

TECHNICAL DOCUMENTATION



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BASICS

HELLO!

DID YOU KNOW THAT FAXWARE IS A “BANANA SOFTWARE“?

Don't panic! You don't know the term “banana software“? This means that programs “ripen“ with the customers. In other words, they develop and become more and more sophisticated. In a certain way, this also applies to our software packages. However, by “ripe“ we mean something different from most other manufacturers.

The package which you are holding in your hands is not the result of years of fiddling away in labs, isolated from the rest of the world. Thanks to regular communication with thousands of our users and due to the transmission of many millions of faxes, FaxWare has become what it is today. An incredibly stable, reliable and sophisticated product. FaxWare is a banana software which is however already “ripe“!

Ah! Does that mean that the last versions were incomplete? No, it doesn't! Taking into consideration the “state of the art“ at that time, FaxWare was without doubt, a mature software product. However, due to the ever changing software and hardware world, the ever increasing technical possibilities and new user requirements it was time for some new developments. That's why, we now offer FaxWare 4.

What are we trying to say with this introduction? That's quite simple. Talk to us. Tell us what you like or don't like about our products. We are always grateful for suggestions.

So get writing!

PS: Don't copy this floppy. Please respect our copyright.

We want you to understand what we´re talking about

FaxWare is a high tech product. Many years of development and experience, as well as thousands of user ideas have made FaxWare what it is today.

It's a major problem to bring the manual and the »functionality« of this kind of software into accord. With operating systems, which FaxWare essentially is, there are very few possibilities for (computer) client based documentation. Contrary to application programs, it is particularly important to understand the basics and conceptions of an operating system to fully know what's going on.

The first chapter of this documentation has been written like a »reader«. You should read it from the beginning to the end. It will inform you about the efficiency of FaxWare and give you an idea why we've designed and developed our product in the way we did. This manual explains the operation, the possibilities you have with FaxWare and for what purposes you can use it.

Off you go!

Of course, we also find it more exciting to tear open the packaging, to take out the disk and to start installing. You could do this with our products. However, in this case, you'd miss a lot of important information which a software program such as FaxWare does not automatically reveal.

We always try to keep the design of our software as simple as possible. In this way, we won't confuse the users with overloaded menus and we make it easy for the FaxWare user to get started. Unfortunately, this has two disadvantages. On the one hand, some people think that a software without overloaded dialog boxes, hundreds of buttons (which you should see at a glance) and a complicated file chaos »isn't suited for professionals«. On the other hand you may never get to know all of the countless possibilities of a software, as nobody will give you the idea of trying certain things. Therefore, software documentation is often the only way to exchange information.

You read manuals? You must be crazy!

It's really funny. You buy a software pack and immediately get upset about the manual. Either it isn't included or it's far too thin.

Or it's too thick and consists of many chapters with many additional sheets. Do you know anybody who says anything positive about a software manual? Except some critics who have »ripped a software program to pieces« and then try to comfort the manufacturer by saying something good about the documentation.

Do you know the following situation? You've bought a fantastic word processing system, including a manual of thousand pages. Nevertheless, you're going straight away to the next book shop to buy the book »Word processing program XYZ«. Probably it's the same urge which makes you throw away the software included when you buy a modem without even having a look at it.

With our manual this won't happen. We've taken a lot of care over this manual. And to make sure that you won't get bored we've tried to write this documentation in a relaxed and humorous style.

Conventions for the manual design

This documentation is as up-to-date as possible. On the one hand, it has been designed as a simple »installation help«, on the other hand you can use it as a »reference book«.

This manual has been divided into the following chapters.

- ◆ You can read the first part named »Basics« completely from the beginning to the end.
- ◆ The chapter »Installation« deals with everything which you should know to be able to install FaxWare on your server. It explains the real copying procedure, starting the various modules, as well as the requirements of the system environment.
- ◆ The chapter »Operation« describes all facts which are useful to carry out routine FaxWare jobs.
- ◆ The »Reference« is very extensive and has been written to help you find functions or settings.
- ◆ In the »Appendix« you'll find among other things a complete description of all FaxWare system files and pathes.

Terminology

This manual was designed for use specifically for network and system administrators. To successfully install and set up FaxWare, basic knowledge of how to configure, operate and maintain a network running under Novell NetWare is required.

We also assume that administrators know how to work with the basic functions of the system console. If you are unfamiliar with the term NetWare Loadable Module, we strongly advise you to carry out the installation together with a more experienced system administrator.

Those individuals who have completed training to become a Certified NetWare Engineer (CNE) should have the necessary experience and understanding to handle all aspects of the product installation and setup.

In the »Appendix« you will find a section which includes an alphabetical listing of terms that appear in this manual.

Additional references

This manual assumes that you have working knowledge of Novell NetWare at an administration level. In some cases, however, you will find it useful to have additional sources of information to supplement the material in this manual. We recommend that you have access to the following documents as additional references:

- ◆ The NetWare system documentation
- ◆ The documentation describing your AIO interface board in the server (if your server configuration includes terminal devices that are connected to the server)
- ◆ Documentation for your fax hardware
- ◆ The documentation describing your NetWare board in the client (in the event of problems encountered with API communication with the Frontends)
- ◆ The documentation describing your telephone system (only when operating a TLD on an extension/PBX)
- ◆ The documentation of the user programs from which you wish to fax

FAXWARE FUNDAMENTALS

This section describes the architecture and fundamental concepts on which FaxWare is based. This information should help you determine the best manner to set up FaxWare for your particular network environment. We strongly recommend that you read this chapter completely before proceeding with the product installation. Reread any sections that are not clear.

The concept of the server

Even among network professionals, the concept of the server is sometimes misunderstood. A server consists of both the hardware and the network operating system that make it possible to run the network processes - in our case, NetWare processes. For example, a typical network process is the file server process. The file server process provides the clients in the network with data from any of the mass storage devices located within the network. This particular process only runs with NetWare on a computer under the NetWare operating system (NetWare OS).

Print servers represent another form of server; a network print server - consisting of both hardware and software - provides access to printers situated on the network in an equitable manner to network users. Another form of server is the database server, for example, BTrieve or the special SQL server.

FaxWare functions as a server under the NetWare operating system. It offers the clients complete high-level communication functions. The FaxWare handles fax communication throughout the network and offers network clients a variety of related functions. The functions of FaxWare are so powerful that with a simple ASCII file and three lines of text, a fax can be broadcasted to thousands of addresses.

Sharing resources

Local area networks encourage the common use of resources among network members. For example, several users can efficiently share an expensive laser printer, CD-ROM drive, or other network device.

With the shared use of modems through NetWare Connect, a modem locked in on the server can be utilized by several different users. FaxWare can share the same modem with NetWare Connect.

A fax modem can, for example, be used in relation to the selection of a mailbox with a terminal program on your client, as well as for sending and receiving faxes. In this situation, FaxWare does not control the modem; NetWare Connect does.

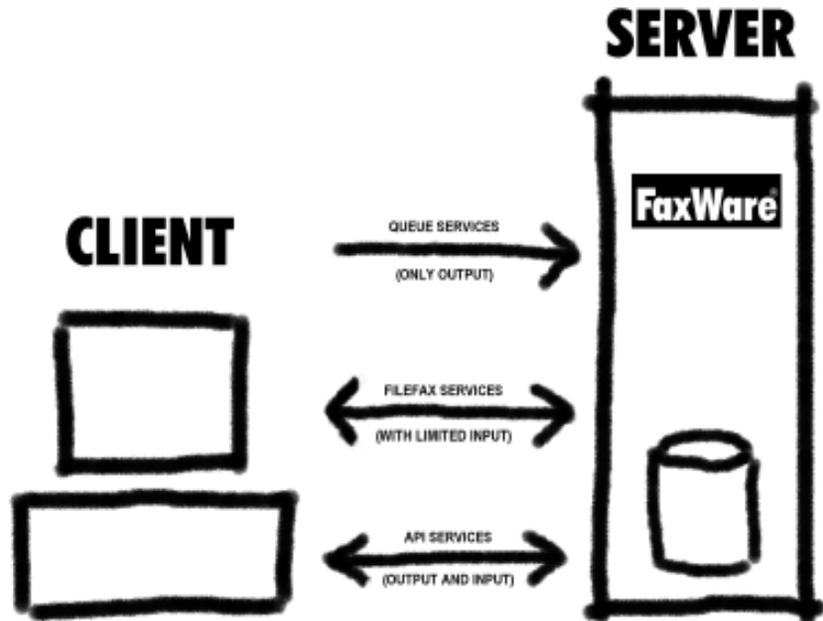
The common use of ISDN boards for various applications by several computers in the network is also interesting. For two reasons however it is substantially easier and safer to share ISDN boards. On the one hand, the interface between the communication hardware and the application is defined as a standard software interface (which excludes any form of incompatibilities). On the other hand, the CAPI (name of the standard software interface) has been designed for the use of different applications and services.

If you are interested in using an ISDN board installed in a server from a client, you should contact your dealer. He can give you further information about HPCS SharePort, another software product. HPCS SharePort has been specially developed for the sharing of ISDN boards in the network.

Communication between the client and FaxWare

Communication between FaxWare and the client workstations can take place in various ways. The FaxWare can be used in conjunction with print queues, files or direct API calls.

*Communication
between client
and server*



Architecture and structure

The architecture of FaxWare consists of three distinct layers. Three different software modules perform different tasks independently of one another. Besides guaranteeing outstanding configurability and increased reliability, this concept also ensures unlimited expansion capabilities for the overall system.

The FaxWare includes these layers:

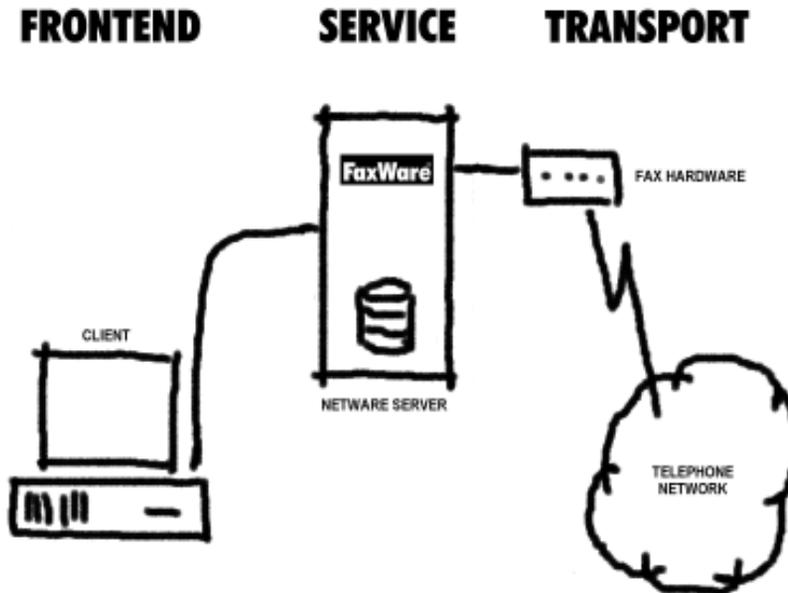
- ◆ The Service Layer, which performs the main work and offers the actual service.
- ◆ The Transport Layer, which takes on the transport of hardware-specific data.
- ◆ The Frontend Layer, which enables client access in the local area network by way of API functions.

Service Layer

The Service Layer is the actual heart of FaxWare. A special NetWare Loadable Module runs on a server and provides all functions needed for faxing operations. The NLM controls all interfaces to the Frontend Layer, all necessary conversions, and complex job management for the Transport Layer.

The main program of the Service Layer, FaxWare, is configured centrally on the server. It offers the »NetWare Look & Feel« for familiar operation by the system administrator.

*The layer functions
of FaxWare*



Transport Layer

As indicated by the name, the Transport Layer facilitates the movement of data. It provides the interface between FaxWare and the hardware, a modem, fax board or an ISDN adapter. A Transport Layer Driver was developed to be hardware-specific; it presents the special functions of the devices in a standardized form. FaxWare supports up to 64 exchange lines - these lines can also be distributed to other NetWare servers. Contrasting types of communication hardware can be used simultaneously.

Frontend Layer

This layer unites the programs and routines that manage communication with the users on the client workstations. This layer represents the link between the FaxWare Service Layer and the user. The functions of the Frontend Layer are only available to users in the local area network, because they are offered by way of special API functions.

Frontend programs allow online communication with FaxWare. For example, logs can be browsed or directories can be edited. Generally, each user has their own send and receive logs. In this log, all incoming and outgoing faxes are chronologically sorted on screen. FaxWare includes a Frontend interface for both DOS and Microsoft Windows.

Interfaces

The three layers of FaxWare are clearly distinguished. However, there are defined interfaces between the individual modules. For example, when sending a fax, the Service Layer copies it to the Transport Layer for transmission to a file in a defined directory. The Transport Layer scans the directory in cycles for this file, which contains all necessary information for the transport job. The Transport Layer Driver now runs the transport job automatically and, on ending, reports the end status to the Service Layer. Through this file interface, it is possible to install a Transport Layer Driver on another file server.

The communication between the Frontend Layer and the Service Layer takes place over the FaxWare client/server interface. The DOS or Windows client receives the entry in the send and receive logs only through the C/S interface. All databases are managed only through the Service Layer. The Frontend Layer also requires no file access on this database.

The NetWare server

This section discusses the demands FaxWare places on your system environment. It also provides you with an overview of the internal workings of NetWare, the 32-bit multitasking operating system under which FaxWare runs. The following information should be of particular interest if you plan to install FaxWare on a server that will also be performing many other services.

The operating system

FaxWare runs under NetWare OS, a complex, non-preemptive multitasking operating system. Several versions of this product now exist. The following list provides information on the different versions of this network operating system:

- ◆ NetWare 386 v3.0
The first 32-bit version of NetWare offers limited possibilities of running additional processes on the server. FaxWare cannot run under this version of NetWare.
- ◆ NetWare 386 v3.1
FaxWare cannot run under this version of NetWare.
- ◆ NetWare v3.11
NetWare v3.11 is currently the most wide-spread version. It is the optimum platform for FaxWare and gives the highest performance with regard to the conversion functions which FaxWare offers. Successful operation with the FaxWare, however, requires the version 3.12g or a higher C library, or a Novell NLM with the name CLIB.NLM. This NLM can be found on the disk NetWare Support Files.
- ◆ NetWare v3.11 SFT III
We currently do not recommend running FaxWare on the SFT III version of NetWare v3.11, no experience has been gathered with continuing use of FaxWare under SFT III.
- ◆ NetWare 3.12
Currently the newest NetWare product in the 3 series, this version is delivered as standard with the most recent CLIB version. FaxWare runs smoothly with this version of NetWare.
- ◆ NetWare 4.00
Although the first version of this product, designed for company networking, is suitable for running FaxWare, we strongly recommend that you update to release 4.1. The updated version of NetWare 4 contains significant bug fixes. Later releases, NetWare 4.01 and NetWare 4.02, should also be upgraded to version 4.1.
- ◆ NetWare 4.1
NetWare version 4.1 forms a suitable platform for use with FaxWare. Some performance is sacrificed; the Service Layer on the NetWare 4.1 server is about 25% slower than on the NetWare 3.12 server.

Hardware considerations

The basic rule of thumb is that fax hardware should operate on all servers capable of running NetWare. All available network boards and mass storage units can be used if they have been integrated properly in NetWare.

System memory

While minimal additional demands are placed on the server's available RAM, we recommend that you install at least 2 MB more internal random access memory than Novell's baseline recommendations. For example, when using NetWare v3.1x, your server should be equipped with at least 6MB of memory. For NetWare 4.x configurations, the server should have at least 8 MB.

Processor

FaxWare operates with any processor type on which the NetWare operating system can be run. Clearly, FaxWare performance improves when coupled with faster processors.

You can adapt the maximum capacity of FaxWare to your particular network environment depending on whether you also wish to use the server to a greater or lesser extent for other services. A system configuration switch defines whether the maximum capacity of the FaxWare is set low, normal or high.

We recommend the following minimum requirement processor types, if you also wish to continue using your server in the network as a normal file server:

Exchange lines	Processor	Clock rate (MHz)
1	80386DX	25
2	80386DX	33
up to 4	i486	25
up to 6	i486	33
up to 20	i486	more than 66
more than 20	Pentium	more than 75

Generally, the FaxWare can cope better than any other processes with reduced processing capacity. If after loading FaxWare, it appears that your server is running slower than before, set the switch in the system configuration to low.

Mass storage requirements

FaxWare requires between 12 and 15 MB of storage space, depending on the number of installed exchange lines.

As a basic recommendation, depending on the fax volume, you should allocate between 20 and 50 MB of mass storage for each continuously operated exchange line.

NetWare multitasking

The NOS handles the program code of FaxWare as an elementary part of NetWare and manages it as an additional thread. In this regard, the NOS hands over control to FaxWare, which then hands over control to the next process. The NOS operates with non-preemptive multitasking; NetWare does not take over control of the individual processes, but leaves responsibility for the load to the respective thread. No task can be run while another task is blocking the computing time. In the case of Microsoft Windows NT and IBM OS/2, for example, this task behavior is managed by the operating system through time slot system or preemptive multitasking.

An important advantage of a non-preemptive operating system is the fact that performance resources are distributed more effectively and overall performance is higher. Each process decides independently how much CPU time it requires. This method poses a risk; if a NLM has not been developed and optimized properly, the entire server can be slowed down unnecessarily or possibly even be blocked completely. A server crash can occur very quickly if the operating system simply aborts the distributing or disabling task.

Server load

During the development of FaxWare, particular attention was paid to utilizing the server's system resources optimally. Because of the inherent design techniques employed, FaxWare also runs on servers which conform to the minimum configuration prescribed by Novell.

FaxWare places the least possible burden on the server's CPU capacity. Time-critical tasks, such as operating API updates (as provided by a Frontend) are handled with a high priority, whereas non-critical operations, such as converting or printing faxes takes a low priority. As a result, no unnecessarily high burden is placed on the server's CPU.

This splitting up of priorities ensures responsible use of server resources. The drawback, however, is that when reading a job out of a queue, it may take a few seconds more than necessary before dialing and actual transfer occur.

The optimum server hardware

Barely adequate servers can frequently be encountered even in large companies with many clients. While workgroup members often have personal computers equipped with i486-50 or 66MHz-CPU's, the server often has only a 80386DX or a 80386SX processor. In many cases, this is not a problem.

During the course of the normal work done by a pure file server, the data throughput bottleneck is generally caused by the mass storage unit or the network. However, if you wish to use a NLM on your server which requires genuine computing power and a large number of memory accesses - such as FaxWare - the CPU's performance becomes a critical issue.

The speed of the network

Many network professionals consider the server utilization factor as specified by the NetWare MONITOR application to be a true index of a network's performance. In reality, this value specifies what percentage of the computing capacity of the server is currently inactive.

The actual bottleneck in a network, however, is rarely due to a lack of CPU capacity, but caused by data transfers between the clients and the server and in accesses to comparably slow network resources, such as mass storage units. When users get the impression that the network is running slowly, this is typically due to the intense traffic through the network, or a saturated data channel to the mass storage unit. In both cases, however, not even the best processor can change the situation much. The only remedy in such cases is to split the network into several LANs and/or to use a computer with a more powerful system bus and appropriate LAN and board adapters. Incidentally, this is also the reason why an i486 processor in the same environment (with equivalent system bus, hard disks, and network boards) achieves insignificant speed increases in comparison with a 80386 processor.

If the server exceeds a load indication value of more than 50 per cent, this does not necessarily indicate a problem. You should think about a new, faster processor type, only if this level of activity occurs regularly and you can objectively observe network slow downs.

Clients in the Network

FaxWare offers a large number of possibilities for communicating with clients. In each case, requirements depend on which service you use to access the functions.

Using API Services

The API Services are only used directly by application programs or the Frontend interface. In this case, refer to the appropriate documentation for details of the requirements applicable to the client. Refer to the special notes from Novell and Microsoft on the subject of MS DOS and Windows in networks.

DOS Interface

The following data applies to the use of the DOS interface.

- ◆ Processors
At least an Intel 8088 processor is required. Recommendation: 80286 processor clocked at 12 MHz or higher.
- ◆ Memory
The DOS requester needs at least 380 kb free memory. EMS (expanded memory) version 4.0 or higher and XMS (extended memory) version 2.0 or higher are detected and used automatically.
- ◆ Operating system
At least MS DOS 3.3. The DOS requester has also been tested under MS DOS 4.01, MS DOS 5.0, MS DOS 6 and MS DOS 6.2 as well as DR DOS 3.41 and DR DOS 6.0.
- ◆ Video board
Standard video board with CGA, MDA, MGA, EGA or VGA compatibility. Faxes can only be displayed on computers with VGA adapters installed.
- ◆ Input devices
Input devices compatible with the Microsoft mouse are supported. A version 6.10 mouse driver or higher is an absolute prerequisite.
- ◆ Network
The network topology does not have a critical influence on the operation of FaxWare.
- ◆ IPX versions
IPX version 3.02 or higher is an absolute prerequisite for communication between the client and server. Older versions are not supported. Drivers with the open data link interface can also be used.

- ◆ NETX / VLM versions
NETX (the NetWare shell) version 3.26 or higher is required. For operation with MS DOS 6, version 3.32 or higher is recommended.

MS Windows Interface

The data listed below applies to the use of the Windows interface only.

- ◆ Processors
At least an Intel 80386SX or higher processor is required (MS Windows must run in extended mode for 386 PCs). Recommendation: 80386DX clocked at 25 MHz or higher.
- ◆ Memory
At least 2 MB RAM required. Recommendation: 4 MB RAM or more. When sending longer faxes, large amounts of memory are needed to create the fax file.
- ◆ Operating system
Microsoft Windows 3.1 or higher. It is imperative that Microsoft Windows is configured for use in the network.
- ◆ Video board
All video boards certified for Microsoft Windows are supported.
- ◆ IPX versions
IPX version 3.10 or higher is an absolute prerequisite for communication between clients and the server.
- ◆ NETX/VLM versions
NETX (the NetWare shell) version 3.26 or higher required. For operation with MS DOS 6, version 3.32 or higher is recommended.

Frontend for MS-Windows 95

Also in the case of Windows 95 you need the current network drivers for this operating system. In addition, the universal printer driver library (UNIDRV.DLL) for Windows 95 is required. FaxWare contains the current version as standard. During the setup of the Windows Frontend under Windows 95 this driver is copied into the Windows directory.

Using the Queue Services

Your computer must be capable of capturing into a NetWare queue if you wish to make use of the Queue Services with a client.

Thus, you may fax from any DOS or Windows computer, or even from a Macintosh, for example.

If necessary, you should choose a special queue for each operating system to make sure that recourse can be taken to different fonts which have each been created for the corresponding client.

Using the FileFax Services

To use the FileFax Services, you only need to establish access to a directory which the client and the server are capable of accessing.

If necessary, you should select a special FileFax directory for each operating system to make sure that recourse can be taken to different fonts that have each been created for the corresponding client.

Communication hardware

Thanks to the fact that FaxWare is completely hardware independent, you are able to select from a large selection of fax hardware and media. To make your choice easier, you will find a few notes in the pages that follow.

You must have the necessary Transport Layer Driver (TLD) for the corresponding device, to be able to use it with FaxWare. This driver is usually developed by the manufacturer of the FaxWare.

ISDN boards

A Transport Layer Driver (TLD) based on CAPI (version 1.1 / 2.0), as well as active ISDN boards are included to specification in FaxWare. All ISDN boards with fax G3 options are supported, which by common ISDN API (CAPI), can be reached in the file server.

With most ISDN boards, there is a circuit which takes care of the analog part of the communication (also fax G3 and modem connection). Other boards provide, by way of mathematical transferral, the creation of a single analog tone. Because of this, you do not need additional hardware.

The exchange from G3 faxing across the digital ISDN network is not essentially faster than, for example, an existing analog telephone network. The increase in speed is on connection and disconnection. With digital, absolute error free connection is guaranteed.

However, it follows that the transfer of data which was sent in analog format and transported in digital format is not any faster, as the signal is still an analog signal. After the implementation of the fax hard or software on the ISDN boards, you are enabled to use fax connections with V.17 up to a max. speed of 14,400 bps.

The employment of ISDN as a tool for faxing is interesting, in that the ISDN board which has been installed onto the file server, can also be used for other applications. So can, for example, the CAPI based multi-protocol router and a TLD gain access to the same hardware. Should a G3 module with two channels exist for the installed ISDN board, then two TLDs can be operated with one board. Every TLD includes a B channel to show the board. With a Transport Layer Driver for ISDN, you are ensured future compatibility with products that use these transfer techniques.

Fax modems

Recently, fax modems have become very popular. In most cases, they conform to Class 1 or Class 2/Class 2.0 EIA recommendations according to TR29.2 and can be obtained both as internal and as external fax modems.

Fax modems typically conform to the CCT type of approval. However, the manufacturer does not guarantee service quality; although a modem may be approved, its operation is still subject to line quality and modem design.

The FaxWare package includes a special NLM for Class 2/Class 2.0 fax modems. More than 70 modems are currently certified for operation with the FaxWare.

Intelligent fax boards

Fax boards are installed directly on the server. These installed boards do not place any unnecessary burden on the NetWare server. Many fax boards, however, do not include both fax transfer and data transfer. GammaFax boards, for example, are PC installable boards specifically designed for faxing. Fax transfers are carefully controlled; with a bad line or connection, the board changes automatically to the next lowest data transfer speed, and, when the quality improves, it automatically increases the transfer rate. GammaFax boards detect the build up of fax images, and deal automatically with determining and establishing the optimal transfer rates. (Modified Reed or Modified Huffman).

Printed Output

The printout of all incoming faxes, like the protocol printout of all outgoing faxes, is generally achieved through one or more printers in the network. The printer must be able to support the Hewlett Packard Printer Command Language 2 (HP PCL 2). For example, a HP Laserjet II printer could be used.

Licensing considerations

In many respects, networks require a different approach to software use and licensing than single-user applications. To be reasonable to customers, the licensing of network software products should reflect the actual use of the product in the environment within which it is used. The manufacturer of the FaxWare has devised a licensing scheme covering the FaxWare product that is tailored to real-world situations.

Utilization rights

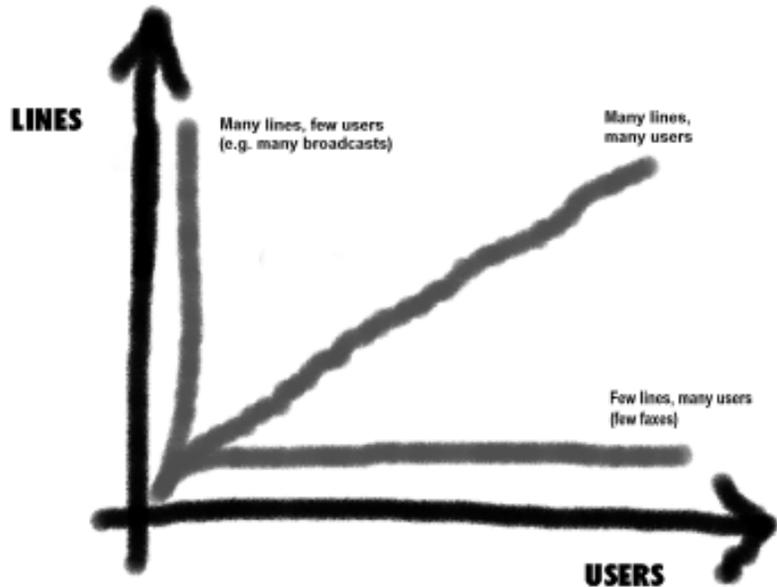
As with the majority of software packages, as a FaxWare customer, you do not acquire the software but only obtain the right to use it. License conditions, printed in this manual as well as on the diskette packaging, explain the terms and conditions that apply to product use.

The licensing

The FaxWare licensing is based on a different fundamental concept. The initial FaxWare starter pack that you purchase contains a utilization license for a specific number of workstations. Rather than being dependent on the number of users, the license specifies the number of workstations on which you intend to use the product. The FaxWare starter pack contains a license number, otherwise known as the system license. The system license - if associated with an evaluation version of the product - provides unlimited use of the product for a predetermined period of time. Through this license system, an evaluation copy of FaxWare can be upgraded to the full version. The number of licenses can then be increased in increments of 5.

Adding further user licenses to FaxWare

A 5-user license does not include any diskettes. The number on the Licensee Card represents the key. A list of all license numbers are stored in the configuration and the new license number is now added to the list. Using this technique, the number of workstations supported by the software is extended without the need for any changes or re-installations.



Adding additional exchange lines to FaxWare

The same system that applies to user licenses also applies to the license handling of telephone exchange lines designated for fax communication. The FaxWare supports up to 64 exchange lines per server. You must purchase a line license for each line that is in operation. After installation of the line, the license number must be entered into FaxWare onto the Service Layer. The new line becomes available immediately after the license number is entered.

The FaxWare licensing system is not a form of copy protection; it is a convenient and flexible licensing method. All illegal use will be prosecuted. All rights are reserved.

INSTALLATION



THE INSTALLATION OF FAXWARE

This section explains how to install FaxWare on a NetWare file server. The NLM software must be installed using the installation program because the files have been compressed. The installation program also creates the complete directory structure and the necessary NCF files.

Installing FaxWare involves the following steps:

- ◆ Copying the Service Layer
- ◆ Copying the Frontend Layer
- ◆ Copying the PCL Conversion Server
- ◆ Copying and configuring the Transport Layer
- ◆ Loading the Service Layers and basic configuration of FaxWare
- ◆ Loading the Transport Layer Driver
- ◆ Optionally, setting up the Frontend Layer

Please follow the procedures given in this documentation carefully without omitting any steps. You can help avoid possible system problems by performing the installation methodically with careful attention to detail.

Selecting the PC

The FaxWare installation program is a DOS program which must be run on a PC under MS DOS version 3.3 or higher, or DR DOS version 3.41 or higher. You can also run the installation program from a DOS box in Microsoft Windows version 3.0 or higher, or IBM OS/2 version 2.0 or higher.

The computer you use for installing the software must be equipped with a 3.5-inch diskette drive.

Selecting the server

If you have several servers in your network, before starting the installation program determine which one to install FaxWare on.

Consider the following guidelines when selecting an appropriate server:

Disk capacity

FaxWare requires approximately 6 MB of hard disk storage to install and additional space to operate effectively. You may want to calculate the approximate volume of daily faxes and provide hard disk space accordingly.

Log in

All users who wish to fax from their workstations must have an appropriate access privilege to the server where the FaxWare Service Layer is running.

Volume

Generally, FaxWare is completely installed on the volume SYS: in the directory structure, with the name »FAXWARE«.

Capacity

The FaxWare server must have an adequate capacity for the volume of faxes anticipated, especially if you plan to operate several exchange lines on the server.

Interfaces

If you plan to operate fax modems on the server, make sure that you have sufficient free serial interfaces, which, if possible, should be driven by a 16550 chip.

Fax boards

If you plan to operate intelligent fax boards or ISDN boards on the server, ensure that you have adequate free space for installation and available IRQ lines to support the boards.

Logging in on the server

Make sure you are logged in on the required server. SUPERVISOR access rights are absolutely imperative for installing FaxWare. It is best if you log in on the target server as SUPERVISOR by means of LOGIN or ATTACH. After starting, the installation program automatically indicates all servers which are suitable for the installation of FaxWare and where you are logged in.

Drive mapping

Special drive mapping (MAP) is not necessary to install the software package; it is installed directly on the volume of the server. The ATTACH command can be used effectively in this situation.

Exchanging outdated original Novell files

On servers running under Novell NetWare v3.11, you may need to update outdated program modules on your hard disk. These modules consist of the following files, generally located in the SYS:SYSTEM directory:

CLIB.NLM

FaxWare requires the C library version 3.12g or higher. This version is not included in the NetWare v3.11 Rev. A or Rev. B package. You can obtain the current version from your Novell dealer.

You must, however, perform the following steps since CLIB.NLM may already be in the server's memory.

Unload CLIB

Enter `UNLOAD CLIB` on the console. If this operation is aborted with an error message, the current CLIB cannot be removed from the memory because other NLMs are currently using it. In this case, you must first unload all NLMs which require CLIB.NLM. Only then can you remove CLIB.NLM.

Once all NLMs which require CLIB, and CLIB itself have been removed from the server's memory, you may restart the NLM loaded previously. There is no need to load CLIB manually because every NLM which requires CLIB reloads this module automatically, unless it is already installed.

AIO.NLM

This is the driver which enables use of asynchronous input/output devices under Novell NetWare. The most up-to-date version of this driver is definitely recommended for use with FaxWare.

AIOCOMX.NLM

UART Chip

This is the driver for the standard serial interfaces with a UART 8250, 16450 or 16550 chip. The latest version possesses an integrated FIFO memory and is recommended for use with FaxWare.

The installation

The FaxWare installation program is on the Service Layer diskette and bears the name INSTALL.EXE.

Switch to the diskette drive where you have inserted the FaxWare Service Layer diskette and start the installation program by entering

INSTALL

Selecting the server

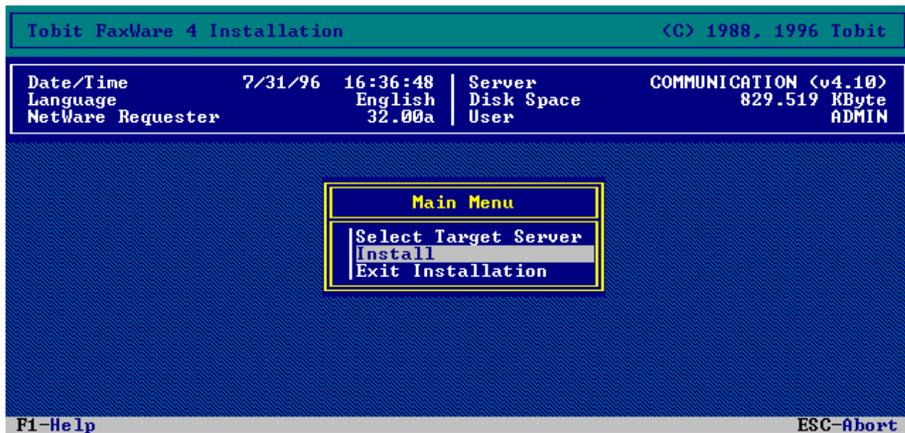
The installation program's initial screen will appear, containing a picklist of the file servers found. Select the required server from the list of available servers. The installation program guides you automatically to the required result. It prompts you to change diskettes and asks you if you will allow it to overwrite if a file with an identical name already exists.

Selecting the fax hardware from the list

Select the names of your hardware out of the list of installed hardware (ISDN board, Class 2 modem or intelligent fax board). If your communication hardware does not appear, then choose the appropriate native driver.

If you want to choose a modem from the list, select the following serial interface which the modem is locked into (i.e. COM1). The corresponding parameter is then copied in the TLD.INI (see »Configuring the Transport Layer«).

*The program
INSTALL.EXE*



Configuring the Service Layer

Once FaxWare has been copied physically to the file server, the Service Layer, the actual core of the FaxWare, has to be loaded on the server and configured.

You may carry out the steps described below either directly on the server console or from the current computer after entering RCONSOLE.

This section deals only with the operation relevant to the basic configuration of FaxWare. Please refer to the »Appendix« for further information on how to configure FaxWare.

Note concerning the FaxWare operation under Novell NetWare 4

If you wish to configure FaxWare under Novell NetWare 4 (in the Bindery Emulation or under the NetWare Directory Services), you must note some things which also concern the loading of the main program. Therefore, please note the information under the section »Configuring FaxWare under Novell NetWare 4« at the end of this chapter before you continue reading here!

Loading FaxWare

The core of FaxWare, the Service Layer, must be loaded directly on the server. The correct way to load the FaxWare is to use the FAXWARE.NCF file created during installation. Type in the following after the system console prompt:

```
FAXWARE
```

The NCF file will filter through and the module FAXWARE.NLM will be loaded in the SYS:\FAXWARE\CODE directory.

Error message

On entering the main menu, if an error message like “Loader cannot find public symbol” appears, your server probably is not working with the most up-to-date CLIB. Follow the notes in the section “Exchanging outdated original Novell files” in this chapter.

Inserting the license number

After the NLM has been loaded, a request to input the system license number will appear. The number can be found on the LICENSEE CARD or within the FaxWare packaging.

Within this screen, you are required to make an entry in the field: General send identifier. Furthermore, an entry of the user or group must be inserted in the field: Recipient of undistributed faxes. All other parameters consist of defaults and do not necessarily need to be altered to run FaxWare.

Regardless of the phone number of the exchange line actually used, this code (General send identifier) is inserted in the FaxWare header when converting faxes. It should represent the number for all incoming faxes and should be entered in the conventional international format.

This entry has nothing to do with the data that is actually used for the fax hardware by the Transport Layer Driver. The FTZ 18 TR 53 guideline stipulates that the code must conform to a defined format (only in Germany).

An example: For a call to Glasgow (041) and then the actual telephone number 420-3761 would (including the international code 44) be as follows:

+44 41 4203761

Once you have made your input, you can close the system configuration window by pressing the `ESC` key.

Configuring the printer

FaxWare needs the printer to print lists and faxes. It contains special configurations for the printer(s).

Select the Printer options in the configuration menu. As in all FaxWare lists, you can also generate a new entry by pressing the `INSERT` key. For example, call the first printer Secretary. The configuration window for printer will appear when you press the `ENTER` key.

User configuration



All parameters relating to the current printer can be defined in this configuration window. You should only pay attention to the bottom field entitled Print queues (PCL). Pressing the `ENTER` key opens a window with the names of the queues created on the server concerned. Select any queue into which outputs for the printer should be written. You can select up to 5 queues for simultaneous output.

Generating fax users

FaxWare stores all users in the network who are able to use the fax services. The relevant data is also stored in the NetWare bindery, the general object database.

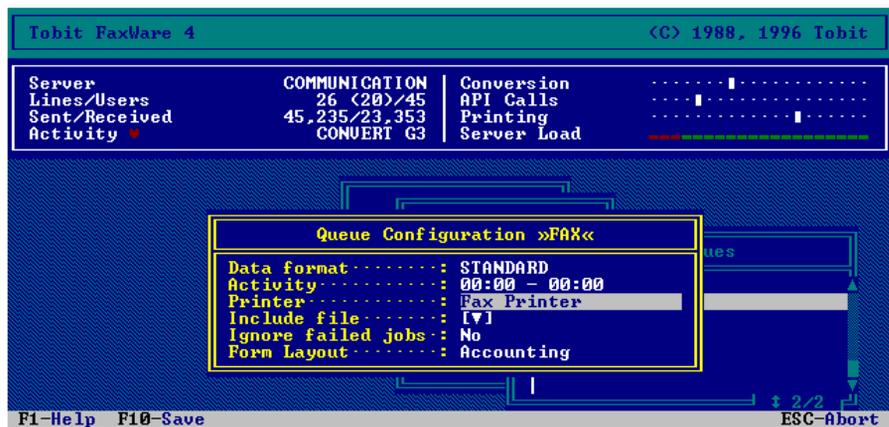
Whenever a user is deleted from the NetWare bindery, the entry is also removed automatically from the FaxWare user list. Similarly, whenever a user is removed from the FaxWare configuration, it is not the complete bindery object that is deleted, only the data pertaining to FaxWare.

Every user who is to be assigned a fax capability must be entered in the user list. The selection of all users not yet entered can be displayed by pressing the `INSERT` key. After the initial start of the Service Layer, only the user who initiated the installation program is carried in.

A number of fax-specific data entries can be stored in the FaxWare user configuration. For example, the signature files which apply to each specific user are specified here.

*Inserting
fax user*

*Queue
configuration*





Creating a fax queue

Creating a fax queue

When you are working under DOS, faxes should be sent via a NetWare print queue. In FaxWare, this service is referred to as the Queue Services. FaxWare is capable of operating 64 queues just like a normal print server.

Create the queues with the Service Layer and not with the NetWare utility PCONSOLE because fax-specific data is also entered in the configuration of the bindery object.

To create a fax queue, switch to the Queue Services option in the Services submenu of the configuration menu. A picklist will appear.

Press the `INSERT` key and enter a name for your fax queue. For example, call it Telefax or Fax.

Several special parameters can be set for every queue, they will be clarified later. We recommend that you create a separate fax queue for different application programs and client operating systems. For example, individual character sets or forms can be defined for each separate application.

It is not absolutely necessary to create this service if you do not intend to fax by printing to a queue.

Creating FileFax Services

The FileFax Service has the capability of assigning jobs to FaxWare. In this case, the FaxWare Service Layer searches through chosen directories of the file server at regular intervals for defined files. These are then recognized as fax jobs and are converted accordingly.

This service can be integrated into the existing system environment and is easy to maintain, because, in contrast to the Queue Services, no changes are made to NetWare bindery objects.

To create a FileFax Service, switch to the FileFax Services menu item in the Services submenu of the configuration menu. A picklist will appear. Press the `INSERT` key. An input screen will appear.

Defining the path

In the directory path field, enter the complete path including the file name and a wild card character. In doing so, you must specify the name of the column. The file name may also contain wild card characters. For example, if all files with the *.TXT extension from the WORD\FAX directory on the SYS: volume are to be recognized as jobs, make the following entry in the directory path field: `SYS:WORD\FAX*.TXT`

Several special parameters can be set for each FileFax Service; these will be explained later.

We recommend that you create separate FileFax Services for different application programs and client operating systems. In this way, individual character sets or forms can be defined separately for each application.

It is not absolutely necessary to create this service if you do not intend to fax with the FileFax Services.

Configuring the API Services

Communication between the Windows clients and FaxWare is carried out through the API Services. They are configured like the FileFax Services with the exception that the API Services require no directory input.

Configuring the Transport Layer

The respective Transport Layer Driver, referred to as TLD, must be loaded to ensure that FaxWare has access to the existing fax hardware.

Please refer to the `READ.ME` file, which is displayed unprompted when installing the drivers, for hardware-specific configuration details (relating to interfaces, port addresses and interrupts and so on). Specific configurations are stored in the file named `TLD.INI`, which you may edit using any conventional text editor.

Supported fax hardware

FaxWare has an absolute modular structure. Between the three sections (Frontend Layer, Service Layer and Transport Layer), there are clearly defined interfaces. These allow the simple integration of every optional piece of fax hardware into the FaxWare environment.

The following fax hardware is presently supported:

- ◆ Analog modems (Class 2 and Class 2.0)
- ◆ ISDN boards with support for CAPI 1.1, CAPI 2.0, CAPI Manager
- ◆ GammaLink FaxBoards (GammaFax boards) XP/CP

Extended line configuration

FaxWare supports the mixed operation of different fax hardware on one server, e.g. several ISDN boards and fax modems. This can cause the problem that certain transmission services are not supported by all lines.

If a fax is to be transmitted by FaxPlus (64,000 Baud Digital Fax), the Service Layer must not pass this job to a conventional fax modem.

For this reason, it is possible to define the transmission specifications for each line. The various services can be defined in the line configuration of the Service Layer.

FaxWare distinguishes between the following services:

- ◆ Fax G3: Transmission via fax Group 3 with a maximum of 14,400 bps
- ◆ FaxPlus: Transmission via file transfer over the ISDN network with a maximum of 64,000 bps
- ◆ FAX/ip: Transmission via TCP/IP transport protocol (e.g. in the WAN or Internet)

During the installation of the driver for an exchange line (Transport Layer Driver) the line specifications for the respective type will be set automatically.

Therefore, a manual setup is not necessary. However, if you wish to carry out changes, you can make settings in the respective line configuration(»Configuration/Lines/Linexx«) under the menu item »Linespecifications«

As standard the FaxWare Service Layer transfers a fax job to any fax line supporting fax G3. However, depending on the number, another service can be selected automatically. If a colon has been appended to a number, the Transport Layer Driver must support FaxPlus.

If an IP address (see section »Loading a FAX/ip TLD«) has been entered instead of a fax number, the job will only be distributed to a line supporting FAX/ip.

If no exchange line is configured for the specified service, the job will remain in the job log and will not be delivered.

Loading a TLD for Class 2 modems

When you have a modem connected to the serial interface on the server, and the corresponding driver exists as a NLM, loading the TLD is particularly simple. When installing the fax hardware on the server, make sure that the interfaces are properly configured and that the IRQ number and port address is not used by any other devices or drivers.

IRQs

While DOS is capable of using the IRQs for different interfaces, this is not possible under NetWare. While the four serial interfaces COM1 - COM4 are controlled with only two IRQs in DOS (IRQ4 and IRQ3 by default), in NetWare, one IRQ must be assigned separately for each interface.

Communication circuits

Data errors

FaxWare communicates with the modem, with a data transfer rate of up to 19,200 bps. At this speed, multi-tasking operating systems such as NetWare have problems receiving data through serial ports. For every incoming byte, an interrupt is lost.

It is possible that the next digits could overwrite the 1-byte buffer of the serial driver circuits UART 8250 or UART 16450, before the operating system can pick these digits up. This loss will be recognized as vertical stripes or full missing lines in the received fax.

Interface

For problem-free operation of serial devices to the interfaces on the server, the serial interfaces of your server should be equipped with a 16550 UART, which has a 16-byte FIFO buffer (first in, first out).

Not all brand-name units contain the 16550 UART. Some manufacturers are still using the less expensive 8250 or 16450 UARTs.

When buying internal modems, insist that the serial interface installed in the modem board includes a 16550 UART. There are a great number of serial boards available that include the 16550 UART.

Novell AIO

Communication between the TLD and the communication hardware takes place through the standardized interface.

It bears the name NetWare asynchronous input/output library (AIO.NLM) and is loaded directly on the server.

AIO.NLM takes care of communication between the application (e.g. the Transport Layer Driver) and the serial interface.

One special driver is required for each item of hardware such as normal serial interface boards, WNIM, ACI or DIGIBOARDS. The following section describes how to load the TLD with the normal driver for serial interfaces. Please refer to the »Appendix« for special information on other systems.

Loading AIO

The AIO must be loaded and running on the server before starting the TLD. First load the corresponding NLM by entering

```
LOAD AIO
```

After this the unit driver for serial end devices is loaded in the server memory. The AIO itself is no physical connection to the communication hardware (interface board). It is only used as a software interface. When the TLD is loaded, the AIO is loaded automatically.

AIO Auto Driver Load feature

The FaxWare Transport Layer Driver is equipped with an AIO Auto Driver Load feature. If you prefer to load the necessary hardware drivers automatically, rather than manually as described in the following sections, you can start the TLD directly for the desired line. Enter the character string `TLD01` on the console to start the driver.

The driver is designed to automatically guide you through the installation process through a series of menus. If the Auto Driver Load feature works successfully, you do not need to perform the steps for Loading AIO described in the following sections. However, you always have the option of loading these items manually if you would rather not use the Auto Driver Load feature.

Loading the AIOCOMX

Load the module AIOCOMX with the parameters for the interface:

```
LOAD AIOCOMX [NODE=x] [PORT=y] [INT=z] maxrate=19200
```

The parameters have the following meaning:

*Quick
installation*

NODE	Node number. This should generally be set the same as the COM port. This should be given in the initialization file TLD.INI under BOARD, during the initialization of the TLDs.
PORT	Port number of the serial interface. This generally has the following value: 3F8 for COM1: 2F8 for COM2: 3E8 for COM3: 2E8 for COM4:
INT	Hardware interrupt. The serial interface reports the receipt of a byte through this interrupt: IRQ4 for COM1: IRQ3 for COM2:
MAXRATE	The maximum transfer rate is limited to 19,200 bps (rated at 19,200 bps). This is important for interfaces with the UART 8250 and 16450 (without FIFO), otherwise, the maximum transfer rate will be limited to 2,400 bps.

NCF files

During the installation, NCF files will be copied in the SYSTEM directory (AIOCOM.NCF, AIOCOM1.NCF, AIOCOM2.NCF) then the standard settings can be made.

AIOCOM.NCF

- ◆ AIOCOM.NCF for the initialization of COM1: - COM4:
- ◆ AIOCOM1.NCF for the initialization of COM1:
- ◆ AIOCOM2.NCF for the initialization of COM2:

*Loading AIO
and AIOCOMX*

```

COMMUNICATION:AIOCOM1
Loading module AIOCOMX.NLM
Novell AIO Serial COM Port Driver (v2.13, 12 Jan 1995)
Version 2.13   January 13, 1995
Copyright 1994 Novell, Inc. All rights reserved.
Auto-loading module AIO.NLM
NetWare Asynchronous I/O Services
Version 6.01b   July 28, 1994
Copyright 1991-1993, Novell Inc. All rights reserved.
For AIOCOMX Driver Load Information, Enter 'LOAD AIOCOMX ?'
Installed I/O Address 0x3F8 (Interrupt Number 4) as Board 0, Port 0
16550 device detected - FIFOs enabled
Driver rated at 19200bps (RXI=4/IXQ=16) - override to 19200bps
COMMUNICATION:

```

To initialize a standard COM port, enter the name of the NCF file on the server console. For example, to initialize the COM1: port, key in on the server console:

```
AIOCOM1
```

How do you test the UART?

Load the NLM AIOCOMX with the correct parameters for the interface to be tested. After loading, the driver tells you if an UART is available, with or without FIFO:

With FIFO: 16550 device detected - FIFO's enabled

Without FIFO: 8250/16450 device detected

Loading the TLD

During installation, a *.NCF file is copied for every Transport Layer in the system directory. To load the TLD under NetWare, at the prompt enter TLD on the server console, followed by the respective number and press `ENTER`. For example, to load the TLD of line 1, key in

```
TLD01
```

on the server console. Do not enter any blanks between TLD and the number. The corresponding Transport Layer Driver is loaded and initialized automatically. The exchange line is then active.

Parameters in the »NCF« file

In the file TLDxx.NCF (e.g. TLD01.NCF for the first line) you can start the program and also set parameters. As mentioned above you will find this (these) file(s) in the SYSTEM directory of your server.

◆ **SHOW**

This is a parameter to find errors. It should not be used permanently. When it is used, the communication between two fax stations will be displayed on the »Communication Monitor« of the TLD (TLD.NLM) during the connection. In this way, you can see the individual modem commands and the corresponding reactions of the distant station.

Debug file

◆ **FILE**

This parameter also records the communication between a fax connection and saves this information in a file (e.g. TLD.DEB in the directory SYS:\FAX WARE\TLD\LINE01 for the first line). However, it should not be used permanently.

◆ **COLOR**

Please use this parameter if you have a color monitor on your file server.

Example (TLD01.NCF):

```
LOAD SYS:\FAXWARE\TLD\LINE01\TLD 01 SHOW
```

Error message when loading the TLD

Errors can occur while loading the TLD, if the interface is not configured properly or the parameters in the TLD.INI are erroneous. Important notes can be found in chapter »Reference: Parameter for the CLASS 2 Transport Layer Driver« and »Appendix«.

Changing the initialization file

If you only wish to operate a modem connected onto the first serial interface on your server, continue reading under the section »Loading the TLD«.

TLD.INI

The TLD.INI contains the parameters for the interface that were input during the installation (i.e. BOARD=0 and PORT=0 for COM 1). When you want to address another interface, then the initialization file must be changed.

Now start the NetWare text editor.

```
LOAD EDIT SYS:\FAXWARE\TLD\LINE01\TLD.INI
```

If you want to modify the file pertaining to another line, then you must replace LINE01 with the required line. Search for the lines PORT and BOARD in the text file and enter the new values for your interface. Then store the file and quit the text editor. You can make changes to the file TLD.INI with a conventional text editor.

*Loading the
Class 2 TLD*



Loading a TLD for ISDN boards

ISDN boards with fax G3 support are installed directly on the server. Every producer of the board can operate up to 4 boards simultaneously. A maximum of 8 ISDN TLDs are operable per server. With the FaxWare TLD able to be used on further servers, this allows the maximum use of up to 64 exchange lines. ISDN board producers have also developed a S2M based version making it possible to install up to 30 ISDN TLDs in one server.

Common ISDN API

FaxWare supports all common ISDN controllers. The communication with the board always takes place via CAPI, a standard established by the CAPI Association (CAPI=Common Application Programming Interface). CAPI drivers establish a connection between one or several ISDN boards and an application software (in the case of FaxWare with the Transport Layer). There are two different standards which are not compatible with each other: version 1.1 and version 2.0. A special variant of CAPI 2.0 is the NetWare CAPI Manager. As far as its functions are concerned it corresponds to the "normal" CAPI 2.0.

However, it has additional possibilities for the configuration of several ISDN controllers from different manufacturers in the server. At the moment, the Novell CAPI Manager is not yet available as final version. It is in the Beta phase. For information please contact Novell.

FaxWare supports all three standards. Therefore, you are always on the right side, but you have to choose what you wish to use. For the ISDN boards "ITK ix1" or "Bintec BIANCA" there are for example drivers for all three standards. It depends on the manufacturer's recommendation which standard you should choose. Unfortunately, some details are missing in one or another version respectively. According to our experience, most errors are contained in the new drivers. Therefore, in most cases we prefer the CAPI 1.1 driver to the version 2.0 driver. You should only use the CAPI Manager if another driver from the manufacturer is not available or if boards from different companies are to be used in one server.

Loading the CAPI.NLM

CAPI.NLM

The operation of FaxWare has been successfully tested with many ISDN boards. For these ISDN boards you can obtain a CAPI.NLM from the manufacturer. Please copy the corresponding drivers on your server and load the required modules. If there are any problems related to the CAPI.NLM, please contact the board manufacturer.

Loading the TLD

During installation, a *.NCF file is copied for every Transport Layer in the SYSTEM directory of the FaxWare server. To load the TLD under NetWare, at the prompt enter »TLD« on the server console, followed by the respective number and press ENTER. To load the TLD for line 1, enter

```
TLD01
```

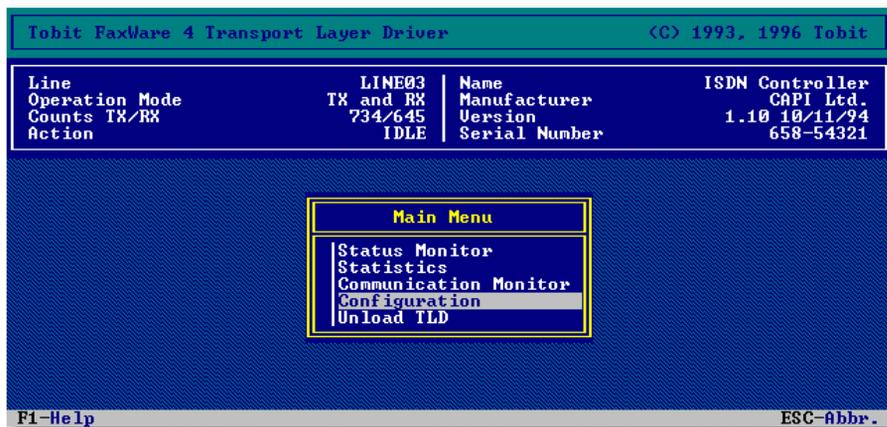
on the server console. Do not enter any blanks between TLD and the number. The corresponding Transport Layer Driver is loaded and initialized automatically. The exchange line is then active.

Error messages when loading the TLD

Errors can occur when the TLD is loaded or during the TLD operation if the ISDN board has not been configured correctly or if TLD.INI parameters are faulty. Please check the correct installation of the ISDN board: cable, type of log (e.g. VN2 or E-DSS1), type of line (point-to-point or point-to-multipoint).

The error message »Loader cannot find public symbol...« means that the necessary CAPI functions on the server are not available. Either you have not loaded the CAPI driver for your ISDN controller or the two versions are different (you are for example trying to use a board with a CAPI 1.1 driver with a 2.0 TLD). Important notes can be found in chapter »Reference: Parameter for the ISDN Transport Layer Driver« and »Appendix«.

Loading the
ISDN TLD



TLD.INI

Changing the initialization file

The TLD.INI contains the parameters for the interface that were input during the installation. When you want to address another interface, then the initialization file must be changed.

Now start the NetWare text editor.

```
LOAD EDIT SYS:\FAXWARE\TLD\LINE01\TLD.INI
```

If you want to modify the file pertaining to another line, then you must replace LINE01 with the required line. You can make changes to the file TLD.INI with a conventional text editor. Furthermore you can change the important parameters directly in the screen of the TLD (TLD.NLM: menu item »Configuration«).

Loading a TLD for intelligent fax hardware

The TLD for intelligent fax hardware can be directly loaded without a previously installed interface. The board is directly managed from the TLD. The TLD loads the board's firmware before providing system access. While installing a TLD for intelligent fax boards all required files are automatically copied into the TLD directory.

Loading the TLD

During installation, a *.NCF file is copied for every Transport Layer in the SYSTEM directory of the FaxWare server. To load the TLD under NetWare, at the prompt enter »TLD« on the server console, followed by the respective number and press `ENTER`. To load the TLD for line 1, enter

```
TLD01
```

on the server console. Do not enter any blanks between TLD and the number. The corresponding Transport Layer Driver is loaded and initialized automatically. The exchange line is then active.

Changing the initialization file

TLD.INI

The TLD.INI contains the parameters for the interface that were input during the installation. When you want to address another interface, then the initialization file must be changed.

Now start the NetWare text editor.

```
LOAD EDIT SYS:\FAXWARE\TLD\LINE01\TLD.INI
```

If you want to modify the file pertaining to another line, then you must replace LINE01 with the required line. You can make changes to the file TLD.INI with a conventional text editor.

Loading a FAX/ip TLD

FAX/ip is a new kind of fax transmission. It enables fax dispatch via the TCP/IP transport protocol. FAX/ip defines a technology for the transmission of faxes via networks, i.e. no longer via conventional dial-up lines. Therefore, faxes can be sent and received through the Internet which is available throughout the world. The only prerequisite for this is that also the distant station has FAX/ip. This section deals with the configuration of the FAX/ip TLD. For detailed information, please refer to the chapter »Appendix/Fax dispatch via Internet«.

Loading the support modules

NetWare makes available the real transport technology for the fax dispatch via FAX/ip. Therefore, two additional support modules have to be loaded on the NetWare server, so that the FAX/ip TLD can use the TCP/IP transport protocol. These modules (TCPIP.NLM and TLI.NLM) are included as standard with NetWare. TCP/IP has to be bound as an additional LAN protocol. When loading the TCPIP.NLM, please make sure that the module is correctly bound to the network board. For more details, please refer to the Novell NetWare documentation.

Loading the TLD

During installation, a *.NCF file is copied for every Transport Layer in the SYSTEM directory of the FaxWare server. To load the TLD under NetWare, at the prompt enter »TLD« on the server console, followed by the respective number and press `ENTER`. To load the TLD for line 1, enter

```
TLD01
```

on the server console. Do not enter any blanks between TLD and the number. The corresponding Transport Layer Driver is loaded and initialized automatically. The exchange line is then active.

Error messages when loading the TLD

Should any error messages (»Loader cannot find public Symbol: ...«) occur at the start of the TLD, please check if the support modules (TLI.NLM and TCPIP.NLM) are correctly configured and loaded.

In the menu item »Configuration« of the TLD you can change the most important system settings. These parameters are also contained in the ASCII file TLD.INI which can be viewed from the Service Layer via the menu item »Configuration/Lines/Linexx/TLD.INI«.

Loading the
FAX/ip TLD



Please note the parameter »TCP Port«. It indicates the port address used by the TLD to log to the TCP/IP module (TCPIP.NLM). This will be important if several applications on this server use TCP/IP (e.g. a WEB server, mail server, etc.).

The TLD only accepts calls which are addressed to the entered port address. This address has already been preconfigured with a value which is generally not yet used by other applications. You should not change this value, as it is the same for each FAX/ip TLD. This way, you make sure that you can be reached from any FAX/ip distant station without explicitly giving the port address. When you change the port address, you have to inform the senders who wish to send you a message. Otherwise these distant stations will not be able to reach you.

Checking the functions

After loading the FaxWare modules (FAXWARE.NLM and TLD.NLM) on the server, you should check the functions. To do this, please change in the FAXWARE.NLM to the menu item »Information/Send Test Fax«. Insert a text and a fax number and start this fax job.

Please note the further information in the »OnLine help« (F1 key) of this menu item.

Configuring the Frontend Layer

The basic range of the FaxWare functions have already been established by configuring the Service and Transport Layers. FaxWare provides the clients in the network with a variety of fax operations.

NetWare Rights

To send a fax, depending on the services configured, you only need to access the hard disk drive of the volume (FileFax Services) containing the client or to print a NetWare queue (Queue Services) as required. In doing so, both functions are assumed by the NetWare shell, which is available for a very wide range of client operating systems.

Other documentation

For the installation of clients in Novell NetWare, refer to the documents from Novell and the network board producers. FaxWare interacts with the shells for DOS, Windows, OS/2 and Macintosh computers. Optionally, you can obtain client requesters for Windows NT or UnixWare.

For example, documentation for each product explains how printing can be directed to a NetWare queue or how NetWare volumes can be accessed.

Configuring the DOS interface

The FaxWare package contains a special program to operate FaxWare on personal computers running under DOS.

The program contains a number of features which facilitate faxing, especially for the inexperienced user. It provides access to the personal send log, the receive log and the phonebook. It is not necessary in order to send a fax, as fax jobs can simply be sent to a fax queue (Queue Service) or can be saved in a directory (FileFax Service). The DOS interface also facilitates allocation of the NetWare queues to LPT1 LPT3.

The DOS interface also runs on extremely basic PCs in the network, and makes use of all available resources such as EMS and XMS, provided these are detected. It can also be installed as a memory resident program, making the fax functions available to the user at any time, at the touch of a key. It uses only 5 kb RAM.

The original FaxWare diskettes are not required to configure a client. All necessary files have been copied directly to the server.

The files are in the directory SYS:\FAXWARE\CLIENTS\DOS and can be used either directly from this directory or can also be copied to the local hard disk. The interface bears the name FWDOS.EXE.

Starting the DOS Frontend

By pressing the key F1, keyboard information is displayed with regard to which hotkeys are available.

Parameter when starting the DOS interface

```
FWDOS [SERVER=server name]
```

Memory resident

Starts the DOS interface as memory resident. The server name can be given as a parameter. This is only important when the interface is not called out of the installation directory. The server name, which was started out of the interface, is set as default. Tip: Start the DOS interface from the installation directory (SYS:\FAXWARE\ CLIENTS\DOS)

```
FWDOS ^ (ALT+94)
```

Unloads the resident DOS interface from the memory.

Non-resident operation

Problem free operation of memory resident programs is not possible in all cases. Owing to the complex architecture of DOS, a conflict between different programs cannot be excluded in all cases.

Problems

Additionally, the following reasons may prevent the interface from popping up.

- ◆ The client is operating in graphic mode. FWDOS cannot back up the video memory; this could cause problems with the application. In this case, calling FWDOS is prevented for safety reasons.

Main menu of the DOS Frontend

```
F:\FAXWARE\CLIENTS\DOS>
F:\FAXWARE\CLIENTS\DOS
  is SYS
  ENCLIENTS\DOS
..
FW 07/01/96 3:18a
FW 07/01/96 5:18p
FW 07/01/96 6:59p
19 07/01/96 2:15a
CHKLIST MS 27 07/01/96 1:07p
3A0000C9 EXP 8 07/01/96 11:36a
130000E2 EXP 22 07/01/96 10:29p
4500001F DAT 158 07/01/96 9:36a
THOMAS DAT 158 07/01/96 8:54p
2B000001 DAT 158 07/01/96 3:03a
13 File(s) 247,238 Byte
128,327,680 Byte free
F:\FAXWARE\CLIENTS\DOS>
```

- ◆ The DOS operating system reports execution of a critical function. This status is frequent when formatting disks, for example. For safety reasons, execution of FWDOS is aborted if FWDOS does not receive a different message within 3 seconds.
- ◆ FWDOS does not receive the keyboard prompt because another program was manipulating the keyboard before FWDOS and is not forwarding the key code. In such cases, try using a different hotkey. A selection can be accessed in the menu setting of the DOS interface.

When setting up FWDOS, the non-resident memory can also be useful. Go into the corresponding switch in the configuration on »Resident after start: No«, or start FWDOS with the parameter »NORES«.

```
FWDOS [SERVER=server name] NORES
```

If you press the ALT key while loading FWDOS, you are prompted to specify whether or not FWDOS should be installed as a resident program.

Configuring the Windows Interface

As standard, FaxWare also contains a Frontend for Microsoft Windows. It has been designed specially for the graphic surface and orients itself by the typical »Windows Look & Feel«. The same Frontend can be used under the following Windows versions:

- ◆ Windows 3.1
- ◆ Windows 3.11
- ◆ Windows 95

The FaxWare Frontend for Microsoft Windows consists of two components which cooperate outstandingly.

- ◆ A requester which allows direct access to the send and receive logs and the phonebook.
- ◆ A device driver which makes FaxWare accessible, just like a normal printer.

This combination allows you to fax all objects from any Windows application capable of being printed. All kinds of graphics (vector and pixel) and all True Type fonts are supported.

Just like DOS interface components, the programs for the MS Windows interface are copied completely to the server during installation. You do not need the original FaxWare diskettes to configure a new Windows client.

The files are copied to the SYS:\FAXWARE\CLIENTS\WINDOWS directory. A special program with the name SETUP.EXE allows uncomplicated configuration of the Windows interface.

Basic prerequisites

NetWare files

Communication between the Windows interface and the FaxWare Service Layer takes place by way of a client/server call. Always configure the Windows client properly for operating under NetWare. Up-to-date versions of IPX and NETX (or ODI and VLM) are very important when using Windows in the NetWare LAN. Contrary to DOS, communication takes place by way of original Novell calls (NWIPSPX.DLL and NWCALLS.DLL), which require up-to-date shell and driver versions.

Notes about the Frontend operation under Windows 95

Windows 95

The same Frontend can be used for all Microsoft Windows versions which we have mentioned above. Due to the FaxWare client/server technology where the file server carries out the real “work” (e.g. conversion into a fax format), it is no essential advantage to develop the Frontend as a real 32-bit application under Windows 95.

Only the printer driver has to be replaced for Windows 95. This is automatically done when the SETUP.EXE is carried out under Windows 95. You should make sure that you are using the current uni driver (UNIDRV.DLL).

*The SETUP of the
Windows Frontend*



Starting SETUP.EXE

Before starting Microsoft Windows, log in on the NetWare server.

Run SETUP

Choose the menu item »RUN« from the menu »FILE«. In the field which appears, enter the drive letter denoting your server, followed by the program path of the SETUP program.

For example, if your FaxWare drive is mapped as F:, enter

```
F:\FAXWARE\SETUP.EXE
```

Select OK. Windows starts the Windows interface SETUP program and sets up the necessary files on the client.

The following settings can be made beforehand:

- ◆ Program group
Selection of the program group, which was inserted in the program symbol.
- ◆ Automatic loading of the interface
It follows that, when an entry is made in the WIN.INI (LOAD FWWIN.EXE), the interface is loaded automatically every time Windows is loaded.
- ◆ Fax as standard printer
The FaxWare printer driver is entered as a standard printer driver in the system configuration.
- ◆ Network installation
Only the FaxWare printer driver (FAXWARE.DRV) and the FAPI.DLL file are copied to the local hard disk. Additional files for the client interface remain in the directory SYS:\FAXWARE\CLIENTS\WINDOWS from where they can be accessed as needed. If a FaxWare update is required, it is not necessary to perform a new installation for every client.

Starting the Interface

The Windows interface is started automatically when you start Windows and is placed on the desktop. You have only to double click the icon to open the window.

The FaxWare device driver is entered just like a conventional printer driver. You can configure it in the Control Panel which can be selected from within any Windows application.

If you select the FaxWare printer driver as the output device of an application, the phonebook, which allows you to select a destination, is opened automatically after printing. However, either the interface must have already been loaded on the desktop or a search path to the directory containing the Windows interface must have been defined.

Configuration

TOBIT.INI

The whole client configuration can be accomplished directly within Windows. The configuration data of the printer driver is saved in the file WIN.INI. For all parameters, an individual file (TOBIT.INI) is created in the Windows directory. The changes become effective after FWWIN.EXE is restarted.

Configuring the printer driver

Under Windows Control Panel select »Print Manager« and »Configure«. Here you will find the fields »Papersize« and »Format« to configure. FaxWare also supports faxing in landscape format, so that the corresponding options can be specified here. Further settings can be made for color mixing and the typefont, which are important in the different grayscales within the graphics.

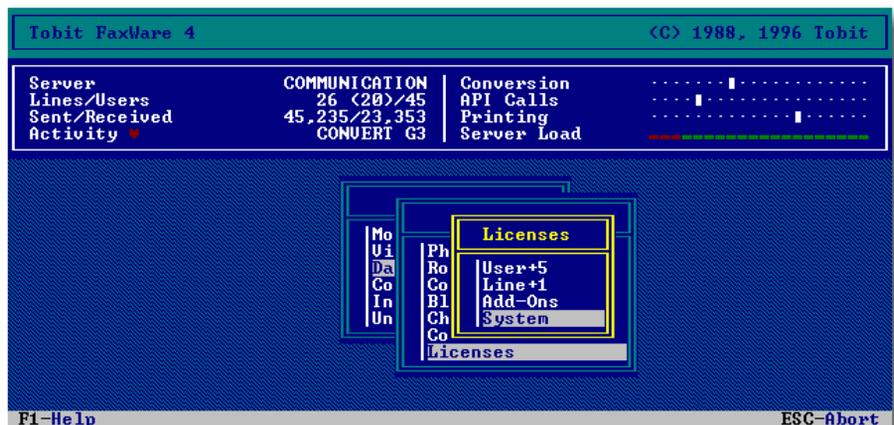
Configuration of further users and exchange lines

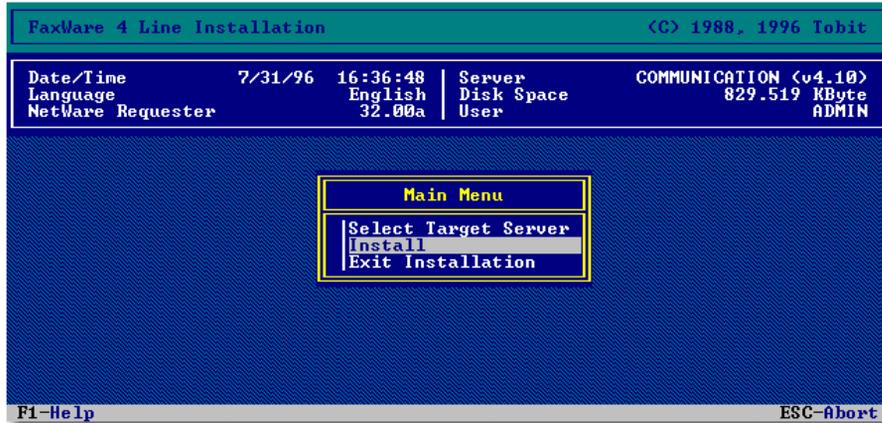
FaxWare has a modular structure that lets you configure additional users and exchange lines whenever necessary without having to perform a complicated installation procedure.

Configuration of further users

Further users

Users licenses are issued in five-user units. You easily can adapt your FaxWare installation to meet your actual network requirements. Enter the new license number from the menu item »Databases/Licenses/User+5« that appears through the FaxWare Service Layer. Once entered, the license allows five additional users to work with FaxWare. You can select any users from within your network to provide access using the menu item »Configuration/Users«.





Configuration of further exchange lines

Further Lines

To increase the number of available exchange lines, first enter the license number for the new exchange line using the menu item »Databases/Licenses/Line+1« of the Service Layer. This immediately provides another line that can then be configured through the installation program. The installation program (INSTALL.EXE) is stored in the directory SYS:\FAXWARE\TLD. You also need the Transport Layer diskette containing the necessary drivers to complete the configuration.

Upgrade to a FaxWare full version

If you have been using a FaxWare evaluation copy or trial version so far, you can very easily transform it into a full version. To do this, you only need the license number of the full version. Please enter it under the menu item »Databases/Licenses/System« of the Service Layer.

The transformation into a full version is carried out »on the fly«, i.e. you do not need to unload the FAXWARE.nlm.

Configuring FaxWare under Novell NetWare 4

If you wish to install FaxWare 4 on a server running Novell NetWare 4, you have two possibilities:

- ◆ Support of the NetWare Directory Services: Please read further under the next section.
- ◆ Installing FaxWare in the »Bindery Emulation«: In this case, please bear the following in mind.

Installation in the Bindery Emulation

If you wish to insert users from different contexts as FaxWare users in the Bindery Emulation, you will have to define these contexts with the command SET BINDERY CONTEXT. To do this, an entry in the AUTOEXEC.NCF is required. The easiest way to make this entry is to use the NetWare module »Server Manager« (SERVMAN.NLM). Under the menu item »Server Parameter/Directory Services« you define the contexts for which the Bindery Services are to be made available. Afterwards please save the changes in the file AUTOEXEC.NCF.

With the sample entry all users from »Organisation Unit1 « will be displayed in FaxWare and can be inserted.

```
SET BINDERY CONTEXT=OU=Organisation Unit1.O=Organisation.
```

If you want to use the FaxWare Queue Services, the users who should send faxes over a fax queue, must be entered as a »QueueUser«. This can be done using the NetWare 4 PCONSOLE.

In the case of NetWare 3.1x the group Everyone is automatically entered as recipient of undistributed faxes in the FaxWare configuration. This group contains all faxes which could not be distributed. Therefore, no fax can disappear. However, as the group EVERYONE does not exist in NetWare 4, you must manually enter a »Recipient of undistributed Faxes«. Please make this setting in the menu item »Configuration/System« of the Service Layer.

Please note: We strongly recommend that you use all existing patches for NetWare 4. Without the current bug fixes from Novell, NetWare 4.1 is simply too unstable and the server can crash when additional NLMs are loaded. The current patches are for example available in the Internet or from almost any Novell Authorized Partner.

Installation in the NetWare Directory Services

FaxWare 4 supports the NetWare Directory Services (NDS). With FaxWare under Novell NetWare 4 you can access all the resources of the NDS users, groups and print queues from different NetWare 4 servers. To enable the NDS support, an additional module (FWNDS.NLM) is loaded on the file server before the main program of FaxWare (FAXWARE.NLM). The additional module is copied on the server during the installation.

When the module is loaded, you will have access to a window, from which you can select users, groups and print queues from all available objects out of the various contexts. Using the `ENTER` key, you can change between the various contexts. The digit `»+«` is placed before the name of an `»Organization Unit«` (OU).

Loading FaxWare

To load FaxWare in a NDS environment, you only need to call the module FWNDS on the server console. It automatically loads the main program (FAXWARE.NLM). Do not directly load the module FAXWARE.NLM as described for the installation under NetWare 3.1x! During the FaxWare installation the file FWNDS.NCF has been copied into the system directory of the server for the call of FWNDS.NLM. Please enter the following on the server console:

```
FWNDS
```

The module will be started and will automatically load the FaxWare Service Layer (FAXWARE.NLM). FWNDS.NLM does not have its own monitor screen. You can however use the NetWare command `»MODULES«` on the server console to check if it has been loaded. When starting FaxWare for the first time, a user name must be entered, under which FaxWare can be registered on the server and the resources entered. This user must possess the NetWare `»Admin«` rights. Login yourself as ADMIN or as a user with equivalent rights. Enter the user name including the context in the `»root«`. For example, for the User Admin (O=ADMINISTRATION) enter the following:

```
ADMIN.ADMINISTRATION
```

Confirm this entry by pressing the `F10` key. Now enter your FaxWare license number. This can be found on the `»Licensee Card«` included with your FaxWare.

Basic configuration

After the initial installation, some basic configuration steps must be carried out. To do so, change in the main FaxWare menu on the server into the menu item »Configuration/System«.

FaxWare Supervisor

Press the `ENTER` key and select a user from the list who should receive all important FaxWare system and error messages.

General send identifier

Enter your fax number in this field. This number will then appear in the FaxWare header on all outgoing faxes.

Recipient of undistributed faxes

Press the `ENTER` key and select a user to receive all faxes which could not be distributed from the distribution list or the line configuration. This entry is absolutely necessary, to stop faxes which cannot be collected or catagorized in any other way from disappearing into »Nirvana«!

Entering FaxWare users

To enable a user to use FaxWare, he must firstly be entered as a FaxWare user. Change to the menu item »Configuration/Users« and press the `INSERT` key. Here you will see a list of all the users in the network which can be inserted as FaxWare users. Within this list you can change between the different contexts and select users using the `ENTER` key. In additon, the user requires certain NetWare rights to directories of the FaxWare server. For detailed information, please refer to the chapter »Operation/General introduction«.

Configuring a print queue

Select from the menu item »Configuration/Printer/Fax Printer/Print Queues (PCL)« a minimum of one print queue, from which sent and received faxes can be printed out. You can configure an optional number of printer filters, to which the various users and groups must have access. In this way, the faxes will be routed through the recipient of the faxes and the specified printer filter to the corresponding print queue.

Please note that under Novell NetWare 4 users must be assigned to a print queue, so that these users can use it. This assignment can be carried out using the utility PCONSOLE.

Configuring a fax queue

If you are faxing from a DOS application using a »Queue Redirection« (»CAPTURE«), then you must configure a fax queue. This fax queue works just like a NetWare print queue, but must be created through FaxWare and not with the NetWare utility PCONSOLE. Make your selection in the FaxWare menu item »Configuration/Services/Queue Services« and set the new fax queue using the `INSERT` key.

Please be careful when writing the queue names: After the name, a context must be defined, for example FAXQUEUE.SALES. During the installation FaxWare creates the group »FaxWare Valid Users«. All users who are entered as FaxWare users will be automatically accepted into this group. These users have automatic access to the FaxWare fax queues. Further users can be assigned to the queue using the NetWare program PCONSOLE.

Line configuration

Select the menu item »Configuration/Lines/Linexx« (xx stands for the number of the line, e.g. Line01 for the first line) and enter a recipient for all faxes which are received on this line under »Distribute to«.

Group configuration

FaxWare phonebooks can be set for an optional number of NetWare groups. Change to the menu item »Configuration/Groups«. Select the desired group and select »Manage phonebook: Yes« in the configuration of this group.

OPERATION

USING FAXWARE

This chapter deals with the fundamental fax possibilities through the various services in a network.

It describes the advantages and disadvantages of the interfaces and gives you a general idea of the efficiency of FaxWare.

As a »fax operating system« FaxWare makes many fax services available. It depends on a great number of factors, for example which service you should use for which application or for which client.

Configuration of the Service Layer

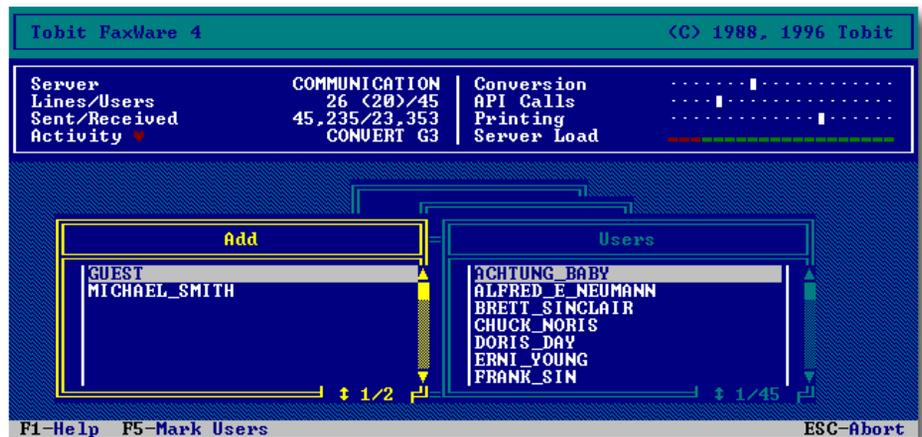
The Service Layer is the actual core of FaxWare, and runs as a NetWare Loadable Module on the server platform. It bears the name FaxWare.

Settings are made directly with the NLM. These can be made either on the system console or by entering RCONSOLE.

FWCONFIG

The configuration of FaxWare users or groups can be directly carried out in the FAXWARE.NLM or by using the Windows utility FWCONFIG.EXE. Please note the corresponding information under the section »Configuring users with FWConfig« in this chapter.

The user interface



The FaxWare user interface

The FaxWare Service Layer has been provided with a user interface which conveys the usual NetWare look and feel. This saves the experienced NetWare administrator from having to become familiar with a new interface.

Display

FaxWare resembles the structure of the Novell MONITOR NLM. Operation is also very similar. Like the most original NetWare NLMs, FaxWare also supports color monitors on the file server.

Online help

F1 key

The FaxWare Service Layer includes full online help. Press the `F1` key to obtain further information about configuration possibilities. The entries are designed to provide more comprehensive information than the short descriptions of menu items that appear later in this section.

Positioning windows

Contrary to other NetWare programs, the positioning of the windows are not apparently random, but are defined clearly. Picklists and windows overlap as long as a further window can be opened. Only the last window in the hierarchy is shown in the middle of the screen.

Menus

As usual in NetWare, with FaxWare, you can also select an item required in a menu with the arrow keys. Few NetWare users are aware that it is also possible in FaxWare, to select entries by keying in their names. In this case, a cursor is displayed to indicate the respective output position.

Key combinations

Hotkeys

The following key combinations work from the system console, and can be executed at any time:

`ALT+S` Change to the system console (prompt)

`ALT+F` Change to the FaxWare console

Display lists

Practically all display lists such as the Queue monitor or the Job monitor operate online. For example, when a change to the setting has been made, and the window has not been reopened, the display is updated on the fly.

One fine difference between the typical NetWare applications and the FaxWare NLMs is the fact that the number of entries and the number of the currently marked entries are displayed within the frame list.

Picklists

As in other NetWare applications, new entries can be created by pressing the INSERT key and the existing ones can be deleted by pressing DELETE.

NUT.NLM

As from version 4.0 of NetWare, use of the NetWare utility interface, NUT.NLM was officially released for third party developers. However, as FaxWare should still be capable of running on previous NetWare versions, no link has been created to this interface. Consequently, the NUT.NLM module does not need to be loaded to operate FaxWare.

Main menu for the Service Layer

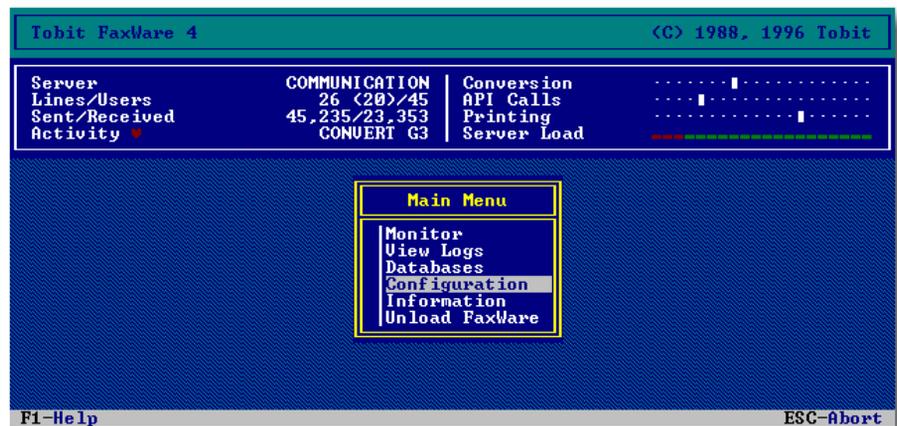
The main FaxWare screen consists of a status display at the top of the screen and the actual menu selection.

Status information

The status display shows the FaxWare status information.

- ◆ Server
Name of the FaxWare server
- ◆ Lines/users
Shows the number of currently licensed exchange lines and entered users.

Main menu



- ◆ **Sent/Received**
Shows the number of correctly sent and properly received faxes. Redialing attempts are not included.
- ◆ **Activity**
Current status of FaxWare on the server. If Idle is displayed as a text, the NLM is currently not busy.
- ◆ **Conversion activity bar**
Indicates whether the process for converting outgoing faxes is currently active. This process is idle if the indicator box is not moving.
- ◆ **API calls**
Indicates whether the program for communication through the Application Programming Interface (API) is currently active. This process is idle if the indicator box is not moving.
- ◆ **Print function**
Indicates whether the process for printing faxes is currently busy. This process is idle if the indicator box is not moving.
- ◆ **Level indicator**
The FaxWare Service Layer constantly calculates the current server load based on system data. The Dynamic Server Load feature (DSL) of FaxWare ensures optimal use of resources on the server without affecting the speed of other services or clients. Note that the displayed value on this line does not correspond to the CPU utilization; DSL includes both CPU utilization as well as client requests and disk activity.

DLS feature

Menu items

The following menu items can be selected:

- ◆ **Monitor**
Provides diverse functions for displaying queues, jobs and the FaxWare Transport Layer Driver.
- ◆ **View Logs**
The send and receive logs for all FaxWare functions can be viewed.
- ◆ **Databases**
Provides access to the distribution list for incoming faxes, the phonebooks and the database containing fax charges.
- ◆ **Configuration**
Provides access to diverse settings of system data, users, queues, FileFax Services, printer filters and the Transport Layer Driver.

- ◆ Information

Provides system information concerning FaxWare. In addition to version information of the NLMs and the drivers available, you can obtain details about the NetWare server. This menu also contains simple functions to dispatch and print faxes, to enable you to carry out the first system tests after installation.
- ◆ Unload FaxWare

Allows you to quit and remove the NetWare Loadable Module from the server's memory. The Transport Layer Driver is neither able to send or receive faxes if the NLM is no longer loaded. All processes on the Service Layer are stopped.

The monitor functions

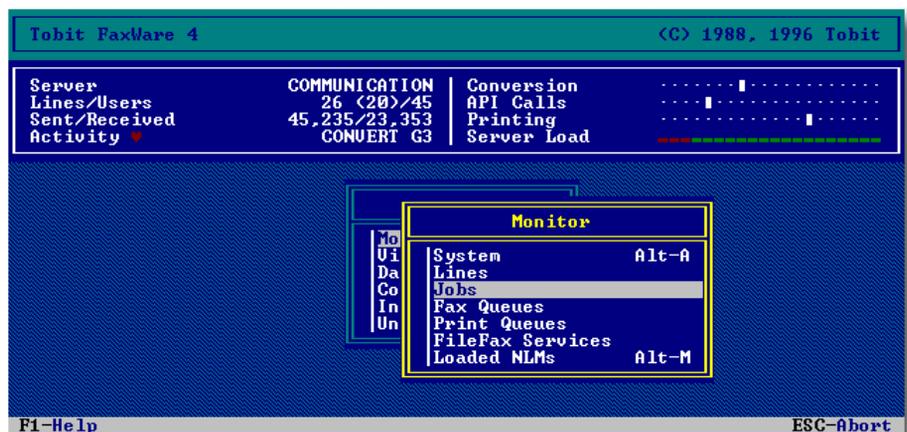
The Service Layer submenu combines various display lists. Without restriction, the lists in this menu are displayed online, i.e. they are constantly updated even when the window involved is open.

System

The monitor window with the name System provides an insight into the various Service Layer processes.

This list, which is updated every second, provides details about the current activities of the various threads. For example, you are able to see which job is being converted or how many bytes still have to be processed by the printing thread.

Menu »Monitor«



The information given here is helpful for system diagnosis and, if technical support is ever required, you will possibly be asked for this information. The @@DIAGNOSTIC command (see chapter »Reference«) also allows you to send this information to any chosen fax number.

Lines

This display list shows the current status of all defined Transport Layer Drivers. This list serves for information purposes only. No deletions or changes can be made in this list. If an entry is followed by the word ACTIVE, the TLD is currently loaded and operable. TX is shown if the TLD is capable of sending, or RX if it is capable of receiving.

The current status is also shown online in this list. Thus, each line may feature the terms sending or receiving.

Jobs

The job monitor displays all jobs which still have to be processed by the Transport Layer Driver.

For example, a send job is removed from the list of jobs if it is completed as either Correctly sent or Busy.

A job in the job list can also be cancelled by pressing the DELETE key. In certain circumstances this may have to be repeated several times as the job may currently be being processed by a Transport Layer Driver. Jobs can only be reliably removed when they are in an unprocessed state.

Delete fax job

The job list

The screenshot displays the Tobit FaxWare 4 interface. At the top, it shows 'Tobit FaxWare 4' and '© 1988, 1996 Tobit'. Below this is a status bar with the following information:

Server	COMMUNICATION	Conversion
Lines/Users	26 (20)/45	API Calls
Sent/Received	45,235/23,353	Printing
Activity	CONVERT G3	Server Load

Below the status bar is a section titled 'Jobs' containing a list of jobs:

Job Name	Company	Time	Status
MICHAEL	Smith Ltd.	15:00 today	User Hold (0.12)
<vacant>			
PETER	Maxisoft	02:00 01/08/1996	Scheduled
KAREN	Maxim Corp.	15:12 today	Being Processed
<vacant>			

At the bottom of the screen, there is a navigation bar with the following options: F1-Help, F4-Info, ←-Menu, Del-Delete, and ESC-Abort. A page indicator '1/3' is also visible.

Entries in this list are not made from the top down as in other lists, but appear to the user to be assigned randomly. If an entry is accompanied by the word Free, then FaxWare will consider it to be deleted. The entries in the list represent slots into which fax jobs are entered. A FaxWare process compares this list constantly against the actual data of the Transport Layer Driver.

Through pressing the `ENTER` key, the send time of a fax job can be changed. It is possible to select between the status of optimized and waiting. A fax that originally was to be optimized, can be sent immediately.

Fax Queues

Here all entries in the queues served by FaxWare are displayed.

Delete entry

In addition to the user name and information about the type of entry involved, the status of each job is also displayed. The current entry underneath the highlight bar can be removed by pressing the `DELETE` key.

Entries are processed according to the FIFO (first in first out) principle. However, the priority of the queue also plays a role.

FaxWare searches through a queue configured with high priority for the fax jobs twice as often as a queue assigned with low priority.

Print queues

The Service Layer also permits the display of the contents of normal NetWare print queues.

As in the case of the Novell PCONSOLE utility, the entries can also be deleted by pressing the `DELETE` key.

FileFax Services

All current entries in the API and FileFax Services are displayed here. Entries can be deleted by pressing the `DELETE` key.

Loaded NLMs

This menu item shows an overview of the NetWare Loadable Modules loaded on the server. The list contains those NLMs which have opened their own screens on the server console.

You can switch to the screen selected in the list by pressing `ENTER`.

The logs

In this part of the program, you can view the send, receive and error logs. Besides the error log, all information is updated online, on the screen.

Send log

The fax transactions of all Transport Layer Drivers are stored in the send log. In doing so, every attempt to send a fax is logged.

Entries are made consecutively, as with books. Therefore, the newest additions are at the bottom of the list. To improve clarity, the highlight bar always jumps to the end of the list when the window is opened.

For safety reasons, it is not possible to delete any entries from this file. Automatic cleaning up of the Service Layer data, which takes place every night, also clears the oldest jobs from the list.

When you press the `ENTER` key, a selection window for additional functions is opened.

The receive log

The receive log contains a list of faxes received on the available exchange lines.

As with the send log, entries are made consecutively, as with a book. The newest additions are at the bottom of the list. To improve clarity, the highlight bar always moves first to the end of the list when the window is opened.

When you press the `ENTER` key, a selection window for additional functions is opened.

The send log

Tobit FaxWare 4		(C) 1988, 1996 Tobit	
Server	COMMUNICATION	Conversion
Lines/Users	26 (20)/45	API Calls
Sent/Received	45,235/23,353	Printing
Activity	CONVERT G3	Server Load

Send Log				
▲ PETER	Smith Ltd.	17:48	today	sent (1.61)
KAREN	Maxim Corp.	17:48	today	sent (1.15)
THOMAS	00444398322342	16:24	today	sent (0.92)
PETER	03887326722	16:33	today	problem
TOMMY	Wesson	16:03	today	busy
CHRISTINE	Cargo Soft	15:51	today	sent (0.92)
MANDY	004377332886	15:51	today	busy
PAUL	Megasoft	15:28	today	sent (1.15)
THOMAS	Terrasoft Ltd.	15:34	today	sent (1.15)

↑ 1,409/1,411

F1-Help F4-Info ←-Menu ESC-Abort



Error log

FaxWare provides an error log in which all critical operations and messages are stored.

Error messages

The system administrator has the possibility of analysing the cause of a problem even weeks after the event. The error log is a simple text file which is stored under the name of FAX\$LOG.ERR in the directory SYS:\FAXWARE\CODE.

On the server, the error log is displayed in a separate list in which you can scroll with the cursor keys. When closing the window by pressing ESC, you are prompted to specify whether or not you wish to delete the log.

You can also view this text file, by means of any chosen word processor on any client.

Boot log

In this log, all errors which occurred when loading the FaxWare are entered. This facilitates the error search.

The FaxWare databases

The Database option allows access to databases which are managed by the FaxWare Service Layer.

The databases have no direct significance with regard to the operation of FaxWare. They are only required for additional functions such as, the distribution of incoming faxes or charge accounting.

Phonebooks

In FaxWare, the user phonebooks are managed centrally by the Service Layer. In doing so, each user group of the NetWare bindery has a possibility of managing a phonebook. When configuring groups in the Service Layer menu item of the same name, it is possible to define whether or not to manage a separate phonebook for each respective number group.

The actual phonebook is proceeded by the selection of the group whose number directory you wish to access.

Fill out the fields with the data from the distant stations. The recipient's fax number must be entered. In addition to the digits themselves, some special entries are allowed:

For example, sending an international fax to Italy, the number is dialed by placing the prefix + before it. In Germany, +3992881028 therefore corresponds to the fax number 003992881028. (FaxWare converts the + digit to 00 only when configured).

Entry in the phonebook



FaxWare converts the letters A - Z to the corresponding numbers according to the American system. Use of these numbers is very popular in the USA. For example, you may dial +1SAY-HELP. The Service Layer then substitutes these letters for the correct digits according to the rules.

A comma (,) generates a dialing pause of around 1 second. For example, if you know that a brief pause is sensible in a certain location after dialing the local code, you can insert a comma in the middle of a number. Example: +442453,77352. Since the connection has not yet been established, no increase in charges results from this pause.

Final commas may increase costs, as the fax line may already have been set up while the corresponding TLD is waiting to transmit.

Routing

FaxWare is capable of automatically distributing faxes to specific users or groups. For this, you can use the distribution list method. Entries in the distribution list can either be created manually, by pressing the `INSERT` key in the list or can be made to the send and receive logs by means of the Learn identifier function.

Please note the information in the chapter »Appendix: Routing and printout of received faxes«.

Please select the routing method:

- ◆ CSID (Calling Station ID)
Distribution by means of send identification of the distant station. According to the international standards, all fax machines must deliver a sender identification. FaxWare uses this identifier to define the recipient's name in the distribution list. Each incoming fax with the same identity is forwarded to the recipient.
- ◆ DTMF (Dual Tone Multi Frequency)
Distribution by means of direct dialing. This is an extension of the call number, and is not sent until connection is made. Because most fax machines are not capable of passing on further numbers after connection, this method is not popular.
- ◆ DDI (Direct Dial In)
DDI is only used in ISDN environments. The DDI number is extended to the telephone number. By using DDI information FaxWare is capable of automatically distributing incoming faxes to every user/group.



- ◆ MSN (Multi Subscriber Number)

As an additional line feature, MSNs can be applied with Euro ISDN. These independent telephone numbers, which may be totally different, physically arrive on one and the same connection. FaxWare is now capable of distributing the faxes to the respective recipients/recipient groups with only one ISDN board, by means of the number dialed. Thus, the number of possible recipients is only limited by the number of MSNs, with this method.
- ◆ DID (Direct Inward Dialing)

The option to dial inside a company directly without going through the attendant. DID is only used in analog telephone systems.

If the distribution list does not contain the identifier of the distant station, then it is allocated according to the Transport Layer Driver configuration.

Collection list

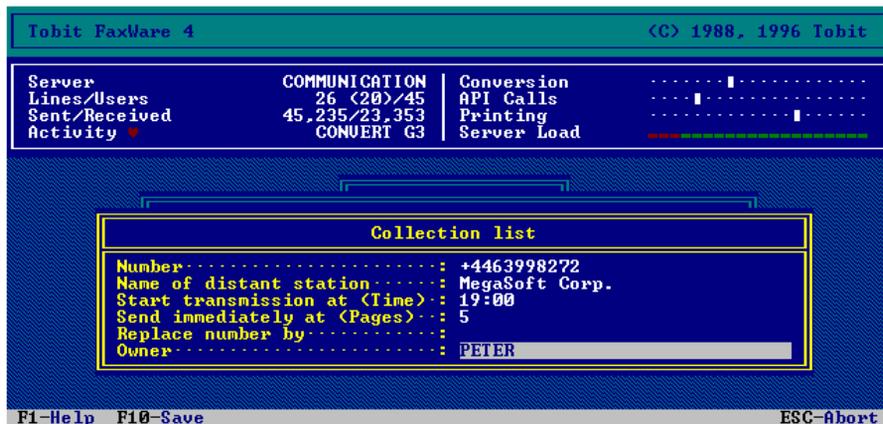
The collection list holds the collection of jobs which are set on the same number. Through this, cost savings are realized, as the connection must only be established once.

A feature: If the number of a distant station has changed, the supervisor can enter a new one in the field »Replace number by«. Should a user select the old number by mistake, the Service Layer will automatically replace it with the new number.

Blacklist

In certain circumstances, it may not be desirable to send faxes to certain recipients.

The collection list



The blacklist provides assistance if, for example, you have a competitor who should not receive a fax from you under any circumstances. If a recipient should generally not want to receive any more faxes, you could also include this number in your server's blacklist.

With each new fax, the FaxWare Service Layer checks whether the number dialed is in the blacklist. If the Service Layer discovers the number in the list, it cancels the fax job directly and stores an appropriate message in the FaxWare error log.

There is no limit to the number of entries in the blacklist. You may also store additional text along with each recipient's number.

Charges Database

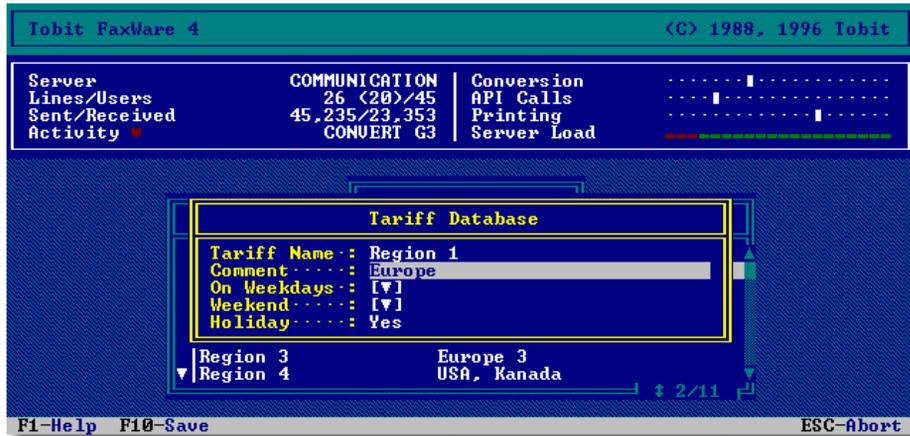
Automatic charge accounting of faxes sent and special cost optimization of send jobs are features of FaxWare.

For each individual job in the send log, FaxWare can determine the charges, even if the fax hardware does not specially support these functions.

The FaxWare Service Layer optimizes the sending time and subsequent calculation of the transmission costs on the basis of a table which differs regionally in conformity with the telecommunication regulations.

FaxWare determines charge units on the basis of the (expected and actual) transmission time and the preselections made. These units are then multiplied by the entry in the system configuration (see: »Accounting«).

The charges database



By using the FaxWare command @@DELIVERY (see chapter »Reference«), the user defines which maximum delay is to be selected for the cheapest transmission time (e.g. »Immediate« for dispatch within the next 15 minutes; »Normal« for dispatch within 12 hours). You can also set these values as default in the FaxWare system configuration (menu »Configuration/System«).

Entries in the FaxWare charges table

The FaxWare includes a basic charges table, which only compliments the regional peculiarities.

For the correct functioning of the charges table and charge optimization, inserting the proper charges in the table is absolutely necessary.

You should enter your regional tarif zones in the FaxWare charges table as soon as possible.

Holiday list

- ◆ Holiday List
Enter the appropriate holidays that should be recognized in the FaxWare system environment. These holidays are used in combination with the charges table to calculate the relative rates and least expensive transmission times.
- ◆ Tariff Database
Here you can find the individual tariff areas. In Germany there are four areas for national calls and six zones for international connections. For every entry you can set tariff times for working days and weekends.
- ◆ Numbers
This database contains a list of all area codes and the respective tariff zones. Please complete this list with the tariff zones valid for your area.

Country directory

By default, FaxWare contains a database that features the basic configuration for every country (such as the local country code and the commonly used date format). FaxWare can be configured to adapt the system environment to any of the major countries. Using this menu, you can modify existing entries or add new entries. To do so, select the country that applies, previously entered under the "Country" item.

A defective charges table renders the entire charges functions of FaxWare useless. Take care to maintain current information in the table and base your entries on accurate information.

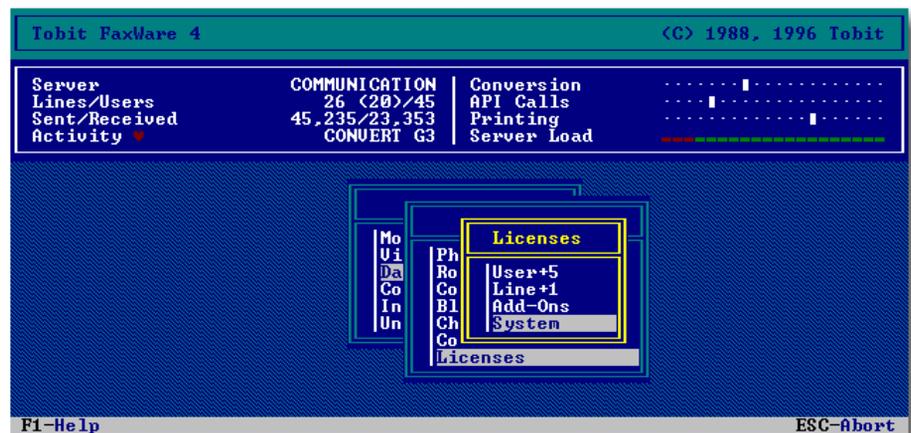
Licenses

Please enter here the license number to extend FaxWare by further exchange lines, users or »FaxWare add-ons«. Here you also have to carry out the upgrade of an evaluation copy to a full version.

NLS

Since 1988 the Network Licensing System (NLS) has been used in the FaxWare. It is not a copyright protection system nor does it aim to fulfill corresponding functions. By using this licensing method, it is very easy to extend your system. You do not need a data carrier and you do not have to copy other things. FaxWare is subject to copyright. An extension is only allowed with original license numbers. You must be able to prove that you have these numbers by submitting your »LicenseeCard«.

Menu »Licenses«





If the number of available license numbers is exhausted, a message appears indicating that you must either delete a user or enter a new license number.

When you press the `ENTER` key on a selected user's name, an input screen appears allowing you to enter configuration details specific to that user.

Groups

In FaxWare, as is usual in NetWare, several users can also be combined in groups.

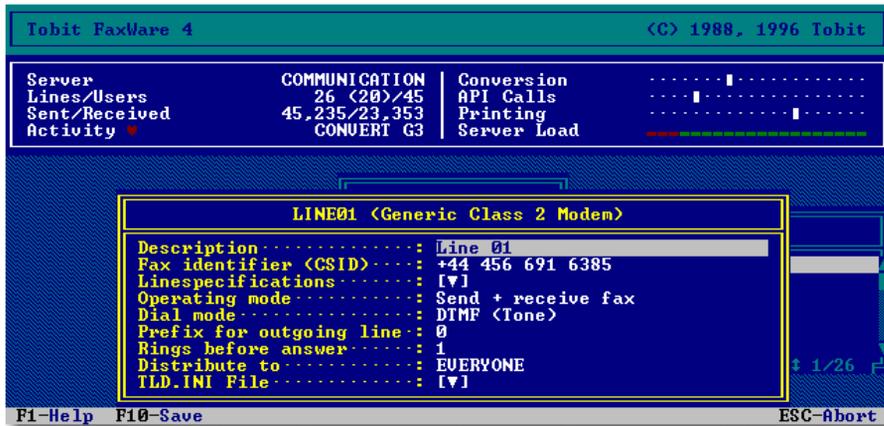
Users must generally be assigned groups with the NetWare utilities (e.g. SYSCON). This cannot be done using the FaxWare Service Layer.

The following parameters are needed for the special fax functions. They are also saved in the NetWare bindery.

Lines

In FaxWare, the fax functions of the Transport Layer Driver are configured centrally on the server. Only the parameters specific to the hardware need be defined in the TLD.INI file using a conventional text editor (see »Reference«).

All Transport Layer Drivers created by the installation program appear in the picklist. The respective configuration window of the TLD can be opened by pressing the `ENTER` key.



Printer

FaxWare passes all print jobs through the »printer«, which can be configured individually. It represents a layer between the Service Layer and the printer, which is independent of the hardware. By pressing the `INSERT` key while in the list, you can add a new printer. Alternatively, you can delete the current printer by pressing the `DELETE` key. The window containing the list of available printers appears if you press the `ENTER` key.

Services

The fax services supported by FaxWare are categorized into three areas:

- ◆ API Services

Frontend programs such as »FWDOS« and »FWWIN« use the »API Services« for their fax jobs. As in the case of FileFax Services, a directory is regularly scanned for fax jobs. If you wish to fax from Windows applications to the FaxWare printer driver, the settings in this fax service will be valid!

- ◆ Queue Services

The NetWare print queues are an important basis for faxing from a network. If you wish to use FaxWare like a printer in your network, you will have to configure corresponding queues. You can configure a new queue in the list of FaxWare fax queues by using the `INS` key. If you press the `ENTER` key, a window showing precise queue definitions will appear. If you wish to use FaxWare only with the Windows requester and not with other clients, it will not be necessary to configure the Queue Services.



◆ FileFax Services

The functions of the FileFax Services are very similar to those of the FaxWare Queue Services. However, in the case of the Queue Services the jobs are given like print jobs, while the FaxWare FileFax Services regularly scan a directory for new fax jobs.

All services are configured in the submenu »Configuration/Services« of the Service Layer. The settings made here are decisive for faxing with FaxWare.

Form Manager

By using the Form Manager, personal fax layouts can be configured for every FaxWare user. In this way, you can automatically use coverpages or save graphics as forms. You can configure any number of form layouts and then assign them to the users in the user configuration. If a form layout is assigned to a fax service (FileFax, Queue or API Services) this layout will be valid for all users creating a fax through this service.

Company Profile

Contains customer data. The data is sent to the FaxWare Support by means of an Online registration. The individual entries can be used, for example, in a coverpage. Refer to the notes in the Appendix.

Information

Provides system information concerning FaxWare. In addition to version information of the NLMs and the drivers available, you can obtain details about the NetWare server. This menu also contains simple functions to dispatch and print faxes, to enable you to carry out the first system tests after installation.

Technical profile

Delivers information about the FaxWare system environment (installed program versions, Service Layer, system environment, licenses) which could be required by the Technical Support should you encounter a problem. This information is also used over the FaxWare Online registration.

Online registration

The OnLine registration includes important information about the installation of FaxWare and the system environment. After the first 50 faxes have been sent, a prompt follows requiring this data to be forwarded to the Technical Support. The information is checked to ensure error free installation.

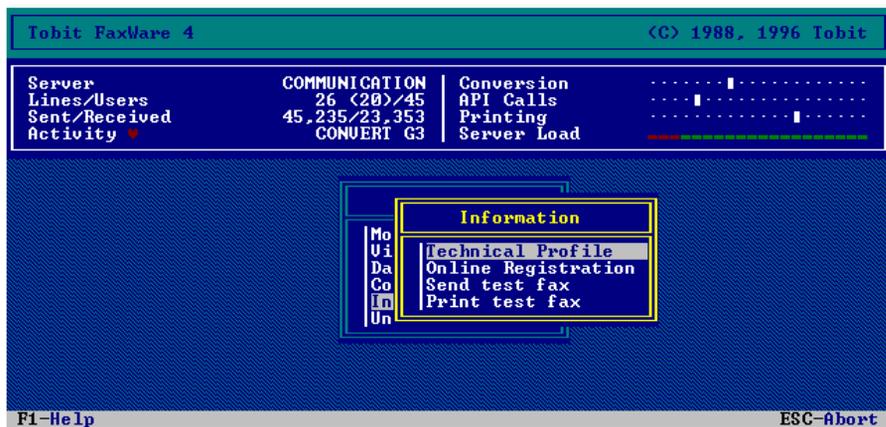
Send test fax

After the initial installation, the test fax can be sent to check that the configuration is correct. By selecting the menu item job file, the directory SYS:\FAXWARE\CODE\DEF is scanned for the example faxes.

Print test fax

To test the printout of faxes, you can print a test fax through a defined printer filter.

*Information
manu*



Configuring users with FWConfig

In addition to the system settings, the FaxWare users and groups are also configured and managed in the FAXWARE.NLM on the file server.

The configuration can be carried out directly on the server console or by means of the Windows utility FWCONFIG.EXE from a Windows client.

Therefore, the system administrator has the possibility to configure the users and groups without having to change to the file server.

Also the FaxWare users can change some of their personal configuration parameters (e.g. »Print automatically« and »Acknowledgement«) if they have the authorization to do this.

Activating the program

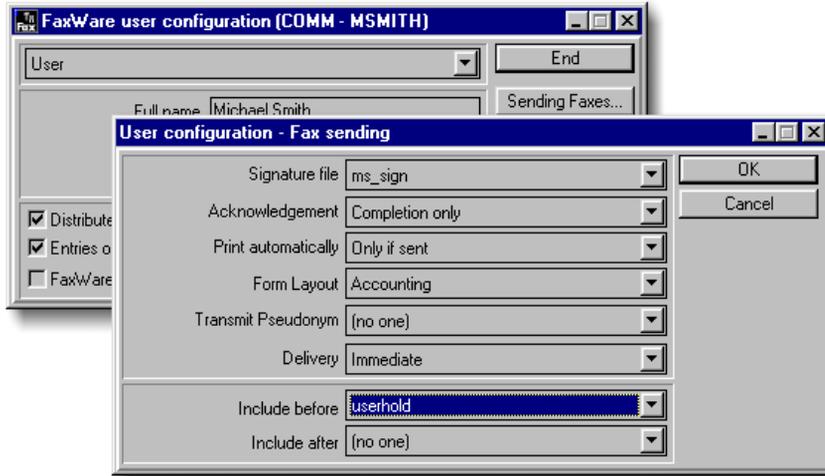
You have to be registered as a FaxWare user in the FaxWare Service Layer (on the file server) to be able to use the program. If you have the »console operator right«, you can add or delete users as FaxWare users through this program.

During the FaxWare installation the program FWCONFIG.EXE is copied into the directory SYS:\FAXWARE\UTIL\WINDOWS\FWCONFIG. Please select the menu item »File/New« in the Program Manager and configure the program in a program group (e.g. FaxWare). Start the program by double-clicking on the program icon.

Program functions

When starting the program you will obtain a list concerning your general configuration parameters (e.g. distribution of authorizations). In the submenus you will find the settings for fax dispatch, fax receipt and the user data. In the case of parameters which provide a menu selection the possible settings will be displayed (e.g. a list of printer filters).

Now you can change your parameters for fax dispatch and fax receipt. If you have no »console operator right«, some functions will be deactivated, so that you cannot get round FaxWare security functions. It will for example not be possible to change signature graphics or to include files.



Configuring users and groups

If you have the »console operator right«, you will also be able to configure other FaxWare users and groups by means of the program FWCONFIG.EXE. In this case you can select the corresponding user or group in the program.

If you use several FaxWare servers, you can select the corresponding file server for configuration by means of the »Server« button.

General introduction

This chapter explains the fundamentals of faxing in a network using the various services. It describes the advantages and disadvantages of the interfaces and gives an overview of the efficiency of FaxWare. FaxWare as a fax operating system offers numerous fax services. What service you use with each application or which client you want to use depends on several factors.

Necessary user rights

Trustees

You only need an »ATTACH« to the FaxWare server to be able to use FaxWare. The user has to be registered in the FaxWare user configuration. As soon as he makes use of the Windows printer driver or the FileFax Services, he needs the following rights.

Directory	Rights
SYS:\FAXWARE\OUT\API	RWCEM
SYS:\FAXWARE\IMPORT	RWCEM

The user needs the following rights to view the faxes.

Directory	Rights
SYS:\FAXWARE\OUT\IMG	R
SYS:\FAXWARE\IN\IMG	R

Fax Services

The fax services supported by FaxWare are categorized into three areas:

- ◆ **API Services**
Frontend programs such as »FWDOS« and »FWWIN« use the »API Services« for their fax jobs. As in the case of FileFax Services, a directory is regularly scanned for fax jobs. If you wish to fax from Windows applications to the FaxWare printer driver, the settings in this fax service will be valid!
- ◆ **Queue Services**
The NetWare print queues are an important basis for faxing from a network. If you wish to use FaxWare like a printer in your network, you will have to configure corresponding queues. You can configure a new queue in the list of FaxWare fax queues by using the `INS` key. If you press the `ENTER` key, a window showing precise queue definitions will appear. If you wish to use FaxWare only with the Windows requester and not with other clients, it will not be necessary to configure the Queue Services.

◆ FileFax Services

The functions of the FileFax Services are very similar to those of the FaxWare Queue Services. However, in the case of the Queue Services the jobs are given like print jobs, while the FaxWare FileFax Services regularly scan a directory for new fax jobs.

There is only one thing which the FaxWare Service Layer cannot carry out through a default, the »addressing«. Therefore, you should inform FaxWare in every job to whom the fax is to be sent or what is to happen with it. There are some FaxWare commands used for fax addressing.

Recognizing commands

Command ID

The actual command must be placed after a command ID. The @@ characters indicate to the Service Layer that a command is to be communicated and included in the fax job. FaxWare commands, under DOS and Windows, can generally be inserted in a document at any location. Additionally, the FaxWare commands can be executed through the menu in the Windows interface.

```
@@NUMBER +44 141 420 5661
To: Acme Software International
Dear Sir/Madam,
Please send us your new price list.

Best regards,
Edward Miller Corp.
@@SIGNATURE
```

Termination of the command mode

Every command must be terminated to ensure that the Service Layer will continue conversion. It can either be terminated by entering the command ID again or by means of a carriage return and line feed (CR and LF).

In the latter case, the two line feed characters are included in the command. The line feed is no longer executed when converting.

```
This is a simple test fax.
Acme @@NUMBER +44 141 420 5661
Software
```

The text »Software« is placed directly after the word »Acme« because the line feed with carriage return is included in the command.

Command notation

Upper and lower case lettering plays absolutely no role in the names of commands. Naturally, it is important to keep the correct notation. Blanks or special characters in a command are not valid.

Parameter

The number of blanks between a command and its parameters may vary. However, at least one, but no more than ten character spaces must be left.

Alternatively, a short form exists for each command which has exactly the same meaning as the fully typed command.

```
@@NUMBER +44 141 420 5661
@@NMB +44 141 420 5661
@@Number +44141,4205661
```

Multiple commands

Commands may basically be inserted anywhere in the text. If a command which only refers to one page or the complete fax is discovered several times, only the command entered last applies.

```
@@NUMBER 99
This fax is intended for the number +44 141 420 5661...
...and not number 99
@@NUMBER +44 141 420 5661
```

Command representation in faxes

Commands themselves are not converted but are deleted after evaluation.

In some cases, it may be useful to replace all characters of a command with blanks. This method is desirable, when writing texts comprising of several columns or tables.

The above-mentioned effect is achieved if you do not enter a command directly after the command ID, but instead leave a space between them.

```
@@NUMBER +44 141 420 5661
This is a simple test text. In the following line,
the word »test« is on the left hand margin of the fax:
@@NUMBER +44 141 420 5661@@test
In the next line, the word »test« is in the same position
as in this text.
@@ NUMBER +44 141 420 5661@@test
```

Conversion of fax jobs

All conversion with FaxWare takes place on the FaxWare server. This server based fax conversion technology relieves the client and creates maximum compatibility with all known applications. FaxWare begins automatically with the conversion of fax jobs as soon as a job is received via one of the three services (Queue, FileFax or API Services). The information which FaxWare requires for the conversion and dispatch of faxes is already included in the fax job. FaxWare receives only one ASCII file, which should already include commands. A PCX file for example which is to be dispatched through the Queue Services, will not be printed into the print queue itself but only the commands necessary for the dispatch of this file will be transmitted.

```
@@INSERT LOGO.PCX
@@NUMBER +44 141 420 5661
```

This information is sufficient for FaxWare to dispatch extensive PCX files.

The advantage of this method is clear:

- ◆ Less data transferred over the network cable, as only the command to insert graphics, and not the graphics itself must be written to the print queue.
- ◆ Data security is maintained, the user requires less access rights to the graphic files. The server itself however, requires access to these files. They must be found on a volume of the server.

Faxing with DOS clients

Although the interface for DOS offers extensive possibilities of browsing logs or working with phonebooks, the fax jobs themselves are generated through the FileFax and the Queue Services.

Probably the easiest way to print is to a fax queue. To do this, the local printer interface is diverted to a NetWare queue which is served by the FaxWare Service Layer. The printout then contains the fax number and other commands, which are evaluated by the Service Layer.

Under DOS, print jobs are generally diverted with the NetWare CAPTURE program. Some programs however, are able to print directly into a queue, thus saving the user the need to assign a local redirection.

The DOS interface allows the users to assign a queue to each of the PC's three standard printer interfaces.

The FileFax Services are capable of running special macros or even programs to create a fax job directly as a job file for FaxWare.

Using the Queue Services

Certainly the easiest way to send a fax in the network is to print it to a queue. To do this, FaxWare can operate like a conventional print server. In doing so, it serves up to 64 fax queues.

All the user has to do is to divert printing to a queue served by FaxWare to arrive at the required result.

An increasing number of standard software packages now support the NetWare queue services and not only output to standard interfaces, but also offer the direct possibility of outputting to a NetWare queue.

Using queues with DOS

DOS is still the most widely utilized client operating system in NetWare networks. Even if graphical user interfaces such as Microsoft Windows are being increasingly used in network environments, hundreds of thousands of users still use DOS.

Traditionally, DOS applications are very fast, place only slight demands on the hardware and software and place as little burden on the network as any other operating system.

*The Queue
Services*

Queue capturing

```
F:\>capture /q=fax /s=communication /l=1
LPT1: re-routed to queue FAX at server COMMUNICATION.
F:\>
```

Probably the greatest drawback with DOS as a client operating system, is the lack of possibilities for integrating drivers and its non-standardized user interface. The latter especially causes problems for new users, while the former has software developers racking their brains.

FaxWare does not require any special driver software to send faxes. This saves the system administrator from unpleasant surprises.

Diverting jobs to a print queue

To send a fax, it suffices to simply print a text to a queue served by FaxWare. To do this, a few commands are inserted in the text. The Service Layer recognizes these by special characters before and after them.

Using the NetWare Capture utility or another tool, you must divert a local interface to a queue served by FaxWare.

For example, if you enter the name Fax in a queue which you have created and you wish to divert the local LPT1 interface to this queue, enter the following command at the DOS level:

```
CAPTURE /Q=FAX /L=1
```

In multi-server networks, you must additionally specify the /S=servername parameter.

Sending a fax

The link between the DOS client and the FaxWare Service Layer has been established by diverting the interface to a queue. If you now want to send a text from your word processor or directly from the DOS level, all you have to do is output the text, by printing it to the diverted local interface.

Special commands can be integrated in the text. FaxWare supports a number of commands for formatting and controlling faxes.

Only the NUMBER command is absolutely necessary. This command communicates the fax number of the recipient who is to receive your text to the FaxWare Service Layer.

It must be possible for the Service Layer to distinguish commands from the actual text. This is why each command has to be preceded by a command ID. By default, the Service Layer evaluates two at symbols (@@) at the start of the command.

If you wish to send a fax to someone with the fax number +44 141 420 5661, your text must contain the line: @@NUMBER +44 141 420 5661

The placement of this entry in your fax is left to your discretion. FaxWare removes all commands from your text. The fax arriving on the receiving end, contains no command strings.

Using the FileFax Services

The FaxWare FileFax Services operate similar to the Queue Services. The only difference is that the Queue Services use the NetWare queues as an interface between the client and server, and the FileFax Services use the simple NetWare file services.

Method of operation

The Service Layer automatically searches through the directories in the server for fax jobs. The name of the volume, the directory and the files can be defined individually. There is no limit to the number of directories which the Service Layer can manage.

The Filefax Services

Sample fax

```
F:\>cd faxware\import
F:\FAXWARE\IMPORT>copy con demo.fax
This is a simple sample file to create a fax with
the COPY CON function of DOS.

This file "TEST.FAX" will be created by the DOS command "copy con"
and saved in the current path ("F:\FAXWARE\IMPORT").
The FileFax services of FaxWare are frequently polling this
directory with the "*.FAX" mask.

@@NUMBER +44 456 233 3345@@
^Z
1 File(s) copied
F:\FAXWARE\IMPORT>
```

Whenever the Service Layer finds a file which corresponds to the defined pattern, it processes it like an entry in the fax queue.

One great advantage of this method is that faxes from applications can be easily used. A text no longer has to be printed to an interface that had to be beforehand diverted using CAPTURE. It only needs to be saved as ASCII text in a specific directory.

Creating a fax job

For example, if the following has been defined as the directory path when configuring the FileFax Services SYS:WORD*.FAX every file with the *.FAX extension in the servers SYS:\WORD directory is recognized as a fax job for the Service Layer.

Saving=faxing

Another example: If you save a text file with the name \WORD\DOC.FAX in the specified directory, the Service Layer will immediately process it as a fax job. If you wish to send a fax to someone with the fax number +44 141 420 5661, your text must contain the line: @@NUMBER +44 141 420 5661

The FaxWare Service Layer now finds the file and converts it to a fax. It recognizes the NUMBER command and enters the fax job in the job list for the Transport Layer Driver. The Service Layer then deletes the text file automatically.

Acknowledgement relating to the job

Independent of the broadcast acknowledgement, a further form of acknowledging jobs can be generated. If the respective FileFax Service has been configured appropriately, an acknowledgement file is created automatically. It bears the same first name as the job, but uses the *.\$\$\$ extension. Information about the structure of the status file can be found in the »Appendix«. This file contains the status of the job in standard text format. It can therefore be read with any word processor.

As long as this file entry bears the "Read Only" file attribute, the job has not concluded. Therefore, the fax is still being processed by FaxWare.

Faxing with the DOS Frontend

In most cases fax jobs from DOS applications are created via the Queue or FileFax Services. The DOS Frontend provides the possibility to use a text editor to create a fax directly from the Frontend. In addition, the DOS Frontend provides extensive possibilities to view logs or to work with phonebooks. The assignment of a FaxWare queue to each of the three standard printer interfaces of a PC can also be carried out through the Frontend.

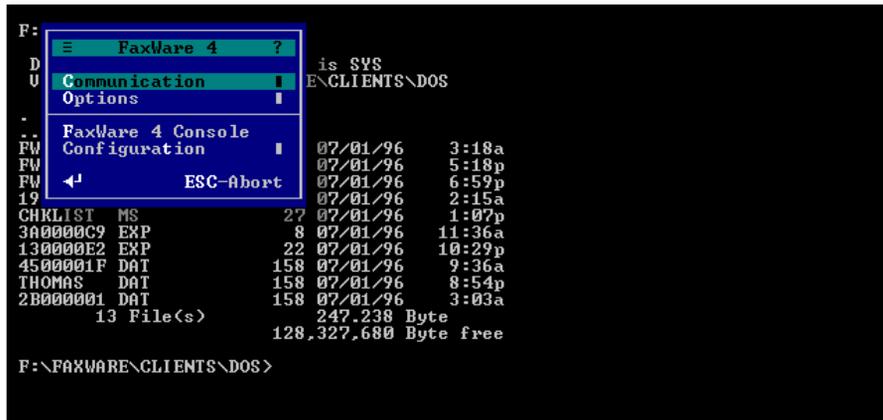
Activation

Activate the Frontend (FWDOS.EXE) as described in the chapter »Installation«. By pressing the `F1` key, you can obtain, at any time a list showing which keys have which functions.

Send log

The send log contains the entries on the respective users, groups and who they belong to. This can be read from the entire Service Layer log, for every user. The following key combinations are available:

- ◆ `ENTER`
Opens the pulldown menus. Under other menus, further information can be accessed.
- ◆ `DEL`
Deletes the chosen fax from the user's log. This has no effect on the server logs.
- ◆ `ALT+P`
Adjusts the parameters for the log. Note: When the user does not have console authority, (see »Service Layer: User configuration«) the menu item »Entries of all users« fail.
- ◆ `F10`
Resends a fax to the same number from the phonebook.
- ◆ `F2`
Prints the fax through the defined printer filter.
- ◆ `F4`
Displays the fax. A viewer is automatically loaded. By pressing the key `F1`, a help viewer appears.
- ◆ `CTRL+ENTER`
Resends the fax to the same number or a different number.



Receive log

Except one parameter, all parameters correspond to those of the send log.

◆ Routing

This function is used to route received faxes to users or groups in the network. It will only be available if the user has the right to distribute faxes (see user configuration of the Service Layer). Please enter the fax recipient in the menu window. If you select the option »Automatic in Future«, an entry will be made in the distribution list of the Service Layer and all further faxes from this distant station will be routed to the recipient entered.

Simple fax

Editor for creating faxes. Masks can be constructed, which can be accessed by the user at any time.

The job log

As soon as a fax job has been converted by the Service Layer, it will be displayed in the user's job log. A fax job can have the following status.

◆ »Waiting«

The job has not yet been transmitted to the Transport Layer. If the job is not carried out, please check if the Transport Layer Driver (TLD.NLM) is loaded on the server.

◆ »Being Processed«

The Transport Layer is processing the job.

Simple fax editor



- ◆ »User hold«
The user has put the fax job on hold or has transmitted the job by using the command @@USERHOLD. Therefore, the job must be manually released.
- ◆ »Scheduled«
A time for the transmission of a fax job has been set by using the command @@SCHEDULE. The job will be automatically dispatched at the defined time.
- ◆ »Optimized«
By using the command @@DELIVERY, it has been defined that the job will be dispatched when the transmission costs are low.
- ◆ »Collection«
The inserted fax number is in the FaxWare collection list on the Service Layer. The job will be dispatched at the time stated.

Phonebook

Used to select the respective additional phonebooks.

Queue Redirection

The print output is diverted through the local interfaces, to a FaxWare queue. Works similarly to the NetWare command CAPTURE.

FaxWare 4 Console

Provides direct access to the FAXWARE.NLM on the file server, similar to the remote console. This menu item is only accessible, when the user has console authorization (see Service Layer: user configuration).

Faxing with Windows clients

Under Windows, it is possible to fax from almost every application. The unique printer driver concept of Windows makes this possible.

Basics

The FaxWare SETUP program installs its own printer driver in the Windows environment. When a document is faxed this printer driver is selected. The printer driver changes each page to a PCX file. This is saved directly in the directory SYS:\FAXWARE\OUT\API with an optional file name, and with the page number extension.

The PCX file for the 3rd page carries the extension, *.003. Commands are filtered from the existing document during the printing process, and, do not appear on the dispatched fax.

In the meantime, these commands are saved in a temporary job file. This file has the same name as the inserted PCX files, however, with the extension *.JOB, and is stored in the directory SYS:\FAXWARE\OUT\API.

*FaxWare
commands*

After the FaxWare printer driver has converted all pages of the print job, it starts the Windows interface automatically. Here, the user can now input from the menu parameters, for the current job. The input or selection of one or several numbers is absolutely necessary. Every selected number creates in the job file, a command @@NUMBERLIST fax number@@. For this reason, the current job can be correctly and simply sent to hundreds of numbers from the interface.

All menu driven selected options are changed, from the interface, with the selected commands, that are saved in the job file. As soon as the fax has been released for dispatch, the Windows interface copies the job file into another file of the same name, without the extension. The Service Layer then scans the API directory in cycles for files without extensions, and then the conversion begins.

Fax conversion procedures

The conversion in the Service Layer is divided into two different sections:

1. Conversion to PGA

The page array (PGA) is a bitmap with the measurements of 1,728 * 2,286 pixels for DIN A4. The length varies however, between the different defined page formats. This bitmap is not stored in the memory, but on a hard disk in the directory SYS:\FAXWARE\CODE\TEMP.

With DIN A4, it can be 493,560 bytes maximum. For every converted page of the fax job, a particular PGA file is given, with the extension *.PGA. The amount of bytes in the inserted job file can now be read. If the Service Layer finds an ASCII character that is not defined as a command identifier (standard:@@), the conversion will be executed with the actual page code.

The ASCII character is now filled onto the current page position. It is irrelevant, whether something else was placed on this position beforehand. Every pixel of the character set for the active FaxWare font is also set on this bitmap. If the Service Layer finds a character that is defined as a command identifier, and the now complete command including parameters can be read. Take for example the conversion command.

The current page position of the graphic file can be combined together pixelwise, with the page array. This technique allows you to very simply put more layers over one another. For example, an ASCII text can be combined together easily with a form text. This technique is comparable with an overhead projector. Several different sheets can be layered over one another, but when projected together, it gives one complete picture.

Conversion to G3

After all pages of the fax job have been changed into PGA format, the conversion process begins. Here from the created PGA bitmap, the corresponding Modified Huffman file (MH) is produced. With this process, the fax header is also placed. The header can only be inserted during conversion to G3 format, as only then will the number of pages and the data to be inserted in the individual header fields be known. The G3 files are placed directly in the directory SYS:\FAXWARE\OUT\IMG.

Fax file

Faxing with the Windows Frontend

Please configure the Windows Frontend on the client as described in the chapter »Installation«. Activate it by double-clicking. In the Frontend you will find many functions and buttons which we have described below. You can use the Windows help (F1 key) at any time to obtain further information and support.

Windows 95

NOTE: The following text applies to the Frontend operation under Windows 3.1 (or 3.11) as well as under Windows 95!

In the individual logs the information about the entries is displayed in several columns. You can change the column order by using your mouse.

Changing the list

If you wish to change the positions of the individual fields, please use the left mouse key and click on the title bar of the corresponding column. Now you can vary the width and place the field to a new position by dragging down the name and inserting it at a new position.

If you click on a column name with the right mouse key, you will obtain a menu which can be used to change or to reset the tab position.

If you wish to save the settings, please select the button »Store Window Positions« in the menu item »Settings«.

The send log

The send log includes all entries of the group, which the user belongs to. It can be read from the log on the server.

Show Fax

Starts the fax viewer and permits viewing of the selected fax.

Print Fax

Prints out the selected fax. A list appears of all configured printer filters.

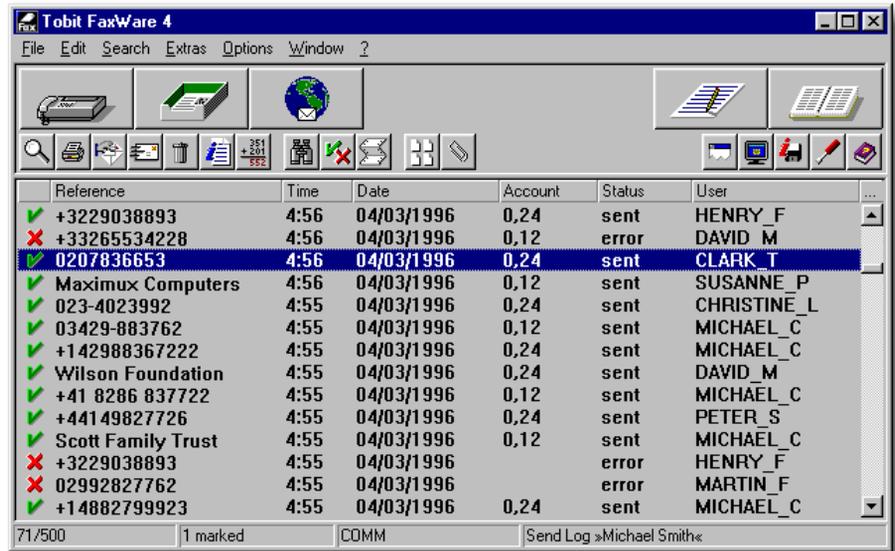
Manual routing

The user can distribute faxes to a group or to another specific user. It then becomes an entry in the Service Layer distribution list, so that faxes with these CSIDs will always be distributed to the other users or groups.

Note: If the user does not have authorization, (see »Service Layer: User configuration«) then the error message »You do not have authorization« will appear.

Resend Fax

Resends the selected fax to one or more numbers.



The screenshot shows the Tobit FaxWare 4 application window. The title bar reads 'Tobit FaxWare 4'. The menu bar includes 'File', 'Edit', 'Search', 'Extras', 'Options', and 'Window'. Below the menu bar is a toolbar with various icons for fax operations. The main area is a table with the following columns: Reference, Time, Date, Account, Status, and User. The table contains 15 rows of data, with the row for reference '0207836653' selected. The status bar at the bottom shows '71/500', '1 marked', 'COMM', and 'Send Log »Michael Smith«'.

Reference	Time	Date	Account	Status	User
✓ +3229038893	4:56	04/03/1996	0,24	sent	HENRY_F
✗ +33265534228	4:56	04/03/1996	0,12	error	DAVID_M
✓ 0207836653	4:56	04/03/1996	0,24	sent	CLARK_T
✓ Maximux Computers	4:56	04/03/1996	0,12	sent	SUSANNE_P
✓ 023-4023992	4:55	04/03/1996	0,24	sent	CHRISTINE_L
✓ 03429-883762	4:55	04/03/1996	0,12	sent	MICHAEL_C
✓ +142988367222	4:55	04/03/1996	0,24	sent	MICHAEL_C
✓ Wilson Foundation	4:55	04/03/1996	0,24	sent	DAVID_M
✓ +41 8286 837722	4:55	04/03/1996	0,12	sent	MICHAEL_C
✓ +441 49827726	4:55	04/03/1996	0,24	sent	PETER_S
✓ Scott Family Trust	4:55	04/03/1996	0,12	sent	MICHAEL_C
✗ +3229038893	4:55	04/03/1996		error	HENRY_F
✗ 02992827762	4:55	04/03/1996		error	MARTIN_F
✓ +14882799923	4:55	04/03/1996	0,24	sent	MICHAEL_C

Delete entries

Deletes the chosen fax from the log.

Note: The entry will be deleted from the log of all users. It will not be deleted from the main log on the server.

Additional Information

Selects further information on the chosen entry.

Log Parameters

Special parameters can be specified referring to the display of the individual log entries.

- ◆ Incorrect Entries
Defective attempts as well as correct attempts are included in the list.
- ◆ Correct Entries
Only correct attempts are included in the list.
- ◆ Conclusion Status Only
Only the status of the last attempt is included in the list. Note: »Either Incorrect entries« or »Correct entries« must be selected.
- ◆ Include Deleted Entries
Entries which have been deleted in the interface log, but not the Service Layer log, can be re-entered in the list.

- ◆ Entries of all users
Entries of all users are included in the list, and also those of the groups which the user does not belong to. When the user does not have console authorization, (see Service Layer: User configuration) this point is inverted.

Data Export

Data export

Copies selected entries in a file permitting further work on them.

Search

Entries containing the specified criteria are searched in the log. To use this feature, state the entry that you are looking for and select the fields in which the search is to be carried out.

Show Thumbnails

Using this option, you can see all faxes quickly in a glance. A window is opened in which all faxes are displayed in reduced size. This feature allows you to quickly find certain faxes in the respective log.

The receive log

The receive log includes all entries from the group to which the user belongs. This can be read from the receive log on the server. The receive log differs from the send log in a number of ways.

Additional information

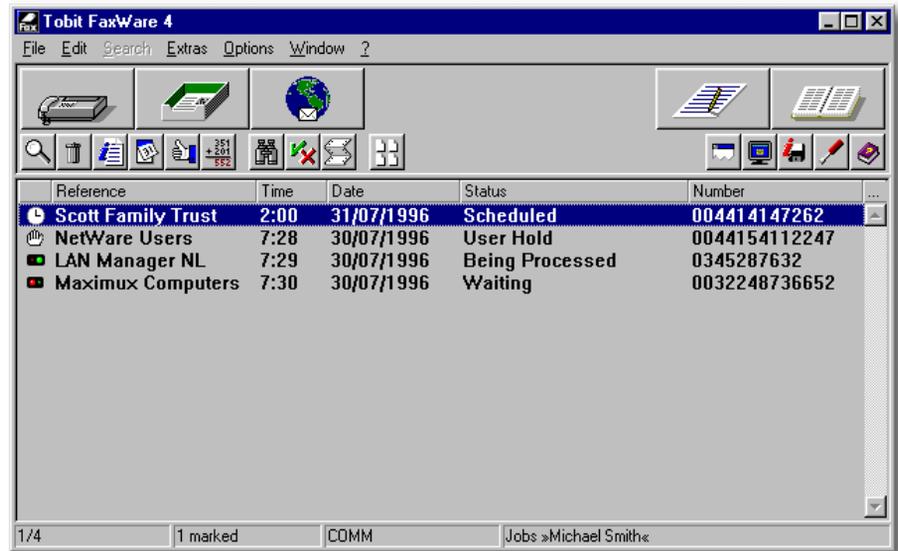
When starting to fax with BinFax files (see chapter »Appendix«), before entry in the log, a disk symbol is displayed. When selecting »Further entry info«, by pressing the switch »Files«, the files will be copied (»Copy«) or displayed (»Display«) in the clipboard or directory.

Job log

The job log contains the jobs which are incomplete.

- ◆ Waiting
The job has not yet been given to the Transport Layer.
- ◆ Being Processed
The job is being processed from the Transport Layer.
- ◆ User hold
The job is on hold.

The only differences between the job log and the send log are the following points:



Delete Entries

A job which has been sent from the user to the FaxWare, can still be deleted. However, this must be done before it is passed to the Transport Layer.

Change this Entries Wait-Status

A job which has been sent by a user to the FaxWare can be stopped and sent at a later point in time. This must be done before it is passed to the Transport Layer. Through selection of another of the menu items, the job can be released.

Simple fax

The Windows interface has its own editor, so additional wordprocessing software is not absolutely necessary. The following operations can be performed:

ClearPage

The text in the editor will be deleted.

Command List

Starts the Windows interface help text.

Schedule

The date and time of transmission can be set.

Coverpages

Should a coverage be included, it should be defined in the directory SYS:\FAXWARE\RESOURCE\COVER and must have the extension *.CVP.

Broadcast

The fax is sent from a number list. This list should be found in the directory SYS:\FAXWARE\RESOURCE\DATA and have the extension *.BCA. Please refer to the notes for the command @@BROADCAST.

Add Appendix

Should an appendage be included, it must be defined in the FAXWARE.APD and be included in the directory SYS:\FAXWARE\RESOURCE\APPEND. Please refer to the notes for the command @@APPEND.

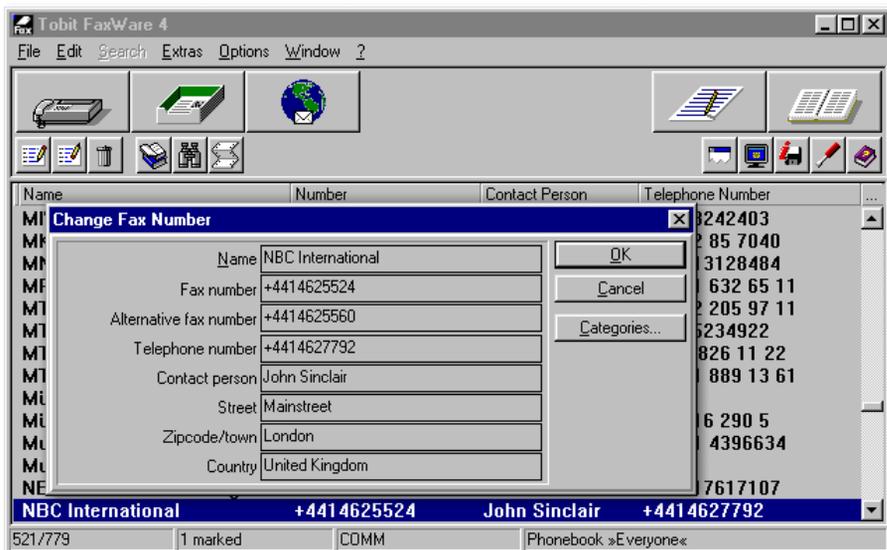
Attach File

A file will be included as a BinFax file. Please refer to the notes in »Reference: Commands and Functions«.

Attach Clipboard as File

The contents of the clipboard will be included as a BinFax file appendix. Please refer to the notes in the »Appendix: BinFax«.

The phonebooks



The phonebooks

Add an Entry

A new entry can be included in the selected phonebook.

Change an Entry

The selected entries can be changed.

Delete Entries

The selected entries can be deleted.

Phonebook Groups

The groups and individual phonebooks can be displayed.

Data Export

The entries in the active phonebooks are copied to a file.

System Icons

Minimize Window

The Windows interface window is minimized. The window can be enlarged again by using the switch »Maximize« in the pulldown menu.

FaxWare 4 Console

A more direct access to the FaxWare on the file server, similar to the REMOTE console. This menu item is only accessible when the user has console authorization (see Service Layer: User configuration).

Version Info

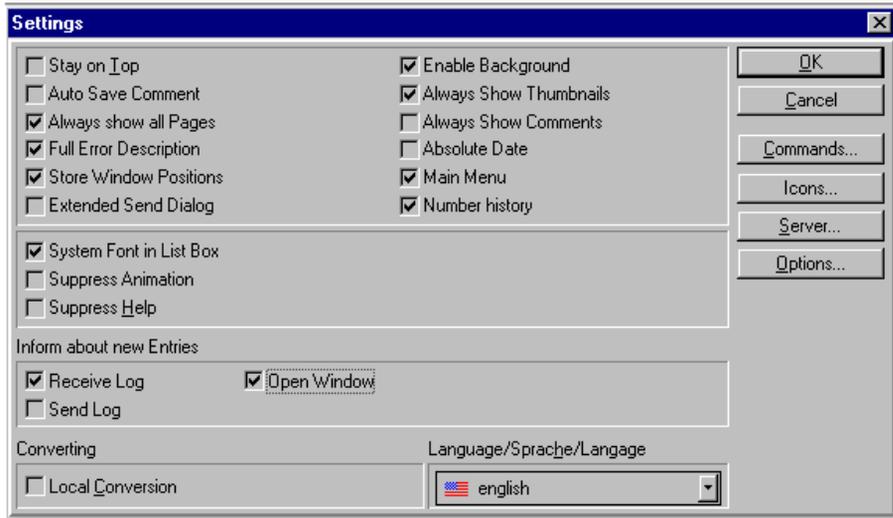
Information about the Windows interface.

Settings

Configuring the Windows interface.

- ◆ Stay on Top
Compels the Windows interface to remain in the foreground even when other applications are started.
- ◆ Suppress animation
The animations (i.e with the send log) can be suppressed.
- ◆ Suppress help
The colored background text can be suppressed.

Settings for the interface



- ◆ **Enable background**
While changing the logs, the first entries are shown, while the rest will be read later.
- ◆ **Local conversion**
To reduce the file server load, the conversion of fax jobs can be done locally. Note: When converting locally, the conversion commands of FaxWare (i.e. @@SIGNATURE, @@GRAPHIC, @@FORM,...) cannot be used.
- ◆ **Commands**
The user can set standard commands, which are valid for every job. This command is entered under the section FaxWare in TOBIT.INI.
- ◆ **Smart icons**
Single icons for the FaxWare interface can be activated or deactivated.
- ◆ **Server**
Here, the FaxWare server can be changed, when several are found in the network. This is carried out through an entry under section [FWWIN] in the TOBIT.INI (SERVER =server name).

Quit

Permits the operator to exit the interface program.

Summary of commands

Starts the Windows interface help text.

FaxWare viewer

The FaxWare viewer (FWVIEW.EXE) lets you individually view faxes and provides a number of other features as well. The viewer directly supports the Modified Huffman Format (MH) in which the fax files are stored on the FaxWare server. Using this tool, you can load and view fax files very quickly.

OLE support

The viewer operates as an OLE client and can facilitate the integration of faxes into other applications. FWVIEW.EXE supports OLE 2.0.

If you start the viewer by selecting a log entry, the range of functions appears on the menu along the top of the screen.

- ◆ File/Save As
Lets you save the displayed fax in a fax format or in a bitmap format (BMP).
- ◆ File/Comment
Facilitates the creation of a comment associated with a particular fax. You can search for this text in the logs. If an OCR server is used, the ASCII text of a fax can also be saved as a file attachment.
- ◆ File/Send Fax/Print
Lets you directly resend a fax or print it out on the selected printer.
- ◆ Edit/Layer
Activates or deactivates the editor utility. You can insert your own text or a graphic as part of the contents of a fax and then resend it, print it, or save it.
- ◆ Settings
Lets you select the displayed icons.

Faxing with the CAS emulator

Basics

The DCA/Intel Communication Applications Specification (CAS) is a defined software interface for the connection of co-processor FAX boards. It is supported by several prominent manufacturers with their newer product versions (Starwriter, Wordperfect etc.). Primarily, CAS is intended for operation in a single user environment. With the CAS emulator, you can use the fax potential offered by your new software, if supported by CAS, and also use the connection to FaxWare under the NetWare environment. The advantage is clear. No special CAS hardware is required, and you can use your software to its fullest potential.

Operation

The CAS emulator is a resident background program. It works on every CAS call and to the user appears no difference from the original. All incoming faxes are set in FaxWare format and are sent to the FaxWare server. It supports all the CAS interface features, from delayed sending to the inserting of PCX graphics. The emulator also gives all information about the current status of dispatch or incoming faxes to the user.

Disabling functions

To guarantee smooth operation between the CAS software and FaxWare, some CAS functions must be blocked. This has no effect on the efficiency of the CAS emulator.

Installation

During the FaxWare installation the CAS emulator files will have been copied into the directory SYS:\FAXWARE\UTIL\DOS\CAS. Therefore, a special installation is not necessary.

Configuration

There is a main directory with several subdirectories on the local disk for the installation. The name of the main directory can be chosen freely, in contrast to the subdirectory. In the following, we will call the main directory FAX.

This should be the structure:

- ◆ \FAX
- ◆ \FAX\QUEUE
- ◆ \FAX\CONTROL

After this, the files CASEM.EXE, DEFAULT.PB and CASEM.CFG must be copied to the main directory. Now the file CASEM.CFG must be adapted to your personal environment by means of a text editor.

The file has the following format:

- ◆ Name of the fax server.
- ◆ Name of the CAS phonebooks (default: DEFAULT.PB).
- ◆ Name of the senders
- ◆ Fax number
- ◆ Station identifier (default: xx[two digits])
- ◆ Number of FileFax Services (default: 2 [1..9])

A different identifier should be selected for every station. The number of the FileFax Service is valid in the selection of a number of other services. Please refer to the following point, »Server settings«. The CAS emulator is now configured and ready for action.

Server settings

Pay attention to the fact that the FileFax Services have been activated. The path entry must begin with SYS: (for example, SYS:\FAXWARE\OUT\CAS\) and should have no extension.

The status files should also be activated. These are deleted automatically by the CAS emulator.

Call up the program

In the CAS main directory (e.g. FAX), the file CASEM.EXE can be found.

Insert the following:

```
CASEM
```

Deinstallation:

```
CASEM /U
```

Operational notes

To save space on the hard disk, it is advisable to periodically delete all entries in the CAS queues. Your CAS software should offer this function. If not, you can perform the following procedure:

- ◆ Remove CASEM from the memory.
- ◆ Remove all entries in the directory \QUEUE and \CONTROL.
- ◆ Restart CASEM.

Software already tested

The efficiency of the emulators have been tested with the following software:

- ◆ StarWriter 7.0
- ◆ WordPerfect 6.0 (DOS version)

Under WordPerfect, please note that in addition to CASEM, the driver INTEL-FAX.COM must be loaded. It is now possible to dispatch a text processed fax via FaxWare.

Faxing with a PCL Conversion Server

Basics

The PCL Conversion Server extends the possibilities of FaxWare by converting data just like a HP laser printer. Therefore, files from any application program which have been created specially to be printed out on a HP laser printer can be sent directly to FaxWare.

Compatibility

The PCL Conversion is practically 100 % compatible with the HP PCL (Printer Command Language) version 5e. Apart from some hardware-specific things (e.g. change of trays) no other restrictions are known. Due to this functionality the PCL Conversion Server can be addressed exactly like a HP LaserJet. As standard, the PCL Conversion Server contains freely scalable fonts, which are also available in a HP LaserJet. If you wish to use downloadable fonts for the HP LaserJet, these commands will also be recognized by the PCL Conversion Server.

Operation

Generally, the FaxWare Service Layer receives a fax job through the FileFax or Queue Services. The conversion function integrated in the NLM will convert this job into a format which can be transmitted through the fax hardware.

The integrated FaxWare conversion function provides a whole lot of special features, such as:

The PCL Conversion Server



- ◆ Use of FaxWare fonts or fonts which you have created yourself
- ◆ Special fonts like italics or bold type
- ◆ Automatic form handling
- ◆ Integration of PCX and BMP graphics
- ◆ Insertion of signatures
- ◆ Margin regulations

Without PCL

Because of the system, this conversion function does not create a compatibility with existing »standards«. The Service Layer only recognizes the widespread »ESC/P« standard codes and processes them if possible. However, FaxWare also supports external converters which avoid the use of the conversion function integrated in the Service Layer. If a data format which does not correspond to the standard (e.g. PCL 5e) is given in the configuration of the FileFax or Queue Services, the Service Layer will pass this conversion job on to an external converter.

Method of operating

The PCL Conversion Server is such a converter. It is available as a.nlm and can therefore be used to reduce the client charge on a NetWare file server on which FaxWare is also installed. Consequently, the PCL Conversion Server is able to interpret almost all FaxWare commands.

When jobs are sent to the PCL Conversion Server, it filters out all FaxWare commands it knows and then converts the PCL document into a PCX file. Via the API Services they are afterwards given to the FaxWare Service Layer. The Service Layer will carry out the job according to the known rules and convert the document into the T.4 format.

Installation

The PCL Conversion Server is configured in a FaxWare subdirectory (SYS:\FAXWARE\CONVERT\PCL). In the other subdirectories fonts can for example be saved. The files must in all cases be in these directories and must not be changed or deleted, as otherwise a correct operation of the PCL Conversion Server cannot be guaranteed.

It is not necessary to specially configure the PCL Conversion Server. All necessary modifications of the FaxWare configuration are described in the following paragraph.

FaxWare configuration

If you want all FaxWare users to have access to the services of the PCL Conversion Server, you should make the following entries in the FaxWare Service Layer on the server console.

PCL data format

If a defined FaxWare queue or a defined FileFax directory is to be processed according to the PCL conventions, a special configuration in the FaxWare Service Layer has to be carried out.

- ◆ Go to the menu »Configuration/Services«
- ◆ Select an existing entry in the menu »Queue Services« or/and »FileFax Services« or add a new entry by pressing the `INS` key.
- ◆ Change the setting in the »Data format« field from »Standard« to »PCL 5e«. Now the Service Layer will automatically pass on the files created via this service to the PCL Conversion Server. After this, faxes can be dispatched with any PCL compatible printer driver.

IMPORTANT! Please note that the PCL Conversion Server must be running in all cases, so that the conversion can be carried out.

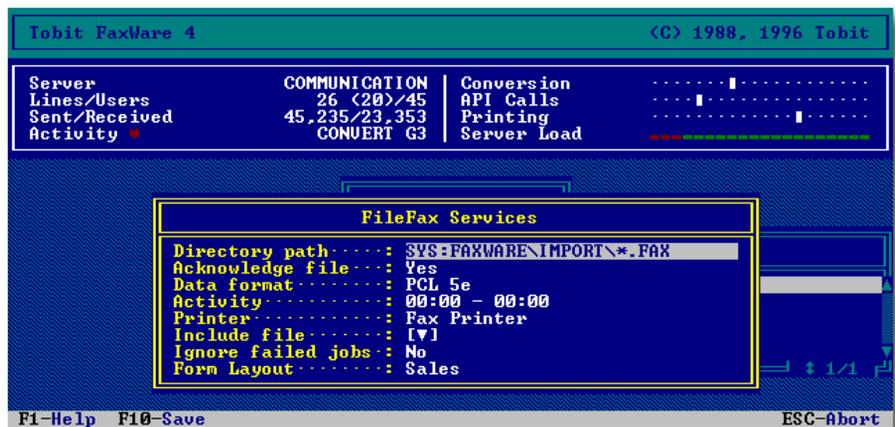
Starting the PCL Conversion Server

The PCL Conversion Server is loaded as a.nlm on the FaxWare server. To start the PCL.nlm you have to enter only one command. Please type in the following on the server console.

PCL

The NCF file of the same name in the system directory will start the loading procedure.

Configuring the fax services



Faxing with the PCL Conversion Server

If all above-mentioned configurations have been carried out successfully, the PCL Conversion Server will be ready for operation. All authorized users can dispatch faxes through the PCL Conversion Server. These are not only the users of DOS and Windows applications but also users of OS/2, Macintosh or UNIX systems.

PCL printer driver

You just have to use the PCL printer driver to print the document to be faxed to the preconfigured service, i.e. either to a print queue with the data format PCL 5e or to a file which is carried out through the FileFax services. The conditions for a PCL Conversion Server being ready for operation are the use of a printer driver for a HP LaserJet and authorization to use the Queue Services or FileFax Services. The installed PCL printer driver must be at least a HP LaserJet II printer driver.

The PCL Conversion Server prepares the documents »printed« in this way for transmission via FaxWare. When the PCL Conversion Server has converted the print file into a PCX file it passes it on to FaxWare for dispatch. Then this PCX file and the corresponding job file which contains all FaxWare commands filtered out will be transmitted to FaxWare via the API Services. There the common FaxWare commands will be evaluated.

Commands

You can use all functions which do not affect the page length. All commands used to address a fax document are recognized. The same applies to almost all job functions and most graphic commands.

The job commands @@NUMBER or @@FORM for example work correctly. The command @@GRAPHIC is also recognized and processed correctly. In contrast, the command @@INSERT does not work, as it affects the page length of a fax.

Graphic commands which can be used:

- ◆ @@GRAPHIC
- ◆ @@SIGNATURE
- ◆ @@FORM
- ◆ @@GOTO

After conversion the faxes created through the PCL Conversion Server can be viewed in the Frontends as usual.

Unloading the PCL Conversion Server

You can unload the PCL Conversion Server while the system is running. If a conversion job is being processed, it will not be lost but it will be carried out again when the PCL Conversion server will be loaded the next time. Unloading does not affect the operation of FaxWare or of the NetWare server. If the PCL Conversion Server is not loaded, the conversion jobs will be buffered until the PCL Conversion Server will be loaded again. You should unload the PCL Conversion Server through the menu item »Unload PCL« on the server console.

Tips & tricks

With the PCL Conversion Server also OS/2 and MAC users will be able to use FaxWare in their networks. Even extensive fax merge functions will be available.

Microsoft Windows

If you use Windows and a »HP LaserJet 4« driver, you should note the following.

- ◆ GRID should be set as a graphic mode, the default entry should be HP-GL/2.
- ◆ The printer resolution has to be set to 300 dpi. The default entry should be 600 dpi. If 600 dpi are set, TrueType fonts like FUTURA etc. will not be converted correctly.
- ◆ The entry »Print True Type as Graphic« has to be deactivated.

Microsoft Word 5 (DOS)

If Word 5.x is used as an application, the entry »Print Queue« in the printer configuration under MS-Word 5.x should be active, so that the fax merge function can be used.

SERVICES

If the command @@FORM is used in a document, the forms entered under the Queue or FileFax Services will not be used but instead those forms defined in the API Services. The reason for this is that after converting a job, the PCL Conversion Server gives this job back to FaxWare via the API Services. Only then the forms will be laid over the converted fax as further layers and be »released« for dispatch.

Technical notes

The PCL commands used for HP laser printers do not transmit a document to the printer but they send a chain of commands in the form of PCL commands which are used to direct printers.

This »page description language« works with a lot of different predefined characters. These characters are transmitted to the printer as Escape sequences. One example is the command »ESC &I#H« which states the paper source. It would also be possible that the character string @@ is used in one of these commands. This would provoke a conflict with the FaxWare command ID.

Problems

The PCL Conversion Server filters out all FaxWare commands in a document which it recognizes. The character string »@@« is placed in front of and behind these commands. This means that all PCL commands containing such a character string are not evaluated as PCL commands. There is a slight incompatibility of the PCL Conversion Server with the PCL command string. However, this incompatibility is very low, as such commands are not used as far as we know.

Using FaxWare with other operating systems

When you install other client operating systems that are supported by FaxWare, you can then use the services offered by FaxWare.

Other client operation systems supported by FaxWare are:

- ◆ IBM OS/2 2.x
- ◆ Microsoft Windows NT
- ◆ Apple Finder (Macintosh)
- ◆ NeXT Corp. NextStep / NextStep
- ◆ SUN Solaris
- ◆ NOVELL UnixWare

Please note that in the case of almost all of the above-mentioned operating systems the PC-8 font is not used, but the OEM font or another font instead. You should create a character set using the FaxWare Font Editor, which includes the correct codes. Refer to the special section in the »Appendix«.

Ask your supplier about optional interfaces available for your operating system. Interfaces are currently being developed for several other operating systems.

The print server for Windows

Generally, received faxes and log printouts of dispatched faxes are printed out via NetWare print queues. The corresponding settings are directly made on the server in the FAXWARE.NLM.

Functioning

In some cases it may be reasonable to print the fax files via a local workstation printer. The »Windows print server« (FWPRINT.EXE) is used for this purpose. It runs under MS-Windows and is able to print out faxes on any printer. This can for example be a wire printer and does not have to correspond to the print defaults from FAXWARE.NLM.

Installation

FWPRINT is in the directory SYS:\FAXWARE\UTIL\WINDOWS\FWPRINT. Please copy the file into your Windows directory. Go to the menu item »File\New« in the Windows Program Manager. FWPRINT.EXE will be configured in the selected group.

First of all, an individual log has to be created into which the log entries of FaxWare are copied. Then, the print server can print out the selected faxes.

FAXWARE.INI

For this purpose you should edit the file FAXWARE.INI with a text editor. This file is in the directory SYS:\FAXWARE\CODE. Please add the entry DUPLICATE=FWPRINT.LOG. You should now start the FaxWare Service Layer again, so that the changes in FAXWARE.INI become active. Optionally, you can directly go from the FAXWARE NLM to FAXWARE.INI by using the key combination `ALT+I`. In this case, you do not have to start the Service Layer again after making modifications.

Configuration

Start the program FWPRINT.EXE under Windows by clicking two times on the program icon. Go to the menu item »Settings« and make the necessary configuration.

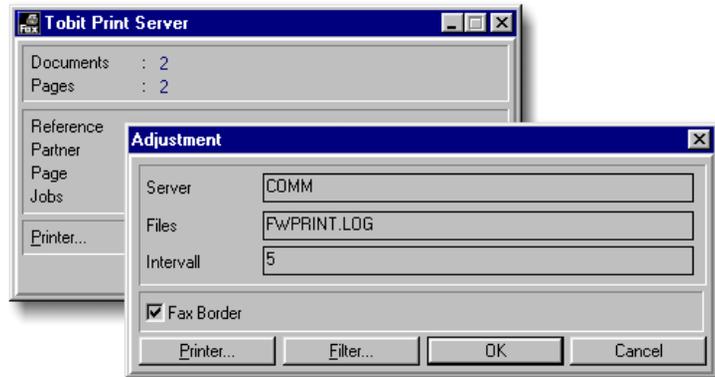
◆ Server

Please state the server on which FaxWare is installed. If you have several FaxWare servers in your network, you can list the individual server names separated by a comma.

◆ Files

Please state here the file which should be scanned for print jobs. Normally, it is the file FWPRINT.LOG which you have also entered in the text file FAXWARE.INI. If you just give the file name, the print server will look for this file in the directory SYS:\FAXWARE\CODE.

*The print server
for Windows*



However, if the file is in another directory, you can also state the path and the file name. If a server volume is given, the print server will automatically put the names of the NetWare servers listed under »Server« in front of the entry. Consequently, all servers will be scanned for new jobs.

Search interval

Please determine the search interval, i.e. after how many seconds the log should be scanned for new entries.

Printer

Please select the printer on which you want the fax files to be printed out.

Options

Please state in this menu item according to which statuses you wish to select the log entries.

Operation

In order to print out the log entries via the Windows print server, FWPRINT.EXE has to be loaded on a Windows client. Due to the entry in FAXWARE.INI (DUPLOG=FWPRINT.LOG) FaxWare will create a log file for the Windows print server if there are any changes in the send or receive log. As soon as FWPRINT is loaded, all entries in the LOG file (FWPRINT.LOG) are carried out and printed out on the configured printer. After completion the LOG file will be deleted.

Formatted printing from the FaxWare logs

FaxWare includes a utility that makes it easy to examine the send logs, receive logs, and the jobs logs of the FaxWare server. This information is arranged individually and can be managed in a number of ways:

- ◆ Onscreen output, by a printer or in a file.
- ◆ Charge registration per user and per line.
- ◆ Selection of all untransmitted faxes and renewed sending.
- ◆ Forwarding of received faxes.
- ◆ Selection according to certain error reports (e.g. busy)

The selection is made possible by the REPORTER.EXE, which was copied into the SYS:\FAXWARE\UTIL\DOS\REPORTER directory during the installation. Additionally, there are some files (*.INI) included in order to demonstrate various evaluation possibilities.

In the following, various sections and parameters of a *.INI file are explained. If certain parameters should not be considered, you can mark them with a semicolon (such as: ;ERRORNR=0 - 100). Marked parameters will not be considered in the evaluation.

Calling up the program:

```
REPORTER filename
```

The Parameter »filename« defines the INI file with evaluation settings. The following settings are possible:

Issue the comment before starting the program

SECTION	[COMMENT]
EFFECT	The text under this section is displayed on the screen before starting the program.
EXAMPLE	Output of a list of the faxes

Defining the fax header

SECTION	[HEAD]
EFFECT	The fax header can be arranged.
EXAMPLE	Reference: Number: Date:

Selecting the data fields

SECTION

[BODY]

EFFECT

Displays the contents of the data fields. You may chose one of the following data fields:

#REF	or	#1	Reference or fax name
#NUM	or	#2	Number selected
#RES	or	#3	Distant station reply
#USR	or	#4	User
#TIM	or	#5	Time to begin transmission
#DAT	or	#6	Date to begin transmission
#PAG	or	#7	Number of fax pages
#SPD	or	#8	Transmission speed
#LIN	or	#9	Line for transmission
#DUR	or	#10	Time taken to transmit
#UNI	or	#11	Number of unit for transm.
#CHA	or	#12	Cost of transmission
#TRY	or	#13	Number of attempts
#ENR	or	#14	Error number
#ETX	or	#15	Error in clear text
#STA	or	#16	Status
#ADA	or	#17	Actual date
#ATI	or	#18	Actual time
#APA	or	#19	Actual page number
#LOG	or	#20	Name of the logs
#SFN	or	#21	Name of the source file
#FFN	or	#22	Name of the converted file
#ALL	or	#23	Number of all log entries
#PRT	or	#24	Number of printed entries
#SCH	or	#25	Sum of entire costs

EXAMPLES

#REF	#NUM	#DAT
Miller Corp.	+4427736299	01.12.95

The maximum number of characters in a field depends on the field name and any following spaces between the field name and another character (e.g. a vertical bar (|)). In the example, the contents of the REFERENCE field are limited to 10 digits. (#REF + 6 spaces).

#REF#	#DAT	#NUM
Miller Corp.	15.12.95	+4427736299

The pound sign (#) character set after a field name indicates that the entire field contents up to another character should be shown. If following fields are overwritten, then they are shifted accordingly.

#CHA####	#NUM
(1.15)	+4427736299

Numerical field contents can be arranged on the right margin. To do this, the # character is added several times to the field name until the right margin is reached. In the example, the field COST OF TRANSMISSION (#CHA) is set on the right margin, beginning with the last digit.

Defining the bottom line

SECTION

[TAIL]

EFFECT

The bottom line can be arranged.

EXAMPLE

Number of faxes:	#PRT####
Charges:	#SCH##### \$

Defining the output device

COMMAND

DEVICE

PARAMETER

file name/screen/printer

EFFECT

Specifies the output device for the selection.

EXAMPLES

DEVICE=CON
DEVICE=SELECT.FAX

Control sequence for starting printout

COMMAND **PRINTSTART**
NOTE Only effective when printing.
EXAMPLE `PRINTSTART=\27\64`

Control sequence for ending printout

COMMAND **PRINTSTOP**
NOTE Only effective when printing.
EXAMPLE `PRINTSTOP=\27\12`

Control sequence for page start

COMMAND **PAGESTART**
NOTE Only effective when printing.
EXAMPLE `PAGESTART=\27\64`

Control sequence for page end

COMMAND **PAGESTOP**
NOTE Only effective when printing.
EXAMPLE `PAGESTOP=\27`

Defining the page length

COMMAND **PAGELENGTH**
EFFECT Defines the page length in lines
NOTE Only effective when printing
EXAMPLE `PAGELENGTH=66`

Continuous screen output

COMMAND	CONTINUE
EFFECT	TRUE: At a page break, the output is scrolled.
PARAMETER	TRUE FALSE
NOTE	Only with screen output
EXAMPLE	<code>CONTINUE=TRUE</code>

Name of the FaxWare server

COMMAND	SERVER
DEFAULT	The server on which FaxWare runs, is automatically selected.
EFFECT	When there are several servers in the network, the desired server can be specified.
EXAMPLE	<code>SERVER=COMMUNICATION</code>

Type of log

COMMAND	LISTTYPE
EFFECT	Selects the log which should be evaluated (send log, receive log or jobs log).
PARAMETER	SND REC JOB
EXAMPLE	<code>LISTTYPE=SND</code>

Error reports language

COMMAND	LANGUAGE
DEFAULT	ENGLISH
EFFECT	Defines the language in which the error report should be displayed.
NOTE	The default language is English
EXAMPLE	<code>LANGUAGE=ENGLISH</code>

Charge calculation

COMMAND	SUMMARY
EFFECT	Calculates the total charges of the selected entries separately for the user and line.
EXAMPLE	<code>SUMMARY=TRUE</code>

Start inquiry

COMMAND	WAIT
EFFECT	Start inquiry before output. If no text is entered, no inquiry is carried out.
EXAMPLE	<code>WAIT=Do you want to start the output now?</code>

Selecting according to the entry status

COMMAND	STATUS
EFFECT	Only the entries corresponding to the specified status are selected.
PARAMETER	ALL RIGHT WRONG
EXAMPLE	<code>STATUS=RIGHT</code>

Selecting deleted entries

COMMAND	SHOWERASED
EFFECT	TRUE: Deleted entries are also selected.
PARAMETER	TRUE FALSE
EXAMPLE	<code>SHOWERASED=TRUE</code>

Start date of the selection

COMMAND	DATE
PARAMETER	YYMMDD (+) (-) (YYMMDD) (Yesterday) (Today)
EFFECT	Defines the start date of the selection.
EXAMPLES	<pre>DATE=960123 + DATE=960123 - 960125</pre>

Selection according to the number of errors

COMMAND	ERRORNMB
EFFECT	Only the entries corresponding to the specified number of errors are selected. It is also possible to enter an interval.
NOTE	See chapter »Appendix: Error messages of the TLD«
EXAMPLE	<pre>ERRORNMB=0-99</pre>

Selecting according to charges

COMMAND	CHARGE
EFFECT	Only the entries are selected relating to the specified charges.
EXAMPLE	<pre>CHARGE=0-3.00</pre>

Selection according to exchange lines

COMMAND	LINE
EFFECT	Only the entries which have been sent/received by the specified line are selected. It is also possible to enter an interval.
EXAMPLE	<pre>LINE=2-4</pre>

Selection according to the users

COMMAND	USER
EFFECT	Only the entries from the specified user are selected. You may also specify several users.
PARAMETER	* ALL Username [, Username]

EXAMPLES

```
USER=Frank
USER=Frank ,Tommy
USER=ALL
USER=*
```

Selection according to defined fax numbers

COMMAND	FAXNMB
EFFECT	You can select according to certain numbers from the log: in the send log, according to the number entered, and in the receive log, according to the CSID.

NOTE With this parameter, faxes received can be forwarded to a defined distant station.

EXAMPLES

```
FAXNMB=+44 561 413 3191
FAXNMB=+44 561 413 3941, +44 561 513 4552
FAXNMB=* (all entries)
```

Filtering using the final status

COMMAND	FINALSTATES
EFFECT	Only the final statuses of fax jobs will be selected, not all attempts which have possibly failed.
PARAMETER	TRUE/FALSE

EXAMPLE

```
FINALSTATES=TRUE
```

REFERENCE



Reference

By reading this reference, you will learn details about FaxWare. It is very important that you have already had a look at the FaxWare architecture and operation.

This chapter deals with the following topics.

Commands and functions

A list of all commands supported by the Service Layer.

Fine tuning for Windows clients

INI file for clients under Microsoft Windows.

Fine tuning on the Service Layer

Configuration file for fine tuning.

Fine tuning for fax modems

Modem-specific parameters in the TLD.INI.

Fine tuning for ISDN controllers

Parameters for ISDN boards.

File names and paths

Complete list of files used.

Commands and Functions

This section contains a list and description of all the FaxWare commands you can use in a fax document. Refer to Chapter »Operation« of this manual for information about how to use the commands.

When the term “command ID” appears in the documentation, it describes the character sequence that causes the Service Layer to switch to the command mode. The command ID always consists of two “at” symbols (@@). Whenever the Service Layer detects this command ID in a fax job, it tries to interpret the following characters as a command.

```
@@NUMBER +44 141 420 5661
To: Acme Software International
Dear Sir/Madam,
Please send us your new price list.

Best regards,
Edward Miller Corp.
```

The command ID (@@) shown in the following examples can be changed upon installation. You can enter an additional valid command ID, but you can also replace the standard default @@ character string with another one to identify command sequences. For additional details on this topic, refer to the section in this chapter titled, »Parameters of the FAXWARE.INI«.

Command categories

FaxWare currently uses more than 50 commands to carry out various operations. The following subsections examine the different categories of commands and provide a brief description of their basic functions.

1. Addressing

Every fax job must have a recipient. Fax transmission cannot be accomplished if no destination for the fax is given. You can directly enter a fax number, but the FaxWare also supports other ways to address a fax. For example, you can use the name of a recipient as the address. When you do so, the Service Layer attempts to locate the number that corresponds with the name in the phone-book. You can also indicate a list that contains several fax numbers or reference a file that contains fax numbers and supply either of these as the recipient address.

2. Job functions

Several rules apply to the transmission of a fax. These have either been determined by the FaxWare system configuration or depend on other environment settings. By using special commands, you can individually modify certain parameters for a fax job. The commands within this category determine such items as the data of a fax transmission, the number of redials when a busy line is encountered or if an error occurs, and the descriptions of particular fax jobs.

3. Layout

The FaxWare Service Layer recognizes a number of different commands that control the layout and physical page design of faxes. These commands control the appearance of each fax, the use of certain forms, graphics characteristics of faxes, and the insertion of signatures.

4. Fonts

This category is closely related to the layout category discussed in the previous subsection. Fonts have a strong effect on the overall appearance of a document. This category includes commands that determine the font style (such as bold, underlining, superscripting, and so on) and the designated typeface.

5. Special functions

The special functions included with FaxWare extend the range of capabilities for users who are already familiar with the basic functionality of FaxWare. They control the use of such functions as the use of INCLUDE files, the resolution selected for fax transmissions, and the selection of individual fax lines for specific users. The commands in this category can be used in standard faxes or those involving special functions.

6. Commands for Windows clients

These commands apply only to printer drivers used within the Microsoft Windows environment; they are not sent to the FaxWare Service Layer. They have no effect on fax jobs created under DOS.

Addressing fax jobs

There is only one thing which the FaxWare Service Layer cannot carry out through a default, the »addressing«. Therefore, you should inform FaxWare in every job to whom the fax is to be sent or what is to happen with it.

There are some commands used for fax addressing. One of the following instructions must be contained in a fax. Otherwise the Service Layer will register the error »no Number« for this fax job in the send log.

@@NUMBER

By means of this command you can insert an individual fax number. In most cases, this command is used since faxes are usually intended for one single recipient.

@@NAME

If you use the command @@NAME instead of the fax number to address a fax, the Service Layer will scan the number database and will dispatch your fax to the fax number saved.

@@NUMBERLIST

If a fax is to be dispatched to several recipients, you should use this command instead of the command @@NUMBER. The Service Layer will create a broadcast list with all fax numbers contained in your fax. Then it will create a broadcast job.

@@BROADCAST

By using this command, you can give the Service Layer the name of a text file which contains the recipients' fax numbers line by line. This type of addressing will be particularly practical if you wish to regularly send a fax message to a list of many recipients. With this command you can dispatch fax jobs to ten thousands of distant stations by simply pressing a key.

@@PRINT

The command @@PRINT addresses your fax to a special recipient, the printer. If this command is contained in a fax, the fax will not be dispatched but only printed on a printer. Therefore, it is suited for unexperienced users who wish to get a fax printout before dispatch.

Please note that this command is really only suited for »printing instead of faxing«. By using another command (@ @PROTOCOL, see category »Special functions«), you can request a copy of the document faxed.

The number structure

It is very easy to enter a fax number on a fax machine. The easy dialing method has definitely been one of the most important reasons for the success of facsimile. (It is as simple as making a call.)

If you wish to dispatch a fax to a number, you give the name and possibly the necessary area code as usual. If you want to send a fax to a foreign country, you also have to give the national code. From Europe you would for example use a number such as »001 408 8822 517«. Of course, you can do the same thing when you use FaxWare.

However, there are some reasons why you should save numbers in an »international format«. In this case you would enter »+1 408 8822 517« for the above-mentioned number. Numbers in the United Kingdom should be entered as »+44 181 974 1117«. If you enter numbers of distant stations based within your area, this will be a little more complicated. However, this method provides enormous advantages for the future safety of your data. It simplifies the exchange of databases with other users and facilitates the use of services, such as CallBack, the collection list or the black list.

Dialing pause

When you write telephone (and fax) numbers, you usually insert a blank character between the national code, the area code, the telephone number and perhaps the extension number. (It also occurs very often that the extension number is added after a »-«). In this way, it is more simple to read the numbers and to keep them in mind.

In some countries however it may be necessary for technical reasons to insert »reading pauses«. If a number is dialed too quickly in some countries, the telephone exchange computer may miss some figures. In the case of old telephone systems, this problem is also well-known. It is often necessary to make a pause after dialing the number for an exchange line.

To ensure that FaxWare will make corresponding pauses between the individual figures or figure groups during the dial procedure, you can insert a comma (»,«) in the number. Every comma causes a pause of approx. 1 second. However, the exact pause for a comma depends on the respective hardware.

If you use fax modems, it will in most cases be possible to change this pause period through a special modem command. Please read the manual for your modem.

Of course you can keep inserting blanks at any place in fax numbers to make it easier to read these numbers. During the dial procedure the blanks are ignored. The same applies to the minus sign (»-«) often used to show an extension number. You can also insert a slash which is mostly used to separate an area code from the real number.

Other special characters

Some other special characters in the character chain of fax numbers are reserved for special functions. The characters have the following meaning.

<i>Character</i>	<i>Function</i>
*	If a fax number starts with a star (»*«), the Transport Layer driver will dial this fax number without obtaining an exchange line beforehand. In this case you have to either indicate also the characters to be dialed or to send your fax to an extension in the telephone system which is able to receive faxes. In short, if you wish to send a fax from one extension to another, please enter a star followed by the extension number. For example: @@NUMBER *112
:	<p>If the character chain of a fax number contains a colon (»:«), FaxWare will try to establish a 64-kBit FaxPlus connection. If the distant station is FaxPlus compatible, transmission will be carried out with 64kBits with the FaxPlus log. If the distant station has an analog group 3 fax machine, the fax will be transmitted in the conventional way.</p> <p>It takes not even 500 ms to check whether a distant station supports FaxPlus and generally there is no cost. Only if the distant station answers as a digital 64-kBit end device (e.g. in ISDN routers), a short connection will be established.</p>

:: If a double colon is contained in a fax number, transmission can only take place with a FaxPlus distant station. Contrary to the above-mentioned method, there will be no transmission with a normal G3 log if the distant station does not support FaxPlus. This setting will be useful if you wish to dispatch for example a particularly extensive fax which would be too expensive for transmission to a normal distant station or if the transmission quality has to be absolutely perfect (e.g. BinFax).

Conversion of letters

By using the »American System«, the letters »A«-»Z« are converted into corresponding figures. In the US the use of these figures is very popular. The Service Layer replaces letters by the correct figures according to the rules.

Conversion takes place according to the following rules:

Letter	Figure
A, B, C	2
D, E, F	3
G, H, I	4
J, K, L	5
M, N, O	6
P, R, S	7
T, U, V	8
W, X, Y	9

Entering the fax number

COMMAND **@@NUMBER**

SHORT FORM **@@NMB**

EFFECT Inserts the fax number of the job. In addition to the normal fax number, you can also insert some special characters.

SYNTAX @@NUMBER fax number

PARAMETER Add the appropriate fax number after the command. The number can contain the digits 0 to 9. In addition to the normal fax number, you can also enter some special characters.

EXAMPLE

```
@@NUMBER +44 141 420 5661
To: Acme Software International
Dear Sir/Madam,
Please send us your new price list.

Best regards,
Edward Miller Corp.
```

Selecting a saved number

COMMAND **@@NAME**

SHORT FORM **@@NAM**

EFFECT Dials a fax number which is inserted in the FaxWare phonebook under the term Name. The Service Layer receives the name to be called and then reads the number out of the database. The corresponding phone number is then entered into the fax job.

SYNTAX @@NAME name [group/user]

PARAMETER »name« specifies the name to be associated with a fax number. Upper and lower case characters are ignored; however, blanks and any special characters must be specified exactly as they appear in the saved entry.

NOTES If a phonebook has not been entered, the Service Layer searches through the phonebook of the group EVERYONE. If you enter the group/user in square brackets, the Service Layer searches in the appropriate phonebook.

EXAMPLE

```
@@NAME Acme Software [MARKETING]
To: Acme Software International
Dear Sir/Madam,
Please send us your new price list.

Best regards,
Edward Miller Corp.
```

Specifying a number list

COMMAND **@@NUMBERLIST**

SHORT FORM **@@NBL**

EFFECT Transmits a (further) fax number for your fax job. The amount of fax numbers per job is not limited. In addition to the normal fax number, you can also enter some special characters.

SYNTAX @@NUMBERLIST number

PARAMETER Add the appropriate fax number after the command.

NOTES The input of the @@NUMBER command is considered invalid if @@NUMBERLIST is detected in a job. You can specify any quantity of fax numbers with the @@NUMBERLIST command.

EXAMPLE

```
@@NUMBERLIST +44 115 260 6563
@@NUMBERLIST +44 141 420 5661
@@NUMBERLIST +44 542 887 2893
To: Acme Software International
Dear Sir/Madam,
Please send us your new price list.

Best regards,
Edward Miller Corp.
```

Starting a broadcast

COMMAND	@@BROADCAST
SHORT FORM	@@BCA
EFFECT	Creates a fax broadcast to a list of numbers. These numbers have to be saved in the ASCII file indicated as the parameter.
SYNTAX	@@BROADCAST file name
PARAMETER	The filename designates the text file that contains the recipients' numbers. Numbers appear one below another with one number on each line.
NOTES	Do not use the @@NUMBER command for a fax job that uses the @@BROADCAST command. The program searches for the file in the directory SYS:\FAXWARE\RESOURCE\DATA. Always provide the appropriate file extension for the broadcast file (such as *.BCA). When no extension is specified, the Service Layer searches for the filename exactly as specified, without an extension. Any telephone number supported by FaxWare can be used as a fax number within the text file.

EXAMPLE

```
@@BROADCAST MAILING.BCA
@@ADDRESSEE Fax Mailing
To: Acme Software International
Dear Sir/Madam,
Please send us your new price list.

Best regards,
Edward Miller Corp.
```

Printing instead of faxing

COMMAND **@@PRINT**

SHORT FORM **@@PRN**

EFFECT A fax is created but not dispatched. Instead it is printed on a printer. The FaxWare Service Layer handles the conversion and the printout of a job; you do not need to enter it as a fax. When testing new forms and graphics, a sample printout helps visualize how a fax will look when it is received.

SYNTAX @@PRINT

NOTES This command treats the job as a normal fax, but instead of sending it to the Transport Layer Driver, it produces a printout. The graphics header, set above the fax as a status line, also appears in the printout. The printout always takes place through the printer filter, as determined by the services that are being used.

EXAMPLE

```
@@NUMBER +44 141 420 5661
@@PRINT
To: Acme Software International
Dear Sir/Madam,
Please send us your new price list.

Best regards,
Edward Miller Corp.
```

Job parameters

The following commands are used for the special configuration of a current job. In some cases they overwrite the basic configuration of the Service Layer for the current fax job. The commands of this category determine for example the date of dispatch, the number of redials or they name a particular fax job. Some job parameters can also be used in INCLUDE files. In this way, it is guaranteed that a user dispatches for example all faxes time optimized.

@@REFERENCE

By using the command @@REFERENCE, you can assign a freely definable short name to the current fax job. Therefore, the fax job will not be registered in the send log under the addressee's fax number but under the text stated behind @@REFERENCE.

@@URGENT

If you want to dispatch a fax immediately, you should use the command @@URGENT. If the addressee is registered in the collection list, the job will nevertheless be released immediately. The manual release of a fax job through the command @@USERHOLD is also avoided with this command.

@@MESSAGE

By means of the command @@MESSAGE a NetWare broadcast informs the user of the status of dispatch of his fax.

@@DELIVERY

With FaxWare, fax jobs which are not urgent can be dispatched charge optimized. By setting the command @@DELIVERY the fax will be dispatched at a cheaper tariff if this is possible.

@@SCHEDULE

By using this command, you can schedule the dispatch of fax jobs. The job will remain in the job log until the time stated. Then it will be automatically released.

@@CSID

This command overwrites the own send identifier transmitted to the distant station for the current fax job.

@@REDIAL

If a fax cannot be transmitted or if the distant station is busy, FaxWare will carry out new send attempts at definable intervals. The number of redials is determined by means of the command `@@REDIAL`.

@@USERHOLD

Often people wish to check the layout of a fax before dispatch. This can be done very easily by using the command `@@USERHOLD`. In this case the fax will be converted by the Service Layer but not released for dispatch. It will remain in the job log until the user releases it manually. If you set the command `@@URGENT`, the command `@@USERHOLD` will no longer be valid.

Naming a job

COMMAND	@@REFERENCE
SHORT FORM	@@REF
EFFECT	Names the current fax job. In the FaxWare job and send log the job will be registered with this name. This command lets the user specify a name by which the Service Layer will manage the job.
SYNTAX	<code>@@REFERENCE</code> character string
PARAMETER	The string is an ASCII string with the maximum length of 19 characters.
NOTES	If the specified string is longer than 19 characters , the text is cut off after the 19th character.
EXAMPLE	

```
@@NUMBER +44 141 420 5661
@@REFERENCE Acme
To: Acme Software International
Dear Sir/Madam,
Please send us your new price list.

Best regards,
Edward Miller Corp.
```

Override the collection of faxes

COMMAND **@@URGENT**

SHORT FORM **@@URG**

EFFECT Dispatches the fax job immediately and deactivates defaults, such as the FaxWare collection list or the command @@USERHOLD.

SYNTAX @@URGENT

NOTES The command @@URGENT applies only to the current job.

EXAMPLE

```
@@NUMBER +44 141 420 5661
@@URGENT
To: Acme Software International
Dear Sir/Madam,
Please send us your new price list.

Best regards,
Edward Miller Corp.
```

Acknowledgement for the user

COMMAND	@@MESSAGE
SHORT FORM	@@MSG
EFFECT	Informs the sender of the fax job via BROADCAST about the status of dispatch. If there is a default in the FaxWare user configuration, it will be overwritten by this command.
SYNTAX	@@MESSAGE type
PARAMETER	Defines the type of message to be sent with the job: 0=No message 1=Report only the end status 2=Report every dial attempt 3=Report only if an error has occurred 4=Report only if an error has occurred and on the last attempt
NOTES	This command overrides the setting stored in the user configuration.

EXAMPLE

```
@@NUMBER +44 141 420 5661
@@MESSAGE 1
To: Acme Software International
Dear Sir/Madam,
Please send us your new price list.

Best regards,
Edward Miller Corp.
```

Defining the redial counter

COMMAND **@@REDIAL**

SHORT FORM **@@RED**

EFFECT This command defines the number of redials for the current job.

SYNTAX @@REDIAL number

PARAMETER The number can be between 0 (no redial) up to 9.

NOTES If the number is out of the defined range, the command is ignored. The system configuration determines the default number of FaxWare redial attempts.

EXAMPLE

```
@@NUMBER +44 141 420 5661
@@REDIAL 4
To: Acme Software International
Dear Sir/Madam,
Please send us your new price list.

Best regards,
Edward Miller Corp.
```

Charge optimization

COMMAND	@@DELIVERY
SHORT FORM	@@DLY
EFFECT	Detects the cheapest time of dispatch. By means of the parameters you can state the maximum delay after which your job is to be dispatched (e.g. up to 15 minutes). The respective delays are set in the FaxWare system configuration.
SYNTAX	@@DELIVERY
PARAMETER	Immediate/Quick/Normal/Optimized
NOTES	When the FaxWare Service Layer detects this command, the send time is determined according to the least expensive period shown in the rate table. If there is not a low-cost rate listed for the number, the job is transmitted immediately. If the command @@SCHEDULE has been entered, then the command @@DELIVERY is ignored. Based on the values in a rate table, the FaxWare Service Layer automatically determines the least expensive time to send the fax and sets the transmission time accordingly.

EXAMPLE

```
@@NUMBER +44 141 420 5661
@@DELIVERY QUICK
To: Acme Software International
Dear Sir/Madam,
Please send us your new price list.

Best regards,
Edward Miller Corp.
```

Defining the send time

COMMAND **@@SCHEDULE**

SHORT FORM **@@SDL**

EFFECT Defines a date for a fax transmission. This date is stated as the parameter. Optionally, you can also give the time. The data in the fax header corresponds to the time of conversion of the fax and therefore deviates from the real time of dispatch.

SYNTAX @@SCHEDULE

PARAMETER Enter the date in DD.MM.YY or DD.MM.YYYY format. Optionally, you can enter the exact time in hours and minutes, using a colon to separate the values (hh:mm).

NOTES If the date or time entered includes a syntax error, or the time is already set, then the input of send times is ignored.

EXAMPLE

```
@@NUMBER +44 141 420 5661
@@SCHEDULE 30.01.96 17:30
To: Acme Software International
Dear Sir/Madam,
Please send us your new price list.

Best regards,
Edward Miller Corp.
```

Setting the hold status for a fax job

COMMAND **@@USERHOLD**

SHORT FORM **@@UHD**

EFFECT It will set the current job into a »waiting status« or deactivate this status (parameter No), if it is defined as default. A job which is in the waiting status has to be manually released in the job log. Each fax can be checked for errors before transmission.

SYNTAX **@@USERHOLD**

PARAMETER Yes/No

EXAMPLE

```
@@NUMBER +44 141 420 5661
@@USERHOLD
To: Acme Software International
Dear Sir/Madam,
Please send us your new price list.

Best regards,
Edward Miller Corp.
```

Temporary change of the CSID

COMMAND	@@CSID
SHORT FORM	@@CSI
EFFECT	Transmits the character string stated to the distant station.
SYNTAX	@@CSI
PARAMETER	Character string
NOTES	This command overwrites the setting in the FaxWare line configuration.

EXAMPLE

```
@@NUMBER +44 141 420 5661
@@CSID +44 653 993 8272
To: Acme Software International
Dear Sir/Madam,
Please send us your new price list.

Best regards,
Edward Miller Corp.
```

Layout commands

General use

The following commands integrate graphics and signatures into text documents.

FaxWare can work with PCX graphics files (ZSoft Corporation) and also BMP (Microsoft Bitmap) format files, and integrate them into the fax.

Some rules apply to both of these graphic formats. The FaxWare Service Layer handles the graphics translation without problem as long as the specified graphic is two color, (black/white) and no wider than 1,728 pixels. You can find some tips and tricks on this subject in the Appendix.

@@APIIMAGE

The command @@APIIMAGE inserts the given graphic file into a fax page. This command works similarly to the command @@GRAPHIC but contains less parameters.

@@APPENDIMAGE

You can append an existing graphic file in the MH (Modified Huffman) format to a fax by using the command @@APPENDIMAGE.

@@ADDRESSEE

As standard, FaxWare inserts the addressee's fax number in the header of outgoing faxes. By means of the command @@ADDRESSEE you can replace the number by any text.

@@USER

When a fax is dispatched, FaxWare inserts user initials in the header. By using the command @@USER, you can overwrite them for the current job.

@@SENDERNAME

FaxWare inserts the sender ID in the header of outgoing faxes. Through the command @@SENDERNAME it can be temporarily overwritten for the current job.

@@APPEND

Any appendix, such as a price list, product information or a route description can be appended to a fax by using the command @@APPEND. An appendix is saved in the PCX or BMP format. You can append it to outgoing faxes as often as you want to. The number of appendices is not limited.

@@COVERPAGE

Optionally, you can use coverpages for outgoing faxes. They can be designed freely. In addition to the company logo, they contain for example the sender's name and title, the recipient's fax number and the number of pages.

@@ENDOFFPAGE

With this command you can force the end of a page or a form feed.

@@INSERT

A graphic file is inserted at the current position. The graphic file must be available in the PCX or BMP format. The fax will be lengthened by the height of the graphic file.

@@FORM

Outgoing faxes can be automatically »printed« on predefined forms. The number of possible forms is practically unlimited. Therefore, every employee can work with his »personal« fax form.

@@SETFORM

The command @@SETFORM assigns a defined form to a paper tray. Afterwards it can be used with the command @@FORM.

@@GRAPHIC

The command @@GRAPHIC includes a given graphic file in a fax page. The content of this graphic is "laid" over the current page. The fax is not lengthened.

@@IMAGE

When the Service Layer detects the command @@IMAGE, the conversion will be interrupted immediately and the given fax image will be dispatched to the addressee. With this command you can only resend faxes which have already been dispatched or received.

@@MARGIN

Sets the left margin in a fax document.

@@SIGNATURE

FaxWare is able to manage a personal signature for every user. With the command @@SIGNATURE it can be inserted as a PCX or BMP file at any position in any document.

@@GOTO

During conversion this command places the »invisible cursor« to a defined position. This position can be indicated through X and Y positions.

@@LINESIZE

Changes the default for the line size in pixels.

@@CHARSIZE

Changes the default for the character size in pixels.

@@STOREPOS

Saves the current position of the »invisible cursor«.

@@RESTOREPOS

Resets the »invisible cursor« to the position saved with @@STOREPOS.

Sending a particular graphic

COMMAND **@@APIIMAGE**

SHORT FORM **@@AIG**

EFFECT Places the graphic stated (format PCX or BMP) on the current page.

SYNTAX @@APIIMAGE file name [DEL] [XP YP] [LANDSCAPE]

PARAMETER Besides the file name, the graphics can be inserted in the upper left position. XP indicates the horizontal position and YP indicates the vertical positions. A DIN A4 fax is usually 1,728 pixels wide and 2,286 pixels high. (US size 1,777 pixels wide and 2,151 pixels high). The LANDSCAPE parameter specifies that the graphic should be presented in horizontal format. If the DEL parameter is used, the graphic is deleted after the fax transmission.

NOTES The graphic file can be set in PCX or BMP format. If no independent path is specified, the Service Layer searches for the file in the directory SYS\FAXWARE\OUTAPI. The server recognizes no logical drive designations. Drive letter designations, such as C: or F: cannot be used. You can, however, use the name of the appropriate NetWare volume (such as VOL1:) on which the file resides. The @@INSERT command when used with @@APIIMAGE displays a Bitmap directly on the fax. Embedding a graphic in this manner does not increase the length of the fax.

See also: @@INSERT, @@IMAGE, @@GRAPHIC

EXAMPLE

```
@@NUMBER +44 141 420 5661
@@APIIMAGE LOGO.PCX 100 200 LANDSCAPE
To: Acme Software International
Dear Sir/Madam,
Please send us your new price list.

Best regards,
Edward Miller Corp.
```

Adding an existing image file as an attachment

COMMAND **@@APPENDIMAGE**

SHORT FORM **@@AIM**

EFFECT Appends an existing fax file as a further page. The graphic must be available in the fax format Modified Huffman (MH).

SYNTAX @@APPENDIMAGE filename [NODEL]

NOTES The image file must be in MH format. If a complete path is not provided, the Service Layer searches for the file in the directory SYS:\FAXWARE\OUT\IMG. The server does not recognize logical drive designations. You can, however, use the name of the NetWare volume (such as VOL1:) where the file resides. A maximum of one image name can be inserted.

The append image file is deleted after sending. To save the image file, use the NODEL parameter. Insert the following entry in the FAXWARE.INI (SYS:\FAXWARE\CODE): NO-APPENDEL=TRUE.

See also: @@GRAPHIC, @@INSERT, @@IMAGE

EXAMPLE

```
@@NUMBER +44 141 420 5661
@@APPENDIMAGE MH303472.001 NODEL
To: Acme Software International
Dear Sir/Madam,
Please send us your new price list.

Best regards,
Edward Miller Corp.
```

Replacing the address number in the fax header

COMMAND	@@ADDRESSEE
SHORT FORM	@@ADS
EFFECT	Overwrites the recipient's fax number in the fax header.
DEFAULT	The default is the fax number stated.
SYNTAX	@@ADDRESSEE Ascii text
PARAMETER	Character string (a maximum of 20 characters)
NOTES	See also: @@SENDERNAME, @@USER
EXAMPLE	

```
@@NUMBER +44 141 420 5661
@@ADDRESSEE Info
To: Acme Software International
Dear Sir/Madam,
Please send us your new price list.

Best regards,
Edward Miller Corp.
```

Replacing the user short form in the fax header

COMMAND	@@USER
SHORT FORM	@@USE
EFFECT	Overwrites the user initials of the sender in the fax header.
DEFAULT	The default is the character string from the user configuration of the user (data field »Initials«).
SYNTAX	@@USER Ascii text
PARAMETER	Character string (a maximum of 10 characters)
NOTES	See also: @@ADDRESSEE, @@SENDERNAME
EXAMPLE	

```
@@NUMBER +44 141 420 5661
@@USER M. Smith
To: Acme Software International
Dear Sir/Madam,
Please send us your new price list.

Best regards,
Edward Miller Corp.
```

Replacing the sender ID in the fax header

COMMAND	@@SENDERNAME
SHORT FORM	@@SDN
EFFECT	Overwrites the sender ID (generally the sender fax number) in the fax header by the character string stated.
DEFAULT	Default is the »General Send Identifier« from the FaxWare system configuration.
SYNTAX	@@SENDERNAME AsciiText
PARAMETER	Character string (a maximum of 20 characters)
NOTES	See also: @@ADDRESSEE, @@USER
EXAMPLE	

```
@@NUMBER +44 141 420 5661
@@SENDERNAME +44 234 8836 2881
To: Acme Software International
Dear Sir/Madam,
Please send us your new price list.

Best regards,
Edward Miller Corp.
```

Adding an appendix

COMMAND	@@APPEND
SHORT FORM	@@APD
EFFECT	Appends a graphic file (format PCX or BMP) as further page.
SYNTAX	@ @APPEND name
PARAMETER	With the parameter you state the name under which the appendix is defined in this file.
NOTES	The names of all fax attachments are defined in the text file FAXWARE.APD in the SYS:\FAXWARE\RESOURCE\APPEND directory. The Service Layer works through this directory and attaches the specified graphic files to the fax. The structure of the FAXWARE.APD file is similar to the WINDOWS.INI file structure. The appendix name appears in square brackets followed by individual lines in which the PCX or BMP files are noted as attachments with the complete path information.

EXAMPLE

```
@@NUMBER +44 141 420 5661
@@APPEND Price list Customer
To: Acme Software International
Dear Sir/Madam,
Please send us your new price list.

Best regards,
Edward Miller Corp.
```

The FAXWARE.APD file can be shown in the following example:

```
[Price list Customer]
PRICE_C1.PCX
PRICE_C2.PCX
[Price list Reseller]
PRICE_R.PCX
```

Using a Coverpage

COMMAND **@@COVERPAGE**

SHORT FORM **@@CVP**

EFFECT Places the currently selected coverpage before the fax job.

NOTES The commands and functions that apply to the coverpage are stored in the text file .CVP file name (contained in the SYS:\FAXWARE\RESOURCE\COVER directory). The file must contain the extension .CVP. You can create this file using any word processor or line editor that can generate an ASCII file. Use the @@SET and @@GET commands to define variables and integrate these elements into the coverpage. You can generate a coverpage that includes variables that reference the user and recipient. Please refer to the notes for the @@SET and @@GET commands in the »Appendix«.

EXAMPLE

```
@@NUMBER +44 141 420 5661
@@COVERPAGE SALES.CVP
To: Acme Software International
Dear Sir/Madam,
Please send us your new price list.

Best regards,
Edward Miller Corp.
```

Forcing a page change

COMMAND **@@ENDOFFPAGE**

SHORT FORM **@@EOP**

EFFECT Forces a page change in a text. This command corresponds to a form feed (Chr 12).

SYNTAX **@@ENDOFFPAGE**

NOTES In most cases, the FaxWare Service Layer automatically determines the appropriate places to insert a page change. With this command, a page change can be specified.

EXAMPLE

```
@@NUMBER +44 141 420 5661
To: Acme Software International
Dear Sir/Madam,
Please send us your new price list.

@@ENDOFFPAGE
This is the second page.

Best regards,
Edward Miller Corp.
```

Inserting graphics

COMMAND **@@INSERT**

SHORT FORM **@@INS**

EFFECT This command inserts a graphic in the text. The length of the fax is extended based on the corresponding height of the graphic.

SYNTAX @@INSERT file name

PARAMETER The name of the graphic file should be provided as a parameter. If no extension is specified, the .PCX extension is added to the file name.

NOTES If the complete path name is not specified, the graphic is searched for in directory SYS:\FAXWARE\RESOURCE\GRAPH.

EXAMPLE

```
@@NUMBER +44 141 420 5661
@@INSERT LOGO.PCX
To: Acme Software International
Dear Sir/Madam,
Please send us your new price list.

Best regards,
Edward Miller Corp.
```

Writing onto a form

COMMAND	@@FORM
SHORT FORM	@@FRM
EFFECT	Includes a graphic in a fax.
DEFAULT	The given form in the field »Page 1« of the used form layout (see »Service Layer/Configuration/Form Manager«)
SYNTAX	@@FORM number
PARAMETER	The parameter has to be a »tray number« (0-3). In the FaxWare configuration (Form Manager), a graphic file is defined for every tray.
NOTES	<p>The form must be saved as a graphic file (format PCX or BMP) in the directory SYS:\FAXWARE\RESOURCE\FORM. The graphic, e.g. a company logo, is “mixed” with the text. The complete number command is ignored if the number of the paper feed cartridge is invalid or if a form is entered in the corresponding number that does not exist (or no longer exists).</p> <p>Depending on how many services are set, your letterhead stationery can be loaded in the first tray, a second sheet in the second tray, and an order form in the third tray. Each job is first placed on the form in the first tray. If the Service Layer also includes a prompt on this page, then this is valid and also serves as the default for the follow-up page.</p>

EXAMPLE

```
@@NUMBER +44 141 420 5661
@@FORM 2
To: Acme Software International
Dear Sir/Madam,
Please send us your new price list.

Best regards,
Edward Miller Corp.
```

Changing the form default

COMMAND **@@SETFORM**

SHORT FORM **@@SFM**

EFFECT The command overwrites the form setting, previously inserted with the respective service (API, FileFax or Queue Services) for the current job. With the default in the services, a maximum of four forms can be set. With the command SETFORM the individual settings can be exchanged. The graphics (PCX or BMP) are expected in the directory SYS:\FAXWARE\RESOURCE\FORM.

SYNTAX @@SETFORM form number file name [,form number file name]

PARAMETER The form numbers (0-3) are expected as a parameter. Also, several forms can be exchanged.

EXAMPLE

```
@@NUMBER +44 141 420 5661
@@SETFORM 2 LOGO.PCX
@@FORM 2
To: Acme Software International
Dear Sir/Madam,
Please send us your new price list.

Best regards,
Edward Miller Corp.
```

Placing graphics

COMMAND	@@GRAPHIC
SHORT FORM	@@GFC
EFFECT	This command places a graphic in a specific position in the text. It does not change the length of the fax.
SYNTAX	@@GRAPHIC file name [XP] [YP]
PARAMETER	The name of the graphic file must be supplied as a parameter. The .PCX extension is added to the file name if no extension is specified. The XP and YP parameters specify the precise position on the page in units of pixels. If these parameters are not specified, the graphic is placed in column 0 of the current line.
NOTES	The following applies: $0 < XP < 1,728$ and $0 < YP < 3,000$. If the complete path name is not specified, the search path for the graphic is identified as <code>SYS:\FAXWARE\RESOURCE\GRAPH</code> . Contrary to the <code>@@INSERT</code> command, this command overwrites everything in the respective position.

EXAMPLE

```
@@NUMBER +44 141 420 5661
@@GRAPHIC PIC.PCX 50 50
To: Acme Software International
Dear Sir/Madam,
Please send us your new price list.

Best regards,
Edward Miller Corp.
```

Sending existing fax images

COMMAND **@@IMAGE**

SHORT FORM **@@IMG**

EFFECT Dispatches the fax file stated. This file must be available in the fax format Modified Huffman (MH).

SYNTAX @@IMAGE [path] file name

NOTES If a complete path is not given, the Service Layer searches for the file in the directory SYS:\FAXWARE\OUT\IMG. The server does not recognize logical drive designations. While you cannot use drive letters such as C: or F:, the name of the appropriate NetWare volume (such as Vol1:) can be used to locate the file.

See also: @@GRAPHIC, @@INSERT

EXAMPLE

```
@@NUMBER +44 141 420 5661
@@IMAGE MH237398.001
To: Acme Software International
Dear Sir/Madam,
Please send us your new price list.

Best regards,
Edward Miller Corp.
```

Setting the left margin

COMMAND **@@MARGIN**

SHORT FORM **@@MAR**

EFFECT Sets the left margin of a fax document.

DEFAULT The default is 20 pixels.

SYNTAX @@MARGIN pixels

PARAMETER The amount of text indentation in pixels can be specified as a parameter. One A4 page comprises a total of 1,728 pixels. The maximum value is 1,000 pixels.

EXAMPLE

```
@@NUMBER +44 141 420 5661
@@MARGIN 70
To: Acme Software International
Dear Sir/Madam,
Please send us your new price list.

Best regards,
Edward Miller Corp.
```

Inserting a signature

COMMAND **@@SIGNATURE**

SHORT FORM **@@SGN**

EFFECT This command inserts the respective user's signature file in the current position in the text.

SYNTAX **@@SIGNATURE**

NOTES The fax length does not increase; the graphic for the signature is placed at the appropriate position within the text. When the system administrator configures users, the name of the appropriate signature file can be assigned to each respective user. This lets you ensure that an inappropriate signature will not be placed on a fax, or that a signature will not be misused. Ensure that all signature files are placed in the directory SYS:\FAXWARE\RESOURCE\SIGN.

EXAMPLE

```
@@NUMBER +44 141 420 5661
To: Acme Software International
Dear Sir/Madam,
Please send us your new price list.

Best regards,
Edward Miller Corp.
@@SIGNATURE
```

Placing the cursor

COMMAND	@@GOTO
SHORT FORM	@@GTO
EFFECT	Places the invisible cursor for the page description to a new position during the conversion.
SYNTAX	@@GOTO [X position, Y position,PIX]
PARAMETER	<p>X position If the position is inserted as a natural number (without a sign), then it would be most effective in the top left corner. If the parameter is not set as 3, the number is interpreted as a unit of measurement. Should the value of the plus sign (+) or minus sign (-) be inserted, the cursor will move into the new position relative to the current old position.</p> <p>Y position If the position is inserted as a natural number (without a sign), then it would be most effective in the top left corner. If the parameter is not set as 3, the number is interpreted as a unit of measurement. Should the value of the plus sign (+) or minus sign (-) be inserted, then the cursor will move into the new position relative to the current old position.</p> <p>Optional Should PIX be inserted as a third parameter, then the value entered is not used as the value in digits, but as the absolute position in pixels.</p>

EXAMPLE

```
@@GOTO 1 1
Places the cursor in the top left corner
@@GOTO 1 +0
Places the cursor at the start of the line
@@GOTO +5 -1
Places the cursor 1 line higher and 5
columns to the right
```

Changing the line difference

COMMAND **@@LINESIZE**

SHORT FORM **@@LSZ**

EFFECT Changes the default for the line size saved for the font used.

SYNTAX @@LINESIZE [Pixel height]

PARAMETER Height of a line in pixels (feed on x pixels with CR.LF)

NOTE When a font changed, this value is reset.

EXAMPLE

```
@@NUMBER +44 141 420 5661
@@LINESIZE 40
(40 pixels have been reserved for one
line)
To: Acme Software International
Dear Sir/Madam,
Please send us your new price list.

Best regards,
Edward Miller Corp.
```

Changing the character size

COMMAND	@@CHARSIZE
SHORT FORM	@@CSZ
EFFECT	Changes the default for the character size saved for the font used.
SYNTAX	@ @CHARSIZE [pixel width]
PARAMETER	Pixel width of the digits
NOTE	When a font is changed, this value is reset.
EXAMPLE	

```
@@NUMBER +44 141 420 5661
@@CHARSIZE 40
(40 pixels have been reserved for one
character)
To: Acme Software International
Dear Sir/Madam,
Please send us your new price list.

Best regards,
Edward Miller Corp.
```

Saving the current cursor position

COMMAND **@@STOREPOS**

SHORT FORM **@@STO**

EFFECT Saves the current position of the invisible cursor.

NOTE Only the last value is saved. This command can also be recalled as often as required. For more information, please refer to the notes on the command @@RESTOREPOS.

EXAMPLE

```
@@STOREPOS
Dear Friends,
This is a demo fax.
@@RESTOREPOS
```

Resetting the cursor

COMMAND **@@RESTOREPOS**

SHORT FORM **@@RST**

EFFECT Replaces the invisible cursor on the position where it was stored using @@STOREPOS. Please refer to the notes for the @@STOREPOS command.

NOTES See also: @@STOREPOS

EXAMPLE

```
@@STOREPOS
Dear Friends,
This is a demo fax.
@@RESTOREPOS
```

Fonts

FaxWare includes a library of fonts that are stored in the SYS:\FAXWARE\RESOURCE\FONTS subdirectory. These fonts can be edited using the font editor, which is also provided in this directory. Refer to the »Appendix« for additional notes.

Defining the fonts

COMMAND	@@FONT
SHORT FORM	@@FNT
EFFECT	Changes the current font used by the FaxWare NLM Service Layer to perform a fax conversion.
DEFAULT	NEUTRAL.FNT or the name specified when configuring the print queues. The font is reset to NEUTRAL.FNT if an invalid font name is specified.
SYNTAX	@@FONT file name
PARAMETER	Enter the name of a font file as a parameter. The extension .FNT is inserted automatically if no extension is specified. If the file name contains a backslash (\), the Service Layer assumes that the name contains the complete path. A complete path must contain the name of the volume; the specified volume must be present on the FaxWare server.

EXAMPLE

```
@@NUMBER +44 141 420 5661
The first line is set in the standard
font.
@@FONT ART
This paragraph is set in the ART font.
@@FONT QUADRA
And this line is set in QUADRA.
```

Setting the font attributes for the printer driver

When using DOS applications, the EPSON FX 80 printer driver is emulated. To alter the font attributes, use the following sequences. This alteration is not designated with the command ID (@@), but must be achieved through a printer driver in an application.

The given parameters are decimal values

Bold

This command switches to bold type.

ESC-CODE	Activating	Deactivating
	027 069 (decimal)	027 070 (decimal)
	or 027 071	or 027 072

Underlining text

This command activates automatic underlining

ESC-CODE	Activating	Deactivating
	027 045 001	027 045 000

Inverting text

This command activates automatic inversion of the text.

ESC-CODE	Activating	Deactivating
	027 099 001	027 099 000

Superscript

This command activates superscript.

ESC-CODE	Activating	Deactivating
	027 083 000	027 084

Subscript

The command activates subscript.

ESC-CODE	Activating	Deactivating
	027 083 001	027 084

Wide font

This command activates twice the lettering width.

ESC-CODE	Activating	Deactivating
	014	018

Elite style

This command sets the ELITE typestyle. The resulting text occupies 12 characters per inch instead of 10 characters per inch.

ESC-CODE	Activating	Deactivating
	027 077	027 080

Compressed type

This command activates the compressed type. The resulting text occupies 15 characters per inch instead of 10 characters per inch.

ESC-CODE	Activating	Deactivating
	015	018

Proportional type

This command activates automatic calculation of spaces between letters.

ESC-CODE	Activating	Deactivating
	027 112 049	027 112 048

Italics

This command activates the ITALICS.

ESC-CODE	Activating	Deactivating
	027 052	027 053

Special functions

The commands summarized under this section are intended for the professional users of FaxWare 4. Particularly for the FaxWare administrator these commands provide many possibilities, but also for advanced users who wish for example to make use of FaxWare's fax merge functions.

@@SAVE

Saves the fax number inserted after @ @NUMBER in one of the FaxWare phonebooks. Therefore, it is possible to make entries in all phonebooks directly from an application.

@@OWNERNAME

If somebody wishes to fax from an "external" operating system (e.g. a UNIX host), it may occur that the owner of this fax job is not registered as a valid FaxWare user. The command @@OWNERNAME assigns a user who is registered in the FaxWare user configuration to the fax job.

@@AUTODEL

Especially if you have large fax merge jobs, it may be useful to delete the individual outgoing fax images immediately after dispatch to save memory space on your hard disk. If the command @@AUTODEL is set, the fax image will be automatically deleted after correct dispatch.

@@COMID

FaxWare is able to fax every ASCII character which can be printed. The only exception are two successive at symbols ("@@"). However, they can be printed by using the command @@COMID in the current text.

@@PROTOCOL

If it is not already set in the user configuration, you can force an automatic printout of dispatched faxes by using the command @@PROTOCOL. Optionally, you can also use this printout as a log printout, as the status of dispatch can also be printed.

@@INCLUDE

This command is very efficient. Commands and functions stated in a special include file can therefore be "added" to a fax job, without having to type the individual commands again for every job.

@@LINE

With the command @@LINE you can assign a fax job to a particular line. Then only this exchange line will be used for fax dispatch. This is not always the best solution. However, this command will be useful if you wish to determine the charges for some users or departments.

@@BEGINOFJOB

With this command you can define the beginning of a job. All information in a fax written in front of this command will be lost. This command can for example be used to filter out unwanted printer sequences of a printer driver. Particularly in connection with the fax merge function this command plays an important part. Several fax jobs can be combined in one single file. They are separated by the two commands @@BEGINOFJOB and @@ENDOFJOB respectively.

@@ENDOFJOB

This is the opposite of the command @@BEGINOFJOB.

@@LENGTH

This command defines if the whole page of a fax will be transmitted or only the written lines.

@@SET

FaxWare includes extensive handling of variables. Many variables can be inserted in a fax job and be recalled at another place.

@@GET

You can use this command to recall variables defined with @@SET as well as many system-specific predefined variables.

@@DIAGNOSTIC

With the command @@DIAGNOSTIC you instruct the Service Layer to insert a system status at the current position in a fax. The system status contains all information which can also be called under »Monitor/System« in the Service Layer.

@@RESOLUTION

FaxWare supports a normal resolution as well as a fine resolution. With the command @@RESOLUTION you can select one of these settings.

@@BARCODE

By means of this command, a bar code in the format »2-of-5-interleaved« is inserted at the current position in a fax. The bar code can be defined through various parameters. It is particularly suited to writing long number chains.

@@BINFAX

A BinFax transmission allows for dispatch of binary files by fax. Therefore, binary data can be integrated in outgoing faxes which will then be decoded and converted into their original formats by distant stations supporting BinFax.

@@COMMENT

Any parts of a fax job can be excluded from conversion if you use the command @@COMMENT. Data written between two identical ASCII characters will not be converted.

Saving a fax number

COMMAND **@@SAVE**

SHORT FORM **@@SAV**

EFFECT Saves the fax number which has been indicated with the command @@NUMBER under the term stated in the phonebook of the group EVERYONE.

SYNTAX @@SAVE name [group/user]

PARAMETER Name determines the designation for the fax number as communicated using the @@NUMBER command.

The maximum length of the name is 30 characters, including all special characters except for the semicolon.

Optionally, the »login name« of a group or user can be indicated in the phonebook of whom the entry should be made.

NOTES If another fax number is already stored under the indicated name, the new number overwrites the existing entry.

EXAMPLE

```
@@NUMBER +44 141 420 5661
@@SAVE Acme [MARKETING]
To: Acme Software International
Dear Sir/Madam,
Please send us your new price list.

Best regards,
Edward Miller Corp.
```

Overwriting the user of a fax file

COMMAND **@@OWNERNAME**

SHORT FORM **@@OWN**

EFFECT Assigns the fax job to a certain user. This user must be registered in the FaxWare user configuration.

SYNTAX @@OWNERNAME name

NOTE If you wish to fax from other operating systems (e.g. from a UNIX host) via the FaxWare server, the owner of this fax file will be the FaxWare server. However, in the case of FaxWare, a FaxWare user cannot be the owner. By using this command, you avoid this problem and assign the fax file to a user. This user is the owner of the fax job and will therefore also receive a status report. The »login name« of the user has to be stated.

EXAMPLE

```
@@NUMBER +44 141 420 5661
@@OWNERNAME M_Smith
To: Acme Software International
Dear Sir/Madam,
Please send us your new price list.

Best regards,
Edward Miller Corp.
```

Deleting a graphic file on completion

COMMAND	@@AUTODEL
SHORT FORM	@@DEL
EFFECT	Deletes the graphic file of a fax (not the log entry!) after transmission.
SYNTAX	@@AUTODEL method
PARAMETER	One of the following methods are expected as parameters. Correct: the graphic file may only be deleted if the fax transmission was successful. Completion: the fax is deleted even if it has not been sent (for example, because the destination station is constantly busy).
NOTES	When constructing a fax merge operation (with individual conversions) this command prevents unnecessary overburdening of network resources.

EXAMPLE

```
@@NUMBER +44 141 420 5661
@@AUTODEL CORRECT
To: Acme Software International
Dear Sir/Madam,
Please send us your new price list.

Best regards,
Edward Miller Corp.
```

Inserting the current command ID

COMMAND **@@COMID**

SHORT FORM **@@CID**

EFFECT The ID command is executed.

SYNTAX @@COMID

NOTES Use this command to show the command ID in a fax.

EXAMPLE

```
@@NUMBER +44 141 420 5661
@@COMID
To: Acme Software International
Dear Sir/Madam,
Please send us your new price list.

Best regards,
Edward Miller Corp.
```

Requesting a printout

COMMAND	@@PROTOCOL
SHORT FORM	@@PTC
EFFECT	Makes a protocol printout of the current fax job on a printer. If there is a default in the FaxWare user configuration, it will be overwritten by this command.
SYNTAX	@@PROTOCOL number
PARAMETER	The number should be defined when an outgoing fax is routed through a defined printer filter. 0=No protocol printout 1=Protocol printout only in case of correct dispatch 2=Protocol printout after every sending attempt 3=Protocol printout on unsuccessful sending attempt and termination 4=Protocol printout only after last sending attempt
NOTES	If a printer filter is associated with the service, then these commands are cancelled. This command overwrites the order defined in the user configuration.

EXAMPLE

```
@@NUMBER +44 141 420 5661
@@PROTOCOL 1
To: Acme Software International
Dear Sir/Madam,
Please send us your new price list.

Best regards,
Edward Miller Corp.
```

Inserting a text file

COMMAND	@@INCLUDE
SHORT FORM	@@INC
EFFECT	Inserts the contents of a text file instead of the INCLUDE command.
SYNTAX	@@INCLUDE [Path] file name
PARAMETER	This command must be followed by a filename. If the file name is inserted without the appropriate path name, then the Service Layer looks for this file in the directory SYS:\FAXWARE\RESOURCE\INCLUDE.

EXAMPLE

```
@@NUMBER +44 141 420 5661
@@INCLUDE USERHOLD.INC
To: Acme Software International
Dear Sir/Madam,
Please send us your new price list.

Best regards,
Edward Miller Corp.
```

Selecting a defined exchange line

COMMAND	@@LINE
SHORT FORM	@@LIN
EFFECT	Selects a defined line for sending the fax job. Otherwise, any other free line will be selected.
SYNTAX	@@LINE number
PARAMETER	The number of the line
EXAMPLE	

```
@@NUMBER +44 141 420 5661
@@LINE 02
To: Acme Software International
Dear Sir/Madam,
Please send us your new price list.

Best regards,
Edward Miller Corp.
```

Resetting the conversion

COMMAND **@@BEGINOFJOB**

SHORT FORM **@@BEG**

EFFECT Marks the start of a new fax job.

SYNTAX @@BEGINOFJOB

NOTES This command is particularly intended for fax merges under DOS applications and can be used to separate single fax jobs. Within the Windows interface, this function has no effect; instead, the command @@FAXMERGE provides the equivalent function.

EXAMPLE

```
@@NUMBER +44 141 420 5661
This text will be deleted!!
@@BEGINOFJOB
Please note our new postal code
Alpo Software International
1 Dogstar Lane
St. Petersburg, FL 45321
Thank you.
@@ENDOFJOB
This text will be deleted!!
@@BEGINOFJOB
@@NUMBER +44 561 139 3145
Please note our new postal code.
Alpo Software International
1 Dogstar Lane
St. Petersburg, FL 45321
Thank you.
```

Separating jobs in a queue

COMMAND **@@ENDOFJOB**

SHORT FORM **@@END**

EFFECT Forces the end of a fax job and is therefore used to separate several fax jobs.

SYNTAX **@@ENDOFJOB**

NOTE Not all programs have well-defined print functions. To insert a clearly defined separation between individual fax pages, use the **@@ENDOFJOB** command. This provides the Service Layer with a clear indication of the end of the job. Within the Windows interface, this command has no effect. Use the **@@FAXMERGE** command when working in Windows.

EXAMPLE

```
@@NUMBER +44 141 420 5661
To: Acme Software International
Dear Sir/Madam,
Please send us your new price list.

Best regards,
Edward Miller Corp.
@@ENDOFJOB
@@NUMBER +44 453 883 9943
Dear Friends,
Please note our new postal code.
Eagle Software International
8999 Rockefeller Road
New York, NY 12100
Thank you.
```

Defining the page length of faxes

COMMAND **@@LENGTH**

SHORT FORM **@@LNG**

EFFECT Defines the page length for the fax job.

SYNTAX @@LENGTH static/dynamic/real

PARAMETER Dynamic=the fax transmission ends after the last line of text has been transmitted

Static=the fax text is placed upon a full page.

Real=the fax is only transmitted to the last line, with a minimum of black pixels included.

NOTES The instruction reads dynamic.

EXAMPLE

```
@@NUMBER +44 141 420 5661
@@LENGTH STATIC
To: Acme Software International
Dear Sir/Madam,
Please send us your new price list.

Best regards,
Edward Miller Corp.
```

Defining a variable

COMMAND **@@SET**

SHORT FORM **@@SET**

EFFECT This command defines the value of a variable. A variable can include digits, letters or numbers. Variables can be read using the @@GET command and inserted in the document. For more information, refer to the notes on the commands @@GET and @@COVERPAGE.

SYNTAX @@SET Variable=value

NOTES In the »Appendix« you can examine a list of pre-defined variables.

EXAMPLE

```
@@NUMBER +44 141 420 5661
@@SET TEXT1=Best regards,
To: Acme Software International
Dear Sir/Madam,
Please send us your new price list.

@@GET TEXT1
Edward Miller Corp.
@@GET USR_NAME
@@SIGNATURE
```

Inserting a variable

COMMAND **@@GET**

SHORT FORM **@@GET**

EFFECT You can insert variables into a text from the current cursor position. These variables can be defined using the @@SET command, or can be any of the pre-defined variables (as listed in the »Appendix«).

SYNTAX @@GET Variable

NOTES See also: @@SET, @@COVERPAGE

EXAMPLE

```
@@NUMBER +44 141 420 5661
@@SET TEXT1=Best regards,
To: Acme Software International
Dear Sir/Madam,
Please send us your new price list.

@@GET TEXT1
Edward Miller Corp.
@@GET USR_NAME
@@SIGNATURE
```

Requesting a diagnosis

COMMAND **@@DIAGNOSTIC**

SHORT FORM **@@DGN**

EFFECT Creates a fax containing diagnostic data concerning the FaxWare operation and is used to find errors when there are any problems. This fax can be attached to the normal text, and can either be faxed or printed out.

SYNTAX @@DIAGNOSTIC

NOTES Using a test routine that performs self diagnosis, the FaxWare can run internal tests and then forward the test results to a specific fax number. The number can be specified by the @@NUMBER command, or the test results can be printed out using the @@PRINT command.

These test results include details on the internal working of FaxWare; the Technical Support staff can use this information to assist you.

EXAMPLE

```
@@NUMBER +44 141 420 5661
@@DIAGNOSTIC
To: Acme Software International
Dear Sir/Madam,
The FaxWare self-diagnosis test results
are included as an appendix.

Best regards,
Edward Miller Corp.
```

Defining the resolution

COMMAND	@@RESOLUTION
SHORT FORM	@@RES
EFFECT	Defines if the fax should be transmitted in high resolution, or normal resolution.
SYNTAX	@@RESOLUTION normal/high
PARAMETER	high or normal
NOTES	<p>The Group 3 fax standard defines two different fax image resolutions.</p> <p>Normal resolution (206 dpi horizontal, 100 dpi vertical) High resolution (206 dpi horizontal, 200 dpi vertical)</p> <p>The high resolution mode has a greater vertical density. With normal resolution faxes, the receiving fax machine copies every line once, without the contents being transmitted a second time through the phone line. The transmission of normal resolution faxes is less expensive, but the quality of the faxes suffers because of the comparatively poor resolution.</p>

EXAMPLE

```
@@NUMBER +44 141 420 5661
@@RESOLUTION normal
To: Acme Software International
Dear Sir/Madam,
Please send us your new price list.

Best regards,
Edward Miller Corp.
```

Inserting a barcode

COMMAND	@@BARCODE
SHORT FORM	@@BRC
EFFECT	This command places the barcode in a specified position.
SYNTAX	@@BARCODE number [x,y,xs,ys]
PARAMETER	The number to be represented as a barcode must be provided as the parameter. Optionally, the absolute position of the barcode on the page may be specified as a parameter: x = X pos y = Y pos xs = X size ys = Y size
NOTES	For applications where the recipient has a barcode reader, you can insert a barcode within a fax. For technical reasons, the number must consist of an even number of digits. A zero (0) is placed before the number if the number of digits is odd.

EXAMPLE

```
@@NUMBER +44 141 420 5661
@@BARCODE 54322 x=80, y=50, xs=1, ys=100
To: Acme Software International
Dear Sir/Madam,
Please send us your new price list.

Best regards,
Edward Miller Corp.
```

Adding a binary file

COMMAND **@@BINFAX**

SHORT FORM **@@BFX**

EFFECT Adds a file as binary file in a fax.

SYNTAX @@BINFAX file name [,note]

PARAMETER The name and path of the file

NOTES The distant station can “unpack” this file if it has »BinFax« technology. The file cannot be transmitted correctly, if there is a text or a graphic at the position of the file in the fax document.

EXAMPLE

```
@@NUMBER +44 141 420 5661
@@BINFAX SYS:\SALES.DOC, Price list
To: Acme Software International
Dear Sir/Madam,
Please send us your new price list.

Best regards,
Edward Miller Corp.
```

Inserting comments

COMMAND **@@COMMENT**

SHORT FORM **@@REM**

EFFECT Places a comment at the beginning of a fax (the comment does not undergo conversion). The end of a comment string is recognized through entering the same characters.

SYNTAX @@COMMENT [Text]

PARAMETER Optional digit

EXAMPLE

```
@@NUMBER +44 141 420 5661
To: Acme Software International
Dear Sir/Madam,
Please send us your new price list.
@@COMMENT !This text will not be
displayed ...
... up to this character!
Best regards,
Edward Miller Corp.
```

Special Windows command

This command is particularly intended for operation with the FaxWare printer driver under Windows. Under DOS applications it is ineffective.

Generating a fax merge

COMMAND **@@FAXMERGE**

SHORT FORM **@@FXM**

EFFECT Instructs the FaxWare printer driver to create a fax merge. The single jobs will be separated and converted one by one. After this command, you have to state the fax number by using the command @ @NUMBER (e.g. as a data field from a command file under Word for Windows).

SYNTAX @@FAXMERGE

NOTES Using the FAXMERGE command, fax jobs are separated and sent as individual faxes. Through the use of the @ @NUMBER command, the fax number for every fax can be accessed from a control file. This function corresponds to the typical mail merge operation as available from Word for Windows or other word processing programs. For more information, please refer to the notes in the »Appendix«. In the example below, the data indicated by brackets (« ») were inserted from a control file.

EXAMPLE

```
@@FAXMERGE
@@NUMBER «Datafield faxnumber»

To: Acme Software International
Dear «Datafield name»,
Please send us your new price list.

Best regards,
Edward Miller Corp.
```

TOBIT.INI parameter

When the Windows interface is installed, FaxWare program parameters are stored in a file called TOBIT.INI that is created in the Windows directory. Program parameters can be set directly from the program or they can be changed manually in TOBIT.INI. If you manually modify TOBIT.INI, you must restart Windows for the changes to become active.

Several sections appear in TOBIT.INI for use by the various FaxWare modules:

[COMMON]	General parameters
[SETUP]	Settings of the SETUP program
[FWWIN]	Settings of the Windows interface
[FWVIEW]	Viewer settings
[FWPRINT]	Settings of the print server (if it is installed)

Defining the FaxWare server name

COMMAND	SERVER
DEFAULT	The name of the server from which the Frontend was started.
EFFECT	Designates the FaxWare server to which the API connection is made.
NOTE	Whenever the FaxWare Frontend is not started from the server drive, the name must be provided. It ensures clear identification when several FaxWare servers are found in the network.
EXAMPLE	<code>SERVER=SCOTTY</code>

Giving the command ID

COMMAND	COMMANDID
DEFAULT	@@
EFFECT	Selects the command used for all FaxWare commands.
NOTE	Set automatically from the FaxWare Frontend
EXAMPLE	<code>COMMANDID=@@</code>

Default command(s) for every job

COMMAND	DEFAULTCMDx
EFFECT	Indicates the default commands for every outgoing fax job.
NOTE	A maximum of 10 default commands can be given. The default commands are saved before all job specific commands. They have low priority since they will be overwritten by the commands in a fax job. Set from the FaxWare Frontend.
EXAMPLE	<pre>DEFAULTCMD1=FORM 1 DEFAULTCMD2=MARGIN 70</pre>

Defining the fax viewer

COMMAND	VIEWPROG
DEFAULT	FWVIEW.EXE
EFFECT	Defines the fax viewer used for incoming and outgoing faxes. Also, defines the format to which the Frontend converts graphic images.
NOTE	The viewer must be located in the Windows main directory, and support one of the following graphic formats: MH, PCX, DCX, BMP.
SYNTAX	VIEWPROG=[program name, graphics format]
EXAMPLE	<pre>VIEWPROG=FAXVIEW.EXE, DCX</pre>

Defining the fax viewer (preview)

COMMAND	PREVIEWPROG
DEFAULT	FWVIEW.EXE
EFFECT	Defines the fax viewer for fax jobs, which should be displayed before the conversion.
NOTE	The viewer should be located in the Windows main directory, and it should support one of the following graphic formats: MH, PCX, DCX, BMP.
SYNTAX	PREVIEWPROG=[program name, graphics format]
EXAMPLE	<pre>PREVIEWPROG=FWVIEW.EXE, DCX</pre>

Converting in G3 on the local workstation

COMMAND	LOCALCONVERT
DEFAULT	FALSE
EFFECT	Defines whether the FaxWare Windows Driver should convert printouts directly to G3 fax format.
NOTE	By default, the FaxWare driver converts the printer output on the local workstation to PCX graphic format. By setting the parameter LOCALCONVERT, output is directly converted to MH format. The advantage is that conversion on the server is not required. Only the header will be added on each page by the server. The disadvantage is that conversion to MH format takes more time and certain commands, such as FORM, GRAPHIC and INSERT, cannot be used.
EXAMPLE	<pre>LOCALCONVERT=TRUE</pre>

Path for outgoing faxes

COMMAND	OUTPATH
DEFAULT	API directory path
EFFECT	Sets the path for outgoing faxes.
NOTE	By default, the fax image files are stored in the directory SYS:\FAXWARE\OUT\API. However, by using the command OUTPATH, another directory can be defined. The directory must be located on the server where FaxWare is installed. This directory must be specified in the FaxWare Service Layer as a FileFax directory.

EXAMPLE `OUTPATH=H:\FAXWARE\OUT`

Maximum number of send/receive log entries

COMMAND	MAXENTRIES
DEFAULT	2000
EFFECT	Sets the maximum number of entries for the send and receive log.
NOTE	Set automatically from the FaxWare Frontend.

EXAMPLE `MAXENTRIES=2000`

Suppressing the help text when the cursor is moving

COMMAND	DISABLEHELPTTEXT
DEFAULT	FALSE
EFFECT	When moving the mouse on a button, the help text at the bottom of the page is suppressed.
NOTE	Set automatically from the FaxWare Frontend.

EXAMPLE `DISABLEHELPTTEXT=TRUE`

Convert graphic: Displaying defective lines

COMMAND	INHIBITCONVERRORS
DEFAULT	FALSE
EFFECT	Suppresses the display of defective pixel lines.
EXAMPLE	<code>INHIBITCONVERROS=TRUE</code>

Using the Windows LargeFonts

COMMAND	LARGEFONTS
DEFAULT	FALSE
EFFECT	Specifies whether Windows large fonts should be used to display text. The screen output is set with LARGEFONT.S.
EXAMPLE	<code>LARGEFONT.S=TRUE</code>

Disable the smart buttons

COMMAND	CFGBUTTONS
EFFECT	Defines which smart buttons should be displayed by Windows.
NOTE	Set automatically from the FaxWare Frontend.
EXAMPLE	<code>CFGBUTTONS=12</code>

Leaving the Frontend on top

COMMAND	STAYONTOP
DEFAULT	FALSE
EFFECT	STAYONTOP=1 ensures that the Frontend is not covered by another window. It always remains visible.
NOTE	Set from the FaxWare Frontend.
EXAMPLE	<code>STAYONTOP=1</code>

Defining the parameters for the send/receive logs

COMMAND	BOOKPARM
EFFECT	Gives the default value for the send and receive logs. The following parameters are set: Correct entries read. Defective entries read. All entries read. Deleted entries displayed. Entries of all users displayed.
NOTE	Set automatically from the FaxWare Frontend.
EXAMPLE	<code>BOOKPARM=31</code>

Setting intervals for job log update

COMMAND	JOBUPDATEINTERVAL
DEFAULT	5
EFFECT	Defines the intervals for job log update
NOTE	JOBUPDATEINTERVAL is entered in seconds.
EXAMPLE	<code>JOBUPDATEINTERVAL=10</code>

Switching off the mouse cursor

COMMAND	NOCURSORCHG
DEFAULT	1
EFFECT	Switches off the FaxWare mouse cursor during the conversion
EXAMPLE	<code>NOCURSORCHG=1</code>

Parameters of the FAXWARE.INI

During the FaxWare installation the text file FAXWARE.INI is copied into the directory SYS:\FAXWARE\CODE. It contains default settings for the operation of the FAXWARE NLM on the server which in most cases do not need to be changed. In the case of some of these commands a change of the default values can affect the server stability. Therefore, it should only be carried out by experienced system supervisors! If the file has been changed, the FaxWare Service Layer must be unloaded and started again, so that the modifications can become effective.

Changing the TLDControlDelay

COMMAND	TLDControlDelay
DEFAULT	2000
EFFECT	Time (in milliseconds) between scans in the directories of the Transport Layer Drivers

Changing the MainTLDControlDelay

COMMAND	MainTLDControlDelay
DEFAULT	2000
EFFECT	Time (in milliseconds) before starting scanning of Transport Layer Drivers

Changing the GetFirstFreeTLDDelay

COMMAND	GetFirstFreeTLDDelay
DEFAULT	1000
EFFECT	Time (in milliseconds) before getting the first free Transport Layer Driver

Changing the JOBFreeDelay

COMMAND	JOBFreeDelay
DEFAULT	200
EFFECT	Time between next reading when job file entry is free

Changing the JOBDelay

COMMAND	JOBDelay
DEFAULT	100
EFFECT	Time (in milliseconds) between next reading when job file entry is used

Changing the ScanDelay

COMMAND	ScanDelay
DEFAULT	2000
EFFECT	Time (in milliseconds) between checking the services of FaxWare (e.g. FileFax, Import, Queue)

Defining the path for outgoing faxes

COMMAND	OutIMGPath
DEFAULT	Localserver/SYS:FAXWARE\OUT\IMG\
EFFECT	Specifies the directory for outgoing facsimilies

Defining the path for receiving faxes

COMMAND	InIMGPath
DEFAULT	Localserver/SYS:FAXWARE\IN\IMG\
EFFECT	Specifies the directory for incoming facsimilies

Defining the CommandID

COMMAND	CommandID
DEFAULT	@@
EFFECT	Must contain two ASCII characters. You should NEVER EVER change this entry (Use AdditionalCommandID instead)

Defining the AdditionalCommandID

COMMAND	AdditionalCommandID
DEFAULT	@@
EFFECT	Must contain two ASCII characters. Defines an alternate sequence for the command ID

Defining the number of lines for log printing

COMMAND	PrinterLPP
DEFAULT	68
EFFECT	Defines number of lines per page for automatic log printing

Rejecting empty pages

COMMAND	Enable0Pages
DEFAULT	FALSE
EFFECT	Value is boolean. Defines if empty pages are automatically rejected during conversion

Setting the DateValue

COMMAND	DateValue
DEFAULT	Default is FALSE
EFFECT	Value is boolean. Set TRUE to suppress the special handling of dates for today and yesterday in the log files. Will cause real date values.

Defining the DeleteTime

COMMAND	DeleteTime
DEFAULT	3
EFFECT	Unit is hours (e.g. 3 means 3:00 am). Defines the time when the Service Layer of FaxWare will automatically start its maintenance functions

Defining the log file for fax broadcasts

COMMAND	RNDReport
DEFAULT	RND.NOK
EFFECT	May contain a file name. Specifies the file, in which all misplaced fax jobs of a fax broadcast are stored. The file is stored in the directory SYS:FAXWARE\RESOURCE\DATA

Changing the speed of PGA converting

COMMAND	AcceleratePGA
DEFAULT	12
EFFECT	Unit is as follows. Specifies the number of characters to convert before another NetWare Thread gets the CPU. The higher the value, the faster the conversion speed.

Changing the speed of PCX converting

COMMAND	AcceleratePCX
DEFAULT	20
EFFECT	Unit is as follows. Specifies the number of pixel lines to convert before another NetWare Thread gets the CPU. The higher the value, the faster the conversion speed.

Changing the speed of G3 converting

COMMAND	AccelerateG3
DEFAULT	20
EFFECT	Unit is as follows. Specifies the number of pixel lines to convert before another NetWare Thread gets the CPU. The higher the value, the faster the conversion speed.

Changing the conversion speed of printing

COMMAND	AccelerateDRK
DEFAULT	5
EFFECT	Unit is as follows. Specifies the number of pixel lines to print before another NetWare Thread gets the CPU. The higher the value, the faster the conversion speed.

Changing the scan interval for fax jobs (fax queues)

COMMAND	DisableScanQueues
DEFAULT	FALSE
EFFECT	Specifies if the queues are scanned for fax jobs immediately after the conversion of a fax job

Changing the scan interval for fax jobs (IMPORT directory)

COMMAND	DisableScanNoBook
DEFAULT	FALSE
EFFECT	Specifies if the IMPORT directories are scanned for fax jobs immediately after the conversion of a fax job.

Changing the scan of the error log import directory

COMMAND	DisableScanErrFiles
DEFAULT	FALSE
EFFECT	Defines, that the »error log import directory«, is not scanned for new entries.

Changing the scan of the current sizes of FaxWare files

COMMAND	DisableCheckFileSize
DEFAULT	FALSE
EFFECT	Defines, that the current sizes of all FaxWare files should not be updated in the FAXWARE.STA.

Setting the delete function for append images

COMMAND	NoAppendDel
DEFAULT	TRUE
EFFECT	Defines if the appended image should not be deleted after sending

Defining the ExtNumberConv feature

COMMAND	ExtNumberConv
DEFAULT	FALSE
EFFECT	Defines if the extended number conversion feature of FaxWare should be active (e.g. conversion of letters to numbers).
NOTE	FALSE will disable checking and warning

Defining the file name of an additional log

COMMAND	DupLog
DEFAULT	None
EFFECT	Defines the path (default is SYS:FAXWARE\CODE) and file name of an additional send and receive log. If the extension is signed, both send and receive log records will be written in one file. Other records will be written in the file with the extension .LOG (send) and .REC (receive).
NOTE	You can use this entry in multiple ways

Setting the BackupPath

COMMAND	BackupPath
DEFAULT	None
EFFECT	Defines the path for the data backup (see »Service Layer / Configuration/System«)

Parameter for the CLASS 2 Transport Layer Driver

The parameters given below may be specified in the TLD.INI file activated when the TLD is called. A TLD.INI file in which the TLD's individual configuration is stored, exists for each line. This file can be edited with any conventional word processor.

A typical TLD.INI file has the following format, for example:

```
NAME=CLASS2-NATIVE
PAGESESSION=
INIT=AT&FE0V1Q0X3&C1&D2S0=0S7=60\Q3+FCR=1
STOP=AT&F
HARDWARETYPE=1
BOARD=0
PORT=0
```

All TLD.INI parameters are set only once when calling up the TLD. When a parameter is changed in the TLD.INI, the TLD must be reloaded, so the new parameter value is set.

Types of parameters:

- ◆ **BOOLEAN**
Permissible value: 0 or 1, yes or no, true or false
- ◆ **INTEGER**
Permissible value extent: 0 up to $2^{31}-1$
- ◆ **STRING**
Alphanumerical signs. The length depends on the parameter.

Initialization of an interface

The following parameters refer to the initialization of the serial interface. Some of them are already set during the FaxWare installation.

Board number selection

COMMAND	Board
DEFAULT	0
TYPE	Integer
EFFECT	Interfaces and board number of the attached serial interface. With COMX boards the board number of the first installed interface board should be 0, the second 1, etc. With all the other interface boards not the board number, but the port number is incremented. Board = 0 corresponds to COM1 Board = 1 corresponds to COM2 Board = 2 corresponds to COM3 Board = 3 corresponds to COM4

Port number selection

COMMAND	Port
DEFAULT	0
TYPE	Integer
NOTES	Port number of the serial interface used. Usually, the port number of the first available interface is 0, that of the second is 1, etc.

Defining the hardware serial interfaces

COMMAND **HardwareType**

DEFAULT 1

TYPE Integer

NOTES Hardware type stands for the type of interface hardware used.

Every interface type has its own type number, with which it can be defined. The following numbers are defined:

Nr.	Type	Name	Term
1	COMx	AIOCOMX	Standard ser.
3	WNIM+	AIOWNIM	Novell WNIM
102	ATI	AIOATI	ATI intel.Board
104	ESP	AIOESP	ESP Board
105	DGX _i	AIODGX _i	DigiBoard Xi
106	DGC _x	AIODGCX	DigiBoard Cx
107	DGX _{em}	AIODGXEM	DigiBoard Xem
134	DGPS	AIOPSDREV	DigiBoard PS

Receiver buffer given as large

COMMAND **RXBufSize**

DEFAULT 4,096

TYPE Integer, unit: byte

EFFECT With RXBufSize, the preset receive buffer, which the TLD applies in AIO, can be modified. It depends on the speed of the computer and the maximum baud rate if this parameter takes on higher or lower values.

Sending buffer given as large

COMMAND	TXBufSize
DEFAULT	2,048
TYPE	Integer, unit: byte
EFFECT	See RXBufSize

Releasing ports

COMMAND	ReleasePort
DEFAULT	1
TYPE	Integer
EFFECT	The port used by the Transport Layer, can be released permanently with the ReleasePort command. If FaxWare does not require the port for sending purposes, the port can be used for other applications (e.g. NetWare Connect). In doing so, the parameter has to be 1 (default) and the configuration »Only sending« has to be set in the configuration of the Service Layer lines. With the configuration 0 the port is covered by the Transport Layer all the time..

Low baud rate initialization

COMMAND	LowBaudInit
DEFAULT	FALSE
TYPE	Boolean
NOTES	According to the standard, the serial interface to the modem is initialized at 19,200 bps. Some modems work with a maximum of 9,600 or 2,400 bps in command mode. If in command mode, LowBaudInit=TRUE was set, the interface would be initialized on 2,400 bps. Before the fax data transmission, the interface speed is switched automatically to a higher level.

Setting the maximum baud rate

COMMAND	LimitBaud
DEFAULT	FALSE
TYPE	Boolean
EFFECT	LimitBaud=TRUE means that the maximum data transfer between the computer and the modem is not permitted to take place with 19,200 bps but only with 9,600 bps.

Defining the flow control

COMMAND	FlowControl
DEFAULT	2
TYPE	Integer
EFFECT	This parameter defines the handshake between the modem and the computer. Software flow control and hardware flow control are distinguished. The hardware flow control is preset as standard.

Nr.	flow control
1	software flow control
2	hardware flow control

NOTE	The locked in modem has to be set on the handshake procedure. As usual, software flow control is activated with AT\Q1 or AT&K1. Hardware flow control is set with AT/Q3 or AT&K3 in most modems. This sequence adds the Init sequence (INIT). Please consult your modem handbook.
------	---

TLD info parameter

These parameters can be specified in the TLD.INI, as well as in the direct call of the TLD. It is not possible to hand them over when calling up the NetWare control files as parameters, but they have to be entered directly into the NCF file when using this file.

TLD screen suppression

COMMAND	HideScreen
DEFAULT	FALSE
TYPE	Boolean
EFFECT	The HideScreen=TRUE command, suppresses the provision of a screen for the TLD. Therefore, the TLD cannot be unloaded by means of the menu. If you wish to remove a TLD, you must enter the UNLOAD TLD command on the console.
NOTE	Therefore, a TLD should be removed only if it is absolutely necessary.

TLD activity display

COMMAND	ShowLights
DEFAULT	FALSE
TYPE	Boolean
EFFECT	ShowLights=TRUE creates the flashing of the LEDs DTR and RTS changing with a delay of 500 ms. Thus, you can directly recognize at the modem if a TLD is active. The ShowLights parameter is especially useful when HideScreen is used.

Modem response display

COMMAND	Show
DEFAULT	FALSE
TYPE	Boolean
EFFECT	Under the menu item Communication Monitor, Show=TRUE displays all the commands to and from the modem in the TLD screen. This function is of use, when adapting and configuring various fax modems, as you can observe how the TLD and the modem behave at that moment. As a result, you are able to view the altered parameter.
NOTE	For daily operation, the display of modem responses is absolutely unnecessary. This parameter should not be used with a properly functioning modem. With the F2 key the logging mode is switched on and off. This is marked by a short beep.

Logging a modem response

COMMAND	File
DEFAULT	FALSE
TYPE	Boolean
EFFECT	In logging the modem responses, as with the parameter Show, there is additional logging possible in a debug file, (SYS:\FAXWARE\TLD\LINExx\TLD.DEB).
NOTE	The parameter FILE should not be set over long periods of time, otherwise, the debug file will be too large.

Deactivating the error log

COMMAND	ErrorLog
DEFAULT	TRUE
TYPE	Boolean
EFFECT	When entering ErrorLog=FALSE the TLD does not carry out any entries in the FaxWare error log file.

Modem initialization

These parameters are specific to the modem. They regulate the communication between the TLD and the connected modem. Here, the behaviour of the TLD during the communication with the modem, must be exactly specified.

Start initialization sequence

COMMAND	Start
TYPE	String, (length: 50)
EFFECT	After loading the TLD, the sequence is sent once to the modem. It may consist of several commands that are separate from each other. In this case, the individual commands are separated by the character(~). This inserts a carriage return for each command. Each modem init sequence starts with the attention command (AT). Please pay attention to the note given in the modem handbook under Modem initialization.

EXAMPLE

```
Start=+++ATH~ATZ0~AT&F
```

This sequence takes the modem back into data mode (+++), cuts the phone line (ATH), dials the 0 profile (ATZ0) and sets the modem back on the reset mode (ATZ0). OK is expected by the modem after each command.

Selecting CLASS 2.0 compatibility

COMMAND	Class20
DEFAULT	FALSE
TYPE	Boolean
NOTES	Selects the Class 2.0 compatibility.

EXAMPLE

```
Class20=TRUE
```

Modem initialization sequence

COMMAND	Init
TYPE	String, (length: 100)
EFFECT	This sequence is sent to the modem with every modem reset (and also before every dial procedure). OK is expected as an answer. Please pay attention to the notes in your handbook.
NOTES	<p>When sending several AT commands in one line, the leading AT is send only once. For example:</p> <pre>AT&FS30=128\Q3</pre> <p>Combination of the commands:</p> <pre>AT&F ATS30=128 AT\Q3</pre> <p>If your modem requires individual commands, the above mentioned init string can be described as follows:</p> <pre>AT&F~ATS30=128~AT\Q3</pre> <p>The character [~] (ASCII 126) serves as a line divider. After each line, the modem expects an OK.</p>

EXAMPLE

```
INIT=ATE0S0=0X3+FLO=2
```

Unload sequence

COMMAND	Stop
TYPE	String, (length:50)
NOTES	<p>This sequence is sent to the modem when unloading the TLD.</p> <p>If the TLD has been configured only for sending, this sequence is sent to the modem before release of the port. The port is then released and is available for different applications.</p>

EXAMPLE

```
Stop=+++ATH
```

Common parameters

TLD name display

COMMAND	Name
TYPE	String, (length:50)
EFFECT	Displays the TLD name on the TLD screen. No program function.

Changing the path for incoming faxes

COMMAND	InImgPath
DEFAULT	Server name/SYS:\FAXWARE\INIMG\
TYPE	String, (length: 150)
EFFECT	With InImgPath the directory in which incoming faxes are stored can be determined. The directory can be residing on another volume but, must be located on the same server and already be mounted. Drive letters such as F: are inadmissible.
NOTE	In FaxWare the InImgPath parameter must also contain the same path (see: FAXWARE.INI).

Cyclic test for the locked in modem

COMMAND	WatchdogDelay
DEFAULT	0
TYPE	Integer (unit: minutes)
EFFECT	Initiates a test of the locked in modem when it has been idle for the period of time specified in the WatchdogDelay, determines if the modem is working. If OK does not appear, the modem is initialized again. WatchdogDelay=3 activates the watchd. every third minute. WatchdogDelay=0 deactivates the watchdog
NOTE	The Watchd. will only be activated, when the modem is idle.

Definition of the Watchdog commands

COMMAND	WatchdogString
DEFAULT	AT
TYPE	String, (length:20)
EFFECT	The string (Default: AT) which is specified in Watchdog-String, is sent to the modem when activating the watchdog. OK is expected as response. With a discrepancy or timeout (2 sec) the modem is initialized.

Change staying time before communication

COMMAND	FloDelay
DEFAULT	0
TYPE	Integer
EFFECT	FloDelay=2 specifies a pause of two seconds after the interfaces are configured (including reset of DTR and DSR) but before any communication with the modem occurs.

Send parameter (TX)

Improving the transmission quality

COMMAND **EOLFilling**

DEFAULT 0

EFFECT EOLFilling=x is used to specify the length of the zero string sent at the end of each pixels line (end of line) during the fax transmission. For example, if a distant line requires a delay to initiate a paper feed, a delay of several milliseconds can be achieved. The number of the fill digits depends on the size of the scan time/line session parameter which is transferred by the distant line, before the fax transmission. The number of the fill digits entered, is calculated from the EOLFilling*FACTOR.

Scan time/line	factor
0 ms	0
5 ms	1
10 ms	2
20 ms	4
40 ms	8

NOTES With some modems this parameter is essential, or, the distant station (recipient) will receive a non-original, vertically shortened fax, because the first lines after the paper-feed are not printed.

Use the EOLFilling parameter only when the fax to the distant station arrives in a vertically shortened format.

EXAMPLE A DIN A4 fax consists of about 2,000 lines. If the distant station reports a scan time of 20 ms per line and EOLFILLING is set to 5, it gives you an additional transmitted data volume of 40kb! (2,000 * 4 * 5). The fax transmission takes approximately 33 seconds longer.

Setting the swell value for the TLD error behaviour

COMMAND	MaxFailedTXJobs
DEFAULT	20
TYPE	Integer
EFFECT	Defines the maximum number of defective selection attempts (TX jobs) that can occur before an error condition is logged. When this default value for failed attempts is reached, an entry is made in the Service Layer error log.
NOTE	MaxFailedTXJobs=0 deactivates this function

Make fax training before every page

COMMAND	MultiPageSession
DEFAULT	FALSE
TYPE	Boolean
EFFECT	By entering the MultiPageSession=TRUE the TLD carries out a training before each new page, for the firm setting of the transmission values (e.g. baud rate).

No increase of the error search counter

COMMAND	NoDialToneInc
DEFAULT	FALSE
TYPE	Boolean
EFFECT	NoDialToneInc=TRUE ignores the dial attempt if the modem displays no dial tone. The retry counter is not raised and the job remains in the order list. It is again passed to the Transport Layer after the timeout value specified by the Repeat on error parameter in the system configuration has elapsed.

Giving the pages parameter

COMMAND **PageSession**

DEFAULT 1,3,0,2,0,0,0,0

EFFECT Contains the complete required page session parameter string sent to the modem before each page.

NOTES You may choose one of the following values:

First value: Resolution

0	1
normal	fine

Second value: Bitrate (baud)

0	1	2	3	4	5
2400	4800	7200	9600	12000	14400

Third value: Line length (pixel)

0	1	2
1728	2048	2432

Fourth value: Side length

0	1	2
A4	B4	unlimited

Fifth value: Data compression

0	1	2	3
1-D MH	2-D MR	2-D uncompr.	2-D MMR

Sixth value: Error correction

0	1
turn off	turn on

Seventh value: Binarc file transfer

0	1
turn off	turn on

Eighth value: Delay at EOL (ms); resolution normal

0	1	2	3	4	5	6	7
0	5	10	10	20	20	40	40

Eighth value: Delay at EOL (ms); fine resolution

0	1	2	3	4	5	6	7
0	5	5	10	10	20	20	40

Send delay at the page start

COMMAND	TopDelay
DEFAULT	0
TYPE	Integer (unit: milliseconds)
EFFECT	Gives the timeout delay (in milliseconds), that must elapse before page data is sent (top of page delay).
NOTE	With some modems, the first pixel lines of each page are faulty or missing. This can be avoided by a delay of a few milliseconds.

Inverting TX data bit order

COMMAND	TXBitOrderReverse
DEFAULT	FALSE
TYPE	Boolean
EFFECT	TXBitOrderReverse=TRUE has the effect that the data bit order is reversed when faxes are sent (for further notes see RXBitOrderReverse).

Defining the dial response time

COMMAND	DialResponseTime
DEFAULT	120
TYPE	Integer (unit: milliseconds)
EFFECT	Defines the maximum dial response time, i.e. how long FaxWare will wait for a connection to the distant station.

Defining a minimum transmission rate

COMMAND	MinValidbaudrate
DEFAULT	2400
TYPE	Integer
EFFECT	During the fax training period, both counter places exchange the transmission parameters. The document transmission rate is also defined. If this transmission rate is lower than the figure defined by MinValidbaud rate the sending station terminates the connection.

Defining the redials for faulty pages

COMMAND	ResendAllPages
DEFAULT	FALSE
TYPE	Boolean
EFFECT	If ResendAllPages=FALSE in the event of a faulty connection, only the pages of the document that have not been transmitted correctly are resent. This includes the page on which the mistake occurred. If ResendAllPages=TRUE, the complete document is transmitted again in the event of a faulty transmission.

Defining the number of redials in the case of a faulty page

COMMAND	MaxFailedPageRetry
DEFAULT	0
TYPE	Integer
EFFECT	This value defines how often the last page will be transmitted again to the distant station, if an error occurs. After every page the receiving distant station reports a status of dispatch (e.g. FPTS:1 for "page OK"). If the page has not been received correctly (FPTS:2), this page will be transmitted again during the connection.

Receive parameter (RX)

Modem reset before pickup

COMMAND **AnswerReset**

DEFAULT FALSE

TYPE Boolean

EFFECT With a requested call, before the line is picked up, a modem reset takes place if AnswerReset=TRUE (see: INIT). AnswerReset=FALSE suppresses the reset.

Reading the charge counter after connection

COMMAND **GetCharge**

TYPE String (length: 20)

EFFECT Some modems have the capability to determine the charge directly from the line. The number of charge impulses can, on request, be read by the TLD. GetCharge includes the string required to read the charge impulse sent to the modem. A numerical value is returned.

NOTE The charge impulse must be reset before each new fax connection. The corresponding command must be placed in the modem initialization string. In some modems, using AT.PO activates the charge impulse counter and reset. The charge impulse can be read by using AT.P1. The following parameters must now be set:

EXAMPLE

```
INIT=AT...~AT.P0~AT...
GetCharge=AT.P1
```

Setting the swell value for the TLD error behaviour

COMMAND	MaxFailedRXJobs
DEFAULT	20
TYPE	Integer
EFFECT	Defines the maximum number of defective received faxes that will be accepted before an error is logged. When the specified default value is reached, an entry is made in the Service Layer error log.
NOTE	MaxFailedTXJobs=0 deactivates this function.

Defining maximum time for every incoming fax page

COMMAND	MaxPageRXTime
DEFAULT	360
TYPE	Integer (unit: seconds)
EFFECT	The parameter MaxPageRXTime is used to specify the maximum acceptable receive time for a fax page. When this value is exceeded, the connection is automatically interrupted.
NOTE	The parameter MaxPageRXTime can also be used to control incoming calls. If the connection is interrupted during transmission, the TLD automatically goes into wait mode after the specified MaxPageRXTime time value has elapsed.

Choosing the caller recognition

COMMAND	Ring
DEFAULT	TRUE
TYPE	Boolean
EFFECT	When Ring=TRUE, the modem does not signal an incoming call as a RI signal (D SUB25: Pin 22; D SUB9: Pin 9), but with the message Ring.

Inverting the RX data bit order

COMMAND	RXBitOrderReverse
DEFAULT	FALSE
TYPE	Boolean
EFFECT	RXBitOrderReverse=TRUE causes the data bit order of incoming faxes to be reversed. Normally receiving of Class 2/Class 2.0 modems fax data follow in the order of lsb...msb.
NOTES	Should the received fax be absolutely indecipherable, the data bit order must be reversed.

Switching off the flow control

COMMAND	RXFlowControl
DEFAULT	TRUE
TYPE	Boolean
EFFECT	RXFlowControl=FALSE causes the flow control to be switched off when receiving faxes.

Send/receive parameters (TX/RX)

Delaying modem commands

COMMAND	CmdDelay
DEFAULT	0
TYPE	Integer (unit: milliseconds)
EFFECT	The command CmdDelay permits the input of a time delay after the command is sent to the modem. Some modems, after receiving the OK acknowledgement, require some time to carry out the command. If another command is sent during this period it is not recognized. The CmdDelay=100 entry causes a 100ms pause after each command is received by the modem.

Facilitating fax transmission with V.17

COMMAND	HighSpeedConnect
DEFAULT	FALSE
TYPE	Boolean
EFFECT	Some modems support the V.17 fax standard, making higher speed and better transmission possible. With a connection to a corresponding distant station, transmission speeds of up to 14,400 bps can be reached. The parameter HighSpeedConnect=TRUE allows fax connection of up to 14,400 bps.

Adjusting the session parameter

COMMAND	Session
DEFAULT	1,3,0,2,0,0,0,0
EFFECT	See PAGESESSION. It is only sent once before the connection.
NOTES	The first parameter (resolution) is set internally by the Transport Layer.
EXAMPLE	<code>Session=1,5,0,2,0,0,0,0</code>

Adjust maximum modem response time

COMMAND	ResponseTime
DEFAULT	60
TYPE	Integer, unit: seconds
EFFECT	By using the command ResponseTime the maximum response time of the modem is monitored. After setting a command, the TLD waits a maximum of 60 seconds (the default) before a timeout error is generated.
NOTE	With slower modems, it could possibly be useful to set the response time higher. A smaller value like 30, should be avoided. The higher the response time, the longer a modem can hang in the cable during a function error.

Eliminating the receive confirmation

COMMAND	WaitForFPTS
DEFAULT	FALSE
TYPE	Boolean
EFFECT	WaitForFPTS=False specifies that the modem should not expect an acknowledgement after each dispatched fax page.

Parameter for the ISDN Transport Layer Driver

The parameters given below may be specified in the TLD.INI file activated when the TLD is called. A TLD.INI file in which the TLD's individual configuration is stored, exists for each line. This file can be edited with any conventional word processor.

Selection of the B channel

COMMAND	Channel
DEFAULT	2
TYPE	Integer
EFFECT	Selects the B channel which should be used.
EXAMPLE	0 selects B channel 1 1 selects B channel 2 2 used for automatic selection

Defining the direct-dialing mask

COMMAND	DeviceNumber
DEFAULT	0,1,2,3,4,5,6,7,8,9
TYPE	Integer
EFFECT	The DeviceNumber is used to specify the call numbers of specific applications. Only calls with "Endgeräteauswahlziffern" (EAZ) that are stated in device numbers are received. The DeviceNumber logically separates several applications which react to the same services (telephone, data etc.). In the case of 1TR6 - the D channel log of the German Telecom - the device number corresponds to the "Endgeräteauswahlziffer" (EAZ). In the case of E-DSS1 a so-called device mapping is done by CAPI. The last figure of a multi-subscriber number (MSN) is accepted as device number.
EXAMPLE	<code>DeviceNumber=1,3</code>

Selection of the ISDN controller

COMMAND	Controller
DEFAULT	0
TYPE	Integer
EFFECT	Specifies the number of the installed ISDN boards

Setting the service indicator

COMMAND	ISDN_Service_FaxG3
DEFAULT	1
TYPE	Integer
EFFECT	Sets the ISDN service indicator for send jobs according to CAPI specifications, fax group 3.
NOTES	Some ISDN extensions require service indicator 1 to respond to a distant station call. Possible setting: 1: Telephone 2: a/b services

TLD name display

COMMAND	Name
EFFECT	Shows the names of the line on the TLD screen
NOTES	No program function

Setting the output priority

COMMAND	DebugMode
DEFAULT	0
TYPE	Integer
EFFECT	Defines which CAPI messages in the Communication Monitor should be displayed. Every CAPI message has a specific priority level. All messages are displayed that correspond to the DebugMode.
NOTE	With DebugMode set to 1, only important messages are displayed. If set to 5, all messages are displayed.

Setting maximum CAPI response time

COMMAND	TimeOut
DEFAULT	60
TYPE	Integer (unit: seconds)
EFFECT	After sending, the commands that use TimeOut expect a response from CAPI before the timeout period elapses, or disconnection occurs.

Renewed sending of pages

COMMAND	ResendAllPages
DEFAULT	FALSE
TYPE	Boolean
EFFECT	If ResendAllPages=FALSE is used, only the document pages that have been transmitted incorrectly are resent in the event of a faulty connection. This includes the page on which the mistake occurred. If ResendAllPages=TRUE, the complete document is transmitted in the event of a faulty transmission.

Transmission of the EAZ to the distant station

COMMAND	OutDeviceNumber
DEFAULT	0
TYPE	Integer
EFFECT	Allows you to transmit your EAZ to the distant station when faxing. Some telephone extensions also demand transmission of their EAZ on outgoing calls. Valid figures are 0-9.

Changing the service indicator for acceptance of calls

COMMAND	EnableISDNPhoneRx
DEFAULT	FALSE
EFFECT	If the parameter EnableISDNPhoneRX=TRUE is set, calls will also be accepted through the service indicator 1/1. This is typical for an ISDN telephone.
NOTE	In the case of some telephone devices (e.g. Teles), the service indicator is changed so that this parameter is required before faxes can be received.

Establishing a FaxPlus connection

COMMAND	DefaultFaxPlus
DEFAULT	TRUE
TYPE	Boolean
EFFECT	Specifies if the Transport Layer Driver should first try to establish a FaxPlus connection to the distant station. If the FaxPlus connection fails, the fax will be transmitted in the conventional way. DefaultFaxPlus=FALSE disables any automatic attempt to establish the FaxPlus connection. An attempt to build a FaxPlus connection then only takes place if explicitly requested by two colons (::) to the telephone number.

Avoiding receipt of FaxPlus calls

COMMAND **DisableFaxPlusRX**

DEFAULT FALSE

TYPE Boolean

EFFECT If there are no MSNs available for an ISDN connection, an overlap of the ISDN services can take place through various applications. If you set DisableFaxPlusRX, the TLD only receives a call if "Telephone" or "a/b services" is indicated as service.

For example, if a MPR and FaxWare use the same ISDN board and the inserted TK device does not pass on any MSN information, an overlap of the 64kbyte service inevitably takes place. If DisableFaxPlusRX=TRUE, incoming FaxPlus calls are not received and a breakdown of further ISDN applications occurs. Dispatch of faxes via FaxPlus is not affected. If DisableFaxPlusRX=FALSE, the TLD is able to receive incoming FaxPlus calls.

Parameters for fax routing

The following parameters have to be entered in the TLD.INI for adaptation to the ISDN connection. Please also note the information in the chapter »Appendix: Routing and printout of received faxes«.

Definition of the So connection

COMMAND	Routing
DEFAULT	0
TYPE	Integer
EFFECT	Specifies the method of inbound routing 0=Routing only by CSID; no routing by TLD 1=DDI routing 2=EAZ/MSN routing The number of direct-dialing figures is given by parameter "DDILength". Parameter "DDIPrefix" allows for a logical separation of several NT1 connections. Through parameter "DDIRange" the possible range of numbers can be limited. The dialed number must be within this range.

Fixing the DDI-validity range

COMMAND	DDIRange
DEFAULT	0, 9999
TYPE	Integer
EFFECT	Allows you to specify a valid range for received DDI numbers (only used with Routing=1). For example, if a connection has numbers from 100 to 400 it can be limited to 210 to 230. The TLD only receives calls within the specified range.
EXAMPLE	<code>DDIRange=210, 230</code>

DDI distribution

COMMAND	DDIPrefix
DEFAULT	000
TYPE	Integer
EFFECT	Allows you to specify a three-figure distribution (prefix) number (only used with Routing=1). This number is placed in front of evaluated DDI figures. The default DDIPrefix is 000. When the distribution method is configured in the ServiceLayer of FaxWare according to DDI, the three-figure DDIPrefix is given before each direct-dialing figure.

EXAMPLE

```
DDIPrefix=100
```

Defining the direct-dialing length

COMMAND	DDILength
DEFAULT	3
TYPE	Integer
EFFECT	Used to specify the direct-dialing length, i. e. the number of figures available for direct dialing. This command is only valid when used with Routing=1. DDILength must correspond to the direct-dialing length of the telephone device connection. Possible direct-dialing length: 1 to 4 figures.

EXAMPLE

```
DDILength=3
```

Board specific parameters

Some ISDN boards show peculiarities during operation which require special parameters in the TLD.INI. The following parameters may only be used with the boards indicated.

Inserting empty lines before the FaxWare header

COMMAND	HeaderLineFeed
DEFAULT	0
TYPE	Integer
EFFECT	Used to specify the number of empty lines before the fax header. Up to 37 empty lines can be inserted.
NOTE	HeaderLineFeed can be set to any value from 0 to 37.
EXAMPLE	<code>HeaderLineFeed=37</code>

Deactivating the fax head of an ISDN board

COMMAND	FaxHead
DEFAULT	0
TYPE	Integer
EFFECT	Allows you to deactivate the integrated fax headline of some ISDN boards. FaxHead=1 ITK ix1 basic FaxHead=2 Dr. Neuhaus NICCY 3009 Hybrid

Forcing a disconnection

COMMAND **WaitForDisconnect**

DEFAULT FALSE

TYPE Boolean

EFFECT If WaitForDisconnect=TRUE, a connection is not automatically deactivated after dispatch of a fax. The sending station waits for an active disconnection by the distant station.

After dispatch of a fax the current firmware of Dr. Neuhaus NICCY 3009/Hybrid does not allow an active disconnection of the sending board at some extensions (telephone devices). Therefore, this parameter must be set in any case.

File names and paths

In this section you will find information about the file names and the FaxWare directory structure.

Dateien und Verzeichnisse der FaxWare

During the installation FaxWare creates the following directory structure on the volume SYS:.

SYS:\SYSTEM

FAXWARE.NCF	NCF to start the Service Layer of FaxWare (FAXWARE.NLM) on the server console
FWNDS.NCF	NCF to load the NDS Support NLM (FWNDS.NLM) of FaxWare
TLD01.NCF	NCF to start the Transport Layer Driver (TLD.NLM) for the first line.
PCL.NCF	NCF to start the PCL Conversion Server (PCL.NLM)
AIOCOM.NCF	NCF to load the module AIOCOMX.NLM with the initialization parameters for the serial interfaces COM1 to COM4
AIOCOM1.NCF	NCF to load the module AIOCOMX.NLM with the initialization parameters for the serial interface COM1

SYS:\FAXWARE

SETUP.EXE	SETUP file to install the Windows Frontend
SETUP.INF	Configuration file for SETUP.EXE
READ.ME	ASCII file with current notes about the FaxWare installation

SYS:\FAXWARE\CODE

FAXWARE.NLM	Program code of FaxWare
ANIMATE.NLM	Animation NLM
FWNDS.NLM	NDS Support NLM for FaxWare
FAXWARE.INI	ASCII file with FaxWare configuration parameters
FAXWARE.FIL	File with pathes from the FileFax and API Services
FAXWARE.DRK	Configuration file for the printer
FAXWARE.DAT	Configuration file for the system settings and licenses
FAX\$LOG.ERR	FaxWare error log
BOOT\$LOG.TXT	FaxWare boot log with error messages
FWPRINT.LOG	Log file for the Windows Print Server (FWPRINT.EXE)
FAXWARE.BKU	ASCII file with the pathes to backup
FAXWARE.JOB	Job log
FAXWARE.LOG	Send log
FAXWARE.REC	Receive log
FAXWARE.PRN	List of all print jobs
FAXWARE.HOL	Holiday list
FAXWARE.CAT	File with the phonebook categories
FAXWARE.TRF	File with the tariff entries
FAXWARE.FRM	Entries in the Form Manager
FAXWARE.STA	File with statistic data
F\$W.CHK	Check file for the »Corrupted-File-Detection«

SYS:\FAXWARE\CODE\DATABASE

01000001.*	Phonebook of the group EVERYONE (only NetWare 3.1x). The name of a phonebook file is the user ID/group ID of the user/group under NetWare
ACCOUNT.*	Charges Database (see »Service Layer/Databases/Char- ges Database«)
DISTRIB.*	Routing list (»Service Layer/Databases/Routing«)

ROBINSON.* Blacklist (»Service Layer/Databases/Blacklist«)
COLLECT.* Collection list (»Service Layer/Databases/Collection list«)
FWDB.CHK Check file for the »Corrupted File Detection«

SYS:\FAXWARE\CODE\DEF

*.DEF ASCII files to send test faxes from the FaxWare Service Layer (»Service Layer/Information/Send test fax«)

SYS:\FAXWARE\CODE\NLD

FWSTART.NLD Animation file for the ANIMATE.NLM

SYS:\FAXWARE\CODE\RESOURCE

CODE.* Resource files for the Service Layer in different languages
HELP.* Files for the »Online Help« of the Service Layer in different languages
COUNTRY.* Files with the parameters of different countries (see »Service Layer/Databases/Country directory«)

SYS:\FAXWARE\CODE\RESOURCE\HEADER

HEADER\$.BMP Default graphic (FAXWARE) in a fax header
HEADER.BMP Name of a graphic file to exchange the default header

SYS:\FAXWARE\CODE\RESOURCE\HOL

FAXWARE.* Holiday lists from different countries, e.g. FAXWARE.FRA for France (»Service Layer/Databases/Country directory). The default file is the FAXWARE.HOL in SYS:\FAXWARE\CODE.

SYS:\FAXWARE\CODE\RESOURCE\MARGIN

*.BMP Graphic files for the fax margin on printed faxes (see »Service Layer/Configuration/Printer/Fax Printer/Fax Margin«)

SYS:\FAXWARE\CODE\TEMP

*.PGA Temporary files during the conversion of fax jobs
*.PRN Temporary files during the conversion of fax jobs

SYS:\FAXWARE\CLIENTS\DOS

FWDOS.EXE	Program code of the DOS Frontend. It can be called directly from the standard directory or can be copied to the local directory.
FWDOS.DMO	Animation file
FWDOS.ENG	Resource file (English) for the DOS Frontend.
FWDOS.MAS	Configuration file with created masks for the simple fax editor in the DOS Frontend.
*.DAT	File with configuration data for the client. For every single computer, there is an individual configuration file produced. The file name is created in the user ID.

SYS:\FAXWARE\CLIENTS\WINDOWS

FWWIN.EXE	Program code. It can be run directly from Windows.
FWWIN\$.*	Resource files for FWWIN.EXE in different languages.
FWWIN.BMP	Graphic file for the animation while starting the Frontend
FWWIN.HLP	Help file for the Windows interface
FWWINHLP.*	Resource files for the Online Help in the Frontend in different languages
FWVIEW.EXE	Viewer under Windows to display the fax files. Supports the graphic format MH (Modified Huffman).
FWVIEW\$.*	Resource files for the viewer in different languages
FAPI.DLL	Dynamic link library for the Fax Application Programming Interface of FaxWare
TOBITLIB.DLL	Dynamic link library with Windows functions from the Frontend
FAXWARE.DRV	Printer driver for the creation of graphic files for FaxWare
FAXWARE.DOC	Macro for »Word for Windows«
UNIDRV.DLL	Dynamic link library from Microsoft for the support of standard printers
NWIPXSPX.DLL	Dynamic link library from Novell for the data transport over the NetWare standard protocol

NWCALLS.DLL Dynamic link library from Novell for the Application Programming Interface of the NetWare shell

TOBIT!.* ASCII file with examples for the field »Markings« in the receive log of the Windows Frontend

SYS:\FAXWARE\CLIENTS\WINDOWS\WIN95

FAXWARE.DRV Printer driver for the creation of graphic files for FaxWare (Windows 95)

OEMSETUP.INF Configuration file for the printer driver

UNIDRV.DLL Dynamic link library from Microsoft for the support of standard printers (Windows 95)

UNIDRV.HLP Help file for the UNIDRV.DLL

SYS:\FAXWARE\OUT\API

2FD8E28D.001 Fax job (format PCX) from a Frontend

2FD8E28D.JOB ASCII file with the FaxWare commands from the fax job

2FD8E28D The same ASCII file without extension to convert fax jobs (FaxWare scans this directory for files without an extension)

SYS:\FAXWARE\OUT\IMG

MHD76C5A.001 Image file from an outgoing fax job (first page)

MHD76C5A.002 Image file from an outgoing fax job (second page)

MHD76C5A.0TN Thumbnail file from the fax image

MHD76C5A.0TX Comment file from the fax image

SYS:\FAXWARE\OUT\QUEUES

6900001D.QDR Directory from a FaxWare queue (see »Service Layer/Configuration/Services/Queue Services«). The directory name is the »Print Queue ID« under NetWare

SYS:\FAXWARE\IN\IMG

100001.0\$0 Directory for the fax images (incoming faxes) from the group EVERYONE (NetWare 3.1x). The directory name is the NetWare »group ID« or »user ID« from the recipient.

SYS:\FAXWARE\INIMG\1000001.0\$0

MHD71A15.001 Image file from a received fax (first page)
MHD71A15.002 Image file from a received fax (second page)
MHD71A15.0TN Thumbnail file from the fax image
MHD71A15.0TX Comment file from the fax image
BFD71A15.000 Bifax appendix from the fax image

SYS:\FAXWARE\UTIL\DOS

CHKVER.EXE Utility to check the FaxWare program versions
MH2PCX.EXE Utility to convert fax images (format »MH«) into PCX files
NUMPREP.EXE Utility to prepare and sort broadcast files
TPACK.EXE Utility to compress files
TUNPACK.EXE Utility to unpack files (see TPACK.EXE)
UART.COM Utility to check the serial interface of a PC (what kind of UART)

SYS:\FAXWARE\UTIL\DOS\CAS

CASEM.EXE Program code from the CAS emulator

SYS:\FAXWARE\UTIL\DOS\REPORTER

REPORTER.EXE Program code of the utility REPORTER
SAMPLE1.* ASCII file with sample settings

SYS:\FAXWARE\UTIL\NL\M\FWIMPORT

FWIMPORT.NLM Program code of FWIMPORT
FWIMPORT.INI Configuration file for FWIMPORT
READ.ME Current notes about FWIMPORT

SYS:\FAXWARE\UTIL\WINDOWS

MODULE.EXE Utility to display loaded modules

SYS:\FAXWARE\UTIL\WINDOWS\FWCONFIG

FWCONFIG.EXE Program code of FWCONFIG

SYS:\FAXWARE\UTIL\WINDOWS\FWPRINT

FWPRINT.EXE Program code of the Windows Print Server

SYS:\FAXWARE\UTIL\WINDOWS\FWODBC

FWODBC.EXE Program code of FWODBC

READ.ME Current notes about FWODBC

SYS:\FAXWARE\UTIL\WINDOWS\FAPIDDE

FAPIDDE.EXE Program code of FAPIDDE

SYS:\FAXWARE\RESOURCE\INCLUDE

WARTEN.INC Example for an FaxWare INCLUDE file (see FaxWare command @@INCLUDE)

SYS:\FAXWARE\RESOURCE\FONTS

FONTEEDIT.EXE Font editor for FaxWare fonts (DOS)

FWFONT.EXE Font editor for FaxWare fonts (Windows)

FWFONT\$.* Resource files for FWFONT in different languages

*.FNT FaxWare fonts

SYS:\FAXWARE\RESOURCE\GRAPH

LOGO.PCX Graphic file for insertion in a fax image (see FaxWare commands @@GRAPHIC and @@INSERT)

SYS:\FAXWARE\RESOURCE\SIGN

TT_SIGN.PCX Graphic file with a sample signature (see FaxWare command @@SIGNATURE)

SYS:\FAXWARE\RESOURCE\COVER

ENGLISH.CVP ASCII file with a sample coverpage (see FaxWare command @@COVERPAGE)

ENGLISH.PCX Sample graphic for integration in a coverpage

SYS:\FAXWARE\RESOURCE\FORM

FORM.PCX Example graphic for insertion in fax images (see FaxWare command @@FORM)

SYS:\FAXWARE\RESOURCE\APPEND

FAXWARE.APD ASCII file with sample entries for the FaxWare appendix (see FaxWare command @@APPEND)

STRESS.PCX Sample graphic for the FaxWare appendix function

SYS:\FAXWARE\RESOURCE\DATA

BCAST.RND ASCII file with fax numbers to create a fax broadcast (see FaxWare command @@BROADCAST)

BCAST.NOK Log file from a fax broadcast

SYS:\FAXWARE\IMPORT

IMPORT.NMR ASCII file with fax numbers to import into the FaxWare phonebooks

FILE.FAX Sample file to create a fax job with the FileFax Service from FaxWare

SYS:\FAXWARE\CONVERT\PCL

PCL.NLM Program code of the PCL Conversion Server

PCL.RES Resource file of the PCL Conversion Server

SYS:\FAXWARE\SAMPLE

SENDFAX.BAT Example to create fax jobs with DOS clients

SYS:\FAXWARE\TLD

INSTALL.EXE Program to install (additional) lines

INSTALL.INF Configuration file for INSTALL.EXE

SYS:\FAXWARE\TLD\INSTALL

HELP.* Help file for the installation program in different languages

INSTALL.* Resource files for INSTALL.EXE in different languages

README.* ASCII file with current notes about the FaxWare installation in different languages

SYS:\FAXWARE\TLD\LINExx (e.g. 01 for the first line)

TLD.NLM	Program code from the Transport Layer Driver
TLD.HLP	Help file for the »Online Help« (only ISDN boards!)
TLD.INI	ASCII file with parameters for the initialization of the fax hardware (see »Service Layer/Configuration/Lines/Linexx/TLD.INI file«)
TLD.CFG	Configuration file with specific settings for the TLD
TLD.DEB	Debug file (ASCII) to detect errors with the fax hardware
TLD.CHK	This file will be created if the TLD is loaded, so that the line is »active« for FaxWare. It will be deleted, if the TLD is unloaded.
TLD.RX	Log file with information about the received fax (e.g. the number of the distant station and status)
TLD.TX	Job file from the FaxWare Service Layer for the TLD to send a fax job. The file contains information about the fax job (e.g. the file name and the fax number).

APPENDIX



APPENDIX

In this chapter you will find important additional details concerning the FaxWare operation. We have included basic information as well as notes about potential errors. In addition, this chapter contains a list of the terms used in this documentation.

ISDN Basics

The Transport Layer Driver for ISDN boards takes advantage of all of the capabilities of ISDN hardware, utilizing such features as:

- ◆ Quick establishment of connections
- ◆ DTMF-tone recognition
- ◆ DTMF-tone dialing

Fax connections established according to V.17 can be handled at rates up to 14,400 bps. If ISDN end devices are installed with the sender and with the recipient, digital data transmission of G3 documents can be carried out at rates of 64,000 bps.

Hardware requirements

Any ISDN board that includes G3 fax support can be used with FaxWare. Every B channel supported by FaxWare has to have a G3 module. Some ISDN boards have two B channels. In such an instance, you can use 2 TLDs with one ISDN board.

Installation and operation of an ISDN board

The following material discusses the installation and operation of an ISDN board. FaxWare supports ISDN based on CAPI 1.1 and CAPI 2.0.

Advantages

Compared to the analog transmission of data by CLASS 2 modems, ISDN offers the following advantages:

- ◆ Direct Dial In
Using ISDN, incoming faxes can be automatically routed to users. Faxes do not need to be distributed manually.
- ◆ Quick establishment of connections
If you use ISDN, connections to distant stations can be established in less than one second. This offers a major advantage over pulse-dialing methods, particularly if you are performing extensive broadcast fax transmissions.

- ◆ Error-free data transmission
ISDN ensures completely error-free data transmissions between the sending and receiving stations.
- ◆ Support for FaxPlus
If the receiving and sending station both work with a FaxPlus log, training times are unnecessary and data transport can take place at 64,000bps.
- ◆ Reduced server load
The server load during data transport operations is far lower using an ISDN board than if using a modem that receives information through the serial interface of the server.

So basic connection

The So basic connection is the most commonly used connection technique for simple communication needs; it replaces the analog connection (a/b connection). A So connection provides a D channel with 16 kbps and two B channels with 64 kbps.

Since two B channels are available, you can use two separate means of transmitting at the same time. These basic channels (B channels) can transmit any data, such as voice, computer data, fax, or video.

The D channel carries information such as the call number or information about charges between an ISDN end device and an exchange. Generally, the D channel is not available to the user for data transport operations.

- ◆ So interface
An ISDN connection is always used as a So connection. The So interface is internationally standardized; it has four lines—two for sending and two for receiving. Various telecom systems provide both a So interface, but also a UP that requires only two lines.
- ◆ So interface in bus configuration
You can use eight end devices at a SO interface. Two of them can always use the ISDN line at the same time (since there are two B channels). It is not possible to connect analog end devices directly to a So connection. For these types of interconnections, you need a terminal adapter that is switched between the So connection and the analog end device.

Addressing at a bus (service MSN)

In principle, all end devices at a bus have the same number. If this number is dialed, the connected device automatically recognizes the requested ISDN service (whether it is voice or data and so on). If several similar end devices are connected to a bus or if two end devices respond to the same service, they can be distinguished by the number dialed.

- ◆ Multi Subscriber Number under E-DSS1

In the case of a Multi Subscriber Number (MSN), you do not have a fixed number distinguished by a different last digit. You assign completely different numbers to a So connection. This allows you to keep your previous analog number if you change your system from analog to ISDN.

NT1 connection

- ◆ Telecom system connection (NT1 connection)

An NT1 connection is available under E-DSS1. A global number is assigned to a telecom system connection. A certain number of digits dialed by the caller are transmitted to the connections. These digits can be evaluated by corresponding hardware (such as a telephone device) or software (the FaxWare).

Point-to-Multipoint / Point-to-Point (PTM / PTP)

The following terms describe the connection type, which also affects the D channel level.

A telecom system connection is considered as a point-to-point connection. In this case, all data goes from one end device (telecom system) to the Telecommunications exchange.

A standard So connection is a point-to-multipoint connection; several devices on the bus can communicate with the exchange.

In the case of connections within a telecom system, the connection type depends on the configuration of this device. If you use ISDN boards, you should make sure that they are adapted to the connection used. Otherwise, the correct operation of components cannot be guaranteed.

Digital fax at 64,000 bps

FaxWare supports FaxPlus, a technology that supports fax transmissions over ISDN lines at 64,000 bps. In comparison to the typical fax transmission rate - 14,000 bps - use of FaxPlus can provide significant savings of time and money.

Requirements for using FaxPlus

The hardware requirements for implementing FaxPlus on an ISDN board are identical to those for accomplishing a standard fax transmission in G3 mode. All active ISDN boards with a CAPI NLM (version 1.1) are supported. In most circumstances, FaxPlus transmissions can be accomplished without requiring a fax G3 module, but the use of such a module is recommended. Otherwise, the TLD will have to “go down” to fax G3 transmissions if the distant station does not support FaxPlus.

For a FaxPlus transmission, both the receiving and the sending station must each support this standard. All ISDN devices that meet the requirements previously described can be used.

Use of FaxPlus

Fax group 3

One of the biggest advantages of FaxPlus is that it is 100% compatible with fax group 3. A network workgroup member does not need to know if the distant station supports the transmission rate of 64,000 bps. Before the connection is established, the Transport Layer Driver with FaxPlus functionality checks to see if a FaxPlus transmission to the distant station is possible. If only fax group 3 is available, the transmission can take place with a maximum rate of 14,400 bps. The transmission of a lengthy document without using FaxPlus can be very expensive. Therefore, a group 3 transmission should probably not be carried out in many cases if the distant station does not have FaxPlus service.

If a user wants to force a FaxPlus transmission, he or she has enter two colons (::) after the number. If the distant station does not have FaxPlus, the user receives an error message, “No FaxPlus at Distant” and the transmission will not be completed.

It is also possible to prevent this operation to check for the presence of FaxPlus at the receiving station. The required changes can be entered in the INI file of the TLD (refer to the TLD.INI parameters DEFAULTFAXPLUS). If the system is configured so that this check is normally not carried out, you can change the settings for a single fax job by entering a colon (:) after the number.

BINFAX

BinFax technology, used in the FaxWare product line, supports the transfer of files which have been integrated as bit graphics in the fax. BinFax technology has greatly extended fax transmission possibilities because of its simple file transfer capabilities, as well as complete (100%) Group III compatibility without any hardware modification. BinFax technology can only be used between two communicating FaxWare servers. The software implementation is hardware independent; the sender can be using a ZyXEL modem and the receiver an ISDN board. The transmission mode is maintained according to the common fax Group III services. This also allows a fax with BinFax attachments to be sent without difficulties to a recipient with a common (paper-based) fax machine. It cannot, however, unpack the files.

Functional operation

The fax server can embed the contents of any binary file (for example, a graphic file) in any position on a common fax. The file is specially encoded and adjusted to the T4 size (Modified Huffman). Additionally, further information is transferred, such as the file size, the file type (ASCII, BMP, EXE and so on), the original file name, the date of creation, all expressed in binary form. Comments can also be transmitted. The receiving fax server recognizes during the transmission that the fax contains one or several BinFax files. The server automatically sets the original files by means of the BinFax files. These are added as an appendix (attachment) to the entry in the receive log.

Practical applications

FaxWare command There is a new command that allows the sender to insert a file into the fax.

```
@@BINFAX SYS:\DOS\COMMAND.COM, This is a test file@@
```

As shown in this example, the COMMAND.COM file is inserted in the fax with the comment »This is a test file«. The command may appear several times in a fax. Wildcards (such as *.EXE) are also allowed. This is greatly simplified through the program interface. You can select the files to be sent within the same window where the fax number is selected. The contents of the Windows clipboard can be sent as well. For example, you can create a document using Microsoft Write, copy the contents into the clipboard, and send it as a (binary) fax.

When a fax is received with one or several file attachments, a dedicated process decodes the files and stores them in the directory containing the received faxes (MH123456.001). The names of the files correspond to the graphic files. However, the MH (Modified Huffman) is substituted by BF (for BinFax). A file with the extension *.000 contains more information about the attachment (such as the original name, date, time).

When using the DOS or Windows Frontend a symbol is received directly before each entry which indicates that one or several files have been added.

Background

The architecture of BinFax includes more than just the functions that can be accessed through FaxWare. Without modifying installed hardware and without requiring assembling a collection of additional phone numbers, corporations and other organizations can transmit data using store and forward techniques. Many network administrators will appreciate the flexibility of this type of data transmission.

Advantages and disadvantages

In spite of a number of advantages, the following three disadvantages are associated with common fax sending:

- ◆ The graphic fax format can create large files that are expensive to transmit.
- ◆ The effective data throughput rate with clean text is relatively small, since the information must first be processed into a graphic. This results in much larger files. For example, a page of ASCII text with A4 dimensions requires approximately 2,100 bytes, as compared to the same size page transmitted as fax G3 that requires about 50,000 bytes.
- ◆ You cannot further process a fax in its original form. Although in theory OCR procedures are supposed to be able to transform a graphic fax into ASCII files (which are readable for machines), this procedure often fails in practice because of the low resolution of faxes (200 * 200 dpi) or problems in the image quality of the original document. A document loses its original features like fonts, attributes, inserted graphics logos, and so on.

BinFax technology makes the transmission of any file possible. For example, if you wish to broadcast a Word for Windows document containing approximately 30 pages, only 120 kilobytes are sent through the line using the BinFax technology. In comparison, a normal fax requires 1.5 megabytes. Savings resulting from reduced transmission times can be considerable. The number of files that can be sent with BinFax transmission is technically unlimited.

Limitations

The transmission procedure of Fax Group III (T.4) cannot guarantee 100% transmission quality, then the transmission considerations become more complicated. If a whole line of pixels is missing, the reader can still decipher the text without problems. Using BinFax technology, if a line is missing, then the transmission is approximately 208 bytes less (including disturbances injected into the line). A specific error procedure compensates for this occurrence by repairing single pixel lines.

During the data transmission with a normal modem connection, a defective block can be very simply transmitted for a second time (unlike fax logs). BinFax only starts producing data after hanging up. This type of transmission is better than using BinFax technology with regard to dealing with errors and charge optimization data with a complex modem log.

However, complicated procedures for dealing with the (non-standardized) transmission of data through a modem bear no resemblance to the techniques provided by the user friendly BinFax technology.

Using the current technology, the fax operates as a store-and-forward system. As compared to a typical connection to an online service, you cannot select the data to be transmitted once the operation has begun. In most cases however, the use of store-and-forward techniques is much more effective than an online connection.

System considerations

The connection between the sender and the recipient must be configured correctly to ensure that the BinFax transmission runs faultlessly. Transmission errors have a much greater effect with this system than with common faxes because of the increased information density. For successful operation, you need:

- ◆ A high-quality, dependable modem.
- ◆ A phone line free from excessive noise or disturbances
- ◆ A reliable transfer mechanism between the modem and the server (we recommend a 16550 UART).

BinFax file graphics are inserted in a fax just like a common PCX or a BMP graphic. This technique can transfer up to 999 A4 pages on which several BinFax graphics have been inserted. Theoretically, you can transfer a maximum of 1,000 files per fax.

Practically, if you want to transfer large amounts of data, you should adopt different procedures, since there are better and less expensive methods for data transfer (such as data carrier exchange, modem, and so on). Since there is no additional BinFax service claimed, the transmission is still less expensive than CompuServe or other services.

BinFax technology presents the user with an exceptionally simple way to send files.

BinFax is very economical in terms of the transfer rate over time (considered in bits per second). You cannot find a quicker means of data transfer when using inexpensive 2,400 baud modems. The effective data throughput rate is around 600 bps, but this may vary according to the type of file. In comparison, with the conventional method (modem function), it is only possible to transfer around 200 bps.

When using BinFax, another restriction involves the transferring of forms. When transferring a form, the BinFax data follows the form.

One final consideration: it is not possible to mix BinFax data with graphics.

Important note

BinFax files are susceptible to computer viruses. However, the virus within a contaminated program is spread throughout the whole program only when the program is running. During a BinFax transmission, the virus cannot access to the network file server and the data contained on it. For adequate protection, run a virus protection program to detect possible infected files and back up the network file server on a regular basis.

Routing and printout of received faxes

The intelligent routing of received faxes is one of the more important features of FaxWare. Depending on the current configuration, incoming faxes can automatically be routed to certain users or workgroups within the network. Optionally, these users can be notified that a fax has been received. Received faxes can also be automatically printed out. The following subsections discuss routing configuration and options.

Routing methods

FaxWare supports a number of different routing methods, depending on the fax hardware available and the type of telephone connection.

Routing according to the line configuration

Using this method, the name of the recipient is entered in the line configuration at the Service Layer. All received faxes are routed to the designated recipient. This method proves useful where several lines are used that are assigned to certain departments.

Routing according to the CSID (Calling Station Identifier)

Routing by this method is accomplished according to the fax number transmitted by the distant station to your own fax hardware. This number is entered in the FaxWare routing list, either manually or by means of the routing functions available through the program interface. All other faxes from the distant station will be routed to the recipient entered. This method supports modems as well as ISDN boards.

One disadvantage of this method is that a fax number may appear only once in the routing list. It cannot be assigned to one number or one workgroup. If a wrong fax number is transmitted, or no fax number, an incoming fax cannot be routed.

Distribution according to extension number

When this method is used, the distant station dials a certain extension number in addition to the basic phone number. Both the fax hardware and the telephone connection equipment must support this technique. The extension number is also entered in the FaxWare routing list.

A fixed extension number is assigned to every recipient in the network. By means of this extension number, a fax is routed to the user entered. The distant station is able to use this technique to send a fax directly to a user or a group.

Routing with
modems

Depending on the type of ISDN connection used, several routing methods are available, including:

- ◆ E-DSS1 (Euro ISDN): by means of MSN (Multi Subscriber Number)
- ◆ NT1 connection: by means of DDI

Routing with
ISDN

FaxWare can use this information to route incoming faxes. However, there are differences associated with the configuration, as MSNs typically do not have a distinctive last digit.

If you use a telecom system, routing according to the MSN or DDI methods will only be possible if the telecom system used passes the information on to the application. In the case of a direct Telecommunications connection, this information is readily available.

Configuration of a routing method

From the main menu of the Service Layer, select the item Databases followed by the Routing option. The routing list appears. Using the **INS** key, you can include a new entry in the routing list. You should complete each of the following entries:

Routing method

Choose the appropriate routing method. You can select routing using either CSID, DTMF, DDI, MSN and DID.

Entry in the
routing list



Character string

- ◆ Routing using the CSID:
FaxWare searches for the entered character string in the transmitted CSID of the distant station. As the CSID is not always known in advance, you should first receive a fax from the corresponding distant station and then let FaxWare learn this CSID through the routing function in the Frontend programs. In this way, you know exactly that the CSID will be correctly registered in the distribution list.
- ◆ Routing using the MSN:
Enter the characters "MSN:" followed by a two-digit line number, a space character, and then the MSN. If you want to determine the routing instructions for the MSN6 on line 1, enter "MSN:01 6" in the field titled Character String.
- ◆ Routing using the DDI:
Enter the character string using the pattern "xxx yy"
The character string »xxx« stands for the DDI Prefix (refer to parameters). Use additional 0s if necessary to fill in all three digits.
The character string »yy« represents the extension number. You do not need to add additional digits for the extension. You can determine the length using the parameter DDILength.

Description

Enter a description of the recipient in this field. The entry has no effect on routing, but can help identify the actual recipient.

- ◆ Routing using CSID
Please enter here the name of the distant station. In future, faxes from this distant station will be registered under this term in the FaxWare receive log (data field »Reference«). Therefore, they can be immediately identified.
- ◆ Routing using DDI/MSN/EAZ
Please enter here an exact name for the recipient. In future, faxes distributed to this recipient will be registered under this name in the FaxWare receive log (data field »Reference«). This entry is not significant for routing.

Recipient

Please choose in this field the recipient who is to receive incoming faxes according to the selected routing method.

Routing priority for received faxes

Received faxes are routed according to the following priorities.

- ◆ Fax recipient entered in the routing list
The fax is routed to the workgroup or user and printed out through the printer filter entered in the group/user configuration. If no entry is found, the next check will be carried out.
- ◆ Group or user entered as recipient in the line configuration
The fax is routed to the workgroup or user and printed out through the printer filter entered in the group/user configuration. If there is no entry, the next step is performed.
- ◆ Group or user entered as recipients of undistributed faxes
The fax is routed to the workgroup or user designated in the system configuration to receive undistributed faxes using the appropriate printer filter.

Notification about a fax receipt

BROADCAST
message

When a fax has been routed to a user, he can receive an automatic notification. By using the button »Broadcast on receipt of fax« in the FaxWare configuration on the Service Layer (menu item »Configuration/User/Receiving Faxes«), you can set in which case the recipient will receive a BROADCAST message.

Under Windows the user will also receive a corresponding message, when he has set the Windows Frontend to the foreground. When it is loaded in the background, no message will be received. Optionally the icon can flash when a fax is received. You can set both options in the Frontend configuration.

Printout of fax files

To print out received faxes automatically you have to make entries corresponding to the recipient in the following fields of the Service Layer configuration.

- ◆ System/Recipient of undistributed Faxes
It is very important that you enter a recipient here to ensure that undistributed faxes will not be lost.
- ◆ User/Printer
If a fax has been routed to this user, it will be printed through this printer filter.

Marking as a
fax printout

- ◆ **Groups/Printer**
If a fax has been routed to this group, it will be printed through this printer filter.
- ◆ **Printer/Print Queues (PCL)**
The recipient (a user or a group) prints the faxes through the registered printer filter on the print queues of the file server which have been entered here.

On the margin of printed faxes there will be a graphic with the text »FAX«. In this way, you can distinguish printed faxes from normal printouts. Fax printouts of several pages are correspondingly marked with arrows.

You can for example configure an individual printer filter for every recipient in order to be able to assign the printouts to the corresponding recipients. Now select the menu item »Fax Margin« in the respective printer filters and choose a graphic which is to appear on the printout.

You can process this graphic with a graphic program (e.g. PAINTBRUSH) and insert the user name. Simply load a sample graphic and modify it. Then you can be sure to have the correct format.

After this, please assign a printer filter to every user in the user configuration. With this marking, it is very easy to distribute faxes which have been printed out.

Avoiding an automatic printout

Not every user wishes to automatically print out faxes received. In the user and group configuration (menu »Receiving Faxes/Disable auto printing«) you can individually deactivate this option.

You can globally overwrite the settings for the users and groups with the menu item of the same name in the system configuration (menu »Options«).

Printout optimization

In addition to the conversion of documents into a fax format, the printout of fax files also requires a great deal of computing performance of the file server. Therefore, in some cases the printout may take longer than desired.

By means of special settings on the Service Layer you can accelerate the printout considerably.

Settings in the
Service Layer

»Dynamic Server Load«

This new technology, a load-dependent use of resources, causes a substantial increase in performance when conversion into a fax format is carried out or when fax files are printed. You can configure this function in the FaxWare Service Layer (see menu item »Configuration/System/Maximum CPU Utilization«). Please note the corresponding information under item »Increase in performance« in this chapter.

Compression type

On the FaxWare Service Layer (menu item »Configuration/Printer/Compression«) you can configure a method for the printout of fax files. The methods »Run-Length Encoding« and »Tagged Image File« both cause a higher speed when faxes are printed out.

Problem solutions

This chapter deals with some of the most common questions and special problems that may occur when using FaxWare. By reading through the individual sections you should be able to contend with problems that arise and obtain quick answers to any FaxWare-related difficulties.

1. Common errors

Read errors on a diskette

Despite stringent production control measures, occasionally defective diskettes are produced. If you encounter read errors while trying to install FaxWare, do not waste time trying to eliminate this problem. Contact your reseller for a new diskette.

Copying single files from the disk

Important Note: The files on the original disks are in starter pack form. You cannot copy from the server volume. In the worst case scenario, this could cause your server to crash.

To unpack these files, a utility program called TUNPACK.EXE was copied into the SYS:\FAXWARE\UTIL\DOS directory. The files were compressed by a special utility and cannot be expanded or unpacked using any other decompression utility.

When copying single files, start the TUNPACK program and enter the parameter, the source and the line name.

2. Problems with the Service Layer

The server does not carry out a data purge

Although you have given a setting in the system window for a data purge, the entry is invalid.

Minimum duration

The minimum duration of a data purge is 2 days (see Systemconfiguration of the Service Layer).

FaxWare files cannot be backed up

Some FaxWare files are always open while the system is running (such as the routing list); these files cannot be backed up by typical data backup applications. You can, however, automatically back up these files within the appropriate directory during the nightly data purge.

Backup function

To accomplish this, state the specific files or the directory in the ASCII file FAXWARE.BKU that appears in the directory SYS:\FAXWARE\CODE. Indicate the directory in which the files should be backed up under the parameter BACKUPPATH in FAXWARE.INI. Then set the data backup under the menu item Options in the Systemconfiguration. In this manner, the backup is activated.

3. Fax broadcast sending

The entry *CCT FAX* disturbs in the fax header

The *CCT FAX* text does not come from FaxWare but from the installed fax hardware. For a long time, the Telecommunications companies instructed people to enter the *CCT FAX* entry before every fax which has not been sent by a fax machine which corresponded to the permitted category A or B. (This is relevant to Germany only).

With almost every currently manufactured modem, this item can be suppressed. If you find it necessary to accomplish this, contact the manufacturer as well as the distributor of your modem.

No fax connection possible

When it is not possible to build up a fax connection to a special distant line, carefully check which error was sent by the modem (e.g. communication errors). In most cases the fax hardware is causing the problem.

Many manufacturers are aware of the incompatibilities of devices and are constantly working on new versions of their products. Talk to the manufacturer or distributor of your fax hardware.

Dialing procedure does not take place

You have produced a fax job with the Service Layer that is not processed. In the job log this job has the Unprocessed status. This may occur for one of the following reasons:

- ◆ The TLD has been configured only for receiving faxes. Please check the configuration of the TLD in the Service Layer.

Wrong dialing
method

- ◆ The TLD is unloaded. The Service Layer communicates the fax job to the TLD only when the TLD is active. This is recognized by the Service Layer by the contents of the file TLD.CHK which is already open and located in the TLD directory. The contents of this file are irrelevant because it is opened when starting the TLD and not closed before the TLD.

A converted fax job has the status Processed in the job list, but is not transmitted. This may be due to one of the following reasons:

- ◆ The wrong dialing method has been entered in the TLD configuration file. Find out whether your phone connection requires tone or pulse dialing.
- ◆ Handling of the busy/free tone has been specified incorrectly in the TLD initialization file (TLD.INI). Regularly X3 (ignore dial tone/evaluate busy tone) is used by default. Find out what kind of handling of the busy/free tone your modem requires.
- ◆ The telephone line is dead. Check whether or not normal telephone operation is possible through the telephone line.

Transmission stops after one page

Although your TLD is sending a fax job, communication is always aborted after the first page.

After transmitting the first page, your modem supplies an invalid page transfer status (+FPTS, Fax Page Transfer Status) and aborts communication with the distant station. The following table shows possible error codes that can be sent after every page by the modem to the TLD.

0	PPR	Partial Page Errors
1	MCF	Page good
2	RTN	Page bad, retrain requested
3	RTP	Page good, retrain requested
4	PIN	Page bad, interrupt requested
5	PIP	Page good, interrupt requested

Normally the modem supplies +FPTS=1 (Page good).

The connection is aborted if the page transfer status 4 or 5 is returned. In this case the TLD resends the pages that are not yet returned to the Service Layer. As a result, the Service Layer starts a new job to dispatch the remaining pages. If the modem reports the status 2 or 3, a fax training is carried out again, and the remaining pages are sent.

Transmission error when sending

Pixel lines are missing during a fax transfer. Therefore, the fax received is compressed.

Flow control

An invalid flow control parameter has been set. Hardware flow control (CTS/RTS) is used by default. Some modems use software flow control (XON/XOFF) when transmitting faxes. Software flow control is set as follows. Set the parameter FLOWCONTROL=1 in TLD.INI. Your modem must also receive the command to use the software flow control. This is done in the INIT sequence. Usually, software flow control is activated with AT/Q1 or AT&K1. You can find further information in the handbook for your modem.

When sending to slow devices, your fax modem cannot automatically cope with the modem's delayed paper feed rate. Pay attention to the EOLFILLING parameter in the TLD.INI parameter file.

4. Fax broadcast receiving

Transmission error when receiving

Although calls are accepted by the TLD, the received graphic file shows many transmission errors. The received fax is printed out in compressed form.

Possible reasons:

Wrong UART chip

- ◆ In your file server you use a serial interface board which is not supplied with UART 16550. The UART 16550 is essential for the correct fax receipt in the multi-tasking environment. Please install a suitable interface board with a UART 16550.
- ◆ Although the serial interface on your server is supplied with a 16550 UART, you loaded the wrong AIOCOMX driver. For the support of the FIFO functions, the installation of a AIOCOMX driver is necessary. When loading AIOCOMX.NLMs, you are informed whether or not the FIFOs have been enabled.

Call is not accepted

Your fax modem does not accept an incoming call. This may be due to the following reasons:

- ◆ The TLD has only been configured for fax sending. Check the configuration of the TLD.

- Ring indicator
- ◆ The Service Layer of the FaxWare is not active. After unloading FAXWARE NLM, the TLD receives a further call because the Service Layer does not delete the TLD.RX file. If the TLD directory contains this file, the TLD assumes that the last job has been quit and therefore, does not answer the call.
 - ◆ The RI line (Ring indicator) of your interface is not active during the incoming call. Pay attention to the RING parameter in the TLD.INI file.

5. Printing of fax files

Received fax files are not printed out

Received faxes are printed out through the printer filter entered for the respective recipients or recipient groups. If a fax cannot be routed, the »Recipient of undistributed Faxes« (menu item »Configuration/System« on the Service Layer) will receive it. For this reason, it is absolutely necessary that a recipient is entered here and that a printer filter has been registered for this recipient. In the case of NetWare 3.1x the group EVERYONE is entered as a default. In the case of NetWare 4.x this group is not necessarily there. Therefore, you should enter a recipient immediately after the installation.

The printout includes many strange characters

HP printer

The wrong printer is used. For the printout, you have to use a HP Laserjet II compatible printer able to emulate the Hewlett Packard Printer Command Language 2 (HP PCL 2). Another reason may be false printer sequences sent to the printer. Check the setting in the configuration of the printer filter by means of the instructions in the printer handbook.

The printing appears compressed

This indicates a receiving fault during transmission. Defective receive lines are deleted by FaxWare. Thus, the printout is compressed. The defective lines are visible when the fax is shown in the receive log, but they do not appear in the printout. Using a board with UART 8250 or 16450 on the serial interface will cause this error. Use an interface with a 16550 UART since it possesses a data buffer (FIFO).

The printout of one fax page appears over two pages

The storage capacity of your printer is too small. The grid graphic consists of a great amount of data that cannot be traced on one page by a printer with only 512 KB. The internal memory of your printer has to be extended.

Faulty fax border (FAX) when printed

Check the Suppressing the fax border setting in the printer filter configuration, in the Service Layer. With some printers first the fax and then the border is printed.

6. Problems with the Frontend Layer (DOS)

Generally, faxing with the DOS Frontend is no problem. Incompatibilities with drivers occur only very rarely. Usually it is simple to correct possible errors.

When calling up the interface the workstation stops working

The DOS interface was tested successfully with many different configurations. If there are mistakes, it may be due to other TSR programs which do not cooperate with the interface. Usually, this can be neutralized by a different order of loading. For testing purposes, you should try loading the interface as nonresident:

```
FWDOS [SERVER=server name] NORES
```

You can load the programs step by step to localize the error.

No fax can be displayed

Probably the defined graphic mode is not supported by the video board used. Change into the menu item Configuration/Technic in the DOS interface. A new window appears where you can carry out the correct configuration.

7. Problems with the Frontend Layer (Windows)

The operation of Windows programs always requires up-to-date drivers. Small problems with the client/server connection can affect FaxWare but perhaps not cause any problems with the DOS Frontend.

The fax viewer for displaying faxes cannot be called up

For viewing faxes, the viewer FWVIEW.EXE is loaded and can be found in the main directory of Windows. Should another viewer be desired, it must be entered in TOBIT.INI. Check the setting in TOBIT.INI under [FWWIN], to establish whether another viewer exists or whether the viewer resides in the main directory.

TOBIT.INI

There are no grayscales displayed with the graphics

Select the Windows Control Panel menu item Printer and select the print driver FaxWare. Click on the Settings button and increase the value for the print density.

8. Processing fax jobs

Fax jobs are not carried out

- ◆ Perhaps the path set or the file ending is wrong. Please check the settings in the Service Layer configuration (menu item »Services/FileFax Services«).
- ◆ The file FAXWARE.FIL in the directory SYS:\FAXWARE\CODE contains all FileFax directories. Please check if this file still exists. If it is defective (for example due to a server crash), you can copy the file again from the Service Layer disk.
- ◆ Please check the correct directory structure of FaxWare. The directory SYS:\FAXWARE\CODE\TEMP is required to convert the fax jobs. If it has been deleted (for example after a server crash), no job can be processed.

Error messages

In this section we have listed possible error messages which can occur during the installation or operation of FaxWare. You will find information about potential error causes and how to remove them.

1. Error messages of the NetWare system environment

The following error messages do not have anything to do with FaxWare. These are NetWare error messages which you should however note in all cases. If possible, you should remove their causes. Some of these causes can result in serious errors which will affect the entire system and therefore also FaxWare.

Loader cannot find public symbol xx

This error message is communicated by the loader of the NetWare Operating System. It means that the NLM that is to be loaded and needs to access system functions is not defined in the system.

The most likely reason for this error is because the support library is not loaded on the server. The message appears when loading the Transport Layer Driver for the ISDN boards when the necessary CAPI NLM have not yet been loaded.

If this message appears when loading the Service Layer, (FaxWare), an antiquated C library (file name CLIB.NLM) is probably the cause.

CLIB.NLM

Use the most up-to-date CLIB.NLM file from NOVELL. A current version of this file is copied onto your server during the installation.

The CLIB.NLM file may have been stored in the server memory before the update. In this case, CLIB.NLM must be unloaded. This can be done by entering

```
UNLOAD CLIB
```

on the system console of the Server. In the case of other NLMs requiring access to the C Library, these programs must be unloaded first. After unloading the CLIB, the file may be reloaded by entering

```
LOAD CLIB
```

on the system console. This procedure is carried out automatically when starting the FaxWare module.

Lost hardware interrupt

This error message is given by the Network Operating System (NOS) and points to a file server hardware problem that could cause conflict between interrupts (IRQs), I/O port addresses or storage addresses. Notes on this subject:

Problems with I/O port addresses

When configuring a serial interface for fax operation, please make sure that you do not assign an I/O port address for another hardware driver to the driver for the interface (AIOCOMX.NLM).

Problems with interrupts (IRQs)

When configuring a serial interface for fax operation, make sure that you do not assign an interrupt (IRQ) for another hardware driver to the driver for the interface (AIOCOMX.NLM). For example, if you wish to use COM2, the network board is often set to Interrupt 3. In this case, you should choose a different interrupt.

On board interfaces

The error message mentioned above often occurs in machines where the serial interface on the main circuit board needs to be disabled (because a board with 16550 UARTs is being used). The deactivation software may have failed to set the BIOS properly. Set the Jumpers or DIP switches on the main circuit board so the conflicting onboard interfaces are disabled. Some experienced NetWare administrators suggest the following technique to eliminate this message. This is done by inserting the

```
SET DISPLAY LOST INTERRUPTS ALERTS=OFF
```

line into the AUTOEXEC.NCF. Of course this is an effective measure against this message, but not against the cause of this problem. The underlying cause of this error can cause serious network problems. Be sure that you understand the source of the problem before turning off the message.

Number of cache buffer is getting too low

This error occurs in servers that have little memory available. When FaxWare stresses that there is very little space left in the server's RAM, it is very easy to reach an overflow situation. When this message occurs you should remove all currently inactive NLMs and add additional memory as soon as possible.

A further possibility to check for more empty RAM in the server memory is to remove the DOS memory. In this case, the entry

```
REMOVE DOS
```

Remove DOS

on the system console of the server. This transfers the assignment of the reserved DOS memory to the NetWare disk cache. In this case EXIT after bringing the servers DOWN, does not allow a return to DOS, but a warm start of the computer.

The NetWare memory management is set permanently to Dynamic. Only as much memory is covered (allocated) as is required at any moment in time.

Because of the specific NetWare multi-tasking (non-preemptive), internal memory, as with Windows, is not virtually managed. Therefore, it is not possible to demand more memory of the NLM than is actually available.

2. Error messages from the Service Layer

Corrupt System file detected

Although extensive tests and many reference installations have been made, it is possible that important system files can be damaged when FaxWare as well as the file server are operated improperly. This can have a much bigger effect in a network than in a single PC. The correct running of the program could be interrupted by corrupt files and could lead to a system crash. In the case of a server crash where the server is not being brought down correctly, open files cannot be closed in the correct way and data garbage can cause errors when the system is restarted. The system files are checked by FaxWare at start time and the stored file size is compared with the current size. When these two values are different, an error message appears on the server console which shows the name and the size of the damaged file. The user has three possibilities:

- ◆ Do not start the FaxWare Service Layer
FaxWare is not started until the cause of the error is determined.
- ◆ Delete corrupt file
The damaged file is deleted and configured again when starting FaxWare.
- ◆ Ignore this error (Own Risk)
If you ignore the error message, no guarantee can be given for a faultless program execution. Effects of the defective file may appear at a later time.

Backup function

- ◆ **Repair Corrupt File**

The FaxWare Service Layer tries to recreate the defective file. This works only in the case of databases (e.g. a phonebook).

FaxWare provides the possibility to automatically backup determined files during data purging. In the section »Problem solutions« you will find notes about this subject.

No receiver defined for undistributed faxes

Please refer to the notes on the configuration of the Service Layer (Configuration/System/Receiver of undistributed faxes). The error message is logged in the boot log.

Faulty fax identifier entered

Please note the references to the configuration of the Service Layer (Configuration/Lines/Linexx/Fax identifier). The error message is contained in the boot log.

The customer information profile is not complete

The customer information profile is sent to the Technical Support through Online registration. Therefore it should be complete. You can include this data as variables in your fax jobs. Please check the settings in menu item »Configuration/Company Profile«.

The automatic purging will be ignored

It is necessary to insert a minimum number of days, so that automatic data purging can be carried out. Please check the settings in menu item »Configuration/System/Automatic purge«.

3. Error messages from the Frontend Layer (DOS)

Connection to the FaxWare server not possible

This may be due to the following reasons:

- ◆ **FAXWARE.NLM was not started**

Determine if FAXWARE.NLM has been loaded on the file server.

- ◆ **Obsolete NetWare driver is installed**

The most recent NetWare driver is required. Pay attention to the notes in Chapter »Installation«.

This error also appears when FWDOS.EXE is not started out of the installation directory. In this case the server name of FaxWare is expected when calling. Example:

```
FWDOS SERVER=COMM
```

4. Error messages from the Frontend Layer (Windows)

FaxWare server cannot be found in your network

The possible reason could be:

- ◆ MS Windows is not working in enhanced mode
Check whether MS Windows is configured for enhanced mode
- ◆ FAXWARE.NLM was not started
Check whether FAXWARE.NLM was loaded on the file server.
- ◆ MS Windows is not configured for NetWare
MS Windows must be configured for NetWare. Check the Windows Setup.
- ◆ Obsolete NetWare driver is installed
A current NetWare driver is required. Refer to the notes in chapter »Installation«.

NetWare driver

In TOBIT.INI there is a section [FWWIN], in which the server name of the FaxWare server should be installed. Check if that setting is correct.

NETWARE.DLL not found

This error message appears when Windows is not configured for network operation. Make the corresponding entry under Windows by selecting Windows Setup (under the main program group) and under Options, specify network operations.

Fax image could not be created

When the registered user is not entered in the FaxWare user configuration, no faxes can be sent. Enter the user in the FaxWare user configuration.

Too many resends!

This error message occurs when the communication between a server and a client is defective, i.e. if for a certain period of time there is no connection to the FaxWare server (e.g. because the NLM has been unloaded). In this case, please check the client/server communication in your network.

5. Problems with loading the TLD

TLD.INI could not be read

The necessary initialization file for the TLD cannot be opened. Start the INSTALL.EXE in the SYS:\FAXWARE\TLD directory and install the line once more.

Login on Server not successful

Remote TLD

This message appears when you wish to fill out a TLD on a Remote Server. Check the parameters when calling up the TLD.

Error Initialize Modem

The necessary initialization file has failed when the initialization string is not confirmed with OK by the modem or when there are no entries in the TLD screen under MANUFACTURER, MODEL and REVISION. An initialization can fail for many different reasons.

If the initialization string, stored in the TLD.INI, is refused (ERROR is displayed) a wrong command has been sent to the modem. Please read your modem handbook to determine which entry in the initialization string has not been accepted. The initialization sequence contains some AT commands. For better identification of the refused command, you may send the commands separately to the modem. When there is a mistake the word ERROR will appear. You can find further details in the description of the INIT command, in the chapter »Reference«.

When there are no entries in the TLD screen under MANUFACTURER, MODEL and REVISION, communication with the modem has failed. If your modem is not Class 2/Class 2.0 compatible, ERROR is displayed when the command is given.

An error is generated if the interface cable is situated on the wrong COM port. Check to see if the RXD/D1 and TXD/D2 lights flicker, this indicates that the connection between the computer and the modem is functioning normally.

6. Error messages during operation of the Transport Layer

After an attempt to dispatch a fax job, the fax hardware and thus the Transport Layer Driver informs FaxWare about the final status. The corresponding text is registered in the send log. These error codes show if there have been errors during transmission.

Evaluating error codes

In the case of the FaxWare FileFax Services (see chapter »Operation«) it is possible to create an acknowledgement file with this status for every job. Then this file can be evaluated. You can also create extensive log evaluations by using the utility REPORTER.EXE. Below in this chapter you will find a list of possible error codes. The most frequent problems and their causes are listed in the following.

Error with communication

First check the fax number, especially when sending broadcasts. Wrong numbers (e.g. no fax machine) may be contained in the list. These errors are incorrectly reported by some of the modems, e.g. in the case that a normal telephone number has been dialed and someone answers.

In the identification of the line status, the modems behave in a totally different way. The problem can also be located in the connection. In this case, you should retry the fax job once more, perhaps several hours later.

Dialing procedure blocked

Some countries require this error report and specify that a fax number should be dialed only once within a certain period of time. If no connection is established after a determined number of attempts, the entire modem function must to be ignored for a defined time according to local requirements. This measure was taken in order to keep the line network of the telephone company clean.

When this message appears, try switching the modem on and off to remedy the situation. Innovative firmware versions exist in many modems which can deactivate Ignore selection. Ask the manufacturer as well as the reseller of your modem about this.

This message may also appear when a modem has stored the target number in a black list. Some modems offer you the possibility to ignore certain target numbers. The numbers are saved in the modem and can be removed only in a roundabout way. This is a rare cause of error. In this situation, consult your modem supplier.

Error at end of page

This message means that the distant station has not reported a correct result for the page transmission. Nevertheless it is possible that parts of the fax or even the whole fax arrived correctly at the distant station.

Transport Layer error messages (Modems)

The following error messages can be given out by the Transport Layer:

Number	Meaning
0	Correctly sent
1	Unknown error
10	Unknown hardware problem
11	Nothing to poll
12	Unknown error with the distant station
20	Error when dialing
21	Busy
22	No fax machine
23	No reply
24	No dial tone
25	Wrong number
26	Dialing blocked
28	Receiver doesn't respond
29	Unknown error (dialing)
30	Error with communication
31	Transmission error
32	Error with page end
33	Error on page
34	Image not found
35	Wrong data format
36	Carrier lost
39	Unknown error (sending)
40	Error phase B
41	Error phase C
42	Error phase D
43-49	Unknown error (receiving)
50	Fax end defective
51	Abort distant station
52	No carrier
53-59	Problem with fax end
60-89	Unknown error

90	Number missing
91	Unvalid LINE
92	Unknown command
94	COM Port already placed
95	Error: COM Port Init
96	Error: COM Ext. control

Transport Layer error messages (ISDN boards)

The following error messages can be given out by the Transport Layer:

CAPI errors

These messages indicate a software error in the application using the ISDN Controller. It is also possible that the PC is too slow for the ISDN Controller (error 1007) or that too many applications are using the ISDN board at the same time.

Number	Meaning
1001	Error upon registration of the application
1002	Wrong application number
1003	Message format not correct (message size or number)
1004	Message contains wrong command
1005	Message could not be transmitted (full send queue).
1006	Empty receive queue
1007	Overflow of the receive queues
1008	Error upon CAPI reinstallation

Wrong address

These error codes can be caused by software errors accessing the ISDN board. E. g., when the wrong controller is used in the application.

Number	Meaning
2001	Wrong controller
2002	Wrong PLCI (Physical Link Connection Identifier)
2003	Wrong NCCI (Network Control Connection Identifier)
2004	Wrong model

Execution errors

These errors indicate wrong parameters, a mode of operation which is not supported or network errors. Please check the configuration of the ISDN board. Also in this case, the cause can be errors in the application using the board.

Number	Meaning
3101	B channel coded incorrectly
3102	Info mask (wrong value in reserved bits)
3103	Serviced EAZ mask (wrong value in reserved bits)
3104	Serviced SI mask (wrong value in reserved bits)
3105	B2 protocol wrong value (perhaps fax is not implemented)
3106	DLPD wrong value (perhaps fax is not implemented)
3107	B3 protocol wrong value (perhaps fax is not implemented)
3108	NCPD wrong value (perhaps fax is not implemented)
3109	NCPI wrong value (perhaps fax is not implemented)
310A	Flags wrong value in reserved bits

Modes of operation not supported

Potential causes for these errors are too many applications accessing the ISDN Controller. Errors in the configuration of the board can also lead to these errors.

Number	Meaning
3201	General controller error
3202	Overlapping of the requested services at LISTEN_REQ
3203	Unsupported function (e. g. DATA_REQ)
3204	PLCI not yet active (e. g. CONNECT_B3_REQ)
3205	NCCI not yet active (e. g. DATA_B3_REQ)
3206	Unsupported B2 protocol (perhaps fax is not implemented)
3207	Switching of the B2 protocol is impossible.
3208	Unsupported B3 protocol (perhaps fax is not implemented)
3209	Switching of the B3 protocol is impossible.
320A	Unsupported DLPD
320B	Unsupported NCPD

Errors in establishing the D channel/B channel connection

If these error codes occur, either the ISDN board has been configured wrong or the type of D channel protocol defined is not supported or there is no connection to the ISDN network. Please check the following items:

- ◆ Is the connection between the ISDN board and ISDN socket correct?
- ◆ Has the right protocol been set (e. g. VN3 or DSS-1)?
- ◆ Has the right type of connection been configured (e. g. point-to-point)?

These errors can also occur if the connection between the board and the ISDN network have only been interrupted for a short time.

Number	Meaning
3301	Error when establishing D-channel level 1
3302	Error when establishing D-channel level 2
3303	Error when establishing B-channel level 1
3304	Error when establishing B-channel level 2
3305	Interruption of the connection D-channel level 1
3306	Interruption of the connection D-channel level 2
3307	Interruption of the connection D-channel level 3
3308	Interruption of the connection B-channel level 1
3309	Interruption of the connection B-channel level 2
330A	Interruption of the connection B-channel level 3
330B	Re-establish of the connection B-channel level 2
330C	Re-establish of the connection B-channel level 3

General errors in the telephone network / telecom system

The following error codes indicate errors in the ISDN network or in the telecom system. Please check the configuration of the telephone system.

Number	Meaning
3400	No error - everything is OK.
3401	Invalid call reference
3403	Service not available at the connection
3407	Unknown call identity
3408	Call identity already occupied
340A	No free channel
340F	Connection cut off (distant station has hung up)
3410	Desired service not available
3411	Desired service not retrievable (from distant station)
341F	No error - everything is OK.
3420	No outgoing calls allowed
3421	Access is presently occupied.
3422	Negative GBG comparison
3423	GBG does not exist.
3429	Temporary disturbance
3430	Rev. charging not allowed
3431	Rev. charging rejected
3432	Not used
3435	Destination cannot be reached (wrong number/service).
3438	Destination number has changed (also as 34B8).
3439	Distant station not ready for operation (also as 34B9).
343A	No answer from distant station (also as 34BA)
343B	Distant station is busy (also as 34BB).
343D	Incoming calls are blocked (also as 34BD).
343E	Call rejected (also as 34BE)

Number	Meaning
3458	Wrong destination number
3459	Network is busy (telephone network).
345A	Caused by the distant station.
3460	Dial elements are missing.
3464	Wrong info - elements
3470	Local error
3471	Error with the distant station
3472	Distant station has switched to "Hold" or "Suspended".
3473	Distant station has cancelled "Hold".
347F	D-channel User_Info not supported
3483	Data transmission to connection not implemented
348A	No free B channel
348F	Normal end of connection - no error
3490	Additional parameters not recognized
3491	Additional parameters not supported
34A0	Own connection blocked against incoming calls
34A2	No connection - no member of the user group
34A5	No semipermeable connection allowed
34B5	Destination cannot be reached (wrong number/service).
34B8	Call number has changed (also as 3438).
34B9	Distant station is not ready for operation (also as 3439).
34BA	Distant station does not respond (also as 343A).
34BB	ISDN number is busy (also as 343B).
34BD	Connection blocked against incoming calls (also as 343D)
34BE	Call has been rejected (also as 343E).
34D9	ISDN network is overloaded.
34DA	Distant station has hung up.
34F0	Wrong source EAZ
34F1	Error between exchange and distant station

Errors in the fax mode

These error messages refer to the actual fax transmission and can for example occur if the lines are bad. The error texts indicate the cause. If necessary, also check the fax module of the ISDN Controller.

Number	Meaning
4001	Distant station cannot be recognized as fax device.
4002	Establishment of connection impossible; the local fax module is busy
4003	Line disturbance during document transmission.
4004	Due to a line disturbance, transmission is impossible.
4005	Transmission error. Sending data has been transmitted too slowly.
4006	Fax module is blocked; too many unsuccessful attempts
4007	Local interruption of the document transmission
4008	Interruption due to distant station error
4009	Explicit logical interruption of connection by the distant station
400A	Unexpected interruption of connection by the distant station
400B	Transmission mode is not supported by the distant station.

Tips and Tricks

This section has been written to show you some tricks which can be very helpful for your everyday work with FaxWare.

Typefaces and fonts

FaxWare uses specific fonts when converting faxes. The program package includes more than 30 predefined fonts.

Font files include the *.FNT extension and they appear in the directory SYS:\FAXWARE\RESOURCE\FONTS.

The file NEUTRAL.FNT is particularly important. This font is used as the default and it is also used whenever a requested font is defective or does not exist.

The FaxWare package includes two special utilities for modifying these fonts. Always copy one of the existing font files to a new name before performing any modifications.

FONT editor for DOS

FONTEDIT.EXE

The DOS program FONTEDIT.EXE is included in the SYS:\FAXWARE\RESOURCE\FONTS directory. This program requires a computer with a VGA graphics board that also supports the 50-line display mode. A Microsoft compatible mouse is also helpful. To start the font editor from the DOS level, specify the name of the font as a parameter (with or without extension).

The font editor is very easy to operate and it can be described in a short section.

- ◆ Leaf through the font characters using the Pg Up and Pg Dn keys.
- ◆ When you press a key directly, the corresponding character is displayed.
- ◆ The arrow keys move the cursor over the grid containing the graphic character.
- ◆ When moving the cursor with the arrow keys, pixels are set to black with the Shift key and are removed with the Caps Lock key.
- ◆ ALT-S stores data without quitting the editor.
- ◆ To reverse any changes to the current character, press ALT-U.
- ◆ Whenever you press the ALT-C key combination and then press any other key, the current character is overwritten by the previously pressed character (that is, the character is copied).

Using the mouse, text for the keys displayed can also be selected directly. Auxiliary lines can be displayed or removed by clicking the frame.

Terminate the editor by pressing the `ESC` key. A safety prompt appears before saving and exiting if changes have been made to the font.

FONT editor for Windows

FWFONT.EXE

The Windows program named FWFONT is in the directory `SYS:\FAXWARE\RESOURCE\FONTS` and can be directly started from Windows. If you wish to change an existing FaxWare font, please go to the menu item »File/Open FaxWare Font« and select the corresponding font from the directory `SYS:\FAXWARE\RESOURCE\FONTS`. Click on the corresponding character which you wish to change. A new window will appear. You can carry out the changes here.

If you wish to create a new FaxWare font, you should edit an existing one and then save it under a new name. This name must have the ending `*.NCF`. The file will be searched for in the directory `SYS:\FAXWARE\RESOURCE\FONTS`.

Creating PCX and BMP graphics

The current version of FaxWare can edit PCX, BMP and MH files.

PCX is probably the most common file format for PC bitmapped graphics. In the long term, PCX will probably be displaced by the BMP format because both Microsoft Windows and IBM OS/2 applications favor the more up-to-date BMP format.

MH (Modified Huffman) stands for the standard fax format; FaxWare uses this as a disk format. MH saves substantially more space than PCX and BMP, but it is more complicated to convert. Currently, the MH format has little significance in application software.

Thanks to the large number of graphics tools available nowadays, a special graphics format does not represent a significant barrier. Many utilities can perform a wide range of file conversions.

Structure of PCX files

Always save PCX files as monochrome (black/white) graphic files for use with FaxWare.

As a fax, a graphic page can include a maximum of 1,728 horizontal pixels (standard). If the graphic file is wider than this, the remainder is truncated.

The length of the fax graphic depends on the currently selected FaxWare page format, as defined in the print queue configuration window:

Structure of BMP files

Bitmapped graphics have a very simple file structure. When creating BMP bitmapped graphics, follow the same basic guidelines that apply to PCX.

When saving the graphics for FaxWare, always make sure that the data is saved as a BITMAP and not BITMAP COMPRESSED. FaxWare cannot read the compressed data format.

Signatures

Creating signatures

These are graphic files which are always inserted in the text. A signature graphic should not be larger than 300 pixels. Signatures are generally placed on the left margin. Make sure that the signature extends far enough to the right within the graphic to appear in the proper place. In FaxWare, the signature files are generally grouped in the SYS:\FAXWARE\RESOURCE\SIGN directory.

Forms

During conversion by the Service Layer, a form is placed over the normal text, generally oriented to the top left (position 0,0). If the graphic file is smaller than the current page format, the remaining positions of the form are displayed as a white area. Forms generally reside in the directory SYS:\FAXWARE\RESOURCE\FORM

Creating forms and graphics

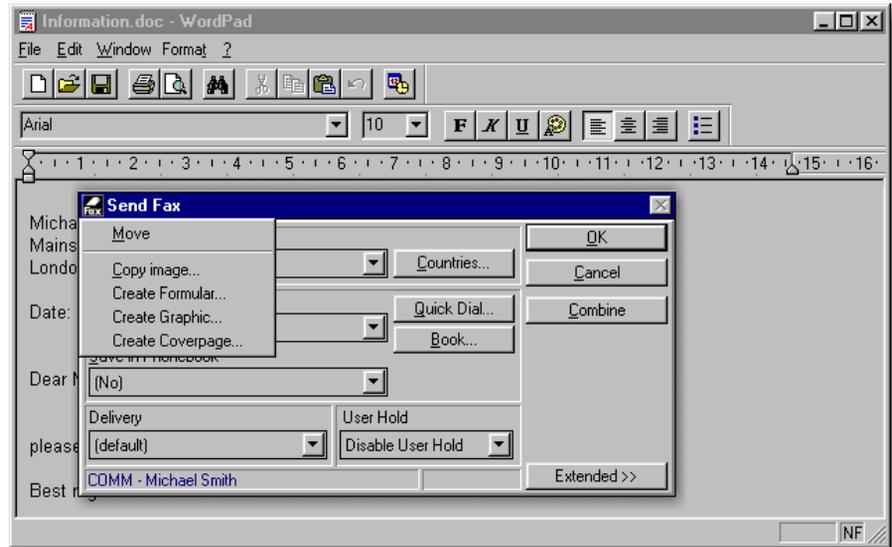
The Windows Frontend offers a function to create forms.

Create a graphic with your company logo (e.g. with PAINTBRUSH) which you would like to use as a form. Now "print" the document to the printer driver »FaxWare on Server«.

The FaxWare Frontend will »pop up« and wait for a fax number being entered. Please chose the menu item »Create Form« in the top left corner of the Frontend. Save the form in the indicated directory SYS:\FAXWARE\RESOURCE\FORM.

Creating forms

Please change to the Form Manager configuration in the Service Layer on the file server. Choose the layout which you wish to use for your form and select the menu item »Form Layout«. If you press the `ENTER` key for the individual trays, the directory SYS:\FAXWARE\RESOURCE\FORM will be scanned and the created graphic will be displayed. Now assign your graphic to a tray. If the form is to be used automatically, please select tray 0, otherwise you should state the corresponding tray by inserting the command @@FORM in the document.



The PCX files created in this way can of course not only be inserted as forms but also as normal graphics. The PCX files can be easily processed by means of a graphic program supporting the PXC format.

Graphics

By default, in FaxWare graphics such as photographs and diagrams and so on reside in the directory, SYS:\FAXWARE\RESOURCE\GRAPH, but the complete path name must be specified when inserting such graphics. The position where the graphic is to be placed can also be specified.

The graphic program, Paintbrush, included as part of Microsoft Windows, supports elementary functions of a graphic program; this program is particularly well suited for manipulating and creating PCX graphics for FaxWare.

The Windows Clipboard provides a useful vehicle for exchanging data and for importing data to Paintbrush.

Importing fax numbers into the phonebook

Fax numbers are usually saved by database programs together with other data associated with business partners.

Manual updating of phonebook data for several different programs can be a cumbersome task. Since consistent database standards do not currently exist, it was necessary to create a different function for importing and adapting data.

```

F:\FAXWARE\IMPORT>type import.nmr
[MARKETING]
Unlimited; 408 564 3762
T. Jerry; 408 468 4773

[SALES]
Wilson Ltd.; 408 328 3884
Newman Plc.; 408 584 1398

[SMITH]
Maxim Software; +44 563 438 8832
Smith Corp.; +44 238 388 4883

F:\FAXWARE\IMPORT>

```

The import directory

Create a line based text file (see the example) which contains the fax numbers and names of recipients in succession. Separate the two fields by a semicolon. A fax number can have a maximum of 30 characters; the name can have up to 31 characters.

Import function

Copy the file into the directory SYS:\FAXWARE\IMPORT with an optional file name, including the extension NMR (i.e. IMPORT.NMR); the Service Layer identifies the file and imports the data automatically into the phonebook group EVERYONE.

Import into other groups

If the Service Layer discovers a word in square brackets in the text file, this will be interpreted as the name of a group or user into which the information will be imported.

```

[SALES]
Maxim Software International; +44561413495
Maxim Technical Support; +44561413490
Smith Corp.; +44912652912

[TOMMY]
TechSoft Software International; +4461947192
TechSoft Technical Support; +4461947190

```

With this information, the numbers will be imported into the sales phonebook, as well as that of Tommy.

Creating coverpages with variables

With the commands SET and GET, variables can be defined and inserted in a document. The following list shows the variables that are already defined and entered in the configuration of the Service Layer:

Configuration/user/user data

USR_NAME	name
USR_TITLE	title
USR_FAX	fax number
USR_PHONE	phone number
USR_EXTENTION1	addition 1
USR_EXTENTION2	addition 2
USR_EXTENTION3	addition 3
USR_EXTENTION4	addition 4
USR_EXTENTION5	addition 5

Configuration/company profile

SYS_COMPANY	firm
SYS_STREET	street
SYS_ZIPCITY	zip/city
SYS_COUNTRY	country
SYS_SUPERVISOR	system manager
SYS_PHONE	phone number
SYS_FAX	fax number

General system data

SYS_SERIALNUMBER	current number of the specified fax
SYS_DATE	date
SYS_TIME	time
JOB_NUMBER	fax job number
JOB_REFERENCE	reference
JOB_PAGES	number of pages in the fax job
JOB_USER	user
JOB_SENDRNAME	sendername
JOB_ADDRESSEE	addressee
JOB_USERID	user ID

It is easy to create coverpages which include individual data that can be filled in for the variables. The coverpage is always the first page of a fax job and it is included as part of the page count number. You can define as many coverpages as you want. The files are created in the ASCII format and are then located in the SYS:\FAXWARE\RESOURCE\COVER directory. They have *.CVP as an extension.

To improve the appearance of the coverpage, you can include graphics within it. A tool is provided to synchronize the positioning of the graphic with the inserted text, as described in the topic titled »Creating forms« in this chapter.

Place the file in the SYS:\FAXWARE\RESOURCE\INCLUDE directory and enter the introduction in the configuration of the FileFax Services. You can call up the coverpage in a fax using the command ID at any time.

Preparing a broadcast

Fax mailings

A broadcast (in contrast to a fax merge) is a fax, that is sent with identical contents to a series of phone numbers. To accomplish this, FaxWare provides the BROADCAST command, which can be specified in the document. The name of a control file in which the fax numbers are specified should be provided as a parameter using a *.BCA extension. FaxWare searches for the control file in the SYS:\FAXWARE\RESOURCE\DATA directory.

Following the first broadcast, the file BCA.NOK is inserted in the SYS:\FAXWARE\RESOURCE\DATA directory. It contains information about the single fax jobs and is constructed as follows:

FAXNUMBER; REFERENCE; RESULT

The result is given as a clear text (e.g. Dispatched). The file is continued and serves the evaluation of broadcasts.

You can also initiate a broadcast directly from DOS or Windows.

Windows

Create a fax and print it to the FaxWare print driver without a fax number. Open the phonebook in Windows and, using the mouse, select the number to which the fax is to be sent. By pressing the CTRL key at the same time, you may select single numbers. With the combination CTRL-#, all entries can be selected.

DOS

Create a fax and print it to a fax queue without a fax number. In the send log, the entry “No number” appears after a short time. By pressing the F10 key, you can select a phonebook. Using the spacebar, mark the numbers to which you want to send your fax. Note: The number of the destination will not appear in the fax header until after the fax has been converted.

NUMPREP.EXE

Sorting of broadcast files

As a rule, when creating broadcasts, files are imported out of a database by means of the fax numbers. In some cases, fax numbers may be duplicated or they may contain special characters that cannot be handled by FaxWare, resulting in transfer errors. To ensure that these files have the correct format, use the NUMPREP.EXE utility, which can be located in the SYS:\FAXWARE\UTIL\DOS directory. A broadcast file must have the following structure:

```
024556 ; Miller Corp.  
036673 ; Office May.
```

It should have the extension *.BCA and must reside in the SYS:\FAXWARE\RESOURCE\DATA directory.

Fax merges
under Windows

Creating fax merges under Windows

With FaxWare it is simple to prepare a fax merge (a broadcast with individual fax contents) from Word for Windows. To do this, insert the @@FAXMERGE command within the Word document. The @@NUMBER command in the document references the fax number within the control file. The @@FAXMERGE command causes FaxWare to separate the individual jobs and to send them separately.

```
@@FAXMERGE  
@@NUMBER <NUMBER>  
Dear Mr >NAME<,  
This is an example of a fax merge.
```

In this example, the terms enclosed within the brackets stand for the data field in the control file. In this manner, FaxWare completely supports the mail merge function of Word for Windows.

Creating fax merges under DOS

To create a fax merge from DOS applications, you can also use the command `@@NUMBER`. After this command, please insert the fax number for the individual fax merge (for example as an import from a database).

However, please make sure that the individual fax merges are separated from each other, as otherwise the command `@@NUMBER` will be detected again and again and the entire fax job will be sent to the fax number entered last!

Please use the command `@@ENDOFJOB` at the end of every fax merge to separate jobs. If FaxWare recognizes this command, it will look upon the next page as a new fax job with a new number.

Please find below an example for a fax merge:

```
@@NUMBER <NUMBER>
Dear Mr >NAME<,
This is an example of a fax merge.
Best regards,
Smith Corp.
@@ENDOFJOB
@@NUMBER <NUMBER>
Dear Mr >NAME<,
This is an example of a fax merge.
Best regards,
Smith Corp.
```

Notes on the FaxWare header

The FaxWare header cannot be deleted. However, the individual data can be altered using FaxWare commands contrary to the settings in the configuration.

- ◆ `@@USER`
Delivers the initials/short form of the user who is dispatching the fax.
- ◆ `@@SENDERNAME`
Delivers the send identifier. Digits and figures can be inserted.
- ◆ `@@ADDRESSEE`
Delivers the identity of the distant station. Digits and figures can be inserted.
Tip: With broadcasts, you can enter the command `@@BROADCAST`.

The FaxWare header is converted in the Service Layer during the distribution of the fax job and includes the data to the point in time of the conversion. When resending at a later date, the header is not reconverted.

The time when the fax header is created is important to the sender. For others, the specific send time is important. To indicate this, there is an entry in the send log. Every user can create a log printout which includes a status line, displaying the real send time. If the fax is sent again from the log to another number, then the original fax number is displayed in the header.

Exchanging the FaxWare logo in the header

Meanwhile FaxWare has been installed on several thousand Novell file servers. The typical logo (FAXWARE) in the header of every fax is a brand label and stands for a sophisticated and reliable software.

Exchanging the
FaxWare logo

In some cases however, it is desired to replace this logo with another one. To do this, you can create a graphic with any graphic program (e.g. PAINTBRUSH) and include this graphic in the header.

This graphic must be created as a Windows bitmap file (*.BMP) and may have a maximum size of 150 x 46 (width x height) pixels. It has to show the colors black and white.

Tip: In the directory SYS:\FAXWARE\CODE\RESOURCE\HEADER you will find the FaxWare logo as a graphic file. Load this file and modify the graphic correspondingly.

Then save this file as HEADER.BMP in the above directory. Afterwards you should load the FaxWare Service Layer (FAXWARE.NLM) again to activate the changes in the header.

It is very important to note the following information:

- ◆ The FaxWare Service Layer is not able to check the graphic file. In some cases a defective graphic file can cause unforeseeable function errors (e.g. a »server crash«). Therefore, you should not carry out an exchange without specialized knowledge. In addition, you should also make a number of tests with the new graphic before using it in a »busy« operation.
- ◆ For technical reasons the graphic file can only be used for faxes in high resolution (206 x 200 dpi). Faxes dispatched in normal resolution will keep the FaxWare logo.

Installing TLDs on a remote server

For the interface to respond properly, the user of the FaxWare client has to be attached to the FaxWare server. However, in this situation FaxWare cannot be used on a NetWare RunTime (single-user NetWare version). The FaxWare Service Layer must run on a server on which the FaxWare users can log in. The individual Transport Layer Drivers can be used on various servers in the network. In this case, the TLDs log in to the server on which FaxWare is installed. Based on NetWare RunTime, a communication server can be configured on which FaxWare as well as NetWare Connect and NetWare Global Messaging are installed.

Remote TLD

For these types of configurations, a user should be created on the FaxWare server whose name can be used by the Transport Layer Driver (TLD) to log in to the server. This user must have the following rights:

Directory:	Rights:
SYS:\FAXWARE\TLD	RWCMF
SYS:\FAXWARE\OUT\IMG	RF
SYS:\FAXWARE\IN\IMG	WC

Only the TLD.NLM file has to be available on the communication server. For simplicity, it can be copied into the directory SYS:SYSTEM. The other TLD files (such as TLD.INI) are usually searched in the corresponding directory of the FaxWare server (that is, SYS:\FAXWARE\TLD\LINE01).

The TLD should be started on the communication server in the following manner:

```
LOAD TLD xx SERVER=Server name/User name [,password]
```

The parameter xx stands for the line number (e.g. 03). Server name is the name of the server on which FaxWare is installed. This is followed by the user name and, if necessary, the user's password. If the TLD.NLM file is not in the system directory, the actual path should be provided.

Increase in performance

In most environments, FaxWare can be run successfully on the same servers on which the NetWare file services are provided. For this reason, FaxWare uses the system resources (memory and CPU capacity utilization) sparingly. Even on a slow server, workgroup members do not see any performance loss when FaxWare carries out G3 conversions or editing prior to printing. This, of course, adds time to the conversion process.

It can take a minute or so with slow servers until a fax job has been passed to the corresponding Transport Layer Driver. In general, this time is negligible. However, with personalized letters the time required can be excessive. With 1,000 individual jobs to be converted, the Service Layer would be occupied with the necessary processing for half a day. Conversions can be controlled by parameters inserted in the FAXWARE.INI file. With appropriate parameter settings, you can reduce the conversion time to about 1 - 2 seconds, depending on the application involved. This allows tens of thousands of faxes per day to be sent with only one FaxWare server. To support this level of activities, several TLDs have to be installed. Transmission of high resolution DIN A4 pages takes around 60 - 80 seconds, assuming an optimal phonebook directory and an accessible distant station.

FaxWare tuning

The tuning parameter

The assumption of tuning is that the maximum CPU use in the FaxWare system configuration is adjusted to high. The following FAXWARE.INI parameters are critical in determining the conversion speed:

- ◆ ACCELERATEPGA
- ◆ ACCELERATEPCX
- ◆ ACCELERATEG3

These parameters determine the time at which the conversion process shall release control over the processor.

Further details about the multi-tasking of NetWare can be found in the later section "NetWare multi-tasking."

With each of these parameters, the higher a value, the more data that is converted at the same time. However, these parameters present a danger. Although the server will not crash even when adjusting values that are too high, the server can be blocked for an extremely long time by this process. This can prevent other processes running on the file server from receiving adequate processing time, resulting in unbalanced file server performance. Use these tuning parameters with care.

Additionally, some of the FAXWARE.INI parameters affect the conversion performance:

- ◆ DisableScanQueues
- ◆ DisableScanNoBooks
- ◆ DisableErrFiles
- ◆ DisableCheckFileSize

The parameters described above should only be set if speed is the absolute priority. If there are only 500 faxes per day, then these parameters will not create an increase in performance.

The following factors are very important when tuning the FaxWare:

- ◆ The CPU performance of the computer.
- ◆ The throughput rate of the hard disk and disk controller.
- ◆ The setting of the ACCELERATE parameter.
- ◆ The number of “CPU-hungry” applications that run simultaneously with FaxWare.

Dynamic Server Load (DSL)

DSL parameter

Dynamic Server Load represents a completely new technology. It is designed to create an environment where allocation of resources depends on server loading factors. A set of algorithms determine the current degree of server use and regulate access to the CPU, LAN, hard disk, and other components for the FAXWARE NLM.

The actual load that applies to a server is calculated by a wide range of data - more than just processor utilization alone. FaxWare already uses the DSL technology and continually recalculates the available resources. A server that is temporarily not used can be used for FaxWare with almost 100% of its performance. If there are any requests from a client or from another NLM, the server switches back to normal mode in a split second. This technique results in exceptional performance. Although a user does not see any difference between a server with FaxWare and a server without FaxWare, this feature accelerates conversion operations and printing by over 1,000%.

Settings in the System-configuration



Fax dispatch via Internet

FAX/ip is a new kind of fax transmission. It enables fax dispatch via the TCP/IP transport protocol. FAX/ip defines a technology for the transmission of faxes via networks, i.e. no longer via conventional dial-up lines. Therefore, faxes can be sent and received through the Internet which is available throughout the world. An organisation with multiple sites connected to each other via routers can also use FAX/ip to send “internal” communications.

This kind of transmission is generally very cheap, since there are often dedicated lines and no special job-oriented connection costs occur as would be the case with dial-up lines. In most cases there is a high transmission rate but this depends on the network. The improved security offered by FAX/ip is an important feature. Through the reliable TCP/IP protocol the sender is informed of the real status of a fax job and knows immediately if the message has reached the recipient.

For the FaxWare user, using Fax/IP is easy. A change in the fax address format is all that is required. Instead of a fax number you have to enter an IP address on which the distant station can be reached. With the following command you can send a fax via FAX/ip:

```
@@NUMBER 193.33.134.160
```

Delivery will be completed quickly and conveniently by the FaxWare Service Layer. A special Transport Layer Driver establishes the connection between FaxWare and the Internet (or the network). The TLD requires a line license and is loaded as a NLM. Just like a “normal” TLD the FAX/ip TLD can be loaded several times. Therefore, multiple FAX/ip jobs can be processed simultaneously.

System conditions

The only conditions for a FAX/ip transmission are that both distant stations support FAX/ip and that the TCP/IP transport protocol is configured.

Under Novell NetWare, TCP/IP is supported as an additional LAN protocol. Please make sure that the TCP/IP module (TCPIP.NLM) has been loaded on your FaxWare server and that it is bound to the network card. If not already loaded, the support module TLI.NLM will be loaded automatically by the TLD. In the Novell documentation you will find information about the configuration of the TCP/IP transport protocol.

At least one FaxWare Transport Layer Driver has to be configured for the use of FAX/ip. If you wish to install additional TLDs for FAX/ip, you will need a corresponding license number (»Line+1«) for each line. A FaxWare server is able to manage up to 64 lines at the same time. The maximum number of TLDs per FaxWare server results from this. A license number must be entered for each TLD.

To be able to receive a FAX/ip message via Internet, your server must be connected to the Internet 24 hours a day (via a dedicated line). To send a FAX/ip message, you only need dial-up access via a router, as this router establishes the connection automatically.

Entering a license number

You will probably wish to use FAX/ip as a transmission method in addition to “normal” fax G3 dispatch. Therefore, you will need to configure an additional TLD, since the FAX/ip TLD does not support any other transmission method. If no license number has been entered for this line, please do this in the FaxWare Service Layer (menu item »Databases/Licenses/Line+1«).

Configuration of a FAX/ip TLD

Please configure a new exchange line with the FaxWare installation program or reconfigure an existing line. Follow the instructions to load the TLD in the chapter »Installation«.

In the menu item »Configuration« of the TLD you can change the most important system settings. These parameters are also contained in the ASCII file TLD.INI which can be viewed from the Service Layer via the menu item »Configuration/Lines/Linexx/TLD.INI«. Please note the parameter TCP Port. It indicates the port address used by the TLD to log to the TCP/IP module (TCPIP.NLM). This will be important if several applications on this server use TCP/IP (e.g. a WEB server, mail server, etc.).

The TLD will only accept calls addressed to the port address entered. The sender can indicate the port address. For example:

```
@@NUMBER 193.33.134.160:100
```

If this is given as the number, the port for FAX/ip must be defined as 100 at the receiving station. If several TLDs are loaded on a server, all of them can serve the same port, as they inform each other about their actions and conflicts are avoided this way. By default, the port address is preconfigured with a value which is generally not used by other applications.

You should not change this value, as it is the same for each FAX/ip TLD. Thus, you ensure that each FAX/ip distant station can reach you, even when the port address has not been indicated explicitly.

If you change the port address, you must inform the senders who wish to send you messages. Otherwise these distant stations will not be able to reach you!

Fax dispatch with FAX/ip

To send a fax via FAX/ip, the user only needs the recipient's IP address. This is used to address the fax by means of the command @@NUMBER. To send a fax to the IP address 195.33.134.160, you have to state:

```
@@NUMBER 195.33.134.160
```

FaxWare will recognize the transmission type FAX/ip and assign the fax job to a TLD supporting this feature. If the distant station has entered another port address (see previous section), you have to indicate this port address behind the IP address and separate the addresses by a colon. For the IP address 193.66.108.178 and the port address 17256 you should enter the following:

```
@@NUMBER 193.66.108.178:17256
```

Addressing possibilities

You can configure several TLDs which support different ports. This way, you will achieve a better distribution of incoming messages. If you configure for example, an additional TLD with the port address 1, automatic distribution of inbound faxes can be achieved via the line configuration. Simply enter the user who is to receive messages received via this line in the configuration of the respective line (in the FaxWare Service Layer).

In this case you have to let the distant station know the port address on which the desired recipient can be reached. If you have entered for example, port 130 for a TLD and group EVERYONE as recipient, the distant station must state the IP and port addresses to send a message to this group. For example:

```
@@NUMBER 195.33.134.160:130
```

Synchronization of the phonebooks

Two additional utility programs have been especially developed for the synchronization of the phonebooks. These programs are included as standard.

Data import from statistical databases

The program FWIMPORT serves to import data from external databases into the FaxWare phonebooks. It runs as a NetWare Loadable Module (NLM) and reads any statistical databases with fixed data record sizes. By means of the time controlled execution, all fax numbers and addresses from a job processing application (e.g. KHK ClassicLine) can be automatically adapted at night to the FaxWare phonebooks. Therefore, maintaining several databases will no longer be necessary.

In the directory SYS:\FAXWARE\UTIL\NLM\FWIMPORT you will find the program and a text file (READ.ME) containing information about the installation and operation.

Import from Windows ODBC databases

The utility FWODBC makes it possible to import numbers from external databases which support the ODBC standard. It is required that the ODBC interface for the desired database (e.g. Microsoft Excel, dBase, Gupta SQL, etc.) has been configured on a Windows client.

The program runs under Microsoft Windows, as under NetWare the necessary ODBC functions are not directly available for a NLM. The program and a text file (READ.ME) are saved in the directory SYS:\FAXWARE\UTIL\WINDOWS\FWODBC.

Terminology used in this manual

Within this documentation, many of the terms are of a specialized, technical nature. We have compiled the following definitions and technical descriptions of the most important terms used within this work to clarify their use and help avoid misunderstanding.

A

AIO, AIOCOMX

The NetWare operating system (NOS) contains a driver for serial input/output referred to as AIO.NLM (Asynchronous Input/Output). This driver manages all asynchronous I/O operations of the server. The additional driver, AIO COMX.NLM, was designed for standard, interrupt-controlled components, such as the UART 8250 and 16550; this driver makes the standard COMs available.

If you want to connect one or several fax modems to the server, you must load the driver AIOCOMX.NLM to ensure that the TLD can address the serial interfaces.

You should pay attention to the following special features. The older versions of this driver, support baud rates of up to 19,200 in any hardware. In the case of serial interfaces using conventional components (8250 and 16450), later versions of AIOCOMX.NLM only support data transfer rates up to 2,400 baud. This is why, during installation, your server substitutes any recent driver with the old one. In any case, however, we recommend that you use serial interfaces containing the more modern 16550 chip.

Approval CCT

The German BZT (Post Office) recognized very soon, that in most cases, hardware for computers was not capable of meeting the requirements of category A and B approval types and therefore introduced the approval of miscellaneous terminal devices. In such cases, BZT only checks the devices with regard to purely technical requirements, but not in relation to their fax suitability. Faxes sent by CCT terminal devices must be identified by the text *CCT FAX*.

BZT does not guarantee the service quality of devices approved in accordance with this category. In Germany, a CCT fax device cannot be registered with the Post Office as a telecopier. Consequently, the operator is not entered in the official fax directory either.

Approval category A

Category A terminal devices completely meet the conditions for the approval of Group 3 terminal equipment for the fax service. They are also tested and maintained by the Post Office. For example, they include 24-hour operation, which must be guaranteed in all cases.

Approval category B

Category B is a simplified variant of category A. It was created for integration into the PC world and relaxes the 24-hour operation requirements. Nevertheless, BZT guarantees service quality and also allows entries in the official fax directory.

B

Bindery

The bindery is NetWare's central object database. It contains all important variable data such as the network's users or print servers. In NetWare 4, the bindery is substituted by the NetWare Directory Services (NDS).

Compatibility with older applications is guaranteed by a bindery emulator.

C

Class 2

see TR29.2

CLIB.NLM

The NetWare Loadable Module with the CLIB.NLM offers the library containing the C functions to all NLMs. Thus, the library is only loaded once and all NLMs use the same library.

The FaxWare requires some functions which are only contained in the most recent CLIB version. During installation, the current CLIB.NLM is copied automatically into the NetWare servers SYS:SYSTEM directory. It is loaded automatically when starting FAXWARE.NLM. If CLIB.NLM is already loaded when starting FaxWare however, the wrong CLIB version may still be installed. In this case, first UNLOAD all NLMs which require CLIB.NLM and then also remove this library. The correct library will then be loaded the next time you start.

Client

A client has access to the services offered by a server. It assigns specific jobs to the server and receives a service in response.

E

ESC/P

The printer language that was originally developed for simple (line-oriented) dot matrix printers produced by EPSON / Japan and is referred to as ESC/P. Just like HP PCL today, ESC/P used to be the standard for all conventional dot matrix printers.

FaxWare recognizes the standard sequences of ESC/P and evaluates them as a conventional EPSON FX80.

F

Fax hardware

The fax hardware is the physical connection between the telephone company's phone line and the personal computer.

The FaxWare is a hardware-independent system that offers access to hundreds of fax terminals by means of special drivers, the Transport Layer Drivers.

In most cases, typical fax hardware is understood to constitute special fax boards, which frequently operate with their own processors and make only minimal use of CPU resources. Fax modems, however, are currently experiencing an increase in use. Besides supporting pure data transfer, fax modems allow users to send and receive faxes. ISDN boards with extendable Fax G3 modules have also become very popular recently.

Frontend

Among NetWare users, there is frequently talk of Frontends and backends. It is difficult to provide an exact definition of these as, in most cases, their precise meaning can only be derived from the context. In this documentation, the Frontend is defined as the respective client which offers access to the FaxWare services.

A DOS Frontend, for example, is a program which allows access to the functions of FaxWare from a personal computer running under MS DOS. The term interface also frequently applies in this usage (such as a DOS interface or Windows interface).

G

Group 1

This denotes a guideline for telecopiers which use the double sided band modulation system. Group 1 devices do not perform any data compression. With a vertical resolution of four scan lines per millimetre, it takes around 6 minutes to transmit a single letter. Devices in this class are no longer approved.

Group 2

This denotes a guideline for telecopiers that use the bandwidth compression system. However, redundancy is not reduced. It takes approximately 3 minutes to transmit one A4 page. Group 2 devices have not been on sale for some time now and are also being phased out by the users.

Group 3

This denotes a guideline for telecopiers that uses the band compression system, with automatic reduction of the picture signal information. This compression ensures that one A4 page is transmitted in less than 1 minute. Telecopiers for the fax service have been split into categories A and B (see approval). Group 3 devices are currently the most widespread telecopiers.

Group 4

This denotes a guideline for telecopiers that reduce the redundant information from the picture signal before transmission and enables largely error free transmission in ISDN. Group 4 devices are split into three different classes.

H

HP PCL

The Hewlett Packard Printer Command Language (HP PCL) has developed towards becoming the standard page description language today. This language is based on a substantially expanded ESC/P syntax and was originally developed specially for laser printers. Nowadays, practically every available high-end output device supports HP PCL which, in the meantime, has appeared as a version 5. Nevertheless, in the age of graphical user interfaces (GUIs), HP PCL is increasingly losing significance because, the open software driver ensures compatability.

For copyright reasons, FaxWare does not currently support any complete PCL codes. The most important HP PCL sequences are recognized and appropriately evaluated wherever possible.

I

ISDN

This short form stands for Integrated Services Digital Network and is a standard which was created for digital transmission of data (voice, images and data). Group 4 was introduced specially for ISDN.

FaxWare does not support the fax function of ISDN (Group 4). However, included in the FaxWare package, you will find a TLD for Fax Group 3, through ISDN.

M

MH, MR

The short forms, MH (Modified Huffman) and MR (Modified Reed) stand for the run length-coded graphic formats for Group 3 fax transmission. Both of them allow a fax resolution of 206 * 200 dpi (dots per inch).

The FaxWare Service Layer converts fax jobs for the respective fax hardware. Therefore, the Transport Layer Driver only has to concern itself with transmitting the data.

N

NetWare Loadable Module

The concept of the NetWare Loadable Module (NLM) should be familiar to you if you want to install the FaxWare. NLMs are 32-bit applications, which run as independent processes under Novell's 32-bit operating systems.

P

PCX

PCX denotes a graphic format which is probably used or at least supported by most application programs today. It was developed at the start of the eighties by ZSoft and is actually a resolution dependent, pixel oriented graphic format, for a small number of colors.

Only recently has PCX appeared to lose its significance due to IBM and Microsoft primarily supporting BMP in OS/2 and MS Windows. FaxWare can recognize PCX files, convert them to fax format, and also convert incoming faxes to this format.

Print server

In a network, the print server provides access to the network printers. Print jobs of workgroup members in the network are stored in the queues, which the print server references to determine the priority of jobs and any special instructions associated with a job.

FaxWare simulates one such print server and evaluates the contents in the corresponding queues. It converts the data and also filters special printing instructions, as well as the addressee's fax number, out of the file.

Q

Queue

NetWare denotes the printer bottleneck as queue, especially as fax queue. By diverting printouts by means of the NetWare Capture function, data can be sent to this queue and then evaluated and processed by a print server (also referred to as a queue server).

The FaxWare simulates a print server. It processes a conventional queue and sends the contents of the file off to the specified recipient after conversion to the appropriate fax format.

R

Router, routing

The concept of routing is used frequently in this documentation. It really only refers to forwarding or distributing.

S

Server

A server consists of an application that offers various services to the client in the network.

Service Layer

The NetWare Loadable Module (NLM) of FaxWare is the core of the Service Layer. The Service Layer offers its services to all clients in the network, as a server.

T

TR29.2

This short form stands for EIA recommendations for data terminals which conform to the Group 3 fax services. There are three different designations:

- ◆ Class 1
This is the first EIA recommendation. Currently no Transport Layer Driver exists for fax modems conforming to this standard.
- ◆ Class 2
In comparison with Class 1, this class has been simplified substantially for the programmer, as the essential fax functions of this recommendation can now be assumed completely by the modem. FaxWare includes a Transport Layer Driver for such modems.
- ◆ Class 2.0
This is a slightly modified Class 2 definition, which above all, uses a different command repertoire. FaxWare includes a Transport Layer Driver for modems conforming to this class.
Important: these designations only represent recommendations that have not yet been issued as standards. However, practical use was faster. All new fax modems already support these standards.

Transport Layer Driver

The Transport Layer Driver (TLD) creates the connection between the Tobit FaxWare Service Layer and the fax hardware. The Transport Layer Driver is a driver dependent on the hardware and operating system, which is capable of running on both a workstation and also on the server.