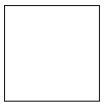

# Linux Install Guide

## SOFTWARE VERSION 1.10

**March 2019**



Mechdyne

ENABLING DISCOVERY

TGX

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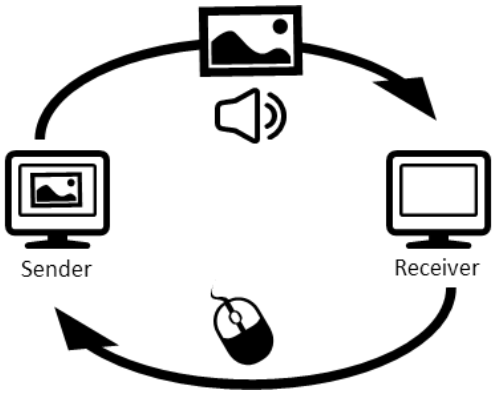
## WELCOME TO TGX

TGX installers are available from the Mechdyne “Product Download Center”.
Contact Mechdyne to receive your login credentials and licenses for the software.

TGX provides separate installers for the sender and the receiver. The sender is the remote workstation whose desktop and applications are shared by TGX to a receiver. The receiver is the local computer that displays and interacts with the remote desktop of the sender via TGX.




## LICENSE MANAGEMENT

The TGX sender requires a valid license to function.

On Linux, install a license file (e.g. TGX.lic) to /opt/mechdyne/licenses. To set an alternative license file location, set the LM_LICENSE_FILE or MECHDYNE_LICENSE_FILE environment variable. The environment variable can provide a list of license files using the “:” separator or a list of servers (i.e. *port@hostname*) using the “,” separator.

TGX uses FlexLM for license management. To use floating licenses with a FlexLM server, please contact software support@mechdyne.com for instructions on how to download and configure the FlexLM license server software.

# SYSTEM REQUIREMENTS

## OPERATING SYSTEM

The TGX sender and receiver support RHEL/CentOS 6 and 7, Ubuntu 16 and derivatives. The installer recognizes RHEL, CentOS, Scientific Linux and Ubuntu explicitly and will make best guesses configuring derivative distributions.

## HARDWARE/DRIVERS

| | Graphics Card | Driver |
|---|---|---|
| TGX Sender | NVIDIA Quadro Kepler or better, NVIDIA GRID (pass-thru) | • R346 (minimum) |
| | NVIDIA GRID (vGPU) | Latest GRID 5 drivers NVIDIA website (recommended) |
| | NVIDIA GTX | Latest available from NVIDIA website (recommended) |
| TGX Receiver | OpenGL 2.1 support | N/A |

The TGX sender requires an NVIDIA Quadro, GRID (in pass-thru or full GPU mode) or GTX graphics card with the proprietary NVIDIA drivers installed. The open-source Nouveau drivers are not supported. The TGX receiver is currently limited to software decode on Linux, but requires a graphics card with OpenGL 2.1 support (most graphics cards in the last decade support OpenGL 2.1).

For GRID vGPU modes, the drivers ship in a package containing a host driver and guest drivers for Windows and Linux. The host and guest drivers must match (or come from the same package).

### TGX VERSION COMPATIBILITY

The following matrix depicts the TGX software version compatibility.

| TGX Software Version | | | | | |
|---|---|---|---|---|---|
| | 1.6 | 1.7 | 1.8 | 1.9 | 1.10 |
| 1.6 | X | | | | |
| 1.7 | | X | X | | |
| 1.8 | | X | X | | |
| 1.9 | | | | X | |
| 1.10 | | | | | X |

## SENDER INSTALLATION OPTIONS

### DO YOU WANT TGX TO CONFIGURE X?

The TGX installer will check for a functional NVIDIA driver and Xorg configuration. If the installer fails to find a valid Xorg configuration, it will prompt to generate one. Select **Yes** to generate a working Xorg configuration (`/etc/X11/xorg.conf`). The existing configuration will be backed up.

### ALLOW TGX TO OVERWRITE THE EXISTING DISPLAY CONFIGURATION?

TGX provides support for the sender desktop to be reconfigured to match that of the receiver. This option is enabled by default on the sender as part of the installation. To disable this capability, select **No**. It is recommended that this option be disabled on senders that are physically connected to complex display systems, especially those configured with NVIDIA Quadro Sync or Mosaic mode.

### SHOULD TGX START A NEW X SESSION?

If no user is logged into an X session, the TGX sender will, by default, start a new X session for the connection rather than connect to an existing (such as the display manager) session. This mode of operation is suitable for a server (either physical or VM) where no displays are attached and X is not started on boot. For a desktop machine with connected displays, it may be desirable to use the existing X session. Select **No** to connect to the existing (display manager or user) X session rather than starting a new instance of X. On Ubuntu, this prompt will not be displayed and TGX will always attempt to connect to the existing X session.

### GENERATE SELF-SIGNED CERTIFICATES

TGX can generate self-signed certificates for temporary or permanent use. When selecting this option, TGX will generate a 2048-bit RSA key and self-signed certificate and configure the sender to use them, these will be stored as files in `/opt/mechdyne/TGX/etc`. This will prompt users connecting for the first time to the sender to add a fingerprint exception. If the defaults are not desirable please see the *Administrator's Guide* for more information on how to configure certificates.

### PORT CONFIGURATION

TGX reserves 17 ports for communication between sender and receiver. The default starting port is 40001, however this is configurable as part of the installation. Note, the default port must match between sender and receiver.

### FIREWALL CONFIGURATION

The TGX installer detects iptables (RHEL/CentOS 6), Firewalld (RHEL/CentOS 7) and UFW (Ubuntu 16) firewalls and will install the necessary exceptions to allow incoming connections on ports 40001-40017 (by default, or as set in the prior step). Additional network firewalls must be configured manually by the IT administrator.

### START TGX SERVICE?

TGX will fail to connect until a valid license is installed to /opt/mechdyne/licenses. See "License Management" for more information on license installation. Select **Yes** to start the TGX service. Otherwise, the TGX service can be manually started with the commands:

- `# systemctl start tgxserverd    (RHEL/CentOS 7 and Ubuntu 16)`
- `# /etc/init.d/tgxserverd start  (RHEL/CentOS 6)`

## RECEIVER INSTALLATION OPTIONS

### PORT CONFIGURATION

TGX reserves 17 ports for communication between sender and receiver. The default starting port is 40001, however this is configurable as part of the installation. Note, the default port must match between sender and receiver.

# SENDER INSTALLATION TROUBLESHOOTING

## SENDER CONFIGURATION ON A LINUX VMWARE VIRTUAL MACHINE

NVIDIA drivers take over X, therefore, the display is no longer backed by the VMware display adapter. This causes the desktop to be unviewable through the VMware console. When building a new Linux VM, the recommended method is as follows:

1. Build VM using the VMware Console
2. SSH to VM to install and configure NVIDIA drivers and TGX. When installing TGX, allow the default for TGX to configure X. This allows TGX to set flags in the `xorg.conf`.
3. The VMware console will display a text login prompt vs. the X desktop.

## INSTALL NVIDIA PROPRIETARY DRIVERS

TGX requires that the proprietary NVIDIA drivers for Linux are installed. For RHEL/CentOS, the drivers can be obtained from the NVIDIA web site (nvidia.com). For Ubuntu, the drivers may be installed from the Ubuntu repository. For RHEL/CentOS, installing the drivers requires:

1. X is not currently running.
2. Open-source Nouveau drivers are not active.
3. Linux kernel development package and GCC are installed.

## DISABLE X START ON BOOT

To stop X, execute:

- `# systemctl isolate multi-user` (RHEL/CentOS 7 and Ubuntu 16)
- `# telinit 3` (RHEL/CentOS 6)

For RHEL/CentOS 7 and Ubuntu 16, to permanently disable X start on boot, execute:

- `# systemctl set-default multi-user`

For RHEL/CentOS 6:

- Edit `/etc/inittab`

For a server or VM with no displays attached, it is preferable to disable X start on boot.

## DISABLE NOUVEAU MODESET

The NVIDIA drivers will fail to install if the open-source Nouveau drivers are activated. To disable the Nouveau drivers, add "`modprobe.blacklist=nouveau`" to the kernel command line and reboot.

For RHEL/CentOS 7:

- Edit `/etc/default/grub`, add the arguments to `GRUB_CMDLINE_LINUX`
- Run `grub2-mkconfig -o /boot/grub2/grub.cfg`

For RHEL/CentOS 6:

- Edit `/boot/grub/grub.conf`
- Add the arguments to the kernel command line

### XORG CONFIGURATION

The TGX installer will check for a functional NVIDIA driver and Xorg configuration. If the installer fails to find a valid Xorg configuration, it will prompt to generate one. Answer yes to "Xorg configuration not found. Do you want TGX to configure X?" to have the TGX installer generate a working Xorg configuration (`/etc/X11/xorg.conf`). The existing configuration will be backed up to `/etc/X11/xorg.conf.before-tgx`. If the TGX installer does not prompt to generate an Xorg configuration, remove or rename `/etc/X11/xorg.conf` and re-execute the installer.

### AMAZON AWS CONFIGURATION

TGX requires some extra configuration when running in the Amazon AWS cloud. Edit the TGX config.ini file (`/opt/mechdyne/TGX/etc/config.ini`) and in the `[ServerSettings]` section add the line:

`DisplayPrefix="VGA"`

After this change has been made, restart the instance and TGX should function normally.

## UNATTENDED INSTALL

Both the sender and receiver can be installed unattended via command-line.

The following arguments will hide all message boxes and accept all defaults:

- e.g. `# sudo ./TGX-Sender-X.X.X.X.run -- -q`

## TECHNICAL SUPPORT

Mechdyne is available for additional technical support.
Please submit queries through our support portal on the web.

WEB

https://tgxremotedesktop.com/resource-center/support/

EMAIL

software_support@mechdyne.com

UPDATED DOCUMENTATION

Refer to the TGX website for the most updated documentation.