Chapter 1
Portable Client32 Modules Overview

Introduction

The various components of the 32-bit NetWare Client were designed to be as portable as possible, running independent of any particular operating system, name service, authentication provider, session protocol, or transport protocol. With that in mind, most of the Client32 Requester modules were written entirely in ANSI C and make no calls to any specific operating system, nor to any specific networking protocols.

Figure 1 shows the various components of the 32-bit client. The shaded components of the client are entirely portable.

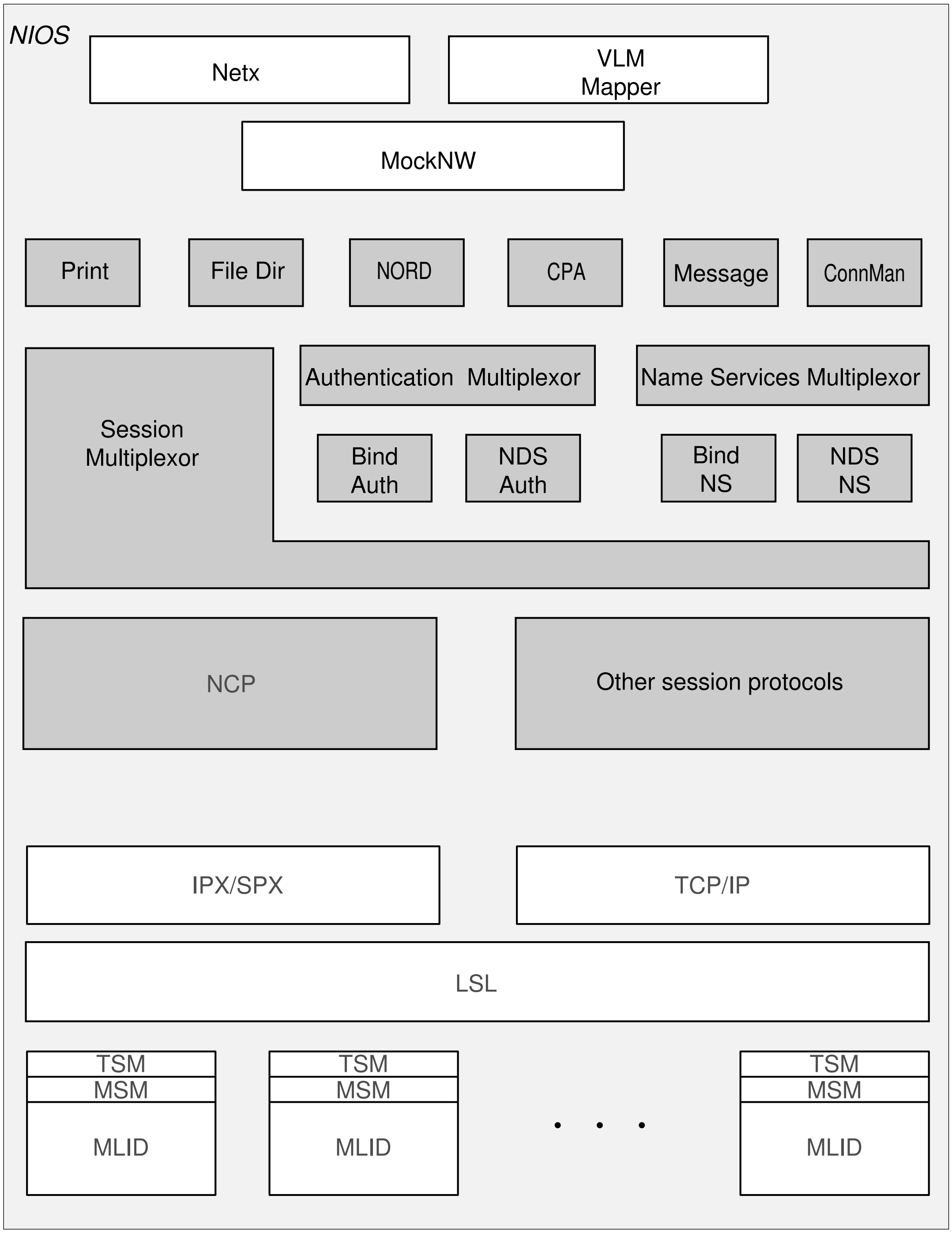

Figure 1. The 32-bit NetWare Client. Shaded areas indicate the portable portion of the client, documented in this manual.

- **Private and Global Resource Tracking**

  Looks at how resource scope issues are handled with Client32. Private scope is not yet supported.

- **Bindery**

  Handles both Bindery name resolution and connection authentication.

- **ConnMan**

  Manages building and destroying connections, allowing applications to be written independent of the underlying sesssion protocol.

- **File and Directory Manager (FileDir)**

  Provides file system services including file, directory, and synchronization functions. This module contains the cache for the file system and support for auto-reconnection of file system resources.

- **Message**

  Sends, receives, and displays messages broadcast to users. Also provides functions to allow application programs to send and receive user broadcast messages.

- **Name Services Multiplexor (NSMux)**

  Serves as a registry for name service providers (such as Bindery.NLM), and as a multiplexor of name service requests.

- **NCP**

  TBD

- **NetWare Directory Services (NDS)**

  Provides NetWare Directory Services support for Client32, including authentication, name resolution, Unicode support, and VLM compatibility.

- **NetWare Object Resource Database (NORD/CPA)**

  TBD

- **Print**

  Implements the new 32-bit printing API.

- **Session Multiplexor**

  Registers session protocol providers and multiplexes requests to the appropriate protocol. Previous requesters supported only one session protocol: NCP. Client32 can support any session protocol, and the key to this independence is the Client32 Session Multiplexor.

- **Authentication Multiplexor**

  Serves as a registry to authentication service providers (such as Bindery.NLM), and as a multiplexor for authentication requests.

- **NDS Licensing**

  Client32 uses a new strategy for licensing NDS connections. The new algorithm views the network as a collection of services that can be individually licensed, rather than as a collection of servers which are licensed.

Overall Features and Design of Client32 Portable Modules

Design Characteristics

The portable parts of the client (shaded in Figure 1) share the following characteristics:

- Written entirely in C, no assembly language
- Independent of any name service (e.g., Bindery or NDS)
- Independent of any session provider (e.g., NCP)
- Independent of any authentication services provider
- Independent of any transport protocol provider (IPX, TCP/IP)
- Able to run on any Intel platform

Requester Features

The Client32 Requester includes current VLM functionality, plus the enhancements listed below:

- Protected-mode Int 21 Shell
- 100% compatibility with Netx and VLM (default).
- Aggressive network I/O caching: file system, directory entries, and executables
- Auto-reconnection of connections, drives, printers, and files
- Large internet packet (LIP) support for Directory Services NCPs
- Packet burst technology with improved WAN support
- Dynamic loading and unloading of requester modules
- Ability to configure a subset of Client workstation settings at runtime
- Ability to extend network resources (e.g., cache buffers) dynamically
- Default memory footprint less than 4k in either conventional or high memory
- Transport independence
- Advanced critical error handling, including pop-up messages
- Long filename support under MS Windows 95
- Up to 65,000 open files per process
- Private connections supported in DOS boxes
- Complete UNC support
- Unicode support
- Advanced background LIP algorithm
- Multi-board support
- Advanced Power Management (APM) support

- Mobile support:

  <u>Shell</u>
  - Registration for suspend/resume events
  - Maintenance of connection status information (active, suspended, standby)
  - Resource tracking, including locks, files, drives, directory handles, connections, print redirection, semaphores (for auto-reconnection on resume events)

System Requirements

To run the 32-bit NetWare Client, you must have at least the following:

- Intel 386 microprocessor
- VGA graphics card or other high-resolution graphics cards that are VGA-compatible
- 4 MB of memory
- NetWare servers 2.15 and above
- DOS v3.1 or higher
- MS Windows v3.11, Windows for Workgroups v3.11 or MS Windows 95 v1.0
- DRDOS 6.0 or higher

Features Not Supported in Client32 v1.0

The following are limitations of the first release of the Client32 Requester:

- VLMs (including 3rd-party) do not co-exist with this client
- 16-bit ODI LAN Drivers are not supported
- C language LAN Drivers are not supported
- NCT not supported
- No Client NLM developer kit