



NetWare IPX Protocol Reference

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About the Author

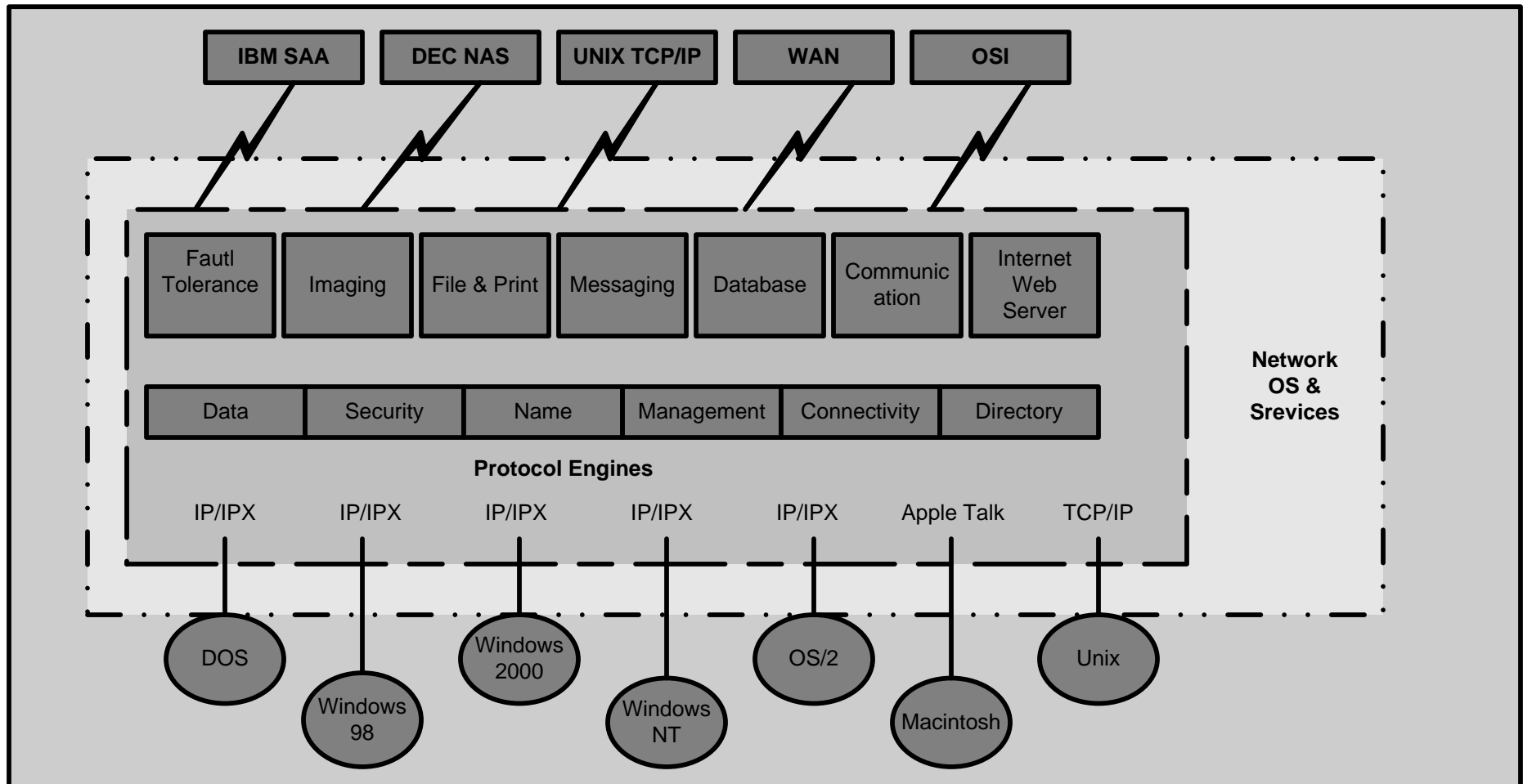
Benoît H. Dicaire is the founder and Information Security Strategist for INFRAX.

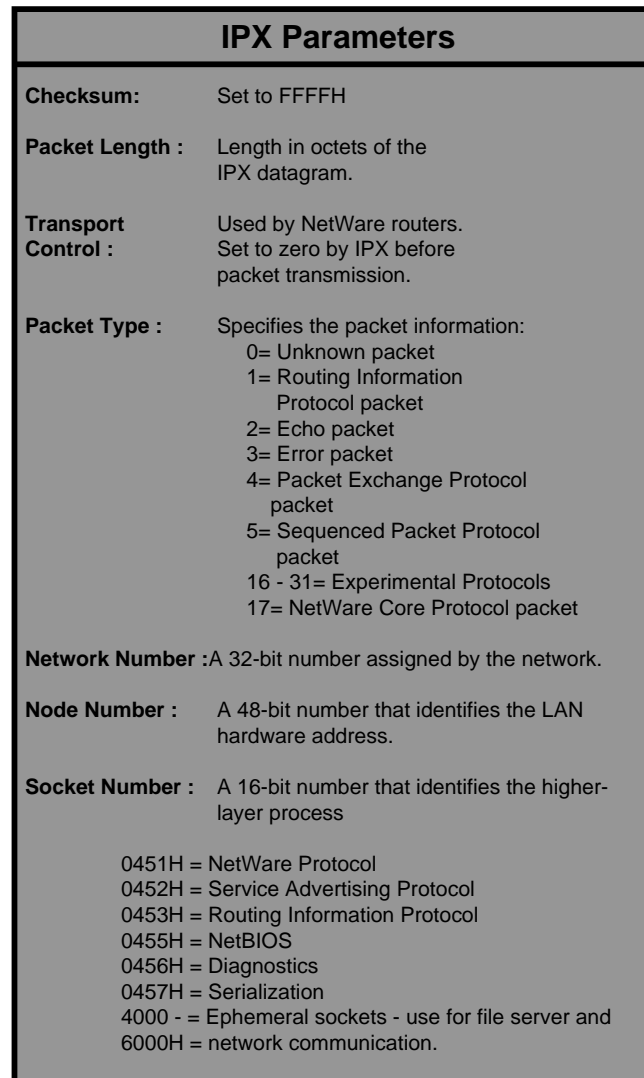
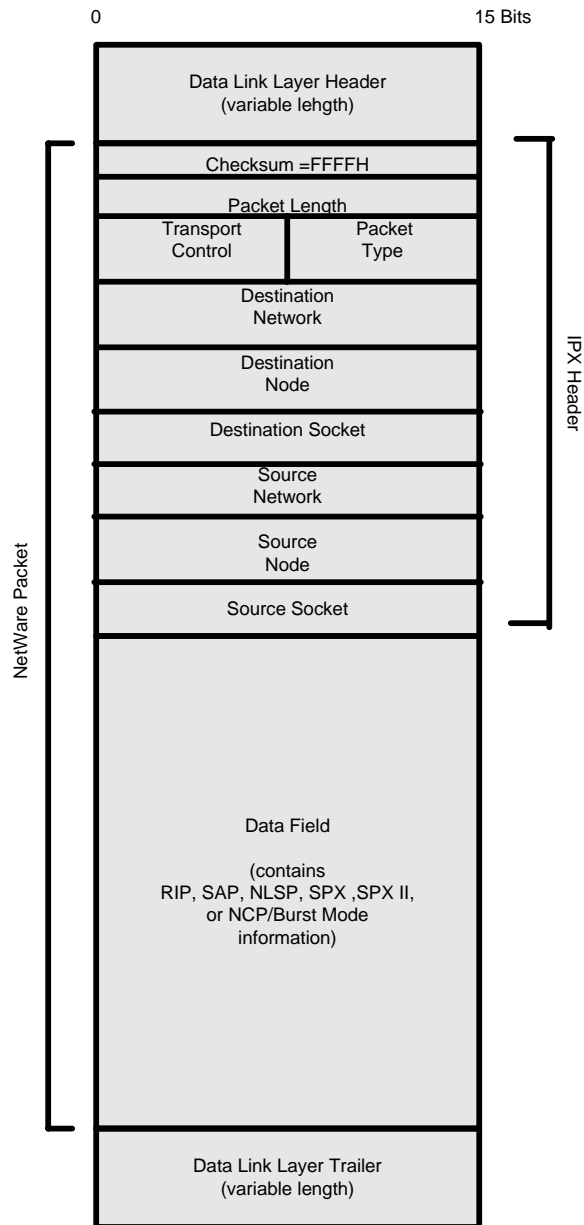
With nearly two decades of experience providing key strategies and technology solutions for managing information security risks, Dicaire now focuses his work on Security Posture Assessment and Enterprise Architecture for organizations in Canada and around the world.

A trusted advisor, Dicaire is frequently consulted by leaders of private and government organizations.

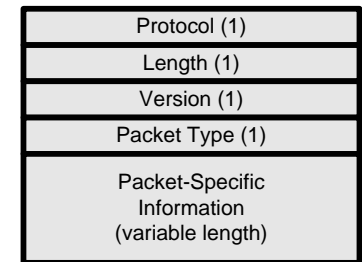
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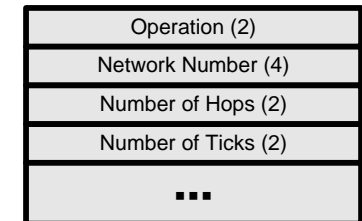




NLSP Packet

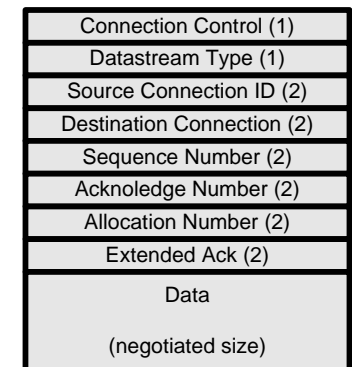


RIP Packet



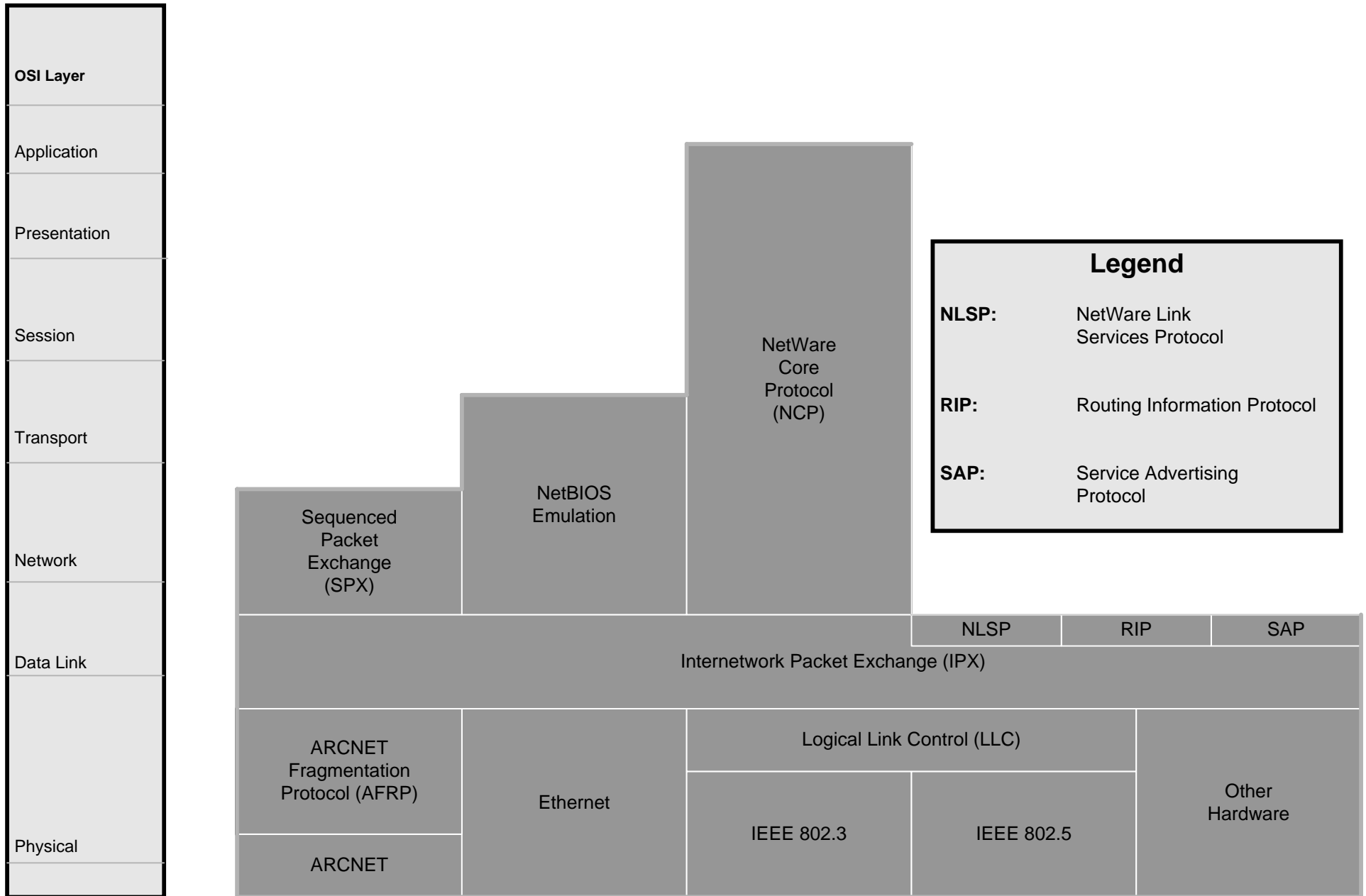
Maximum 50 sets of network information

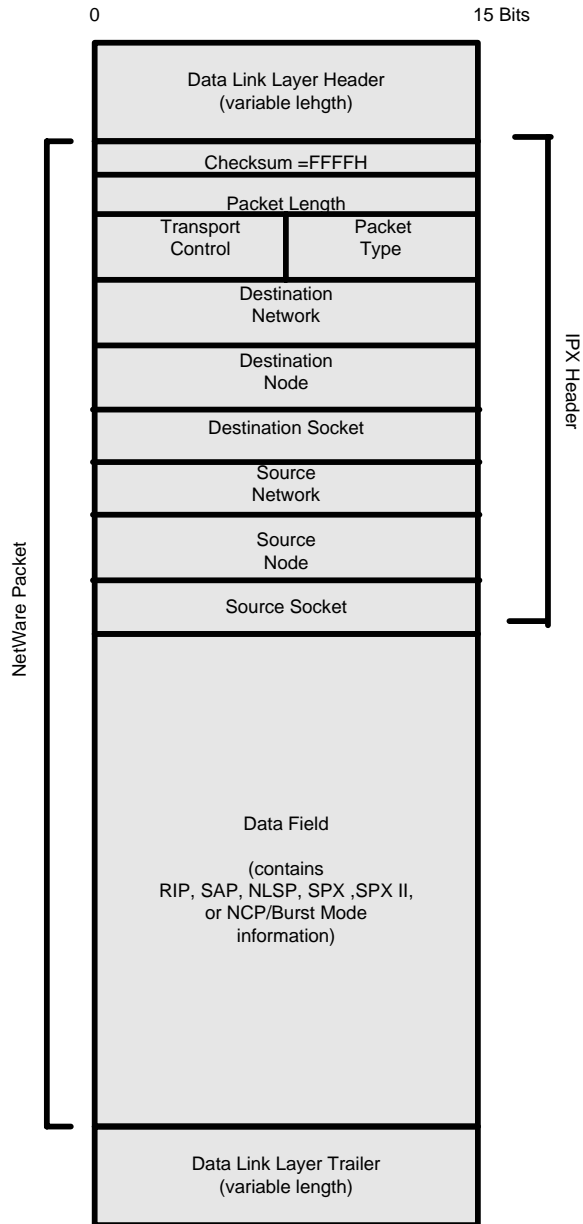
SPX II Packet



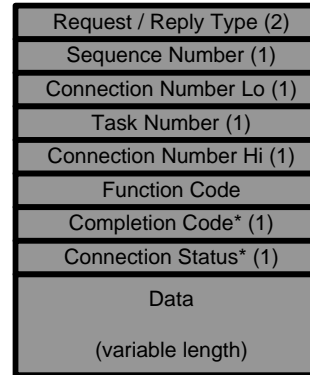
H represents hexadecimal notation

() represents field length in octets

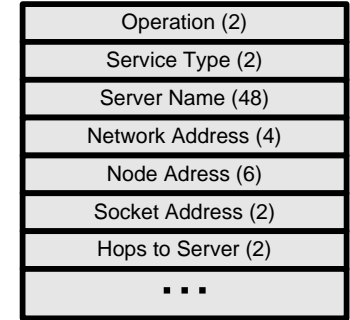




NCP Packet

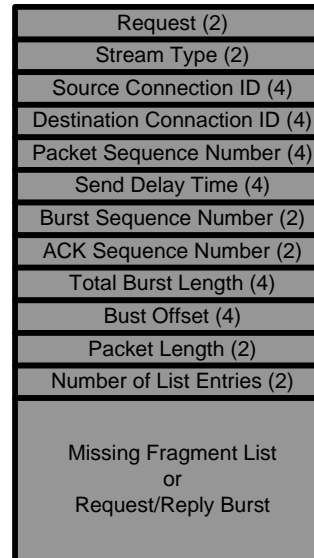


SAP Packet

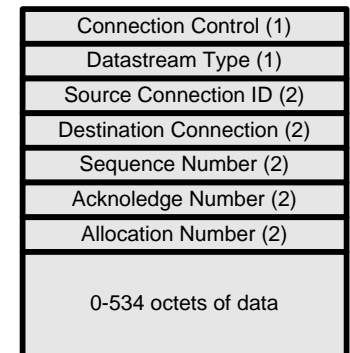


Maximum 7 sets of server information

Burst Mode Packet

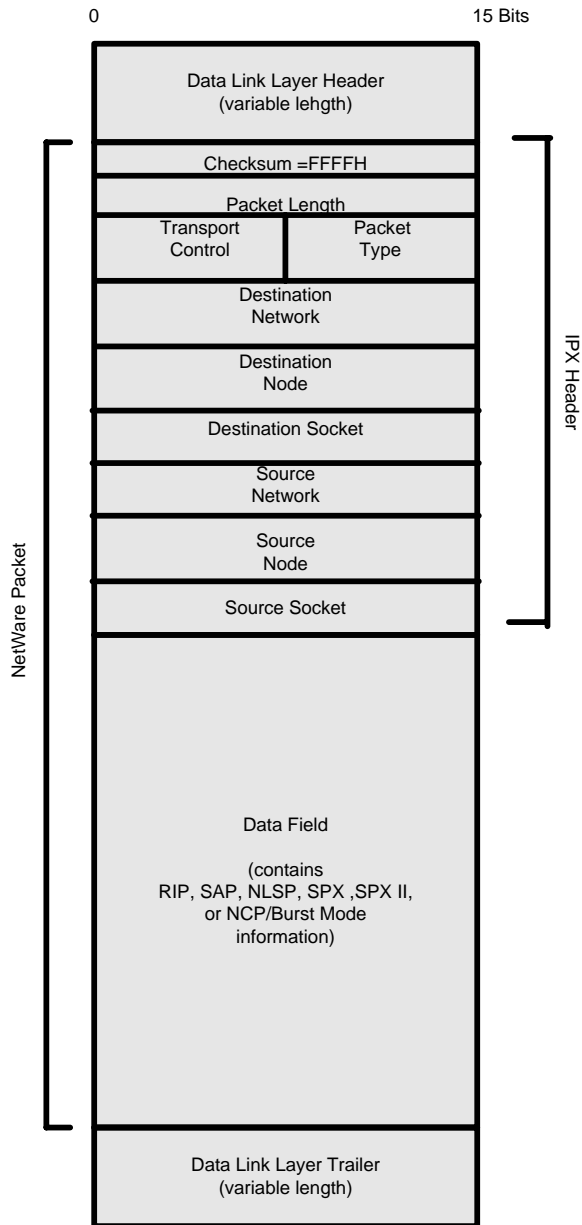


SPX Packet



H represents hexadecimal notation

() represents field length in octets



SPX / SPX II Parameters

Connection Control: Four flags which control the bi-directional flow of data across an SPX connection:
 Bit 2= Negotiate size (SPX II)
 Bit 3= SPX II packet (SPX II)
 Bit 3= SPX II packet (SPX II)
 Bit 4= End of a Message
 Bit 5= Reserved
 Bit 6= Ack Required
 Bit 7= System Packet

Datastream Type: Specifies the data within the packet:
 00-FDH= Client defined request (SPX II)
 FDH= Orderly release ack (SPX II)
 FEH= End of connection
 FFH= End of connection ack

Connection ID: A 16-bit number assigned by SPX to identify the connection.

Sequence Number: A 16-bit number, managed by SPX, which counts packets transmitted.

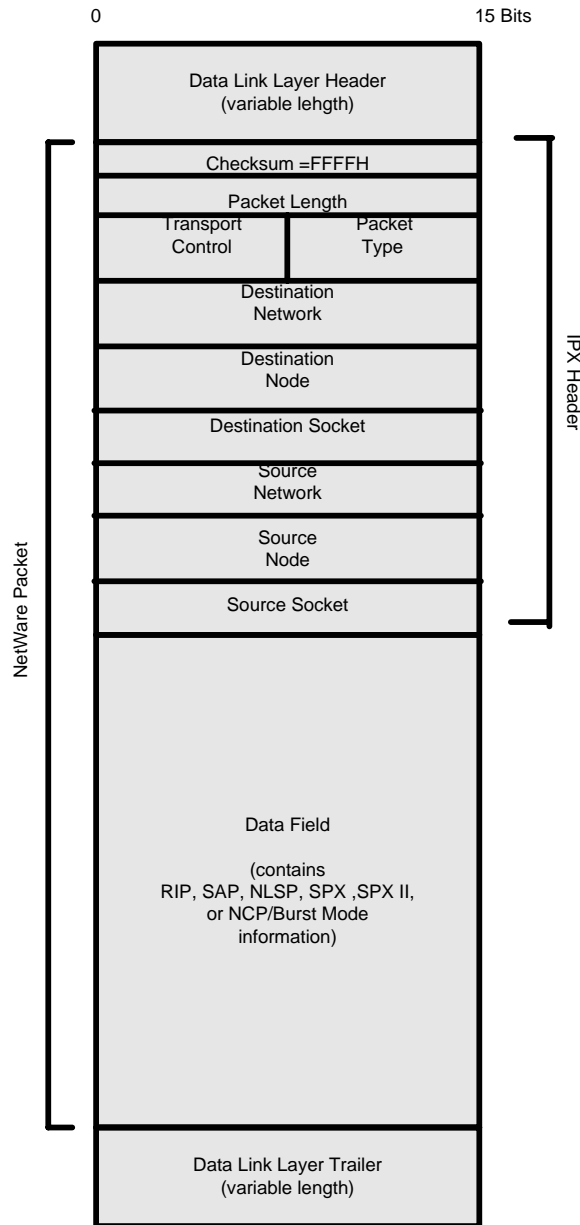
Acknowledge Number: A 16-bit number, indicating the next expected packet.

Allocation Number: A 16-bit number, indicating the number of packets sent but not yet acknowledged.

NCP / Burst Mode Parameters

Request/Reply, Type :	Identifies the packet type : 1111H = Create connection 2222H = File server request 3333H = File server reply 5555H = Destroy connection 7777H = Burst mode packet 9999H = Positive acknowledge
Sequence number :	Used by workstation and file server to identify packets sent and received.
Connection Number :	Connection number assigned to workstation.
Task Number :	Identifies the client task.
Function Code :	Identifies the specific request or reply.
Completion code :	Indicates successful client request.
Connection Status :	Indicates status of connection.
Stream Type :	Burst Mode control bits.
Send Delay Time :	Time delay between packets.
Burst Sequence Number :	Burst number being transmitted.
ACK Sequence Number :	Next expected burst sequence number.
Total Burst Length :	Length in octets of transmitted burst.
Burst Offset :	Location of this packet's burst data.
Packet Length :	Length in octets of this packet's burst data.
List Entries :	Number of elements in the missing fragment list.
Missing Fragment List :	Data fragments not yet received.

H represents hexadecimal notation
 () represents field length in octets



SAP Parameters

Operation: Specifies the operation that packet will perform:
 1= General service request
 2= General service reply
 3= Nearest service request
 4= Nearest service reply

Service Type : Specifies the service performed. Examples include:
 01H= User
 04H= File Server
 07H= Print Server
 09H= Archive Server
 21H= NAS SNA Gateway
 23H= NACS
 27H= TCP/IP Gateway
 4B = Btrieve VAP
 98H= NetWare Access Server
 107H= NetWare 386
 26AH= NetWare management
 278H= NetWare Directory Server

Server Name : A 48-octet field containing the Server's name.

Network Address: The Server's 32-bit Network Number.

Node Address : The Server's 48-bit Socket Number.

Socket Address: The Server's 16-bit Socket Number.

Hops: The number of routers that must be passed through to reach the specified server.

NLSP Parameters

Packet Type: Identifies one of four NLSP packets:
 15= Hello packet
 18= Link state packet
 24= Complete sequence number packet
 26= Partial sequence number packet

RIP Parameters

Operation: Specifies the packet operation:
 1= RIP Request
 2= RIP Response

Network Number: The 32-bits address of the specified network.

Hops: The number of routers that must be passed through to reach the specified network.

Ticks: A measure of time needed to reach the specified network (18.21 Ticks/second).

H represents hexadecimal notation

() represents field length in octets