

Thin Client Operating System: eLux[®]NG for FUTRO

eLux[®]NG (eLux Next Generation) is a newly designed Linux-based embedded operating system, especially developed for FUTRO and SCOVERYs used as Thin Clients in server-based environments, thus taking advantage of the centralization in networks and the reduction of the Total Cost of Ownership for which Thin Clients are known.

The eLux[®]NG software has consolidated the 3-year old eLux[®]1.1 software to a flexible solution supporting more and more hardware platforms. This new flexibility is necessary to use the dynamics of the Open Source development for the evolution of Thin Client computing.

The eLux[®]NG graphical user interface is easy to use and has been streamlined to ensure a low start time and to offer Thin Client users a fast, comfortable and secure access to Windows applications and servers. Neither the end-user nor the administrator needs Linux knowledge.



- The FUTRO with eLux[®]NG is an intelligent, multi-functional terminal and a slim network computer. eLux[®]NG connects the FUTRO to all kinds of servers, such as the Windows Terminal Server, Citrix[®] MetaFrame[®] Server, mainframe systems like OS/390, BS2000/OSD, AS400, Unix/Linux systems, SAP R/3, Tarantella server and Web server. eLux[®]NG clients are able to connect to any server type simultaneously.
- Since the network is essential for any business-critical applications, eLux[®]NG supports all kinds of network types like Ethernet up to 1 GB, Wireless LAN connection up to 54 Mbit and connections like ISDN and DSL for small bandwidths to remote offices. Even legacy networks like Token Ring are supported.
- The eLux[®]NG operating system being write-protected there is no risk of viruses or the installation of illegal software nor can the FUTRO user disturb the stability of the operating system. Even if aborted after a power failure or during operation there is no risk of data loss or functional restrictions. Expense of administration is highly reduced, at the same time increasing the system availability for the essential user tasks, i.e. productivity, availability and security at the client is increased, and costs are decreased. Signed software packages safeguard against viruses and trojans. Network connections are encrypted via VPN Tunnel. Device authentication (802.1x) and user authentication (LDAP, ADS, PKI), and Single-Sign-On are provided for your security.
- The modular firmware concept allows the administrator to individually customize the software installed on the FUTRO to the end-user requirements. New software packages are easy to integrate via download from the Internet. You can build your own software packages with the eLux[®] Builder Kit and integrate these into the operating system. In particular, for small bandwidths eLux[®]NG offers a practicable, cost- and resource-saving solution in SoHo areas (small office / home office) due to compressed software packages and the modular update concept.
- The management software Scout Enterprise provides manageability of an unlimited number of eLux[®]NG devices on 4 levels: firmware, device configuration, server connectivity and online commands. Moreover, Scout Enterprise offers multiple administrator policies, database support (ODBC) and open interfaces for third party management tools. The new structure with an arbitrary number of organisation units on different levels provides a very flexible "inheritance" of configuration, applications and properties.
- With eLux[®]NG for PC you can migrate your "old" PCs to Thin Clients. When the PC should reach end-of-lifetime, the license can be transferred to a FUTRO, thus protecting your investment.



Areas of Application

Windows Application Server

The FUTRO provides the possibility to run an ICA client or RDP client to connect directly to a Windows application server. Independent Computer Architecture from Citrix (ICA) and Remote Desktop Protocol from Microsoft (RDP) are both protocols to compress and encrypt the data on the network to have small bandwidth and a high level of security. The FUTRO with eLux[®]NG supports extended memory with external USB devices, like USB mass storage devices, USB PDA, USB printers and a wide range of Fujitsu Siemens Computers keyboards. Secure your Network with a SmartCard Logon to authenticate via PKI infrastructure.

Mainframe Connectivity

The comfortable FUTRO terminal emulations are integrated as a residential function in the system and thus can replace legacy terminals. Direct connection to the host application without any tiers is possible. Use the integrated PowerTerm (optional) and Eterm applications to emulate the whole world of Mainframe connectivity. All kind of mainframe types are supported such as AS400, OS390, BS2000, Unix and many more.

Graphical Terminal Replacement

Use the FUTRO to replace classical X-terminals such as Sun and HP workstations. Display the monitor of UNIX/LINUX servers directly on your client monitor by means of the X.11 emulation with XDM support. Save local resources yet using the full functionality of a UNIX environment.

As an option Accelerated-X[™] from Xi Graphics is integrated in eLux[®]NG. Accelerated-X is used to upgrade the performance and to enrich functionality of the Linux graphics drivers.

Web Station

Due to the integrated browsers the FUTRO gives access to the Internet world without risk of viruses or any other attacks from outside. Important plug-ins, such as mail clients, the Acrobat Reader and the Macromedia flash player and Java complete the functionality. You have the option between Mozilla, Opera and Firefox browsers.

SAP R/3 Terminal

With the SAP[®]GUI for the Java environment on eLux[®]NG the FUTRO provides a fully functional SAP terminal which connects you to any SAP R/3 application server. Enter the SAP world with the best possible security, availability and reliability. Furthermore, SAP provides support to the eLux[®]NG end user with SAP GUI.

Connectivity

When consolidating desktop systems an important factor of cost-saving has become the minimization of processes for updating security software such as anti-virus programs, security updates, and the fact that local applications have become dispensable, for these are available on the central server.

It is only for client software like ICA client or terminal emulation that updates are necessary, and these definitely in longer time-intervals.

eLux[®]NG has a compressed file system, so that single software components, which are available on a central system compressed as well, can be updated on the Thin Client. The volume involved is highly reduced compared to conventional PC installations, and eLux[®]NG thus qualifies to update remote stations with small bandwidths practically at no expense of preparations.

eLux[®]NG supports all network protocols for LAN and WAN:

- Wake-on-LAN
- network drive with SMB and NFS protocols
- ADSL Connections
- ISDN and analogue network
- LAN 10Mbit/100Mbit/1Gbit
- Token Ring
- Wireless LAN IEE 802.g

Security

Due to comprehensive networking security has become a main reason for the decision to use Thin Clients.

eLux[®]NG is not outstanding because of its numerous functions but rather because of saving costs and increasing security of workstations thanks to its coherent security concept.

The write-protected file system prevents users from installing illegal software, viruses or trojans on the client. Moreover, eLux[®]NG provides the option to prohibit use of mass storage devices (such as USB hard disk, USB memory stick), so that dataflow to the client is cut off.

The software packages – defined according to our modular concept – are signed by a X.509 certificate verifying both the integrity and the origin of the firmware residing on the Thin Client. eLux[®]NG supports the network authentication protocol 802.1x, in order that all participants within a network can be identified via certificate before they are assigned an IP address.

For network connections via Internet eLux[®]NG supports VPN Clients ensuring secure access to your company network environment from remote.

eLux[®]NG satisfies the increasing safety requirements by means of extensive support of PKI (public key infrastructure) functions, such as SmartCard support, local authentication, mail, web and screensaver security as well as ICA- and RDP-SmartCard redirection.

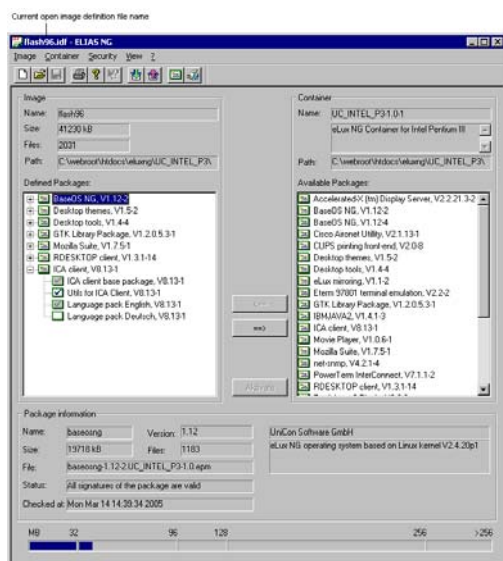
eLux[®]NG complies with the existing standards like PC/SC and PKCS#11, and supports more than 30 SmartCard readers.

With its entire security concept eLux[®]NG offers an integrated solution of administration which in a PC network could only be realized by means of expensive third party components.



Flexibility

ELIAS NG (eLux[®] Image Administration Service for Next Generation) is a unique tool allowing the administrator to individually customize the software installed on the device to satisfy end-user requirements.

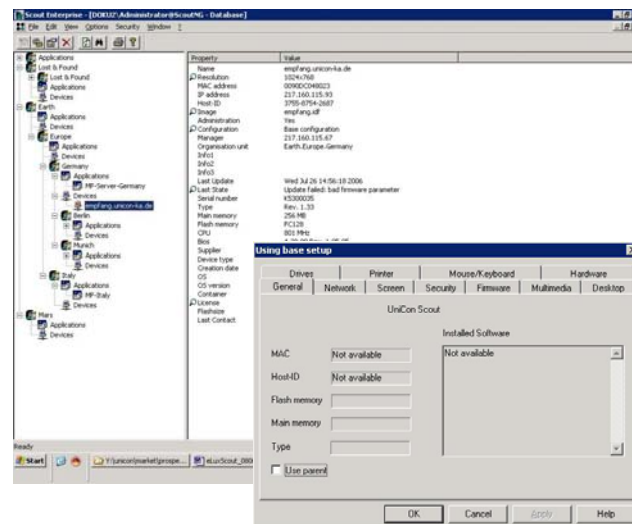


- User-friendly graphical interface that allows you to create software images by mouse click
- Easy management of device firmware using the "container method"
- Ability to activate/deactivate software components to optimize your use of available resources
- Image size bar to avoid exceeding flash size
- Automatic test of software dependencies
- Automatic test of software conflicts
- Easy import feature to add the latest versions of software
- Easy export feature that exports a package along with its software dependency information
- Digital signatures to ensure the installed packages are genuine
- Only modified data will be transferred and updated via HTTP/FTP

Manageability

Scout Enterprise

In large networks with many clients central management is a main topic. Scout Enterprise is *the* management software for FUTROs with eLux[®]NG for large-scale installations. For installation of Scout Enterprise only small storage space on standard PC or Server architecture is needed. The administrator can manage the clients on 4 levels - firmware, device configuration, server connectivity and online commands - and distribute them to every single eLux[®]NG-based FUTRO in a very comfortable and well-structured way. Moreover, Scout Enterprise offers multiple administrator policies, database support (ODBC) and open interfaces for third party management tools. Every organizational or site structure of a company can be mapped with Scout Enterprise – be it home offices, branches or structures in large, international companies with many sites and clients. An arbitrary number of organisation units on different hierarchical levels can be created thus making the "inheritance" of configurations, applications and properties very flexible.



To update application software, such as a browser or ICA client, you need not move. Scout Enterprise enables the administrator to install a new version centrally. Functionalities like flexible grouping of Thin Clients, software asset management, hardware asset management, tracking and reporting, mirroring via VNC are available.

For help desk functionality mirroring is available with these benefits:

- Mirroring allows support for users who have questions to an application.
- All applications running on the desktop will be supported.
- The helpdesk can take over keyboard input as well as mouse input.

For more information about administration functionalities, please read the White Paper "Manageability" on <http://extranet.fujitsu-siemens.com/futro>.



Migration

Protect your investment with **eLux[®]NG for PC**:

PCs with Intel chipset can also operate with eLux[®]NG, independent from the clock rate of the processor. eLux[®]NG for PC must be installed on the standard PC hard disk drive, the installation being independent from the disk format.

Test your PC with the eLux[®]NG for PC Live Evaluation CD. It runs eLux[®]NG for PC from CD upon boot. No files are installed on your hard drive, the Eval CD tests for the hardware automatically and shows, whether the "old" PC is eLux[®]NG compatible. eLux[®]NG for PC supports more than 500 network and graphics interfaces.

System requirements:

- Personal computer with a Pentium MMX processor or higher.
- IDE or SCSI hard disk.
- PCI LAN and PCI video. ISA LAN and ISA video are not supported.
- 64 MB of RAM minimum.
- 128 MB of hard-disk space minimum.

The CD-ROM drive running the evaluation CD must be IDE or SCSI.

Other types of cards should be checked for support in eLux[®]NG (see reference list on www.mylux.com).

Of course, PCs with eLux[®]NG for PC can be managed by Scout Enterprise just like Thin Clients. When the PC reaches end-of-lifetime the license can be transferred with no additional costs to a FUTRO.

eLux Software Packages:

Terminal Server:

- ICA Client (Citrix), V 9.8
- NX Client (NoMachine), V 1.5.0
- RDP Client (Linux), V 5.2
- Tarantella Client (Linux), V 4.20.909.2
- ThinLinc, V 1.2.0

Host Connectivity:

- SAPGUI Client (Java), V 6.40rev.6
- eterm – 97801 Terminal emulation , V 2.2.2
- X97 – 9750 Emulation
- PowerTerm, V 7.1
- HOB Link Jterm, V 3.3
- X11 Terminal with XDM support

Hardware Support:

- PCL Printer Support
- Cisco Aironet Utility
- WLAN USB
- WLAN DLINK
- USB Compaq IPAQ Driver, Pocket Loox
- USB Handspring Visor, Palm Driver
- Cherry KVK Reader
- KV Card
- PCSC Lite
- Touchscreen Elographics Input Driver, V 3.0
- G-Touch, Touchscreen Driver

Printing:

- ThinPrint, V 1.6.69.1
- CUPS Print Client, V 2.0-8

Browser:

- Firefox , V 1.5.0.1
- Mozilla, V 1.7.12
- Opera, V 8.54

Mail Client:

- Thunderbird Mail Client, V 1.5

Desktop:

- Desktop themes
- Desktop tools (CD Player, Calculator, File Manager, Editor)
- XScreensaver

Document Viewer:

- Adobe Acrobat Reader, V 5.0.10; V 7.0

Multimedia:

- Macromedia[®] Shockwave[®] Player, V 7.0r63
- Movie Player (DVD, MPEG, DivX, etc.), V 1.0.7
- RealPlayer[®]10 , V 10.0.7

Middleware:

- IBM Java: Sun
- Sun Java Runtime Environment, V 1.5.0.6
- Sun Java Web Start

Network Management:

- net-SNMP, V 4.2.1

Network Security:

- Secure Shell (SSH)
- Cisco Systems VPN Client V4.8.01

Security:

- User authorization with LDAP, ADS, SMB, V 2.5-4

Helpdesk:

- VNC Server; VNC Client
- Additional Software (ThirdParty):
- Accelerated-X[™] Display Server, V 2.2.21.3