NTEX
Documentation

Installation and Maintenance Guide

19 December 1996
Version 2.3.0

by Frank Langbein

Contents

1 Introduction

This manual describes the installation and maintenance of NTEX. It is not yet complete and will hopefully provide enough useful information to install and maintain NTEX. If you have any suggestions for improvements, etc. please let me now. But note that my time is rather limited.

2 Installation

This section describes the general installation procedure, the package management and how to update NTEX. The main tool for installing NTEX is `InstallNTeX`, which is based on a terminal menu or a Tcl/Tk menu. There are some useful tools for installing, removing and configuring packages in *ADMDIR*/sbin after the initial installation. All these scripts accept `--help` as command line option to print the usage information.

Installing NTEX from scratch requires the following steps

1. Check if your systems meets the requirements mentioned below.
2. Download the packages you want to install.
3. Run the intial installation to install NTEX's maintenance tools, etc.
4. Install the package sets or single packages.
5. Configure NTEX as described in the next section.

Read the sections about the requirements, the initial installation and installing packages below.

If you want to update NTEX you just have to download and install the new packages.

1. Check the file `CHANGES` to figure out which packages have been changed since you last updated/installed NTEX.
2. Download the new packages. The `NTeX-ftp` script can help you getting the new packages. There is also some support for updating on the primary archive for NTEX at `http://web.mathematik.uni-stuttgart.de/pub/ntex/`.
3. Sometimes you also have to get a new `ntex.pkg`. Check out the updates section below for details.
4. If you got `ntex.pkg` you can install this package with InstallNTeX or NTeX-install since version 2.2.2. Elsewise you also have to get `InstallNTeX` and rerun the initial installation. In general this is a good idea since it will update the installation and maintenance scripts.
5. Update/install the new packages.

Recheck the section about the requirements and read the sections about updates and installing packages.

2.1 Requirements

NTEX has been compiled and tested on various Unix platforms. However you might have to install some GNU software or some shared libraries. The installation and maintenance scripts require the following tools.

sh
bash I've checked the installation scripts with some Bourne shell versions, especially under AIX and HPUX. However I can't guarantee that the scripts will work with every Bourne-like shell available. If you have any problems with the scripts, get bash. Note that the scripts don't work with some older bash shells. There should be no problems with version 1.14.6 or later stable versions.
Some shells dont set the *SHELL* variable correclty. In this case run the shell and set the environment variable *SHELL* to the absolute path of the used shell (normally `/bin/sh`).

gzip GNU `gzip` is required on all platforms since all the packages are compressed with this tool.

cut Some versions of `cut` might cause trouble. You will be notified by `InstallNTeX` and/or `configure` if it does not work. The `cut` from GNU's textutils 1.11 is known to work.

cpio
tar The packages are created using `tar` and `cpio`. The `cpio` archives are created using the old portable ASCII format. I highly recommend to install GNU `cpio` and GNU `tar`. You can install `tar` as `gtar` or `gnutar` and `cpio` as `gcpio` or `gnucpio`. On Linux platforms the GNU versions should be available. I had especially problems with `cpio` on some HPUX platforms.

sed
awk
grep You can expect that the versions of these tools provided by your system have enough features. Normally it's not necessary to install the GNU versions, but if you run in trouble with these programs, try it with GNU. You can install the GNU tools as `gnused`, `gnuawk` and `gnugrep`.

wish If you want to use the X11 frontend of the scripts you have to install Tcl 7.5 and Tk 4.1. Please note that the Tcl/Tk versions are not fully compatible, so you might run in trouble if there are older or newer versions installed. However I hope that newer versions will be backward compatible. As all scripts provide a command line interface and also work on a terminal, it's not required.

Currently NTEX provides the binaries for the following platforms

hppa1.1-hp-hpux9.03-X11R5 Compiled on a standard HPUX 9.03 using HPUX's X11 release 5.

hppa1.1-hp-hpux9.03-X11R6 This has been compiled on a HPUX platform with X11 release 6.

i486-linux Compiled on a Linux 2.0.X ELF system using the shared libraries

libc.so.5	⇒	/lib/libc.so.5.4.7
libgdbm.so.1	⇒	/lib/libgdbm.so.1.7.3
libm.so.5	⇒	/lib/libm.so.5.0.6
libjpeg.so.6a	⇒	/usr/lib/libjpeg.so.6a.0.0
libncurses.so.3.0	⇒	/lib/libncurses.so.3.0
libICE.so.6	⇒	/usr/X11R6/lib/libICE.so.6.0
libSM.so.6	⇒	/usr/X11R6/lib/libSM.so.6.0
libX11.so.6	⇒	/usr/X11R6/lib/libX11.so.6.1
libXaw.so.6	⇒	/usr/X11R6/lib/libXaw.so.6.1
libXext.so.6	⇒	/usr/X11R6/lib/libXext.so.6.1
libXi.so.6	⇒	/usr/X11R6/lib/libXi.so.6.0
libXmu.so.6	⇒	/usr/X11R6/lib/libXmu.so.6.0
libXpm.so.4	⇒	/usr/X11R6/lib/libXpm.so.4.7
libXt.so.6	⇒	/usr/X11R6/lib/libXt.so.6.0

where libc and libm are absolutely required. libjpeg is required for `xfig` and `transfig`, libncurses for GNU's `info` command and the X libraries are of course only necessary for the X clients.
The base package provides kpathsea as a shared library which is used by nearly every program provided by NTeX. It is automatically installed in *SHAREDLIBDIR* (default value is /lib).

m68k-hp-hpux8.00

mips-dev-ultrix4.4

mips-sgi-irix5.3

powerpc-ibm-aix3.2.5

rs6000-ibm-aix3.2.5

alpha-dec-osf3.2 These binaries have been compiled by James LewisMoss ¡dres@dres.elam.org¿. To compile them you need a new GNU flex because the flex distributed with the system does not work.

I'm trying to expand the above list, but currently these are all the systems I have access to. However NTeX should also compile on other Unix platforms. In this case you have to install the sources set and compile the binaries yourself. To compile NTeX you need `flex` (version 2.5.2), `bison` (version 2.6), `autoconf` (version 2.12), GNU `make` (version 3.74) and `gcc` (version 2.7.2). It might work without one of these programs, but I wouldn't try it. See the section below on compiling NTeX.

2.2 Getting NTeX and the NTeX Distribution Structure

The primary site for NTeX is located at `ftp://web.mathematik.uni-stuttgart.de/pub/ntex` also accessible via WWW at `http://web.mathematik.uni-stuttgart.de/pub/ntex`. It is mirrored by `sunsite.unc.edu` in `/pub/Linux/apps/tex/ntex` and by CTAN (for instance `ftp.dante.de`, `ftp.shsu.edu` or `ftp.tex.ac.uk`) in `/tex-archive/systems/linux/ntex`. More mirrors could be found on the NTEX WWW home page `http://www.mathematik.uni-stuttgart.de/mathB/lst3/langbein/ntex.html`. Please use an archive close to you to keep the load of the master archive low!!!

Check out the `NTeX-ftp` script in the root directory of the NTEX distribution. This script was written by Volker Börchers ⟨*boercher@physik.uni-bremen.de*⟩ and modified by me to simplify getting the whole distribution or just the new packages via ftp. The `--help` option will print the Usage information for this script. The options are very similar to those of `NTeX-install`. `NTeX-ftp` will get the files you requested by ftp and create a directory structure on your local disc suitable for installing NTEX.

It is very important that you do not change any of the names of the packages. Elsewise the installation scripts will not work properly. This especially applies if you download the packages to some MS–DOS filesystem or if you use some MS–DOS archive program.

2.2.1 NTEX Archive

The directory structure of the primary NTEX archive at `ftp://web.mathematik.uni-stuttgart.de/pub/ntex`:

ntex
current
stable These are all links to the most recent, stable NTEX release available. They point to one of the `ntex-`⟨*version*⟩ directories. The files and directories in this link points to should be available on every mirror. This is also the root directory of the NTEX release.

unstable The link to the latest available unstable release of NTEX. This link is not always there and might point to a stable release.

ntex-⟨*version*⟩ This directory provides NTEX release ⟨*version*⟩ with the directories mentioned below. It also contains the installation and documentation, etc. for the release.

base	base package set
extras	extras package set
languages	languages package set
japanese	Japanese package set
fonts	fonts package set
sources	sources package set
systems/⟨*system*⟩	binary package set for ⟨*system*⟩

Unstable releases might provide the directories tfm and pk or mf-fonts/tfm and mf-fonts/pk-* for the TFM and PK packages.

mf-fonts Here you find prebuild TFM (TEX font metric) files and PK (font bitmaps) files for all the METAFONT fonts provided by the currently stable NTEX.

tfm	TFM packages
pk-⟨*mfmode*⟩	PK packages for the ⟨*mfmode*⟩ METAFONT mode

fixes Various fixes, etc. for NTEX.

Normally only the contents of the directory the **ntex** link points to is available on the mirrors. You can also access the primary NTEX archive by WWW at `http://web.mathematik.uni-stuttgart.de/ntex/`. The structure of these pages is very similar to the above one.

For the initial installation of NTEX you need the files `InstallNTeX` and `ntex.pkg` from the root directory of the NTEX release. You can get the other files from the root and these will be installed by `InstallNTeX` if it can find them, but they are not required. Note that the initial installation only installs the necessary installation and maintenance scripts, etc. for NTEX and not any of the files required for running TEX. These are provided by the various sets.

NTEX is grouped in package sets to simplify the installation. You can either install a complete set or single packages from the sets depending on what you need. The most important set is the base set, all the other sets are optional.

base	This is the basic set providing everything you need for a standard TEX/LATEX installation.
extras	This set provides various extras like the old LATEX 2.09, packages for music typesetting, extra documentation, TeXXeT, xlatex, xtem, xtexsh, etc. Most likely you only need a few of this packages depending on your special needs.
languages	These are special packages to support various languages like Arabian, Sanskrit, Thai, Tengwar, the German style, etc. Note that common European languages are already supported by the Babel package provided by the base set.
japanese	PostScript fonts, TeX macros and the binaries to typeset Japanese texts.
fonts	Various extra fonts like Pandora, CM bright, phonetic, etc.
sources	The sources for all the binaries provided by NTEX. This set also provides the sources for the LATEX 2_ε packages.

For a simple installation, all you need is the base set. In most cases this will also be everything you'll ever have to install. If you need additional packages from the other sets have a look at the file *INDEX* for a complete listing. The packages for the package sets are provided in the subdirectories with the corresponding names.

The binaries for the various supported platforms are provided by special binary package sets. There is a subdirectory for each such set. These sets provide a binary package for each package set except the sources set. The package nb-bin-⟨*system*⟩ provides the binaries for the base set and is required for all installations. nx-bin-⟨*system*⟩ provides the binaries for extras, nl-bin-⟨*system*⟩ for languages, nj-bin-⟨*system*⟩ for Japanese and nf-bin-⟨*system*⟩ for fonts. If you don't plan to install NTEX on multiple platforms (see *MULTI_BINDIRS*), you only need one of the binary sets. For instance for Linux you have to get the packages from the **i486-linux** directory.

For installation from a mounted directory (CDROM, NFS, local disc, etc.) the packages have to be in the same directory structure as they are provided by the archive or at the top level of the mounted directory. You can also mix this, just a package from **base** is not found, if it is in the subdirectory **extras** or **BASE** – either it is in `base` or in the top level. This does not apply if you give the absolute path to the package when you run the command line interface `NTeX-install`.

2.3 Initial Installation

The installation is done in two steps, the first one is the initial installation which has to be done only the first time you install NTEX and whenever you have/want to upgrade the installation scripts (see the updates section in this case). If you've already installed some version of NTEX and rerun the initial installation, you can either update the installation scripts, etc. or install NTEX somewhere else for test purposes, etc. In this case you have to take care that the correct texmf.cnf file is used. You might have to set the variable *TEXMFCNF* to the path for the texmf.cnf you want to use.

If you have some other non-NTEX TEX installation around make sure that the binaries are not in the *PATH* (either remove them or move them somewhere else). NTEX searches for texmf.cnf in `/etc`, `/usr/etc`, `/usr/local/etc`, `/usr/lib/texmf/web2c`, `/usr/local/lib/texmf/web2c`, `/usr/tex/web2c` and `/usr/local/tex/web2c`, If there is some non-NTEX texmf.cnf you should also move it somewhere else before you start to install NTEXor set the *TEXMFCNF* variable. I do not recommend to install NTEX over an already existing non-NTEX TEX installation using the same paths. If you do this some files might not be replaced correctly.

The initial installation will only install the maintenance and installation scripts and a basic setup for NTEX. Everything else is provided by the sets. Please note that you cannot install the NTeX 2.X packages (suffix .pkg) with tar. You have to do this with the installation scripts. The .pkg files are tar files which contain a gzipped pki file and a gzipped cpio archive. The pki file contains special information about the package and the cpio archive provides all the files.

1. Make sure that `InstallNTeX` and `ntex.pkg` are in the current directory. If you want to install any of the other files in the root distribution directory, these files have to be there, too.

2. Run `InstallNTeX` by `‘./InstallNTeX’`. If you have `bash` around, you have to call `InstallNTeX` by `‘bash ./InstallNTeX’` to be sure that `bash` is used.
   `InstallNTeX` accepts a few command line options. Type `‘./InstallNTeX --help’` to get the usage information.
   Note that some Bourne shells do not set the SHELL environment variable. This might cause trouble if the SHELL variable is set to some value not corresponding to the shell you are using. In this case you have to call InstallNTeX as `‘SHELL=`⟨*shell*⟩` ./InstallNTeX’` where ⟨*shell*⟩ has to be replaced by the complete path of your Bourne shell (probably `/bin/sh`).

3. First you have to choose the directory structure:

TEXMF	directory for the fonts, macros, style files, etc.
BINDIR	directory for the binaries
INFODIR	directory for the TEXinfo .info files
MANDIR	directory for the manuals
SRCDIR	directory for the sources
DOCDIR	directory for the documentation
ELISPDIR	directory for the elisp programs (emacs site-lisp directory).
VARDIR	The directory for the variable data, like the fonts created with `MakeTeXPK`
ADMDIR	The directory for the installation scripts
SHAREDLIBDIR	Directory for shared libraries (currently only used by Linux)

You can choose between the TEX Directory Structure:

TEXMF	⟨*tex-root*⟩
BINDIR	⟨*tex-root*⟩/bin
INFODIR	⟨*tex-root*⟩/doc/info
MANDIR	⟨*tex-root*⟩/doc/man
SRCDIR	⟨*tex-root*⟩/source
DOCDIR	⟨*tex-root*⟩/doc
ELISPDIR	⟨*tex-root*⟩/elisp
VARDIR	⟨*tex-root*⟩/tmp
ADMDIR	⟨*tex-root*⟩/ntex
SHAREDLIBDIR	/lib

where ⟨*tex-root*⟩ is an arbitrary root directory for TEX, for instance `/usr/lib/texmf`, `/usr/local/lib/texmf`, `/usr/tex` or `/usr/local/tex`. You can also choose the Linux File System Standard:

TEXMF	/usr/lib/texmf
BINDIR	/usr/bin
INFODIR	/usr/info
MANDIR	/usr/man
SRCDIR	/usr/src/ntex
DOCDIR	/usr/doc/ntex
ELISPDIR	/usr/lib/emacs/site-lisp
VARDIR	/var/lib/texmf
ADMDIR	/usr/lib/texmf/ntex
SHAREDLIBDIR	/lib

or you choose each directory separately.

I recommend to use the TEX Directory Structure with some root which fits best in your filesystem structure.

Note that `InstallNTeX` will always create a set of symbolic links to meet the requirements of the TEX Directory Structure. On Linux *SHAREDLIBDIR* should be one of the directories were shared libraries are stored on your machine. These directories are configured by the file `/etc/ld.so.conf`. Whenever you changed `/etc/ld.so.conf` you have to run ldconfig.

If there is some old NTEX texmf.cnf around, `InstallNTeX` will set the defaults for the directories according to this file. Note that you can choose another directory structure in this case if you want to install some NTEX release for test purposes, etc.

4. After you have chosen the directory structure you have to decide on the location of texmf.cnf. texmf.cnf is the basic configuration file for NTEX. Note that it can only be stored in one of the offered directories elsewise it is not found by kpathsea which is the path searching library used by nearly all programs in NTEX. If you really want to install texmf.cnf in some other directory, you have to set the environment variable *TEXMFCNF* to this path.

5. Finally you can set *MULTI_BINDIRS*. If *MULTI_BINDIRS* is true, the binaries are installed in *BINDIR*/⟨*platform*⟩. This is only useful if you want to install NTEX for more than one Unix platform on the same file system. Note that you might have to create a symbolic link in *BINDIR* from ⟨*platform*⟩ to the value `config.guess` returns for your platform (`config.guess` can be found in *ADMDIR*/scripts). If you plan to compile NTEX yourself the directory will be created appropriately.
   Please note that *BINDIR*/⟨*platform*⟩ or *BINDIR* depending on the value of *MULTI_BINDIRS* has to be in your *PATH* environment variable or the binaries will not be found! Alternatively you can link the binaries to some directory which is already in your *PATH*. However you have to check the links whenever you installed or updated some binary packages.

6. After these selections `InstallNTeX` installs a basic set of files and runs some basic configuration for the scripts. This configuration is used for all the other scripts. Whenever you want to recheck this configuration (you might have installed new software, etc.) add the command line option `--config` which is accepted by every script in *ADMDIR*/sbin. If you ever run in trouble with the `kpsewhich` kpathsea tool (for instance when the paths are not set correctly, you get error messages about not existing files, etc.), set the environment variable *KPSEWHICH* to the absolute path of the `kpseexp.sh` script in *ADMDIR*/scripts.

7. When the basic installation is finished you can directly continue with the package installation after the files are installed.

2.4 Installing Packages

The second step of the Installation is to install the package sets and/or single packages. You can always rerun this whenever you want to install or update a package.

There are three ways to install single packages or complete package sets. `InstallNTeX` can be used to install the packages by using a X frontend based on Tcl/Tk or by a terminal menu. `NTeX-install` is a command line interface to install the packages and complete package sets.

`InstallNTeX` offers an option to install all necessary binaries. This is selected by default and will always install or update the binaries for all installed sets and the systems you selected (but not for all installed systems). If you unselect this option only the binaires for newly installed packages will be extracted from the binary archives.

2.4.1 `InstallNTeX` in Terminal Mode

If the `wish` shell (Tcl/Tk) is not available or the *DISPLAY* variable is not set, `InstallNTeX` will automatically run in terminal mode. The command line option `--noX` also selects the terminal mode.

1. Run `InstallNTeX` from *ADMDIR* by '`cd` ⟨*ADMDIR*⟩`; sh ./InstallNTeX`'
2. Choose the install menu of `InstallNTeX`. You get a menu where you can set the path of the root of the NTEX distribution menu, the installation mode, the Linux distribution (only sensible on Linux systems), the platforms for which the binaries should be installed and the package sets you want to install.
3. Either just all packages are selected now or you have to choose which packages you want to install, depending on the 'm' option.
4. Now depending on your choices before the packages are installed. Note that if you do not have all the packages on disc but have chosen to install all packages of some set `InstallNTeX` will complain at the end that not all packages could be installed. If this was on purpose just forget about this message.

2.4.2 `InstallNTeX` in X Mode

This is not yet documented here. `InstallNTeX` runs automatically in X mode, if `wish` is available and the *DISPLAY* variable is set. The option `--X` will select the X mode.

2.4.3 `NTeX-install`

This is not yet documented here. This script is located in *ADMDIR*/sbin. The command line option `--help` will print the usage information. Currently `NTeX-install` is the only script which can install the TFM and PK packages.

NTeX-install will only work if the `kpsewhich` binary is available. If you try to run it directly after the initial installation it willprobably fail. If `kpsewhich` is not available set the environment variable *KPSEWICH* to `\textit{ADMDIR}/scripts/kpseexp.sh` which is a shell script offering some basic features of `kpsewhich`.

2.5 Updates

If you have some NTEX release from Version 1 you have to remove it completely and install the new version from scratch. `InstallNTeX` from NTEX release 1.3, 1.4 and 1.5 provides some support to remove the packages. If you use the same directory structure as you used for the old installation it's enough to remove the TEXMF directory. If you are using some Linux distribution providing NTEX (I only know of Slackware), you can use the package maintenance scripts from this distribution to remove the packages.

If you already have some NTEX Version 2 installed, you can automatically update the installation. But please consider the following notes.

The changes of NTEX Version 2 can be found in the file *CHANGES*. Also have a look at the WWW home page of NTEX. If the first two numbers of the version number are equal, it is enough to get the new packages and install those. These are mainly bug fixes and updates. If only the first number of the release version is equal, you should get the new packages and `ntex.pkg`. Since version 2.2.2 you can install this package with `NTeX-install` or `InstallNTeX`. Elsewise you also ahve to get `InstallNTeX` and rerun the Initial installation. Updating `ntex.pkg` will upgrade all the installation and maintenance scripts of NTEX. Afterwards you can install the packages with `NTeX-install` or `InstallNTeX` as described above. Both programs provide some update option. If this is selected, only newer packages will be installed. Once you installed the packages you should rerun the configuration.

Note that each package has it's own version number. This version number is equal to the NTEX release the package was last updated.

Between NTEX 2.0 and NTEX 2.1 the package format changed. Yet the version number of the single packages are only higher if the contents of the package was changed. So you don't have to upgrade some package if the package format but none of the contents were modified.

The package organization and the configuration has been changed considerably between NTEX 2.1.2 and NTEX 2.2.0. If you plan to update from some pre 2.2.0 release of NTEX you have to upgrade **all** installed packages. Download the sets you installed, `InstallNTeX` and `ntex.pkg`, run `InstallNTeX` from the directory containing `ntex.pkg` and finally run the installation scripts with the update option. Please don't select the current configuration if you are updating to 2.2, because some of the configuration options are new or have changed!

If you have NTEX 2.2.2 or newer, you only have to get the package `ntex.pkg` for updating the base installation. Either directly install this package with `NTeX-install` or select the NTeX installation package in `InstallNTeX`.

There have been some improtant changes to the configration scripts in release 2.3.0. In order to guarantee that the configuration will work you also have to updated `ntex.pkg`.

2.6 Removing Packages

You can remove some packages or the whole distribution by the 'remove' menu of `InstallNTeX`. There you can select the packages you want to remove. But please be careful if you want to remove the whole NTEX distribution. This might also remove some of your locally installed files.

The packages can also be removed in the X mode of `InstallNTeX` and with the command line interface `NTeX-remove` (in *ADMDIR*/sbin).

If you've installed NTEX in Slackware compatibility mode you can also use `pkgtool` to remove the packages. However you can't install NTEX packages with `pkgtool`. If you used the debian compatibility mode you can remove the packages with `dpkg` and `dselect`, but there is also no way to install the packages with these tools.

3 Configuration

After you have installed the packages it is necessary to configure them. If you do not configure NTEX nearly nothing will work. Therefore call the configure menu of `InstallNTeX`. In terminal mode you have the choice between default, simple, expert and current configuration. If you have no clue of TeX you should probably choose the default configuration. This will set certain default values. However it is sensible to choose the simple configuration which will let you choose some basic options for which it is also hard to guess default values. The expert option asks about everything my configuration scripts know. These are by far not all configuration options possible for TEX, but I will continue working on the scripts to improve things here. If you need some help for any option, type '?'. By typing '-' you reset the value to the default value set by the script (and not by your last configuration). Once you're through the configure questions, NTEX will be configured automatically. Note that this can take quite some time. Please check the output of the configuration scripts for errors!

If you run configure before and you only want to reconfigure NTEX without changing any settings, select the current configuration. If there was no previous run of configure, this is the same than selecting the default configuration. Your configuration is stored in the files in ADMDIR/cfg. You can also edit these files (once they are there) and run the current configuration. If you remove them, you get the original defaults back.

The X mode of `InstallNTeX` provides a comfortable interface to the configuration options. In this case you'll always be offered all possible configuration options. But you can easily reset them to the default value or the last setting.

The shell script NTeX-config is the command line interface for the configuration options. It either uses the terminal interface or the X interface. It provides more possibilities to configure NTEX. The option `--help` will print the usage information. It also allows to configure single packages and takes care of configurations which depend on these packages.

Note that by running the configure scripts any local modifications of the real configuration files are lost, i.e. the files in the cfg subdirectories except for *ADMDIR*/cfg are overwritten. If you want to modify any of the configuration files directly, remove `NTeX` from the first line of this file and it will not be overwritten anymore. In this case the configuration set by the scripts will not be used.

Please don't select the current configuration if you are updating to 2.2, because some of the configuration options are new or have changed!