory where you copied the packages.
iv. Run the following command for each package:
`rpm -ivh <package_name>`

> **Note:**
>
> Optionally you can install tools for work in operating system by running the command:
> `yum install mc vim screen telnet bind-utils mlocate net-tools iptraf sysstat iotop rsync`

i. Make sure you have correctly configured network settings (see Operating System and Network Server Configuration Requirements) and the `/etc/hosts` file contains the hostname resolving setting. If it does not, run the command:
`sh -c "echo '<IP_address> `hostname -f` `hostname -s`' >> /etc/hosts"`

3. Create a directory to locate the InfoWatch Traffic Monitor installer. For example, to create a directory named `distr` in the root of the file system run the following command:
`mkdir /distr`
4. Copy the files from InfoWatch Traffic Monitor distributive into the created directory.
   - **`iwtm-installer-x.x.x.xxx-rhel7`** – for installation on Red Hat Enterprise Linux or Oracle Linux (where x.x.x.xxx is a number of build);
   - **`iwtm-postgresql-15.5-x.x.x.xxx-rhel7.tar.gz`** – if you use PostgreSQL DBMS on Red Hat Enterprise Linux and Oracle Linux or Postgres Pro Enterprise;
   - **`iwtm-oracle-19.0.0.0.0-x.xx.x.tar.gz`** – if you use Oracle DBMS.

   As per our example:
   - **`iwtm-installer-7.10.0.97-rhel7`** – for installation on Red Hat Enterprise Linux or Oracle Linux;
   - **`iwtm-postgresql-15.5-7.10.0.97-rhel7.tar.gz`** – if you use PostgreSQL DBMS or Postgres Pro Enterprise;
   - **`iwtm-oracle-19.0.0.0.0-7.10.0.97.tar.gz`** – if you use Oracle DBMS.

> **Warning!**
>
> The following instruction describes installation using installer for Red Hat Enterprise Linux.
> It is also valid for Oracle Linux.

> **Note:**
>
> When using Oracle DBMS and network file system, before running the installation:

- **when using Oracle Real Application Clusters (RAC):**

  Install the mount options according to official website instructions.

- **if RAC is not used:**

  Open the mount points (`/etc/fstab` by default) and make sure the `noac` option is not used and the value of `actimeo` is not set to `0`.

  For more details, please see official website info.

5. Enter the command to shift to Traffic Monitor distributive directory.
   As per our example:
   `cd /distr`
6. Before running the installation make the installer file is executable. To do this, use the following command:
   `chmod u+x ./iwtm-installer-x.x.x.xxx-rhel7`
   As per our example:
   `chmod u+x ./iwtm-installer-7.10.0.97-rhel7`

Parameter file (option file)

The file contains the following parameters description:

`<parameter's_name>=<parameter's_value>`

You may leave comments using `#`.

Parameter file example:

```
# This file is just an example
product_type=tme
installation_type=distributed
template_database=1
template_indexer=1
template_web=1
template_interceptors=0
product_language=rus
```

The example above contains the parameters as follows:

- Product edition type – Traffic Monitor Enterprise (TME);
- Installation type – distributed;
- The templates used to be installed on the server:
  - Database;
  - Indexer;
  - Web console.
- Main product language – Russian.

Warning!

The parameters which are not specified in the file will have the default values. The full list of parameters is specified in the table below.

To use the parameter file, go to installer directory and run it using `--optionfile` and specifying the file which was previosly created.

Example of using parameter file:

```
./iwtm-installer-7.10.0.97-rhel7 --optionfile /some_directory/option-file-example
```

An alternative way to use: give the parameter file the same name the installer has, but use `.options` extension and copy it to installer directory. In this case the running installer will consider the file parameters the default values.

Silent mode installation

To install in silent mode, use `--mode unattended` option.

Level of interaction with user is set by `--unattendedmodeui` parameter, which has the following values:

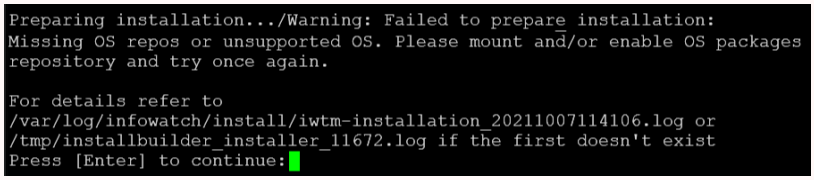
- `none` – no information displayed while installing and no interaction is required;
- `minimal` – status of implementation is displayed while installing, no interaction is required;
- `minimalWithDialogs` – status of implementation is displayed while installing, pop-up windows can be displayed and interaction with user can be required.

Example of installer running command in silent mode with no user assistance and using parameter file:

```
./iwtm-installer-7.10.0.97-rhel7 --optionfile /some_directory/option-file-example --mode unattended --
unattendedmodeui minimal
```

Warning!

If available configured OS repositories are missing, the preparation process will stop with the following error message:



To fix this error, press **Enter** to exit, connect the standard OS repository, EPEL repository and restart the installer.

For more details on the error, refer to the log files, specified in the error message.

Note:

If Consul service is configured incorrectly, the following warning message will be displayed:



To finish installation, press **Enter**.

For correct work of System check and configure Consul service cluster

1. Start Consul service with the command:
   `service iwtm-consul start`
   To check the service status enter the command:
   `service iwtm-consul status`
2. To check Consul enter the command:
   a. To display IP address of main server (leader) of cluster:
      `curl --noproxy 127.0.0.1 http://127.0.0.1:8500/v1/status/leader ; echo`
   b. To display information about cluster members:
      `consul members`
3. If the IP address of cluster leader is not displayed, configure cluster of Consul service. After configuration is complete, repeat checking (step ii).

If the error occurs, the installer will not launch Traffic Monitor services when the installation is finished, so you need to start them manually.

Note:

If for any reason the installation process was interrupted, eliminate the cause and restart the installer. The installation will continue from the last step that was successfully completed.

In case the process is over with no errors, the packages created for installation will be removed by installer.

Full composition of parameter file

The table below contains full list of possible parameters and their default values.

Note:

`<ora|pg>` in default values means you should select one value in accordance with DBMS specified earlier:

- `ora` – for Oracle DBMS;
- `pg` – for PostgreSQL DBMS.

Name	Default value	Valid values	Description	Note
`use_debug`	`0`	`0, 1`	Enabling the scripts debug mode, which are a part of the installer	The parameter is used to collect the detailed logs in case of errors occured while the installer operation

Name	Default value	Valid values	Description	Note
`skip_check_swap`	`0`	`0, 1`	Disabling the check of Swap space volume	
`skip_check_space`	`0`	`0, 1`	Disabling the check of free space volume on disk	
`skip_check_ram`	`0`	`0, 1`	Disabling the check of RAM volume	
`skip_check_network`	`0`	`0, 1`	Disabling the check of available network	
`skip_check_tmp`	`0`	`0, 1`	Disabling the check of temporary directory	
`skip_check_home`	`0`	`0, 1`	Disabling the check of home directory	
`setup_cron_jobs`	`1`	`0, 1`	Set targets for cron planner	
`log_dir`	`/var/log/infowatch/install`		Path to log files directory	
`eula`		`show`, `accept`	Display the License Agreement text, Accept the License Agreement without preview	If you run the installation not in the unattended mode and do not specify the parameter, then the License Agreement text will be displayed. You will be asked to accept the agreement. If you run the installation in the unattended mode, this parameter

Name	Default value	Valid values	Description	Note
				value is ignored and the License Agreement is accepted by default
`product_type`	`tme`	`tme`, `tms`	Traffic Monitor edition type	
`product_language`	`rus`	`rus`, `eng`	Main product language	
`installation_type`	`all_in_one`	`distributed`, `all_in_one`	Installation type	In case Traffic Monitor Enterprise edition is selected (`product_type=tme`)
`template_database`	`0`	`0, 1`	Install Database template	In case distributed installation is selected (`installation_type=distributed`)
`template_indexer`	`0`	`0, 1`	Install Indexer template	
`template_web`	`0`	`0, 1`	Install Web console template	
`template_interceptors`	`0`	`0, 1`	Install Interceptors template	
`db_classification_lang_ru`	`1`	`0, 1`	Set Russian for classification base	In case All-in-One installation type (`installation_type=all_in_one`) or Database template (`template_database=1`) is selected For Postgres Pro Enterprise DBMS only remote

Name	Default value	Valid values	Description	Note
`db_classification_lang_en`	`0`	`0, 1`	Set English for classification base	variant is supported
`db_classification_lang_ma`	`0`	`0, 1`	Malay is set for classification base	
`db_installation_type`	`local`	`local, remote`	Database location	
`db_type`	`postgresql`	`oracle, postgresql`	Selecting DBMS	Available when installing to OS Red Hat Enterprise Linux and edition type is Traffic Monitor Enterprise (`product_type=tme`) If you are going to use Postgres Pro Enterprise DBMS, select `postgresql` .
`db_server_address`	`iwtm`		Server address with Database template or remote database server address	For Indexer, Interceptors and Web console templates For All-in-One installation type and Database template when using a remote database (`db_installation_type=remote`) To install Traffic Monitor on the same server with already deployed DBMS Postgres Pro Enterprise, specify the address `127.0.0.1` .
`db_server_port`			Server port with database	
`db_name`	`postgres` or `iwtm` (according to `db_type` parameter)		Database name	

Name	Default value	Valid values	Description	Note
`db_sysdba_password`	`xxXX1234`		Password of SYSDBA user	
`db_scheme_owner_name`	`iwtm`		Name of database security scheme owner	In case All-in-One installation type (`installation_type=all_in_one`), Database template (`template_database=1`) or Web console template (`template_web=1`) are selected
`db_scheme_owner_password`	`xxXX1234`		Пароль владельца схемы базы данных	In case All-in-One installation type (`installation_type=all_in_one`) or Database template (`template_database=1`) is selected
`db_linux_user_name`	`iwtm_linux`		Name of Linux services user	
`db_linux_user_password`	`xxXX1234`		Password of Linux services user	
`db_web_user_name`	`iwtm_web`		Name of web services user	
`db_web_user_password`	`xxXX1234`		Password of web services user	
`db_nagios_user`	`iwtm_nagios`		Name of nagios user	
`db_nagios_password`	`xxXX1234`		Password of nagios user	

Name	Default value	Valid values	Description	Note
`db_auth_change_defaults`	`0`	`0, 1`	Change the default database connection parameters	
`db_storage_type`	`normal`	`normal, fast_slow, rotate`	Data storage mode	
`db_storage_main_tbs_path`	`/u02/<ora|pg>data`		Path to main tablespace	
`db_storage_dtbs_paths_number`	`1`	1 - 10	Number of paths to daily tablespaces	
`db_storage_fast_disk_path`	`/u03/<ora|pg>data`		Path to directory where daily tablespaces are stored on fast drive	In case All-in-One installation type (`installation_type=all_in_one`) or Database template (`template_database=1`) and `fast_slow` data storage mode (`db_storage_type=fast_slow`) are selected
`db_storage_dtbs_days_on_fast_disk`	`7`		Storage period of daily tablespaces data on fast drives, in days	
`db_storage_change_defaults`	`0`	`0, 1`	Change the database storage parameters	
`db_storage_dtbs_path_1`	`/u02/<ora|pg>data1`		Path to daily tablespace #1	In case All-in-One installation type (`installation_type=all_in_one`) or Database template (`template_database=1`) is

Name	Default value	Valid values	Description	Note
db_storage_dtbs_path_2	/u02/<ora|pg>data2		Path to daily tablespace #2	selected. Also depends on the db_storage_dtbs_paths_number parameter value.
db_storage_dtbs_path_3	/u02/<ora|pg>data3		Path to daily tablespace #3	
db_storage_dtbs_path_4	/u02/<ora|pg>data4		Path to daily tablespace #4	
db_storage_dtbs_path_5	/u02/<ora|pg>data5		Path to daily tablespace #5	
db_storage_dtbs_path_6	/u02/<ora|pg>data6		Path to daily tablespace #6	
db_storage_dtbs_path_7	/u02/<ora|pg>data7		Path to daily tablespace #7	
db_storage_dtbs_path_8	/u02/<ora|pg>data8		Path to daily tablespace #8	
db_storage_dtbs_path_9	/u02/<ora|pg>data9		Path to daily tablespace #9	
db_storage_dtbs_path_10	/u02/<ora|pg>data10		Path to daily tablespace #10	
db_archiving_dtbs_path	/u02/arch		Path to directory where archived tablespaces are stored	In case All-in-One installation type (installation_type=all_in_one) or Database template (template_database=1) is selected
db_days_before_archiving_nonviolations	45		Number of days to store events without violations before archiving	In case All-in-One installation type (installation_type=all_in_one) or Database template (template_dat

Name	Default value	Valid values	Description	Note
				`abase=1`) is selected, and `db_archive_nonviolations=1`
`db_archive_nonviolations`	`0`	`0, 1`	Archive events without violations	In case All-in-One installation type (`installation_type=all_in_one`) or Database template (`template_database=1`) is selected
`db_days_before_archiving_violations`	`45`		Number of days to store events with violations before archiving	In case All-in-One installation type (`installation_type=all_in_one`) or Database template (`template_database=1`) is selected, and `db_archive_violations=1`
`db_archive_violations`	`0`	`0, 1`	Archive events with violations	In case All-in-One installation type (`installation_type=all_in_one`) or Database template (`template_database=1`) is selected
`db_days_before_archiving_screenshots`	`45`		Number of days to store screenshots before archiving	In case All-in-One installation type (`installation_type=all_in_one`) or Database template (`template_database=1`) is selected,

Name	Default value	Valid values	Description	Note
				and `db_archive_screenshots=1`
`db_archive_screenshots`	`0`	`0, 1`	Archive screenshot events	In case All-in-One installation type (`installation_type=all_in_one`) or Database template (`template_database=1`) is selected
`db_archiving_dtbs_change_defaults`	`0`	`0, 1`	Change default archiving parameters	
`db_days_before_removing_nonviolations`	`90`		Number of days to store events without violations before deleting	In case All-in-One installation type (`installation_type=all_in_one`) or Database template (`template_database=1`) is selected, and `db_remove_nonviolations=1`
`db_remove_nonviolations`	`0`	`0, 1`	Delete events without violations	In case All-in-One installation type (`installation_type=all_in_one`) or Database template (`template_database=1`) is selected
`db_days_before_removing_violations`	`90`		Number of days to store events with violations before deleting	In case All-in-One installation type (`installation_type=all_in_one`) or Database template (`template_database=1`) is selected, and

Name	Default value	Valid values	Description	Note
				`db_remove_violations=1`
`db_remove_violations`	`0`	`0, 1`	Delete events with violations	In case All-in-One installation type (`installation_type=all_in_one`) or Database template (`template_database=1`) is selected
`db_days_before_removing_screenshots`	`90`		Number of days to store screenshot events before deleting	In case All-in-One installation type (`installation_type=all_in_one`) or Database template (`template_database=1`) is selected, and `db_remove_screenshots=1`
`db_remove_screenshots`	`0`	`0, 1`	Delete screenshot events	In case All-in-One installation type (`installation_type=all_in_one`) or Database template (`template_database=1`) is selected
`db_removing_dtbs_change_defaults`	`0`	`0, 1`	Change default deleting parameters	
`use_data_storage`	`0`	`0, 1`	Use external storage of binary data – Data Storage	In case All-in-One installation type (`installation_type=all_in_one`) or Database template (`template_database=1`) is selected

Name	Default value	Valid values	Description	Note
`ds_set_uri`	`myplatform.infowatch.ru`		hostname or IP address of the server on which the storage is installed	You can find the actual value of the token: • On the Data Storage server, via the command line. For this: 1. Go to the directory where the Platform distribution kit was extracted. 2. Run the command: `./setup.py tokens list` As a result, you will see a list of tokens for connecting to the Platform. The actual Data Storage authorization token will be displayed opposite the *DataStorage User* identity. • In the Platform product management console, in the **Token for Data Storage User** field of the **Global settings** section. Available if

Name	Default value	Valid values	Description	Note
`ds_set_port`	`40731`		Port for connecting to Data Storage	the Platform product with web interface is installed on the server with Data Storage and the web interface contains such a setting.
`ds_set_token`	`1exwo92iwpczl1hy6jxy`		Data Storage authorization token	
`consul_bind_addr`	`<list_of_ip_addresses>`		Consul network interface address	
`consul_mode`	`server` – for Database template and All-in-One installation type `client` – for the rest of templates	`server`, `client`	Consul operation mode, server and client	
`consul_datacenter_name`	`iwtm`		Consul data center name	
`consul_node_name`	`<hostname>`		Node name	
`consul_retryjoin_manual`			List of Consul agents	
`consul_retryjoin_port`	`8301`		Port to connect Consul agents	
`ntp_manual_addr`			NTP server address	In case NTP server manual specification is selected (`ntp_mode=ntp_manual_addr`)

Name	Default value	Valid values	Description	Note
`ntp_mode`	`ntp_use_system`	`ntp_use_system`, `ntp_manual_addr`	NTP server type: • `ntp_use_system` – use system NTP-server; • `ntp_manual_addr` – specify NTP server manually.	
`sphinx_server_address`			Sphinx server address	In case Web console template (`template_web=1`) is selected and Indexer template (`template_indexer=0`) is not selected
`sphinx_exact_match_words`	`0`	`0, 1`	Enable exact word match indexing	In case All-in-One installation type (`installation_type=all_in_one`) or Indexer template (`template_indexer=1`) is selected
`sphinx_change_language_settings`	`0`	`0, 1`	Change list of sphinx languages	
`sphinx_langs`	`rus`	`rus eng deu fra spa ita ara ukr ron lav bel pol aze tur srp kir uzb fin kaz msa nld vie`	List of sphinx languages	Sequence of languages defines the priority

Name	Default value	Valid values	Description	Note
		`por tat ell lit kat hve ces slk fas hin sin tgk sah zho`		
`ocr_enabled`	`1`	`0, 1`	Enable OCR using	In case All-in-One installation type (`installation_type=all_in_one`), Interceptors template (`template_interceptors=1`) or Web console template (`template_web=1`) are selected
`ocr_type`	`ts`	`fre`, `ts`	Selecting OCR extractor: • `fre` – ABBYY FineReader; • `ts` – Tesseract.	In case All-in-One installation type (`installation_type=all_in_one`) or Interceptors template (`template_interceptors=1`) is selected
`ocr_finereader_mode`	`quality`	`quick, quality`	OCR ABBYY FineReader operation mode	In case OCR ABBYYFineReader (`ocr_type=fre`) is selected
`ocr_finereader_have_license`	`1`	`0, 1`	License issued for OCR ABBYY FineReader	
`db_unpack_dir`	`/tmp/iwtm_installer/database`	Line – path to directory	DB archive will be unpacked to derictory	Directory will be created automatically.

Name	Default value	Valid values	Description	Note
				You can specify an existing directory. In case the installation is over with no errors, the directory will be removed automatically.
`packages_unpack_dir`	`/tmp/iwtm_installer/packages`	Line – path to directory	Traffic Monitor installation packages will be unpacked to directory	Directory will be created automatically. You can specify an existing directory. In case the installation is over with no errors, the directory will be removed automatically.

3.3 Pre-installed Server Parameters

During installation of the System, the installer creates a set of parameters. You may need to address these parameters when configuring or using the System.

System installation directories:

- Traffic Monitor server components – `/opt/iw`
- Database components – `/u01` and `/u02`

> **Note:**
>
> The directories can be placed on different servers.

After the System is installed, please **change the passwords** for:

- `oracle` or `postgres` user, depending on the database you are using;
- Linux account (see details in the document "*InfoWatch Traffic Monitor. Administration Guide*", "Changing the Preset Password").

Parameter	Oracle	PostgreSQL
Database connection port	`1521`	`5433`
Database name / SID or `service name`	`iwtm`	`postgres`

Parameters of Traffic Monitor database:

`oinstall` – a group of the DBMS installation owner, which includes the following users:

- `iwtm`, `oracle` – for Oracle DB;
- `iwtm`, `root` – for PostgreSQL DB.

Linux accounts:

Account	Name	Password
Superuser of Linux OS (`root`)	`root`	Specified during installation
Linux user on whose behalf the Traffic Monitor server processes will be executed	`iwtm`	Not set*
Linux user on whose behalf Oracle database server processes will be executed **Note:** During installation of Oracle database, this account is not created.	`oracle`	`xxXX1234`
Linux user on whose behalf PostgreSQL server processes will be executed **Note:** During installation of PostgreSQL database, this account is not created.	`postgres`	`xxXX1234`

Database accounts:

> **Note:**
>
> The accounts are available after running:
>
> - `sqlplus` – for Oracle;
> - `psql` – for PostgreSQL.

Purpose	Oracle account name	PostgreSQL account name	Password
Database scheme owner	`iwtm`	`iwtm`	`xxXX1234`
Accounts for database administration	`sys`	`postgres`	`xxXX1234`
	`system`		
Account for Linux processes to access the database	`iwtm_linux`	`iwtm_linux`	`xxXX1234`
Account for Management Web Console to access the database	`iwtm_web`	`iwtm_web`	`xxXX1234`

Purpose	Oracle account name	PostgreSQL account name	Password
Account for the monitoring subsystem (Nagios) to access the database	`iwtm_nagios`	`iwtm_nagios`	`xxXX1234`

Web console accounts:

Purpose	Name	Password
User administrator	`administrator`	`xxXX1234`
Security officer	`officer`	`xxXX1234`

Sphinx index directory `/var/lib/sphinx`:

Purpose	Name	Password
Linux user on whose behalf binary files and Sphinx indexes will be run	`iwtm`	Not set*

* `iwtm` Linux user does not have access to the system; account privileges are limited to running TM processes, binary files and Sphinx indexes. The account cannot be edited.

4 Updating the System

Warning!

Traffic Monitor can be updated to version 7.10.x from versions 7.8.x and 7.9.x. Releases history can be found in the article "InfoWatch Traffic Monitor Documentation".

Note:

The System is updated from a connected repository.

A repository is a folder that contains files and other folders and provides them on demand to the operating system. In other words, a repository is a storage from which programs can be installed or updated. Before using the repository, you need to connect the repository so that the operating system could access it.

You can find a Guide on how to work with the repository on the Red Hat Enterprise Linux official website.

Note:

Traffic Monitor upgrade is not supported when connecting to server via HP Integrated Lights Out (ILO).

Warning!

Before starting the upgrade to version 7.10.x, run the script to define the duplicates of graphical objects in the System and delete them. To do this, run the following script in the console of DBMS PostgreSQL:

```
//Automatic deletion of duplicate Graphic Object imprints
with fingerprint_to_delete as (
  with duplicate_contents as (
    select content_id, count(f2c.fingerprint_id) cnt
    from fingerprint_to_content_sb f2c
    left join fingerprint_sb f on f.fingerprint_id=f2c.fingerprint_id
    where f.type = 'image_classifier'
    group by content_id
    having count(f2c.fingerprint_id) > 1
  )
  select f2c.fingerprint_id
  from duplicate_contents dc
  left join fingerprint_to_content_sb f2c on f2c.content_id = dc.content_id
  where f2c.fingerprint_id not in (
    select (select fingerprint_id from fingerprint_to_content_sb where content_id=dc.content_id
limit 1)
    from duplicate_contents dc
  )
order by dc.content_id
)
delete from fingerprint_sb
where fingerprint_id in (select fingerprint_id from fingerprint_to_delete);
```

In case there are no duplicates, the System will inform you to start the upgrade.

After the script execution has been completed, logout from the database.

Warning!

Before updating the System, it is required to apply the configuration. If the configuration is not to be applied before the update, it is to be forced.

During the update, events are neither intercepted nor analyzed.

Примечание:

During IW Traffic Monitor update, the operations that require `sysdba` rights will be performed:

Oracle DBMS

- `iwtm_logon_trg` trigger creation that is used to provide `iwtm_linux` and `iwtm_web` users access to objects of `iwtm` scheme;
- Creation of `sp_iwtm_execute_os_command` procedure to run OS commands when creating, removing, archiving and restoring table space files;
- Setting user profile by default (password lifetime, password change limit and connection attempts limit);
- Setting service windows of `dbms_scheduler` ;
- Disabling access to XDB using HTTP protocol;
- Disabling dispatcher, as a particular server is used;
- Providing `iwtm` user with
    - DB installation, update and uninstallation rights;
    - Daily tablespaces creation, removing, archiving and restoring rights;
    - Rights that are used in InfoWatch Traffic Monitor code;
    - Rights to access DB statistics.

PostgreSQL DBMS

- Creation of wraper function to read files, stop and break sessions, create table spaces and provide `iwtm` with rights for them;
- Removing all views and functions from `iwtm` scheme in order to create the required ones later during update to a new version;
- Providing `iwtm` user with:
    - Rights to create DB objects;
    - Rights to install, update, ininstall DB scheme;
    - Rights to create, remove, archive and restore table spaces;
    - Rights to clear `postgres` server statistics that are used in `pgstat` diagnostics script;
    - Rights for statistic views and tables to collect statistics of DB operation;
    - Rights that are used in InfoWatch Traffic Monitor code;
    - Rights to view DB statistics;
    - Rights for `pgagent` scheme to create and manage jobs.

> **Note:**
>
> In case `sudo i` command was used when installing the product, make sure you use the same command to update the System on RED OS.

Before the update, make sure that you have:

- Red Hat Enterprise Linux 7.x distribution disk ISO image;
- InfoWatch Traffic Monitor distributive of the version to which you want to update the System;
- Access to a physical or a virtual server (or servers) which you want to update;
- Password for the `root` user.

Also, before the update, you need to find out:

- The System installation type (it can be *All-in-One* or *Distributed installation*) – this information is required in order to choose the right instruction for the update;
- Which DBMS is used (Oracle or PostgreSQL) – this information is required for updating the database scheme and server components;
- The server where `web-gui` is installed – this information is required in order to clear the server cache after updating the database scheme.
  Tip: the package is installed on the server to which Traffic Monitor Management console is connected.

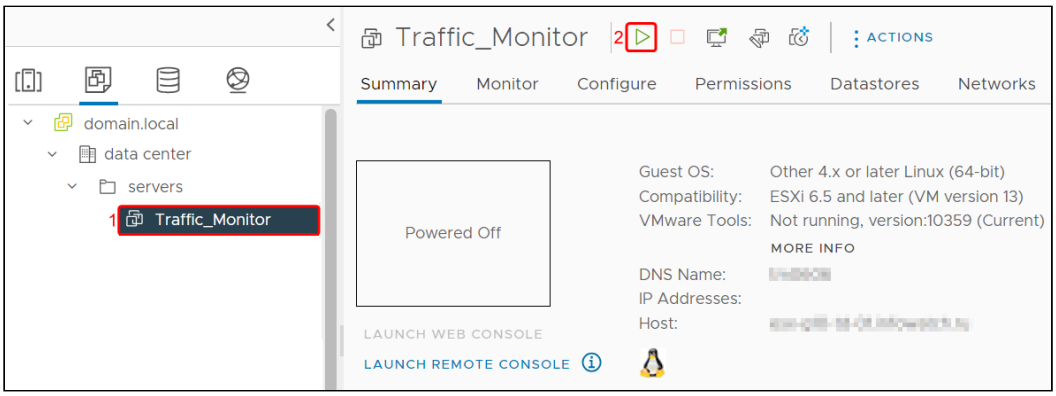
Before the update, take the following actions:

1. Turn on each server you want to update (in case it is off):
   - For a physical server – press the power button on the server (for details, see instructions for the server);
   - For the virtual server – run **Power On** command (see the example below).
     Example of launching a virtual server:

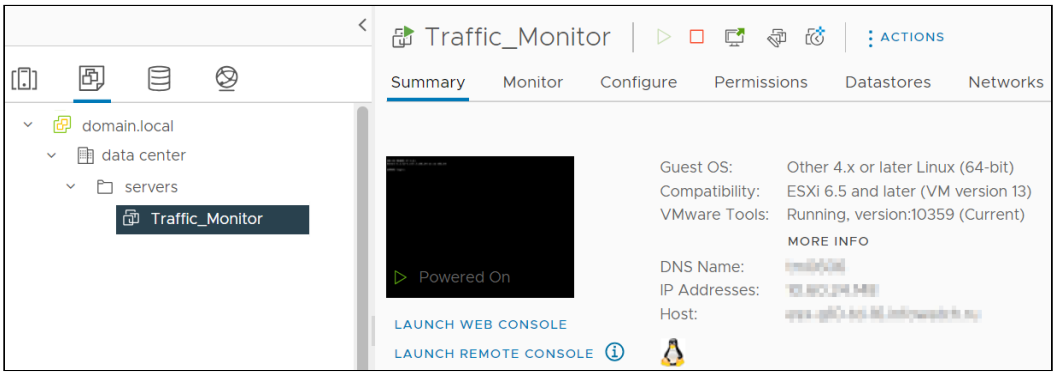
     > **Note:**
     >
     > This instruction contains examples of working with a virtual server in the web version of a client application of one of the most common virtualization environments – VMware vSphere (VMware vSphere Client).
     >
     > In frameworks, you can see interface areas that you need to click in the specified order to achieve the desired results.

     a. Run VMware vSphere Client application. Authorize in the application using the login and password issued by the administrator of your network.
     b. Consistently expand all the nodes on the left side of the workspace until you see the required virtual server.

c. Turn on the virtual server:



Some time later, the virtual server will start and the client application will look as follows:



2. Connect InfoWatch Traffic Monitor distributive to the servers you want to update, using your OS or virtualization system resources.

Update the servers, following these instructions:

- Updating TM All-in-one Enterprise and Standard – updating the server with "All-in-One" installation type (*Enterprise* or *Standard*)
- Updating TM in case of Distributed Installation – updating the server with a distributed installation type (database and TM servers are installed separately).

Note:

For information on how to update Device Monitor Server and Agents, see *"InfoWatch Device Monitor. Installation, Configuration and Administration Guide"*.

Note:

After the System is updated, preinstalled privileges for complete queries and reports management are unavailable for users with *Security officer* and *Administrator* roles.

Note:

When using DB unloading you should wait for 7 minutes after upgrade is complete to ensure the correct operation of analysis technology. In case you cannot wait, please add one element of DB unloading technology and apply configuration. Right after this you can remove the element you've added.

4.1 Updating TM All-in-one Enterprise and Standard

Warning!

Before updating Traffic Monitor, we recommend updating the Device Monitor server first.

The Traffic Monitor installer can work in two modes involving user to update the System:

- text mode in server console;
- graphical mode.

The updating steps and its sequence is similar in both modes.

Silent mode is also available to reduce user's role.

Regardless the selected mode of update, the Management console or server terminal is required to update the System.

During the update all the Traffic Monitor packages will be delivered, but after update is over the installer will start only the services which were not disabled before the update.

Note:

In case the service was disabled, it will **not** be started after updating.

In case the service was stopped, it will be started after updating.

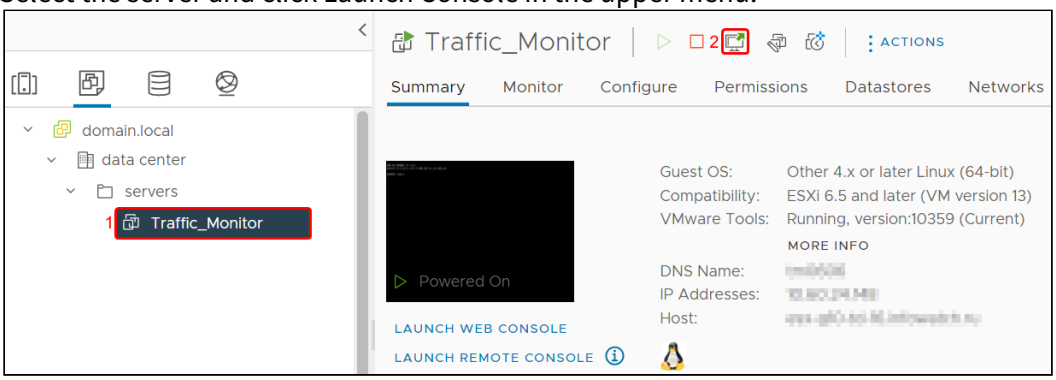
New services statuses will comply with statuses of initial installation.

The packages unpack will start not when the installer will be started, but directly before the updating.

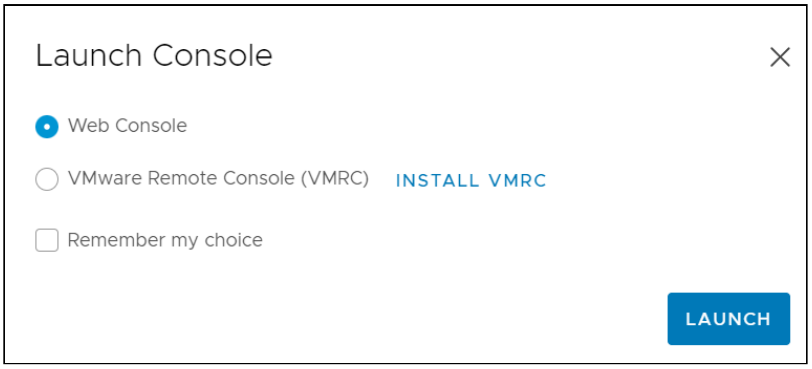
Before updating the System, perform the following steps:

1. Open the console of the server being updated:
   - in case of a physical server – the console is displayed on the screen of a monitor connected to the server;
   - in the case of a virtual server – run the **Launch Console** command (see an example below). **Example of launching a virtual server console in the web version of client application VMWare vSphere Client:**

a. Select the server and click Launch Console in the upper menu.



b. Click Launch.



A window with the server console will open. Enter the user password there.

2. To log into the System, enter login and password (you should enter as a **root** user).

> **Tip:**
>
> The commands within the console are entered from the keyboard and must be confirmed by pressing **Enter**. So, if the instruction tells you to enter the `command`, it means that you should enter the `command` and then press **Enter**. Once the command is executed, the invitation is displayed again – it is ended with `#` or `$` (depending on the user who logged in). Before typing the next command, make sure that an invitation is displayed at the command line.
>
> If you connect remotely via SSH, we recommend using the Screen utility. Thus you can avoid problems in case of a lost connection with the server being updated. When disconnecting from the utility, all the processes started are not to be interrupted and you may safely continue the System update.
>
> **Warning!** Using Screen is highly recommended when working with DB and updating DBMS.
>
> Basic commands:
>
> - `screen` – start the utility;
> - `Ctrl+a d` – disconnect from the screen (to be input within the screen window);
> - `screen -ls` – display the list of screen running;
> - `screen -r` – connect to the screen again;
> - `screen -r name` – connect to a specific screen with «name»;
> - `exit` – exit screen (to be input within the screen window).

3. Check the version, edition and installation type of the server you need to update. Run the command:
`cat /opt/iw/tm5/install_mode`

Example of content:

```
"product_type": "tme",
"version": "7.9.0.150",
"all_in_one": true,
```

The example is given for a Traffic Monitor server with the parameters:

- *All-in-One* installation type;
- *Enterprise* edition;
- Version *7.9.0.150*.

4. Update the OS in case its version is not listed among supported versions in "Hardware and Software Requirements" article.

Warning!

Before running the installation make sure that the server complies with the OS and network settings requirements.

After updating parameters of unit files the initialisation systems systemd will return to default values.

Attention!

In case an error occurs and you need to restore your database and restart the update from the last successfully completed step, we recommend to perform the following actions:

1. **Database and indexes backup**

Warning!

To back up successfully, you should copy the files with their **rights**, **users** and **groups** saved.

To do this, copy files into the **Linux file system** only (ex., Ext4 or XFS).

Store backup copies either on a separate section of the server or on another server or on an external device. Make sure that the data will not be lost.

Backup copies should be copied into their **original directories**, and **rights**, **users** and **groups should not be changed**.

a. To stop Traffic Monitor services enter the command:
`iwtm stop`
b. Perform the backup:
   i. Depending on the database you are using and the version of Traffic Monitor, enter the command to stop the database:
      - for **Oracle DBMS**:
        `systemctl stop oracle`
      - for **PostgreSQL DBMS** version 13:
        `systemctl stop postgresql-13`
      - for **PostgreSQL DBMS** version 15:
        `systemctl stop postgresql-15`

ii. Create your database backup. By default, the database is stored in the directories `/u01`, `/u02` etc.
Store the database backup copies either on a separate section of the server or on another server or on an external device.

> **Note:**
>
> To specify the directories that contain the database, check the file content:
>
> - `/opt/iw/tm5/csw/oracle/database.conf` (for **Oracle DBMS**)
> - `/opt/iw/tm5/csw/postgres/database.conf` (for **PostgreSQL DBMS**)

iii. Perform indexes backup. To do this:
   1. Go to the directory `/opt/iw/tm5/etc` and open to view the file `indexer.conf`.
   2. In the parameter `"SphinxBaseDir"` you can see the path to the directorty that contains the indexes. In the parameter `"ArchiveDir"` you can see a relative path to indexes archive. The path is specified relating to the content of `"NookDir"` parameter.
   Copy the directories with indexes and indexes archives either on a separate section of the server or on another server or on an external device.

iv. Create the backup of `iw_adlibitum` service configuration. To do this:
   1. Go to the directory `/opt/iw/tm5/etc` and open the file `adlibitum. conf` to view.
   2. In the parameter `"ConfigDir"` you can see a relative path to the directory that contains the configuration of `iw_adlibitum` service. The path is specified relating to the content of `"NookDir"` parameter.
   Copy the directory with the configuration either on a separate section of the server or on another server or on an external device.

2. **Backup configuration of the environment**

   You are required to consider the specifics of backing up from the **Warning** note in the previous step. Go to these addresses and copy the files:

   - **For Oracle DBMS:**
     - `/opt/iw/tm5/etc/oracle/` – all files in the directory
     - `/etc/default/iwtm`
     - `/etc/profile.d/iw-oracle-env.sh`
     - `/etc/logrotate.d/iwtm-oracle-conf-server`
     - `/opt/iw/tm5/etc/oracle.conf`
   - **For PostgreSQL DBMS:**
     - `/etc/default/iwtm`
     - `/etc/profile.d/iw-postgresql-env.sh`
     - `/etc/profile.d/iw-postgresql-client-env.sh`
     - `/etc/sudoers.d/iw-pgagent`
     - `/etc/pgagent/pgagent-13.conf` or `/etc/pgagent/pgagent-15.conf` depending on the DBMS version

- `/opt/iw/tm5/etc/postgresql/` – all files in the directory
- `/opt/iw/tm5/etc/postgres.conf`

> **Note:**
>
> In the directory `/tmp/iwtm_db_configs_backup` the installer automatically creates copies of files of environment settings. To make it easier for the user, the installer recreates in the directory the paths of original files. Use the paths when you need to copy the files to restore their initial state.
>
> The backup copies created by the installer are stored untill uptate. They will be deleted after the update is complete.

Depending on the update mode, select the instruction:

- Updating the System over the installed one
- Updating the System via installation and restoring data from the backup copy (for PostgreSQL)

Updating the System over the installed one:

> **Warning!**
>
> We strongly recommend backing up the System, cloning it, and updating on this particular testing machine.

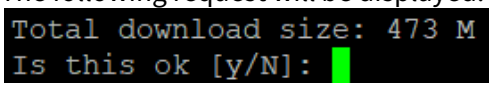
To upgrade the System, please take the following actions:

1. Copy the following files which are a part of InfoWatch Traffic Monitor distribution kit to `/root` dir ectory:
   - **`iwtm-installer-x.x.x.xxx-rhel7.run`** – for upgrade on Red Hat Enterprise Linux or Oracle Linux (where x.x.x.xxx is the build number)
   - **`iwtm-postgresql-15.5-x.x.x.xxx-rhel7.tar.gz`** – if you use PostgreSQL DBMS;
   - **`iwtm-installer-x.x.x.xxx-redos-737.3`** – for update on RED OS;
   - **`iwtm-postgresql-15.5-x.x.x.xxx-redos-737.3.tar.gz`** – if you are using PostgreSQL DBMS on RED OS;
   - **`iwtm-oracle-19.0.0.0.0-x.xx.x.tar.gz`** – if you use Oracle DBMS.

   As per our example:
   - **`iwtm-installer-7.10.0.97-rhel7`** – for upgrade on Red Hat Enterprise Linux or Oracle Linux;
   - **`iwtm-postgresql-15.5-7.10.0.97-rhel7.tar.gz`** – if you use PostgreSQL DBMS;
   - **`iwtm-installer-7.10.0.97-redos-737.3`** – for update on RED OS;
   - **`iwtm-postgresql-15.5-7.10.0.97-redos-737.3.tar.gz`** – if you are using PostgreSQL DBMS on RED OS;
   - **`iwtm-oracle-19.0.0.0.0-7.10.0.97.tar.gz`** – if you use Oracle DBMS.

     > **Warning!**

The following instruction describes installation using installer for Red Hat Enterprise Linux. It is also valid for Oracle Linux.

2. To make the file **`iwtm-installer-x.x.x.xxx-rhel7`** executable, enter the command:
   `chmod u+x /root/iwtm-installer-x.x.x.xxx-rhel7`
   Our example command:
   `chmod u+x /root/iwtm-installer-7.10.0.97-rhel7`
3. Connect external or local OS repositories.
   For example, you can find instructions on how to configure local Red Hat Enterprise Linux repository at the official web page.
4. Update packages. For this, enter:
   `yum upgrade`
   The following request will be displayed:
   

   To continue, type **Y** and then press **Enter**.
5. Install the additional packages `python3-psycopg2` and `libzstd` by running the command:
   `yum install python3-psycopg2 libzstd`
   In case of error, download the packages from the EPEL repository and install them manually.
6. If you use a remote database:
   a. Make sure the DBMS version you use is supported by Traffic Monitor:
      - Oracle Enterprise 19c
      - PostgreSQL 15
      - Postgres Pro Enterprise 15
   b. If DBMS version is actual, please skip this action.
      If DBMS needs to be upgraded:
      i. To stop Traffic Monitor services, run the command:
      `iwtm stop`
      ii. Stop the DBMS.
      iii. Upgrade the DBMS to supported version. To do this, use the official instructions.

      Note:

      For PostgresSQL and PostgreSQL Pro you should also upgrade the service in use `pgagent`.

      iv. After upgrade is complete, run the DBMS but do not start Traffic Monitor services.
7. If you have the Prometheus system installed to stop the service you should run the following command::
   `systemctl stop iwtm-postgres_exporter` – for **PostgreSQL DBMS**
   `systemctl stop iwtm-oracledb_exporter` – for **Oracle DBMS**
8. Enter the command to go to Traffic Monitor distribution kit directory:
   `cd /root`

   Note:

Before starting the update, you are recommended to start the database service, in case it was stopped before. In accordance with DBMS used please type the command to run:

- for **Oracle DBMS**:
  `service oracle start`
- for **PostgreSQL DBMS** version 13:
  `systemctl start postgresql-13`
- for **PostgreSQL DBMS** version 15:
  `systemctl start postgresql-15`

9. Automatic merging of Traffic Monitor configuration files of the old and new versions is implemented in the installer.

Warning!

Automatic merging applies only to Traffic Monitor configuration files with the `.conf` extension that are located in the `/opt/iw/tm5/etc` directory.
Before merging, backup copies for source configuration files are created in the `/opt/iw/tm5/etc_conf_backup_<date_time>` directory. An example of the directory name: `/opt/iw/tm5/etc_conf_backup_06.07.2024_09:26:33`.
After merging, files with the `.rpmnew` extension, which relate to merged configuration files, will be deleted.
All steps will be logged in the `/var/log/infowatch/iwtm-install-<version>-<date>_<time>.log` file. An example of the log file name: `/var/log/iwtm-install-7.10.0.97-2024-09-07_09-56-25.log`.
You can also find information on the merge process in the `/var/log/infowatch/config_merge/` directory.
If during operations with a configuration file, some errors occur, the process will be stopped until the user corrects the errors. Restart the update after the errors are corrected.

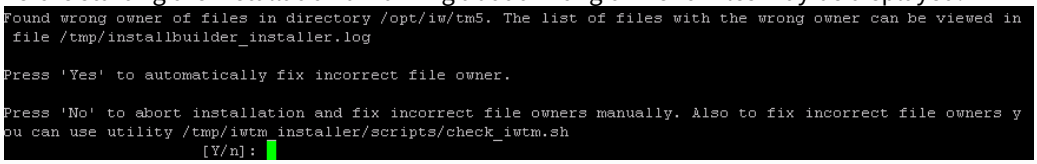
Run the installer using one of the modes:
Updating in text mode using server console

To update Traffic Monitor using server console, take the following steps:

a. Start the Traffic Monitor installer running the command:
`./iwtm-installer-x.x.x.xxx-rhel7`
Our example command:
`./iwtm-installer-7.10.0.97-rhel7`
Preparations will be made to start the updating. At this stage the unpacking of Traffic Monitor files is not being performed.

Note:

Before starting the installation a warning about wrong owner of files may be displayed.



Type **Y** and press **Enter** to change the owner of files and continue running.

Otherwise, you can enter **N** and press **Enter**, then make corrections manually or using `/tmp/iwtm_installer/scripts/check_iwtm.sh` script and start the installer again.

Warning!

If available configured OS repositories are missing, the preparation process will stop with the following error message:

```
[root@spopov-rhel7-713 ~]# ./iwtm-installer-7.2.1.280-rhel7

Preparing installation.../Warning: Failed to prepare installation:
Missing OS repos or unsupported OS. Please mount and/or enable OS packages
repository and try once again.

For details refer to
/var/log/infowatch/install/iwtm-installation_20211007114106.log or
/tmp/installbuilder_installer_11672.log if the first doesn't exist
Press [Enter] to continue:
```

To fix this error press **Enter** to exit, connect the standard OS repository, EPEL repository and restart the installer.

For more details on the error refer to the log files, specified in the error message.

After this finished, a welcoming window will be displayed:

```
Welcome to the Traffic Monitor Setup Wizard.

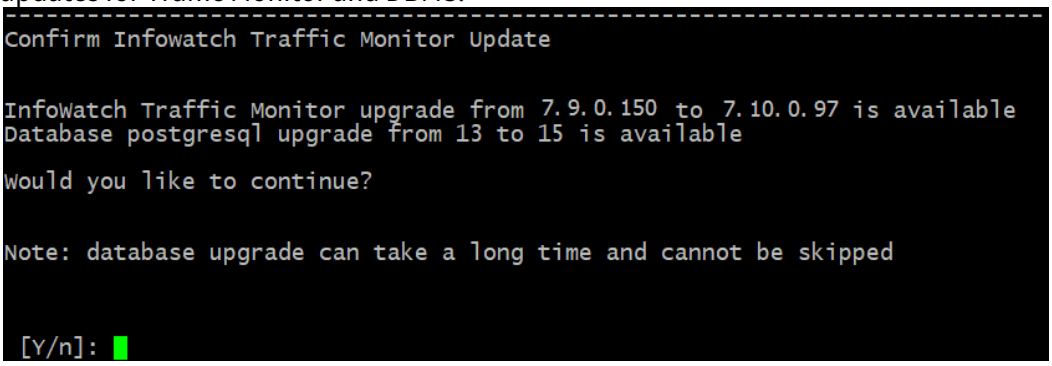
-------------------------------------------------------------------------------
Please read the following License Agreement.
You must accept the terms of this agreement before continuing with the installation.

[1] Show the License Agreement
[2] I accept the License Agreement
[3] I do not accept the License Agreement
Please choose an option [1] :
```

b. You must accept the terms of the License Agreement before continuing with the update. Select one of the following options. For this, type the figure specified next to it and press **Enter**:
   - `Show the License Agreement` – to view the License Agreement;
     If this option is selected:
     i. Select language to display the License Agreement:
        - `English`
        - `Russian`
     ii. Read the License Agreement. To go to the next page, press **Enter**.
     iii. Accept the License Agreement. For this, type **y** and press **Enter**.
   - `I accept the License Agreement` – to accept the License Agreement without preview;
   - `I do not accept the License Agreement` – to not accept the License Agreement and abort the update process.

> **Note:**
>
> When updating via server console, you can see the default value which is specified in square brackets as a figure or a capital letter next to input field. This value will be used in case of leaving the field empty and pressing **Enter**.
>
> **Example:**
>
> If you do not input a value as per picture above and press Enter, the item `[1] Show the License Agreement` will be selected.

Then update confirmation window will be displayed. It will contain all available updates for Traffic Monitor and DBMS.

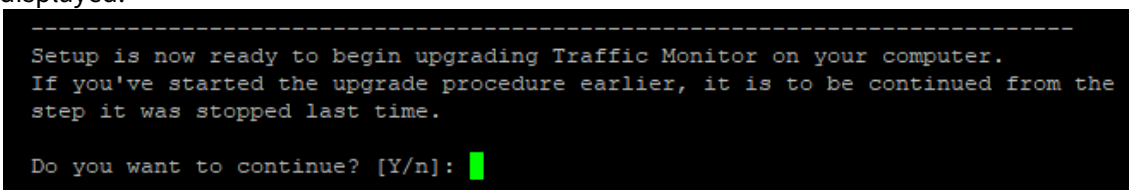


c. To continue, type **Y** and press **Enter**. To exit the installer type **n** and press **Enter**.
d. Confirm the Traffic Monitor services and database were stopped. Steps to confirm the stop and to select a mode will be missed in case the services were stopped manually before starting the installer.
e. Select a mode to stop Traffic Monitor:
   - `Quick stop` – quick stop without events processing;
   - `Waiting for stop` – wait till the current processing of events is finished `;`
   - `Waiting for emptying file queues` – wait till all the events are processed and all the file queues are empty before stopping.

   To make a choice please enter the figure specified next to option selected, and press **Enter**.

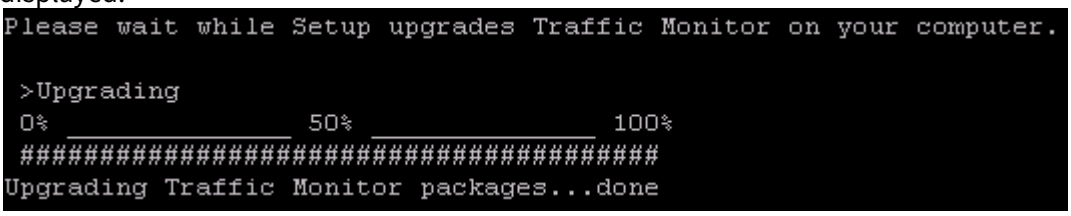
> In case `Quick stop` is selected, the stopped services will have `failed` status before the update.

f. If you've selected `Quick stop` or `Waiting for stop`, events can be sent to error queue after Traffic Monitor resumes the work.
   To continue type **Y** and press **Enter**.
   While stopping an events proessing progress will be displayed.
g. After the services are stopped, a message to start the updating and query to continue will be displayed.



To start the updating type **Y** and press **Enter**.

The unpacking of Traffic Monitor updating files will start. Implementation progress will be displayed.



The process may take some time.

> **Note:**
>
> If for any reason the installation process was interrupted, eliminate the cause and restart the installer. The installation will continue from the last step that was successfully completed.

h. When updating is successfully completed the installer will offer starting the services which were stopped.

> **Warning!**
>
> After update is complete Nagios monitoring system configuration will be changed to default values. In case you've edited Nagios configuration files before the update, its copies will be created in `/etc/infowatch/nagios/iwmon` as `.saved` files. Before starting the Traffic Monitor services move the configuration from `.saved` files to corresponding new configuration files.
>
> After the update to manage the monitoring system use iwtm-nagios service.
> For example, to check Nagios status use the command:
> `systemctl status iwtm-nagios`

If you do not run the services, to recover the System's efficiency you should run it later manually.

> **Note:**
>
> If Consul service is configured incorrectly, the following warning message will be displayed:
>
> ```
> \Warning: You should run 'iwtm start' command manually after fixing problems with
> Consul.
> Press [Enter] to continue:
> ```
>
> To finish installation press **Enter**.
>
> **For correct work of System check and configure Consul service cluster**
>
> 1. Start Consul service with the command:
>   `systemctl start iwtm-consul`
>   To check the service status enter the command:
>   `systemctl status iwtm-consul`
> 2. To check Consul enter the command:

a. To display IP address of main server (leader) of cluster:
`curl --noproxy 127.0.0.1 http://127.0.0.1:8500/v1/status/leader ; echo`
b. To display information about cluster members:
`consul members`

3. If the IP address of cluster leader is not displayed, configure cluster of Consul service.
After configuration is complete, repeat checking (step ii).

If the error occurs, the installer will not launch Traffic Monitor services when the installation is finished, so you need to start them manually.

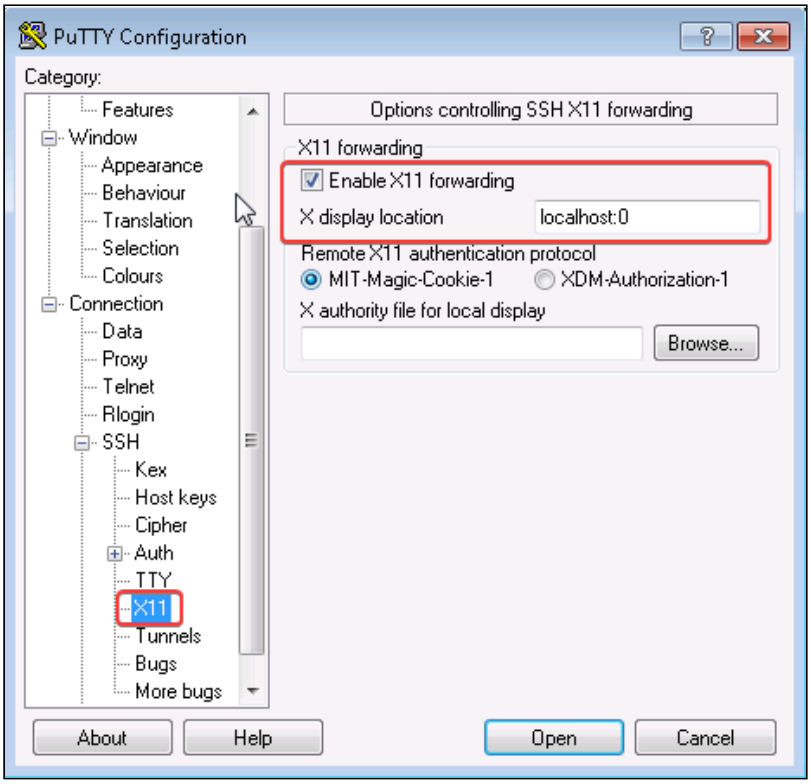
i. Before completeting the update the installer will offer deleting the packages created to update the System.
When update is successfully completed, this data is recommended to delete.
j. Wait till completion of installer operation.

Updating in graphical mode

X Window System uses a client-server model. To run the installer in the graphical mode **X11 Forwarding** is used to forward the graphical output of remote system. This let you work directly with Linux graphical applications on the computer which is connected to server. This mode is implemented via SSH connection.

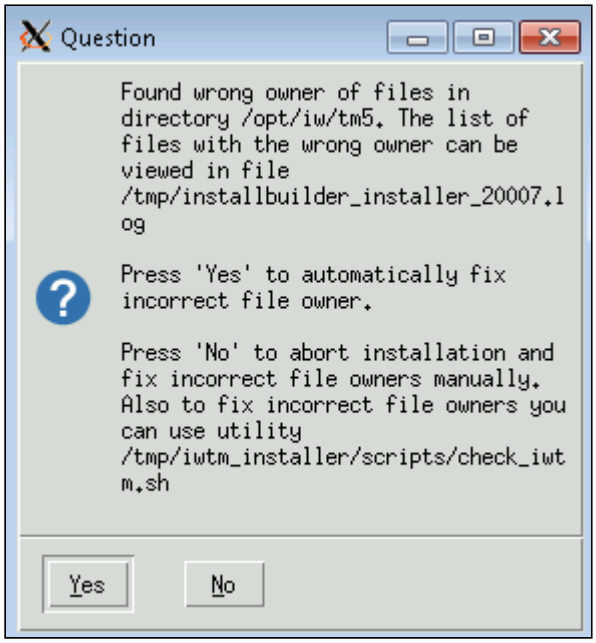
To update Traffic Monitor using graphical mode of installation, take the folowing steps:

a. On the server, where Traffic Monitor components are planned to update:
   i. Install `xauth` utility using the command:
   `yum install xauth`
   ii. In `/etc/ssh/sshd_config` configuration file uncomment the line "`X11Forwarding yes`". To do this, delete `#` placed before the line.
   iii. Save changes in configuration file.
   iv. Restart SSH service using the command:
   `systemctl restart sshd`
b. On the computer, where the graphical mode is to be used:
   i. To connect to Traffic Monitor installation server you will require a SSH client with enabled X11 Forwarding option, e.g. PuTTY.
   ii. To start the installer in the graphical mode you will require an application configured to access to X Window System, for example:
      - Xming application – for OS MS Windows;
      - Gnome 3 shell – for OS Linux.
c. Run the application client which was previously configured to access to X Window System.
d. Connect to server, where Traffic Monitor components are planned to install, using selected SSH client.
Example of PuTTY configuration window used to connect



e. Run the installer using the command:
`./iwtm-installer-x.x.x.xxx-rhel7`
As per our example:
`./iwtm-installer-7.10.0.97-rhel7`
Preparations will be made to start the installation. At this stage the unpacking of files is not being performed.

> **Note:**
>
> Before starting the installation a warning about wrong owner of files will be displayed.

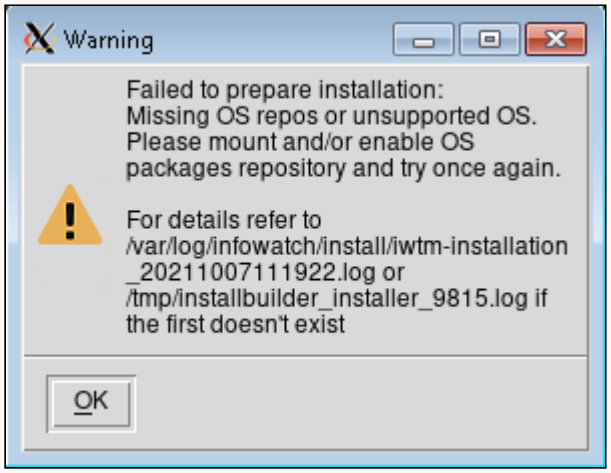


Press **Yes** to change the owner of files and continue running.

Otherwise, you can enter **N** and press **Enter**, then make corrections manually or using `/tmp/iwtm_installer/scripts/check_iwtm.sh` script and start the installer again.

Warning!

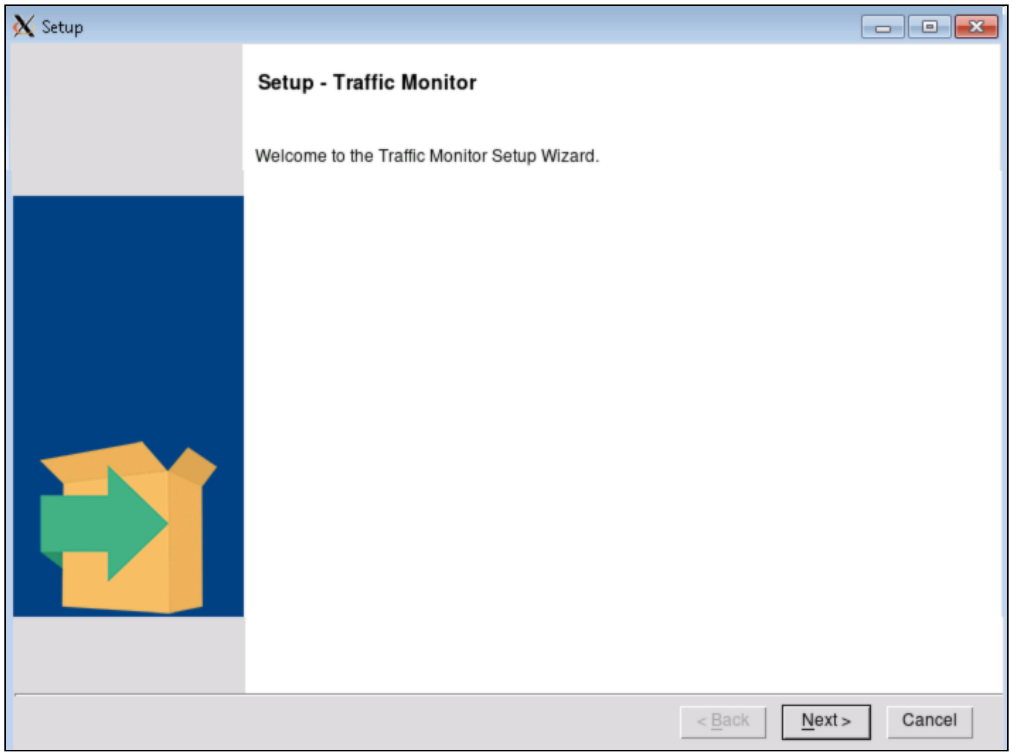
If available configured OS repositories are missing, the preparation process will stop with the following error message:



To fix this error press **OK** to exit, connect the standard OS repository, EPEL repository and restart the installer.

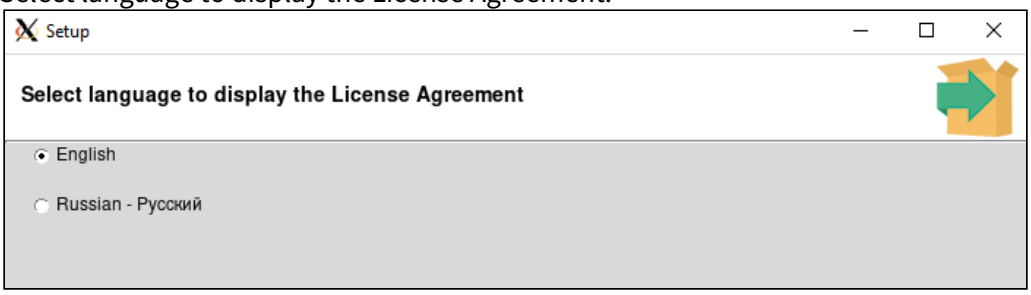
For more details on the error refer to the log files, specified in the error message.

After finishing, a window to install Traffic Monitor will be displayed:



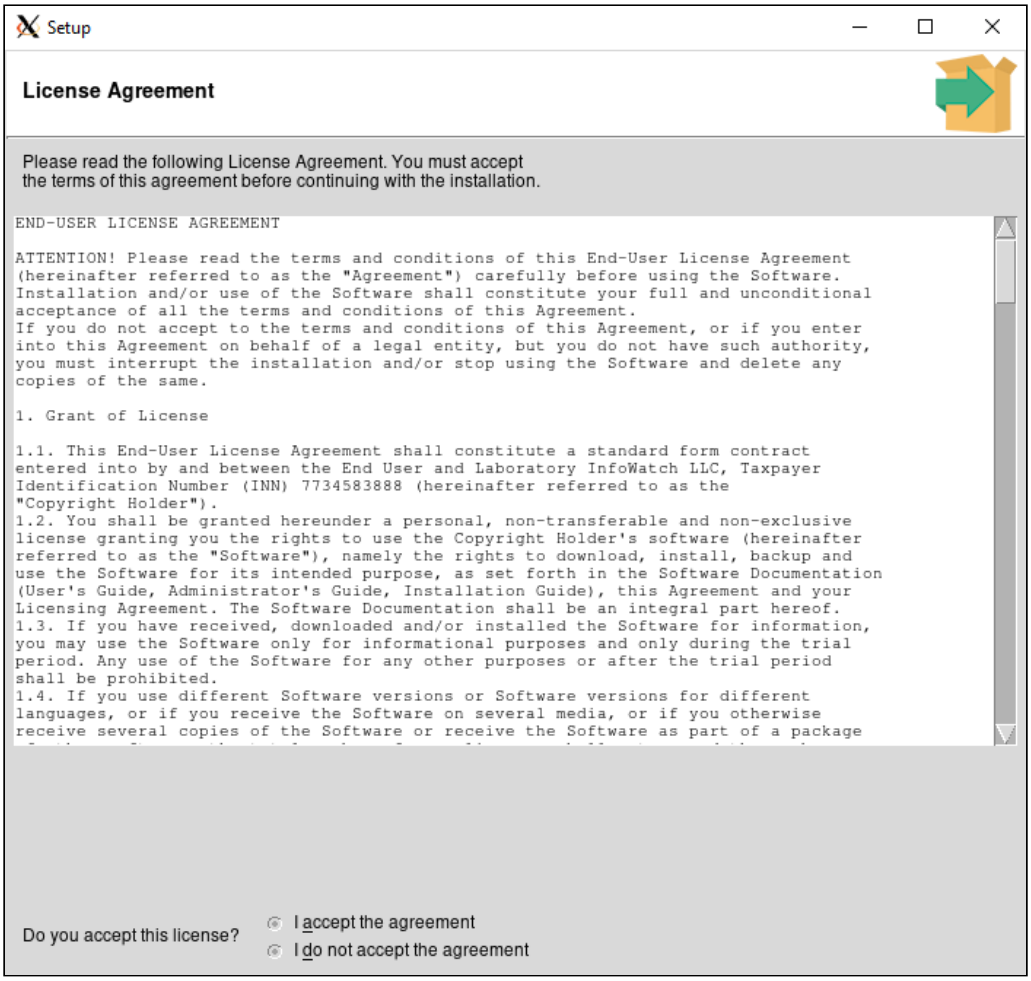
To go to the next parameter press **Next** button, to go back press – **Back**. To exit the installer press **Cancel** button.

f. You must accept the terms of the License Agreement before continuing with the update. For this:
   i. Select language to display the License Agreement:



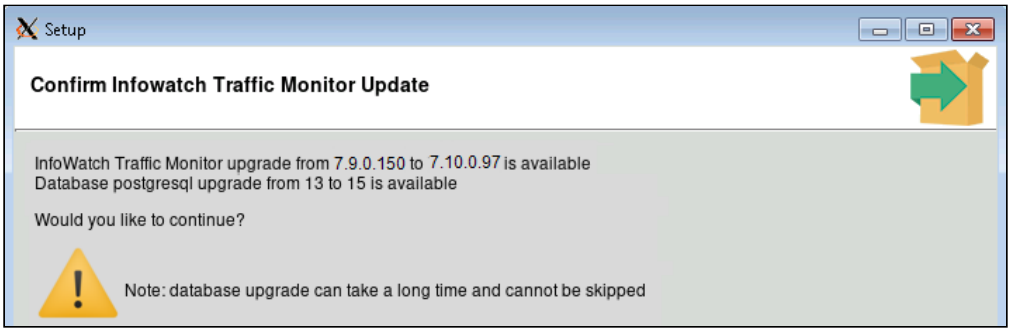
- `English`
- `Russian`

   ii. Select one of the following options. For this, click in the checkbox next to the required value and press the **Next** button:



- **`I accept the agreement`** – to accept the License Agreement and continue the update process;
- **`I do not accept the agreement`** – to not accept the License Agreement and abort the update process.

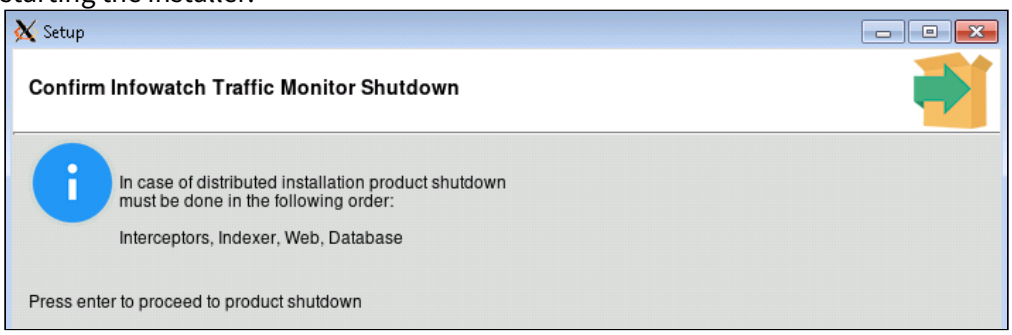
g. The next window will contain data related to available upgrades for Traffic Monitor and DBMS.



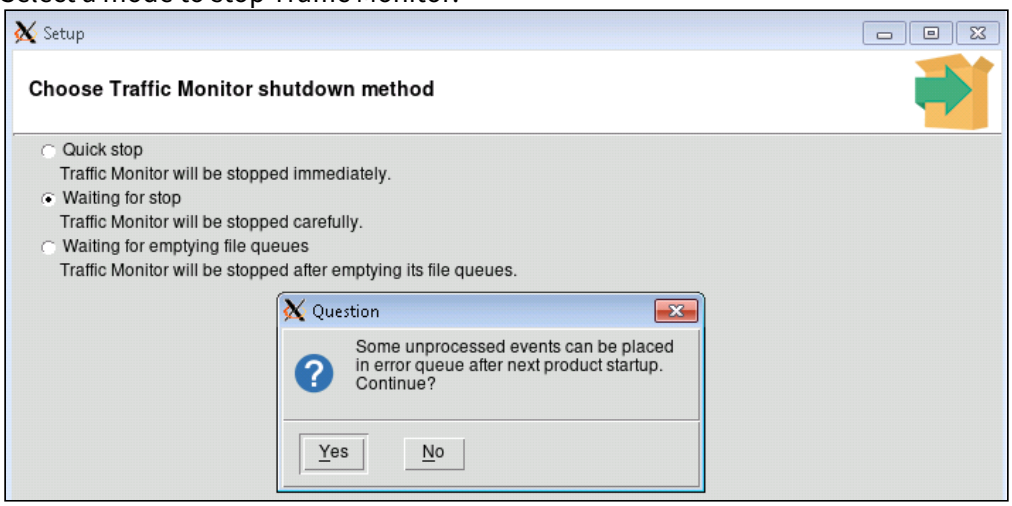
To continue press **Next**.

h. Confirm the Traffic Monitor services and database were stopped. Steps to confirm the stop and to select a mode will be missed in case the services were stopped manually before

starting the installer.



i. Select a mode to stop Traffic Monitor:

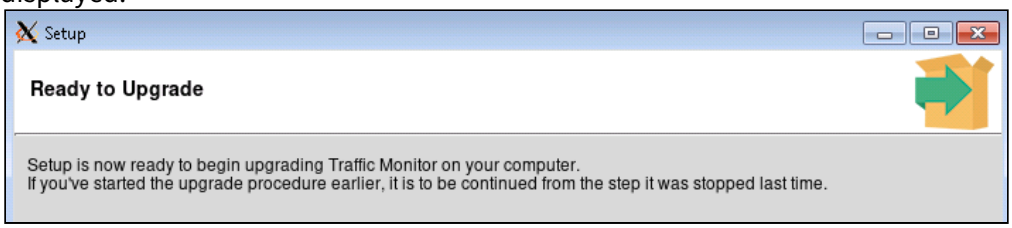


- `Quick stop` – quick stop without events processing;
- `Waiting for stop` – wait till the current processing of events is finished;
- `Waiting for emptying file queues` – wait till all the events are processed and all the file queues are empty before stopping.
  To select click in the checkbox next to required value and press **Next** button.

> **Note:**
>
> In case `Quick stop` is selected, the stopped services will have `failed` status before the update.

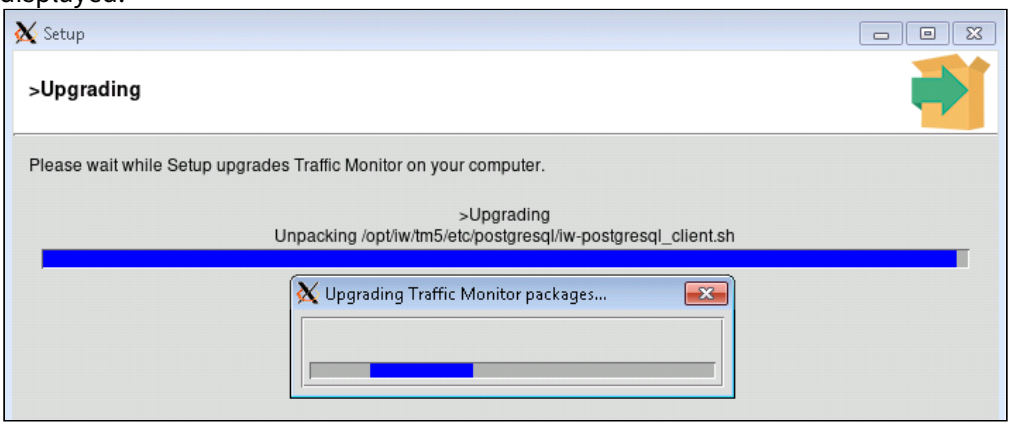
j. If you've selected `Quick stop` or `Waiting for stop`, events can be sent to error queue after Traffic Monitor resumes the work.
To continue press **Yes** button.
While stopping an events proessing progress will be displayed.

k. After the services are stopped, a message to start the updating and query to continue will be displayed.



To start the updating press **Yes** button.

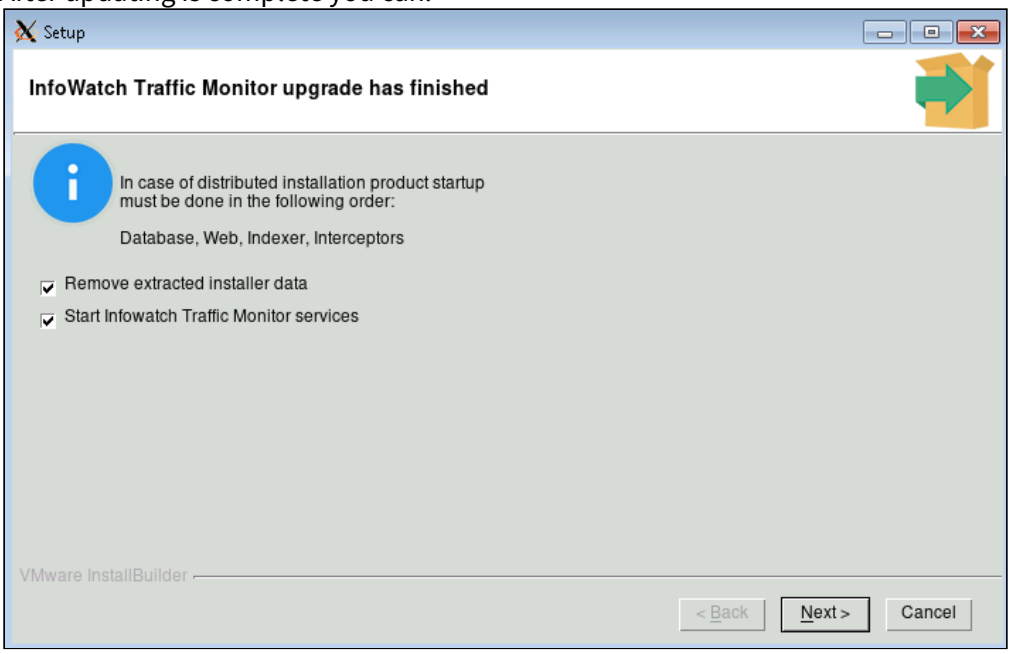
The unpacking of Traffic Monitor updating files will start. Implementation progress will be displayed.



The process may take some time.

> If for any reason the installation process was interrupted, eliminate the cause and restart the installer. The installation will continue from the last step that was successfully completed.

l. After updating is complete you can:



- **`Remove exctracted installer data`** – when updating is successfully completed you can delete the packages created to install the System. This data is recommended to delete.
- **`Start Infowatch Traffic Monitor services`** – start the stopped services. Otherwise, you need to restore System availability manually later.

> **Warning!**

After update is complete Nagios monitoring system configuration will be changed to default values. In case you've edited Nagios configuration files before the update, its copies will be created in `/etc/infowatch/nagios/iwmon` as `.saved` files. Before starting the Traffic Monitor services move the configuration from `.saved` files to corresponding new configuration files.

After the update to manage the monitoring system use iwtm-nagios service.

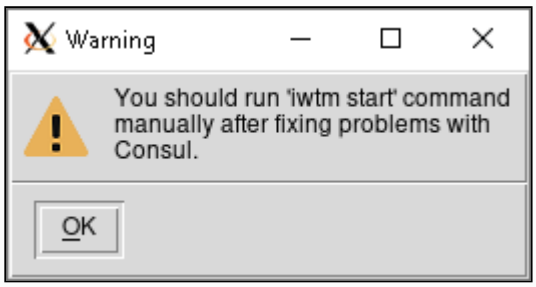
For example, to check Nagios status use the command:

```
systemctl status iwtm-nagios
```

Mark the checkboxes to select the actions you need:

Note:

If Consul service is configured incorrectly, the following warning message will be displayed:



To finish installation press **OK**.

For correct work of System check and configure Consul service cluster

i. Start Consul service with the command:
`systemctl start iwtm-consul`
To check the service status enter the command:
`systemctl status iwtm-consul`

ii. To check Consul enter the command:
    1. To display IP address of main server (leader) of cluster:
    `curl --noproxy 127.0.0.1 http://127.0.0.1:8500/v1/status/leader ; echo`
    2. To display information about cluster members:
    `consul members`

iii. If the IP address of cluster leader is not displayed, configure cluster of Consul service.
After configuration is complete, repeat checking (step ii).

If the error occurs, the installer will not launch Traffic Monitor services when the installation is finished, so you need to start them manually.

m. To finalise the installation press **Next**.

Updating in silent mode

To reduce a user's role in the System updating process there is a silent mode of installation. In this mode Traffic Monitor can be updated using default parameters.

An options file is realized to be used as a parameter file. In this file you can set required installation parameters. When starting the installation via parameter file, the values specified in this file will be considered the default parameters.

4.1.1 Parameter file (option file)

The file contains the following parameters description:

`<parameter's_name>=<parameter's_value>`

You may leave comments using #.

Parameter file example:

```
# This file is just an example
fix_incorrect_file_owners=1
cleanup_way=clean_fq
start_services_after_upgrade=1
```

The example above contains the parameters as follows:

- Change wrong owner of files to correct one;
- Before stopping the services wait until all events are processed and the queues are cleared;
- Run the services after update.

Warning!

The parameters which are not specified in the file will have the default values. The full list of parameters is specified in the table below.

To use the parameter file go to installer directory and run it using `--optionfile` specifying the file which was previosly created.

Example of using parameter file:

```
./iwtm-installer-7.10.0.97-rhel7 --optionfile /some_directory/option-file-example
```

An alternative way to use: give the parameter file the same name the installer has, but use `.options` extension and copy it to installer directory. In this case the running installer will consider the file parameters the default values.

4.1.2 Silent mode installation

To update the System in silent mode use `--mode unattended` option.

Level of interaction with user is set by `--unattendedmodeui` parameter, which has the following values:

- `none` – no information displayed while updating and no interaction is required;
- `minimal` – status of implementation is displayed while updating, no interaction is required;

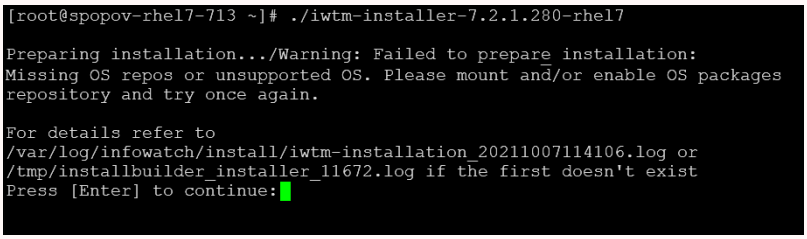
- `minimalWithDialogs` – status of implementation is displayed while updating, pop-up windows can be displayed and interaction with user can be required.

Example of installer running command in silent mode with no user assistance and using parameter file:

```
./iwtm-installer-7.10.0.97-rhel7 --optionfile /some_directory/option-file-example --mode unattended --unattendedmodeui minimal
```

Warning!

If available configured OS repositories are missing, the preparation process will stop with the following error message:



To fix this error press **Enter** to exit, connect the standard OS repository, EPEL repository and restart the installer.

For more details on the error refer to the log files specified in the error message.

Note:

In case the process is over with no errors, the packages created for installation will be removed by installer. If for any reason the installation process was interrupted, eliminate the cause and restart the installer. The installation will continue from the last step that was successfully completed.

Note:

If Consul service is configured incorrectly, the following warning message will be displayed:



To finish installation press **Enter**.

Check and configure cluster of Consul service for correct work of the System:

a. Start Consul service with the command:
`systemctl start iwtm-consul`
To check the service status enter the command:
`systemctl status iwtm-consul`
b. To check Consul enter the command:

i. To display IP address of main server (leader) of cluster:
`curl --noproxy 127.0.0.1 http://127.0.0.1:8500/v1/status/leader ; echo`
ii. To display information about cluster members:
`consul members`

c. If the IP address of cluster leader is not displayed, configure cluster of Consul service.
After configuration is complete, repeat checking (step ii).

If the error occurs, the installer will not launch Traffic Monitor services when the installation is finished, so you need to start them manually.

4.1.3 Full composition of parameter file

The table below contains full list of possible parameters used for update and their default values.

Name	Default value	Valid values	Description	Note
`force_upgrade`	`0`	`0,1`	Forcible switch to updating mode, even if the versions do not match	
`fix_incorrect_file_owners`	`0`	`0,1`	The parameter defines if the wrong owner of files should be changed before the update	If the files to be updated have a wrong owner, the update will be interrupted

Name	Default value	Valid values	Description	Note
`cleanup_way`	`wait_stop`	`quick_stop`, `wait_stop`, `clean_fq`	Select the mode to stop services: • `quick_stop` (no events processing); • `wait_stop` (wait until current events processing is complete); • `clean_fq` – (before stopping wait until all events are processed and the queues are cleared)	All events processing and file queues clearing mode (`clean_fq`) is available only when interception components are installed on server. In case this mode was selected but there is a lack of interception components on server, the current events processing mode will be used (`wait_stop`)
`start_services_after_upgrade`	`1`	`0,1`	The parameter defines if the installer should run the services after update	After update is complete Nagios monitoring system configuration will be changed to default values. In case you've edited Nagios configuration files before the update, its copies will be created in `/etc/infowatch/nagios/iwmon` as `.saved` files. Before starting the Traffic Monitor services move the configuration from `.saved` files to corresponding new configuration files. After the update to manage the monitoring system use iwtm-nagios service. For example, to check Nagios status use the command:

Name	Default value	Valid values	Description	Note
				`systemctl status iwtm-nagios`
`eula`		`show`, `accept`	Display the License Agreement text, Accept the License Agreement without preview	If you run the installation not in the unattended mode and do not specify the parameter, then the License Agreement text will be displayed. You will be asked to accept the agreement. If you run the installation in the unattended mode, this parameter value is ignored and the License Agreement is accepted by default.

10. Enter the command to find files with **`.rpmnew`** extension, except backups of configuration files:
`find / -name "*rpmnew*" -not -path "/opt/iw/tm5/etc_conf_backup*" -print`
If the files have been found, they are displayed at the console. In this case, you should correctly merge them with configuration files (see "Merging configuration files").

> **Note:**
>
> To merge successfully the configuration files you should read the following articles on the official site:
>
> - "What are rpmnew & rpmsave files?"
> - "Recommendations on handling of rpmnew and rpmsave files following Red Hat Enterpries Linux system update"

11. Check the contents of `/opt/iw/tm5/etc/scripts/` **`iwssid.lua`**. If it was not changed before the update, it is recommended to not change it. Otherwise, properly merge it with the configuration file **`iwssid.lua.rpmnew`** (see "Merging configuration files").
12. Starting from version 7.8.0, Traffic Monitor supports ABBYY Finereader 12 OCR extractor. After the update, the extractor operation modes will be configured in new profile files: `/opt/iw/tm5/etc/CRProfile.ini` and `/opt/iw/tm5/etc/CRProfile_fast.ini`.
If you were using ABBYY Finereader OCR extractor before the update and made changes to the old profile files (`FRProfile.ini` or `FRProfile_fast.ini`), then to save these settings move them to the new files. Please note, that in the new version of the extractor, the names and values of the parameters may differ.
13. If the installer has not complete its work before, select start of services and finish the update. If the installer has completed its work without running the services, start them manually or reboot the server to start all stopped services.
To reboot the server:
`reboot`

Warning!

After the start, Traffic Monitor connects to DB and loads the configuration file `cas_config.xml`. from it. Depending on size of the file, its loading may take some time.

During the loading process, the System may record error messages in log files:

- **/opt/iw/tm5/log/cas_config_compiler.log**

Error record

```
1 2019-10-07 17:00:57.351489 (3936:0x00007f4008de8880) [ERROR  ] :
<Root> Exception:.
Diagnostic information..
/sandbox/src/cas3/config/details/cas_factory.cpp(233): Throw in
function bool
cas::CasConfigFactory::LoadXmlConfig(cas::ConfigCreator::Ptr&, const
boost::filesystem::path&) const
Dynamic exception type:
boost::exception_detail::clone_impl<cas::ExceptionCasConfig>
```

- **/opt/iw/tm5/log/cas.log**

Error record

```
1 2019-10-03 17:39:13.348146 (14262:0x00007fe83892ba80) [WARNING] :
<Root> Prometheus server is off, therefore the statistics is
unavailable. That's what you wanted, isn't it?
2 2019-10-03 17:39:14.364655 (14262:0x00007fe83892ba80) [ERROR  ] :
<Root> Error when loading config of tech: Cannot open xml file with
 cas configuration: etc/config/cas/cas_config.xml
3 2019-10-03 17:39:14.364856 (14262:0x00007fe83892ba80) [ERROR  ] :
<Root> failed to initialize thrift server
Diagnostic information.
/sandbox/src/cas3/handler.cpp(682): Throw in function
 cas::Handler::LoadedConfigData
cas::Handler::GetLoadedConfigData(const prop::Property&, const Ptr&)
Dynamic exception type:
boost::exception_detail::clone_impl<tech::ExceptionTechLoadConfig>
std::exception::what: Cannot open xml file with cas configuration:
etc/config/cas/cas_config.xml
```

When `cas_config.xml` file loading is complete the System will stop recording errors and will operate normally.

If the System keeps recording errors for a long time, check the connection to the DB.

14. In Traffic Monitor, we have extended the list of default tasks that automatically delete obsolete tasks.
Tasks for the `cron` scheduler are now specified in the `/etc/cron.d/iwtm_cleanup` file (file contents are described in the "Automatic deletion of unnecessary files in Traffic Monitor" article).

For new tasks to work correctly:

a. Delete obsolete tasks by editing the `cron` configuration file:
   `sudo crontab -e`
b. Save changes and exit the configuration file editor.
c. Restart the service:
   `systemctl reload crond`

15. If you haven't edited the previous `/etc/cron.d/iwtm_error_queue` file with tasks before the update, then skip this step.
    Otherwise, the `/etc/cron.d/iwtm_error_queue` file will be deleted and its contents will be saved in the `/etc/cron.d/iwtm_error_queue.rpmsave` file.
    For earlier added tasks to start working again, create a file for your tasks in the `/etc/cron.d/` directory and copy required tasks from `/etc/cron.d/iwtm_error_queue.rpmsave` to this file.

> **Note:**
>
> You can add your tasks to the `/etc/cron.d/iwtm cleanup` file. On the next update, this file will be renamed to `/etc/cron.d/iwtm_cleanup.rpmnew` and replaced with a file with default content. After the next update, you will need to move added tasks from the `/etc/cron.d/iwtm_cleanup.rpmnew` file to a new `/etc/cron.d/iwtm_cleanup` file.
> To avoid moving tasks every time, you can create a separate file with your tasks in the `/etc/cron.d/` directory.

16. If you have the Prometheus system installed and in case the server has not been rebooted to stop the service you should run the following command:
    `systemctl start iwtm-postgres_exporter` – for **PostgreSQL DBMS**
    `systemctl start iwtm-oracledb_exporter` – for **Oracle DBMS**
17. Enter the command to clear cache of packages manager:
    `yum clean all`
18. Enter the command to clear cache:
    `redis-cli flushall`
19. Enter the command to test processes' start:
    `iwtm status`
    A list of processes and their statuses will be displayed.

Updating Traffic Monitor All-in-one server is complete. The version of the System in the **About** window of the Management Console will be changed. If the System includes other servers or subsystems to be updated, follow the instructions in this section.

> **Note:**
>
> After the DBMS was successfully updated you can remove files which belong to previous versions.
>
> This can be done **only after** the System is completely updated and check is performed.
>
> Before removing the files, please make sure that:
>
> - The services arranged for this System are running and working;
> - The Management concole contains no errors at System state section;
> - Old events are placed to DB. You can check this on Events section, using a query with corresponding date of interception;

- New events are sent to DB.

To remove the files run the following command:

- If you use PostgreSQL DBMS:
  `yum erase postgresql13*`
  `/u01/postgres/tmp/delete_old_cluster.sh`
- If you use Oracle DBMS:
  `su - "oracle" -c "rm -rf ${ORACLE_HOME}.backup"`

Warning!

If you have configured automatic synchronizations with LDAP servers, to guarantee the download of entities after update is completed, you should run the synchronization manually (for more details, please see "*Infowatch Traffic Monitor. User guide"*, "Running Synchronization with Server Manually" article).

Note:

To display data correctly via Management console you should delete the cache in the browser you use. This can be done using the browser standard tools.

Updating the System via installation and restoring data from the backup copy (for PostgreSQL)

Warning!

We strongly recommend backing up the System, cloning it, and updating on this particular testing machine.
If you do not want to copy the data because you will mount the disk or the section containing your data, we recommend to backup them anyway.
After clear installation of the System you will need to set the configuration files of Traffic Monitor again. We recommend to store them so you can configure settings after the update.

1. To stop Traffic Monitor services, run the command:
   `iwtm stop`
2. Check the number of events DB contains. For this, run the command:
   `psql postgres iwtm -c "select count(1) from object;"`
3. Starting from version 7.8.0. Traffic Monitor supports ABBYY FineReader 12 OCR extractor. If before updating the System, you were using ABBYY FineReader OCR extractor and made changes to the profile files (`FRProfile.ini` or `FRProfile_fast.ini`), save the customizations in order to restore them after installing the new Traffic Monitor version.
4. Complete database and indexes backup.
5. Install a new version of Trafic Monitor.

   Warning!

If the backup copies of your DB are stored on external devices, do not connect them during the update. You need to do it before restoring and updating the DB.

When the update is complete, do not remove the packages created by the installer during the process of update (the point **Remove extracted installer data**).

Perform the following steps on the server where you have installed the new version of Traffic Monitor.

6. To stop services, run the commands:
   `iwtm stop`
7. Enter the command to stop the DB:
   `systemctl stop postgresql-13`

   Note:

   To restore the initial state of clean installation, you can copy the directories `u01` and `u02`.

8. To change the access rights to the directory, enter the command:
   `chmod 777 /var/log/infowatch/update`
9. Copy reserve DB copy so that it was located the same way it was placed initially.
10. Change the owner of the directories by running the commands:
    `chown -R postgres:postgres /u01/`
    `chown -R postgres:postgres /u02/`
11. Enter the command to go to the directory that contains scripts:
    `cd /tmp/iwtm_installer/scripts`
12. From the directory run the script to update the DBMS by using the command:
    `./install_postgres.sh --distrib_path=<directory_with_DBMS_distributive> --tm_version=<new_version_of_Traffic_Monitor> --update`
    As per our example:
    `./install_postgres.sh --distrib_path=/root --tm_version=7.10.0.97 --update`

    Note:

    In the example the distributive `iwtm-postgresql-15.5-x.x.x.xxx-rhel7.tar.gz` is located in the `/root` directory.
    To view the version of Traffic Monitor you have installed, enter the command:
    `cat /opt/iw/tm5/version`

13. After the successfull update complete the command to check the status of DBMS service:
    `systemctl status postgresql-15`
14. Run the script to update the data scheme by using the command:
    `./install_dbschema.sh --tm_version=<new_version_of_Traffic_Monitor> --db_type=postgres --update`
    As per our example:
    `./install_dbschema.sh --tm_version=7.10.0.97 --db_type=postgres --update`
15. Complete the step 2 of the instruction to compare the number of events in the DB before and after the update.
16. Copy the backup copies of indexes and configurations of `iw_adlibitum` service so that they were located the same way it was placed initially.

If the initial location is not the default one, then you will have to specify it in the corresponding sections of the configuration files (see steps biii and biv).

17. Change the owner of the directories by running the commands:
    `chown -R iwtm:iwtm /var/lib/sphinx/`
    `chown -R iwtm:iwtm /opt/iw/tm5/etc/adlibitum/`
18. Run the commands:
    `sudo -u iwtm touch /opt/iw/tm5/www/backend/protected/runtime/first_run`
    `iwtm restart kicker`
19. After updating the System, operation modes for ABBYY FineReader 12 OCR extractor will be configured in new profile files: `/opt/iw/tm5/etc/CRProfile.ini` and `/opt/iw/tm5/etc/CRProfile_fast.ini`. If before updating the System, you were using ABBYY FineReader OCR extractor and made changes to old profile files (`FRProfile.ini` and `FRProfile_fast.ini`), then in order to save the settings, move them to the new files. Please note, that in the new version of the extractor, the names and values of the parameters may differ.
20. Run the command to reboot the server:
    `reboot`
    Wait untill the server is rebooted, then log in again by completing the steps 1-3 of the instruction before the update.
21. Enter the command to clear cache:
    `redis-cli flushall`
22. Enter the command to check statuses of the processes:
    `iwtm status`
    The list of processes and their statuses will be displayed.

Updating Traffic Monitor All-in-one server is complete. The version of the System in the **About** window of the Management Console will be changed. If the System includes other servers or subsystems to be updated, follow the instructions in this section.

> **Note:**
>
> Clear cache of your browser before starting the works, so the Console is displayed correctly. You can do it by using the standard tools of your browser.

4.2 Updating TM in case of Distributed Installation

> **Warning!**
>
> Before updating the Traffic Monitor server, we recommend updating the DM server first.

Traffic Monitor installation kit contains installation templates. Each template is a set of components to be activated after the System is deployed. For more details please see "System Deployment Schemes and Installation Types".

There are four templates available to install:

- **Database**
- **Indexer service**
- **Web console**
- **Traffic interceptors**

All servers are to be updated, where Traffic Monitor components are installed.

The Traffic Monitor installer can work in two modes involving user to update the System:

- Text mode in server console
- Graphical mode

The updating steps and its sequence is similar in both modes.

Silent mode is also available to reduce user's role.

Regardless the selected mode of update, the Management console or server terminal is required to update the System.

During the update all the Traffic Monitor packages will be delivered, but after update is over the installer will start only the services which were not disabled before the update.

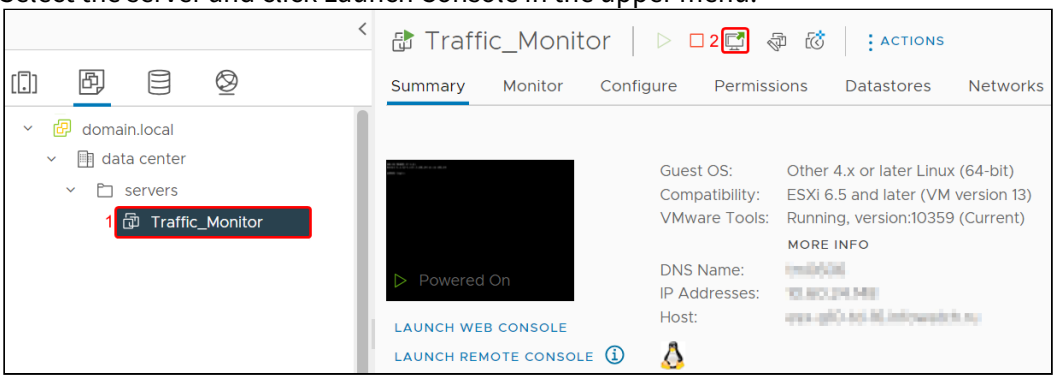
> **Note:**
>
> In case the service was disabled, it will **not** be started after updating.
>
> In case the service was stopped, it will be started after updating.
>
> New services statuses will comply with statuses of initial installation.

The packages unpack will start not when the installer will be started, but directly before the updating.

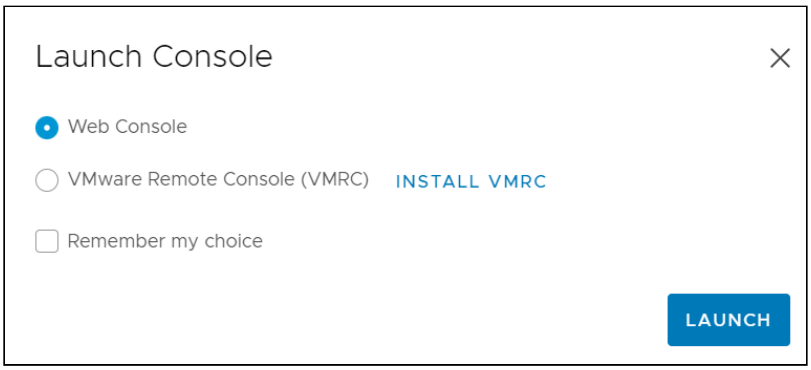
> **Warning!**
>
> Each server should have a unique correct FQDN.

Before updating the System, perform the following steps:

1. Open the console of the server being updated:
   - In the case of a physical server – the console is displayed on the screen of a monitor connected to the server;
   - In the case of a virtual server – run the **Launch Console** command (see an example below). **Example of launching a virtual server console in the web version of client application VMWare vSphere Client:**
     a. Select the server and click Launch Console in the upper menu.



b. Click Launch.



A window with the server console will open. Enter the user password there.

2. To log into the System, enter login and password (you should enter as a **root** user).

> **Tip:**
>
> The commands within the console are entered from the keyboard and must be confirmed by pressing **Enter**. So, if the instruction tells you to enter the `command`, it means that you should enter the `command` and then press **Enter**. Once the command is executed, the invitation is displayed again – it is ended with `#` or `$` (depending on the user who logged in). Before typing the next command, make sure that an invitation is displayed at the command line.
>
> If you connect remotely via SSH, we recommend using the Screen utility. Thus you can avoid problems in case of a lost connection with the server being updated. When disconnecting from the utility, all the processes started are not to be interrupted and you may safely continue the System update.
>
> **Warning!** Using Screen is highly recommended when working with DB and updating DBMS.
>
> Basic commands:
>
> - `screen` – start the utility;
> - `Ctrl+a d` – disconnect from the screen (to be input within the screen window);
> - `screen -ls` – display the list of screen running;
> - `screen -r` – connect to the screen again;
> - `screen -r name` – connect to a specific screen with «name»;
> - `exit` – exit screen (to be input within the screen window).

3. Check the installation parameters of the server to be updated. Run the command:
`cat /opt/iw/tm5/install_mode`

Example of content

```
{
  "product_type": "tme",
  "version": "7.9.0.150",
  "all_in_one": false,
  "templates": {
    "db": {
      "local": true
    },
    "indexer": {},
```

```
  }
}
```

Record from the example corresponds to a Traffic Monitor server with the following parameters:

- *Enterprise* edition;
- Version *7.7.2.136;*
- *Distributed* installation type;
- *Database* and *Indexer* templates are activated;
- *Local* database is used.

4. Update the OS in case its version is not listed among supported versions in "Hardware and Software Requirements" article.

Warning!

Before running the installation make sure that the server complies with the OS and network settings requirements.

After update is complete the `systemd` unit file parameters will return to default values.

Attention!

In case an error occurs and you need to restore your database and restart the update from the last successfully completed step, we recommend to perform the following actions:

1. **Database and indexes backup**

   Warning!

   To back up successfully, you should copy the files with their **rights**, **users** and **groups** saved.

   To do this, copy files into the **Linux file system** only (ex., Ext4 or XFS).

   Store backup copies either on a separate section of the server or on another server or on an external device. Make sure that the data will not be lost.

   Backup copies should be copied into their **original directories**, and **rights**, **users** and **groups should not be changed**.

   a. On all servers stop TM services:
   `iwtm stop`
   b. On the server installed with Web console template, create the backup of `iw_adlibitum` service. For this:
      i. Go to `/opt/iw/tm5/etc` and open the file **`adlibitum. conf`** to view.
      ii. In "ConfigDir" parameter you can see a relative path to the directory where the configuration of `iw_adlibitum` service is. The path is specified in relation to the content of `"NookDir"` parameter.
      Copy the directory to a separate section of server or to another server or to an external device.
   c. On the server installed with Indexer template, create the indexer backup copy:

i. Go to `/opt/iw/tm5/etc` and open the file **`indexer.conf`** to view.
ii. In "`SphinxBaseDir`" parameter you can see a relative path to the directory where the indexes are. In "`ArchiveDir`" parameter you can see a relative path to the indexers archive. The path is specified in relation to the content of `"NookDir"` parameter. Copy the directories to a separate section of server or to another server or to an external device.

d. On DBMS server:
i. Depending on the DBMS you use and the version of Traffic Monitor, enter tha command to stop the database:
- for DBMS **Oracle**:
  `systemctl stop oracle`
- for **DBMS PostgreSQL** version 13:
  `systemctl stop postgresql-13`
- for **DBMS PostgreSQL** version 15:
  `systemctl stop postgresql-15`

> **Note:**
>
> To specify the directories that contain the database, check the file content:
>
> - /opt/iw/tm5/csw/oracle/database.conf (for **Oracle DBMS**)
> - /opt/iw/tm5/csw/postgres/database.conf (for **PostgreSQL DBMS**)
>
> Create your database backup. By default, the database is stored in the directories **`/u01`**, **`/u02`** etc.
> Store the database backup copies either on a separate section of the server or on another server or on an external device.

ii. Create a backup copy of indexes. To do this:

1. Go to `/opt/iw/tm5/etc` directory and open to view **`indexer.conf`** file.
2. `"SphinxBaseDir"` parameter contains a path to directory with indexes. "`ArchiveDir`" parameter contains a path to indexes archive. Path to archives is specified according to `"NookDir"` parameter content.
   Copy the directories with indexes and indexes archives to different section or to external device.

2. **Backup configuration of environment**

   You are required to consider the specifics of backing up from the **Warning** note in the previous step. Go to these addresses and copy the files:

   - **For Oracle DBMS:**
     - `/opt/iw/tm5/etc/oracle.conf`
     - `/etc/default/iwtm`
     - `/etc/profile.d/iw-oracle-env.sh`
     - `/etc/logrotate.d/iwtm-oracle-conf-server`
     - `/opt/iw/tm5/etc/iw-oracle_client.sh`
     - `/opt/iw/tm5/etc/iw-oracle_server.sh`
   - **For PostgreSQL DBMS:**
     - `/etc/default/iwtm`

- `/etc/profile.d/iw-postgresql-env.sh`
- `/etc/profile.d/iw-postgresql-client-env.sh`
- `/etc/sudoers.d/iw-pgagent`
- `/etc/pgagent/pgagent-15.conf` or `/etc/pgagent/pgagent-15.conf` depending on DBMS version
- `/opt/iw/tm5/etc/postgresql/` – all files in the directory
- `/opt/iw/tm5/etc/postgres.conf`

> **Note:**
>
> Also the installer makes copies of environment configuration file in `/tmp/iwtm_db_configs_backup` directory. For user comport the installer recreates in directory the paths of original files which can be used to copy back to initial state. Copies created by installed are stored untill successfull upgrade is complete. Once completed these copies are to be removed.

Depending on the version installed, choose the instruction:

- Updating the System over the installed one;
- Updating the System via installation and restoring data from the backup copy (for PostgreSQL).

Updating the System over the installed one

> **Warning!**
>
> We strongly recommend backing up the System, cloning it, and updating on this particular testing machine.
>
> You should stop the services using the installer and run the update in the following order:
>
> 1. Interceptors
> 2. Indexer
> 3. Web console
> 4. Database

The updating order is as follows:

Step 1. Updating All Servers

Step 2. Checking Consul Cluster

Step 3. Performing Healthcheck of System Internal Services

Step 4. Completing Servers Update

STEP 1. UPDATING ALL SERVERS

To update servers, please take the following actions as per each server:

1. Copy the following files which are a part of InfoWatch Traffic Monitor distribution kit to `/root` directory:
   - **`iwtm-installer-x.x.x.xxx-rhel7.run`** – for upgrade on Red Hat Enterprise Linux or Oracle Linux (where x.x.x.xxx is the build number)

- **`iwtm-postgresql-15.5-x.x.x.xxx.tar.gz`** – if you use PostgreSQL DBMS;
- **`iwtm-oracle-19.0.0.0.0-x.x.x.xxx.tar.gz`** – if you use Oracle DBMS.

As per our example:

- **`iwtm-installer-7.10.0.97-rhel7`** – for upgrade on Red Hat Enterprise Linux or Oracle Linux;
- **`iwtm-postgresql-15.5-7.10.0.97.tar.gz`** – if you use PostgreSQL DBMS;
- **`iwtm-oracle-19.0.0.0.0-7.10.0.97.tar.gz`** – if you use Oracle DBMS.

> **Warning!**
>
> The following instruction describes installation using installer for Red Hat Enterprise Linux. It is also valid for Oracle Linux.

2. To make the file **`iwtm-installer-x.x.x.xxx-rhel7`** executable, enter the command:
   `chmod u+x /root/iwtm-installer-x.x.x.xxx-rhel7`
   Our example command:
   `chmod u+x /root/iwtm-installer-7.10.0.97-rhel7`
3. Connect external or local OS repositories.
   For example, you can find instructions on how to configure local Red Hat Enterprise Linux repository at the official web page.
4. Update packages. For this, enter:
   `yum upgrade`
   The following request will be displayed:
   ```
   Total download size: 473 M
   Is this ok [y/N]:
   ```
   To continue, type **Y** and then press **Enter**.
5. Install the additional packages `python3-psycopg2` and `libzstd` by running the command:
   `yum install python3-psycopg2 libzstd`
   In case of error, download the packages from the EPEL repository and install them manually.
6. If you use a remote database:
   a. Make sure the DBMS version you use is supported by Traffic Monitor:
      - Oracle Enterprise 19c
      - PostgreSQL 15
      - Postgres Pro Enterprise 15

   b. If DBMS version is actual, please miss this action.
      If DBMS needs to be upgraded:

      i. To stop Traffic Monitor services, run the command:
      `iwtm stop`
      ii. Stop the DBMS.
      iii. Upgrade the DBMS to supported version. To do this, use the official instructions.

      > **Note:**
      >
      > For PostgresSQL and PostgreSQL Pro you should also upgrade the service in use `pgagent`.

      iv. After upgrade is complete, run the DBMS but do not start Traffic Monitor services.

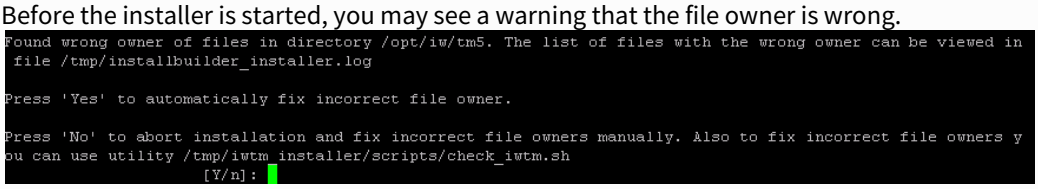
7. In case you are using the Prometheus system, to stop the service, run the following command on the server installed with Database template:
   `systemctl stop iwtm-postgres_exporter` – for **PostgreSQL DBMS**
   `systemctl stop iwtm-oracledb_exporter` – for **Oracle DBMS**
8. On the server installed with Database template, before running the installer you are recommended to start database service in case it was stopped earlier. Depending on the DBMS you are using, enter one of the commands:
   - `systemctl start oracle` (for DBMS **Oracle**)
   - `systemctl start postgresql-15` (for DBMS **PostgreSQL**)
9. Enter the command to go to Traffic Monitor distribution kit directory:
   `cd /root`
10. Automatic merging of Traffic Monitor configuration files of the old and new versions is implemented in the installer.

> **Warning!**
>
> Automatic merging applies only to Traffic Monitor configuration files with the `.conf` extension that are located in the `/opt/iw/tm5/etc` directory.
> Before merging, backup copies for source configuration files are created in the `/opt/iw/tm5/etc_conf_backup_<date_time>` directory. An example of the directory name: `/opt/iw/tm5/etc_conf_backup_11.07.2024_09:26:33`.
> After merging, files with the `.rpmnew` extension, which relate to merged configuration files, will be deleted.
> All steps will be logged in the `/var/log/infowatch/iwtm-install-<version>-<date>_<time>.log` file. An example of the log file name: `/var/log/iwtm-install-7.10.0.97-2024-11-07_09-56-25.log`.
> You can also find information on the merge process in the `/var/log/infowatch/config_merge/` directory.
> If during operations with a configuration file, some errors occur, the process is not stopped and other files are merged. Records concerning the errors will be added to the log file.

Run the installer using one of the modes:
Updating in text mode using server console

To update Traffic Monitor using server console:

a. Start the Traffic Monitor installer running the command:
   `./iwtm-installer-x.x.x.xxx-rhel7`
   Our example command:
   `./iwtm-installer-7.10.0.97-rhel7`
   The installer will prepare to run. At this step, files are not unpacked.

> **Note:**
>
> Before the installer is started, you may see a warning that the file owner is wrong.
>
> 
>

Type **Y** and press **Enter** for the installer to change the file owner and continue running.

Otherwise, you can enter **N** and press **Enter**, then edit the file owner manually or using the `/tmp/iwtm_installer/scripts/check_iwtm.sh` script and start the installer again.

Warning!

If available configured OS repositories are missing, the preparation process will stop with the following error message:

```
Preparing installation.../Warning: Failed to prepare installation:
Missing OS repos or unsupported OS. Please mount and/or enable OS packages
repository and try once again.

For details refer to
/var/log/infowatch/install/iwtm-installation_20211007114106.log or
/tmp/installbuilder_installer_11672.log if the first doesn't exist
Press [Enter] to continue:
```

To fix this error press **Enter** to exit, connect the standard OS repository, EPEL repository and restart the installer.

For more details on the error refer to the log files specified in the error message.

After this finished, a welcoming window will be displayed:

```
Welcome to the Traffic Monitor Setup Wizard.

-------------------------------------------------------------------------------
Please read the following License Agreement.
You must accept the terms of this agreement before continuing with the installation.

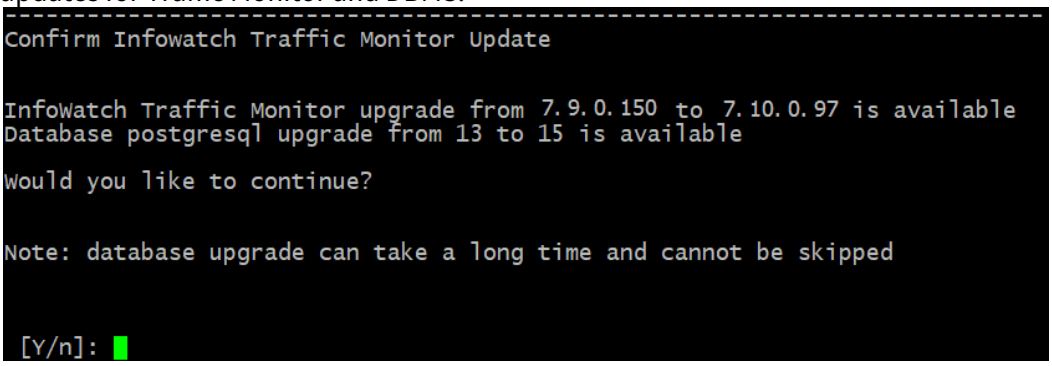
[1] Show the License Agreement
[2] I accept the License Agreement
[3] I do not accept the License Agreement
Please choose an option [1] :
```

b. You must accept the terms of the License Agreement before continuing with the update. Select one of the following options. For this, type the figure specified next to it and press **Enter**:
   - `Show the License Agreement` – to view the License Agreement;
     If this option is selected:
     i. Select language to display the License Agreement:
        - `English`
        - `Russian`

     ii. Read the License Agreement. To go to the next page, press **Enter**.
     iii. Accept the License Agreement. For this, type **y** and press **Enter**.
   - `I accept the License Agreement` – to accept the License Agreement without preview;
   - `I do not accept the License Agreement` – to not accept the License Agreement and abort the update process.

> **Note:**
>
> When updating via server console, you can see the default value which is specified in square brackets as a figure or a capital letter next to input field. This value will be used in case of leaving the field empty and pressing **Enter**.
>
> **Example:**
>
> If you do not input a value as per picture above and press Enter, the item `[1] Show the License Agreement` will be selected.

Then update confirmation window will be displayed. It will contain all available updates for Traffic Monitor and DBMS.



c. To continue, type **Y** and press **Enter**. To exit the installer type **N** and press **Enter**.
d. Confirm the Traffic Monitor services and database were stopped. Steps to confirm the stop and to select a mode will be missed in case the services were stopped manually before starting the installer.

> **Note:**
>
> If components of Traffic Monitor are operating on several servers, then you should stop them one after another in the following order:
>
> i. Interceptors
> ii. Indexer
> iii. Web console
> iv. Database

e. Select a mode to stop Traffic Monitor:

- `Quick stop` – quick stop without events processing;
- `Waiting for stop` – wait till the current processing of events is finished `;`
- `Waiting for emptying file queues` – wait till all the events are processed and all the file queues are empty before stopping `.` The mode is available only on servers with interception components.

> **Warning!**

If interception and analysis components `iw_cas`, `iw_pas` are used on separate servers, then stopping interceptors and cleaning up file queues may be pending.

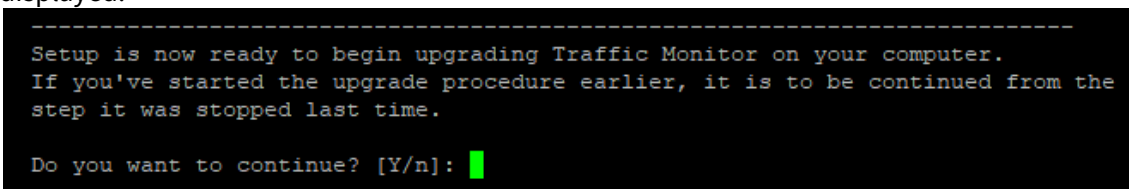
We recommend to select a different mode or to stop the components manually.

To make a choice please enter the figure specified next to option selected, and press **Enter**.

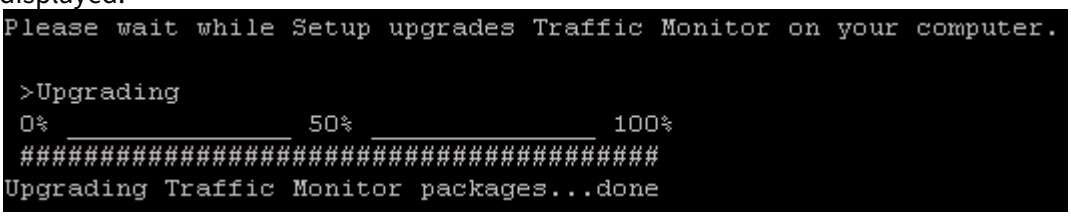
> **Note:**
>
> In case `Quick stop` is selected, the stopped services will have `failed` status before the update.

f. If you've selected `Quick stop` or `Waiting for stop`, events can be sent to error queue after Traffic Monitor resumes the work.
To continue type **Y** and press **Enter**.
While stopping an events processing progress will be displayed.

g. After the services are stopped, a message to start the updating and query to continue will be displayed.



To continue type **Y** and press **Enter**.
The unpacking of Traffic Monitor updating files will start. Implementation progress will be displayed.



The process may take some time.

> **Note:**
>
> If for any reason the installation process was interrupted, eliminate the cause and restart the installer. The installation will continue from the last step that was successfully completed.

h. Before completing the update the installer will offer deleting the packages created to update the System.
When update is successfully completed, this data is recommended to delete.

i. When updating is successfully completed the installer will offer starting the services which were stopped.

Note:

If Consul service is configured incorrectly, the following warning message will be displayed:

```
\Warning: You should run 'iwtm start' command manually after fixing problems with
Consul.
Press [Enter] to continue:
```

To finish installation press **Enter**.

If the error occurs, the installer will not launch Traffic Monitor services when the installation is finished, so you need to start them manually after the checking described in step 3 of the instruction.

Warning!

Do not start services before you complete the update of the DBMS server and start it. You can wait and start the services after the update or continue without starting them in order to perform it later manually.

The services should be started in the order depending on the templates activated on them.

After update is complete Nagios monitoring system configuration will be changed to default values. In case you've edited Nagios configuration files before the update, its copies will be created in `/etc/infowatch/nagios/iwmon` as `.saved` files. Before starting the Traffic Monitor services move the configuration from `.saved` files to corresponding new configuration files.

After the update to manage the monitoring system use iwtm-nagios service.

For example, to check Nagios status use the command:

```
systemctl status iwtm-nagios
```

Updating in graphical mode

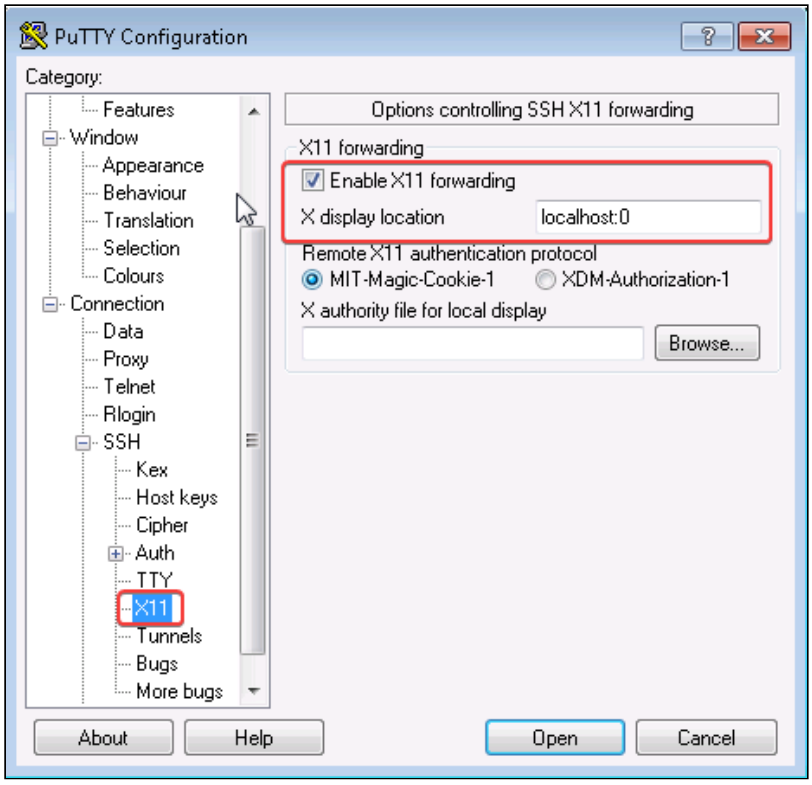
X Window System uses a client – server model. To run the installer in the graphical mode **X11 Forwarding** is used to forward the graphical output of remote system. This let you work directly with Linux graphical applications on the computer which is connected to server. This mode is implemented via SSH connection.

To update Traffic Monitor using graphical mode of installation, take the folowing steps:

a. On the server, where Traffic Monitor components are planned to update:
   i. Install xauth utility using the command:
   `yum install xauth`
   ii. In `/etc/ssh/sshd_config` configuration file uncomment the line "`X11Forwarding yes`". To do this, delete `#` placed before the line.
   iii. Save changes in configuration file.
   iv. Restart SSH service using the command:
   `systemctl restart sshd`
b. On the computer, where the graphical mode is to be used:
   i. To connect to Traffic Monitor installation server you will require a SSH client with enabled X11 Forwarding option, e.g. PuTTY.
   ii. To start the installer in the graphical mode you will require an application configured to access to X Window System, for example:
      - Xming application – for OS MS Windows;

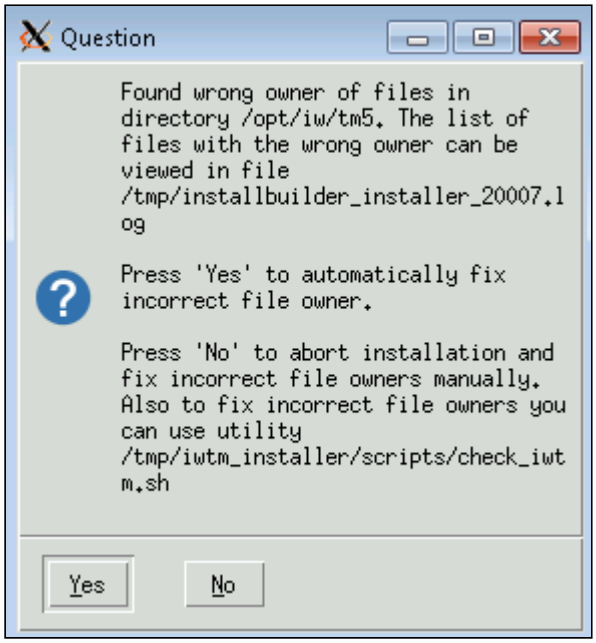
- Gnome 3 shell – for OS Linux.

c. Run the application client which was previously configured to access to X Window System.
d. Connect to server, where Traffic Monitor components are planned to install, using selected SSH client.
Example of PuTTY configuration window used to connect



e. Run the installer using the command:
`./iwtm-installer-x.x.x.xxx-rhel7`
As per our example:
`./iwtm-installer-7.10.0.97-rhel7`
Preparations will be made to start the installation. At this stage the unpacking of files is not being performed.

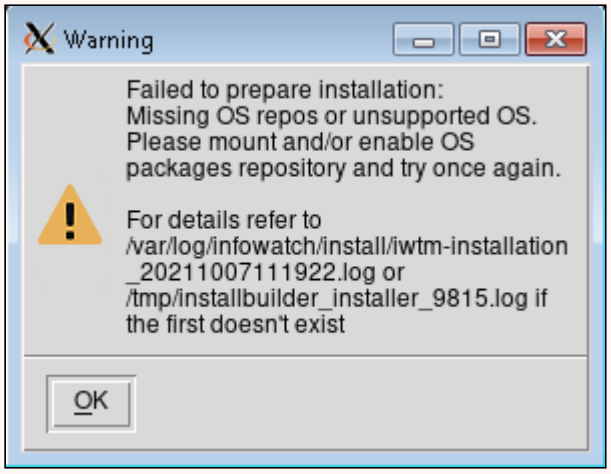
> **Note:**
>
> Before starting the installation a warning about wrong owner of files will be displayed.



Press **Yes** to change the owner of files and continue running.
Otherwise, you can enter **N** and press **Enter**, then make corrections manually or using `/tmp/iwtm_installer/scripts/check_iwtm.sh` script and start the installer again.

Warning!

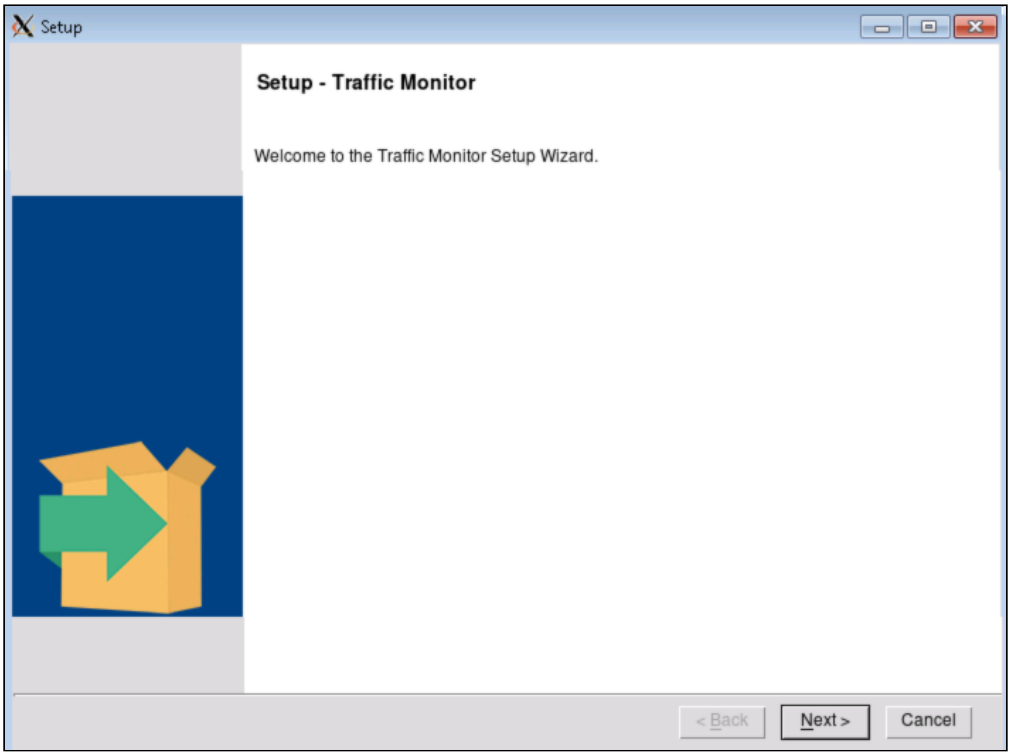
If available configured OS repositories are missing, the preparation process will stop with the following alert box:



To fix this error press **OK** to dismiss, connect the standard OS repository, EPEL repository and restart the installer.

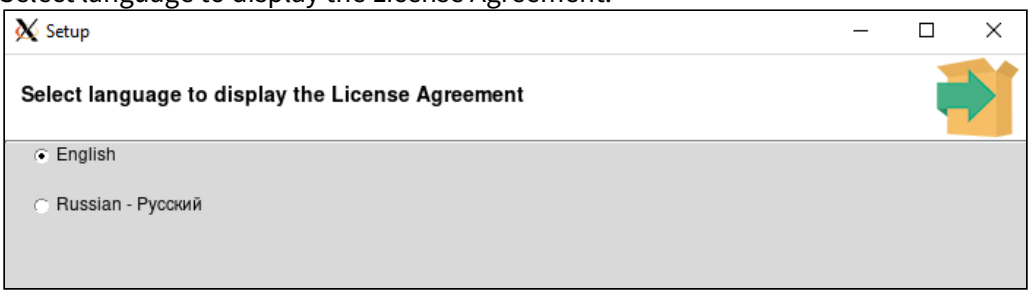
For more details on the error refer to the log files specified in the alert box.

After finishing, a window to install Traffic Monitor will be displayed:



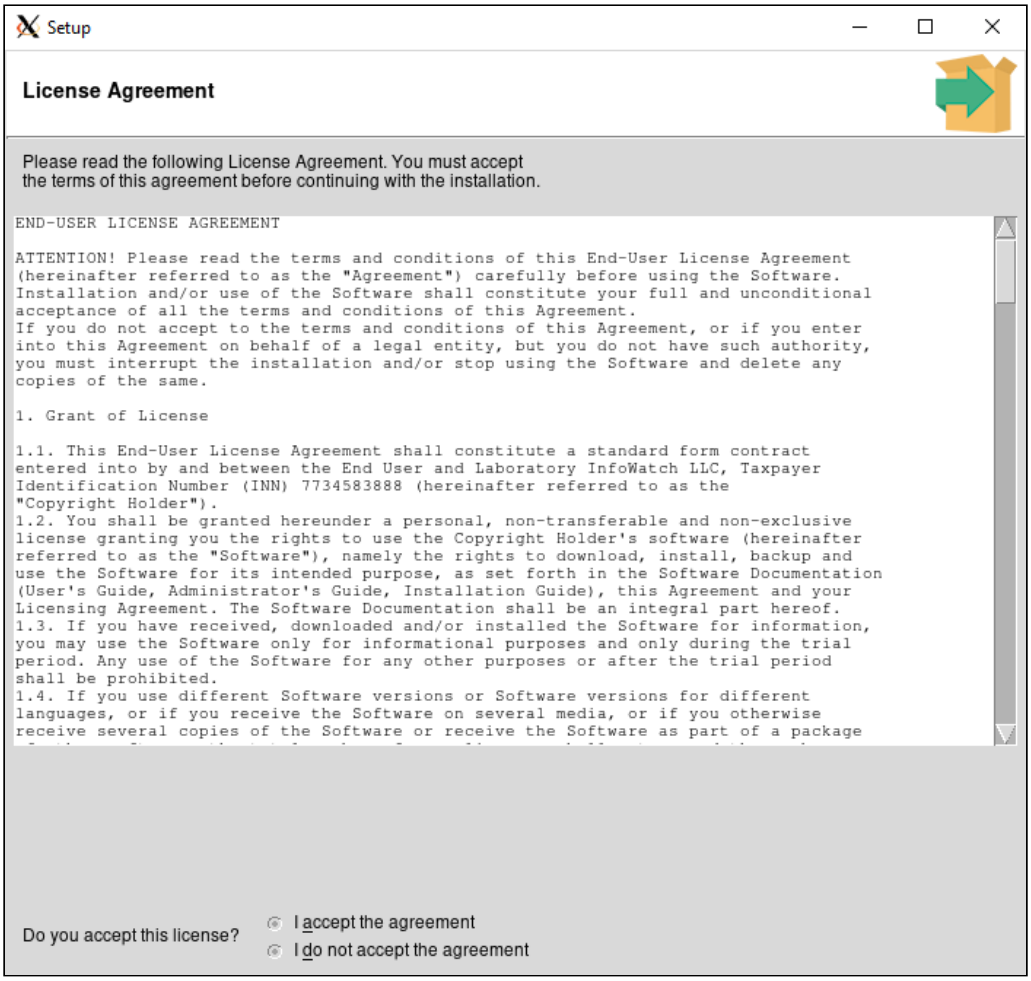
To go to the next parameter press **Next** button, to go back press – **Back**. To exit the installer press **Cancel** button.

f. You must accept the terms of the License Agreement before continuing with the update. For this:
   i. Select language to display the License Agreement:



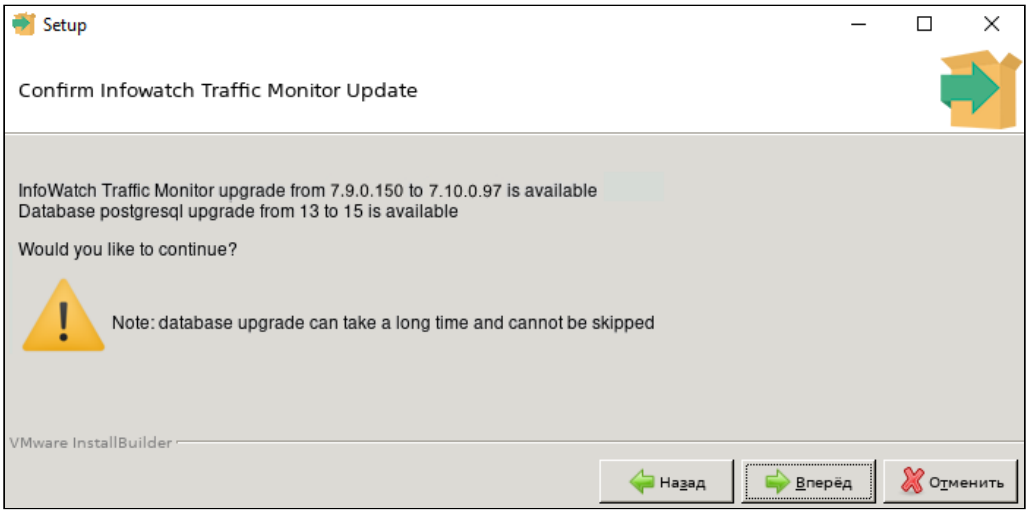
- `English`
- `Russian`

   ii. Select one of the following options. For this, click in the checkbox next to the required value and press the **Next** button:



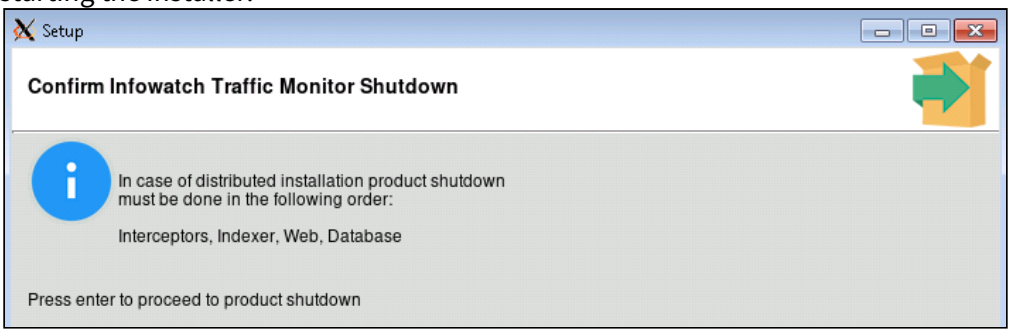
- **`I accept the agreement`** – to accept the License Agreement and continue the update process;
- **`I do not accept the agreement`** – to not accept the License Agreement and abort the update process.

g. The next window will contain data related to available upgrades for Traffic Monitor and DBMS.



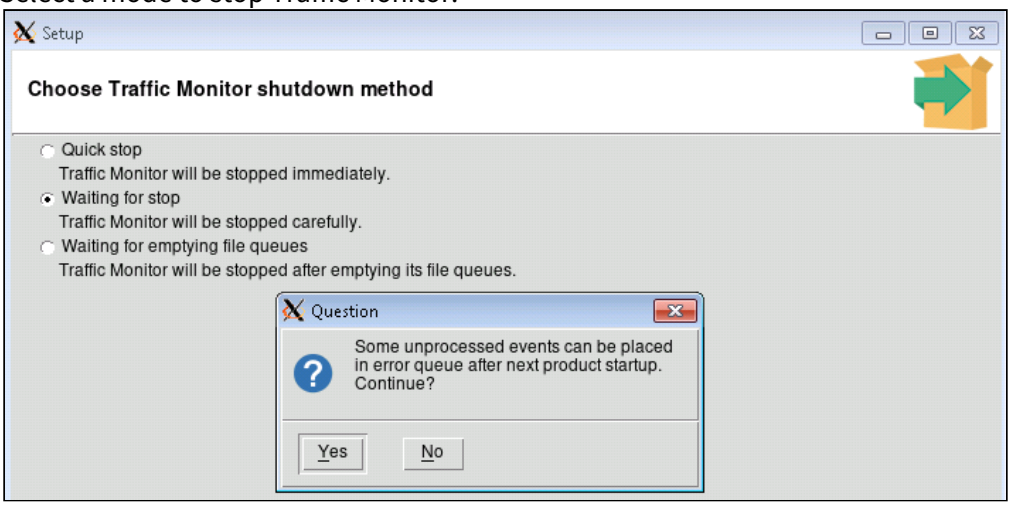
To continue press **Next**.

h. Confirm the Traffic Monitor services and database were stopped. Steps to confirm the stop and to select a mode will be missed in case the services were stopped manually before starting the installer.



> **Note:**
>
> If components of Traffic Monitor are operating on several servers, then you should stop them one after another in the following order:
>
> i. Interceptors
> ii. Indexer
> iii. Web console
> iv. Database

i. Select a mode to stop Traffic Monitor:



- `Quick stop` – quick stop without events processing;
- `Waiting for stop` – wait till the current processing of events is finished;
- `Waiting for emptying file queues` – wait till all the events are processed and all the file queues are empty before stopping. The mode is available only on servers with interception components.

> **Warning!**
>
> If interception and analysis components (`iw_cas` , `iw_pas`) are used on separate servers, then stopping interceptors and cleaning up file queues may be pending.

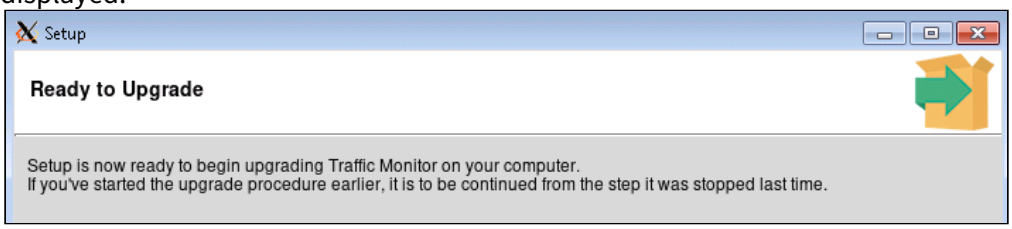
We recommend selecting a different mode or to stop the components manually.

To select click in the checkbox next to required value and press **Next** button.

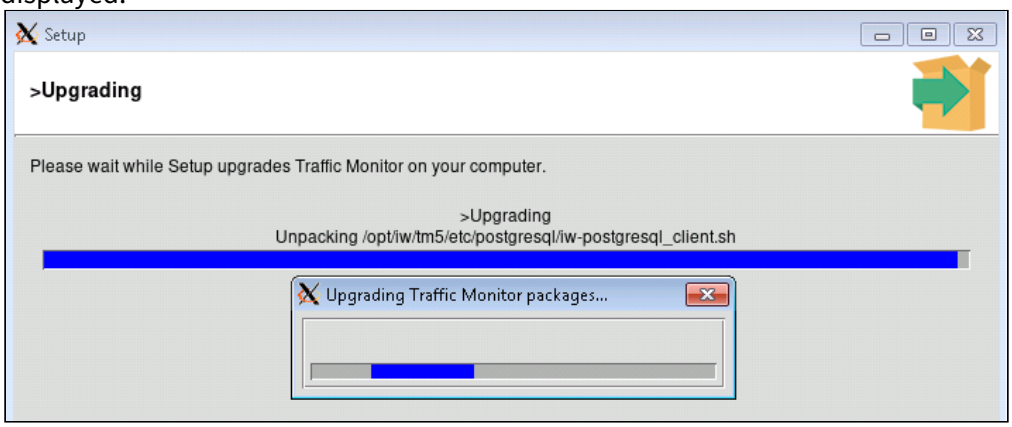
> **Note:**
>
> In case `Quick stop` is selected, the stopped services will have `failed` status before the update.

j. If you've selected `Quick stop` or `Waiting for stop`, events can be sent to error queue after Traffic Monitor resumes the work.
To continue press **Yes** button.
While stopping an events proessing progress will be displayed.

k. After the services are stopped, a message to start the updating and query to continue will be displayed.



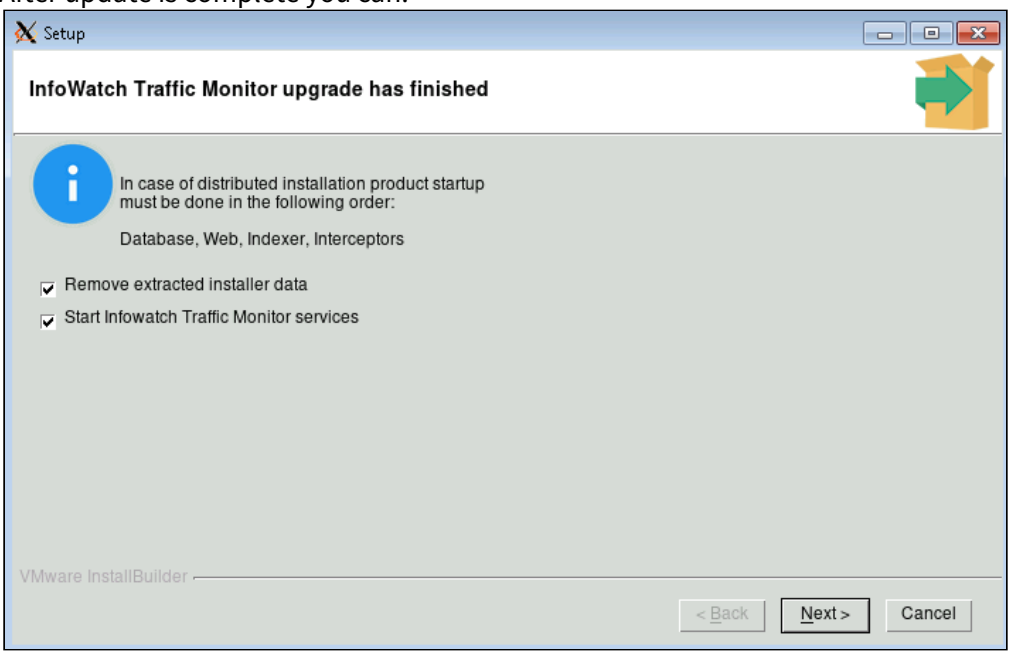
To start the updating press **Yes** button.
The unpacking of Traffic Monitor updating files will start. Implementation progress will be displayed.



The process may take some time.

> **Note:**
>
> If for any reason the installation process was interrupted, eliminate the cause and restart the installer. The installation will continue from the last step that was successfully completed.

l. After update is complete you can:



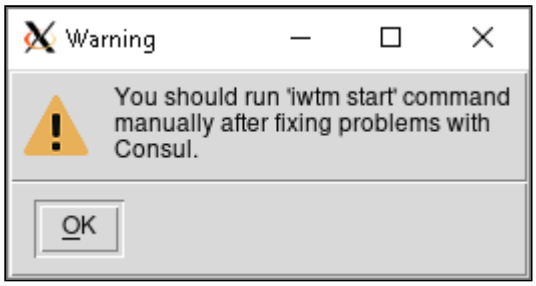
After updating is complete you can:

- `Remove exctracted installer data` – when updating is successfully completed you can delete the packages created to install the System. This data is recommended to delete;
- `Start Infowatch Traffic Monitor services` – start the services which were stopped.

To select click in the checkboxes next to required values and press **Next** button.

Note:

If Consul service is configured incorrectly, the following warning message will be displayed:



To finish installation press **Enter**.

If the error occurs, the installer will not launch Traffic Monitor services when the installation is finished, so you need to start them manually after the checking described in step 3 of the instruction.

Warning!

Do not start services before updating and starting DBMS server. You can either wait and start the services after you update the DBMS server or continue without starting and do it later manually.

You are required to start the services in the order that depends on the templates activated on these services.

Do not start Traffic Monitor services before the server installed with Database template is updated and started.

After update is complete Nagios monitoring system configuration will be changed to default values. In case you've edited Nagios configuration files before the update, its copies will be created in `/etc/infowatch/nagios/iwmon` as `.saved` files. Before starting the Traffic Monitor services move the configuration from `.saved` files to corresponding new configuration files.

After the update to manage the monitoring system use iwtm-nagios service.

For example, to check Nagios status use the command:

```
systemctl status iwtm-nagios
```

m. To finalise the installation press **Next** or wait till completion of DBMS server update.

Updating in silent mode

To reduce a user's role in the System updating process there is a silent mode of installation. In this mode Traffic Monitor can be updated using default parameters.

An options file is realized to be used as a parameter file. In this file you can set required installation parameters. When starting the installation via parameter file, the values specified in this file will be considered the default parameters.

4.2.1 Parameter file (option file)

The file contains the following parameters description:

`<parameter's_name>=<parameter's_value>`

You may leave comments using #.

Parameter file example:

```
# This file is just an example
fix_incorrect_file_owners=1
cleanup_way=clean_fq
start_services_after_upgrade=1
```

The example above contains the parameters as follows:

- Change wrong owner of files to correct one;
- Before stopping the services wait until all events are processed and the queues are cleared;
- Run the services after update.

Warning!

The parameters which are not specified in the file will have the default values. The full list of parameters is specified in the table below.

To use the parameter file go to installer directory and run it using `--optionfile` specifying the file which was previosly created.

Example of using parameter file:

```
./iwtm-installer-7.10.0.97-rhel7 --optionfile /some_directory/option-file-example
```

An alternative way to use: give the parameter file the same name the installer has, but use `.options` extension and copy it to installer directory. In this case the running installer will consider the file parameters the default values.

4.2.2 Silent mode installation

To update the System in silent mode use `--mode unattended` option.

Level of interaction with user is set by `--unattendedmodeui` parameter, which has the following values:

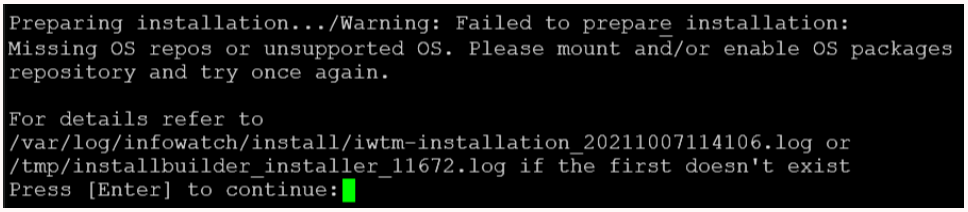
- `none` – no information displayed while updating and no interaction is required;
- `minimal` – status of implementation is displayed while updating, no interaction is required;
- `minimalWithDialogs` – status of implementation is displayed while updating, pop-up windows can be displayed and interaction with user can be required.

Example of installer running command in silent mode with no user assistance and using parameter file:

```
./iwtm-installer-7.10.0.97-rhel7 --optionfile /some_directory/option-file-example --mode
unattended --unattendedmodeui minimal
```

Warning!

If available configured OS repositories are missing, the preparation process will stop with the following alert box:



To fix this error press **Enter** to dismiss, connect the standard OS repository, EPEL repository and restart the installer.

For more details on the error refer to the log files specified in the alert box.

Note:

In case the process is over with no errors, the packages created for installation will be removed by installer. If for any reason the installation process was interrupted, eliminate the cause and restart the installer. The installation will continue from the last step that was successfully completed.

Note:

If Consul service is configured incorrectly, the following warning message will be displayed:

```
\Warning: You should run 'iwtm start' command manually after fixing problems with
Consul.
Press [Enter] to continue:
```

To finish installation press **Enter**.

If the error occurs, the installer will not launch Traffic Monitor services when the installation is finished, so you need to start them manually after the checking described in step 3 of the instruction.

4.2.3 Full composition of parameter file

The table below contains full list of possible parameters used for update and their default values.

Name	Default value	Valid values	Description	Note
`force_upgrade`	`0`	`0,1`	Forcible switch to updating mode, even if the versions do not match	
`fix_incorrect_file_owners`	`0`	`0,1`	The parameter defines if the wrong owner of files should be changed before the update	If the files to be updated have a wrong owner, the update will be interrupted
`cleanup_way`	`wait_stop`	`quick_stop, wait_stop, clean_fq`	Select the mode to stop services: • `quick_stop` (no events processing);	If Traffic Monitor components are operating on several servers, then they should be stopped one after another in the following order:

Name	Default value	Valid values	Description	Note
			• `wait_stop` (wait until current events processing is complete); • `clean_fq` – (before stopping wait until all events are processed and the queues are cleared)	a. Interceptors b. Indexer c. Web console d. Data base All events processing and file queues clearing mode (`clean_fq`) is available only when interception components are installed on server. In case this mode was selected but there is a lack of interception components on server, the current events processing mode will be used (`wait_stop`) If components of interception and components of analysis (`iw_cas` , `iw_pas`) are operating on different servers, then stopping interceptors cleaning file queues might hung. It is recommended to use other modes or to stop them manually.
`start_services_after_upgrade`	`1`	`0,1`	The parameter defines if the installer should run the services after update	Do not start services before updating DBMS server. After update is complete Nagios monitoring system configuration will be changed to default values. In case you've edited Nagios configuration files before the update, its copies will be created in `/etc/infowatch/nagios/iwmon` as `.saved` files. Before starting the Traffic Monitor services move the configuration from `.saved` files to corresponding new configuration files. To manage the monitoring system after the update use iwtm-nagios service.

Name	Default value	Valid values	Description	Note
				For example, to check Nagios status use the command: `systemctl status iwtm-nagios` If Traffic Monitor components are operating on several servers, then they should be stopped one after another in the following order: a. Data base b. Web console c. Indexer d. Interceptors
`eula`		`show`, `accept`	Display the License Agreement text, Accept the License Agreement without preview	If you run the installation not in the unattended mode and do not specify the parameter, then the License Agreement text will be displayed. You will be asked to accept the agreement. If you run the installation in the unattended mode, this parameter value is ignored and the License Agreement is accepted by default.

11. Enter the command to find files with **`.rpmnew`** extension, except backups of configuration files:
`find / -name "*rpmnew*" -not -path "/opt/iw/tm5/etc_conf_backup*" -print`
If the files have been found, they are displayed at the console. In this case, you should correctly merge them with configuration files (please see "Merging Configuration Files").

> **Note:**
>
> To merge successfully the configuration files please see the following articles:
>
> - "rpmnew and rpmsave files";
> - "Processing rpmnew and rpmsave after the System is updated Red Hat Enterprises Linux".

> **Важно!**
>
> When updating, do not change files **`database.conf`**, **`consul.json`**.

On the server installed with Web console template, after merging in **`web.conf`** configuration file, in `search_meta` block, in `hostname` parameter please specify DBMS server IP address.

12. On servers installed with Interceptors template, in `/opt/iw/tm5/etc/scripts/` directory there should be a file **`iwssid.lua`**, it should be left with no changes in case it was not edited before the update. Otherwise it should be correctly merged with the file **`iwssid.lua.rpmnew`** (please see "Merging Configuration Files").

> **Note:**
>
> All configuration to work In line was moved to `luaengined.conf`.

13. Starting from version 7.8.0, Traffic Monitor supports ABBYY FineReader 12 OCR extractor. After the update, the extractor operation modes will be configured in new profile files: `/opt/iw/tm5/etc/CRProfile.ini` and `/opt/iw/tm5/etc/CRProfile_fast.ini`.
If you were using ABBYY FineReader OCR extractor before the update and made changes to the old profile files (`FRProfile.ini` or `FRProfile_fast.ini`), then to save these settings move them to the new files. Please note, that in the new version of the extractor, the names and values of the parameters may differ.
14. Check Consul cluster – see the description below.

STEP 2. CHECKING CONSUL CLUSTER

To check Consul cluster take the following steps:

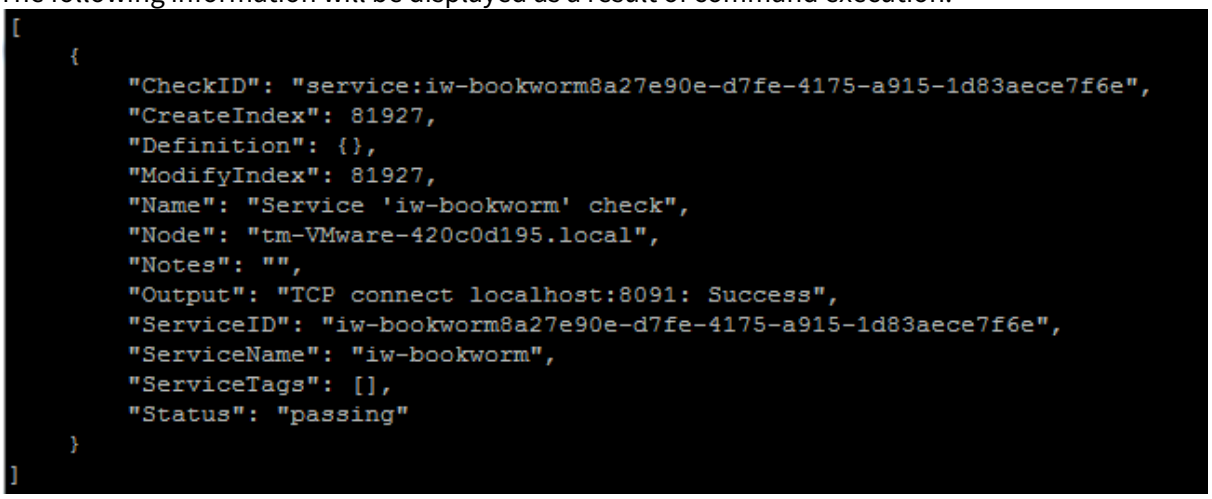
1. Start Consul on all servers to be updated by running the command:
`service iwtm-consul start`
Enter the command to check status:
`service iwtm-consul status`
2. To check Consul on DBMS server (TME DB Server), enter the command:
    a. To get the IP-address of the primary server in the cluster (leader):
    `curl --noproxy 127.0.0.1 http://127.0.0.1:8500/v1/status/leader ; echo`
    b. To get the information about cluster members:
    `consul members`
3. If no response with the IP-address of the cluster leader, or not all servers are listed as cluster members, configure Consul cluster.
Recheck after configuration (step 2).
4. Perform health check of the System internal services – see the description below.

STEP 3. PERFORMING HEALTHCHECK OF SYSTEM INTERNAL SERVICES

Start services `iw_bookworm`, `iw_licensed`, `iw_updater` and `iw_kicker`, check the services status.

1. Run command to start `iw_bookworm` service**:**
`iwtm start bookworm`
2. Service may need some time to start. Enter the command to check the service status:
`curl -s http://localhost:8500/v1/health/checks/iw-bookworm | python -mjson.tool`

The following information will be displayed as a result of command execution:



3. Check `"Node"` and `"Status"` blocks:
   a. `"Node"` block should contain node's name (that has a service being checked) in Consul cluster;
   b. `"Status"` block should be `"passing"`.
4. There should be only one **`iw_licensed`** service running on the cluster. Start **`iw_licensed`** service using the command:
   `iwtm start licensed`
5. The service may need some time to start. Enter the command to check the status of `iw_licensed` service:
   `curl -s http://localhost:8500/v1/health/checks/iw-licensed | python -mjson.tool`
   Complete action 3 of the current step.
6. Run command to start `iw_updater` service:
   `iwtm start updater`
7. The service may need some time to start. Enter the command to check the status of iw_updater service:
   `curl -s http://localhost:8500/v1/health/checks/iw-updater | python -mjson.tool`
   Complete action 3 of the current step.
8. To check `iw_kicker` service you need to start `iw_blackboard`:
   `iwtm start blackboard`
9. There should be only one **`iw_kicker`** service running on the cluster. Start `iw_kicker` service using the command:
   `iwtm start kicker`
10. The service may need some time to start. Check `/opt/iw/tm5/log/web-console-error.log` file to check the status of `iw_kicker` service and find if any errors occurred during the update. Enter command:
    `grep -r 'error' /opt/iw/tm5/log/web-console-error.log || echo "All good"`
    Make sure the command address is correct. If no errors found, the `All good` message will be displayed.
11. Run command to stop services:
    `iwtm stop`
12. Finish update of DBMS server – see description below.

Important!

In case a service has not started successfully, check if there are errors in appropriate log file occured during the update. And contact InfoWatch technical service at support@infowatch.com.

Also, you can check the support section on our site:

www.infowatch.com/support

Log files for checking:

- `/opt/iw/tm5/log/bookworm.log` – `iw_bookworm` service
- `/opt/iw/tm5/log/updater.log` – `iw_updater` service
- `/opt/iw/tm5/log/licserv.log` – `iw_licensed` service
- `/opt/iw/tm5/log/web-console-error.log` – `iw_kicker` service

To exclude errors, we recommend checking log files even if the services have been started successfully.

Recommended logging level – not lower than INFO. A log file can be missing if no errors registered.

STEP 4. COMPLETING SERVERS UPDATE

To complete servers update, the following action are to be taken as per each of the servers:

1. If the installer operation was not completed before, select the services running and finalise the update.
   In case the installer completed operation with no services started, run them manually or reboot the server to restart all the services.
   Use the following command:
   `reboot`

   Warning!

   Components of Traffic Monitor should be started in the following order:

   a. Database
   b. Web console
   c. Indexer
   d. Intercepters

   Warning!

   After the start, Traffic Monitor connects to DB and loads the configuration file `cas_config.xml`. from it. Depending on size of the file, its loading may take some time.

   During the loading process, the System may record error messages in log files:

   - **/opt/iw/tm5/log/cas_config_compiler.log**

Error record

```
1 2019-10-07 17:00:57.351489 (3936:0x00007f4008de8880) [ERROR  ] :
<Root> Exception:.
Diagnostic information..
/sandbox/src/cas3/config/details/cas_factory.cpp(233): Throw in
function bool
cas::CasConfigFactory::LoadXmlConfig(cas::ConfigCreator::Ptr&, const
boost::filesystem::path&) const
Dynamic exception type:
boost::exception_detail::clone_impl<cas::ExceptionCasConfig>
```

- **/opt/iw/tm5/log/cas.log**

Error record

```
1 2019-10-03 17:39:13.348146 (14262:0x00007fe83892ba80) [WARNING] :
<Root> Prometheus server is off, therefore the statistics is
unavailable. That's what you wanted, isn't it?
2 2019-10-03 17:39:14.364655 (14262:0x00007fe83892ba80) [ERROR  ] :
<Root> Error when loading config of tech: Cannot open xml file with
 cas configuration: etc/config/cas/cas_config.xml
3 2019-10-03 17:39:14.364856 (14262:0x00007fe83892ba80) [ERROR  ] :
<Root> failed to initialize thrift server
Diagnostic information.
/sandbox/src/cas3/handler.cpp(682): Throw in function
 cas::Handler::LoadedConfigData
cas::Handler::GetLoadedConfigData(const prop::Property&, const Ptr&)
Dynamic exception type:
boost::exception_detail::clone_impl<tech::ExceptionTechLoadConfig>
std::exception::what: Cannot open xml file with cas configuration:
etc/config/cas/cas_config.xml
```

When `cas_config.xml` file loading is complete the System will stop recording errors and will operate normally.

If the System keeps recording errors for a long time, check the connection to the DB.

2. In Traffic Monitor, we have extended the list of default tasks that automatically delete obsolete tasks.
   Tasks for the `cron` scheduler are now specified in the `/etc/cron.d/iwtm_cleanup` file (file contents are described in the "Automatic deletion of unnecessary files in Traffic Monitor" article).
   For new tasks to work correctly:
   a. Delete obsolete tasks by editing the `cron` configuration file:
      `sudo crontab -e`
   b. Save changes and exit the configuration file editor.
   c. Restart the service:
      `systemctl reload crond`

3. If you haven't edited the previous `/etc/cron.d/iwtm_error_queue` file with tasks before the update, then skip this step.
   Otherwise, the `/etc/cron.d/iwtm_error_queue` file will be deleted and its contents will be saved in the `/etc/cron.d/iwtm_error_queue.rpmsave` file.
   For earlier added tasks to start working again, create a file for your tasks in the `/etc/cron.d/` directory and copy required tasks from `/etc/cron.d/iwtm_error_queue.rpmsave` to this file.

   > **Note:**
   >
   > You can add your tasks to the `/etc/cron.d/iwtm_cleanup` file. On the next update, this file will be renamed to `/etc/cron.d/iwtm_cleanup.rpmnew` and replaced with a file with default content. After the next update, you will need to move added tasks from the `/etc/cron.d/iwtm_cleanup.rpmnew` file to a new `/etc/cron.d/iwtm_cleanup` file.
   > To avoid moving tasks every time, you can create a separate file with your tasks in the `/etc/cron.d/` directory.

4. If you are using the Prometheus system and in case the server installed with Database template has not been rebooted to stop the service, you should run the following command:
   `systemctl start iwtm-postgres_exporter` – for **PostgreSQL DBMS**
   `systemctl start iwtm-oracledb_exporter` – for **Oracle DBMS**
5. On server installed with Web console template, enter the command to clear cache of packages manager:
   `redis-cli flushall`
6. Enter the command to clear cache:
   `yum clean all`
7. Enter the command to test processes' start:
   `iwtm status`
   A list of processes and their statuses will be displayed.

Updating Traffic Monitor All-in-one server is complete. The version of the System in the **About the System** window of the Management Console will be changed. If the System includes other servers or subsystems to be updated, follow the instructions in this section.

> **Warning!**
>
> If you have configured automatic synchronizations with LDAP servers, to guarantee the download of essences after update is completed, you should run the synchronising manually (for more details please see "*InfoWatch Traffic Monitor. User Guide*", "Running Synchronization with Server Manually" article).

> **Note:**
>
> To display data correctly via Management console you should delete the cache in the browser you use. This can be done using the browser standard tools.

Updating the System via installation and restoring data from the backup copy (for PostgreSQL)

> **Warning!**

We strongly recommend backing up the System, cloning it, and updating on this particular testing machine.
If you do not want to copy the data because you will mount the disk or the section containing your data, we recommend to backup them anyway.
After clear installation of the System you will need to set the configuration files of Traffic Monitor again. We recommend to store them so you can configure settings after the update.

1. To stop Traffic Monitor services, run the command:
   `iwtm stop`
2. On the server installed with Database template, check the number of events DB contains. For this, run the command:
   `psql postgres iwtm -c "select count(1) from object;"`
3. Complete database and indexes backup.
4. Starting from version 7.8.0. Traffic Monitor supports ABBYY FineReader 12 OCR extractor. If before updating the System, you were using ABBYY FineReader OCR extractor and made changes to the profile files (`FRProfile.ini` or `FRProfile_fast.ini`) on the servers with Traffic interceptors template, save the customizations in order to restore them after installing the new Traffic Monitor version.
5. Install a new version of Trafic Monitor.

   Note:

   Unless you plan to change servers with Indexer, Web console and Interceptors templates (e.g. install a new OS or transfer templates to different servers), you can update them over the installed ones. In this case, skip steps 8-10 of this instruction.

   Warning!

   If the backup copies of your DB are stored on external devices, do not connect them during the update. You need to do it before restoring and updating the DB.

   When the update is complete, do not remove the packages created by the installer during the process of update (the point **Remove extracted installer data**).

   Perform the following steps on the servers with the new version of Traffic Monitor.
6. To stop services on all servers, run the commands:
   `iwtm stop`
7. On the server installed with Database template:
   a. Enter the command to stop the DB:
      `systemctl stop postgresql-15`

      Note:

      To restore the initial state of clean installation, you can copy the directories `u01` and `u02` .

   b. To change the access rights to the directory, enter the command:
      `chmod 777 /var/log/infowatch/update`
   c. Copy reserve DB copy so that it was located the same way it was placed initially.

d. Change the owner of the directories by running the commands:
`chown -R postgres:postgres /u01/`
`chown -R postgres:postgres /u02/`
e. Enter the command to go to the directory that contains scripts:
`cd /tmp/iwtm_installer/scripts`
f. From the directory run the script to update the DBMS by using the command:
`./install_postgres.sh --distrib_path=<directory_with_DBMS_distributive> --tm_version=<new_version_of_Traffic_Monitor> --update`
As per our example:
`./install_postgres.sh --distrib_path=/root --tm_version=7.10.0.97 --update`

> **Note:**
>
> In the example the distributive `iwtm-postgresql-15.5-x.x.x.xxx-rhel7.tar.gz` is located in the `/root` directory.
> To view the version of Traffic Monitor you have installed, enter the command:
> `cat /opt/iw/tm5/version`

g. After the successfull update complete the command to check the status of DBMS service:
`systemctl status postgresql-15`
h. Run the script to update the data scheme by using the command:
`./install_dbschema.sh --tm_version=<new_version_of_Traffic_Monitor> --db_type=postgres --update`
As per our example:
`./install_dbschema.sh --tm_version=7.10.0.97 --db_type=postgres --update`
i. Complete the step 2 of the instruction to compare the number of events in the DB before and after the update.

8. On the server with Indexer template:
a. Copy the backup copies of indexes so that the location and the rights were the same as they were initially.
If the initial location of indexes is not the default one, then you will have to specify it in the corresponding sections of the configuration files (see backup instructions).
b. Change the owner of the directory by running the command:
`chown -R iwtm:iwtm /var/lib/sphinx/`
Command above contains the default location.
9. On the server with Web console template:
a. Copy the backup copy of `iw_adlibitum` service configuration so that the location and the rights were the same as they were initially.
If the initial location of `iw_adlibitum` service configuration is not the default one, then you will have to specify it in the corresponding sections of the configuration files (see backup instructions).
b. Change the owner of the directory by running the command:
`chown -R iwtm:iwtm /opt/iw/tm5/etc/adlibitum/`
Command above contains the default location.
c. Run the commands:
`sudo -u iwtm touch /opt/iw/tm5/www/backend/protected/runtime/`

```
first_run
iwtm restart kicker
```

10. On the servers with the Interceptors template, after updating the System, operation modes for ABBYY FineReader 12 OCR extractor will be configured in new profile files: `/opt/iw/tm5/etc/CRProfile.ini` and `/opt/iw/tm5/etc/CRProfile_fast.ini`. If before updating the System, you were using ABBYY FineReader OCR extractor and made changes to old profile files (`FRProfile.ini` and `FRProfile_fast.ini`), then in order to save the settings, move them to the new files. Please note, that in the new version of the extractor, the names and values of the parameters may differ.
11. Reboot all servers by running the following command on each of them:
    `reboot`

    Warning!

    You should start components of Traffic Monitor one after another in the following order:

    a. Database
    b. Web console
    c. Indexer
    d. Interceptors

12. On the server with Web console template run the command to clear cache:
    `redis-cli flushall`
13. Run the command to check statuses of the processes:
    `iwtm status`
    The list of processes and their statuses will be displayed.

Updating Traffic Monitor All-in-one server is complete. The version of the System in the **About** window of the Management Console will be changed. If the System includes other servers or subsystems to be updated, follow the instructions in this section.

Note:

Clear cache of your browser before starting the works, so the Console is displayed correctly. You can do it by using the standard tools of your browser.

4.3 Merging Configuration Files

During the update of Traffic Monitor server configuration files (e.g, with **.conf**, **.cfg**, and **.lua** extensions) that were modified when using the previous version, cannot be overwritten with the new files. The new files are created in the same directories and with the same names, but with **.rpmnew** extension respectively. This is done to support the ability to change the structure of new file versions. For correct operation of the System it is required merging files of an old and a new version.

Important!

During the update, do not change the **`web.conf`**, **`database.conf`**, **`consul.json`** files.

You can use any method of file merging type described below.

4.3.1 Merging configuration files in Midnight Commander

Let's consider an example to merge **postgresql.conf** and **postgresql.conf.rpmnew** files.

> **Tip**
>
> To view the file content, press **F3**. For editing, press **F4**.

The **postgresql.conf** file looks like:

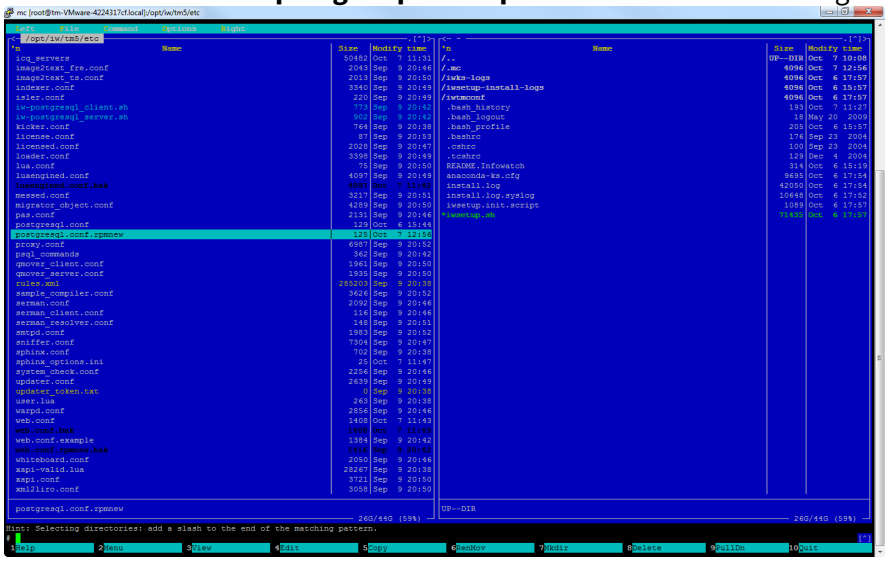
```
{
    "DB": "postgres",
    "Host": "localhost",
    "Password": "xxXX1234",
    "Port": 5433,
    "Username": "iwtm_linux"
}
```

The **postgresql.conf.rpmnew** file looks like:

```
{
    "DB": "put postgresql database name here",
    "Password": "put postgresql password here",
    "Username": "put postgresql username here",
    "Port": 5432,
    "Host": "put postgresql host address here"
}
```

To merge these files, you need to copy data from sections of the **postgresql.conf** file to the corresponding sections of the **postgresql.conf.rpmnew** file. For this:

1. Go to `/opt/iw/tm5/etc` directory.
2. Position the cursor on **postgresql.conf.rpmnew** file in the file manager.



3. Press **F4**.

4. Replace the values in the file sections with the values from correspondings sections of the **postgresql.conf** file. The result looks like this:

```
{
    "DB": "postgres",
    "Password": "xxXX1234",
    "Username": "iwtm_linux",
    "Port": 5433,
    "Host": "localhost"
}
```

> **Note:**
>
> For the distributed installation type, the value of the "Host" field will be an IP address of the server where the DBMS is installed. For example, `"Host": "10.60.23.6",`

5. Press **F2**.
6. In the window that opens, confirm the file saving by clicking **Save**.
7. Press **F10**.
8. Position the cursor on the **postgresql.conf** file in the file manager.
9. Press **F8** to delete the **postgresql.conf** file.
10. In the window that opens, confirm the deletion by clicking **Yes**.
11. Select the **postgresql.conf.rpmnew** file in the file manager.
12. Press **F6**.
13. In the **to** field, enter `/opt/iw/tm5/etc/postgresql.conf` and press **Enter**.
    Now the System has only one PostgreSQL configuration file, which is **postgresql.conf**. It has a structure of the new version and the required content:

```
{
    "DB": "postgres",
    "Password": "xxXX1234",
    "Username": "iwtm_linux",
    "Port": 5433,
    "Host": "localhost"
}
```

4.3.2 Merging configuration files by means of vimdiff

To work with vimdiff the editor Vim should be installed on a server.

Let's consider an example of merging **user.lua** and **user.lua.rpmnew** files. After the update, the **user.lua. rpmnew** file appears (if the original **user.lua** file has been changed). You should copy all earlier specified values of parameters and settings from **user.lua** to **user.lua.rpmnew**. To do this:

1. Go to `/opt/iw/tm5/etc/scripts` directory.
2. In the command line, enter:
   `vimdiff user.lua.rpmnew user.lua`
3. Go into edit mode (**Insert** key).
4. If parameter values are different, copy the values from **user.lua** to **user.lua.rpmnew** manually.
5. Exitthe edit mode (**Esc** key).
6. Save the changes within **user.lua.rpmnew** and exit the editor (input **:wq**)
7. Close the file **user.lua** as moot (input **:q**).
8. Delete **user.lua** file.
9. Rename **user.lua.rpmnew** to **user.lua**.

Important!

To avoid data loss and System errors (Traffic Monitor server part configuration files) it is required to follow the instructions.

In case of any trouble while merging the configuration files you are recommended contacting InfoWatch service desk via support@infowatch.com.

The service desk is available from 7 AM till 9 PM Moscow time, from Monday to Friday, except weekends and public holidays.

You can also find the required info on http://www.infowatch.com/support.

Important!

To avoid System's improper operation you should avoid merging the following files with the files from older versions:

1. /etc/rc.d/init.d/postgresql-13.rpmnew
2. /etc/sgml/docbook/xmlcatalog.rpmnew

5 Uninstalling the System

The System uninstalling implies the deletion of all packages of the System as well as removal of a used database scheme. To completely delete the operating system and the DBMS you, for example, can execute formatting of used partitions by standard tools.

- See details on Data Storage removal in "Uninstalling Data Storage".
- See details on DB schema removal in "Deleting the Database Scheme".
- See details on Traffic Monitor removal in "Uninstalling Traffic Monitor" (all components which were installed on the server: web console, interception modules, DBMS containing DB data and others).
- See details on Device Monitor removal (Server and Clients) in *"InfoWatch Device Monitor. Installation, Configuration and Administration Guide"*.

After the InfoWatch Traffic Monitor Server removal completion please return the external infrastructure set to Traffic Monitor to original state:

- if there was an integration with a mail relay server – please make sure the Postfix settings are set to the original state;
- if the System performed interception and filtering of SMTP traffic – please configure the SMTP mail delivery through a corporate mail server, bypassing the InfoWatch Traffic Monitor server.

5.1 Uninstalling Data Storage

You can uninstall Data Storage via the command line.

To uninstall Data Storage, uninstall Platform. For this:

1. Go to the folder to which the installer with the latest Platform version was unpacked.
2. Run the command:
   `./setup.py remove`
3. Wait for the uninstallation process to complete.

> **Note:**
>
> The installer will remove components of Platform. After removal, results of the Platform operation will remain on the server. The data will remain in the directories that were specified during installation of Platform.

5.2 Deleting the Database Scheme

This instruction is relevant for Oracle, PostrgreSQL and Postgres Pro Enterprise DBMS.

> **Important!**
>
> Do not delete the database scheme from which the daily tablespaces were distracted for archiving. Otherwise, you will not be able to restore data from these tablespaces.
>
> The process of database deletion launches on the server which was installed with Database template, including cases when remote database is used.

In case you're using Oracle DBMS, make sure that:

- The version of the installed database scheme corresponds to a version of a software package used for its removal;
- The DBMS server is running;
- In configuration file **database.conf** the name and the password of an account having SYSDBA permissions are specified correctly (values of parameters `sysdba` and `sysdba_password`).

To delete a database scheme, follow the steps:

1. **Stopping Traffic Monitor**
   a. Stop all TM server processes:
   `iwtm stop`
   b. Close all copies of the Management console;
   c. Stop the service:
   `service iwtm-php-fpm stop`
   d. Stop all the connections with a database scheme executed from other programs.
2. **Starting the scheme removing**
   a. Go to directory
   `/opt/iw/tm5/csw/oracle` or `/opt/iw/tm5/csw/postgres`
   b. Run script:
   `./uninstall.sh`
3. **Removing old versions of configuration**
   a. Remove all content of the directory:
   `rm -rf /opt/iw/tm5/etc/configerator/*`

Important!

When deleting the database scheme, the following components are also deleted from the System:

- Policies, including preinstalled ones (see "*InfoWatch Traffic Monitor. User Guide*", "Preinstalled Policies" article);
- Queries and reports (see *InfoWatch Traffic Monitor. User Guide*", "Queries" and "Reports" sections);
- Plugins and tokens (see "*InfoWatch Traffic Monitor. User Guide*", "Plugins" article).

To restore Device Monitor plugin, preinstalled queries, reports and to redeploy preinstalled policies after the deletion, the following actions are to be taken:

1. Create **/opt/iw/tm5/www/backend/protected/runtime/first_run** file on behalf of **iwtm** user;
2. Restart **iw_kicker** process:
   `iwtm restart kicker`

Then you need to manually add other plugins (see "*InfoWatch Traffic Monitor. Administration Guide*", "Adding plugin" article) and create required policies (see "*InfoWatch Traffic Monitor. User Guide*", "Creating Data Protection Policy" and "Creating Person Control Policy" articles).

Note:

If required, you may delete the database content and indexes as well. Delete it only if you're sure the data cannot be further required.

To do this:

1. Delete the directories `u01` and `u02` using the command:
   `rm -Rvf /u01 /u02`
2. Delete indexes using the command:
   `rm -Rvf /var/lib/sphinx`

5.3 Uninstalling Traffic Monitor

Warning!

If the database is located on the same server, where the unintstallation process is to be started, first, remove DBMS.

Uninstallation influences **only** the server where the removal command is run.

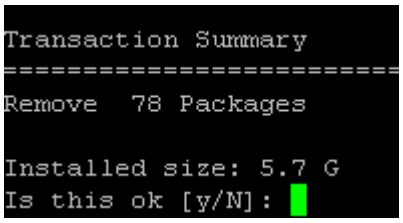
If you require to restore events when reinstalling Traffic Monitor, you are recommended to create a database reserve copy before processing the uninstallation (for more details see "*InfoWatch Traffic Monitor. Administration Guide".* Database Administration - **PostgreSQ**L > Database Backup "Creating Database Backup" section; **Oracle** > Database Backup "Creating Database Backup" section.

We also recommend prior making a copy of configuration settings.

Traffic Monitor uninstallation process starts running in console mode, using InfoWatch Traffic Monitor installer.

The following actions are to be taken to uninstall Traffic Monitor:

1. Enter login and password to log into operating system used (enter as a **root** user using the password created when the System was installed).
2. Stop Traffic Monitor processes by entering the command:
   `iwtm stop`
3. To remove Traffic Monitor packages, enter the commad:
   `yum remove `rpm -qa | grep iwtm``
   Preparing for removal will start.
4. Preparation finished, the list of packages to be removed will be displayed in a confirmation window:

   To continue, enter "**Y**" and press **Enter**.
   Traffic Monitor packages removal will start.
   Wait until the end of uninstalling process.

All Traffic Monitor services will be removed. After removal, the following entities will stay on the computer:

- configutation files, that were changed (changed files will get the suffix **.rpmsave**, for example, **web.conf.rpmsave**; unchanged files will be removed);

- objects queue (for details on how to remove files from the directory containing OS temporary files and Traffic Monitor file queues directory, see «*InfoWatch Traffic Monitor. Administration Guide", article "Deleting Temporary Files"*);
- configuration elements;
- license file;
- user account – InfoWatch Traffic Monitor owner and the group, this user was in;
- logs;
- distributives.

To remove all other files, you can remove the directory / `opt/iw` and all of its content by using OS tools.

> **Warning:**
>
> Before removal, make sure that directories do not contain some important information.

To remove a directory, you can use the command:

```
rm -Rvf /opt/iw
```

To be able to reinstall correctly:

1. Delete the file containing information about repository, which was created for product. Use the following command:
   `rm -f /etc/yum.repos.d/tm-x.x.x.xxx-release.repo`
   As per our example:
   `rm -f /etc/yum.repos.d/tm-7.9.0.150-release.repo`
2. If PostgreSQL was used, run the following command to delete the rest components:
   `yum remove phantomjs pgagent_15 redis postgresql15 postgresql15-libs postgresql15-server postgresql15-contrib`

> **Note:**
>
> In case of distributed installation of Traffic Monitor, the actions described above should be performed on each server.

6 Appendix A. Username and Password Recommendations

Requirements for usernames

- The username should be 1-20 characters long.
- The username may include English letters, digits, and underscore "_". It must begin with a letter.

Requirements for passwords

- The user password should be 8-128 characters long.
- The user password may cinclude the characters in accordance with any three conditions from the follwing four:

1. Capital letters in Latin characters (A-Z)
2. Lowercase letters in Latin characters (a-z)
3. Arabic numerals (0-9)
4. Characters: «#», «$», «!» or «%»

- The user password should not contain username or a part of username.
- The password is case-sensitive.

Requirements for DB user's passwords

- The user password should not contain the symbols «"» and «'».

Recommendations for strong passwords

- Recommended password length is 10-30 characters.
- The password must contain letters, digits, and characters.
- It is not advised to:
    - Include whole words or phrases into a password.
    - Use a series of the same character.
    - Start and end the password with the same character.
    - Create a new password by adding characters to your current password.

General recommendations

It is not recommended beginning a username or password with combinations: SYS_ and ORA_.
It is not recommended using Oracle reserved words in usernames or passwords:

ACCESS	EXCLUSIVE	MODE	SELECT
ADD	EXISTS	MODIFY	SESSION
ALL	FILE	NOAUDIT	SET
ALTER	FLOAT	NOCOMPRESS	SHARE
AND	FOR	NOT	SIZE
ANY	FROM	NOWAIT	SMALLINT
AS	GRANT	NULL	START
ASC	GROUP	NUMBER	SUCCESSFUL

AUDITBETWEEN	HAVING	OF	SYNONYM
BY	IDENTIFIED	OFFLINE	SYSDATE
CHAR	IMMEDIATE	ON	TABLE
CHECK	IN	ONLINE	THEN
CLUSTER	INCREMENT	OPTION	TO
COLUMN	INDEX	OR	TRIGGER
COMMENT	INITIAL	ORDER	UID
COMPRESS	INSERT	PCTFREE	UNION
CONNECT	INTEGER	PRIOR	UNIQUE
CREATE	INTERSECT	PRIVILEGES	UPDATE
CURRENT	INTO	PUBLIC	USER
DATE	IS	RAW	VALIDATE
DECIMAL	LEVEL	RENAME	VALUES
DEFAULT	LIKE	RESOURCE	VARCHAR
DELETE	LOCK	REVOKE	VARCHAR2
DESC	LONG	ROW	VIEW
DISTINCT	MAXEXTENTS	ROWID	WHENEVER
DROP	MINUS	ROWNUM	WHERE
ELSE	MLSLABEL	ROWS	WITH

7 Appendix B. Licenses for Third-Party Technologies

System contains third-party components distributed under MIT License (http://www.opensource.org/licenses/mit-license.html):

- Lua – http://www.lua.org/license.html
- LuaBind – http://www.rasterbar.com/products/luabind.html
- libxml2 – http://www.xmlsoft.org/

The System also uses software:

- Distributed under BSD license (http://www.opensource.org/licenses/bsd-license.php):
  - Stringencoders – http://code.google.com/p/stringencoders/
- Distributed under GNU GENERAL PUBLIC LICENSE (http://www.gnu.org/licenses/gpl-2.0.html):
  - Pdftotext – http://www.foolabs.com/xpdf/
  - Tnef – http://sourceforge.net/projects/tnef/
  - libcole.so – arturo@directmail.org; andy.scriven@research.natpower.co.uk
  - libhtmltree.so – pauljlucas@mac.com