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OpenText Exceed TurboX
Release Notes

Version 12 - 12.0.2

Product Released: April 2020

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Contents

1 Introduction

These Release Notes provide an overview of OpenText Exceed TurboX, including new features, delivery information, and supported platforms. OpenText recommends that you read these Release Notes in conjunction with the documentation included with the software package. If any conflicts exist, the Release Notes supersede the other documentation. We also recommend that you check OpenText My Support (https://support.opentext.com) for any patches or documentation updates that may have been posted after the initial release of this product.

1.1 Release Notes Revision History

Revision date	Sections revised	Description of revisions
2020-04-02	Section pertaining to 12.0.2	Description of ETX 12.0.2 (Service Pack 2 release)
2020-01-09	Supported environments and compatibility	Modified the ETX Server and ETX Connection node sections
2019-12-05	Section pertaining to 12.0.1	Description of ETX 12.0.1 (Service Pack 1 release)
2019-04-16	All	Description of ETX 12 (initial release)

1.2 Related documentation

For additional information about OpenText Exceed TurboX, or for supplemental information about related products, refer to the following documents, which are available on OpenText My Support (https://support.opentext.com).

- *OpenText Exceed TurboX 12.0.2 Dashboard and Client User Guide*
- *OpenText Exceed TurboX 12.0.2 Installation and Configuration Guide*
- *OpenText Exceed TurboX 12.0.2 Server Manager Administration Guide*
- *OpenText Exceed TurboX 12.0.2 Release Notes*
- *OpenText Exceed TurboX 12.0.1 Hotfix Notes*

2 About OpenText Exceed TurboX

This section provides an overview of OpenText Exceed TurboX.

OpenText Exceed TurboX (ETX) is a web-based platform that enables users to launch UNIX and Windows desktops and applications over the internet. ETX provides IT with a central platform to monitor and manage user access to systems. It provides users with a seamless experience, where desktops and applications running on remote hosts look and feel as if they are running locally.

3 New features in Version 12.0.2

This section lists the new features of OpenText Exceed TurboX 12.0.2. Additional features were included in Version 12 hotfixes. For details, see *New features in Version 12.0.1 hotfixes* on page 41.

3.1 Support for systemd

Version 12.0.2 provides native systemd support for ETX Connection Nodes on Linux, and no longer relies on systemd-sysv-generator to convert SysV init scripts.

JIRA ID: ETX-16143

3.2 Silent installation support for maximum number of sessions launched on a node

In Version 12.0.1, ETX added two settings to limit the number of sessions running on a node. For details, see *Limiting the number of sessions launched on a node* on page 27. Version 12.0.2 includes the corresponding settings in the silent installation and response file for a node.

Consequently, the silent installation will provide the following values to registration, based on the response file contents:

- `maxsessions` — Corresponds to **Limit total sessions to [ ]** , which specifies the maximum number of sessions that can be launched on a node
- `maxperuser` — Corresponds to **Limit sessions per user to [ ]** , which specifies the maximum number of sessions per user that can be launched on the node

JIRA ID: ETX-16942

3.3 Runtime removed from server patches

Starting in Version 12.0.2, runtimes will no longer be provided as part of server patches. This is because runtime updates and server updates are independent and may be installed separately and at different times.

A prompt has been added to the end of the server patch script, to remind ETX Server administrators to install the runtime if desired:

```
Patch has been applied successfully.

No runtime has been added. To apply the latest runtime, or set a default runtime,
please refer to the product documentation.
```

If you wish to apply a new runtime when installing a server patch, you have the following three choices:

Upload the runtime through the ETX Server web interface

In ETX Server Manager, navigate to **Site Settings > Runtimes**. After the runtime is added, you may optionally click **Make default** in the **Actions** column to make the new runtime default.

-or-

Add the runtime via REST APIs:

   a) Invoke `POST /v2/runtime/add` to upload the runtime
   b) (Optional) Invoke `POST /v2/runtime/default/%runtime_version%` to make it default

-or-

Extract the runtime manually and restart ETX Server:

   a) Extract the runtime .zip to `<etxsvr_root>/data/runtimes/patch/<runtime_version>/`

   For example:

   ```
   mkdir -p /opt/etxsvr-12.0/data/runtimes/patch/12.0.2.6288
   ```

   ```
   unzip ETXRuntime-12.0.2.6288-SP2.zip -d /opt/etxsvr-
   12.0/data/runtimes/patch/12.0.2.6288
   ```

   b) (Optional) To make the new runtime default:

   ```
   touch <etxsvr_root>/data/runtimes/patch/12.0.2.6288/makeDefault
   ```

   c) Invoke `<etxsvr_root>/bin/etxsvr restart` to restart the server; this will pick up the new runtime

JIRA ID: ETX-16744

3.4   New Connection Node state (Enabled, synchronizing)

For usability reasons, Version 12.0.2 added the following new connection node state:

Enabled, synchronizing

A node in this state is not available for use (e.g. for launching a new session) until the data synchronization between ETX Servers and ETX Connection Nodes is complete. This node state is now visible in ETX Server Manager, and reflected in REST API calls (e.g., in a search filter)

JIRA ID: ETX-17070

3.5   ETX Server improvements

3.5.1   Improved runtime deployment to connection nodes

After a runtime is uploaded to ETX Server, ETX Server distributes the runtime to all connection nodes so that new sessions can be established with that runtime version. The deployment of this runtime to the connection nodes is now handled in a more intelligent way to consume less network bandwidth and to ensure proper delivery of the runtime to

all nodes with no failures, even in an unstable network environment. This is an important update, particularly for ETX Sites which contain hundreds or thousands of connection nodes.

JIRA ID: ETX-13557

3.5.2   Improved login workflow

Logging into ETX server has been optimized to eliminate delays and enhance the user experience.

Note: Any delays due to environmental reasons outside of ETX scope (network, web browsers, or system issues) may still delay the login workflow.

JIRA ID: ETX-17420

3.5.3   Improved ETX Server startup speed (connecting to multiple nodes)

ETX Server now connects asynchronously to Connection Nodes on startup. This change results in a significantly faster start time for ETX Server in environments with hundreds or thousands of nodes, and also eliminates startup delays caused by unreachable Connection Nodes.

JIRA ID: ETX-17058

3.5.4   Better handling of replies when ETX License Server is in Maintenance mode

ETX License client has improved how it handles replies from an ETX License Server in cases where the License Server is in Maintenance mode. ETX Sites connected to the License Server now log the details of this event at the WARNING log level (not ERROR), indicating that the License Server is in maintenance.

JIRA ID: ETX-17037

3.5.5   Improved collection of troubleshooting information

Troubleshooting Information (collected via the via `bin/etxsvr collect` command) is now more detailed:

- Information is collected even if `jcmd` fails.
- ETX Server back-end status is collected in `server.status` file.
- Cluster status output is now saved in a `.csv` file; thus, opening a file will become more readable.
  The following items are now included:
  - `etxdata` disk usages of each sub-directories - `system.du`
  - `etxdb` table row counts and disk sizes - `server.etxdb`
- Processes are listed in a tree format (Linux only) - `system.processes`
- File names inside of the `.tar.gz` file are prefixed with "server." and "Java."
- Temporary files are now removed automatically at the end of a successful `.tar.gz` file creation.

JIRA ID: ETX-16583

3.5.6   New server setting httpsCipherSuites

A new server setting, httpsCipherSuites, can now override the preferred order of cipher suites used by ETX Server for HTTPS connections. If this value is set, only the specified cipher suites will be allowed.

The list of cipher suites can be viewed or changed with the following command:

```
bin/etxsvr config httpsCipherSuites
```

The value is a comma separated list of cipher suites; ciphers will be attempted in the order specified.

The default value is the empty string ("") which means that ETX Server will use the default list of ciphers provided by and supported by Java.

Example:

```
bin/etxsvr config
httpsCipherSuites=TLS_ECDHE_RSA_WITH_AES_256_GCM_SHA384,TLS_DHE_RSA_WITH_AES_256_GCM_SH
A384
```

JIRA ID: ETX-17134

3.5.7   Improved workflow for email notifications

The SMTP email functionality in ETX Server has been redesigned to work more efficiently and to reduce load on the ETX Server and SMTP email server. Emails not sent after 7 days are now purged, instead of being accumulated indefinitely. In addition, some unnecessary notifications have been removed (for example: when a node connection is re-established after ETX Server is started).

JIRA ID: ETX-16876; ETX-17280

3.5.8   Site URL property in all notifications and messages

Two new Site URL properties (for Server Manager and Dashboard) have been added to the Site Settings > General tab, in Server Manager. The Site URL properties should be set whenever you have a load balancer or HTTP proxy sitting in front of the ETX Server or ETX Server cluster.

ETX Servers behind a load balancer or web proxy need to know the public address of the site for several reasons:

- To provide the correct (public) ETX login URL in messages and emails to users and administrators
- To provide the correct redirect URL to OTDS server so that it redirects users back to the correct (public) site URL after authentication is complete
- To write activity logs and other log entries that specify the public-facing URL.

If the Site URLs are not correctly configured, ETX Servers behind a load balancer or proxy will use the (possibly internal) server hostname for the above purposes. If these addresses are not accessible by users or the OTDS server, this may result in emails with inaccessible login URLs, broken OTDS authentication, and inaccurate log entries.

Note: ETX Server Manager and ETX Dashboard may be configured on different ports, allowing a separate load balancer or proxy for each section of the application. If both sections go through the same load balancer or proxy then you should configure both the Server Manager and Dashboard Site URLs to use the same public URL.

To configure the Site URL property:

1. In ETX Server Manager, navigate to **Site Settings > General**.
2. Under Site URL, add the relevant **Server** and **Dashboard** URL.
3. Enter any IPVv4 or IPv6 address, hostname or FQDN (anything DNS resolvable). Web URLs are not valid.

Allowable formats:

```
http[s]://hostname[:port]/[path/]
```

```
http[s]://ipv4_address[:port]/[path/]
```

```
http[s]://ipv6_address[:port]/[path/]
```

Note: If an incorrect format of Site URL is specified (when the user attempts to save the page, or attempts to set corresponding parameters by REST API), a message will be displayed, informing you that the Site URL is invalid and which format to use.

JIRA ID: ETX-16473, ETX-16742, ETX-16741, ETX-16662

3.5.9 Custom welcome message on the Login page

Version 12.0.2 allows you to configure a custom welcome message on the login page to replace the default message ("Welcome to ETX!"). This message can be in HTML or plain text format.

To set your own welcome message on the ETX Login page:

1. In ETX Server Manager, navigate to **Site Settings > General > Notifications**, and then select the **Custom welcome message** check box.
2. In the **Welcome message (HTML)** box enter the HTML code or plain text message that you want to replace the default welcome message.
3. Save your changes.

   Note: The total length of the welcome message (including HTML markup) cannot exceed 500 characters.

JIRA ID: ETX-13090

3.5.10 Tile-based watermark for copy auditing feature

Images copied from an ETX session may now include a horizontally placed tiled watermark (if you do not wish to use the original, diagonally displayed watermark). The watermark will still contain the following information:

- User name
- Profile name
- IP Address
- Time (reflects the time when the Copy command was selected)

Before you can use this feature, you must enable the watermark feature for the captured image.

To…	Do this…
Enable the watermark feature	In the **General** profile tab, add the following to **Optional settings**: `proxy.TextOverlay=1`
Change the watermark to tile mode instead of diagonal mode	In the **General** profile tab, add the following to **Optional settings**: `proxy.AutoFill=1`

JIRA ID: ETX-13651

3.5.11   Retrieving Total active time for a session using REST APIs

The total active time for a session is now available via REST API, using one of the following API calls:

- `GET /v2/sessions?where_full_detail=1`
- `GET /v2/sessions/{id}`

The `totalActive` attribute represents the total number of seconds that the session has been active.

JIRA ID: ETX-17283

3.6   New session features

3.6.1   Suspended session sharing

Version 12.0.2 allows session owners to share sessions with other users even after the session owner has suspended the session. This means that users can now work with a session while the original session owner is offline.

Note that:

- Only a session owner can share the session, add or remove users from the share list, or stop sharing.
- The users with whom the session was shared may join the session, without the participation of the initial session Owner. More than one such user can join the session at a time, in collaborative mode.
- This option is disabled by default in all profiles and must be enabled in the **Security** tab by selecting the **Allow suspended session sharing** option.
- Once enabled in the profile, users must enable the **Suspended session sharing** option in the **Share Session** dialog to enable this functionality.

JIRA ID: ETX-15839

3.6.2   Improved session state notification in ETX Dashboard

The session status information displayed in the Dashboard ICONS view now contains detailed launch state information to make it easier to troubleshoot session launch issues. Additionally:

- A session icon is created immediately upon launch (and for all types of session launch). The icon is created immediately in the user's browser even if the server is slow to respond; this eliminates an undesirable user behavior of clicking **Launch** multiple times in situations where the server is overloaded or otherwise taking a while to respond.
- The session status indicators, shown at the top right corner of the session icon, have been improved, with some new status indicators added (icons correspond to the session state, spinner indicates whether the session launch is in progress etc.).
- More detailed status descriptions are shown when launching, resuming, or joining a shared session. These statuses provide more detailed information (such as **Downloading Client...** to indicate that the client runtime is being downloaded). This provides real-time updates and assists with troubleshooting.

JIRA ID: ETX-16911

3.6.3   Improvement to launching a session from a shortcut

When users launch a profile via a desktop shortcut, they are now presented with the correct options based on the session reuse and the option **Allow desktop shortcuts to resume suspended sessions**:

- The dialog shown to users for session reuse now presents the correct options
- The **Allow desktop shortcuts to resume suspended sessions** option in user settings ensures that users will now always have the option to resume suspended sessions

JIRA ID: ETX-17238

3.7 Keeping the current locale or setting the system one (to use the language of choice)

ETX can now keep the current locale or set the system one. The intent is to preserve the original system environment even if it is undefined (blank) instead of forcing `LANG=en_US.UTF-8`. This is now possible with the use of the startup flag `AllowToChangeLocale.`

This flag disallows changing of the LANG environment variable, when an X application is started, i.e., the current locale is not changed when a session is started. Instead, ETX reads the current locale.

Values: 1 − allowed (default), 0 − not allowed

To keep the current locale untouched:

`xstart.AllowToChangeLocale=0`

To configure ETX to set the locale:

`xstart.AllowToChangeLocale=1` [Default]

JIRA ID: ETX-14145

3.8 Ability to disable file Copy / Paste for Windows hosts

For security reasons, the file Copy and Paste feature that enables Windows clients to copy and paste files to and from remote Windows hosts may be disabled, by disabling any of the following options at the **File and print** profile tab:

- **Enable File and Print Manager**
- **Enable file download**
- **Enable file upload**

JIRA ID: ETX-17324

3.9 Performance improvements for remote sessions

A number of important changes have been made to improve performance and reduce bandwidth for both Windows and UNIX remote sessions:

- Better compression for higher frames per second, lower input latency, and reduced bandwidth use
- Hardware-based H.264 video decode support for Windows client
- Faster software video decode support for Windows client
- Better codec selection on AVX2-capable hosts
- Cursor change rate limits, giving better responsiveness with an application and/or video driver combination
- Reduced video driver load for some application and/or video driver combinations

JIRA IDs: ETX- 9763, ETX-16529 , ETX-17265, ETX-17569

3.10   New profile option for H.264 hardware decoding

A new option, **Allow GPU-accelerated decoding,** has been added to the **Performance** profile tab. This option determines if video decoding on client systems will take advantage of GPU acceleration. If disabled, video decoding will be performed by the CPU with a software decoder; however, disabling this option may cause the proxy to select a different compression method. This option is enabled by default for performance reasons, and should not be disabled unless required to debug hardware-related issues.

Hardware video decoding is currently supported only on Windows client platforms; sessions running from Mac and Linux clients will not use video compression.

JIRA ID: ETX- 9763, ETX-17265

3.11   Manual configuration of .Xauthority

ETX users may now manually add MIT-MAGICCOOKIE to the `.Xauthority` file, if the option **Use dynamic Xauthority** has been enabled, in the **Security** tab, under **Access control**.

Note: `xstart.XauthFile=XAUTHORITY` supports only the **X Windows Host Application** startup method. With this user-level security method in use, Exceed TurboX generates a cookie (MIT-MAGICCOOKIE) and passes the cookie to X applications. Only those X applications for which Exceed TurboX generates the cookie can connect to Exceed TurboX.

To create the .Xauthority file (as per the `XAUTHORITY` setting specified by user):

From the **General** tab, in the **Optional settings** box, enter: `xstart.XauthFile=XAUTHORITY`

Consequently, ETX will not modify/use the XAUTHORITY variable *(*set at the **Security** tab, under **Access control**> **Use dynamic Xauthority**). Instead, it will allow users to manually add the MIT-cookie (XAUTH key) to their `.XAUTHORITY` file, via an etxstart command.

If…	Then..
`xstart.XauthFile` does not exist	ETX will create the `.Xauthfile` in a temporary location: `/tmp/.Xauthority-ETX.john.1` (where john is the username and 1 is the DISPLAY number).
`xstart.XauthFile=XAUTHORITY`	ETX will add the MIT-MAGICCOOKIE to the XauthFile location pointed by the environment $`XAUTHORITY`. If the environment $`XAUTHORITY` is empty or does not exist, ETX will add the MIT-MAGICCOOKIE to `~/.Xauthority`
`xstart.XauthFile=User_Specify _Xauthfile_location`	ETX will add the MIT-MAGICCOOKIE to the `User_Specify_Xauthfile_location`

Examples:

```
User_Specify_Xauthfile_location =/any_directory/any_file_name_@u
/any_directory/any_file_name_john
```

```
User_Specify_Xauthfile_location =/any_directory/any_file_name.@#
/any_directory/any_file_name.1

User_Specify_Xauthfile_location =/any_directory/any_subdirectory/any_file_name.@u_@#
/any_directory/any_subdirectory/any_file_name.john_1
```

-where-

- `@u` will get expanded to username
- `@#` will get expanded to DISPLAY_NUMBER

JIRA ID: ETX-16037

3.12 Improvements to notifications and messages

3.12.1 Message for regular users attempting to log into ETX Server Manager

If a regular user, whose account does not have the necessary privileges, attempts to log into ETX Server Manager, the login will be unsuccessful. A more detailed error message is now displayed, to inform the user why the login was unsuccessful:

```
You do not have sufficient privileges to access ETX Server Manager
```

JIRA ID: ETX-17371

3.12.2 Messages indicating that incorrect local port or IP address were entered

An improvement has been made to eliminate errors for administrators creating or joining ETX Servers to an HA cluster using the `etxsvr cluster create` and `etxsvr cluster join` commands.

When prompted to enter the local server's IP address and TCP listen port for the local server, some users may enter a remote IP address or TCP listen port by mistake. If that happens, the cluster commands will now fail with an appropriate error.

JIRA ID: ETX-16151

3.12.3 Useful errors shown when Windows RDP sessions fail to start

Important error messages are now shown to end users when launching a Windows Desktop - RDP or Windows Published Application profile fails due to an error on the RDP host.

JIRA ID: ETX-16454

3.12.4 Message to close RDP sessions before launching 1st Direct session

ETX now provides the following, more informative message to indicate that a Windows-Desktop Direct session failed because a Windows RDP session blocked its first-time launch:

```
You need to close all RDP sessions before launching the first Direct session.
```

JIRA ID: ETX-16051

3.13 Logging improvements

3.13.1 Sorting the list of Server Log files

Server logs are now sorted in an ascending order. `etxsvr.log` is listed first in the list, followed by the remaining log files (e.g., `etxsvr-0.log`, `etxsvr-1.log`, `etxsvr-3.log` etc.).

Any remaining files, such as access log files, are listed after `etxsvr` and `etxsvr-x` log files in alphabetical order.
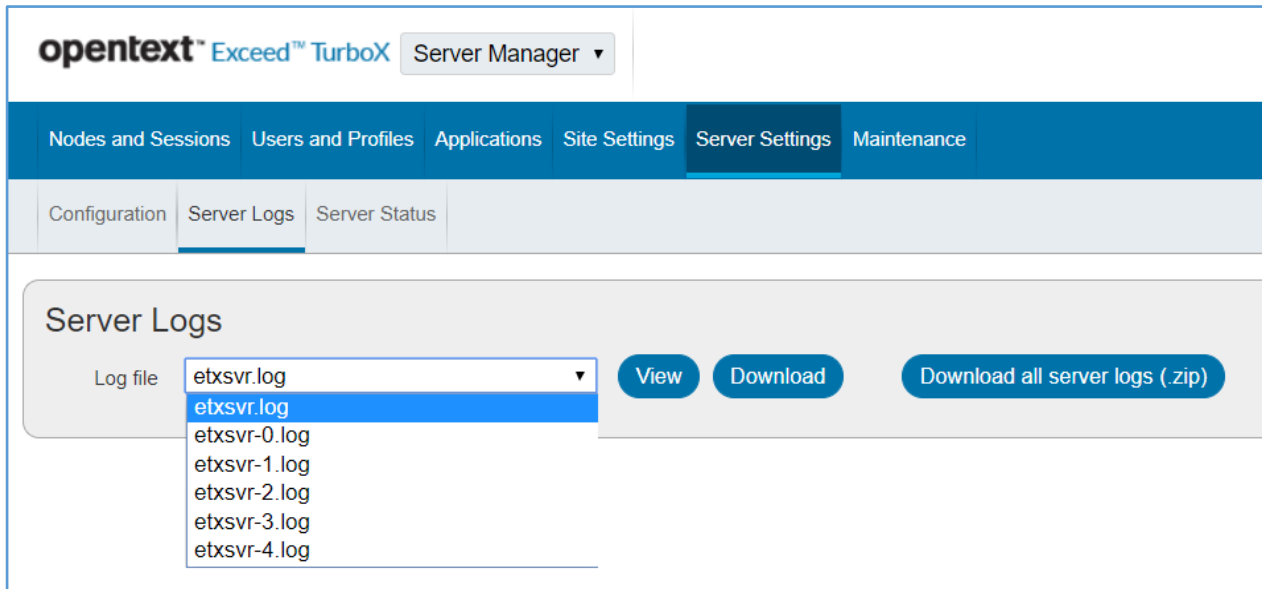
The `GET /v2/log/server/logfiles` REST API now also returns a correctly sorted list.

JIRA ID: ETX-16907

3.13.2 Improved etxdb logging for troubleshooting of FATAL/WARNING messages

To facilitate troubleshooting of the root cause of any etxdb FATAL or WARNING messages, ETX now provides more information in a log file.

ETX will print the last 10 log messages (which are available only when the DEBUG logLevel is set) after printing the FATAL/WARNING (or any other critical level) error. Any DETAIL log messages, following such critical error messages, are also printed.

JIRA ID: ETX-16995

3.14 User interface improvements

This section lists the most important user interface changes in Version 12.0.2. Additional changes may exist and are described elsewhere in this document.

3.14.1 New "Idle since" column

The following column has been added to the **Sessions** grid on the **Nodes and Sessions** page in ETX Server Manager:

- **Idle since**—Specifies the date and time when the session became idle (no activity occurred in the session)

3.14.2   New Security page under Site Settings

All security-related options from the **General** tab in **Site Settings** have been moved to a new **Security** tab. This tab contains the following settings:

- **Session**— Configure session security settings.
- **Website**— Configure sign-in options and locking users out of ETX server in case of login failures
- **Proxy server**— Configure proxy server for client connections and for client launcher connections
- **REST APIs**— Configure API security options (API calls and API keys)

JIRA ID: ETX-17141

3.15   Support for ARM 64-bit on Linux

ETX now supports Linux ARM 64-bit client, tested on Ubuntu 19.10.

JIRA ID: ETX-16360

3.16   New OpenSSL version

Exceed TurboX now uses OpenSSL version 1.1.1e for all encryption-related tasks.

JIRA ID: ETX-15858

3.17   OpenJDK 1.8.0_232 on Linux

ETX Server on Linux platforms has been updated from Oracle Java 8 (version 1.8.0_202) to OpenJDK 8 (version 1.8.0_232). ETX Server for Solaris is not updated.

JIRA ID: ETX-13342

3.18 Discontinued and deprecated features or components

This section lists the features, functionality or components no longer available in Version 12.0.2.

3.18.1 ETX UI no longer contains the option Use TLS in FIPS mode

The following option, previously located under the **Site Settings > Security** tab, has been removed from Version 12.0.2 user interface:

- **Use TLS in FIPS mode**

Note: FIPS mode is not supported in OpenSSL 1.1.1 and may be re-introduced at a later time.

REST API GET /v2/site/settings

The `enableFips` option in `GET` and `PUT /v2/site/settings` is still present for backwards and future compatibility. This flag is ignored in 12.0.2.

JIRA ID: ETX-17357

3.18.2 Two node events removed from the Activity log

The following events were removed from the Activity Log (to eliminate unnecessary replication overhead and thus facilitate smoother functioning of ETX Server clusters):

NODE_DISCONNECTED (MID=303)

NODE_CONNECTED (MID=301)

JIRA ID: ETX-17482

3.19 New features in 12.0.1–SERVER hotfixes

3.19.1 New features in Hot Fix 6-SERVER

The following features and enhancements were added in this hotfix:

JIRA ID	Description
ETX-16976	**Reusing old command macro URLs upon migration** Customers may migrate to Version 12 and beyond, from a legacy version, and reuse the commandmacros URLs used in the legacy version. A mapping file is generated during import, and placed in the server directory (`data/custom/profileid.map`). It contains mapping between the old `profileIds` and new `profileIds` (a list of `old_integer_id=new_ETXID`). **Note:** ETX Server will replicate the mapping file to all the servers in the cluster. ETX Server does not handle files that are linked to etxdb. You need to copy the mapping file manually to all ETX Servers. For details, contact Customer Support.
ETX-13292	Added the ability to control the enabling and disabling of nodes via REST API. - The `POST /v2/nodes/{id} action` parameter now supports the following values: `{suspend_all_sessions, enable, disable}`

JIRA ID	Description
	• The description for this REST API is updated as follows: ```Suspend all sessions on a node, or enable or disable a node.``` **Note:** For backwards compatibility, the `start` value is now substituted with the `enable` value.

3.19.2   New features in Hot Fix 4-SERVER

The following features and enhancements were added in this hotfix:

JIRA ID	Description
ETX-16105	Added server side implementation of the following feature: *Multiple IP address support for "Alternative node addresses" (for clients).* For details, see the feature description on page 25 in the section *New features in Hot Fix 3*.

ETX-16919	**Improvements to HTTPS Proxy feature**
	
	Version 12.0.1 added support for HTTP(S) tunneling proxies, which enabled remote session traffic to be directed through a secure proxy server. In the **Site Settings > General** tab, ETX Server administrators could configure a specific proxy server or instruct the client to use the proxy server configuration on the user's system. Both HTTP and HTTPS proxies were supported, as was proxy authentication.
	
	This hotfix adds the following changes :
	
	• **Modified `proxyurl` and `launcherproxyurl` arguments:**
	
	   o `proxyurl` — Now specifies proxy for the client (prior to this hotfix it specified proxy for ETX Client Launcher);
	
	   o `launcherproxyurl` — Now specifies proxy for ETX Client Launcher
	
	• **New site settings (for proxy launcher connections)**
	
	   To configure proxy launcher connections:
	
	   1. Navigate to **Site Settings >General > Proxy server.**
	
	   2. Select **Use proxy server for client launcher connections**.
	
	     • If this option is selected, ETX Client Launcher will use the setting from the client system or ETX Server.
	
	     • If this option is not selected, ETX Client Launcher will make a direct connection to ETX Server.
	
	   Note: See *New Security page under Site Settings* on page 20.
	
	• **Deprecated environment variables**
	
	   The following environment variables are no longer interpreted by ETX Client

JIRA ID	Description
	Launcher: `no_proxy`, `https_proxy`, `http_proxy` **Note:** Starting with 12.0.1.4-SERVER hotfix, customers who wish to use the new HTTP(S) proxy feature must manually update the ETX Client Launcher to the same version or later (the update can be downloaded from User Settings after applying the 12.0.1.4-SERVER update). As well, they must apply 12.0.1.3 (a.k.a. 12.0.1 Runtime HF3), or later. Previous versions of the Client Launcher and Runtime can still be used if HTTP(S) proxies are not used.

3.19.3   New features in Hot Fix 3-SERVER

The following features and enhancements were added in this hotfix:

JIRA ID	Description

ETX-15490	**New REST API functionality (readable formatted date)**
	
	For date attributes, added the ability to return xxxTimestamps attributes.
	
	Example:
	
	`"timeStart": 1578082389000` — Date is not formatted.
	
	`"timeStartTimestamp": "2020-01-03T15:13:09-0500"` — Date is formatted.
	
	The following new xxxTimestamps have been added:
	
	`"timeStartTimestamp": "2020-01-03T15:13:09-0500",`
	`"timeLastSuspendTimestamp": "2020-01-03T15:13:38-0500",`
	`"timeLastResumeTimestamp": "2020-01-03T15:13:55-0500",`
	`"timeLastHangTimestamp": null,`
	`"timeIdleStartedTimestamp": "2020-01-03T15:13:55-0500",`
	`"startTimestamp": "2020-01-03T15:13:09-0500",`
	`"currentTimestamp": "2020-01-03T15:55:52-0500",`
	`"lastSuspendedTimestamp": "2020-01-03T15:13:38-0500",`
	`"lastResumeTimestamp": "2020-01-03T15:13:55-0500",`
	`"lastHangTimestamp": null,`

ETX-14797	**New License Server Stats API query**
	
	`GET /v2/licenseServer/stats`
	
	Description: Retrieve summarized information about license usage and availability.
	
	Returns:
	
	`{`
	`    "totalLicensesInstalled": int,`
	`    "totalStaticLicensesAllocated": int,`
	`    "totalLicensesInUse": int,`
	`    "totalLicensesFree": int,`
	`    "totalClientSites": int,`
	`    "totalClientSitesConnected": int,`

JIRA ID	Description

	``
	    "totalClientSitesDisconnected": int
	}
	``
	• `totalLicensesInstalled`: The total number of licenses from all license keys installed on the server or cluster
	
	• `totalStaticLicensesAllocated`: The total number of licenses allocated to connected sites statically
	
	• `totalLicensesInUse`: The sum of licenses in use across all connected sites (including local server licenses in use)
	
	• `totalLicensesFree`: The total number of licenses available which are not statically allocated (totalLicensesInstalled - totalStaticLicensesAllocated)
	
	• `totalClientSites`: The total number of Connected Sites (connected and disconnected status only; on hold sites are not counted)
	
	• `totalClientSitesConnected`: The total number of Connected Sites with the Connected status
	
	• `totalClientSitesDisconnected`: The total number of Connected Sites with the Disconnected status

3.20 New features 12.0.1–RUNTIME hotfixes

3.20.1 New features in Hot Fix 3-RUNTIME

The following feature were added in this hotfix:

JIRA ID	Description	Affects

ETX-17063	**Ability to truncate text that exceeds the permitted text limit**
	
	If you wish to copy more text than the CopyText limit allows (set via `proxy.AllowCopyFromX`) the surplus text will be removed, and the permitted amount of text will still be copied to the Clipboard.
	
	I.e., the buffer will retain the permitted number of characters and discard the rest. Prior to this hotfix, if the text limit was exceeded, no text would be written to the buffer.
	
	New flag
	
	To activate this feature, use the following flag:
	
	`AllowTruncatedCopyFromX`
	
	Example:
	
	1. Configure the permitted text limit to 400 characters, as follows:
	
	`proxy.AllowCopyFromX=400`
		etxproxy

JIRA ID	Description	Affects
	2. Configure the ability to truncate text that exceeds the above limit, as follows. `proxy.AllowTruncatedCopyFromX=1` 3. Attempt to copy/paste 420 characters. A popup message is displayed (informing you that you have exceeded the permitted text limit). No text is copied to the buffer. With this hotfix, the same popup message will be displayed but the buffer will copy the permitted number of characters and discard the rest. In the above example, 400 characters will be copied, and 20 will be discarded and not copied to the buffer. **Note:** To disable the popup message, see the instructions provided for ETX-16755.	
ETX-16755	**Disabling the popup message about the exceeded text limit** You can completely disable a popup message, which is shown when the user attempts to copy the text which exceeds the permitted text limit (contains a greater number of characters than allowed). **To disable a popup message, set the following flag:** `proxy.AllowCopyFromX= -n` —where `n` is greater than 1; and the minus sign means that ETX will not display the popup message if you attempt to copy more than a permitted number of characters (n). **Example:** `proxy.AllowCopyFromX=-400` If you attempt to copy more than 400 characters, you will not receive a popup message informing you that the text will not be copied because you have exceeded the permitted text limit.	etxproxy
ETX-16841 ETX-16840 ETX-16839 ETX-16322	**Multiple IP address support for "Alternative node addresses" (for clients)** ETX Connection nodes may use multiple Network adapters or multiple NAT devices to accept connection from various sources (e.g., one adapter for internal network connection, another one for external network connection, and so on). To ensure that ETX Client from various sources (internal and external) can always connect to the node, ETX Admin can configure ETX Connection Node to return the list of all the available IP addresses for this node. As a result, ETX client can always connect to the node, using one of the IP addresses from this configured list. **To configure ETX Client support for multiple IP addresses:** 1. In ETX Server Manager, select a node you wish to configure. Click **Edit node**. 2. Under **Settings**, under **Alternative Node addresses**, in the **For client** field,	ETX Client

JIRA ID	Description	Affects
	type the IP addresses you wish ETX to be able to recognize (the IP addresses need to be separated by a comma). **Example:** `192.168.0.12:5510,10.3.47.96:5510,any_host_name:5510` 3. Click **Save**. As a result, when ET Client attempts to connect to this node, it will identify an IP address from the specified list, and then establish a session connection.	
ETX-16527	Added support for software-based server-side OpenGL rendering (SISSR) on Solaris x86_64. This allows GNOME 3 desktops to run without GPU hardware.	etxproxy

4   New features in Version 12.0.1

This section lists the new features of OpenText Exceed TurboX 12.0.1. Additional features were included in Version 12 hotfixes. For details, see *New features in Version 12 hotfixes* on page 41.

4.1   Support for the Korean language

OpenText Exceed TurboX was localized in the Korean language.

JIRA ID: ETX-14412

4.2   Secure HTTPS Proxy for Non-VPN environments

Version 12.0.1 adds support for HTTP(S) tunneling proxies. Remote session traffic can now be directed through a secure proxy server.

New site settings for HTTP(S) session proxy

ETX Server administrators can configure a secure HTTP(S) server to tunnel session traffic through a 3rd party proxy server. This can be used to connect users to your ETX environment securely, even without a VPN.

In the **Site Settings > General** tab, ETX Server administrators can configure a specific proxy server or instruct the client to use the proxy server configuration on the user's system. Both HTTP and HTTPS proxies are supported, as is proxy authentication.

 JIRA ID: ETX-11048, ETX-16560, ETX-16561

4.3   Support for multiple ETX versions in a cluster

Starting with Version 12.0.1, patches to an ETX High Availability Server Cluster no longer require that all servers in the cluster be stopped and patched before restarting the cluster. Instead, servers can be stopped and patched in sequence, providing true high availability for the cluster.

This is possible because different patch levels may now be running in the same cluster. Any combination of major release versions, subsequent service packs, and/or hotfixes that are greater than Version 12.0.1 can coexist. The servers within a cluster do not need to be upgraded to the same version simultaneously.

Note: This feature allows sequential patching of servers in the cluster. It is not intended to be used for running the cluster with servers at different patch levels for an extended period. The ETX Server user interface and functionality changes between versions, thus running a cluster with multiple server versions provides an inconsistent user experience.

To keep track of the patch level of each server in the cluster, a new column, **Server version**, was added to the **Cluster** page, under **Site Settings**, as well as to the **Server details** dialog box.

JIRA ID: ETX-16349

4.4 Improvements to Connection Nodes

4.4.1 Limiting the number of sessions launched on a node

Version 12.0.1 added a feature, which allows ETX to limit the number of sessions running on a node. You may:

- **Limit total sessions to [ ]** — Specifies the maximum number of sessions that can be launched on a node
- **Limit sessions per user to [ ]** — Specifies the maximum number of sessions per user that can be launched on the node

For example, you may want to limit the node to four (4) sessions in total, and maximum one (1) session per user. Both active and suspended sessions count towards this limit.

Note: If the configured number of sessions has been met and another node is not available, based on the node targeting settings in the profile, ETX will inform the user and display the following message:

```
No suitable node found to launch a session.
```

REST API modifications

The following node properties have been added to read and set these limits using REST APIs:

```
{LimitTotalSessions, LimitTotalSessionsNum, LimitSessionsPerUser,
LimitSessionsPerUserNum}
```

JIRA ID: ETX-10809

4.4.2 Limiting the number of nodes being patched concurrently

A change to ETX Server sets a limit on the number of Connection Nodes that are patched concurrently. This avoids unexpected downtime after applying an ETX Server patch (containing an updated Node package) to environments that have hundreds or thousands of Connection Nodes. Restricting the number of nodes is necessary to avoid flooding the network and to ensure ETX environment availability.

Additionally, new node statuses have been added, so that administrators can see which nodes are being patched. The following statuses have been added:

- **Enabled, Patch queued**
- **Enabled, Patching**
- **Enabled, Patched**

JIRA ID: ETX-15352

4.5 New profile functionality

4.5.1 Exporting and importing profiles using ETX Dashboard

Using ETX Dashboard, users can now export a profile and its associated template in `.xml` format. Previously, this functionality was available in ETX Server Manager only. Note that an exported profile must be imported to the same version of the OpenText Server, because it requires the same underlying template. This allows you to share the profile with another user, or provide information to OpenText Global Technical Services.

Note: ETX users may import individual Version 11.5.5. profiles (or later), using ETX Dashboard or ETX Server Manager. Earlier profiles, e.g., 11.5.4 profiles, may not be imported.

Only users with the **Create profiles** permission may import profiles.

JIRA ID: ETX-15570, ETX-15545

4.5.2 Pseudo Color emulation support for ETX Client

To support certain legacy X11 applications, ETX now supports PseudoColor emulation for ETX Client running on Linux or Mac.

JIRA ID: ETX-16351

4.5.3 Option to use interactive mode for Secure Shell

The following Secure Shell option has been added to the ETX user interface (in the **General** tab, under profile startup settings):

- **Use interactive shell** — Select this setting to run Secure Shell profile in interactive mode. By default, this setting is disabled, and the Secure Shell profile runs in SSH execution mode.

Note: In interactive mode `etxstart` initiates SSH session and ensures that the SSH session has been fully established (a shell has been created) before starting the X application. In SSH execution mode `etxstart` initiates the ssh-session and starts the X application without establishing the SSH session.

Example of interactive mode:

```
[qauser@qaxredhat ~]$ ssh qauser@qaxredhat7.hcl.com
qauser@qaxredhat7.hcl.com's password:
Last login: Thu Nov 28 13:51:57 2019 from qaxredhat0011.hcl.com
[qauser@qaxredhat7 ~]$ ls
ab.txt
foo.txt
test.txt
[qauser@qaxredhat ~]$ exit
logout
Connection to qaxredhat7.hcl.com closed.
```

Example of SSH execution mode:

```
[qauser@qaxredhat ~]$ ssh qauser@qaxredhat7.hcl.com ls
qauser@qaxredhat7.hcl.com's password:
ab.txt
foo.txt
test.txt
```

```
[qauser@qaxredhat ~]$
```

JIRA ID: ETX-8439

4.6   New session management functionality

4.6.1   Launching a session on a node selected by the user

A new feature is added where users can select the session node when launching a session. Windows Direct Desktop sessions always provide a desktop on the node machine, so this feature enables users to select a host for their Windows Direct Desktop session. The list of nodes displayed in the user prompt can further be filtered using node group targeting settings in the profile. Only members of the specified node group will be shown in the list. The node list is additionally filtered to show only valid hosts for the specified startup mode. For example, Linux nodes will not be displayed if the startup mode is Windows Direct Desktop.

Note: In support of this feature, a new profile option, **Ask user to select node**, was added to the **Session** tab. The feature is not available when **Node targeting** is set to **Specific node**.

JIRA ID: ETX-10840, ETX-15742, ETX-15776, ETX-15777

4.6.2   New default for resuming a session via a shortcut

Administrators may now change the default value for **Allow desktop shortcuts to resume suspended sessions**, and may also change this setting for all users through **Site Settings > New User Settings**.

A new property, *allowShortcutResumeSuspendedSessions,* has also been added to the user object for REST APIs. It can be used to change this setting for a specific user.

JIRA ID: ETX-11579, ETX-15568

4.6.3   Windows Direct console sessions fall back to multi-user mode

The **Use console on Windows Server** option for Windows Direct desktop sessions will now fall back to multi-user RDS sessions if the console session is unavailable. Prior to 12.0.1, if the console session is unavailable, an error was generated and the session failed to launch.

To return to the legacy behavior, set the following flag in the profile **Optional settings**:

```
proxy.DirectConsoleFallbackToRds=0
```

JIRA ID: ETX- 14009

4.6.4   Option to sign out of Windows when ETX session terminates

Version 12.0.1 provides the following new option, on the **Session** tab, under **Session Management:**

- **Sign out of Windows hosts when session terminates**

This option applies to both Windows Direct and Windows RDP desktop sessions.

If the option is…	Then…
Enabled (default)	When an ETX session is terminated, the related Windows session is signed out. The

If the option is…	Then…
	Windows sign-out screen may be shown if you have applications running as the logged in user that cannot be closed. This replaces the prior behavior where the Windows session would be forcibly terminated without any warning.
Disabled	When an ETX session is terminated, the underlying Windows session is not signed out, but placed into the Disconnected state instead. Windows applications remain running within the Disconnected session.
	To reconnect to the disconnected Windows session, launch any profile that targets the same host, uses the same startup mode (Direct or RDP), and specifies the same user credentials. Windows Direct can now also reconnect to Windows sessions that were disconnected using the Disconnect option in the Windows Start menu.

Note: This option replaces the **Sign out when session terminates** option previously located in **Advanced Settings** for Windows RDP desktop profiles.

JIRA ID: ETX-14089, ETX-14031, ETX-15574

4.6.5   Running remote sessions directly on the node (for Windows RDP and XDMCP queries)

A new profile option, **Run on node**, is now available in the profile **Startup** tab, as follows:

For…	Meaning
XDMCP Query and Windows Desktop - RDP profiles	Launches the XDMCP or RDP desktop session directly on the node, and will correctly set the DISPLAY environment variable to include the node IP address.
Windows Desktop - Direct startup mode	Indicates that the session is always launched on the node (it cannot be turned off in this case).

JIRA ID: ETX- 15845

4.6.6   Option to terminate a session when the last window is closed

A new option, available in the profile Session tab, allows you to specify one of the following behaviors when the user closes the last window in an ETX session:

• When a user closes the last window in a session, a confirmation prompt is displayed. The user is asked whether he or she wants to terminate the session. Previously, this prompt was not displayed.

This feature is configured at the profile **Session** tab, under **Session Management > Last window closed**, where you may select the appropriate option:

Option	Meaning
Terminate with confirmation	A confirmation prompt is displayed. Users may terminate the session, or click Cancel to leave the session running in passive mode.

Option	Meaning
Terminate session	Session will be terminated without a prompt.
Keep session running	Exceed TurboX will keep the session running, waiting to accept new X client connections.

Restoring legacy profile configuration:

The **Last window closed** option replaces an older option, **Terminate session when last application exits.** Profiles where the older option was enabled will have **Last window closed** set to **Terminate session**.

Last window closed triggers even if an X client is still connected (but no longer has a window open), so that X applications like GNOME Terminal that keep running after their main window has closed will terminate correctly, using the newer option. However, should you wish to revert to the legacy behavior of only terminating when all X application sockets are closed, you can use the following optional setting:

```
proxy.TerminateSessionWithLastApp=1
```

The **On last window closed** option was designed with Custom startup and Published application profiles in mind, running in multiple window mode. This option will not have any effect with certain startup modes such as XDMCP Query or Windows desktop.

JIRA IDs: ETX-16077, ETX-16183, ETX-16185

4.6.7 Shared session title shows who controls the session

Version 12.0.1 adds a shared session indicator (to indicate who controls the session).

This shared session indicator is shown in the session title bar, as follows:

`[In Control- username]` — Shown to the user who is in control of the session.

`[View Only - <username>]` — Shown to users who are not in control of the session

`[Collaborative - <username>]` — Shown to all users when the session is being shared in collaborative mode.

JIRA ID: ETX-5222, ETX-16107, ETX-16108

4.6.8 Restricted session sharing for LDAP groups

ETX user groups that contain LDAP groups may now be selected for restricted session sharing. You can select them in the **Restrict sharing to user groups** list under the Security tab in ETX profiles. This enables you to restrict sharing of a profile to specific LDAP groups.

JIRA ID: ETX- 16027

4.6.9 ETX session windows resume to the original Windows virtual desktop

If you suspend and resume an ETX session which has windows spread across multiple Windows 10 virtual desktops, those windows will now resume back to the same virtual desktop where they had been running previously. Virtual

desktop information is now saved per-window rather than per-session, so prior to this change all windows in the ETX session would resume to the same Windows 10 virtual desktop.

This feature affects Exceed TurboX Client on Windows 10 only.

JIRA ID: ETX-13992

4.6.10   Windows taskbar is grouped by ETX session

A new profile option, **Group session windows in taskbar**, has been added to Multiple Window Mode. When enabled, all windows in the session will be grouped as a single Windows taskbar item.

This makes it easy to work with several Multiple Window Mode sessions without getting confused which window corresponds to which ETX session. Users can now minimize and maximize all windows in a session by clicking on the session group in the taskbar.

The feature is applicable to ETX Windows Client and turned on by default.

The feature was initially added in Version 11.5.5.21.

JIRA ID: ETX-15337, ETX-15422

4.6.11   Saving a workspace when a session is forced to quit

When a user forcibly shuts down their Windows client machine without responding to the ETX suspend prompt, Windows 10 virtual desktop information will now be saved for all ETX session windows, so that they open on the correct virtual desktop when the session is resumed.

JIRA ID: ETX-15820

4.7   Improvements to Copy and Paste functionality

4.7.1   Support for Copy / Paste in shared sessions

A new option, **Menu is visible for controller of shared sessions**, has been added to the profile **Copy and Paste** tab. It allows users in shared sessions to access the **Edit** menu (for copying and pasting data in the clipboard).

If the option is…	Then…
Enabled	The client Edit menu will be available to users in shared sessions according to the following rules: • The current presenter in a non-collaborative session may access the Edit menu • Any user in a collaborative session may access the Edit menu
Disabled	Only the session owner may access the Edit menu. This was the only supported behavior prior to this release.

Note: To avoid conflicts, keyboard shortcuts (such as Ctrl+C and Ctrl+V) as well as clipboard synchronization between local and remote are enabled only for the session owner.

JIRA ID: ETX-12252, ETX-16420

4.7.2   Support for Copy Image functionality on Mac and Linux desktops

Version 12.0.1 has added support for copying and pasting images using Mac and Linux clients. The same functionality for the Windows client was implemented in an earlier version. To copy and paste images, use the **Copy/Paste** application menus on the Linux/Mac clients, or the following keyboard shortcuts: Ctrl+C, Ctrl+V.

Note: Image *drag and drop* between the client and remote host is not supported.

JIRA IDs: ETX-11715, ETX-12333

4.7.3   Copy and paste files and directories to and from Windows hosts

Exceed TurboX now supports copying files and directories from a user's local Windows system to a remote Windows Direct or RDP desktop.

Files and directories can be copied in both directions (using Ctrl+C and Ctrl+V). This feature is supported only when the local and remote systems are running Windows 7 / Server 2008 R2 or later.

The feature is enabled by default, but can be disabled as follows:

- In ETX Server Manager, under **Site Settings** deselect the following option: **Allow file transfer and printing.**
- In a profile, deselect the following option: **Enable File and Print Manager**.

 JIRA ID: ETX-9867, ETX-15685, ETX-12338, ETX-12339

4.7.4   Watermark timestamps may show local server time

The watermark shown on audit images may now use the local server time instead of UTC time (default).

To configure the time zone shown in the watermark:

- Edit a profile. Under the **General** tab, in the **Optional settings** box, add the following flag:

    ```
    proxy.CopyEventUTC =0
    ```

    Note: 0 = Local server time.

Note: This feature is also available in Version 11.5.6.

JIRA ID: ETX-15355

4.8   New file transfer and printing functionality

4.8.1   File and Print Manager shows the local and remote hostname

File and Print Manager now shows the local and remote host names. This usability improvement helps the user to easily identify which file browser pane corresponds to which host.

JIRA ID: ETX-15877, ETX-16145, ETX-16146

4.8.2   File and Print Manager shows a drive selection dropdown

To facilitate file transfers, File and Print Manager now displays a drive selector for local and remote Windows hosts.

 JIRA ID: ETX-12664

4.9 Keyboard functionality improvements

4.9.1 New keyboard file (Icelandic)

Exceed TurboX now provides the Icelandic keyboard file (`icelandic.kbf`). You may set this keyboard layout as the primary layout, if the option **Auto-select** is selected in the profile, and the Icelandic language input is currently activated on the Windows desktop.

 Note: The Icelandic keyboard file has been added to the connection node installation package.

JIRA ID: ETX-16403

4.9.2 Ability to configure keysyms mappings for AIX hosts

A new profile option was added to configure keyboard mappings on AIX hosts:

`proxy.OldNumPadMapping=<value>`

The `<value>` can use the logic-OR (arithmetic addition) of the following numbers:

- 1 - Change the navigators to the old keysyms
- 2 - Change the arithmetic signs to the old keysyms
- 4 - Change the numerical digits to the old keysyms

Example: Set `proxy.OldNumPadMapping=5`, which is 1 + 4, to convert the `KP_Left` to `Left` and the `KP_1` to `1`.

JIRA ID: 14001

4.9.3 Function keys displayed on Macbook Pro Touch Bar

When an ETX window has focus, the function keys (F1 to F12) will now be displayed on the MacBook Pro Touch Bar

JIRA ID: ETX-13318

4.9.4 Option to send Mac command shortcuts to remote hosts in MWM

Some Mac command key shortcuts (such as ⌘ + w, ⌘ + m or ⌘ + `) are special key combinations which are handled by the user's local system and are not sent to the remote host.

A profile option has been added to ignore local handling of these key combinations and to instead send them to the remote host.

Example: To send the **⌘ + w** and **⌘ + m** keys to the remote host, use:

`proxy.MacCommandShortcutSendRemote=wm`

This option specifies one or more characters representing command key shortcuts which will be passed to the remote host instead of being handled by the local MacOS system.

JIRA ID: ETX-12325

4.10 Authentication related changes

4.10.1 Stripping domain from username during account creation on first login

When an ETX user logs in for the first time and the ETX Site is configured with **Create users on first sign-in** enabled, their user account will be created with the username set to the username which was typed on the login screen. If your ETX Site is configured to use LDAP (or PAM with LDAP back-end), you can end up with inconsistent ETX usernames due to the ability of LDAP to accept multiple username formats.

For example if Bob Smith logs in to ETX for the first time as `bobsmith@company.com`, and Judy Jenkins logs in as `COMPANY\jjenkins`, two new users will be created with the usernames `bobsmith@company.com` and `COMPANY.COM\jjenkins`.

To remedy this situation, the following option has been added to the LDAP and PAM authentication pages:

- **Remove domain from username during sign-in**

When this option is enabled, the domain prefix or suffix will be removed. In this example the user accounts would be created as `bobsmith` and `jjenkins`.

JIRA ID: ETX-15734, ETX-16331

4.10.2 Script to fetch user email address and full name on first login

When users log into ETX for the first time with the option **Create users on first sign-in** enabled, they will be prompted to enter their full name and email address in order to create their user account. When using LDAP or OTDS authentication, the LDAP or OTDS attributes for full name and email may be specified in which case those settings will be pulled from the authentication database.

An option has been added to execute shell script(s) to fetch the user's email address and full name:

- if you are using Native or PAM authentication, or
- if your LDAP or OTDS attributes for email and full name are not set or are returning empty results.

If these scripts are successful, you may additionally choose to hide the first time login dialog which is displayed to users the first time they log in to ETX.

The following options are provided in the **Authentication** tab in **Site Settings** for all authentication types (Native, PAM, LDAP and OTDS):

Setting	Purpose
Execute commands to fetch user information on first login (for Native, PAM) -or- Execute commands to fetch user information if not set by attributes (for LDAP, OTDS)	Enables administrators to execute a shell script or command to retrieve the user's email address or full name. • Set the **Full name** property to the full path of a shell script on ETX Server which returns the full name of the user who is logging in. • Set the **Email address** property to the full path of a shell script which returns the email address for the user who is logging in. Instructions on how to write and configure these scripts (including environment variables to check the current user) are provided in the product documentation.

Setting	Purpose
Hide first sign-in dialog if user information has been set	Combined with the option above, allows administrators to hide the first time login dialog (which is otherwise displayed to the user after successful login, and asks them to enter their email address and full name, and download the Client Launcher).

JIRA ID: ETX-15512, ETX-15537

4.10.3   Extending the time period of the PAM password expiration message

When a user logs in to an ETX Server which is configured for PAM authentication, a warning message may be displayed to the user on the login screen if their password is about to expire. Prior to 12.0.1 this message would only be displayed for a brief instant before the login would proceed. To allow users to read this message, a 5 second delay has been added prior to processing the login, to give time for users to read the login warning returned by the PAM module.

To increase or decrease this delay, you can add the following under **Site Settings > Optional settings**:

```
auth.secondsToDelayPamInfo=<delay_in_seconds>
```

JIRA ID: ETX-14373

4.10.4   Security improvement for authentication errors

If either an invalid username or invalid password were entered on the Login page, the following error message is returned:

```
Authentication failed. Credentials you provided are invalid.
```

Prior to Version 12.0.1, different error messages would be displayed if the username or password were incorrect. The new error message does not provide attackers with any information about user accounts in the system

JIRA ID: ETX-13738

4.11   Native Client Launcher improvements

This section lists the improvements made to ETX Native Client Launcher (`etxlauncher`).

4.11.1   Launching or resuming new sessions via Native Client Launcher

Version 12.0.1 enables you to resume suspended Exceed TurboX sessions instead of always launching new sessions. To support this functionality, a new -action parameter has been added.

- To launch a session, use: `etxlauncher -action launch [params]`
- To resume a session, use: `etxlauncher -action resume [params]`

For details, see *OpenText Exceed TurboX 12 Dashboard and Client User Guide.*

JIRA ID: ETX-13717, ETX-15475

4.11.2   Windows launcher support for Kerberos SSO

Sessions launched and resumed with Native Client Launcher for Windows (`etxlauncher.exe` and `etxlauncher.com`) now support Kerberos authentication by passing the Windows login token to the Kerberos server

configured in the ETX Server Settings. To use Kerberos authentication, pass the `-k` option to Native Client Launcher on Windows platforms. This parameter can be used instead of saving username and password or API key into launch scripts, providing better overall security and avoiding the need to enter credentials during launch.

For details, see *OpenText Exceed TurboX 12 Server Manager Administration Guide.*

JIRA ID: ETX-12094

4.11.3   Passing xstart parameters (commandmacro)

Native Client Launcher now supports an optional `commandmacro` parameter which can be used to pass runtime information to Xstart commands. This parameter only works with `etxlauncher -action launch.`

For details, see *OpenText Exceed TurboX 12 Server Manager Administration Guide.*

JIRA ID: ETX-15198

4.12   New creation date column for users, profiles and sessions

The following columns have been added, to make it easier to find and sort objects in ETX Server Manager:

- **Created on** column has been added to the **Profiles and Templates** grid
- **Created on** column has been added to the **Users** grid
- **Started on** column has been added to the **Sessions** grid

Note: The **ID** column has been removed from the sessions and profiles grids.

JIRA IDs: ETX-15471, ETX-15589, ETX-16062

4.13   New Top Users report

A new type of report has been added to the **Reports** page under the **Maintenance** tab. It displays a ranking of the most active ETX users. More specifically, the report displays a list of users, along with that user's total number of active and suspended session hours and the maximum number of concurrent sessions for a given time period.

The report can be sorted and filtered based on date range and user group, and can be exported to `.csv` format.

A new REST API has also been added to generate the Top Users report. For related REST API information, see *REST API for Top Users report* on page 41.

JIRA ID: ETX-12393, ETX-15594

4.14   New network connection timeout

If the ETX Server does not respond when a user performs an action in the user interface, ETX Dashboard displays a network connection timeout message. The timeout has been increased from 15 to 30 seconds to avoid situations where an error is displayed to the user when the server is simply busy.

JIRA ID: ETX-7932

4.15   Displaying backup information at the end of ETX Server datastore backup

The `/bin/etxsvr datastore backup` command in the ETX Server installation path now prints information about the backup file to console.

JIRA ID: ETX-15322

4.16   Logging improvements

4.16.1   Improvements to HA server logs

Certain ERROR log entries that indicate normal cluster operation have been removed or reduced to DEBUG or WARNING level, to avoid confusion.

JIRA ID: ETX-16153

4.16.2   Changes to the Activity log

This section lists the changes made to ETX Activity log.

JIRA ID	Issue description
ETX-16519	The `GET /v2/log/server/activity` REST API now includes the *serverName* parameter for login events, so that you can see which server in an HA cluster that a user logged into.
ETX-16639	If launching a session fails due to an issue on a connection node, the administrators may need to identify this node, so that they can disable or troubleshoot it as required. The activity log for `SESSION_LAUNCH_FAILED` (MID 211) now records the node ID that returned the error.
ETX-15715	Separate messages are now displayed for Server and Site settings changes. A new MID (427) was added for site changes, and server changes continue to use MID 401.
ETX-15329	Enabling or disabling the `Launch new sessions` property of a connection node will now trigger an activity log event (MID 404 - Node settings changed).

4.16.3   Additional logging information for etxlauncher

Version 12.0.1 improved logging of etxlauncher information, by allowing users to turn on verbose logging.

To create the file that will turn on verbose logging:

Platform	Details
Mac/Linux	Terminal prompt> `touch ~/.etxc-webcache/.etxlauncher-verbose`
Windows	CMD prompt> `type > %USERPROFILE%\.etxc-webcache\.etxlauncher-verbose 2>nul`

Note: The `.etxc-webcache` folder may have to be created first. The folder will contain the log file with the additional logging information, i.e., `etxlauncher.log`. Other logging files may exist on Windows (e.g., `etxlauncher64.log`).

JIRA ID: ETX-15037

4.17 REST API improvements

4.17.1 Kerberos support for REST APIs

Version 12.0.1 added SSO support for REST APIs. This improvement enables writing scripts that authenticate as the logged in Windows user using their Kerberos token, and avoids the need to store API keys or credentials in script files. It can be used with the curl `--negotiate` parameter when accessing 12.0.1 or later REST APIs.

JIRA ID: ETX-15728

4.17.2 Allowing REST API calls from subnets only

For additional security, ETX may now be configured to allow REST API calls only from designated subnets.

To configure ETX to allow REST API calls from one or more subnets:

1. In ETX Server Manager, navigate to **Site Settings> General > API settings**.
2. Select **Allow API calls only from subnets**.
3. In the provided text field, enter one or more subnets that may use and access ETX REST APIs (separate multiple subnets by a space). The following formats are acceptable:

```
192.168.2.1
192.168.2.0/24
fe80:0:0:0:0:0:c0a8:11
fe80:0:0:0:0:0:c0a8:1/120
192.168.2.1 192.168.3.0/24 fe80:0:0:0:0:0:c0a8:11
```

If ETX is configured to allow REST API calls from subnets only, and an API is invoked from a client address outside of the specified range, the API will return `403 Forbidden`.

Note: When deploying an ETX Server in a DMZ, ensure that your firewalls are configured to detect and block IP spoofing (e.g., by verifying that an external sender does not use an internal network IP address as the sender).

JIRA ID: ETX-15883

4.17.3 ISO 8601 formatted timestamps added to GET /v2/sessions

The following properties have been added to the response body for `GET /v2/sessions`:

`startTimestamp, currentTimestamp, lastSuspendedTimestamp`

These ISO 8601 formatted DateTimes were added as a convenience. The existing POSIX DateTime properties (`start, currentTime, lastSuspended`) continue to be available.

JIRA ID: ETX-15490

4.17.4   Parameter to return full object details in list GET APIs

A parameter `where_full_detail` has been added to the following APIs to return full object properties instead of a summarized list of objects:

- `GET /v2/users`
- `GET /v2/usergroups`
- `GET /v2/nodes`
- `GET /v2/nodegroups`
- `GET /v2/sessions`
- `GET /v2/profiles`

`where_full_detail` has the default value of 0. While this new filter can simplify REST API scripts by avoiding the need to call GET iteratively on a list of objects to fetch detailed information, the amount of detail returned by the API can cause long delays and huge result sets if called against a very large list of objects.

JIRA ID: ETX-15811

4.17.5   API to measure the responsiveness of user sessions

A new property, `responseTime`, has been added to the response body of `GET /v2/sessions` and `GET /v2/sessions/{id}`. This can be used to measure the responsiveness of the remote session and takes into account the network delay, type of application drawing, and decompression and rendering delays on the end user's desktop machine. The metric is updated only while the session is active. It should be ignored for suspended sessions.

JIRA ID: ETX-13887

4.17.6   Server returns HTTP 503 when in maintenance mode

When a REST API call is invoked against an ETX Server in maintenance mode, HTTP error code 503 (Service Unavailable) will be returned, with the message:

```
This server is in maintenance mode.
```

The user may invoke the REST API at a later time, when the server becomes available (is no longer in maintenance mode).

JIRA ID: ETX-15725

4.17.7   New License Server API obtains the list of Connected Sites

A new License Server REST API provides the list of connected sites. This REST API is available to all non-User accounts.

NEW REST API

```
GET /v2/licenseserver/connectedsites
```

This REST API returns a list of connected sites with the following
attributes:`{"server", "ipAddress","accepted", "status", "allocationType", "licensesAllocated", "lic ensesInUse"}`

JIRA ID: ETX-14955

4.17.8 REST API for Top Users report

Version 12.0.1 introduces the following REST API: `GET/v2/reports/topusers.`

This returns a list of users along with their total session hours and maximum concurrent sessions over a defined time period. For more information, see *New Top Users report* on page 37.

JIRA ID: ETX-12393, ETX-15594

4.18   New Mesa version

Exceed TurboX now uses Mesa Version 19.2.4.

JIRA ID: ETX-16668

4.19   New version of Java (1.8.0_202)

Exceed TurboX now includes an updated JRE 1.8.0_202 (JRE version 8 update 202). The update was also done in Version 11.5.6.
JIRA ID: ETX-15979

4.20   New VirtualGL package

Virtual GL package has been updated to Version 2.6.3. The following package has been provided on the installation media: `virtualgl_2.6.3_linux_2019-10-30_8cfafd3.tar.gz`

JIRA ID: ETX-16190

5   New features in Version 12.0.1 hotfixes

5.1.1   New features in Hot Fix 6-SERVER

The following features and enhancements were added in this hotfix:

JIRA ID	Description
ETX-16976	**Reusing old command macro URLs upon migration** Customers may migrate to Version 12 and beyond, from a legacy version, and reuse the commandmacros URLs used in the legacy version. A mapping file is generated during import, and placed in the server directory (`data/custom/profileid.map`). It contains mapping between the old `profileIds` and new `profileIds` (a list of `old_integer_id=new_ETXID`). **Note:** ETX Server will replicate the mapping file to all the servers in the cluster. ETX Server does not handle files that are linked to etxdb. You need to copy the mapping file manually to all ETX Servers. For details, contact Customer Support.
ETX-13292	Added the ability to control the enabling and disabling of nodes via REST API. • The `POST /v2/nodes/{id} action` parameter now supports the following values: `{suspend_all_sessions, enable, disable}` • The description for this REST API is updated as follows:

JIRA ID	Description
	`Suspend all sessions on a node, or enable or disable a node.` **Note:** For backwards compatibility, the `start` value is now substituted with the `enable` value.

5.1.2   New features in Hot Fix 4-SERVER

The following features and enhancements were added in this hotfix:

JIRA ID	Description
ETX-16105	Added server side implementation of the following feature: *Multiple IP address support for "Alternative node addresses" (for clients).* For details, see the feature description on page 25 in the section *New features in Hot Fix 3*.
ETX-16919	**Improvements to HTTPS Proxy feature** Version 12.0.1 added support for HTTP(S) tunneling proxies, which enabled remote session traffic to be directed through a secure proxy server. In the **Site Settings > General** tab, ETX Server administrators could configure a specific proxy server or instruct the client to use the proxy server configuration on the user's system. Both HTTP and HTTPS proxies were supported, as was proxy authentication. This hotfix adds the following changes : • **Modified `proxyurl` and `launcherproxyurl` arguments:** o `proxyurl` — Now specifies proxy for the client (prior to this hotfix it specified proxy for ETX Client Launcher); o `launcherproxyurl` — Now specifies proxy for ETX Client Launcher • **New site settings (for proxy launcher connections)** To configure proxy launcher connections: 3. Navigate to **Site Settings >General > Proxy server.** 4. Select **Use proxy server for client launcher connections**. • If this option is selected, ETX Client Launcher will use the setting from the client system or ETX Server. • If this option is not selected, ETX Client Launcher will make a direct connection to ETX Server. • **Deprecated environment variables:** The following environment variables are no longer interpreted by ETX Client Launcher**:** `no_proxy, https_proxy, http_proxy`

JIRA ID	Description
	Note: Starting with 12.0.1.4-SERVER hotfix, customers who wish to use the new HTTP(S) proxy feature must manually update the ETX Client Launcher to the same version or later (the update can be downloaded from User Settings after applying the 12.0.1.4-SERVER update). As well, they must apply 12.0.1.3 (a.k.a. 12.0.1 Runtime HF3), or later. Previous versions of the Client Launcher and Runtime can still be used if HTTP(S) proxies are not used.

5.1.3   New features in Hot Fix 3-SERVER

The following features and enhancements were added in this hotfix:

JIRA ID	Description

ETX-15490	**New REST API functionality (readable formatted date)**
	
	For date attributes, added the ability to return xxxTimestamps attributes.
	
	Example:
	
	`"timeStart": 1578082389000` — Date is not formatted.
	
	`"timeStartTimestamp": "2020-01-03T15:13:09-0500"` — Date is formatted.
	
	The following new xxxTimestamps have been added:
	
	`"timeStartTimestamp": "2020-01-03T15:13:09-0500",`
	`"timeLastSuspendTimestamp": "2020-01-03T15:13:38-0500",`
	`"timeLastResumeTimestamp": "2020-01-03T15:13:55-0500",`
	`"timeLastHangTimestamp": null,`
	`"timeIdleStartedTimestamp": "2020-01-03T15:13:55-0500",`
	`"startTimestamp": "2020-01-03T15:13:09-0500",`
	`"currentTimestamp": "2020-01-03T15:55:52-0500",`
	`"lastSuspendedTimestamp": "2020-01-03T15:13:38-0500",`
	`"lastResumeTimestamp": "2020-01-03T15:13:55-0500",`
	`"lastHangTimestamp": null,`

ETX-14797	**New License Server Stats API query**
	
	`GET /v2/licenseServer/stats`
	
	Description: Retrieve summarized information about license usage and availability.
	
	Returns:
	
	`{`
	`   "totalLicensesInstalled": int,`
	`   "totalStaticLicensesAllocated": int,`
	`   "totalLicensesInUse": int,`
	`   "totalLicensesFree": int,`
	`   "totalClientSites": int,`
	`   "totalClientSitesConnected": int,`
	`   "totalClientSitesDisconnected": int`

JIRA ID	Description
	`}` • `totalLicensesInstalled`: The total number of licenses from all license keys installed on the server or cluster • `totalStaticLicensesAllocated`: The total number of licenses allocated to connected sites statically • `totalLicensesInUse`: The sum of licenses in use across all connected sites (including local server licenses in use) • `totalLicensesFree`: The total number of licenses available which are not statically allocated (totalLicensesInstalled - totalStaticLicensesAllocated) • `totalClientSites`: The total number of Connected Sites (connected and disconnected status only; on hold sites are not counted) • `totalClientSitesConnected`: The total number of Connected Sites with the Connected status • `totalClientSitesDisconnected`: The total number of Connected Sites with the Disconnected status

6   New features in Version 12 hotfixes

This section describes the features added via hotfixes, released after Version 12 and prior to Version 12.0.1.

6.1   New features in Hot Fix 5-SERVER

This section describes the features added in this hotfix.

JIRA ID	Description	Affects
ETX-16125	**Case insensitive sort order(sorted by profile name)** Alphabetical sorting of profiles and sessions by profile name is now case insensitive (the name can begin with either uppercase or lowercase). This change matches the sort order of the Icon view in ETX Dashboard. This change affects: • ETX Dashboard > List View -> Profiles • ETX Server Manager > Profiles and Templates • ETX Server Manager > Sessions	ETX Server
ETX-16126	Added dynamic resizing of the following user interface components: • ETX Dashboard > Profiles pane • ETX Server Manager > Sessions and Profiles pane • ETX Server Manager > Templates pane	ETX Server

JIRA ID	Description	Affects
	They are now dynamically resized and occupy the entire available space. This change allows for a larger number of entries on the screen and aids the user in locating the desired entry in a large list more easily. Previous maximum number of entries was 21 per page.	

6.2   New feature in Hot Fix 10

The following feature was added in this hotfix:

JIRA ID	Description	Affects
ETX-15997	Added a bi-directional CopyAudit feature to track file transfers made via the File and Print Manager and elpr.	etxproxy

6.3   New feature in Hot Fix 4

This section describes the features added in this hotfix.

JIRA ID	Description	Affects
ETX-13927	Updated the keyboard layout functionality. Added the ability to auto-select the Spanish (Mexico) keyboard layout, by linking the relevant language id to `latinam.kbf`.	ETX Client (Windows)

6.4   New feature in Hot Fix 1

The following feature was added in this hotfix:

JIRA ID	Description	Affects
ETX-15466	**Enhanced URL-based argument-passing mechanism** ETX Server can launch profiles using a specially formatted URL, which can be used to launch profiles via desktop shortcuts. This functionality has been enhanced in 11.5.2 to support parameterized URLs for the Command field. The parameters passed via a URL could be referenced in the Command field of an Xstart using the @{} macro. Version 12 adds a support for passing CommandMacros to the Parameters and Application fields for the Windows Application Xstart method. CommandMacros passed via the URL are expanded in the Applications and Parameters field for Windows applications. **Example of a launching URL with parameters:** `http://myserver.etx.com/etx/#profile=1&commandmacro=para`	Xstart

JIRA ID	Description	Affects

	`m1=value1,param2=value2,...,paramN=valueN`
	
	Where:
	
	• `#profile=NNN` specifies the profile ID to launch
	
	• `commandmacro` indicates the start of the Xstart parameters
	
	• "`=`" and "`,`" are used to separate parameters in the URL
	
	Parameter values that contain non-alphanumeric characters must be percent-encoded for URL safety. Percent encoding is a common standard. You can use online encoders such as https://www.urlencoder.org/
	
	Parameters are ignored unless the Command, Parameters and Applications fields in Xstart reference them by name using the `@{}` macro. For example:
	
	`/usr/bin/X11/xterm -ls -e @{param1} @{param2}`
	
	This will insert value1 in place of `@{param1}` and value2 in place of `@{param2}`.	

7   New features in Version 12

This section lists the features added in OpenText Exceed TurboX Version 12.

7.1   New zero configuration installation of ETX Server

The Install Wizard has been removed from Version 12. The configuration settings from the Install Wizard (e.g., authentication and licensing mode) have been moved into the Server Manager area. This makes ETX Server installation shorter and simpler and eliminates the need to stop ETX Server to make configuration changes.

JIRA ID: ETX-7540

7.2   New ETX Server architecture

ETX Server has undergone a number of architectural changes to support integrated high availability, improve security and performance, and simplify configuration and management.

Embedded datastore — ETX Server no longer stores application data in an external database, such as IBM DB2 or Microsoft SQL. Instead, application data is stored as a combination of loose files as well as an internal application datastore. This provides a number of benefits to ETX administrators:

- Easier and faster deployment
- No more database management / hosting
- No more database licensing fees
- Integrated high availability with ETX Server clustering
- Greater scalability by eliminating the database as a potential bottleneck

Elimination of Apache Tomcat—ETX Server now runs as a native application with an embedded Oracle Jetty web server. Earlier versions of ETX Server ran inside Apache Tomcat as a collection of Web Application Resource (WAR) files.

This re-architecture of ETX Server provides a number of benefits:

- A single login page and session across all areas of the application (Server Manager, Dashboard, REST APIs)
- Eliminates Common Vulnerabilities and Exposures (CVEs) associated with Apache Tomcat
- Reduced resource consumption
- Ability to configure web settings through Server Manager, including HTTP(S) ports and Java memory allocation
- Easier troubleshooting

Integrated High Availability support— ETX Server can now be added to a Highly Available (HA) server cluster with up to four other ETX Servers. Each server in the HA cluster maintains a local cache of the application datastore which means that it can handle local logins. The datastore is kept synchronized with other servers in the cluster, including full recovery support when one or more servers is offline.

For more information, see *Active-Active High Availability of ETX Servers* on page 48.

Migration—ETX Server supports migration of 11.5.5 environments to Version 12 through a migration command during installation. The migration process is non-destructive, but the ETX Connection Nodes must be manually updated and re-registered with ETX Server.

For details, see *Migrating to the latest version of Exceed Turbo* in *ETX Installation and Configuration Guide.*

JIRA ID: ETX-7689

7.3 User interface improvements

A number of changes have been made to the organization of tabs in the Server Manager, as well as changes to site navigation and workflow.

7.3.1 Site Settings and Server Settings

- **Server Settings** — These settings are local to each ETX Server. They are not replicated to other servers in a HA cluster. They can be modified manually via the **Server Settings** tab in Server Manager, or programmatically using the `/bin/etxsvr config` script in the ETX Server installation directory.
- **Site Settings** — These settings affect the entire ETX Site. They are replicated to other servers in an HA cluster, so changing one of these settings will mirror the change to all other servers in the cluster. Site settings can be modified manually via the **Site Settings** tab in Server Manager, or programmatically using the new */v2/site/settings* REST APIs.

A number of other improvements have been made to improve administration and navigation, as described in the rest of this section.

JIRA ID: ETX-12621, ETX-13395, ETX-14119

7.3.2 New navigation dropdown

A new navigation dropdown has been added, allowing you to switch between the **Server Manager**, **Dashboard** and
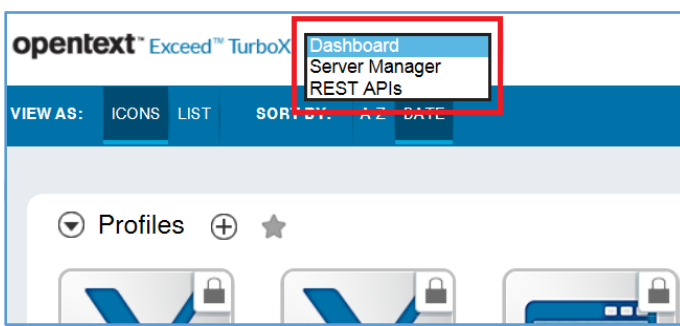
REST APIs pages, without having to manually type URLs and re-authenticate.

JIRA ID: ETX-13590

7.3.3 Server Logs and Server Status tabs

The **Server Logs** and **Server Status** pages have been moved into the **Server Manager** >**Server Settings** area. These pages are now alongside the **Server Configuration**, making it easier to configure and view all Server-related information in one place.

The **Scripts** tab (in the REST APIs section) has been removed as there is no longer a need to execute database scripts.

JIRA ID: ETX-8503

7.3.4 New Cluster tab in Site Settings

A new tab, **Cluster**, has been added to **Site Settings**. This makes it possible to view the status of all ETX Servers in a high availability (HA) cluster, and to identify problems in the cluster.

The Cluster tab provides information such as:

- Server cluster names and host names
- Connection state with other servers in the cluster
- The amount of data accumulating in the replication journal (typically a result of servers being offline or not accessible)
- Links to the Server Manager URL for each other server in the cluster, for easy administration

JIRA ID: ETX-12599

7.3.5 Elimination of Install Wizard

The Install Wizard has been eliminated and all settings can now be configured through the Server Manager on a live ETX Server. This means that:

- Authentication settings can now be configured on the Authentication tab in Site Settings.
- License mode settings (whether the Server operates as a license server, connects to a license server, or uses its own licenses) have been moved to the Licenses tab in Site Settings

JIRA ID: ETX-7540

7.4 Active-Active High Availability of ETX Servers

In Version 12, multiple active ETX Servers, configured as a Server Cluster, provide highly available access to the ETX Dashboard and Server Manager web applications. Prior ETX versions used a failover-style configuration, with a single
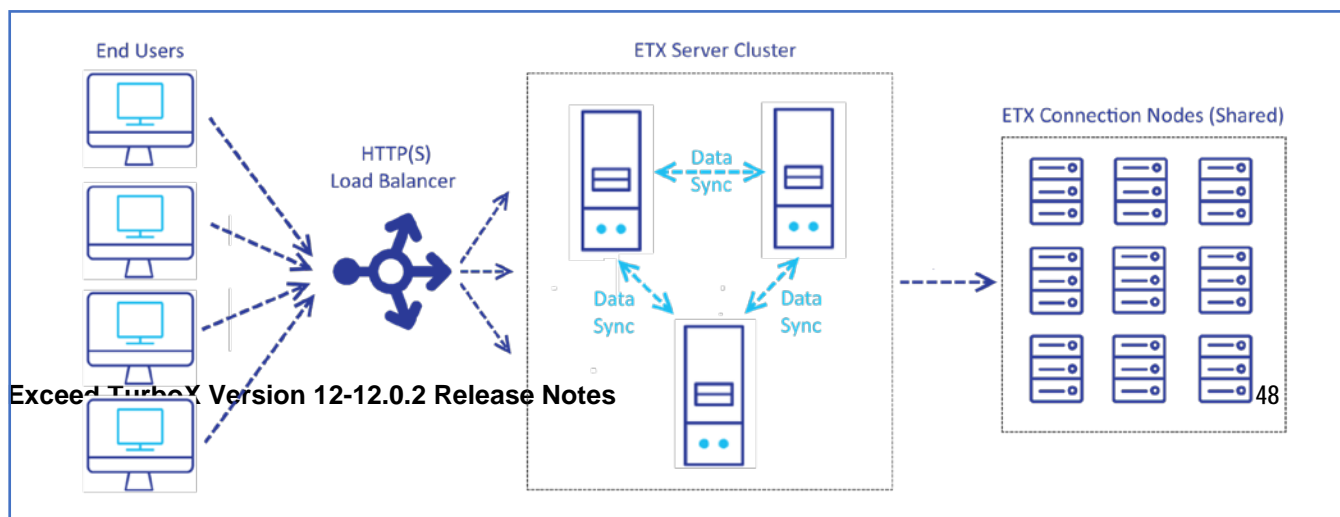
active Master ETX server and an offline Secondary ETX Server that would take over as the new Master server if the Master failed.

The new Active-Active HA solution provides several benefits over a failover solution:

- Multiple ETX Servers may share the web load for large environments.
- No data corruption will happen because of multiple ETX servers connecting to the same nodes.
- No DNS re-mapping is required to direct users to a failover server.
- No `keepalived` needs to be configured or used.
- HTTP(S) load balancer may be configured with a single front-end web address and direct sessions internally to multiple working servers.
- Data replication happens internally without installing or configuring an enterprise database with replication
- ETX Servers may be installed in multiple time zones.
- Failed servers will be resynchronized automatically when brought back online.
- Cluster status may be tracked in the Cluster tab in ETX Server Manager, under Site Settings.

Easy setup

Creating an ETX server cluster and joining ETX servers to the cluster can be done with a few `etxsvr` commands from a shell. Once the ETX Servers within a cluster are configured, users may log in to any server and make changes. The changes will be populated automatically to all other servers in the cluster. Data is synchronized internally between all ETX servers. No database or database replication needs to be configured.

Visual indication

If any abnormal or error condition is detected, affected servers or nodes are listed in red, to indicate to administrators that they require immediate attention.

Multiple time zones

ETX Servers within a cluster can be deployed in multiple regions with different time zones. For example, one server may be deployed in Toronto and another one in Hong Kong. All the timestamps from different servers are converted automatically to the time zone where the connecting ETX servers are located.

JIRA ID: ETX-7689

7.5   Backup and restore script

Version 12 includes backup and restore scripts that can be used to take periodic backups of ETX Server.

It is recommended to all customers to take periodic backups of ETX Server in case of an unrecoverable error, such as a corrupt database or accidental deletion or modification of objects (for example, incorrect usage of a REST API script).

The commands for backup are as follows:

```
bin/etxsvr datastore backup <backup_filename>

bin/etxsvr datastore restore <backup filename>
```

The backup file includes the application datastore (`/etxdata` directory) as well as configuration files and binary files such as application icons and runtimes.

For an ETX Server cluster, the backup command needs to be run only against a single server in the cluster. Each server maintains an identical copy of the application datastore, so the cluster can be rebuilt from a single backup file. For details, see *ETX Server Manager Administration Guide* and its chapter *Managing ETX Server from the command line.*

JIRA ID: ETX-13222

7.6   No more Java keys requirement for HTTPS

ETX Server now uses industry standard x509 `.pem` files for HTTPS encryption without the need to import the certificate into a Java keystore using the Apache Tomcat's *keytool* utility.

JIRA ID: ETX-7689

7.7   New built-in administrative account: etxadmin

`etxadmin` is now a mandatory account in ETX Server. This built-in administrator account has the following purposes:

- For initial server configuration, including setting up the initial authentication settings and creating the first full admin user
- To recover access to ETX server when the authentication system is not responding (e.g. LDAP, OTDS) or authentication nodes (PAM or Native authentication) are not accessible

The account name (`etxadmin`) has been hard coded to avoid potential conflicts between the built-in account name and actual user account names that exist in the back-end authentication system. The ETX Server administration utility (`bin/etxsvr`) includes functionality to reset the built-in account password, and to disable the built-in administrator account if desired.

If the password for the account has not been set via the `etxsvr` utility, it must be set when logging in to Server Manager for the first time.

JIRA IDs: ETX-12593, ETX-14132

7.8   Improvements to Connection Nodes

A number of improvements have been made to connection nodes to provide more accurate information, better logging, and easier management.

7.8.1   Node status changes

The status column in the Nodes grid has been updated to provide more useful information to ETX administrators:

Disabled— The node was disabled by an administrator. Disabled nodes no longer consume resources by communicating with ETX Server.

Enabled, Error — The node is enabled, but ETX Server cannot establish a connection to the node, the node is reporting an error, or ETX Server detected an error when communicating with the node. Details of the error are provided in the node properties.

Enabled, Connected — The node is enabled and connected to ETX Server, but is not ready to launch sessions or perform authentication (typically because of pending node updates or when synchronizing data with ETX server).

Enabled, Ready — The node is ready to accept new sessions and authentication requests.

JIRA ID: ETX-13735

7.8.2   Improved reconnection policy

ETX Server now uses a more intelligent method to recover communication with nodes:

- Retry connection immediately after first failure
- Retry once per second for the next 10 attempts
- Retry once per 10 seconds for the next 30 attempts
- Retry every 60 seconds afterwards

These changes provide fast recovery of failed connections, while reducing resource usage on ETX Server for nodes that are offline for long periods of time.

JIRA ID: ETX-14970

7.8.3   Node auto-registration

When a node that is registered with ETX Server is re-installed on the same system and with the same port number, ETX Server will reconnect to the node without requiring the node to be manually deleted and re-registered.

JIRA ID: ETX-14540

7.8.4   Load balancer penalizes nodes that fail to launch sessions

When a user launches a profile targeting a node group and the session fails to start, the node that was selected to start the session will be temporarily penalized by the load balancer.

This means that if a user tries to launch the same profile multiple times, the load balancer will select a different node each time to ensure that users do not get locked out because the load balancer selects the same (possibly non-working) node every time the session is launched.

JIRA ID: ETX-5049

7.8.5   PAM / Native authenticator role can be disabled on all nodes

The Native/PAM authenticator role can now be disabled on all nodes when ETX Server is configured for PAM / Native authentication.

In previous releases, at least one node had to have the authenticator role enabled when ETX Server was configured for PAM or Native authentication, and an authenticator node had to be registered before completing the Install Wizard (which was discontinued in Version 12).

In Version 12, having an authenticator node is not required because the built-in administrator account `etxadmin`can log in to configure such a node at any time.

JIRA ID: ETX-14074

7.8.6   Alternative node addresses can specify a port number

The alternative node addresses for server and client (configured in the node settings tab) can now include a port number as well as a hostname or IP address. In earlier versions, the alternative node addresses for client and server could specify only the hostname or IP address, and the default node port number would be assumed.

To change the port number of a node:

Enter the following information: `<hostname>:<port> or <ipaddress>:<port>`

The supported inputs are:

`<hostname>, <ip address>, <hostname>:<port> or <ipaddress>:<port>`

JIRA ID: ETX-14085

7.8.7   Option to disable session launch on nodes

A new option to enable or disable session launching has been added to the connection node.

This option enables administrators to temporarily stop sessions from being launched on a node (e.g. for temporary maintenance), without disabling the Proxy Manager role. Disabling the Proxy Manager role can remove the node from node targeting lists and published application lists so should only be used to indicate a permanent change in a node's function.

JIRA ID: ETX-13735

7.9   Improvements to Client Launcher

Version 12 includes improvements to Client Launcher and its workflow.

7.9.1   Java client launcher discontinued

The Java client launcher has been discontinued, and all users must now install the Client Launcher on their Mac, Windows or Linux PC to launch ETX sessions. The Java launcher was discontinued due to limited browser support, as well as to enable a simpler launch process with better mechanisms to detect whether the launcher is running.

JIRA ID: ETX-12618

7.9.2   Configurable timeout for the *Launcher not detected* message

If a user launches a session on a system that does not have the ETX Client Launcher installed, they will see a message appear after several seconds informing them that the launcher is not detected, and a download link to install the client launcher.

In Version 12, the timeout before this message is displayed to users has been reduced to 10 seconds (by default). This can be changed under **Site Settings > General tab > Session control**.

JIRA ID: ETX-11357

7.9.3   Client launcher automatic updates

Starting in Version 12, the client launcher that requires an update will automatically update itself when a session is launched. This eliminates the need for users to re-install the launcher manually when an update is required. It also avoids the need for administrators to publish a new version of the Client Launcher through software publishing tools.

This feature is supported on Windows, Linux and Mac client platforms.

Note: To launch remote sessions on ETX Server version 12, all users must re-install the v12 Client Launcher. ETX 12 will not detect or work with earlier versions of the client launcher.

JIRA ID: ETX-11357

7.10   Changes affecting user accounts and settings

Version 12 introduced a number of improvements to user accounts and settings.

7.10.1   Automatic sign-off due to idle timeout

For security reasons, ETX can sign users out of their ETX web session (Server Manager, Dashboard or REST APIs) after a period of inactivity.

The idle sign-out feature is off by default but can be enabled under **Site Settings > General tab > Security**. The idle timeout period can also be specified in minutes. When a user is logged out in this way, they will see a message:

```
Your session expired due to inactivity. You will need to re-authenticate to continue.
[OK]
```

JIRA ID: ETX-7122, ETX-13956

7.10.2   Account lockout from consecutive login failures

For security reasons, ETX can automatically lock users out of ETX after a specified number of consecutive login failures. This security mechanism applies to ETX Dashboard, ETX Server Manager and REST API login failures.

This feature is disabled by default but can be enabled (along with a configurable number of attempts) under **Site Settings > General > Security.**

New messages have been added to notify administrators and users when such a lockout event occurs. Users are notified by default when their personal account is locked out.

JIRA ID: ETX-12702

7.10.3   Secondary email address removed

Each user's settings previously contained two fields for the user's email addresses: **Primary email address** and **Secondary email address**. ETX 12 now provides a single field only, named **Email address.**

JIRA ID: ETX-12247

7.11 Improvements to Windows Desktop-Direct startup mode

Version 12 introduces a number of improvements to Windows Direct profiles.

7.11.1 Support for Per-Device RDS licensing

ETX Windows Desktop-Direct multi-user sessions now support Per-Device remote desktop session (RDS) licensing.

Note: Currently, the device ID is not synchronized with other remote access clients on the device, such as Microsoft RDP client. Connecting to a server with both ETX and Microsoft RDP may consume two device licenses, requiring the extra license to be revoked in the RDS License Manager.

JIRA ID: ETX-13846

7.11.2 Dynamic monitor and resolution change for Direct multi-user sessions

Windows-Desktop Direct multi-user sessions now automatically adjust the remote session to match changes in the number of monitors and resolutions on the user's local desktop machine, whether from live changes to Windows settings, or by transferring the ETX session to another machine with a different number of monitors or a different monitor resolution.

JIRA ID: ETX-12880

7.11.3 Support for Windows login screen in console mode

Windows Direct profiles running in console mode now support the **Windows login screen** authentication option. This means that users can now access the login screen on Windows 7, 8 and 10 hosts, as the console session is always used when accessing Windows desktop operating systems.

JIRA ID: ETX-13441

7.12 New file transfer and printing functionality

The File and Print Manager is a graphical file transfer and printing wizard that can be launched from the client menu inside an active ETX session. This utility combines the File Transfer Wizard and Print Manager in previous releases into a single utility, enabling two-way file transfer as well as printing of remote files via a right click menu.

New features in Version 12 include:

- Mac and Linux client support
- Support for Windows Direct sessions
- Per-profile options to enable or disable the File and Print Manager as well as a site-wide setting to disable it
- Per-profile options to enable upload, download, and printing features individually
- An integrated Print context menu for printing remote and local files
- Ability to specify the start path for the local and remote host via macros, as well as caching of the last used path on a per-host basis for convenience

JIRA ID: ETX-13118, ETX-8647, ETX-11594, ETX-13419, ETX-6747, ETX-8862,ETX-12337, ETX-12334, ETX-12799

7.13 New utility used for remote printing (`etxft`)

Version 12 no longer includes a stand-alone `elpr` utility because the `elpr` functionality has been copied to `etxft`(the utility that launches the File and Print Manager).

To use `etxft`to print remote files, use the following command:

`etxft -print <filename>`

Because `etxft -print` and `elpr` are functionally equivalent, you can still print to ETX 12 using `elpr`. However, forwards compatibility is not guaranteed, so it is recommended that you switch to use `etxft -print` instead of `elpr`.

Notes about remote printing support:

• Users can no longer print to a suspended session. They must resume a session prior to using the remote printing feature.
• If a user attempts to print a non-printable file, such as a binary file, they will be notified that the file cannot be printed.
• If a user attempts to print via the command line, but remote printing is disabled in the profile, they will be notified (an error message will be displayed).

JIRA ID: ETX-7463, ETX-13419

7.14   New display format in ETX Dashboard (List View)

A new List view has been added to the ETX Dashboard as an alternative to Icons view. The List view displays profiles in a more compact way and is designed for users that typically have dozens of profiles or active or suspended sessions. The List view makes it easy to:

• Sort profiles and sessions by a variety of profile or session attributes, such as the startup mode, profile name or session status.
• Search for profiles and sessions by name
• Expand the profiles or sessions pane to view even more profiles or sessions in a single view

To switch between the List and Icons view:

From the **View As** menu (located in the top left corner of ETX Dashboard), select the preferred view (**List** or **Icons**).

JIRA ID: ETX-10410

7.15   New icons for XDMCP Broadcast and Query group profiles

The default XDMCP Query and Broadcast group profile icons have been updated to make them easier to distinguish from other default icons.

New icon	Represents…
	XDMCP Broadcast —Sends an XDMCP broadcast message to all the machines on the network asking if they support the protocol. ETX compiles the responses into a list of desktop hosts available for launching desktops, and the user can then select which machine to connect to.

New icon	Represents…
	XDMCP query— Connects to a single specified host and attempts to launch a desktop (instead of having it selected from a list).

JIRA ID: ETX-7952

7.16   Launching profiles via URL on the first login

First time users who do not have an ETX user account can now successfully launch profiles using shortcuts (which specify a #profile parameter in the URL). The profile will now be launched after the user account is created on first login.

JIRA ID: ETX-13276

7.17   Hiding the ETX Client Help menu

The Help action in the client-side menu can now be disabled using the following **Optional setting** in the profile:

```
proxy.ShowClientHelpMenu=0
```

JIRA ID: ETX-14141

7.18   Improvements to Copy and Paste functionality

Version 12 includes a number of usability improvements to the Copy and Paste feature.

7.18.1   New Copy and Paste profile options

The Copy and Paste tab in the ETX profile now has two groups of options:

- **Edit menu items** — Controls which options are displayed in the client Edit menu. If all options are cleared (disabled), the Edit menu is hidden.
- **Clipboard synchronization** — Enable remote to local and local to remote clipboard synchronization and specify which X buffers are used in each direction.

  For details, see *Configuring Copy and Paste settings in Advanced mode*, in *ETX Server Manager Administration Guide* (or *User's Guide*).

JIRA ID: ETX-13263

7.18.2   Copy Rectangle shows offset and image size

The **Edit > Copy Rectangle** command in the client menu now displays an indicator of the X and Y offset as well as
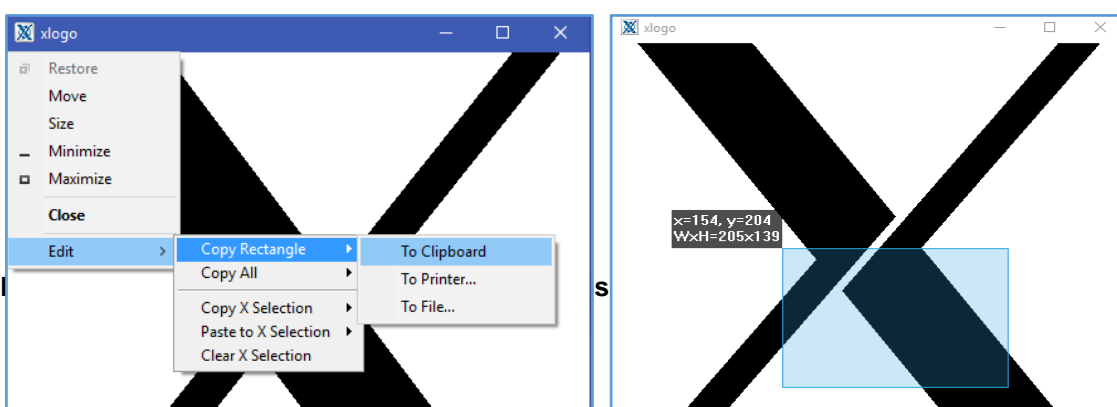
width and height of the selection.

JIRA ID: ETX-14530

7.19 Site banner

Version 12 allows you to add a site banner, which can be configured by ETX administrators. The site banner is displayed at the top of all ETX web pages (Server Manager, Dashboard and REST APIs) in red bold text. The site banner can be used to notify ETX users about upcoming system changes such as a reboot or update, and to make other important announcements. The site banner can be configured under **Site Settings > General > Notifications.**
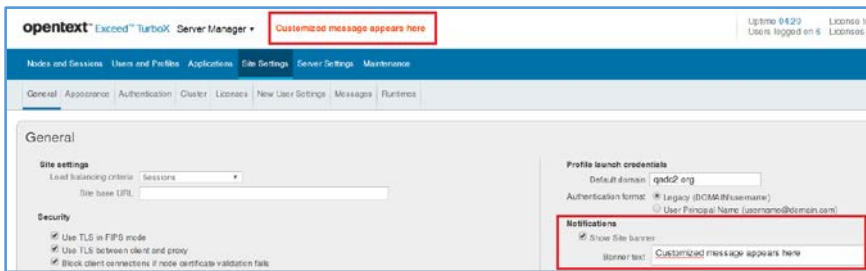
JIRA ID: ETX-13594

7.20 Deleting all messages after a configured period

Administrators can now configure a maximum retention period for user messages. By default, messages will remain for 30 days after which they will be deleted permanently.

It is recommended to leave this feature enabled to avoid continual growth of the ETX datastore.

Options to disable automatic message deletion and configure the message retention period are available under **Site Settings > Messages > Message options.**

JIRA ID: ETX-13609

7.21 New messages and notifications for administrators

Version 12 introduces a number of new messages to inform administrators and session owners about important problems or events in ETX.

7.21.1 Message when License Server cannot be reached

Administrators may now receive an email notification if the ETX Server cannot reach the License Server for a specified time period. The message can be configured under **Site Settings > Messages > For administrators.**

Note: There is a 72-hour grace period for administrators to resolve connection issues to the license server before the connected server (license consuming server) starts blocking sessions from starting or resuming.

JIRA ID: ETX-8964

7.21.2 Message when an ETX Server in an HA cluster is not reachable

Administrators may now receive an email notification when an ETX Server in an HA cluster cannot reach another Server in the cluster within a specified timeout period. This message can be configured under **Site Settings > Messages > For administrators**.

Note: There is a sub-option to send a message when the connection is restored. It is recommended that you enable this sub-option.

Note: If a server fails, each other server in the cluster will send a message for redundancy / fault tolerance reasons. This means that administrators may receive multiple messages.

Note: It is important to resolve the HA cluster member failures quickly because each other server in the cluster will maintain a backlog of all datastore transactions to synchronize with the failed server when it comes back online. If a cluster member is left in a disconnected state for a long period of time, other servers in the cluster may run out of disk space or there may be a long re-synchronization delay due to the large amount of backlogged recovery data. If a clustered server cannot be recovered in a timely fashion, it is recommended that you remove it from the cluster and re-join it later.

JIRA ID: ETX-12486

7.21.3 Message when a Node is low on disk space

Administrators may now receive an email notification when a Connection Node runs low on disk space. This message can be configured under **Site Settings > Messages > For administrators**.

Connection Nodes must have free disk space available to perform file-related tasks, such as downloading runtimes, applying node updates, recording session traces, and transferring files.

Note: A common reason for low disk space on the node is when a user starts a trace and leaves the trace running for a long period. There may also be old trace files, runtimes, and logs that have accumulated over time. To quickly locate the source of disk usage on Linux, Solaris or AIX nodes, you can open the node installation directory in shell and invoke the *du* command.

JIRA ID: ETX-11671

7.21.4 Message when a Node is unreachable

Administrators may now receive an email notification when a connection node is unreachable by ETX Server for a specified minimum duration. This message can be configured under **Site Settings > Messages > For administrators**.

Unreachable nodes will enter the **Enabled, Error** state and the following will happen:

- The node cannot launch sessions
- Suspended sessions on the node cannot be resumed, transferred or terminated
- Node resource usage and session information will be out of date
- ETX Server will continually try to re-establish a connection to the node
- PAM and Native authentication attempts will fail, if the node has the AUTH role enabled

Note: There is a sub-option to send a message when the connection to the Node is restored. It is recommended to enable this option to avoid unnecessary work and to provide a history of what happened.

Note: You may receive a notification from multiple ETX Servers if the node is registered to an ETX Server HA cluster.

Note: If a Node is offline for a long period (or permanently), it is important to disable or delete the node in Server Manager to free up resources on ETX Server. Otherwise ETX Server will continually attempt to re-establish a connection with the node.

JIRA ID: ETX-11671

7.21.5   Message when ETX Server is low on disk space

Administrators may now receive an email notification when ETX Server runs low on disk space. This message can be configured under **Site Settings > Messages > For administrators**.

ETX Server must have free disk space available to write binary files and logs to disk, as well as to access the datastore. If the server runs out of disk space it will most likely result in server failure. It can also result in data corruption and unexpected server behaviors.

Note: A common reason for low disk space on ETX Server is the accumulation of binary files such as old runtimes, as well as a growth in the datastore when there is an accumulation of the recovery journal as a result of one or more servers failing in an HA cluster. To quickly locate the source of disk usage, invoke the *du* command from shell.

JIRA ID: ETX-12580

7.21.6   Message when a user account is locked out

Administrators may now receive an email notification when a user becomes locked out because of too many failed consecutive login attempts. This message requires that account lockout is enabled in **Site Settings > General > Security.** This message is disabled by default. It can be configured under **Site Settings > Messages > For administrators**.

If a user account becomes locked after a certain number of failed authentication attempts, you can have the account automatically unlock after a timeout period. If you have enabled automatic unlocking then it is not necessary to enable this notification.

If you prefer to unlock accounts manually, you may do so by accessing user properties under the **User and Profiles** tab in Server Manager.

JIRA ID: ETX-12702

7.22   New messages for session owners and users

Version 12 introduces a number of new messages for session owners and other users of ETX.

7.22.1   Message when the session proxy has crashed

Users may now receive an email notification when a session that they started terminates unexpectedly due to a crash in the ETX session proxy. This message is enabled by default. ETX administrators can change the default setting and apply it to all users via **Site Settings > Messages > For session owners**. Users can also enable or disable this message through the **Messages** tab in **User Settings**.

Proxy crashes should be rare but may be reproducible with certain applications or OS / hardware configurations. When the ETX proxy crashes, it automatically creates a proxy crash report which is saved to the installation directory of the Node.

Administrators can view a list of Node crash reports using the `/v2/log/node/{nodeId}/crashreports` REST API and download a copy of the crash report using the

`/v2/log/node/{nodeId}/crashreports/{fileName}`REST API. Proxy crash reports may then be sent to OpenText Customer Support for further analysis.

JIRA ID: ETX-11383

7.22.2   Message when a session is shared to a user

Users may now receive an email notification when a session is shared to them from another ETX user. This message is enabled by default. ETX administrators can change the default setting and apply it to all users via **Site Settings > Messages > For all users.** Users can also enable or disable this message through the **Messages** tab in **User Settings**.

JIRA ID: ETX-12222

7.22.3   Message to users when their account becomes locked out

Users may now receive an email notification when their user account becomes locked out due to too many failed authentication attempts. This message requires that account lockout is enabled in **Site Settings > General > Security**. This message is enabled by default.

ETX administrators can change the default setting and apply it to all users via **Site Settings > Messages > For all users**. Users can also enable or disable this message through the **Messages** tab in **User Settings**.

Note: It is recommended that you leave this message enabled as it can help prevent unauthorized access to the ETX environment by notifying users when someone tries to guess their password.

JIRA ID: ETX-12702

7.23   Configuring memory allocations for ETX Server components

ETX Server Version 12 includes options to specify how much memory to allocate to the Java Runtime Environment as well as `etxdb` (the ETX datastore process). These memory allocations can be configured from **Server Settings > Configuration > Memory allocation**.

Most of ETX Server runs inside of the Java Runtime Environment (JRE). By default, up to 50% of system memory is allocated to Java, and thereby to ETX Server. You may wish to change this percentage depending on total system memory and whether other important services are running on the same host as ETX Server.

The `etxdb` shared memory setting specifies the amount of memory allocated to ETX Server's internal datastore for the purpose of sharing cached memory between multiple threads. This value may be increased from the default value of 128MB to improve performance of ETX Server in a heavily loaded scenario.

JIRA ID: ETX-14209

7.24   Scheduling time for server maintenance

ETX Server performs a nightly cleanup every 24 hours starting at midnight, which primarily consists of deleting activity logs and messages that are older than the retention period.

This cleanup work can have an impact on Server performance due to the increased CPU and memory load on the system while the cleanup is occurring. Should you wish to configure a different time and date for this maintenance to avoid impacting users, a new flag has been added:

```
server.CleanupActivityLogScheduleAt = [ddd,]hh:mm[:ss]
```

-where-

`[ddd,]` is a new value, which belongs to the following set `{Sat, Sun, Mon, Tue, Wed, Fri}`

Examples — when to start ETX Server cleanup:

- Start ETX Server cleanup on Saturday at 12 a.m.:`server.CleanupActivityLogScheduleAt = Sat,00:00:00`
- Start ETX Server cleanup on Wednesday at 8 p.m.:`server.CleanupActivityLogScheduleAt = Wed,20:00`
- Start ETX Server cleanup each day at noon: `server.CleanupActivityLogScheduleAt = 12:00`

This flag should be added to **Site Settings > Server Settings > Optional settings**. If it is not set, the server will perform cleanup tasks every day at midnight (server local time).

JIRA ID: ETX-14556

7.25 Viewing, searching and downloading server logs

A new tab in Server Manager enables administrators to investigate ETX Server logs and take corrective actions.

From the **Server Settings > Server Logs** tab in Server Manager, administrators can:

- View a list of server logs
- View the contents of a specific log file
- Download a specific log file
- Download all server logs as a .zip file
- Search a log file for specific messages (e.g., ERROR)

The server logs `.zip` file may be provided to OpenText Customer Support to help debug issues with ETX Server. A new REST API has also been added to download the server logs as a `.zip`:

`GET/v2/log/server/alllogfilesaszip`

JIRA ID: ETX-8503, ETX-8504, ETX-14208, ETX-14461

7.26 Configuring ETX Server logging options

Administrators can now configure logging behaviors of ETX Server by changing the logging options in **Server Settings > Configuration > Logging** options. New options include:

- **Log level** — Adjusts the detail of server logs. Values range from Error (least verbose) up to Trace (most verbose).
- **Log filter** — A filter string that may be provided by OpenText Customer Support to gather specific server information.
- **Enable web access logs** — Turns on logging of web events, which can help to debug issues in the ETX user interface.

JIRA ID: ETX-14208

7.27 Changes to the Activity log

Multiple changes were made to ETX Activity log. Some of the changes are detailed below:

JIRA ID	Issue description
ETX-14874 ETX-12366	Activity log events can now be triggered by multiple different servers, when ETX Server is part of a highly available server cluster. Consequently, the following changes were made: A new column — **Server** — was added to the Activity log. It displays the server hostname (for a standalone server) or server cluster name (for a clustered server) that initiated the event. This column is not populated if the event is not triggered by the server. **Session ID** was removed from the Activity log table and moved into the event details, to make space for the **Server** column. The **Source** field in the **Event detail** dialog box displays "server" and "node" instead of "etxsvr" and "etxpm". The changes ensure that the user sees clearly which server originated the event.
ETX-13735	Some events have been removed because of changes in Version 12, for example: **Node Paused / Resumed / Stopped**.
ETX-12366	The Source column in the activity log now identifies the source of the event more precisely (this can be `server`, `node` or `install`). Activity log now includes multiple updated messages, to provide more information to the user as to the cause of a specific event.
ETX-8492	Runtime deployment failure events were added to the Activity Log.

7.28   REST API improvements

ETX 12 adds new REST APIs, options to configure API permissions, and a refreshed user interface for interacting with APIs in the web browser.

Note: Some REST API improvements were added in ETX 11.5.5 hotfixes. For details, see the relevant documentation.

7.29   Increased security against cross-site scripting attacks

Exceed TurboX has increased security, to address vulnerabilities that may arise when cross-site scripting is used. Consequently, a number of ETX objects may not use certain special characters. If the prohibited characters are used, a popup window appears, informing the user that the action undertaken or item used cannot be validated.

Item	Cannot contain…
Profile name	<>
Login	%*+,/;<=>^|
Full name	%*+/;<=>^|

Item	Cannot contain…
User and Node group names	%*+/;<=>^|

Example: Profile name contains the following character: **>**. A popup is displayed, informing the user as follows: `Profile name is invalid.`

JIRA ID: ETX-15599

7.29.1   Parameter changes to `apikeys` APIs

The `expiration` and `type` parameters for `POST /v2/apikeys` and `POST /v2/apikeys/user/{userid}` have been moved to the function body (JSON). The parameters are now hidden in the Swagger UI but can still be passed in the URL for backwards compatibility.
JIRA ID: ETX-12425

7.29.2   New APIs for Site Settings

Site settings can now be modified via REST APIs, which enables administrators to configure most ETX Site Settings using scripts.

The following APIs have been added for reading and modifying site settings:

REST API	Description
GET /v2/site/settings	Gets a list of all site settings
PUT /v2/site/settings	Change one or more site settings

Note: The PUT API requires only that you include settings in the request body that you wish to change. You do not need to PUT all settings.

JIRA ID: ETX-13504

7.29.3   New APIs to register ETX Sites with a License Server

APIs have been added to the ETX License Server to automate registration of Connected Sites (license consuming ETX Servers) as well as allocation of dynamic and static licenses to Connected Sites.

The following APIs have been added in Version 12:

REST API	Description
POST/v2/licenseserver/{hostname}	Register {hostname} with the license server.
DELETE/v2/licenseserver/{hostname}	Deregister {hostname} with the license server.

REST API	Description
`POST/v2/licenseserver/{hostname}/allocate/{number}`	Allocate {number} of licenses to {hostname}. 0 means dynamic allocation, whereas other positive numbers represent a static allocation.

These APIs are called against a License Server system (not against a server that is a license consumer).

Note: Licenses may be added and removed from ETX Server via the `/v2/site/licensekeys`APIs, which have also been added in Version 12. For information, see the section *New APIs to add and remove license keys*

JIRA ID: ETX-14973

7.29.4   New APIs to add and remove license keys

The following APIs have been added for viewing, adding and removing license keys from an ETX Server.

REST API	Description
`GET /v2/site/licensekeys`	Returns a list of objects with the following fields: `{ "id" "dateAdded" "dateExpires" "version" "licenseType" "licenseTotal" }`
`POST /v2/site/licensekeys`	Adds a new license key to ETX Server.
`DELETE /v2/site/licensekeys/{id}`	Deletes a license key with the specified ID.

JIRA ID: ETX-11804

7.29.5   New REST API for user login and registration

A new user login API has been added in version 12:

`POST /v2/users/login`

This API serves two functions:

- It records a login event to the activity log for that user.
- If the user does not have an ETX user account, and the ETX Site has been configured to allow user accounts to be created on first login, a user account will be created. If ETX Server is configured for PAM or Native authentication, or if the Full Name or Email attributes are not configured for LDAP or OTDS, you may pass the user's email address and full name as parameters in the body of the request. Otherwise, they are populated from the authentication system and the request body is ignored.

Note: When developing a GUI front-end to use in place of the ETX Dashboard, it is recommended that you call this API before performing API actions on behalf of the user to ensure that the user's account has been created and that a login event has been recorded.

JIRA ID: ETX-14557

7.29.6 User APIs now include messaging settings

The user object has been updated to include a group of properties for changing user message preferences. This enables users or administrators to configure which messages / emails are sent to users based on different conditions.

The following APIs now include this capability:

- `GET /v2/users/{id}`
- `GET /v2/users/current`
- `POST /v2/users`
- `PUT /v2/users/{id}`

JIRA ID: ETX-14697

7.29.7 New API for downloading ETX profile icons

A new API has been added in version 12 to download profile icons:

`GET /v2/profiles/{profileid}/icons`

The response body includes a URL for the small and large versions of the profile icon. This API was added to support development of custom user interfaces that replace the ETX Dashboard.

JIRA ID: ETX-14698

7.29.8 New API for downloading node logs and crash reports

The following REST APIs have been added to ETX Server for downloading crash reports from nodes:

REST API	Description
`GET /v2/log/node/{nodeId}/crashreports`	Retrieve a list of crash report filenames.
`GET /v2/log/node/{nodeId}/crashreports/{filename}`	Retrieve the specified crash report .zip package
`GET /v2/log/node/{nodeId}/logfiles`	Retrieve a list of node log filenames.
`GET /v2/log/node/{nodeId}/logfiles/{filename}`	Retrieve the specified log file

These APIs are usable and visible to Admin, Read-only Admin, Session Manager, Technical Support.

JIRA ID: ETX-8453

7.29.9 New API to download server log files as a .zip file

Administrators can now download server logs as a .zip file using the following API:

`/v2/log/server/alllogfilesaszip`

This API returns a `.zip` file containing all of the server logs. Note that each server in a high availability cluster maintains its own local logs. These logs may also be accessed from the **Server Settings > Server Logs** tab in Server Manager, by clicking on the **Download all server logs (.zip)** button.

JIRA ID: ETX-15454

7.29.10 New APIs for generating a report of top session and license users

New reporting APIs have been added for generating a sorted list of top session and license users:

```
GET /v2/reports/licenses/topusers
```

```
GET /v2/reports/sessions/topusers
```

Both APIs accept parameters to specify a group ID as well as a starting and end date to measure. Both APIs return a list of users along with the total time (in seconds, and as a percentage of total time) that they had a session or license active.

JIRA ID: ETX-15067

7.29.11 Ability to prevent users from creating never-expiring API keys

A new option was added under **Site Settings > General > API settings** to prevent users from creating never-expiring API keys.

Enabling this option prevents only user accounts from generating never-expiring keys. It does not prevent administrators from creating such keys on their own behalf or generating never-expiring keys on behalf of a user with `POST /v2/apikeys/user/{userId}`.

JIRA ID: ETX-13508

7.30   New OpenSSL version

Exceed TurboX now uses OpenSSL version 1.0.2r for all encryption-related tasks.

JIRA ID: ETX-14905

7.31   Discontinued and deprecated features or components

The following features have been discontinued in this release:

JIRA ID	Removed…
ETX-7198	Java client launcher support has been removed. Users wishing to launch ETX Sessions must install the native client launcher on their local Mac, Linux or Windows PC.
ETX-7540	ETX Install Wizard has been removed. It is no longer required to set up a new installation of ETX. Instead, use the appropriate tabs in ETX Server Manager, e.g., the License tab.
ETX-10563	The setting **Terminate session when X desktop exits** has been removed from the user interface. Instead, the setting **Terminate session when last application exits** will close the session when the last X client exits.

JIRA ID	Removed…
ETX-13263	These settings were removed from the profile **Copy and Paste** tab: **Send text in UNICODE** (configurable via a flag). **CUT buffers** from the **Xselection menu** **Note:** Additionally, the option **Allow copy and paste between local and remote** has been eliminated and replaced by separate options to configure clipboard transfer in each direction.
ETX-15063	The Site base URL has been removed from the **Site Settings > General** page.
ETX-15456	ETX Server for Windows is no longer provided in Version 12 because the data replication libraries used to synchronize ETX Servers in a cluster are not supported on Windows platforms. Windows nodes continue to be fully supported so there is no impact on Windows remote access capabilities. Only the ETX Server component (web GUI) must be installed on Linux or Solaris, including for Windows-only remote access environments.
	The VMware image (.ova) that was provided in earlier releases is no longer provided because the new ETX Server installation is designed to be simple and straightforward, with no database to configure and no Install Wizard.
ETX-7463	The `elpr` utility has been removed from the ETX DVD. The `elpr` utility has been deprecated. Use `etxft -print <filename>` to print files from remote hosts. This combines remote file transfer and printing capabilities into a single utility.

 Other changes may have been made and listed elsewhere in the document.

8   Fixed issues

This section lists the bugs and customer-reported issues.

8.1   Issues fixed in Version 12.0.2

This section provides information about past issues, fixed in ETX after the release of Version 12.0.1 (SP 1).

JIRA ID	Description
ETX-17522	Fixed an issue where an ETX server, which was removed and then deleted from an ETX Server Cluster while being active, remained listed at the Server Status page.
ETX-17521	Fixed an issue where active, suspended or shared session descriptions in Dashboard Tile View would add a line break after hyphens in hostnames. This extra line break caused the last part of session descriptions to be cut short.
ETX-17513	Fixed an issue where Windows Direct login errors were not visible, leaving a grey screen.

JIRA ID	Description
ETX-17508	Fixed an issue where etxproxy crashed with signal 11 [Segmentation fault]. The application sent too many Drag and Drop events in a single property, which caused the buffer overrun.
ETX-17393	Fixed an issue where MAC windows could not be raised above the session X windows in ICE WM.
ETX-17344	Fixed an issue where Kerberos Single Sign-on feature was not working for all users (they could not log in using this authentication method). The issue was fixed by increasing the maximum header size to 64k for both the request and response.
ETX-17322	Fixed an issue where an invalid account could be created if a user entered a username followed by the <Space> character (at the ETX Dashboard Login page). For example, if the user entered the username "abc", the following user account was created incorrectly: "abc ". The issue was fixed by trimming the Space characters entered by users.
ETX-17305	Fixed an issue where profiles published to an LDAP group were not visible in ETX Dashboard List View (only in the Icon View).
ETX-17192	Fixed a security issue, which may have been used in an SQL Injection attack (by manipulating Web UI code). All UI generated values are now sanitized by ETX Server, prior to being used in SQL queries.
ETX-17048	Fixed the `c.o.c.etx.utils.BeanUtils  Cannot write smtpPwd configuration value` error, by ensuring that incorrectly encrypted values are ignored.
ETX-17061	Fixed an issue where Windows Direct Multi-user sessions were stuck with a blank grey screen when credentials mode was set to Windows Login screen.
ETX-17047	Fixed a `c.o.c.e.c.mappers XMapperWrapper` error, by changing the output log from the ERROR level to DEBUG level. ETX will now show an error message with an Invalid ETXID value and not the entire stack trace.
ETX-16962	Fixed an issue where orphaned sessions could not be deleted via REST API.
ETX-16920	Fixed a windows focus issue affecting ETX Linux Client. A user resumed a suspended Multiple Window session and clicked in a window, but the clicked window did not come into focus.
ETX-16862	Introduced additional security measures to ETX Server to ensure safe downloading of client packages.

8.2   Issues fixed in Version 12.0.1 hotfixes SERVER

This section provides information about past issues, fixed in ETX server hotfixes after the release of Version 12.0.1 (SP 1).

8.2.1   Issues fixed in Hot Fix 7-SERVER
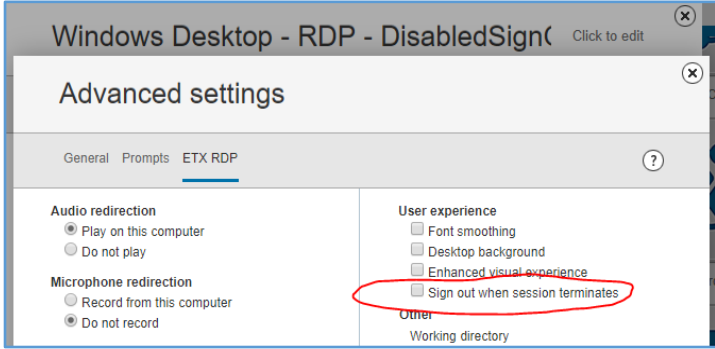
The following issues were fixed in this hotfix:

JIRA ID	Description
ETX-17216	Fixed an issue where, after upgrading to 12.0.1 Server HF6, it was no longer possible to resume a session from a shortcut. Instead, a new session was launched.
ETX-17214	Fixed an issue that caused the Event Bus Handling Error. The issue happened when a user launched a profile, at the same time that another user logged in or logged out.

ETX-17028	Fixed an issue where an ETX connection node became unusable by an ETX Server. The following error message in the etxsvr.log file describes the issue:
	
	`ERROR: duplicate key value violates unique`
	`constraint  "xsession_sharing_pkey"`
	
	The error may have occurred when a connection node was re-registered where previous data were not purged properly or due to a race condition with an ETX Server clustering.
	
	Note: It is not recommended to re-register a node, which has not been reinstalled first.

ETX-16887	Fixed an issue that required ETX Launcher to be updated, to ensure that HTTPS coercion is evaluated properly. In cases where HTTPS proxy is requested most servers do not need TLS connections to the proxy, but rather only to the ETX Site itself, and HTTPS is coerced to HTTP instead.

8.2.2   Issues fixed in Hot Fix 6-SERVER

The following issues were fixed in this hotfix:

JIRA ID	Description
ETX-16872	Fixed a REST API that caused ETX Launcher test to fail when the option **Allow API calls only from subnets** option was selected.
ETX-15499	Fixed the following issue affecting Windows Desktop RDP profiles : • If the setting **Sign out when a session terminates** was unchecked, the same setting in Version 12 would not be properly migrated. The profile itself would be migrated but the effect of the check box would not be in place correctly (ETX would still sign out when the session terminates although the expectation was to keep the Window session in place).

JIRA ID	Description

8.2.3   Issues fixed in Hot Fix 5-SERVER

The following issues were fixed in this hotfix:

JIRA ID	Description
ETX-17043	Fixed a template and profile issue due to which the credentials selector, username and password were not saved under the Startup tab of the Default Windows Desktop-Direct template and profile (i.e., when the modified template or profile was reopened, the setting was not in effect).
ETX-15790	Modified an existing API, to allow publishing a template to all users. Previously, you had to distribute a profile to a user or a user group before publishing a template. To publish a template, call the following REST API: `POST /v2/profiles/<id>` where `id` represents the template you wish to publish to all users. The description of the API now states: `Distribute a profile to a user or user group, or publish a template to all users.`

8.2.4   Issues fixed in Hot Fix 4-SERVER

The following issues were fixed in this hotfix:
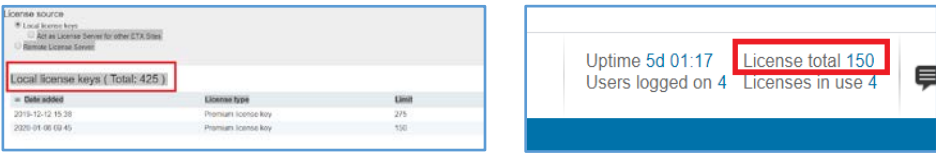
JIRA ID	Description
ETX-16998	Fixed an export/import issue (duplicated startup command). The issue occurred when a startup command was added to a template, and a profile was created from this template; when this template and profile were imported to ETX server, the startup command was duplicated in the profile.

JIRA ID	Description
ETX-16993	Fixed a startup failure issue, which happened due to a bug in etxdb code. Starting ETX Server failed immediately after running the `bin/etxsvr start` command or was aborted shortly after starting successfully. The following error message was shown in the `etxsvr.log` file: `FATAL: cannot make new WAL entries during recover` This issue was first reported after ETX 12.0.1 HF2 was applied. However, it is not related to any HF in particular, but may happen with any version of ETX Server Version 12. ETX Servers running in a cluster are not affected. The issue occurred only with a stand-alone ETX Server that was (or attempted to be) a server in an ETX Server cluster previously. **Note:** You must apply this hotfix to address this issue. Otherwise, starting ETX Server will continue to fail. Applying this HF will address the issue, and no loss of information will occur (i.e., data stored in ETX datastore is not affected by the bug).
ETX-16956	Fixed a REST API issue where `GET /v2/nodes` provided incorrect output (when using `where_status` with old status of Running, Disconnected, Paused, or Stopped). This hotfix made the following adjustments: • Marked the old statuses as DEPRECATED • Added new statuses: o Disabled o Enabled_Ready o Enabled_Connected, o Enabled_PatchQueued o Enabled_Patching o Enabled_Patched o Enabled_Error
ETX-16929	Fixed an issue where the customer kept receiving the following error in `etxsvr.log`: `Request from unknown port 443` The log file filled up very fast, which made it difficult to debug other problems. This hotfix changes the log level for this message to DEBUG from ERROR. **Note:** The change was made to assist the specific customer requirements. The error message was sent accurately (ETX Server was on one port and the load balancer on another one, whereas ETX design requires, for security reasons, that the same port be used by both). .
ETX-15938	Fixed an issue that prevented the users to launch any profile after they initially logged into ETX 12.0 portal. An incomplete (zero) size .xml file was created in `.etxc-webcache` directory and the session would time, with the following error: `Failed to download XML file.` The issue has been addressed. This hotfix adds a new proxy configuration for ETX Launcher in the server. The default is reverted to no proxy use. This setting can be overridden via the

JIRA ID	Description
	ETXLAUNCHER_PROXY environment variable, without any Server side changes.

8.2.5   Issues fixed in Hot Fix 3-SERVER

The following issues were fixed in this hotfix:

JIRA ID	Description
ETX-16955	Fixed an issue due to which the License total, visible under Site settings > Licenses, was not shown correctly in the top right corner (where the Server Manager showed the number from the last key entered and not a total of all keys).
ETX-16928	Fixed an issue where 2FA bounces users back to the Login page in ETX Dashboard, after failing to authenticate them. The issue was discovered when the user logged in to ETX, provided AD credentials and the 2FA Token, was initially able to log in for a few seconds, but then bounced back to the Login page.
ETX-16871	Fixed an issue where the profile name was not shown in the active session Details dialog box, and the macros that were shown instead (specified in the profile Session title field, at the Session tab), were not expanded. With this hotfix, ETX no longer uses a field named Session Title (which can contain macros, some of which may not be expanded) as a header for the active session Details window. Instead, it now uses a synthesized name `<profile> on <node>`, as in ETX Dashboard icon view. More specifically, if the profile contains custom title with either plain text or macros, the session title will show the correct information that was specified in the profile. But the active session Details window always shows the `<profile_name> on <display_id)>` information, identical to what ETX Dashboard shows for the active session name.
ETX-16861	Fixed an issue where ETX could not process the `./etxsvr collect` command on a Solaris 11.3 host. The "free" command was not found and the collection process was stopped with no `.tar.gz` file generated.
ETX-16829	Fixed an issue where the maintenance message, configured in ETX Server Manager, was not displayed if `etx_custom.css` was in place. ETX no longer loads `etx_custom.css` if server

JIRA ID	Description
	is in Maintenance mode.
ETX-16773	Fixed a login failure issue which occurred after a migration from Version 11.5. Users could not log in to ETX Dashboard due to the following Java exception : `org.apache.ibatis.exceptions.TooManyResultsException: Expected one result (or null) to be returned by selectOne(), but found: 2"` The issue happened with a user account that was previously deleted by an ETX administrator but re-created prior to the migration. It was caused by a bug in the migration code due to which such a deleted account still appeared as an active account. After this hotfix is applied, and ETX Server started, the invalid user accounts (if any) will be removed automatically. The hotfix will not affect any active user accounts.

8.2.6   Issues fixed in Hot Fix 2-SERVER

The following issue were fixed in this hotfix:

JIRA ID	Description
ETX-16909	Fixed an issue where a timestamp on the custom profile could cause a lookup failure (i.e., an updated custom icon could not be migrated from Version 11.5.6 to Version 12). More specifically, ETX replaced an existing icon with a new one but kept the same ID while adding a timestamp to the name. This allowed the final URL to be unique. During migration, ETX was not replacing the timestamp for lookup purposes, so while the icon was properly created, the profile could have a lookup failure and display the default icon.
ETX-16898	Fixed an issue that made a connection node unusable due to a bug in ETX Server. Depending on how many connection nodes were affected, the load balancing criteria for the session control may not have worked correctly, or an attempt to launch a session may have failed completely with the following error message: `Cannot find suitable node to launch a session.`
ETX-16886	Fixed a profile migration issue (a duplicate key value violated the unique constraint "attr_value_pkey") that resulted in exceptions in the log when ETX Server is started after a migration has taken place. The fix ensures that both non-migrated but patched ETX Servers, as well as migrated ETX Servers, safely adjust profiles for new `ActionOnLastWindowClosed` attribute.
ETX-16853	Fixed a migration issue, which happened when the data exported from Version 11.5.6 could not be imported successfully into Version 12.0.1 and the following exception was returned: `Exception in thread "main" java.lang.NullPointerException:` The fix ensures that profiles that were marked as favorite but then deleted will be removed from favorite list during migration process.
ETX-15605	Fixed an issue where ETX Server would not start after the system reboot when ETX Server

JIRA ID	Description
	was installed on a non-root mount point. After applying this hotfix, enable the fix with etxsvr bootstart disable, and then etxsvr bootstart enable.

8.2.7   Issues fixed in Hot Fix 1-SERVER

The following issue were fixed in this hotfix:

JIRA ID	Description
ETX-16851	Fixed an issue where a profile was no longer accessible, after ETX was upgraded to Version 12.0.1. Instead, the following error was returned: `The Profile does not exist on the server.`
ETX-16847	Fixed an issue where the user constantly received notifications about the License Server connection loss, even after the option **Send a copy of all notifications via email** was disabled and the new setting saved. As well, disabling (deselecting) the message options for **License server is unreachable for ( )** and then saving this setting, did not stop the notifications about License Server connection loss. They continued to be repeatedly sent to the user.
ETX-16833	Fixed an issue where, if a deleted template was still referenced by existing profiles, the profiles would not be migrated. This also resulted in failures during Xstart import because those related profiles were skipped during migration.
ETX-16341	Fixed a crash issue that occurred during migration from Version 11.5.6 to 12.0.0.7-SERVER. The crash happened because the list of user's favourite profiles could contain profileIds that have been deleted in the past but not cleaned up in the user's profile details.

8.3   Issues fixed in Version 12.0.1 RUNTIME

This section provides information about past issues, fixed in ETX Runtime after the release of Version 12.0.1.

8.3.1   Issues fixed in Hot Fix 6-RUNTIME

The following issues were resolved in this hotfix:

JIRA ID	Description	Affects
ETX-17347	Fixed a drawing issue where an X application was not displayed correctly n Native Window Manager mode, until a session was suspended and resumed, or until a window was moved (the desktop visual was out of sync with etxproxy).	etxproxy
ETX-17334	Fixed an issue where etxproxy crashed with signal 11 [Segmentation fault], due to a lost font server connection.	etxproxy

ETX-17330	Fixed an issue where the default keyboard association could not be overwritten, i.e., the keyboard file selection was set to Auto-Select and the `flag proxy.KeyboardFileOverride` did not take effect.	etxproxy ETX Client (Windows)
ETX-17319	Fixed an issue where `etxlog.txt` file did not indicate, as expected, which keyboard file was loaded (when the keyboard file selection was set to Auto-Select) . The information now appears in the log.	etxproxy
ETX-17197	Fixed an issue in Multiple Window Mode with a multiple monitor arrangement, where, after the session was suspended and resumed, clicking in windows did not give focus and the user was unable to interact with the session.	ETX Client (Linux)

8.3.2   Issues fixed in Hot Fix 5-RUNTIME

The following issues were resolved in this hotfix:

JIRA ID	Description	Affects
ETX-17247	Fixed an issue where the ETX session unexpectedly remained running when the customer closed the X application, even though the profile option **Last window closed** was set to **Terminate session** (under the **Session** tab, in the **Session management** section).	etxproxy
ETX-17195	Addressed a potential performance issue for some users that occurred when a remote application changes the mouse cursor extremely quickly.	etxproxy
ETX-16868	Fixed a keyboard input issue where the keyboard input unexpectedly remained in the Pycharm application window, even though the Terminal window was highlighted.	ETX Client (Linux)
ETX-11712	Fixed an issue where closing an ETX Dashboard session from ETX Linux client menu displayed a wrong event in ETX Server Manager Activity Log. The incorrect entry `Session terminated by the system` is now replaced with the correct one, `Session terminated by user`.	ETX Client (Linux)
ETX-6905	Improved performance, giving lower latency response and higher FPS.	etxproxy

8.3.3   Issue fixed in Hot Fix 4-RUNTIME

The following issue was resolved in this hotfix:

JIRA ID	Description	Affects
ETX-16531	Fixed a regression issue introduced in Version 11.5 and 12. Right-clicking in the application did not open a new window.	ETX Client (Windows) etxproxy

8.3.4   Issues fixed in Hot Fix 3-RUNTIME

The following issues were resolved in this hotfix:

JIRA ID	Description	Affects
ETX-17032	Fixed a keyboard input issue, where the **AltGR** key did not work on a Swedish keybord — pressing the **AltGR+7** key combination on a Swedish keyboard did not result in the expected special character **{** .	ETX Client (Linux) etxproxy
ETX-16590 ETX-16865	Fixed a performance issue with Multiple Window Mode sessions running on Windows systems with particular video drivers, where the session became slow and irresponsive after mouse button input.	ETX Client (Windows)
ETX-16813	Fixed a windows docking issue where the X window did not come to the foreground when clicked on, but remained underneath the WindowsOS windows.The issue was detected in an XDMCP session in Multiple Window Mode running IceWM window manager.	etxproxy
ETX-16440	Fixed a display issue occurring randomly in a multi-monitor environment (a laptop with two external monitors attached). Randomly, ETX display unexpectedly moved from one monitor to another and could not be brought back by suspending and resuming the session.	ETX Client
ETX-16396	Fixed a Xinerama related issue, detected in Version 12. The configuration `proxy.XineramaSingleWindowMode=1` did not work as expected. The user launched a Single Window Mode session (with the Fixed resizing policy and Full screen settings in effect), switched to a non-Full screen setting via the Full screen toolbar, and then suspended the session. The issue occurred when the session was resumed, and the user switched the session back to Full screen (via the client menu).	ETX Client

8.3.5   Issues fixed in Hot Fix 2-RUNTIME

The following issues were resolved in this hotfix:

JIRA ID	Description	Affects
ETX-16945	Fixed a malfunction of the Shift+CAPS lock, detected with the Japanese Input Method (IME), on a Windows 10 host. When the Japanese IME was current, the Shift+CAPS combination in the remote X application was out of sync with the local Windows applications. The input in the X window got stuck in the uppercase and could not be changed.	ETX Client (Windows)
ETX-16930	Fixed a drawing issue that caused menu items to appear as black boxes in the Foxboro application (running ETX Version 12.0.1).	etxproxy

JIRA ID	Description	Affects
ETX-16901	Fixed an X Window Manager Issue, where, in a dual-monitor setup, the applications initially shown on the 2nd monitor did not appear on the laptop display, after the user suspended the session and then resumed it on the laptop only. The issue happened when a session was resumed to a smaller screen area; typically, this occurred when a session was transferred from a larger number of monitors to a lesser number of monitors. This fix requires the use of the following flag (for legacy desktops): `proxy.CheckOffscreenWindows=1` This moves all off-screen windows onto the screen, when a session is resumed on a smaller display in X Window Manager mode.	etxproxy
ETX-16866	Fixed an issue where moving an ETX session to another monitor left the Full Screen toolbar on the original monitor	ETX Client (Windows)
ETX-16531	Fixed a regression issue introduced in Version 11.5 and 12. Right-clicking in the application did not open a new window.	etxproxy
ETX-16490	Fixed a crash issue, which occurred on Windows 7 when "Use DPI-aware resolution for remote applications" was disabled.	ETX Client (Windows)

8.3.6   Issues fixed in Hot Fix 1-RUNTIME

The following issues were resolved in this hotfix:

JIRA ID	Description	Affects
ETX-16791	Fixed a focus issues where clicking on the main Nedit window (while the search window was mapped) did not bring it to the front of native Windows applications.	Exceed TurboX Client etxproxy
ETX-16617	Fixed empty drawing of OpenGL-rendered glyphs (`glXUseXFont()`) when used with desktop-side OpenGL rendering (DSR). The issue was detected when some text was missing in the Tornado application used with ETX Version 12.	etxproxy
ETX-16617	Fixed the following issue: Report REST API responseTime in milliseconds instead of microseconds. Previously, there was a discrepancy in how the user viewed response Time in the notification area and in the REST API.	etxproxy

JIRA ID	Description	Affects

8.4   Issues fixed in Version 12.0.1

This section provides information about past issues, fixed in ETX after the release of Version 12.

JIRA ID	Description	Affects
ETX-16713	Fixed an issue where an unreachable node could not be disabled via node REST API. `PUT /v2/nodes/{id}["enabled", "false}`	ETX Server
ETX-16712	Fixed an authentication issue with the built-in etxadmin account; when the user attempted to join a server through a cluster the action failed with the following error: `ERROR: Remote ETX Server returned error: 403: Forbidden`	ETX Server
ETX-16700	Fixed an issue where, after applying ETX 12.0.0.9-SERVER hotfix, some ETX profiles could not be launched; instead the following error was displayed on launch: `java.lang.RuntimeException: getXAppProfileAsJson`	ETX Server
ETX-16667	Addressed the following issue: • ETX client hangs when the user attempts to zoom or scroll inside a Python application on Mac OS. The fix ensures that ETX Client remains responsive to the end-user (it prevents ETX from going into an infinite loop when it receives a large number of window `create/map/unmap/destroy` requests in rapid succession).	ETX Client (Mac)
ETX-16630	Improved ETX implementation of the BackingStore setting. This change addresses the missing fonts issue, which occurred when ETX was used with	etxproxy

JIRA ID	Description	Affects
	the FoxBoro application.	
ETX-16621	Fixed an import template issue when a template was imported into Version 12.0.0.9, but the setting **Use DPI-aware resolution for remote applications** was not preserved**.**	ETX Server
ETX-16559	Fixed a number of ETX Server security issues (issue 6, 8-12 listed in the related JIRA record).	ETX Server
ETX-16531	Fixed a regression issue introduced in Version 11.5 and 12. The issue was an extra X event sent, which caused some applications not displaying a window after a right-click.	etxproxy
ETX-16491	Fixed the following issue: • The Delete and Arrow keys were not functional inside the Cadence Virtuoso application. The keys now work as expected.	ETX Client (Linux)
ETX-16486	Fixed a focus issue that prevented the KDE application window to move to the foreground, when invoked. Instead, it remained hidden in the background, and the user could not work with the KDE application, as expected.	ETX Client (windows)

ETX-16444	Fixed a crash issue where etxproxy crashed with signal 11 [Segmentation fault], due to a blocked thread creation on ETX node host. The crash happened when the user launched a new session or resumed a suspended session.
	Note: Should etxproxy encounter the same situation (inability to create threads) it will show an error, like the one below: .
	`Error: llvmpipe: Failed to create thread 7: Error 2`
	`Info: llvmpipe: Using 6 threads`
		etxproxy

ETX-16439	Fixed the issues that caused clustered ETX servers to disconnect or connect unexpectedly.	ETX Server

ETX-16398	Fixed an issue due to logging in and out in rapid succession, due to which a session could not be launched from ETX Dashboard.
	The issue that led to the following error:
	`Event Bus Handling Error`
	`Cannot process event UserLoggedIn:`
	`com.google.gwt.event.shared.UmbrellaException: Exception`
	`caught: (TypeError) : Cannot read property 'j' of undefined`
		ETX Server

ETX-16358	Fixed an issue with the REST API `POST /site/util/encryptthat` did not work in Version 12, although it was working in Version 11.5.2.15.	ETX Server

JIRA ID	Description	Affects
ETX-16318	Fixed the issue of receiving unnecessary ETX server cluster disconnection or warning notifications on a regular basis.	ETX Server
ETX-16249	Fixed an issue where a runtime that was used by an ETX profile was removed, but the ETX profile was not reset to the default runtime. When a runtime is removed, all the templates and profiles that use this runtime are reassigned to use the default runtime.	ETX Runtime
ETX-16190	Fixed a crash issue occurring with HyperWorks 2019, by updating VirtualGL (ssrrun) to support applications that use OpenCL. The fix requires the following new package to patch ETX Nodes: `virtualgl_2.6.3_linux_2019-10-30_8cfafd3.tar.gz`	3rd party component (VirtualGL)
ETX-16179	Fixed an issue due to which mouse-buttons suddenly stopped working. The X-desktop was not responsive to mouse events after a session was suspended and resumed, and the user could access only the last opened window.	etxproxy
ETX-16157	Fixed an issue that caused the following error message to appear in logs: `Cannot parse replication UPDATE list without 'to\t'"`	ETX Install
ETX-16155	Fixed the following issue: • Because the ! sign was present in the `custom/etx_custom.template` file, no changes could be reflected in the Exceed TurboX user interface. Instead, an error message, similar to the one shown below, was shown: **//Unable to render embedded object: File (*Login page welcome message*) not found.//** The ! sign was removed from the commented out lines in the `custom/etx_custom.template` file.	ETX Install
ETX-16152	Fixed an issue of the session main window positioning (in Single Window Mode) that occurred when the Dynamic resizing policy was in effect. The pointer coordinates in the X desktop were offset, after the user launched an MS Office application.	ETX Client (Mac)
ETX-16142	Fixed a template duplication issue. The issue was detected in the following context: 1. Create a Default Custom Startup template with two profiles, export it, and then remove it. For example, name it `Default Custom Startup Copy 1`. 2. Import the same template, and the two profiles. 3. Three identically named templates are imported (in this example `Default Custom Startup Copy 1`). The imported profiles are	ETX Server

JIRA ID	Description	Affects
	linked to different templates.	
ETX-16111	Fixed a text copy restriction issue, where the users defined a specific Copy Text limit in the flag `proxy.AllowCopyFromX`. The limit was not enforced as expected. Also, the user was not warned that the maximum number of characters has been exceeded. The issue was caused by the X application that used incremental copying, when the size of the copied text was greater than 256KB.	etxproxy
ETX-16110	Fixed an issue where an ETX Server cluster did not detect a failure during joining. The joining failure is now correctly detected, and an error message is displayed accordingly.	ETX Server
ETX-16089 ETX-16088	Addressed multiple Jackson Databind vulnerabilities (CVE-2019-14379, CVE-2019-14439), by upgrading to a higher version of this 3rd party component (e/g., instead of `jackson-core-2.9.6.jar` ETX now uses `jackson-core-2.9.9.jar`.).	3rd party component
ETX-16053	Fixed an issue where Hardware Indirect Server-Side OpenGL Rendering would fail with "`ERROR: Could not load symbol XCheckMaskEvent`", and fall back to Software Indirect Server-Side OpenGL Rendering.	etxproxy
ETX-16021	Fixed an issue where mouse cursor disappeared in Catia. The following flag was added, to allow the user to force GDI mouse: `proxy.VideoGdiCursor=1`	etxwinsvr
ETX-15988	Fixed an issue that prevented ETX Client Launcher to be installed in the MacOS Catalina environment. ETX Client Launcher is now being notarized for distribution with MacOS Catalina and may be installed as expected. **Note:** Users need to apply the new `.dmg` package in their site so that it can be downloaded. If ETX Client Launcher was quarantined, any ETX Clients downloaded will also be quarantined, and if they are also not notarized, they will fail to launch.	ETX Client Launcher ETX Client
ETX-15602	Fixed the following security vulnerability issue: • Vulnerable `handlebars-1.0.0.js` found. The issue was fixed by upgrading to Version 4.1.2.	3rd party component
ETX-15867	Fixed the following issue: • The email queue was not purged after email notifications were sent successfully (notification messages were not deleted).	ETX Server
ETX-15799	Fixed an issue where email notifications were disabled for the following	ETX Server

JIRA ID	Description	Affects
	events, but the user still received them: • Server connection has been established • Server in cluster is unreachable for x minutes	
ETX-15744	Fixed an issue due to which new sessions could be launched on a node with load balancing, even though the option **Launch new sessions** was disabled for that node (under **Server Manager > Nodes and Sessions**).	ETX Server Manager
ETX-15614	Fixed the following issue: • After running a security scan, in a newly configured Version 12 environment, the user received the following security warning: `Web Application Potentially Vulnerable to Clickjacking.`	ETX Server
ETX-15606	Fixed a 503 error that was returned after running the `etxsrv` start command and accessing `hostname:8080/etx/admin`, when ETX V12 was installed on Solaris V10u11. The `etxsvr` package now has the ability to switch to the `ustar` format, to avoid problems on the operating systems (OSs) compliant with Portable Operating System Interface (POSIX), e.g., Solaris.	ETX Install
ETX-15603	Addressed the following Jquery vulnerability: CVE-2019-11358. The component has been upgraded to Version 3.4.1.	3rd party component

ETX-15583	Fixed an ETX Server accessibility issue that occurs with the following error (where a Load Balancer was used):
	
	 `HTTP ERROR 500`
	 `Problem accessing /etx/.`
	 `Reason: Server Error`
	 `Caused by:java.lang.NullPointerException`
	
	 This happened when the ETX Server could not identify a port number for a redirection if the Load Balancer used a port number different that the port number configured with ETX Server. ETX Server will no longer redirect an ETX Dashboard or Server Manager connection if a Load Balancer is detected.
		ETX Server

ETX-15563	Fixed a profile control issue, which occurred when a user was able to copy a profile (in the List view) that should not have been available for duplication (i.e., the option **Duplicate profiles** was deselected under **Server Manager > Site Settings >New User Settings > Profile control > Duplicate profiles**).	ETX Dashboard
ETX-15551	Fixed the following issue: • Profile information was not correctly shown (updated) in ETX Server Manager. Changes to Runtime Version, Startup Mode, and Window Mode did not appear to be updated correctly in profiles and templates,	ETX Server Manager

JIRA ID	Description	Affects
	nor the Profiles and Templates grid.	
ETX-15286	Fixed an issue due to which usernames were missing from the Activity log entries. Occasionally, a hyphen was shown (instead of a username). The issue has been fixed and the usernames appear in the log as expected.	ETX Server Manager
ETX-15225	Fixed the following issue: • The etxft utility did not correctly interpret the macros specified at the profile File and Print tab (i.e., the initial remote and local path did not show the results specified in the macro). The affected macros are now understood from the Initial Local/Remote path.	File Transfer
ETX-15142	Fixed the following intermittent issue: • ETX window was not restored to its original size, after a suspended session was resumed.	ETX Client (Linux)
ETX-15055	Fixed an issue that caused ETX Mac Client not to work correctly in Multiple Window mode, in a dual-monitor environment. ETX Mac Client now correctly occupies both monitors, when running in Multiple Window Mode.	ETX Client (Mac)
ETX-14711	Fixed an issue where the wrong window gained focus when the user switched between Mac workspaces.	ETX Client (Mac)
ETX-14559	Fixed an issue where the profile name contained the CJK (multibyte) characters, due to which the Windows Desktop – RDP session could not be launched successfully on a CJK (Chinese, Japanese, Korean) configured node.	ETX Server
ETX-13767	Fixed an issue due to which ETX Server did not calculate or display the license usages correctly when a session was launched locally, with the ETX Server acting as a License Server.	ETX License Server
ETX-13408	Fixed an issue where an ETX Windows RDP session could not be launched. The session connection failed, due to the following error: `Cannot open connect stream`	ETX Runtime

8.5 Issues fixed in Version 12 hotfixes (Server)

This section provides information about past issues, fixed in ETX Server hotfixes, after the release of Version 12.

8.5.1 Issues fixed in Hot Fix 9-SERVER

The following issues were resolved in this hotfix:

JIRA ID	Description	Affects

JIRA ID	Description	Affects
ETX-16438	Fixed an issue that caused the following flag to stop working in Version 12: `proxy.MacOptionSendsAlt`	ETX Server
ETX-16434	Fixed an issue that caused an excessive number of suspended session notifications to be sent.	ETX Server
ETX-16425	Fixed an issue where invalid sessions were listed with a node name starting with the following string: `"z:<ETXID>"` This occurred when a node was removed from an ETX Server, and the sessions were not removed from all ETX Servers in a cluster environment.	ETX Server
ETX-16404	Fixed a database export issue. Published applications and scanned apps were not included in the import file.	ETX Server
ETX-16395	Fixed a migration issue where the Runtime version and Windows Mode were not updated correctly in ETX Server Manager.	ETX Server

ETX-16390	Fixed a database import issue detected with Version 12, HF 7. Database imports could not be completed but failed with the following error:
	
	`ERROR: ETX datastore migration failed - server may be in invalid state.`
	`ERROR: Could not find file /disk2/ETX/ETXS/12.0.0/username/b5410/etxsvr-12.0/run/migrate/normalize3772305263790658298-package/MESSAGES.data`
	
	Certain non-critical tables did not exist in the export file, which caused the import to fail.
		ETX Server

ETX-16372	Fixed a template migration issue, detected in Version 12.0.0 HF 7. New templates were created in Version 11.5.6, with certain tabs, option groups and individual options locked. After importing into Version 12.0.0 HF7, the following issue were noted: • Certain group locks were not working as expected (were unlocked when expected to be locked). E.g., the Keyboard group (on the Input tab) was unlocked after import, as was the Window Mode group (on the Window Mode tab). • Not all of the individual options remained locked as expected.	ETX Server
ETX-16191	Fixed an import issue, due to which Custom Startup profiles could not be launched after they were imported from Version 11.5 into Version 12.	ETX Server

8.5.2   Issue fixed in Hot Fix 8-SERVER

The following issue was resolved in this hotfix:

JIRA ID	Description	Affects
ETX-16282	Fixed an issue, due to which orphaned sessions were not removed successfully.	ETX Server

8.5.3   Issue fixed in Hot Fix 7-SERVER

The following issues were resolved in this hotfix:

JIRA ID	Description	Affects
ETX-16266	Fixed the following issue: • During an import of profiles from Version 11.5.6 to Version 12, a matching runtime package could not be detected. This resulted in an error. The profiles could not be launched unless they were opened in the administrative dashboard and saved without any changes. This fix standardizes how ETX checks for valid runtimes: • For empty or old Version 11.x runtimes, ETX switches to the default runtime version. • For other runtime versions, ETX work only if they exist in ETX current runtime version list. Otherwise, ETX switches to the default runtime version. Previously, ETX handled an XApp profile itself and not the underlying `client_version` value in the profile `ATTR_VALUEs`.	ETX Server
ETX-16194	Fixed an issue of displaying user's favourite profiles: • After migrating from ETX 11.5.5. to ETX 12.0, and upon logging in, the user received an error message. ETX Dashboard was shown but, unexpectedly, the favorite profiles were not. Follow this procedure: 1. Apply this hotfix. 2. Delete the datastore folder (`data/etxdata`) 3. Migrate again.	ETX Server
ETX-16191	Fixed an issue where custom profiles, imported from Version 11.5.5 into Version 12, could not be launched.	ETX Server
ETX-16177	Fixed an issue due to which sending of email notification created excessive number of SMTP connections (old connections remain open).	ETX Server

JIRA ID	Description	Affects
ETX-16135	Fixed the following issue: • If a profile is exported, removed, and imported again, the settings made under "Access control setting" are not saved.	ETX Server
ETX-16131	Fixed an issue that caused the startup settings (configured under `Startup > Xstart` template) to disappear when the customer exports a template, removes it, and imports it again.	ETX Server
ETX-15600	Fixed a security issue, related to Insecure Direct Object References (IDOR). I.e., users who do not have sufficient privileges may no longer access the pages they are not authorized to view. **Note**: IDOR allows attackers to bypass the application authorization and access its resources directly (via modifying the value of a parameter that points to an object directly). ETX does not allow this unauthorized access (e.g., a logged in rduser who is not authorized to view the Administration page cannot access it).	

8.5.4   Issue fixed in Hot Fix 6-SERVER

The following issue was resolved in this hotfix:

JIRA ID	Description	Affects
ETX-16150	Fixed an issue that caused an ETX Server running in a cluster mode to abort or crash when a system was running out of memory, due to memory leaks in the etxdb module. The issue occurred in a cluster setup, but not with a standalone ETX Server. The issue could be detected by monitoring the following process: `"etxdb: bgworker: bdr (...)->bdr (...)"` The process eventually consumed all the available memory, until it crashed.	ETX Server

8.5.5   Issues fixed in Hot Fix 5-SERVER

The following issues were resolved in this hotfix:

JIRA ID	Description	Affects
ETX-16141	Fixed the following import issue: • ETX was migrated from Version 11.5.5 to Version 12, and a user could not log into a new ETX Server. During user accounts import, ETX incorrectly adjusted the `login_name` so that the deleted users were treated as active users. This caused problems in user searches, when the same `login_name` was used for another active user. **Note:** This fix requires recreation of the datastore during a new migration	ETX Server

JIRA ID	Description	Affects
	attempt.	
ETX-16120	Fixed the following issue: • High CPU usage with the main ETX Server Java process causes the ETX server to become unresponsive or slow. This lasts until ETX Server is restarted. However, an attempt to stop ETX Server may also fail and the following error message may be displayed: `ERROR: The server may be busy. Please try again later.`	ETX Server
ETX-16128	Fixed the following issue: • A database sync failure or a certain database backup/restore actions may create a session that cannot be terminated normally from ETX Dashboard. Administrators may now remove such orphaned session entries from ETX Server Manager. Please note that an administrator's own session can be removed only by a different administrator.	ETX Server
ETX-16129	Fixed the following issue, detected in Version 12.0.0.9: • Regular Users (i.e., the users that were assigned the User role) can create API keys under User Settings, but cannot view them. Instead , the following error is displayed: `Your current role does not allow you to perform this action.` The users with the User role may now view the API keys they create.	ETX Server
ETX-16045	Fixed an issue where the ETX Server script `etxsvr` failed on ETX 12 Server - Solaris 10 SPARC because it could not locate `whoami` properly.	ETX Server
ETX-15945	Fixed an issue where a runtime was deleted from ETX Server Manager but remained installed on the Connection Node. A deleted runtime is now removed from all the nodes and the Server itself. **Note:** If a runtime was deleted from Server Manager prior to 12.0.0.5-SERVER HF, it would be deleted from both the nodes and the Server after this HF is applied. To enable this feature, you must enter the following optional setting in ETX Server Manager (under Site Settings > General tab): `server.runtime.AllowRemovalOfRuntimes=1`	ETX Server

8.5.6   Issues fixed in Hot Fix 9

The following issue was resolved in this hotfix:

JIRA ID	Description	Affects
ETX-15920	Fixed a security issue that potentially allowed unauthorized access to ETX Server Manager for non-administrative users. Unauthorized access to ETX Server Manager is no longer possible and any attempt of unauthorized access will be logged in the `etxsvr.log` file. **Example:** `Unauthorized access to /etx/etxadmin/uicommon/common/xyz from 10.1.2.34 by user1`	ETX Server

8.5.7   Issues fixed in Hot Fix 8

The following issue was resolved in this hotfix:

JIRA ID	Description	Affects
ETX-15662	Fixed a template locking issue. If the General section was locked during template editing, all the other sections were also locked.	ETX Server
ETX-15626	Fixed the following startup issue: • ETX Server failed to start after an ETX Server Cluster was created. The following error message was observed in the `etxsvr.log` file: `ERROR: database with oid=<nnnnn> is not configured for bdr or bdr is still starting up`	ETX Server

8.5.8   Issues fixed in Hot Fix 6

The following issue was resolved in this hotfix:

JIRA ID	Description	Affects
ETX-15881	Fixed the following issue: • HTTP to HTTPS redirection may fail to work when a user connects to ETX Server Dashboard or Server Manager. The redirection now uses the hostname from the request sent by a web browser instead of trying to resolve it locally from the ETX Server host. This is required because the user may attempt to connect through a proxy server or because the system installed on the ETX Server may use a hostname that was resolved differently than the hostname specified by the end users.	ETX Server
ETX-15488	Fixed a login issue resulting in the following error: `### Error querying database`	ETX Server

JIRA ID	Description	Affects
	The issue occurred due to a wrong letter case in the username. If the username was initially entered in uppercase, and then in lowercase, the login could not be completed.	

8.5.9 Issues fixed in Hot Fix 3

The following issue was resolved in this hotfix:

JIRA ID	Description	Affects
ETX-15658	Fixed the following issue: • New templates could not be created via the REST APIs page.	ETX Server
ETX-15344	Fixed a profile deletion issue, for profiles imported from Version 11.5.5. into Version 12. Such profiles could not be deleted.	ETX Server

8.6 Issues fixed in Version 12 hotfixes (Runtime)

This section provides information about past issues, fixed in ETX Server hotfixes, after the release of Version 12.

8.6.1 Issue fixed in Hot Fix 15

The following issue was resolved in this hotfix:

JIRA ID	Description	Affects
ETX-15683	Fixed the following issue, detected with Cadence Virtuoso 12.3 running ETX on a Mac: • After a window is opened in the Cadence application, it becomes active. The user cannot make other windows active and work with them until the Cadence window is closed. I.e., the user could not bring any other Xwindows (or any other Mac application) in front of the Open> File Xwindow.	ETX Client (Mac)
ETX-16067	Fixed a usability issue that prevented the users to locate the Close/Suspend dialog box easily, and thus suspend a session in Multiple Window Mode. The issue occurred when the user was using the focus-mode "mouse". The Close/Suspend dialog box was unexpectedly hidden in the background, and behind the X windows.	ETX Client
ETX-14357	Fixed the following session sharing issue: • When a shared multiple windows session was converted to a single windows session, the user with a smaller monitor could not see the entire screen area visible to the user who used a larger monitor and whose Resizing Policy for SWM was set to Dynamic.	etxproxy

JIRA ID	Description	Affects
	The issue was resolved by forcing the Resizing Policy from Dynamic to Fixed when a shared Multiple Window Mode is switched to Single Window Mode. The second user can now view the screen, using the scroll bar.	

8.6.2   Issue fixed in Hot Fix 14

The following issue was resolved in this hotfix:

JIRA ID	Description	Affects
ETX-16178	Fixed an issue where customers were unable to print some postscript files from `elpr` and `etxft` on Linux systems.	etxproxy

8.6.3   Issue fixed in Hot Fix 13

The following issue was resolved in this hotfix:

JIRA ID	Description	Affects
ETX-15809	Fixed the following issue: • The Alt key modifier was not working in QT5 with ETX 11 on the Mac or Linux clients.	ETX Client (Mac, Linux)

8.6.4   Issue fixed in Hot Fix 12

The following issue was resolved in this hotfix:

JIRA ID	Description	Affects
ETX-16136	Fixed an etxproxy crash issue, detected in the following context: • After a KDE session was running for a long time (1-2 days), the KDE terminal window became frozen and could not be moved. As well, the keyboard and mouse were frozen, and the user could not open a new terminal.	etxproxy

8.6.5   Issues fixed in Hot Fix 11

The following issue was resolved in this hotfix:

JIRA ID	Description	Affects

ETX-16104	Fixed an issue where the colour maps opened in the Qosmic application were not displayed correctly. The issue was detected with ETX Version 12. The colour maps are now rendered correctly.	etxproxy
ETX-16063	Fixed an issue detected with the Actual Multiple Monitors application. Linux windows were not displayed in the foreground, unless their title bar was clicked. I.e., clicking in the body or the border of the background window did not affect the stacking order (the window remained in the background). Now, clicking anywhere on any window moves the window to the foreground.	ETX Client

8.6.6   Issues fixed in Hot Fix 7

The following issue was resolved in this hotfix:

JIRA ID	Description	Affects
ETX-15928	Fixed a file transfer security issue, i.e., the ability to block file transfers may no longer be bypassed.	etxproxy

8.6.7   Issues fixed in Hot Fix 5

The following issue was resolved in this hotfix:

JIRA ID	Description	Affects
ETX-15767	Fixed an issue where a very large number of windows resulted in excessive CPU usage, even while idle.	etxproxy

8.6.8   Issues fixed in Hot Fix 4

This section describes the issues resolved in this hotfix.

JIRA ID	Description	Affects
ETX-15555	Fixed an issue that caused graphics to appear randomly on the screen, which prevented the user to see all of its contents. The issue was caused by the combination of Drag&Drop with a Compositing Remote Window Manager.	ETX Client (Windows)
ETX-15461	Fixed an issue with the setting Save Geometry on Exit, which caused ETX window to appear in a wrong location, when a session was resumed.	ETX Client (Windows)
ETX-15005	Fixed an issue that caused horizontal mouse scrolling not to work with ETX.	ETX Client (Windows)

JIRA ID	Description	Affects
ETX-14172	Removed the `WM_HOTKEY` handle from ETX to ensure that a trace is not started accidentally.	ETX Client (Windows)

8.6.9   Issues fixed in Hot Fix 2

The following issues were resolved in this hotfix:

JIRA ID	Description	Affects
ETX-15476	Addressed the following mouse-wheel issue noticed inside Virtuoso Library Manager: • The vertical mouse scrolling did not work as intended (instead the mouse scrolled horizontally). I.e., vertical scrolling sent buttons 6 and 7 instead of 4 and 5.	ETX Client (Windows)
ETX-15343	Fixed an issue that unexpectedly terminated an ETX session when the laptop was shut down. The issue occurred because ETX Client ignored the profile configuration (to suspend a session in this situation, and not terminate it).	ETX Client (Linux)
ETX-15340	Fixed the following issue: • When the XKB extension was turned off, the modifiers in ETX Mac client did not work properly (e.g., CTRL and SHIFT keys).	etxproxy
ETX-15134	Fixed a scrolling delay issue that occurred in the following context: • A user of the Tornado application scrolled via the arrow keys (Left and Right, Up and Down). When the user released the arrow key, the scrolling did not stop immediately, as expected, but continued for some time.	etxproxy
ETX-15087	Fixed a monitor rearrangement issue, which occurred during monitor docking and undocking, in the following context: • The Gnome taskbar disappeared when a user undocked the Windows laptop, and it reappeared when the user docked the laptop using the same session.	etxproxy
ETX-14884	Fixed the following issue, which occurred when a laptop on which the session was started was placed into the Sleep mode, and then awoken: • The `Invalid Command Line Arguments` message was displayed, when a session was resumed.	ETX Client (Windows)
ETX-13473	Fixed a mouse scrolling performance issue (mouse scrolling was delayed). In Multiple Window Mode, ETX now defaults to the graphics device interface (GDI) mode.	ETX Client (Windows)

8.7 Issues fixed in Version 12

This section provides information about past issues, which were fixed in Version 12. For information about issues fixed prior to release of Version 12, see *OpenText Exceed TurboX 11.5 - 11.5.6 Release Note* and *OpenText Exceed TurboX 11.5.6 Hot Fix Notes.*

JIRA ID	Issue description	Affects
ETX-15228	Fixed a mouse behavior issue that occurred after a session was resumed and the user attempted to select some text in an X window. Instead of the selected text being highlighted, the line above it was highlighted. This mouse offset happened in the content part of the X window (affects all X windows).	ETX Client (Linux)
ETX-14836	Connection nodes remained disconnected after a network outage. The issue has been resolved.	ETX CNs
ETX-14832	Fixed an issue that prevented the RDP Host value, shown at the Summary tab of a profile window, to be updated. The issue was detected in the following context: • Create a new **Default Windows Desktop - RDP** template (e.g., Template A). Type any value in **Host** box at the **Startup** tab, e.g., 1234. Then, lock the template. • Create a new profile based on Template A. The **Host** box is grayed out and shows the originally configured value (1234). • Change the **Host** IP in the template and lock it again (e.g. from 1234 to 5678). • In ETX Dashboard, click the profile you created in step 2. The **Summary** tab of the profile window incorrectly shows the original value—1234. However, if you click the **Advanced mode** button and display the **Startup** tab, ETX behaves as expected, and the updated value is shown —5678. The RDP Host value (based on the Host parameter from Windows Dektop-RDP Xstart) is now updated accurately.	ETX RDP
ETX-14371	Fixed an issue that unexpectedly disabled middle-button mouse emulation. The issue occurred in the following context: • A laptop containing a 2-button mouse (trackpad) was placed in a docking station connected to an external 3-button mouse (which was then used to paste text). • After the laptop was undocked, the user could not use the trackpad to paste text (the middle-button mouse emulation was no longer functional).	ETX Client
ETX-13971	Fixed the following issue:	ETX Server

JIRA ID	Issue description	Affects
	• The connection node services were not getting started at boot time even though they were configured to do so during the installation. The following error was shown: `The tr version on this machine is too old. It needs to be equivalent to GNU tr.` ETX now checks multiple fallback locations if TR is missing from the default path.	
ETX-13844	Fixed an **Alt-Tab** stack issue in Multiple Window Mode. Using the **Alt-Tab** to move between the session windows did not always result in bringing the active window to the top of the stack.	ETX Client (Windows)
ETX-13757	Improved how `etxrdp` connection is exited, for published applications. ETX now waits for another top-level window to appear until the last one currently in existence is closed. The following parameter is introduced: `etx-app-delay` This ETX RDP parameter specifies a period that needs to pass before exiting. The value is specified in milliseconds. The default is 5000. To set the value of this flag, while editing a profile, navigate to **Startup> Advanced Settings> ETX RDP** tab, and then enter the flag in the **Optional settings** box.	ETX RDP
ETX-13733	Fixed the following REST API issue: • The option **Hide used and expired API keys** is enabled. • A user creates an API key which should expire after 1 hour, but the newly created key is not displayed. The issue has been resolved and the key displayed as expected.	REST API
ETX-13586	Fixed the following issue: • The user was a member of an LDAP group that was associated with an ETX group but could not see the profiles distributed to this particular ETX group.	ETX Server
ETX-13519	Fixed an issue where the setting **Use Dynamic Xauthority** did not work as expected, if either of the following settings was selected: **User Specified Credentials** *-or-* **Load shell Environment**	Startup
ETX-12849	Fixed the following issue: • A user could not log into an RDP session on a Windows node, using the following notations:	ETX RDP

JIRA ID	Issue description	Affects

	`domain\user`
	
	-or-
	
	`user@domain`	

ETX-11862	Fixed an issue due to which the user could not launch a Published Application profile based on a template whose Startup tab contents were locked. The issue has been resolved.	ETX Server
ETX-8445	Fixed an issue that caused duplicate node entries to appear in ET Server Manager. The issue has been resolved and no duplicate entries are shown.	ETX Server

9   Known issues

This section lists the issues, known at the time of the release.

9.1.1   Known issues in Version 12.0.2

The following known issues exist in this release:

JIRA ID	Issue description
ETX-17568	If the ETX Server Manager shows a timeout error "receiving StartSsl handshake response" when connecting to a connection node it may indicate insufficient CPU resources on the ETX Connection Node.

9.1.2   Known issues in Version 12.0.1

The following known issues exist in this release:

JIRA ID	Issue description
ETX-16776	Launching a profile from the Dashboard with the **Ask user to select node** option may fail to launch a session when users access ETX Server through a load balancer. This is because the web session cookie (which is provided to the launcher by the browser for authentication reasons) will not be valid if the launcher is directed to a different server by the load balancer. This issue will be addressed in a future update.
ETX-16731	When ETX is configured to use a proxy server and the same user launches a profile on two different client machines, ETX Server will not be able to distinguish between the two different client machines. As a result, Custom startup and Published Application profiles that have **Reuse session** set to **Auto-select** may launch the profile Xstart command or application inside a session running on the other client machine instead of realizing that the other session is on a different host and starting a new session. To prevent this situation, when sending session traffic through a proxy, it is recommended that you set **Reuse session** to **Never** or **Prompt User**, or inform users not to launch sessions from multiple client

JIRA ID	Issue description
	machines.
ETX-16533	Users with double-byte characters in their ETX username (e.g. Chinese or Korean characters) will receive an error message when launching sessions in Firefox (`Missing Command Line Argument parameters`). This error does not occur in other web browsers including Chrome, Internet Explorer and Microsoft Edge.

9.1.3   Known issues in Version 12

The following known issues exist in this release:

JIRA ID	Issue description

ETX-15321	If a full path for the backup file is not specified, the datastore backup command creates a backup in a run directory under the ETX Server installation directory.
	
	Example:
	Run the following command:
	`/opt/etxsvr-12.0/bin/etxsvr datastore backup mydata1`
	The mydata1 backup file is created in the directory
	
	`/opt/etxsvr-12.0/bin/etxsvr/etxsvr-12.0/run/`
	
	instead of the current directory.

ETX-15089	KDE users may experience graphical issues after upgrading to ETX 12 as a result of KDE OpenGL Desktop Effects becoming enabled on the remote session. ETX Version 12 OpenGL software rasterizer added support for 32-bit depth visuals, a requirement for KDE OpenGL Desktop Effects. The OpenGL compositor used by KDE Desktop Effects relies on local GPU features that are not supported by ETX (default) software OpenGL renderer. To prevent these issues, you will need to disable KDE Desktop Effects (which restores the same KDE behaviors as seen with earlier ETX versions), enable OpenGL hardware acceleration (where available), or change KDE Desktop Effects to use XRENDER instead of OpenGL.

10 Supported environments and compatibility

This section provides details about platforms, systems, and versions that are supported in Version 12.

Component	Supported platform
ETX Server	Red Hat® Enterprise Linux® 6.5 or later, 64-bit
	CentOS® 6.5 or later, 64-bit
	Oracle® Solaris® SPARC® 10 U11 or later, 64-bit
	Oracle Solaris x86-64 10 U11 or later, 64-bit
	SUSE® Linux Enterprise Server 12 or later, 64-bit
Connection Node	Oracle Solaris SPARC 10 U11 or later, 64-bit
	Oracle Solaris x86-64 10 U11 or later, 64-bit
	Red Hat Enterprise Linux 6.5 or later, 64-bit
	SUSE® Linux Enterprise Server 11.4 or later, 64-bit
	CentOS 6.5 or later, 64-bit
	IBM AIX® 7.1 or later, 64-bit
	Windows 7 SP1, Windows 8.1 and Windows 10, 64-bit
	Windows Server® 2008 R2 SP1, 2012 R2, and 2016, 64-bit
Client	Windows 7 SP1, Windows 8.1 and Windows 10, 64-bit
	Windows Server® 2008 R2 SP1, 2012 R2, and 2016, 64-bit
	Red Hat Enterprise Linux 6.5 or later, 64-bit
	CentOS 6.5 or later, 64-bit
	MacOS™ 10.14 (Mojave) or later
	iPad® 4th Generation, iPad Air® 2, iPad Pro® 12 inch or later
Web Browsers	Microsoft Internet Explorer® 11
	Microsoft Edge®
	Mozilla Firefox®
	Google Chrome™
	Safari® 8 or later (applicable to Mac OS™ only)

11   Language support

OpenText Exceed TurboX is currently localized in the languages listed in the table below. Additional languages may be available in future releases.

Product	Languages					
	EN	**DE**	**FR**	**IT**	**ES**	**KO**
OpenText Exceed TurboX	UI	UI	UI	UI	UI	UI

Note: Certain components of the product were not localized.

UI = user interface only
B = both user interface and online help

opentext™

12   Contact information

OpenText Corporation
275 Frank Tompa Drive
Waterloo, Ontario
Canada, N2L 0A1

OpenText My Support: https://support.opentext.com

For more information, visit www.opentext.com

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