

X Window System for ND-500/5000 211998A

Description of product

The X Window System is a portable, network-transparent window system originally developed at M.I.T. It can be used on a wide variety of raster display devices, ranging from simple monochrome frame buffers to deep, true colour graphics processors.

This is a port of the X Window System X11.R3 for ND-500/5000 series running on the SINTRAN III operating system.

This product contains compiled/linked versions of most of the clients and utilities normally contained in the X11.R3 distribution. The clients available are: *uwm*, *xterm*, *xclock*, *xcalc*, *xmag*, *xlogo*, *xbiff*, *bitmap*, *atobm*, *bmtoa*, *xsetroot*, *xev*, *xfd*, *xlsfonts*, *xlswins*, *xdpyinfo*, *xrdb*, *xmodmap*, *xset*, *xwininfo*, *xwd*, *xwud*, *xpr*, *maze*, *xhanoi*, *puzzle*, *ico* and *plaid*. No X Window System display server is currently available under SINTRAN.

This version of the X Window System is ported from the original M.I.T./X Consortium distribution from October 1988 and is delivered with the same notice.

Norsk Data makes no representations about the suitability of this software for any purpose. It is provided "as is" without express or implied warranty.

Reason for new product

Norsk Data wants to continue its SAFE architecture and at the same time ease the integration of new workstations and servers running the UNIX operating system with customers' existing hardware and software.

With the *xterm* client it is possible to run conventional character-based applications on SINTRAN III (for example NOTIS-WP) in one window, whilst FrameMaker is running on a UNIX-based computer in another window. It is possible of course to cut and paste text between applications running on machines with different architectures and operating systems.

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Prerequisites

In order to use this product, the following are required:

Hardware prerequisites

CPU type (either of the following):

- ND-500 series
- ND-5000 series

Other hardware:

| Product name | Product number |
|--------------------------------------------------------------|----------------|
| Ethernet II controller for TCP/IP (ND-500 or ND-5000 series) | 110063 |
| or | |
| Ethernet III controller (MF-BUS) (ND-5000 series only) | 110513 |

Software prerequisites

The following software must be available on the system before the product is installed:

Operating system:

SINTRAN III/VSX version L revision 2000 or later

Other software:

| Product name | Product number |
|-------------------------|----------------|
| COSMOS TCP/IP Gateway | 211185 C07 |
| or | |
| TCP/IP Basic Module/III | 211327 B05 |

Notes:

In order to run the X Window System with maximum performance it is necessary to have a TCP/IP Basic Module/III running in an Ethernet III controller. Although it is possible to use an Ethernet II controller with the COSMOS TCP/IP Gateway, this is not recommended.

Running X Window System clients generally makes heavy demands on memory. It may thus be necessary to increase memory capacity.

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Other prerequisites

Minimum Permanent Mass Storage:

| User area | Space (pages) | Number of files |
|-------------|---------------|-----------------|
| X11-DOMAINS | 4530 | 47 |

| | |
|------------------------------|-------------------|
| Number of segments (ND-100): | None |
| Number of RT-descriptions: | None |
| Internal devices: | None |
| Batch processors: | None |
| MTADs: | See pages 8 and 9 |
| Background programs: | See pages 8 and 9 |
| ND-500 processes: | See pages 8 and 9 |

Dependencies

Software dependencies

| Product name | Product number |
|------------------|----------------|
| User Environment | 210518 D |

Version D of User Environment is recommended to obtain automatic login via the *uwm* and *xterm* clients. If version C of User Environment is used, automatic login is not available - refer to page 8 for further information.

| | |
|----------------------------------|------------|
| SINTRAN III Remote Shell Utility | 220000 A03 |
|----------------------------------|------------|

This is an implementation of the UNIX utility *rsh* and the *rshd* server for SINTRAN III. This product is not necessary, but it makes it easier to combine SINTRAN and UNIX systems as it is possible to start clients on SINTRAN III from a window manager running under UNIX and the other way around.

Hardware dependencies

X Window System server

In order to run a client you need a workstation running an X Window System display server, a PC/AT running an X Terminal emulator, or an X Terminal connected to your computer via TCP/IP over Ethernet.

If an X Terminal is used you also need a UNIX machine on the network. This machine should be able to act as a boot and font server for the X Terminal.

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Documentation

No documentation is provided with this product. All documentation may be purchased from a bookshop. We recommend The X Window System Series from O'Reilly & Associates, Inc:

Volume 0, X Protocol Reference Manual

For programmers with "special" interests in the X protocol. Describes the protocol in detail. 418 pages.

Volume 1, Xlib Programming Manual

Guide to making your own clients. A must for the programmer. 659 pages.

Volume 2, Xlib Reference Manual

Describes all routines, structs, macros etc. in a clear and systematic fashion. A must for the programmer. 723 pages.

Volume 3, X Window System User's guide.

Explains the concepts and terminology in the X Window System. For novices and programmers. Describes configuration files for *uwm* and other applications. 576 pages.

Volume 4, X Toolkit Intrinsic Programming Manual

Guide to programming with Xt (X toolkit) A must for the programmer using the Toolkit. 582 pages.

Volume 5, X Toolkit Intrinsic Reference Manual

Describes all routines and widgets in the X toolkit and Athena. A must for the programmer using the Toolkit. 545 pages.

Volume 7, XView Programming Manual

Guide and reference manual to XViews toolkit. This toolkit is NOT available in the SINTRAN version. 566 pages.

The books describes X11.R2 and R3 (volume 2) and X11.R3 and R4 (volumes 4 and 5).

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Installation procedure

This product is delivered on 8 double-sided/double-density diskettes.
The 8 diskettes contain compiled and linked sample clients.

- Create user area X11-DOMAINS, and give this user area 4530 pages.
- Log in as user area X11-DOMAINS, insert diskette number 1 in the floppy drive, and enter the directory on the floppy:

@ENTER-DIRECTORY 211998A,FLOPPY-DISC-<controller no.>,<floppy-unit> ↵

- Use the Backup-System (or another utility) to copy all files on the floppy to disk:

@BACKUP-SYSTEM ↵

Ba-sy: COPY-USERS-FILES ↵

Destination type: DIRECTORY ↵

Destination directory name: ↵

Destination user name 'X11-DOMAINS' : ↵

Source type: DIRECTORY ↵

Source directory name: 211998A ↵

Source user name 'FLOPPY-USER' : ↵

Source file name '' : ↵

Manual selection: LIST ↵

Ba-sy: EXIT ↵

- Release the directory and remove the diskette:

@RELEASE-DIRECTORY 211998A ↵

Then repeat the procedure for diskettes 2-8: enter each diskette and copy the files by means of the Backup-System (or another utility) to user area X11-DOMAINS.

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Errors known but not corrected

All upper-case letters in parameres and options are converted to lower case, thus it is not possible to use upper-case letters in parameters and options.

It is not possible to send characters to the process running in the *xterm* window if the MTAD buffer is filled. This means that the running process will not respond to break characters (including ESCAPE and CTRL+@) when the type-ahead buffer contains more than 63 characters.

The window manager (*uwm*) does not accept comments (#) in the configuration files.

The bitmaps editor (*bitmap*) has problems with creating a new bitmap from the command line.

Differences between the X Window System on SINTRAN III versus UNIX

Changed file names:

File names for libraries, error message files and resource database files are different under SINTRAN III. This is because of differences in the file system (naming and structure).

UWM-SYSTEM:RC and UWM:RC

This is the *uwm* window manager configuration files.

These replace the UNIX file names `/usr/lib/X11/uwm/system.uwmrc` and `~/uwmrc`.

XDEFAULTS:SYMB

This is the resource database. It has the same function as `~/XDefaults` under UNIX.

(X11-DEFAULTS)XXX:SYMB

This is the application specific resource database. It has the same function as `/usr/lib/X11/app-defaults/xxx` under UNIX. This file is used by the toolkit initialisation routines. The toolkit also tries to open the file `XXX:SYMB` on own user area.

XERRORDB:SYMB

This is the Xlib error text database. It has the same function as `/usr/lib/X11/XErrorDB` under UNIX. This file should be copied to user area `SYSTEM`.

XTERRORDB:SYMB

This is the toolkit error text database. It has the same function as `/usr/lib/X11/XtErrorDB` under UNIX. This file should be copied to user area `SYSTEM`.

X Window System for ND-500/5000 211998A**Environment variables in SINTRAN III**

UNIX-based X Window System clients communicate with the display server specified in the `DISPLAY` variable, for example:

```
$ DISPLAY=pcscreen:0
$ export DISPLAY
$ xclock
```

The `xclock` client is now running on the display named `pcscreen`.

To achieve this in SINTRAN III, the tool `SETENV` should be used (it is supplied as a domain file `SETENV:DOM`). The same example as above, for a SINTRAN system, would be:

```
@ND (X11-DOMAINS)SETENV display pcscreen:0
```

The environment variables are stored in the User Environment profile of each user.

To see the value of an environment variable, the tool `GETENV` can be used (also supplied as a domain file), for example:

```
@ND (X11-DOMAINS)GETENV display
```

Limitations

At present, there is no X Window System display server available under SINTRAN III. This product can only be used together with workstations connected to the ND-500/5000 computer through a network connection.

Some clients normally distributed with the X Window System are not available under SINTRAN III. These are `xdm`, `xhost`, `xload` and `xman` among others.

The display manager (`xdm`) is interesting, but it is not possible to port to SINTRAN III without substantial modifications and reduced functionality. This is mainly because of different process control functions and login-functions in UNIX and SINTRAN III.

The host access control utility (`xhost`) protects the local display server from unwanted connections, so this has no meaning on a system without a local display.

The system load display utility (`xload`) shows variations in CPU load over time. This utility uses the Load widget in the Athena widget set. This widget is not fully implemented in this release.

The manual display utility (`xman`) needs UNIX utilities and is based on the pipe mechanism not available on SINTRAN III. There are also no manual pages available on disk to display.

It is not possible to boot an X terminal from a computer running the SINTRAN III version of the X Window System. Most X terminals require the use of `tftp` to download fonts, colour database and/or object code from a host at boot time. This means that you need a UNIX-based computer in your network in order to boot the X terminal. This does not apply to X-terminal emulators running on MS-DOS because these systems use the local disk for the necessary files. Scanned by Jonny Oddene for Sintran Data © 2011

X Window System for ND-500/5000**211998A****Changed functionality in the core clients**

- uwm** The window manager reads its configuration from a file. The UNIX file names `/usr/lib/X11/uwm/system.uwmrc` and `~/uwmrc` are replaced by `UWM-SYSTEM:RC` and `UWM:RC`. Comment lines are not allowed in this version.
- The start program command in the configuration file is extended to take one parameter. The first `%`-characters found in the command string is replaced by the identification of the display server on which *uwm* is running. This makes it possible to start clients by the window manager on the same display as the window manager is running, without explicitly hard-coding the display name into the configuration file. This can also be done by use of the environment variable `display` (see page 7).
- The *uwm* under SINTRAN III may use three new resources and configuration parameters: `LoginUsername`, `LoginPassword` and `LoginProjectPassword`. These new resources only apply if User Environment version C is used. `LoginUsername` specifies under what user area the spawned processes are run. The spawned processes are running on MTADs. Make sure that enough free MTADs are available. Each additional client started uses one MTAD, one background program and one ND-500 process. It may be necessary to increase these resources substantially using the SINTRAN III Configuration Program and the SINTRAN Service Program.
- xbiff** The mail notification program is modified to check for mail in the NOTIS-ID mail system. The change is actually done in the Athena widget set.
- bitmap** The bitmap editor screen layout is rearranged to make it work on smaller (640x480) displays.
- It also contains one new command, "Load existing bitmap from file". This function assumes that the bitmaps have file type `:ICON` and is located on the current user area.
- The bitmaps editor have problems with creating a new bitmap from the command line. To create a new bitmap you must modify a copy of an old one. This is made easy by the use of the three bitmap manipulation utilities *bitmap*, *atobm* and *bmtoa*.
- xset** All upper-case letters are converted to lower-case letters, thus it is not possible to use upper-case letters in parameters and options.
- maze** *maze* supports one additional command-line option that specifies level of low-level debugging. The `-debug <value>` option specifies a value for the global variable `TcpDebug`.

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xterm The Tektronix 4014 emulator is not implemented.

It is not possible to log the session to a pipe. The default file name for logging is `XTERMLOG-XXXXX:LOGG` (where XXXXX is the process id of *xterm*) and is created in the current user area.

It is not possible to send signals to the process running in the window. In general, features that are directly interacting with UNIX-specific functions are removed.

The VT-102 emulation mode works well together with terminal type 6 in SINTRAN III. It is possible to rebind all (function) keys using the resource manager. This makes it possible to use all function keys on the keyboard in a manner consistent with the well known TDV-2200 NOTIS terminal.

The *xterm* under SINTRAN III uses two new resources: Language and TermType. Language is used to show which national character set to use, and can take one of the values: USASCII, Norwegian, Danish, Swedish, English, German or French. TermType shows which SINTRAN III terminal type to emulate, and can take the values 6 (VT-100) or 92 (Facit Twist in portrait mode (72 lines)). With the standard fonts, the VT-102 terminal emulator will not give national characters, only [\] { | }. It is possible to change this behaviour by using a different font.

Each running copy of *xterm* uses one additional MTAD, one background program and one ND-500 process to run the user process. It may be necessary to increase these resources substantially using the SINTRAN III Configuration Program and the SINTRAN Service Program.

plaid *plaid* supports one additional command-line option that specifies level of low-level debugging. The `-debug <value>` option specifies a value for the global variable `TcpDebug`.

Changed functionality in the X library

Files Some file names for resource database files are changed. See page 6 for a list of changed file names.

Changed functionality in the X toolkit library

Files Some file names for resource database files are changed. See page 6 for a list of changed file names.

X Window System for ND-500/5000**211998A****Changed functionality in the X Athena widget set**

Mailbox The mailbox widget, used by *xbiff*, checks the NOTIS-ID mail system. This requires the user to be logged in using User Environment. To link clients using this widget the UE-PLIB is required. The resources and command line options for specifying a mailbox file etc. is still there, but they are not used by the widget.

Copyright notice

The following copyright and permission notice outlines the rights and restrictions covering most parts of the standard distribution of the X Window System from M.I.T. Other parts have additional or different copyrights and permissions; see the individual source files.

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