
Lokální sítě (11)

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České vysoké učení technické v Praze

Síťová rozšíření OS

Síťová rozšíření souborových systémů

- NetBIOS - SMB
- Novell NCP
- Banyan VINES
- Unix - NFS, AFS
- IBM - MPTS
- Apple - Appletalk

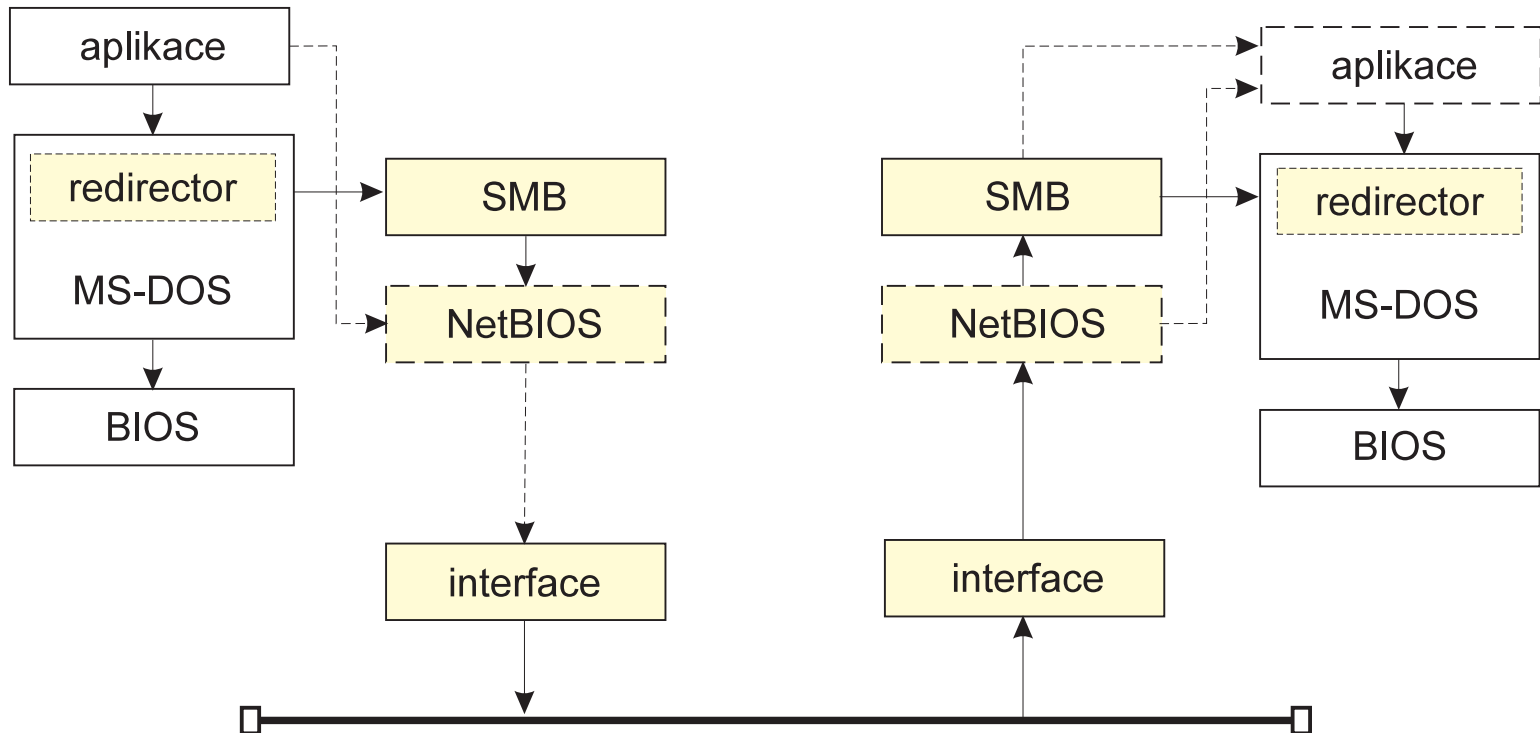
Architektura

- peer-to-peer (MS Windows 95,98,XP)
- client-server (Novell Netware, IBM OS/2, MS Windows NT)

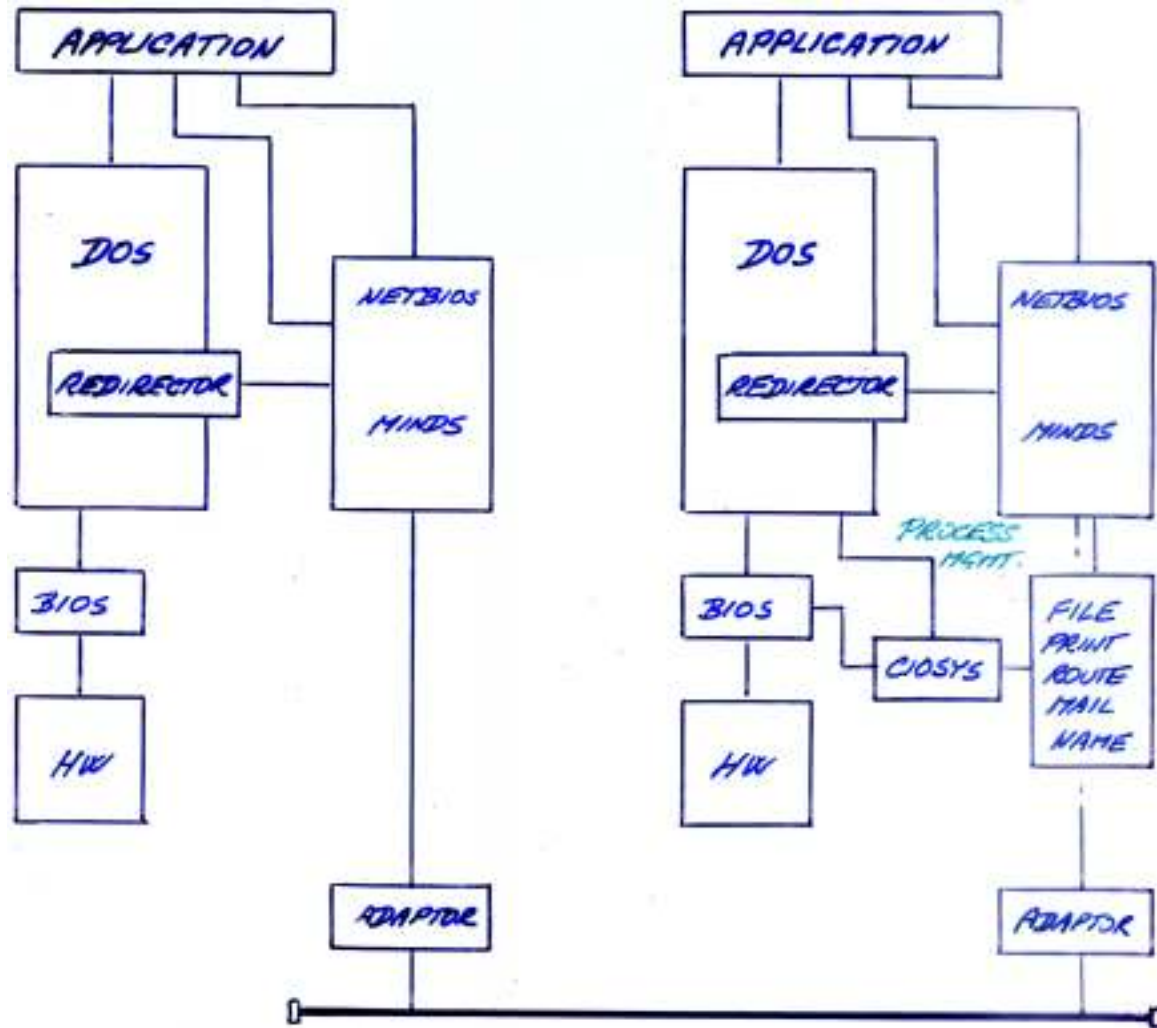
Síťová rozšíření OS

	IPX/SPX	NetBIOS	TCP/IP	VINES	AppleTalk
Application	Application Programs				
	Netware Core Protocol (NCP)	Server Message Block (SMB)	Remote Procedure Call (RPC/XDR)	Remote Procedure Call (NetRPC)	AppleTalk Filling Protocol (AFP)
	NetBIOS	NetBIOS			AppleTalk Session Protocol (ASP)
Transport	Sequenced Packet Exchange (SPX)	NetBIOS Extended User Interface (NetBEUI)	Transmission Control Protocol (TCP/UDP)	VINES Interprocess Communication Protocol (VIPC)	AppleTalk Transaction Protocol (ATP)
Network	Internetwork Packet Exchange (IPX)		Internet Protocol (IP)	VINES Internet Protocol (VIP)	Datagram Delivery Protocol (DDP)
Data Link	Software Driver Network Interface Card				
Physical	Transmission Media				

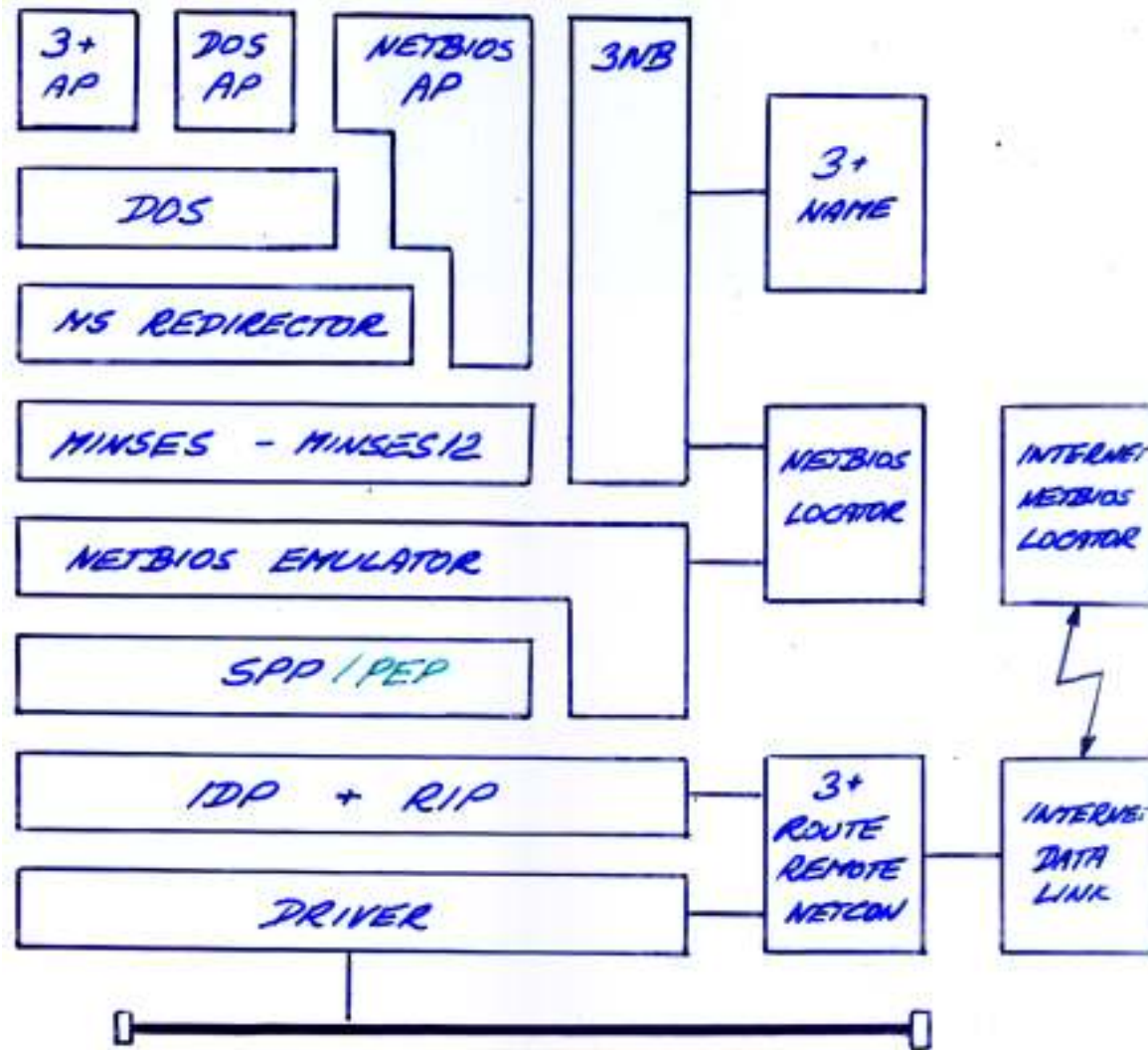
NetBIOS / SMB - architektura



NetBIOS - 3Com

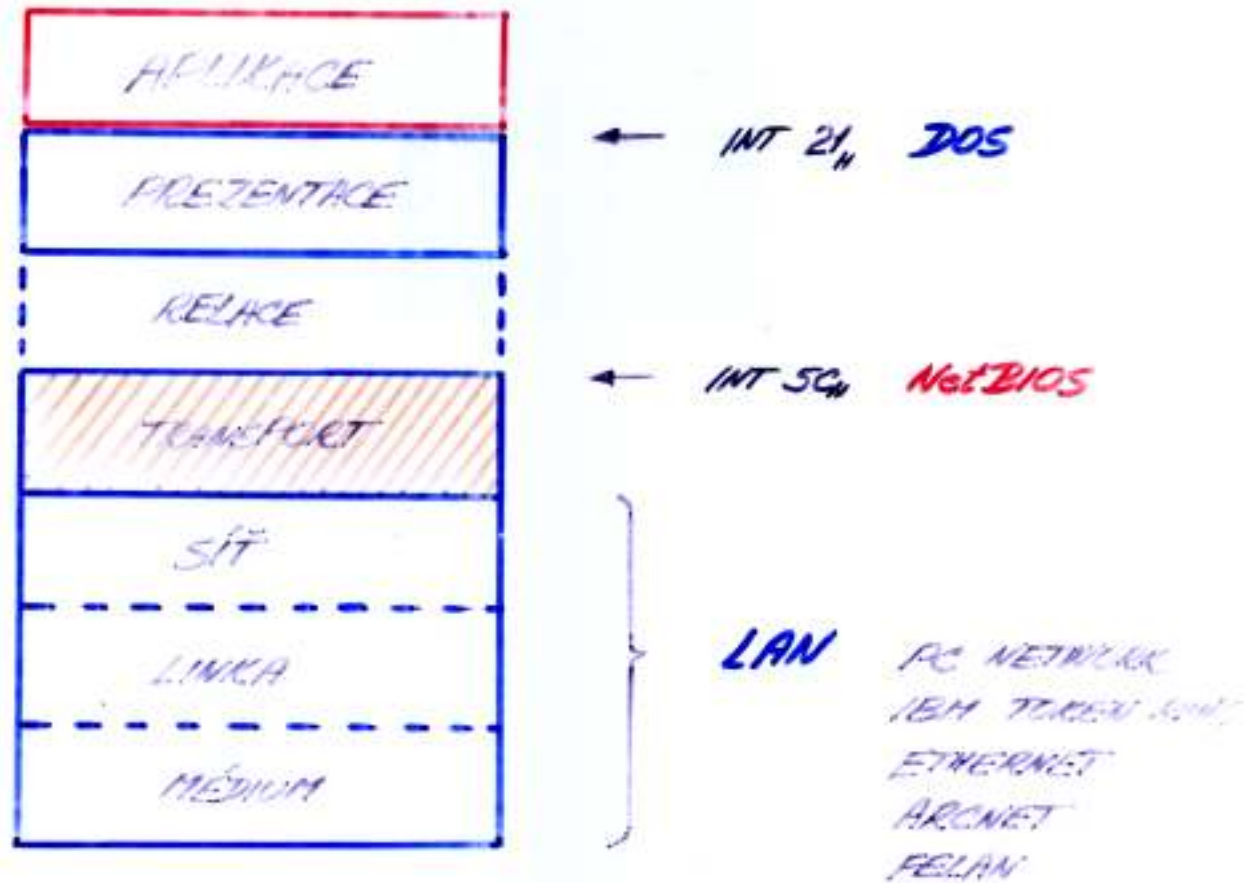


NetBIOS - 3Com



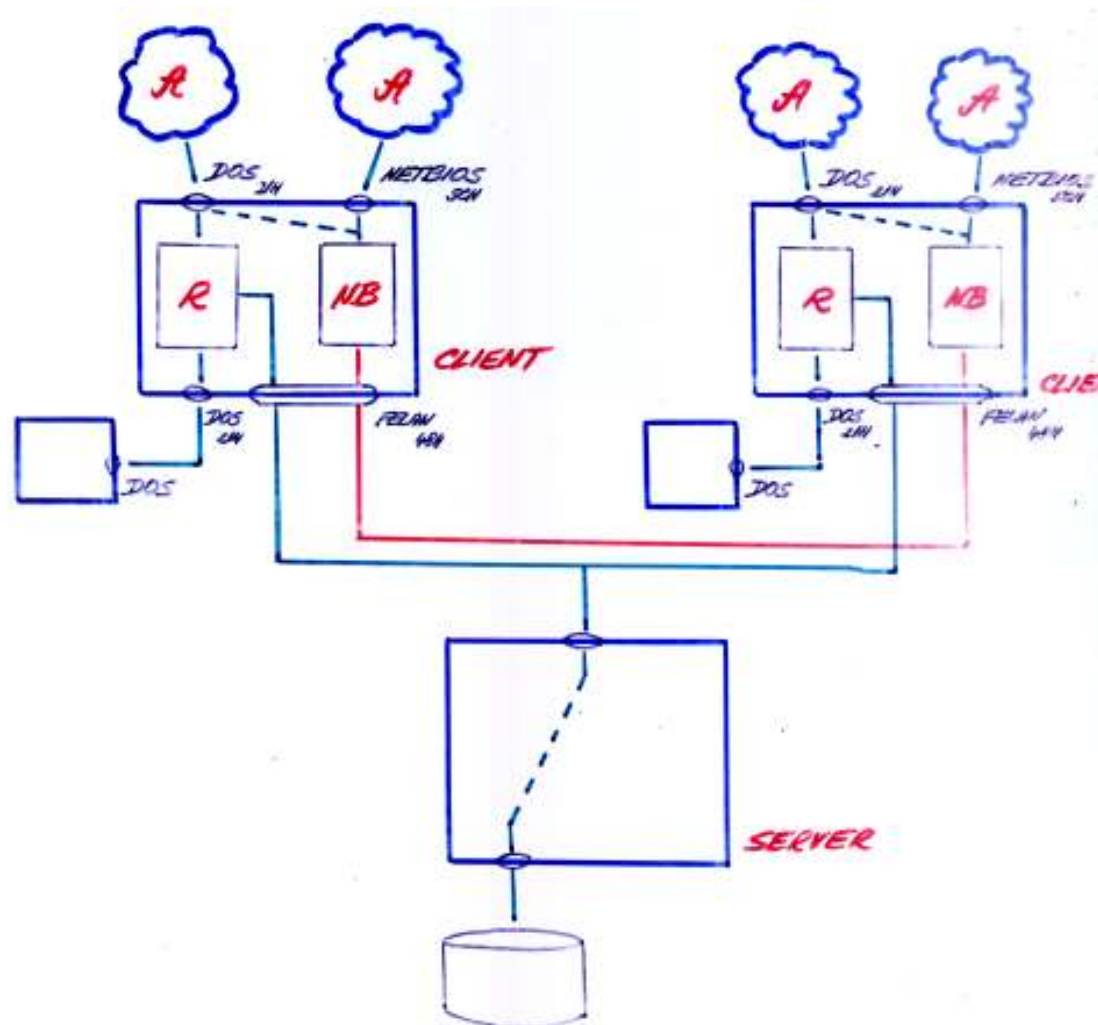
NetBIOS - architektura vrstev

API v systému MS-DOS / FELAN

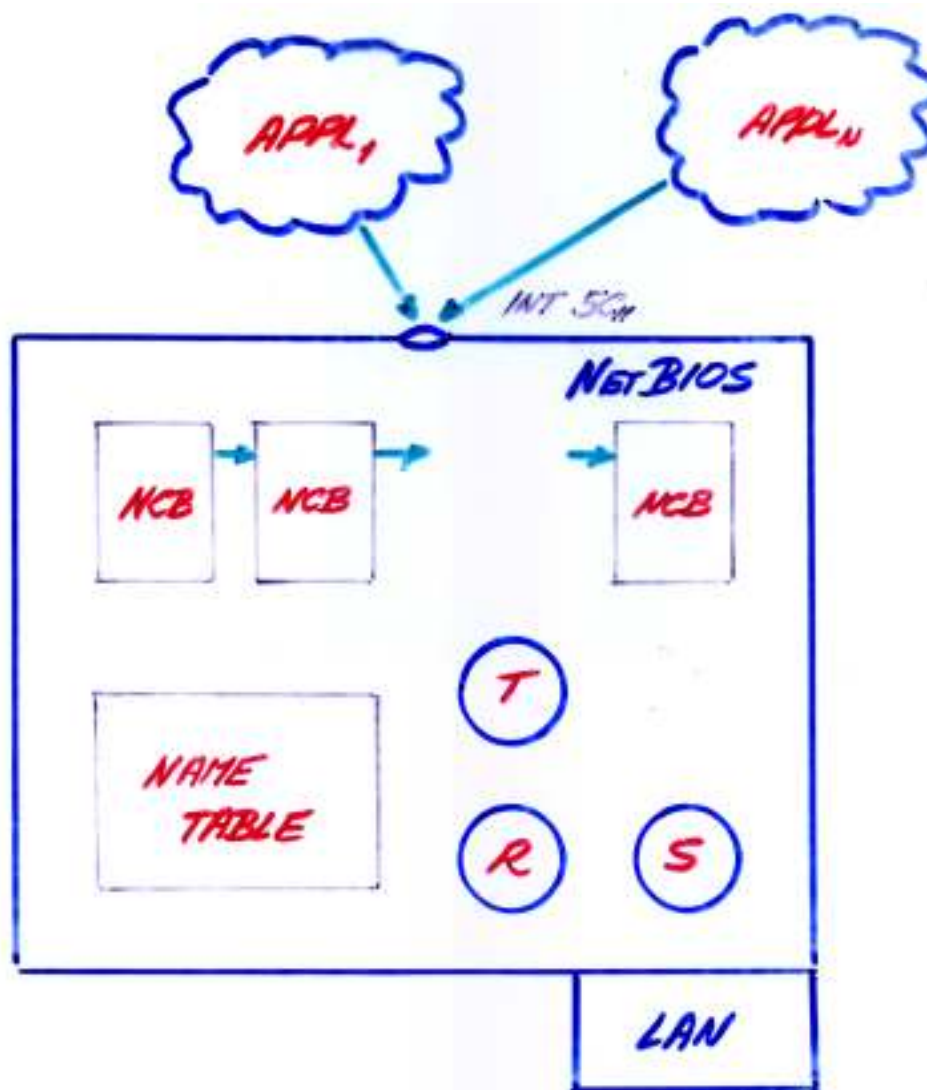


NetBIOS - architektura

Peer-to-peer a client-server (historicky s LAN Manager, OS/2 ...)



NetBIOS - funkce

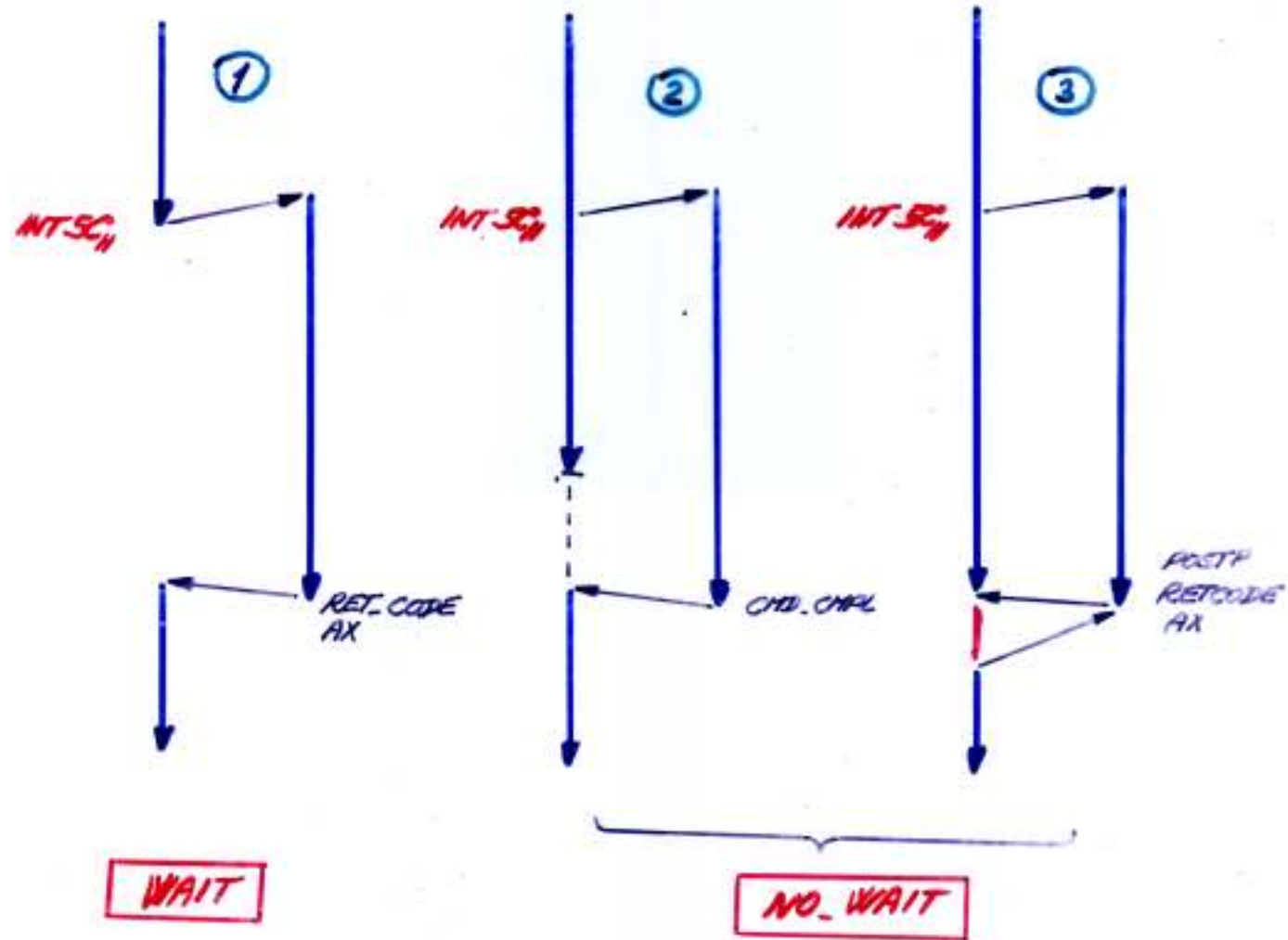


NetBIOS - NCB

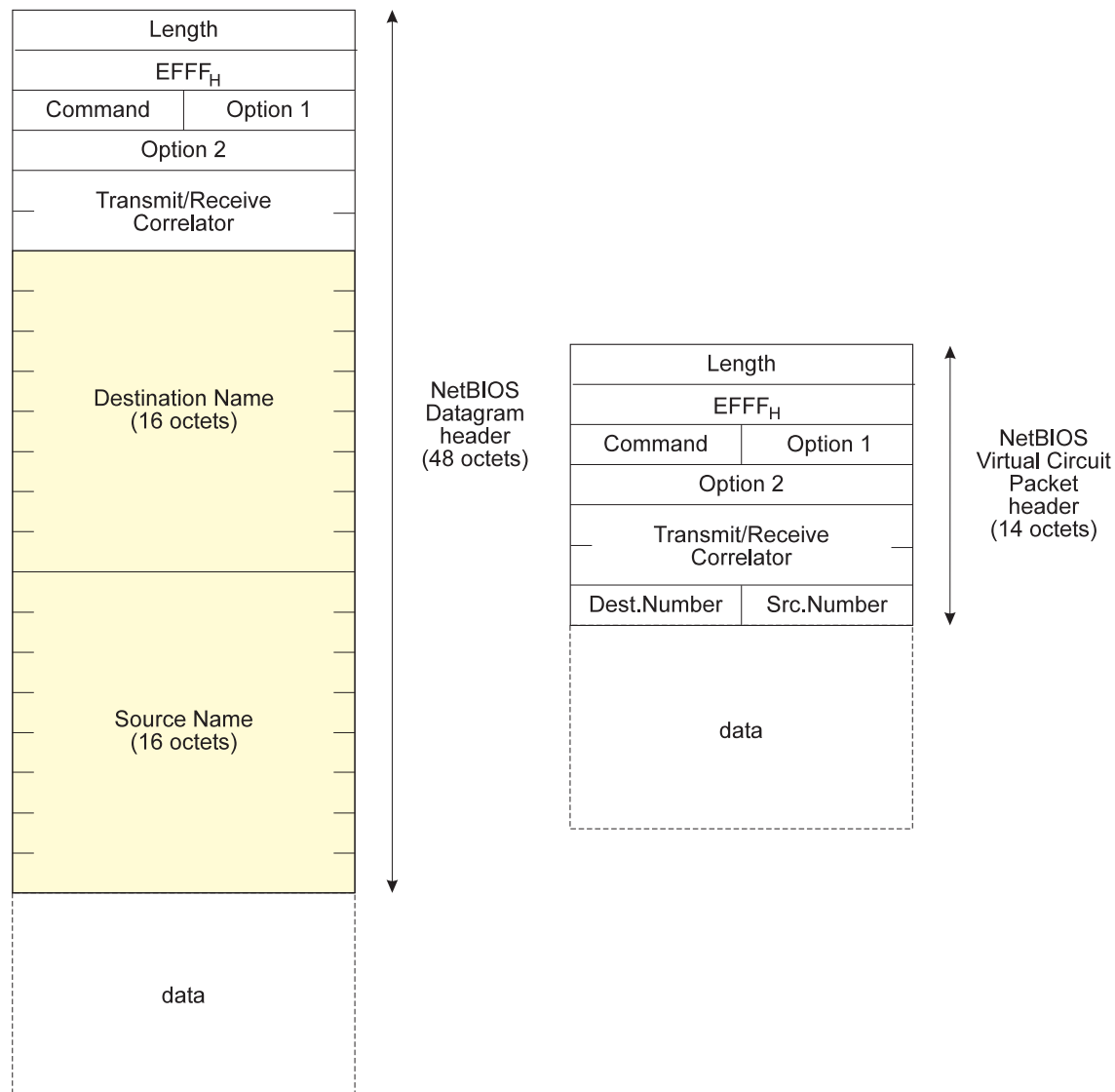
NCB = RECORD OF

```
COMMAND : BYTE;  
RETCODE : BYTE;  
LSN     : BYTE;  
NUM     : BYTE;  
BUFFERP : POINTER;  
LENGTH : WORD  
CALLNAME : ARRAY [0..15] OF CHAR;  
NAME     : ARRAY [0..15] OF CHAR;  
RTO     : BYTE;  
STO     : BYTE;  
POSTP   : POINTER;  
LANA_NUM : BYTE;  
CMD_CPLT : BYTE;  
RESERVE : ARRAY [0..13] OF BYTE  
END;
```

NetBIOS - obsluha



NetBIOS - protokol



NetBIOS - API

SPRÁVA TABULEK JMEN

- *ADD_NAME*
- *ADD_GROUP_NAME*
- *DELETE_NAME*
- *FIND_NAME*

DATAGRAMOVÁ SLUŽBA

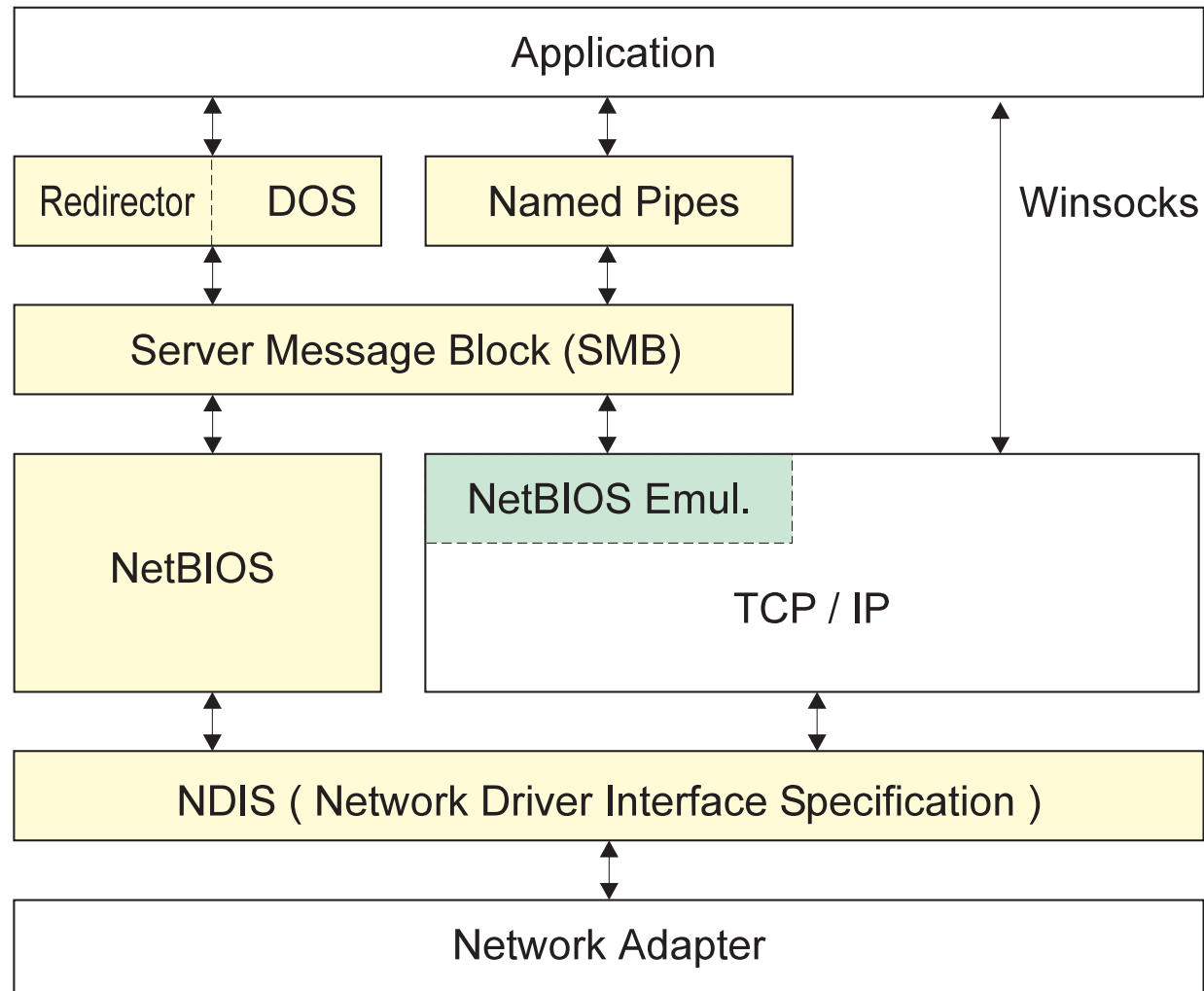
- *SEND_DATAGRAM*
- *SEND_BROADCAST_DATAGRAM*
- *RECEIVE_DATAGRAM*
- *RECEIVE_BROADCAST_DATAGRAM*

NetBIOS - API

LOGICKÉ KANÁLY

- CALL
- LISTEN
- SEND
SEND_NO_ACK
- RECEIVE
RECEIVE_ANY
- HANG_UP
- SESSION_STATUS

NetBIOS - Microsoft



Novell Netware

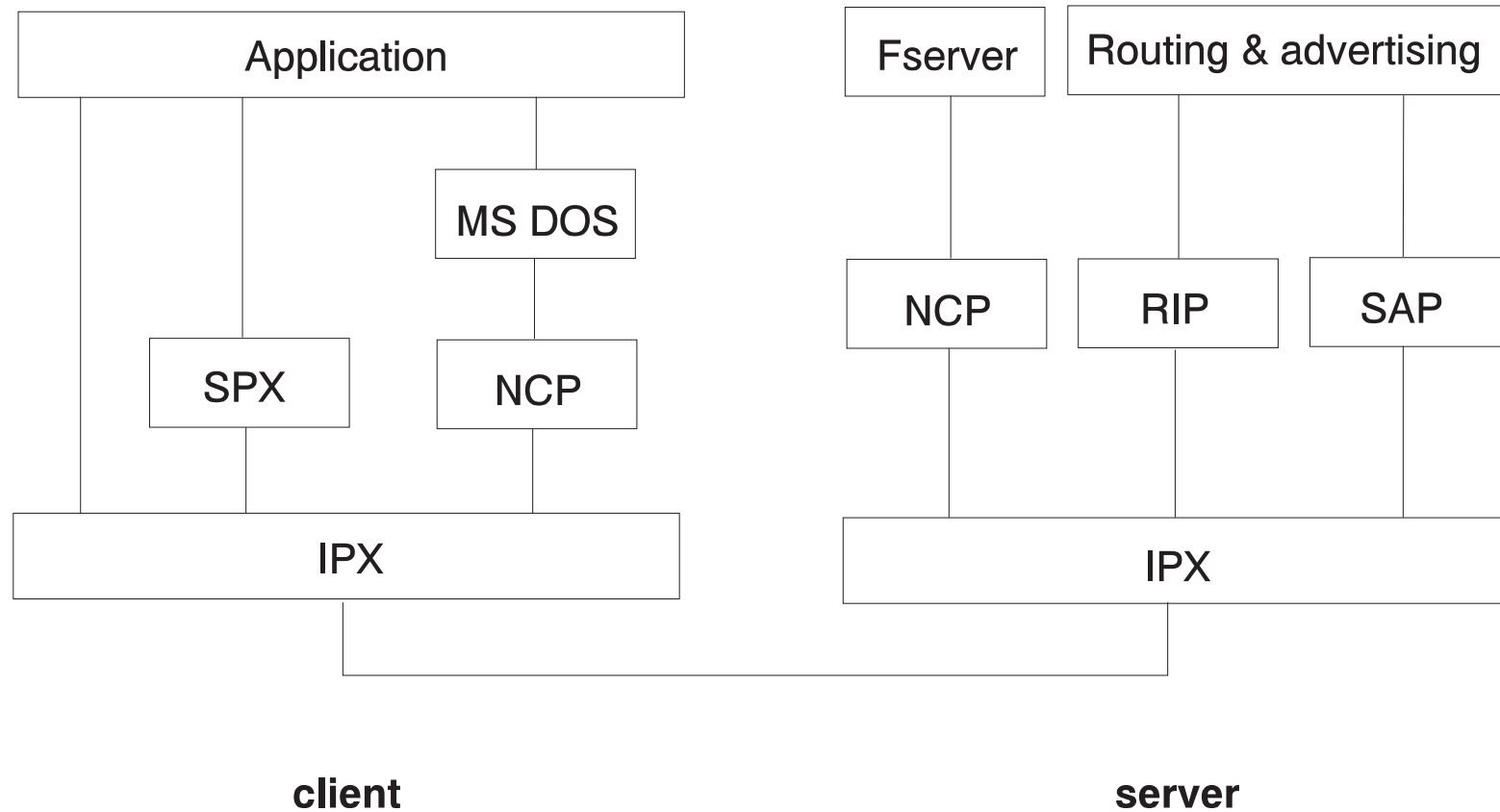
Architektura client-server

- kooperativní multitasking
- využití protokolů Xerox - IPX/SPX
- proprietární protokol NCP
- cache na straně serveru

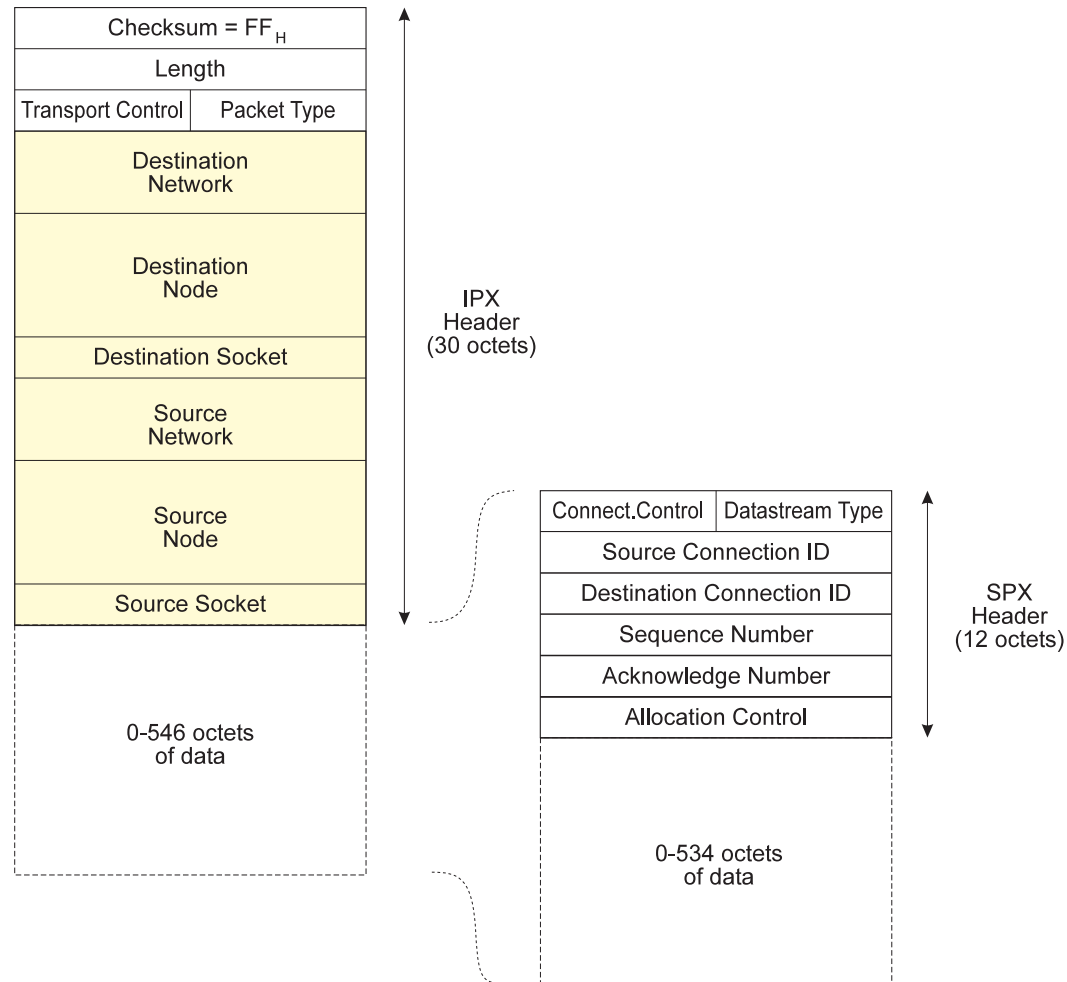
... později

- možnost doplnění aplikací ve formě modulů NLM
- ochrana proti chybám v NLM
- přechod k protokolům TCP/IP

Novell Netware - architektura



Novell Netware - IPX/SPX



Banyan VINES - protokoly

NETWORK

VIP VINES INTERNET PROTOCOL
VICP --- INTERNET CONTROL PROTOCOL
VARP --- ADDRESS RESOLUTION PROTOCOL
VRTP --- ROUTING UPDATE PROTOCOL
IP, ICMP, ARP
X.25

TRANSPORT

VIPC VINES INTERPROCESS COMMUNICATION PROTOCOL } XNS
VSPP --- SEQUENCED PACKET PROTOCOL }
TCP, UDP

SESSION & PRESENTATION

NETRPC (MATCHMAKER) - XNS COURIER

Banyan VINES - architektura

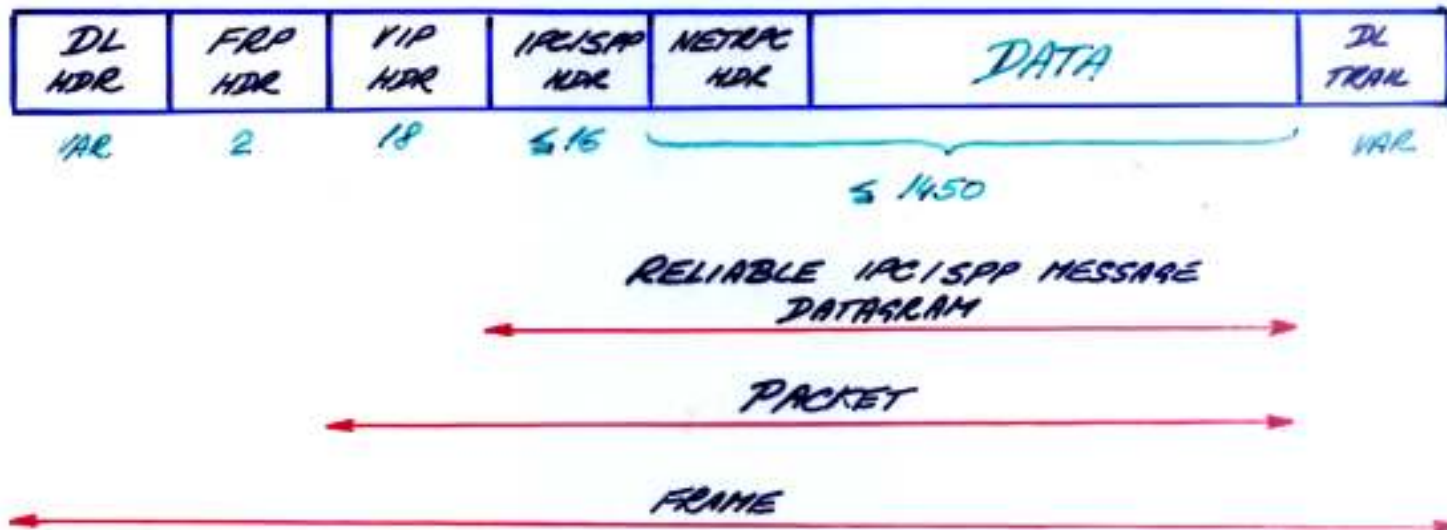
Client

Clients LOGIN, MAIL, ...	File Redirector
NetRPC	Sockets
VIPC	VSP
VIP, VRTP, VARP, VICP	
Drivers (802.x, X.25, ...)	
Network	

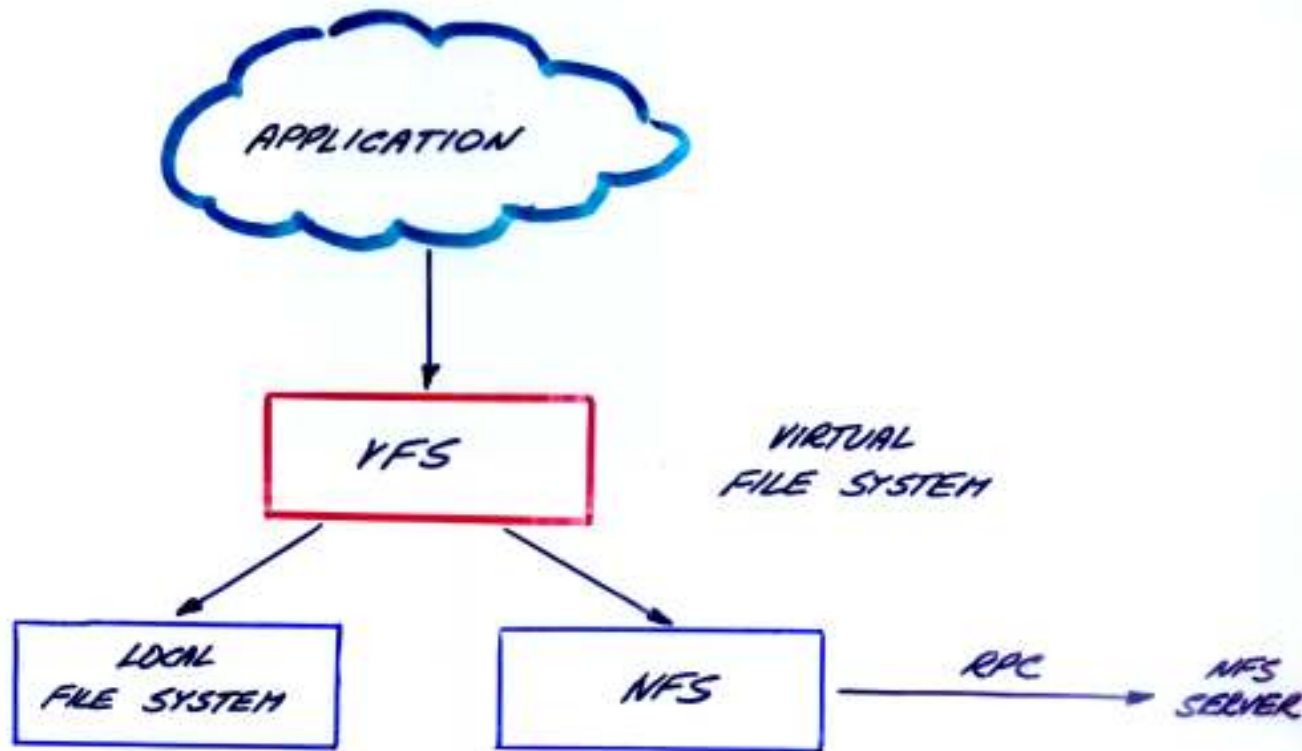
Server

Services LOGIN, MAIL, ...	File Service	UNIX Applications
NetRPC	Sockets	SMB
VIPC	VSP	TCP, UDP
VIP, VRTP, VARP, VICP		IP, ARP, ICMP
Drivers (802.x, X.25, ...)		
Network		

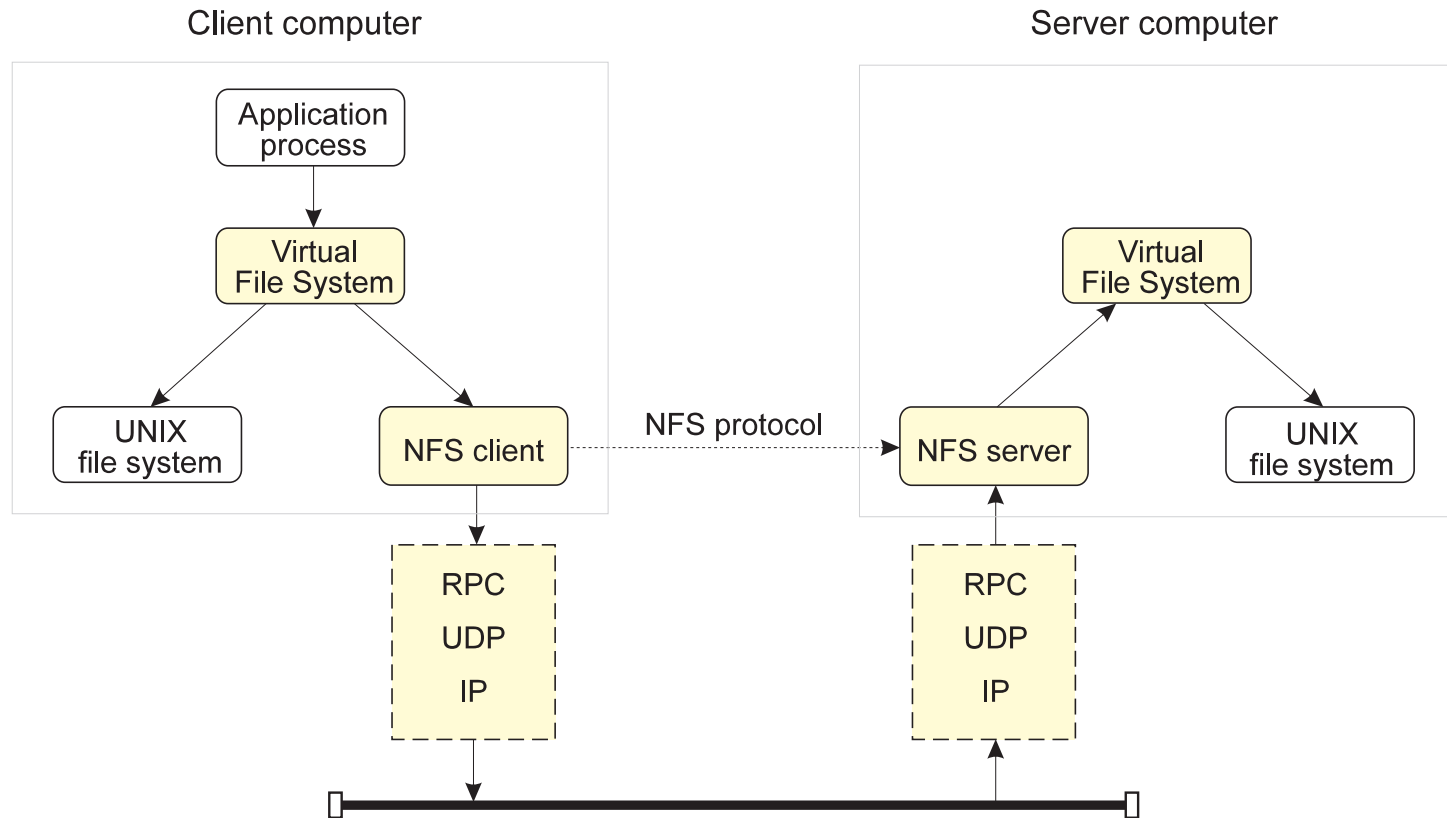
Banyan VINES - pakety



Unix NFS - architektura



Unix NFS - architektura



Unix NFS - API

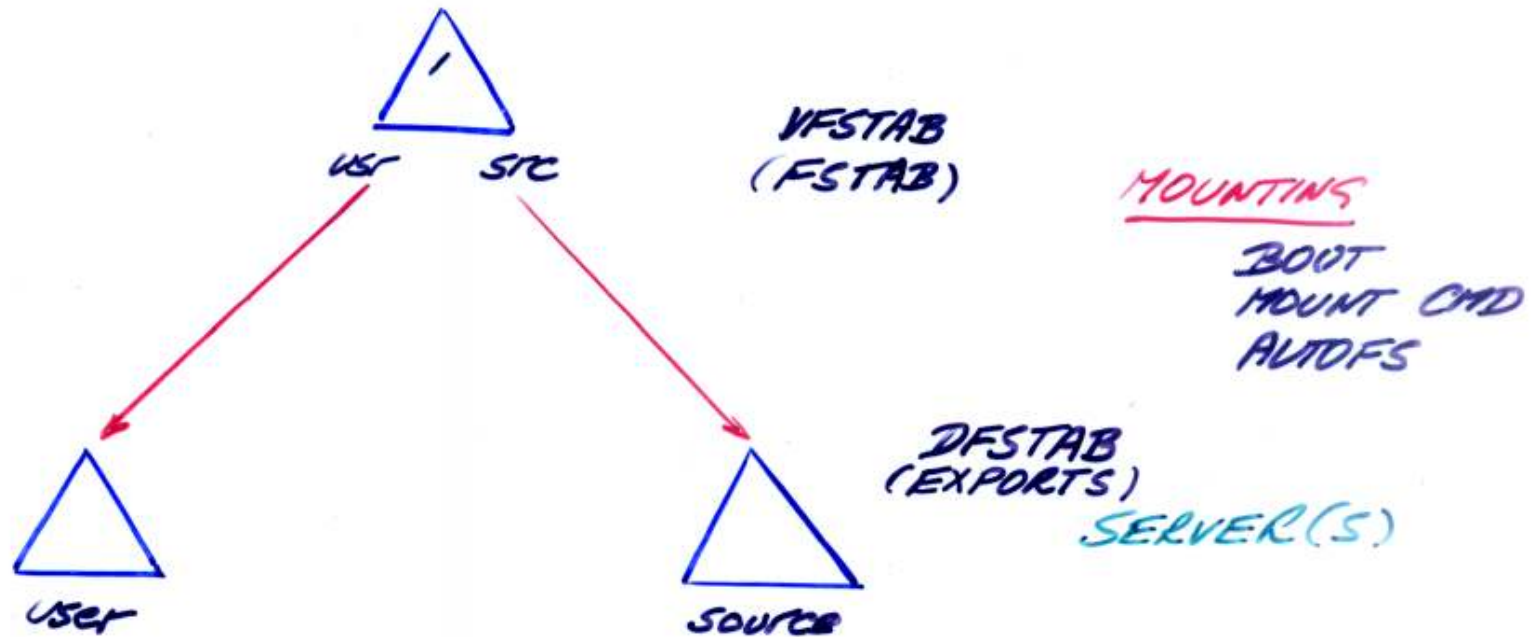
OPEN
CLOSE
RDWR
IOCTL
SELECT

GETATTR
SETATTR
ACCESS
LOOKUP
CREATE

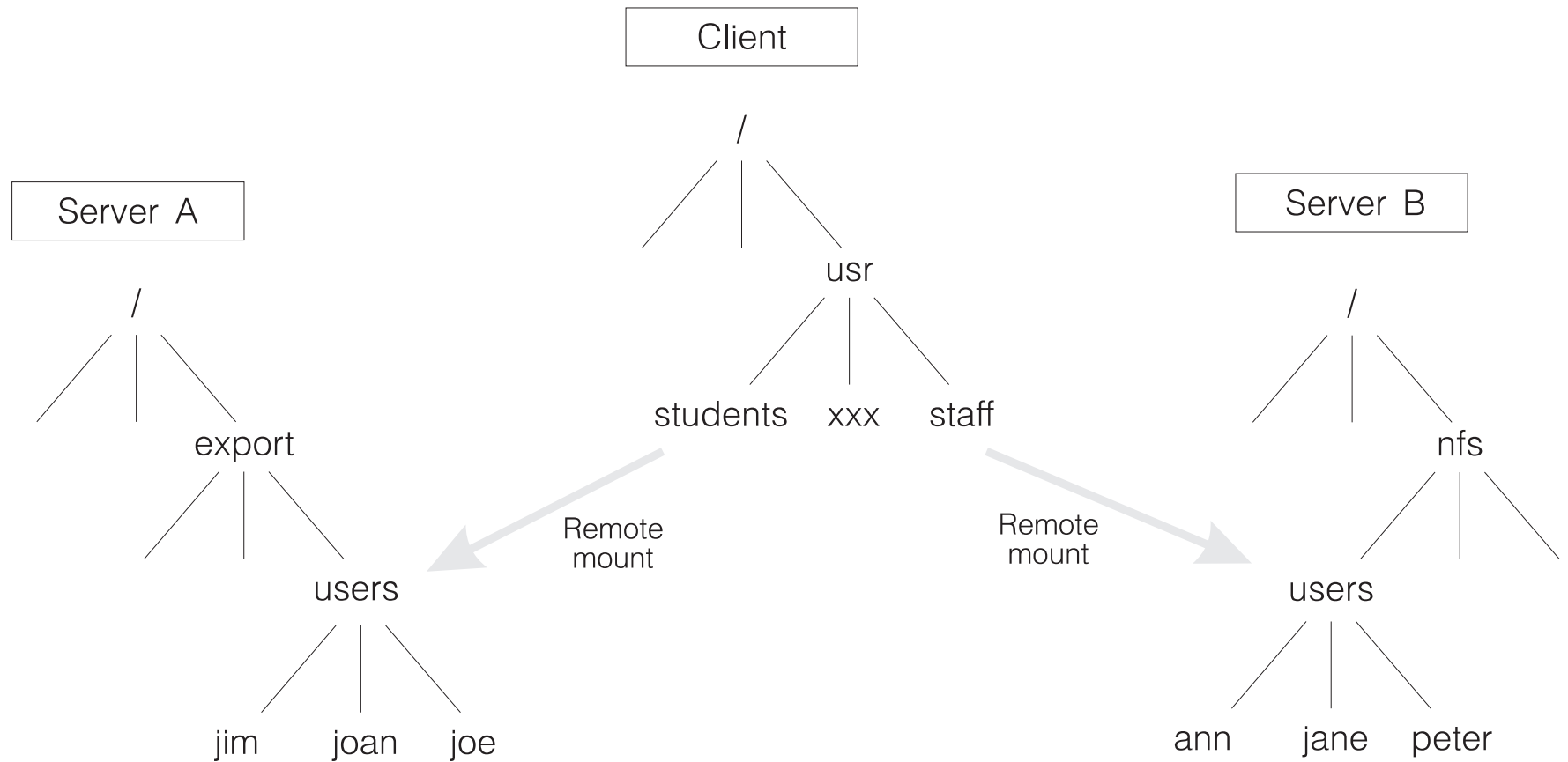
REMOVE
LINK
RENAME
MKDIR
RMDIR

REaddir
SYMLINK
READLINK
FSYNC

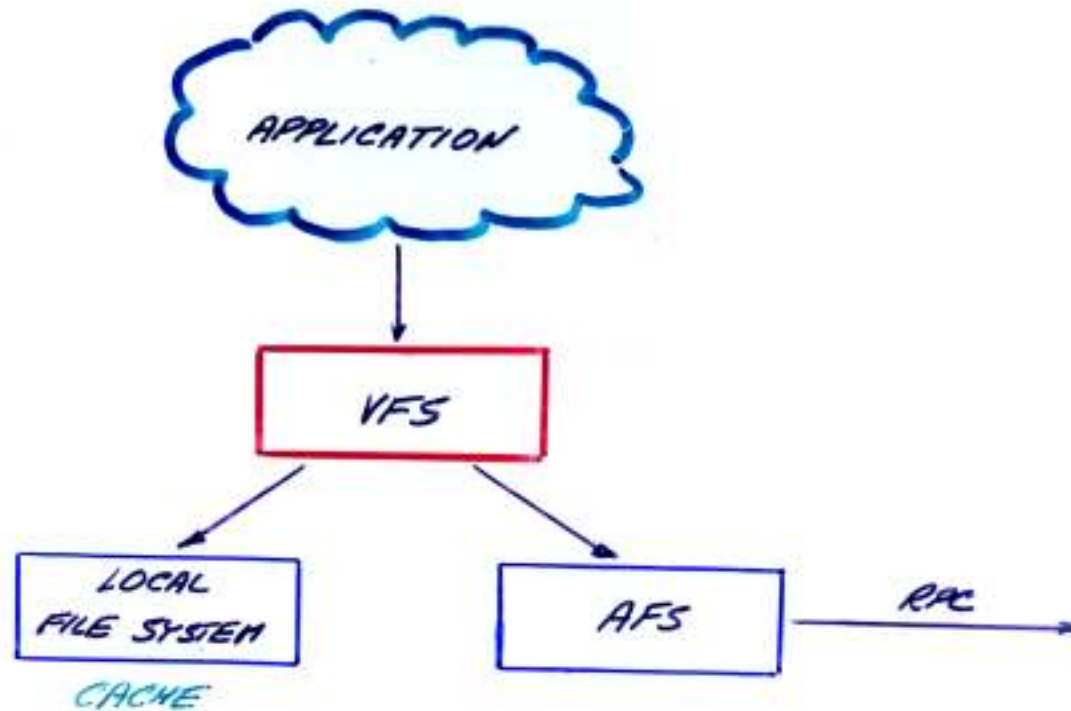
Unix NFS - struktura FS



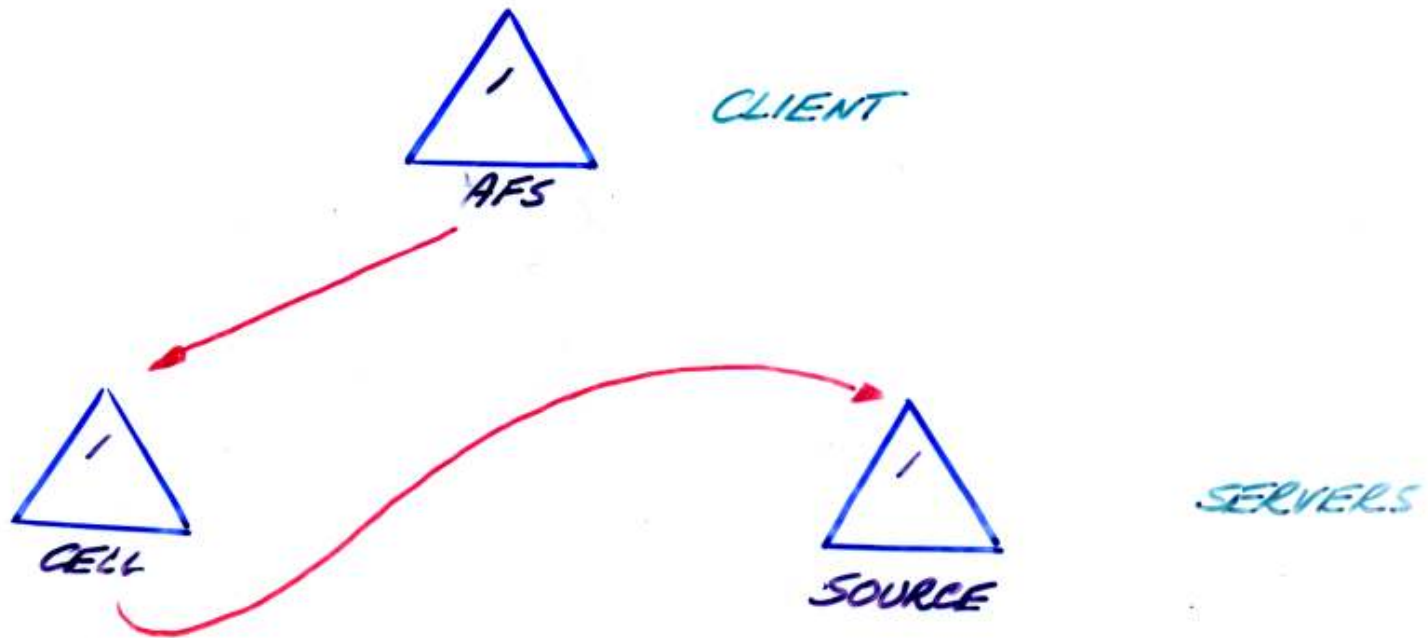
Unix NFS - struktura FS



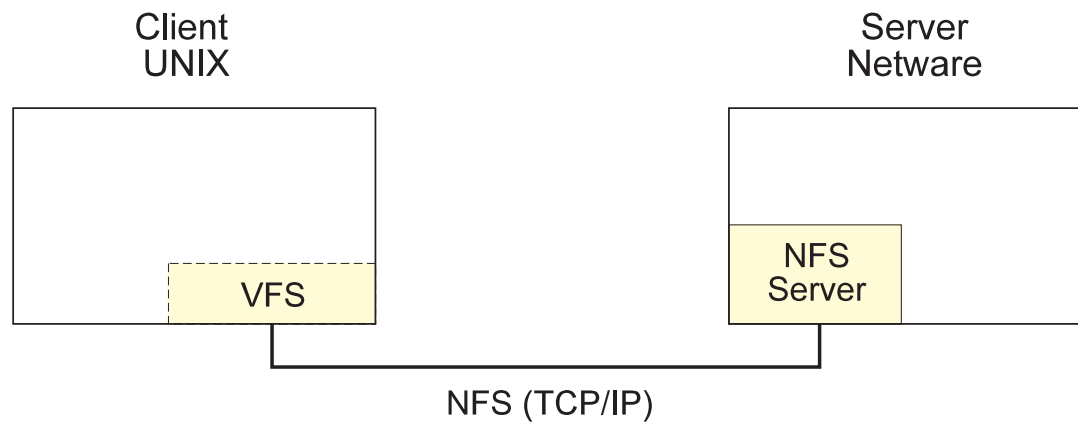
Unix AFS - architektura



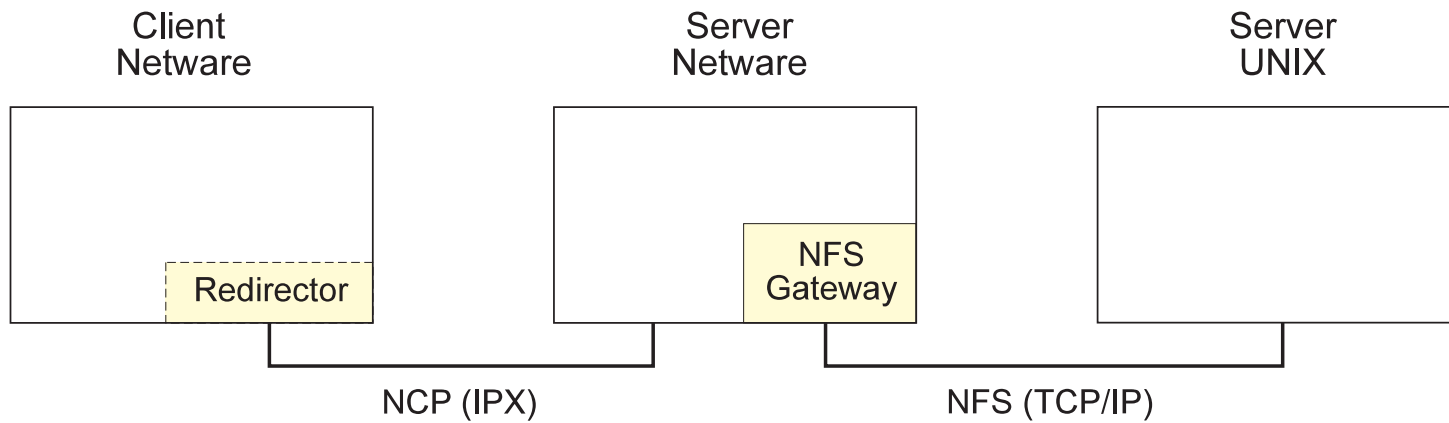
Unix AFS - struktura FS



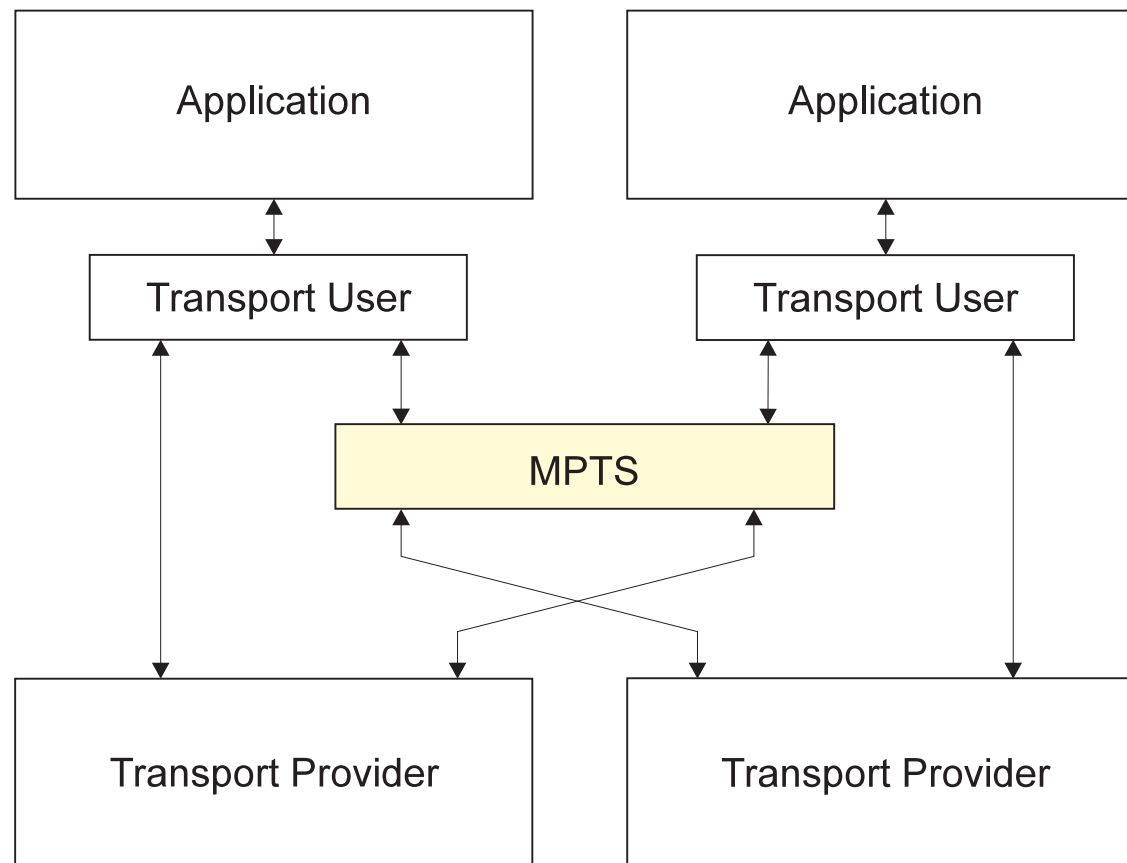
Propojení služeb Unix - Novell



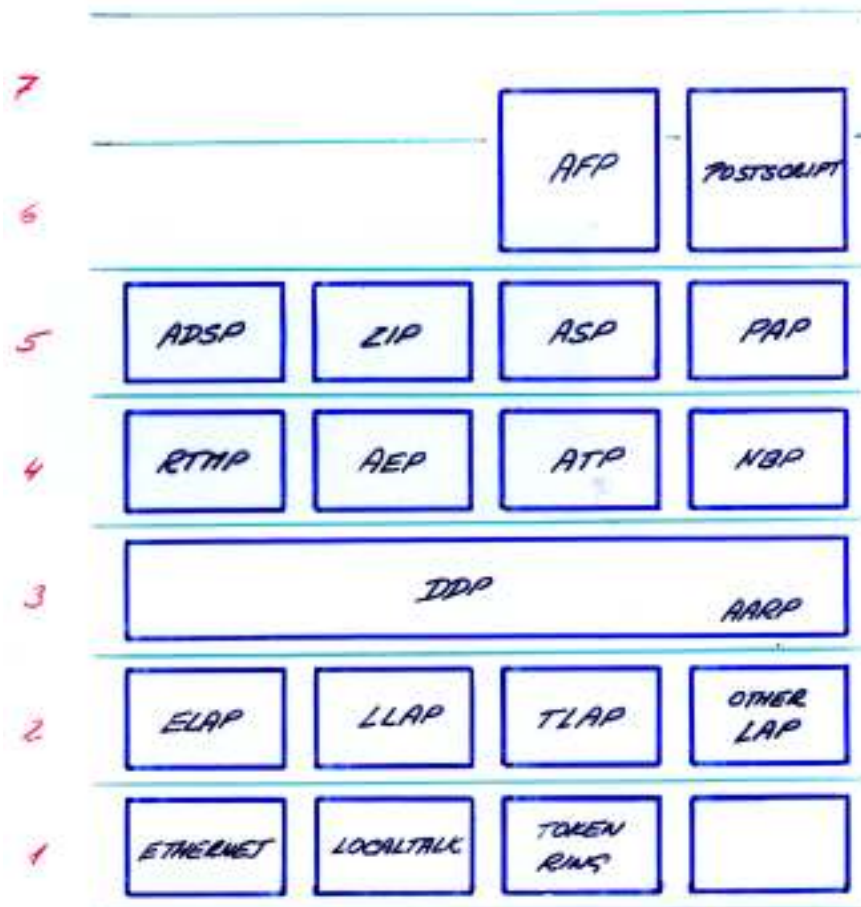
Propojení služeb Unix - Novell



IBM - Multiprotocol Transport

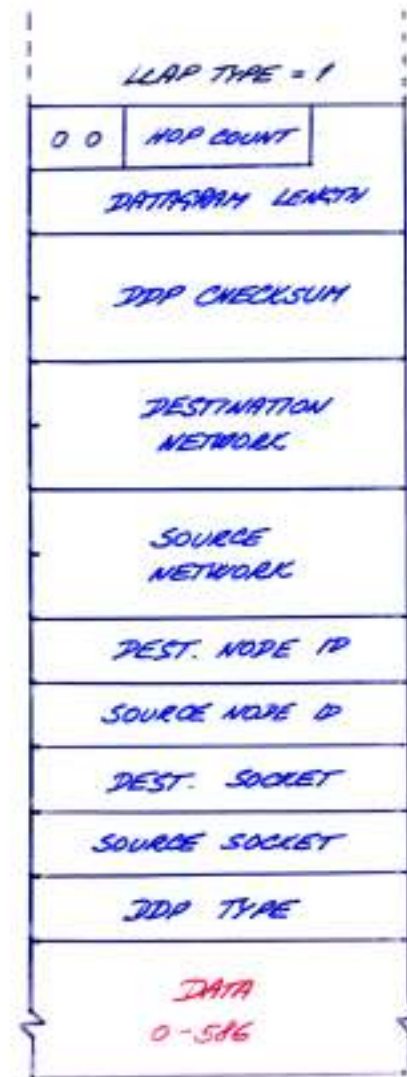
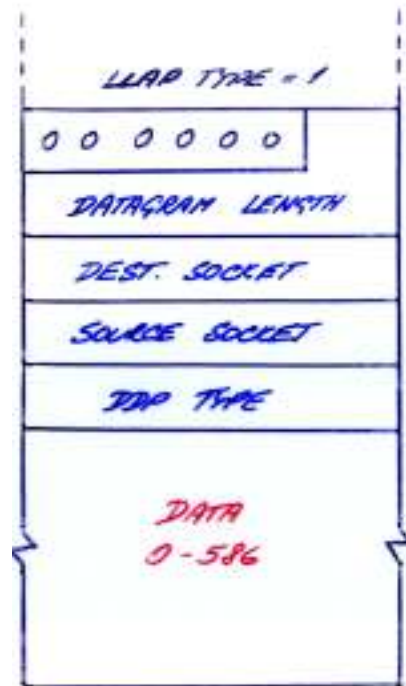


Apple AppleTalk - architektura



APPLE TALK DATA STREAM PROT.
 ZONE INFORMATION PROTOCOL
 APPLE TALK SESSION PROTOCOL
 PRINTER ACCESS PROTOCOL
 ROUTING TABLE MAINTENANCE P.
 APPLE TALK ECHO PROTOCOL
 APPLE TALK TRANSACTION PROT.
 NAME BINDING PROTOCOL
 DATA DELIVERY PROTOCOL
 ETHER TALK LINK ACCESS PROT.
 LOCAL TALK LINK ACCESS PROT.
 TOKEN TALK LINK ACCESS PROT.

Apple AppleTalk - DDP



Apple AppleTalk - pakety

LOCALTALK LAP



ETHERTALK LAP



TOKEN TALK LAP

