# Protocol Family Encapsulations



#### **Layer 7 Application**

Provides standard services to applications and end-user interfaces.

#### Layer 6 Presentation

Performs data format conversion. Provides compression, encoding, and encryption of data.

#### Layer 5 Session

Establishes sessions between services. Synchronizes and performs translations for naming services

#### Layer 4 Transport

Manages connections and provides reliable packet delivery. Operates in units of messages.

#### Layer 3 Network

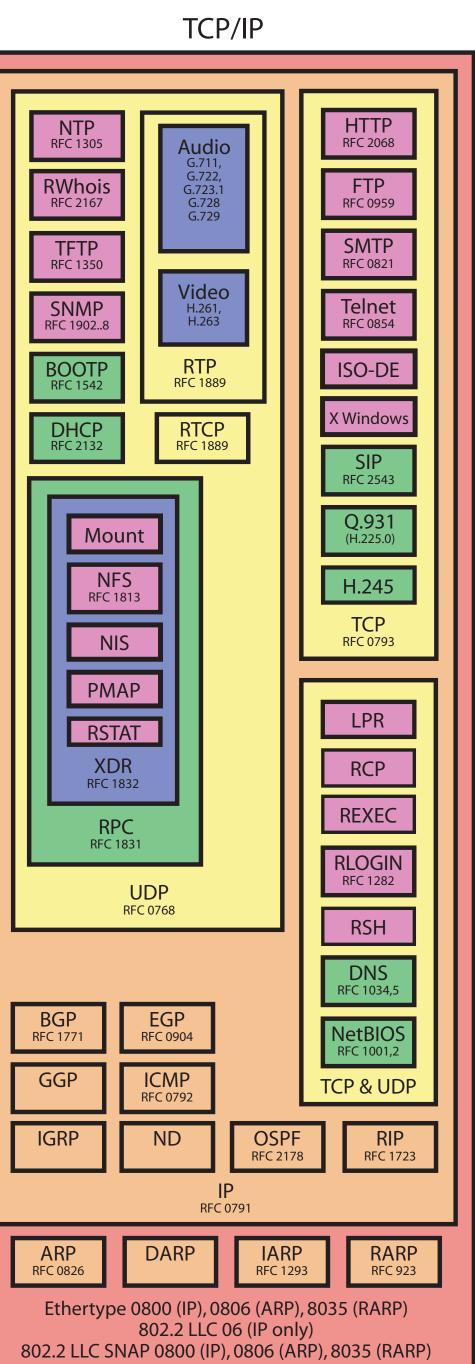
Addresses and routes data-

#### Layer 2 Logical Link

Provides hardware addressing and error detection/ correction. Operates in units of frames.

### Layer 1 Physical

Defines connection, electrical, and wiring specifications. Operates in units of



## **Novell Netware** LSP NDS NCP NLP **NWBCAST** NWDIAG **NWSER** WatchDog SAP **NetBIOS** SPX SPX II NLSP

PING

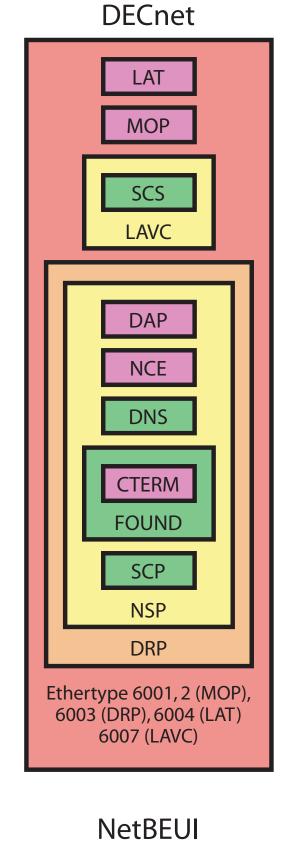
RIP

Ethertype 8137

Novell "Raw"

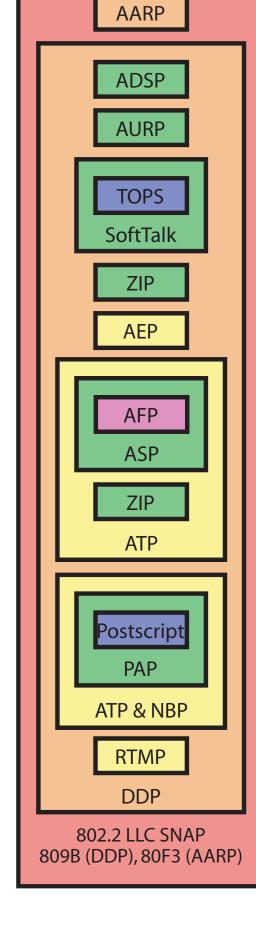
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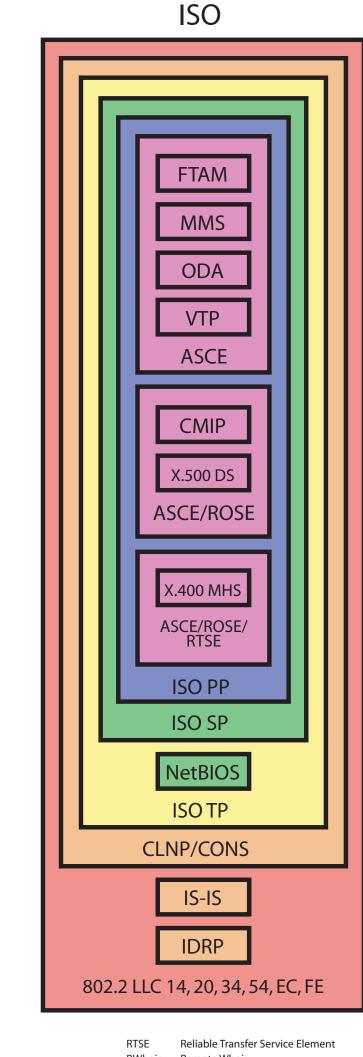


SMB

**NetBEUI** 



**AppleTalk** 



grams. Performs fragmentation and reassembly (IP). Operates in units of packets.



AARP	AppleTalk Address Resolution Protocol
ADSP	AppleTalk Data Stream Protocol
AEP	AppleTalk Echo Protocol
AFP	AppleTalk Filing Protocol
ARP	Address Resolution Protocol
ASCE	Association Control Service Element
ASP	AppleTalk Session Protocol
ATP	AppleTalk Transaction Protocol
AURP	AppleTalk Update Routing Protocol
BGP	Border Gateway Protocol
BOOTP	Boot Protocol
CLNP	Connectionless Network Protocol
CMIP	Common Management Information Protocol
CONS	Connection Oriented Network Protocol
DARP	Dynamic Address Resolution Protocol
DDP	Datagram Delivery Protocol
DHCP	Dynamic Host Configuration Protocol
DNS	Domain Name System
EGP	Exterior Gateway Protocol
FTAM	File Transfer Access and Management
FTP	File Transfer Protocol

Gateway to Gateway Protocol

HyperText Transfer Protocol

GGP

802	2.2 LLC F0	
IARP	Inverse Address Resolution Protocol	NLP
ICMP	Internet Control Message Protocol	NLSP
IDRP	Interdomain Routing Protocol	NTP
IGRP	Interior Gateway Routing Protocol	NWBCAS
IP.	Internet Protocol	NWDIAG
IPX	Internet Packet Exchange	NWSER
IS-IS	Intermediate System to Intermediate System Routing	ODA
ISO PP	Presentation Protocol	OSPF
ISO SP	Session Protocol	PAP
ISO TP	Transport Protocol	PING
ISO-DE	Development Environment	PMAP
LPR	Remote Print	RARP
LSP	NetWare Lite Sideband Protocol	RCP
MMS	Manufacturing Message Service	REXEC
Mount	Mount Server	RIP
NBP	Name Binding Protocol	RLOGIN
NCP	NetWare Core Protocol	ROSE
ND	Network Disk	RPC
NDS	NetWare Directory Service	RSH
NetBEUI	NetBIOS Enhanced User Interface	RSTAT
NetBIOS	Network Basic Input/Output System	RTCP

Network File System

**Network Information Services** 

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LP	NetWare Lite Protocol	
LSP	NetWare Link State Protocol	
ΤР	Network Time Protocol	
WBCAST	NetWare Broadcast Message Notificat	tion
WDIAG	NetWare Diagnostic Support Protoco	l
WSER	NetWare Serialization Protocol	
DA	Office Document Architecture	
SPF	Open Shortest Path First	
<b>ΛP</b>	Printer Access Protocol	
NG	Packet Internet Groper	
ИАР	Port Mapper	
ARP	Reverse Address Resolution Protocol	
CP	Remote Copy	
XEC	Remote Execution	
Р	Routing Information Protocol	
.OGIN	Remote Login	
DSE	Remote Operations Service Element	
PC	Remote Procedure Call	

Remote Shell

Remote Statistics

RTP Control Protocol

Routing Table Maintenance Protocol

Real-time Transport Protocol

RTSE	Reliable Transfer Service Element
RWhois	Remote Whois
SAP	Service Advertisement Protocol
SIP	Session Initialization Protocol
SMB	Server Message Block
SMTP	Simple Mail Transfer Protocol
SNMP	Simple Network Managment Protocol
SPX	Sequenced Packet Exchange
TCP	Transmission Control Protocol
Telnet	Telecommunications Network Protocol
TFTP	Trivial File Transfer Protocol
TOPS	Transcendental Operating System
UDP	User Datagram Protocol
VTP	Virtual Terminal Protocol
WatchDog	Station Keep Alive
X Windows	Graphical Windows
X.400 MHS	Message Handling System
X.500 DS	Directory Services
XDR	Exchange Data Representative Protocol
ZIP	Zone Information Protocol