

DSock – DOS TCP/IP

by ICOP / DMP Group



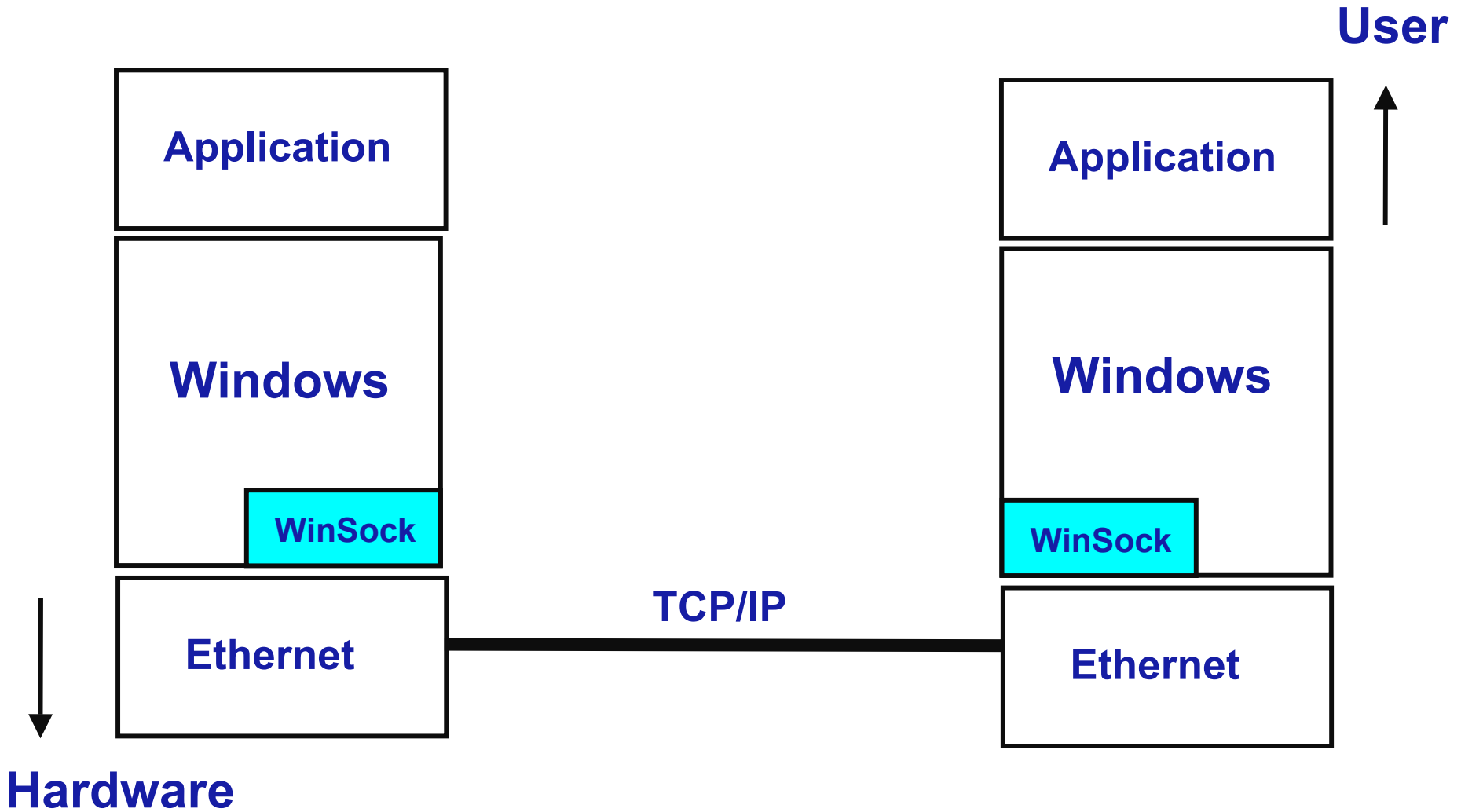
NUCLEUS Electronics Corp.

What is WinSock?

- **The Windows Sockets specification defines a network programming interface for Microsoft Windows which is based on the "socket" paradigm popularized in the Berkeley Software Distribution (BSD) from the University of California at Berkeley.**
- **Released at 1993 of Windows Sockets 1.1**
 - **An open interface for network programming under Microsoft Windows version 1.1**
 - **Application programming interface – API**
- **WinSock.dll (Windows Sockets)**
 - **WinSock is a Windows TCP/IP library for users who want to program their network application software under Windows.**



Structure of WinSock

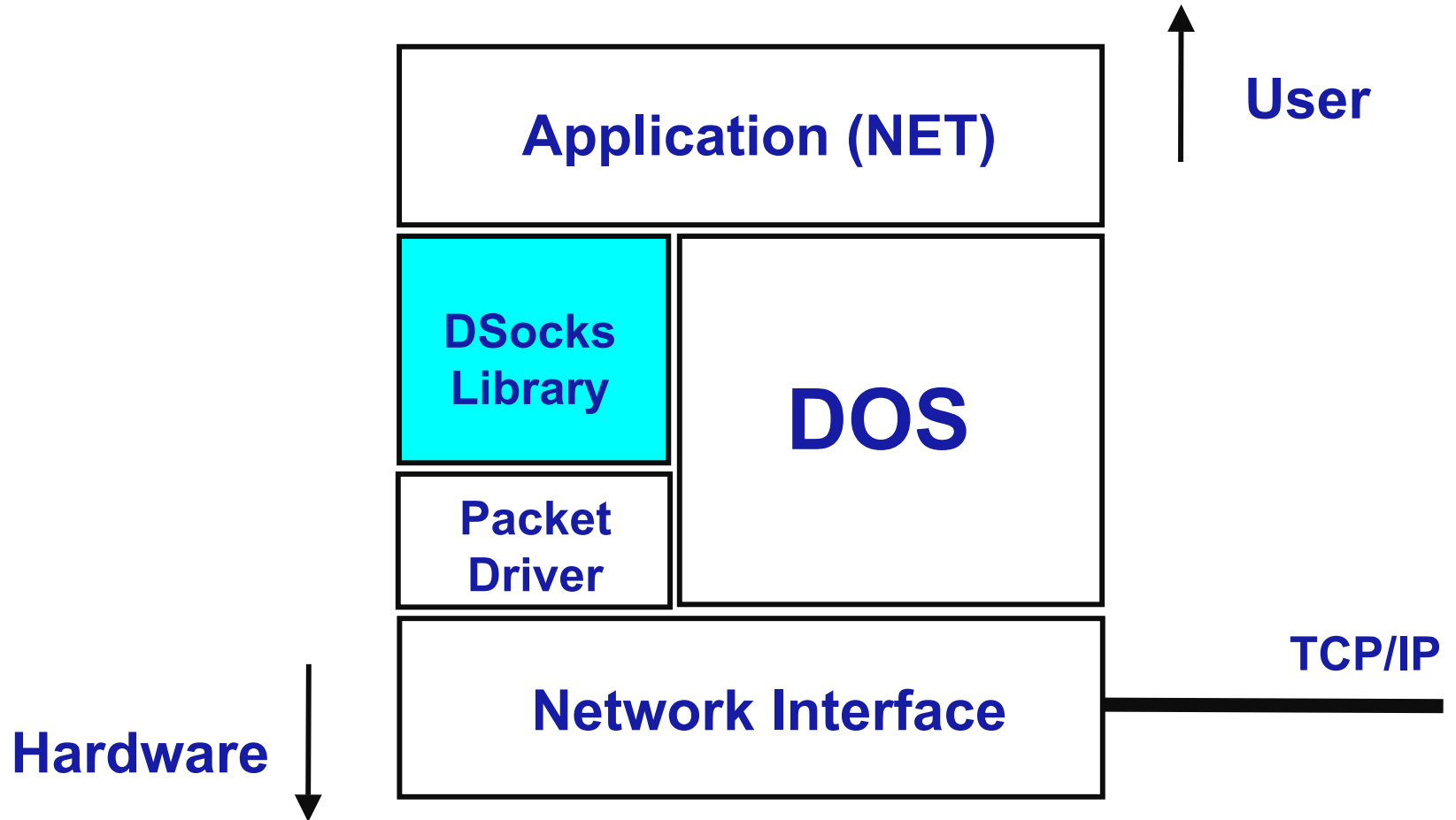


What is DSocket?

- **Based on the platform of DoD Model**
 - **DoD – Department of Defense**
- **DSock.lib (DMP DOS Sockets)**
 - **Issued by DMP group at 1998**
 - **DSocks is a DOS TCP/IP library for users who want to program their application software through network interface under DOS.**
 - **It provides C function calls for programmers to create internet applications.**



Structure of DSocket on DOS Environment



Conditions to Use DSocket?

- **Hardware Requirements**
 - **ICOP Single Board Computers with Ethernet interface only**
 - **Realtek 8019 10 Base-T**
 - **Realtek 8139 10/100 Base-T**
- **Driver Requirements**
 - **Packet Drivers for RTL8019 and RTL8139 are necessary**
 - **RTL8019: NE2000 compatible**
 - **RTL8139: Support by Realtek**
- **Operating System**
 - **MS-DOS / Dr-DOS**
 - **X-DOS**

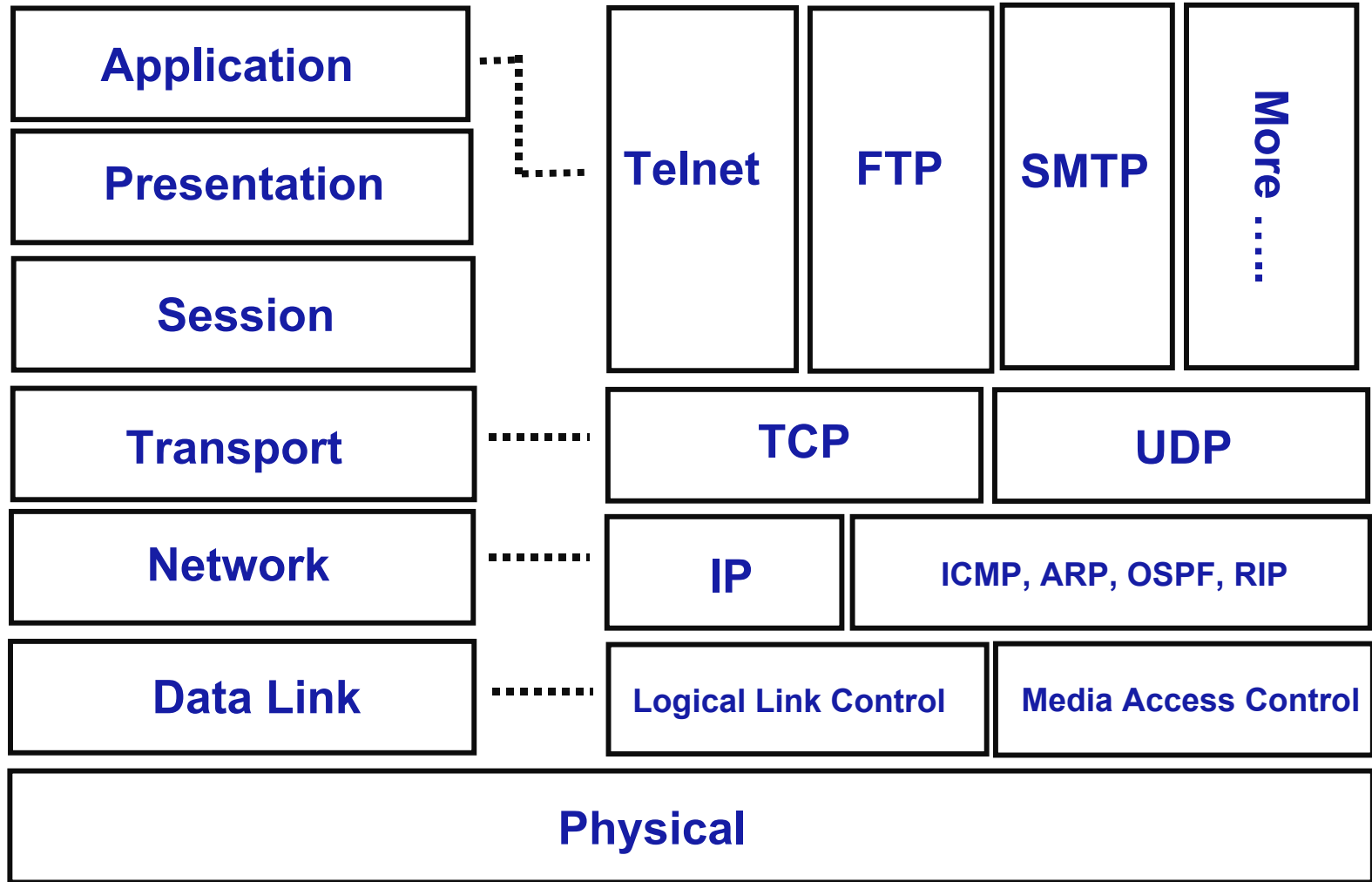


Structure of DSocket Library



OSI Reference Model & TCP/IP

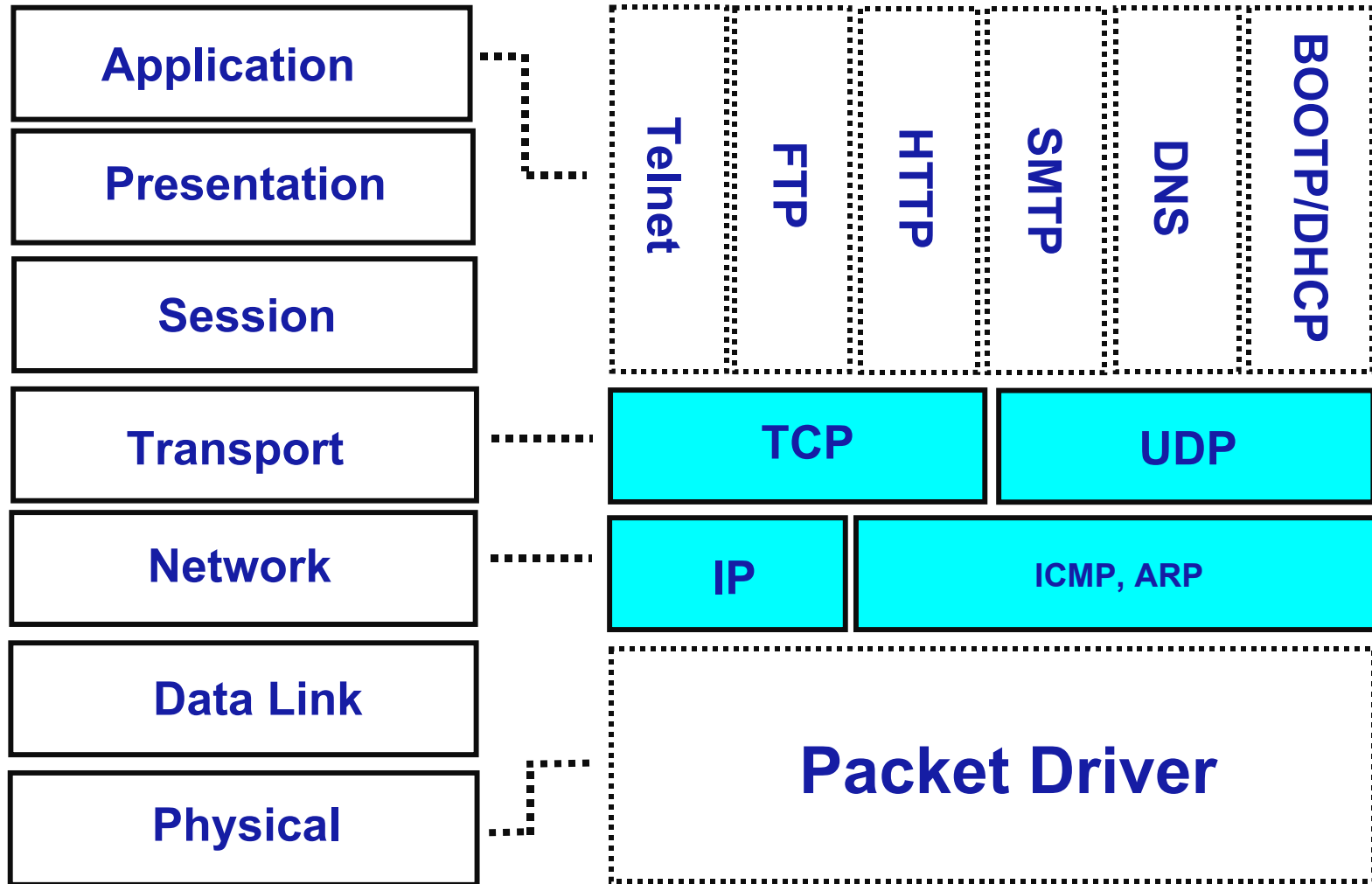
7 Layer of Open System Interconnection Model



5 Layer of TCP/IP Protocol Model



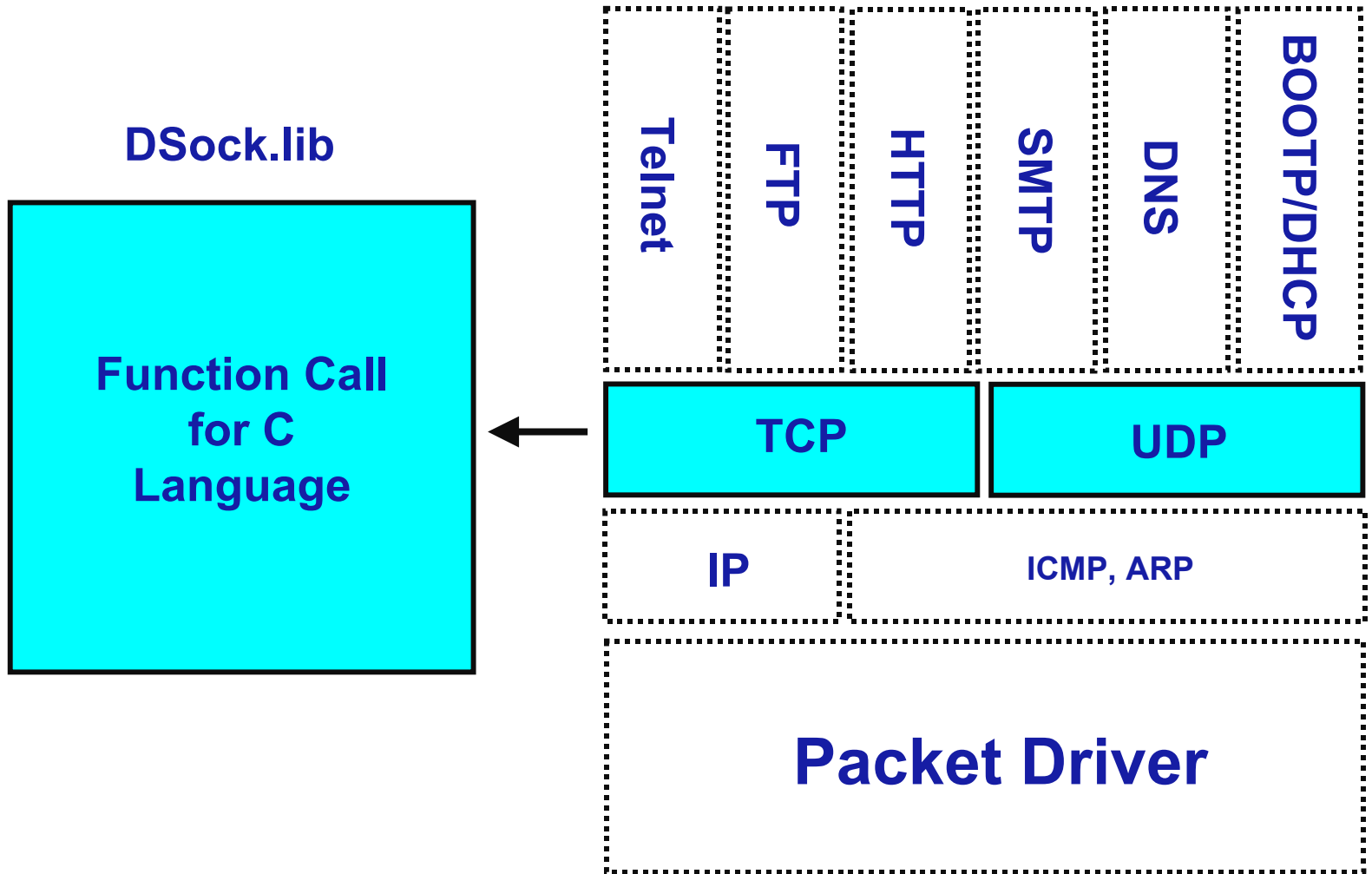
OSI Reference Model & DSocket



4 Layer of DOD (Department of Defense) Model



Function Call of Dsock Library



4 Layer of DoD (Department of Defense) Model



Function Call of DSocket Library



Function Call of WinSock- 1/3

- **Socket Functions (BSD 4.3-like)**

- | | | |
|-----------------------|----------------------|----------------------|
| • <u>accept()</u> | <u>bind()</u> | <u>closesocket()</u> |
| • <u>connect()</u> | <u>getpeername()</u> | <u>getsockname()</u> |
| • <u>getsockopt()</u> | <u>htonl()</u> | <u>htons()</u> |
| • <u>inet_addr()</u> | <u>inet_ntoa()</u> | <u>ioctlsocket()</u> |
| • <u>listen()</u> | <u>ntohl()</u> | <u>ntohs()</u> |
| • <u>recv()*</u> | <u>recvfrom()*</u> | <u>select()*</u> |
| • <u>send()*</u> | <u>sendto()*</u> | <u>setsockopt()</u> |
| • <u>shutdown()</u> | <u>socket()</u> | |

- **Note:** * The routine can block if acting on a blocking socket.



Function Call of WinSock - 2/3

- **Database Functions (BSD 4.3-like)**
- gethostbyaddr()*
- gethostname()
- gethostbyname()*
- getprotobyname()*
- getprotobynumber()*
- getservbyname()*
- getservbyport()*

- **Note: *** The routine can block under some circumstances.



Function Call of WinSock - 3/3

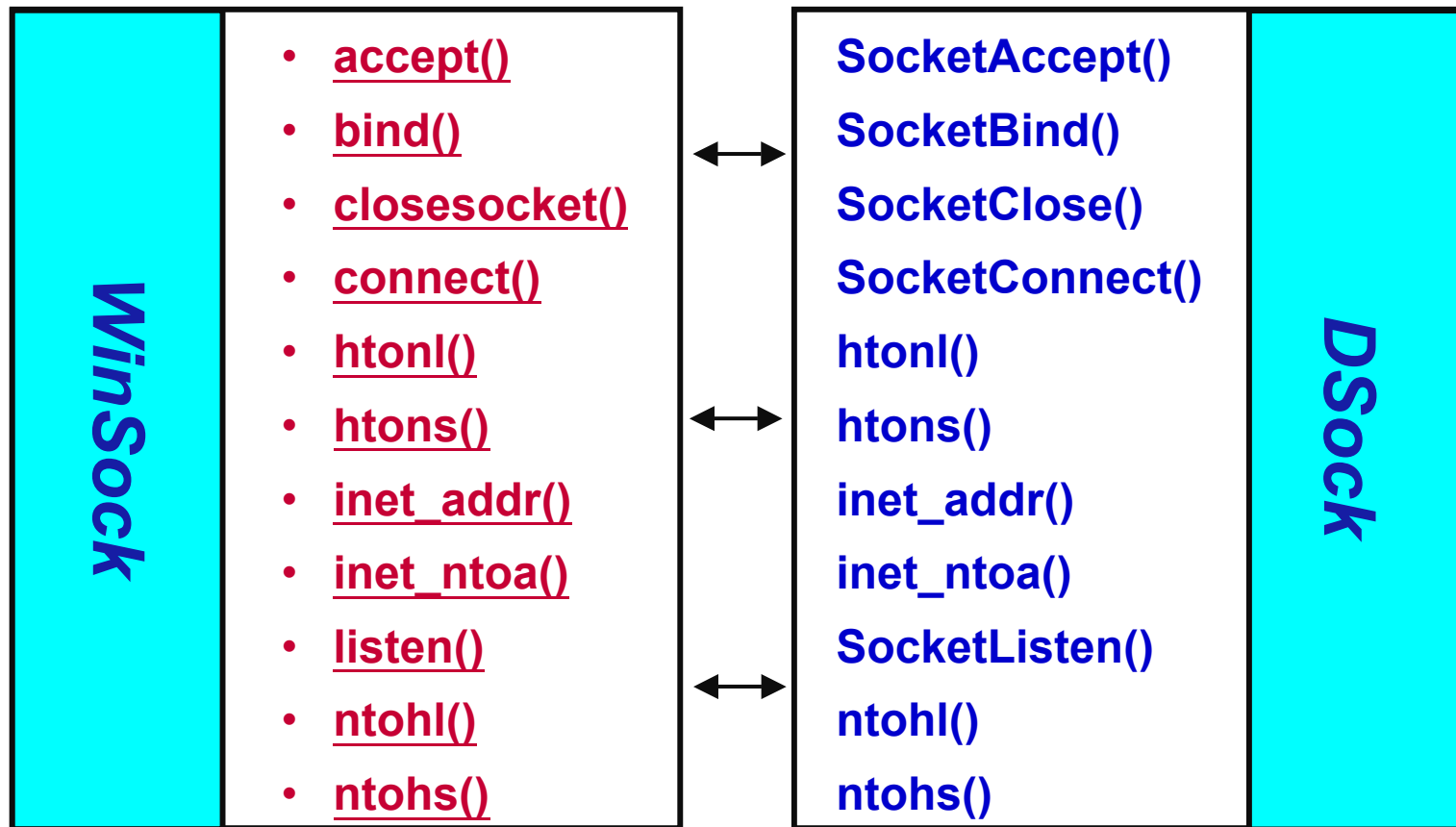
- **Microsoft Windows-specific Extensions**

- WSAAsyncGetHostByAddr() WSAAsyncGetHostByName()
- WSAAsyncGetProtoByName() WSAAsyncGetProtoByNumber()
- WSAAsyncGetServByName() WSAAsyncGetServByPort()
- WSAAsyncSelect() WSACancelAsyncRequest()
- WSACancelBlockingCall() WSACleanup()
- WSAGetLastError() WSAIsBlocking()
- WSASetBlockingHook() WSASetLastError()
- WSAStartup() WSAUnhookBlockingHook()



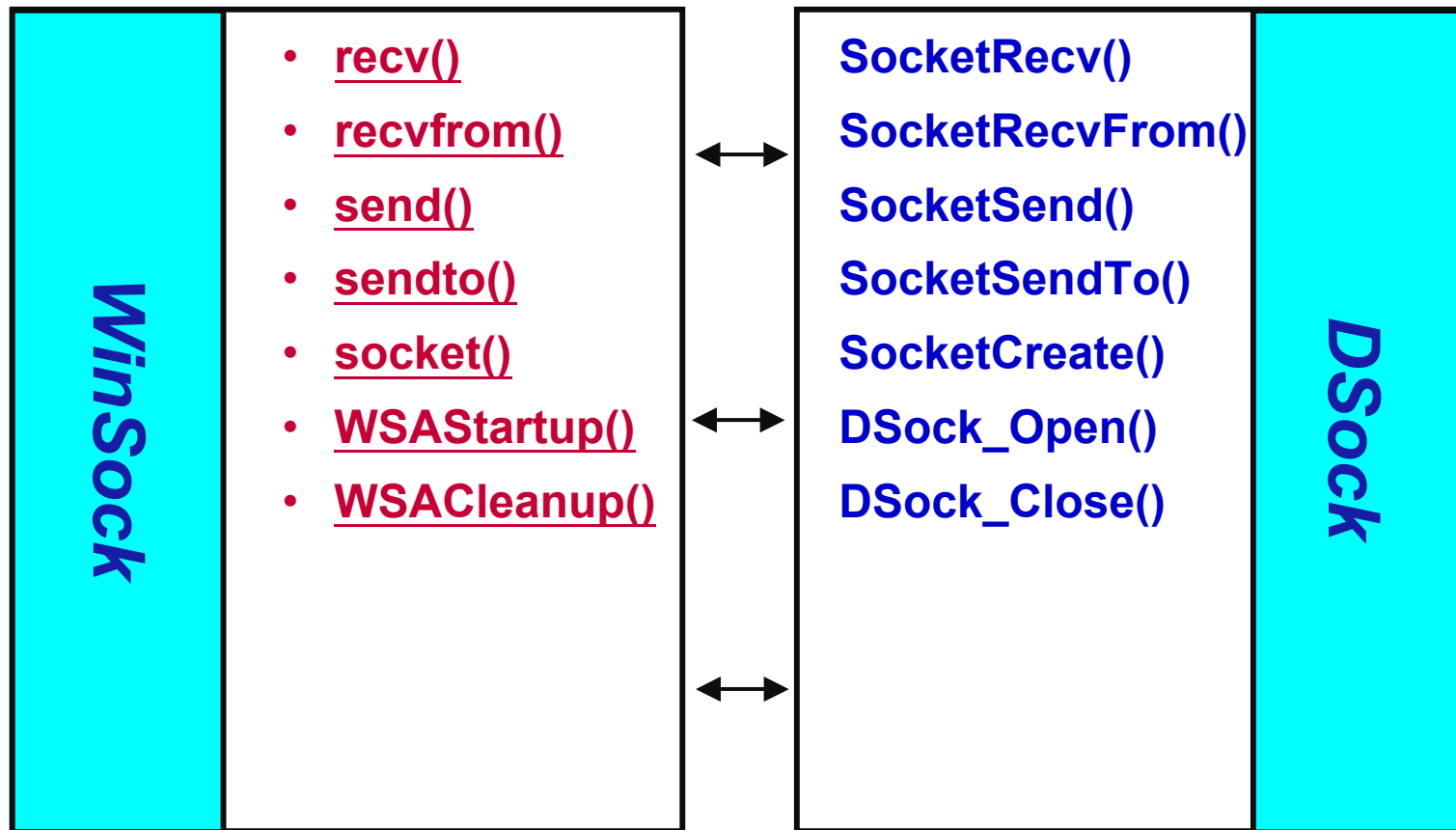
Function Call of DSocket- 1/3

- **Socket Functions (WinSock-like)**



Function Call of DSocket- 2/3

- **Socket Functions (WinSock-like)**



Function Call of DSocket - 3/3

- **DSock-specific Extensions**

- **DSock_DoBootp()**

- **DSock_AddGateway()**

- **DSock_Resolve**

- **DSock_GetHostIp()**

- **DSock_GetNetMask()**

- **SocketDestory()**

- **SocketDataReady()**

- **SocketPutChar()**

- **SocketPutString()**

- **DSock_AddDomainNameServer()**

- **DSock_GetDomainNameServer()**

- **DSock_LoadConfigFile()**

- **DSock_GetGateway()**

- **DSock_GetMacAddr()**

- **DSock_SetHostIp()**

- **DSock_SetNetMask()**

- **SocketAbort()**

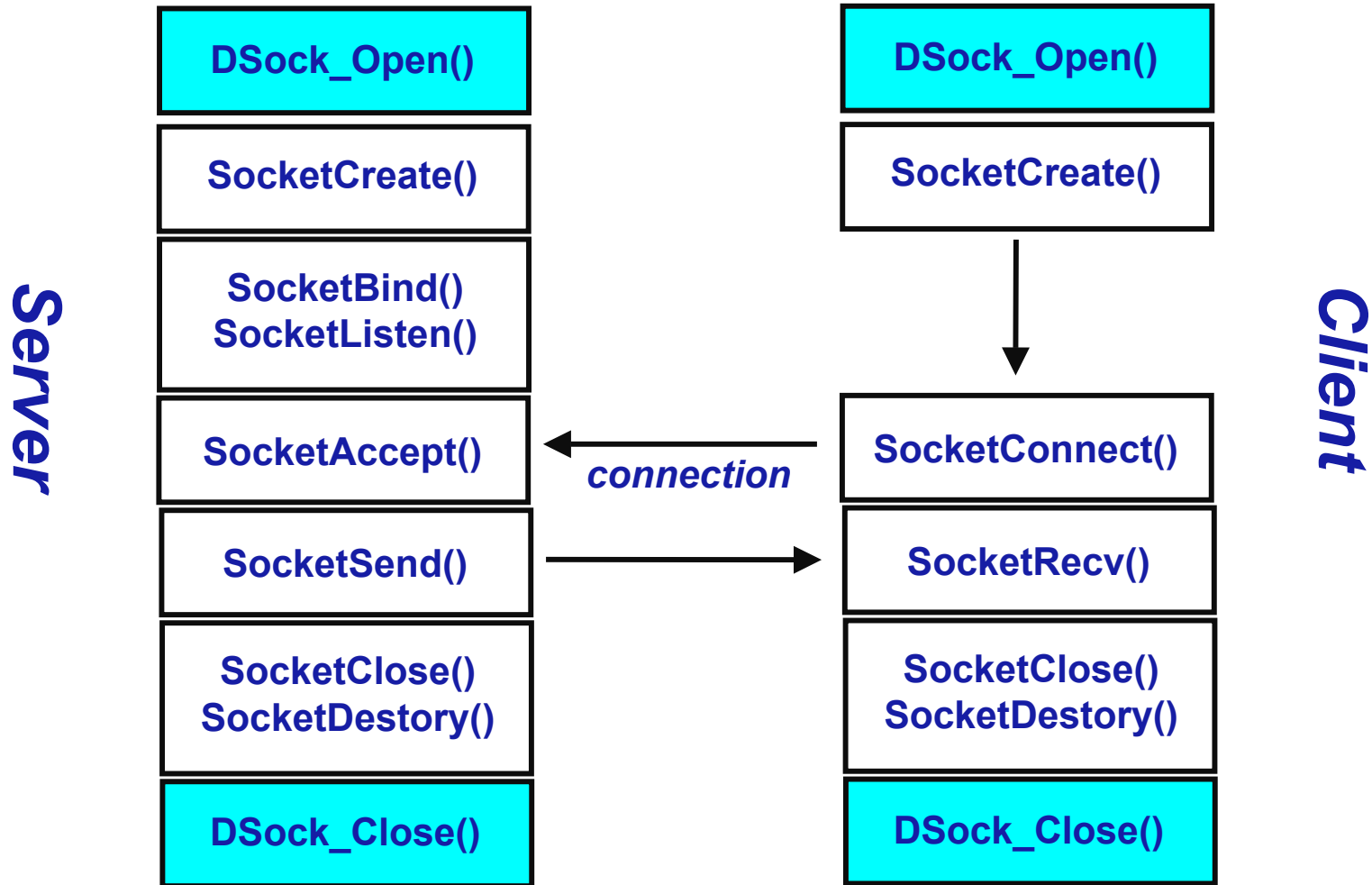
- **SocketIsConnected()**

- **SocketGetChar()**

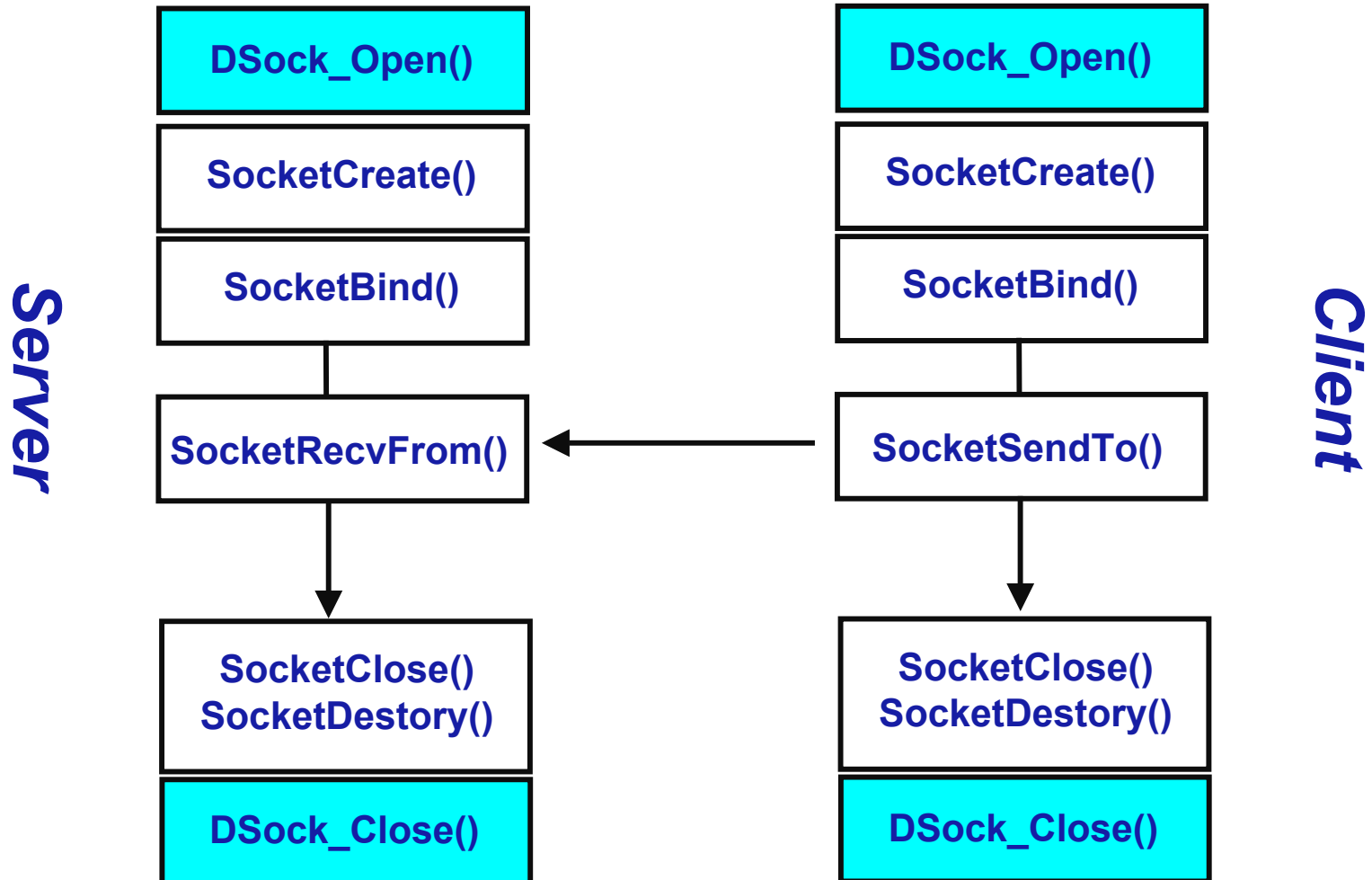
- **SocketGetString()**



Procedure of TCP Server-Client Model



Procedure of UDP Server-Client Model



Demo Program of DSocket

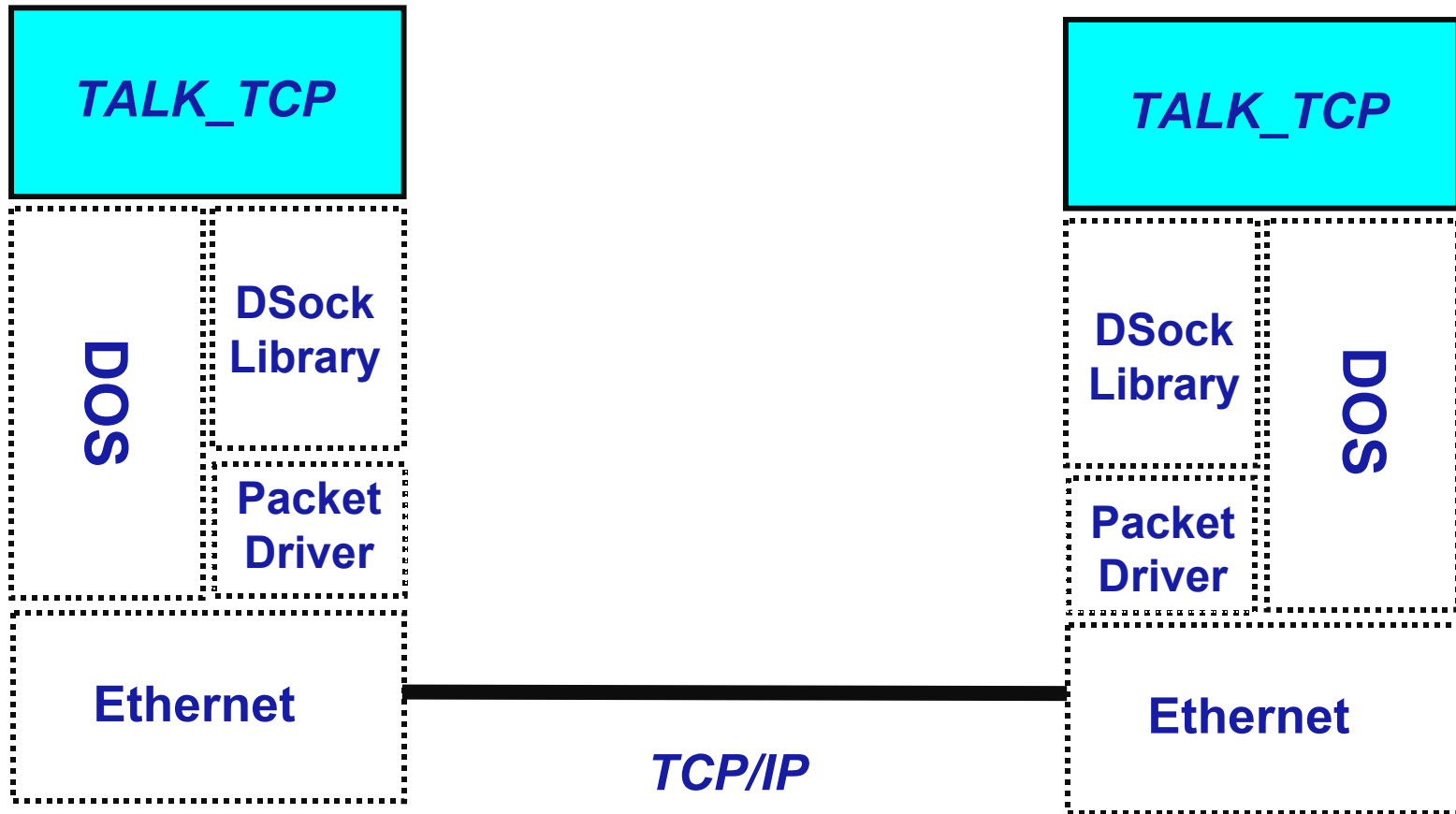


Demo Program of DSocket

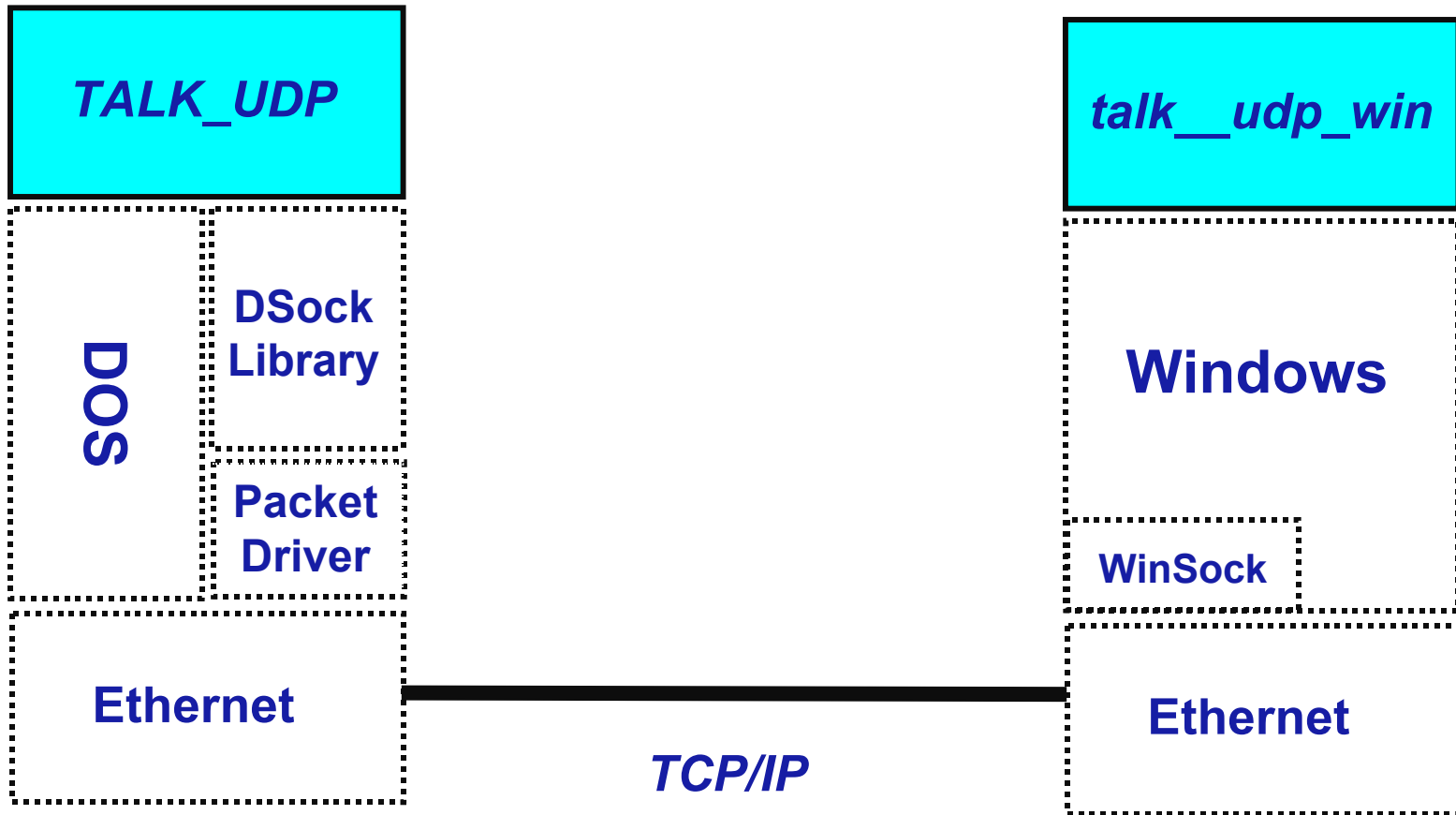
<i>Filename</i>	<i>Description</i>
<ul style="list-style-type: none">• BOOTP	Demo program of BOOTP/DHCP.
<ul style="list-style-type: none">• DNS	To get IP address of domain name.
<ul style="list-style-type: none">• EXE	Exectue files for all samples.
<ul style="list-style-type: none">• FTPD	Demo program of FTP server.
<ul style="list-style-type: none">• HTTPD	Demo program of Web server.
<ul style="list-style-type: none">• SMTP	A simple program to send mail.
<ul style="list-style-type: none">• TALK_TCP	Example of Talk with TCP.
<ul style="list-style-type: none">• TALK_UDP	Example of Talk with UDP (broadcast).
<ul style="list-style-type: none">• TELNETD	Simple TELNET server example.
<ul style="list-style-type: none">• talk_tcp_win	Talk with TCP (Windows version by WinSock).
<ul style="list-style-type: none">• talk_udp_win	Talk with UDP (Windows version by WinSock).



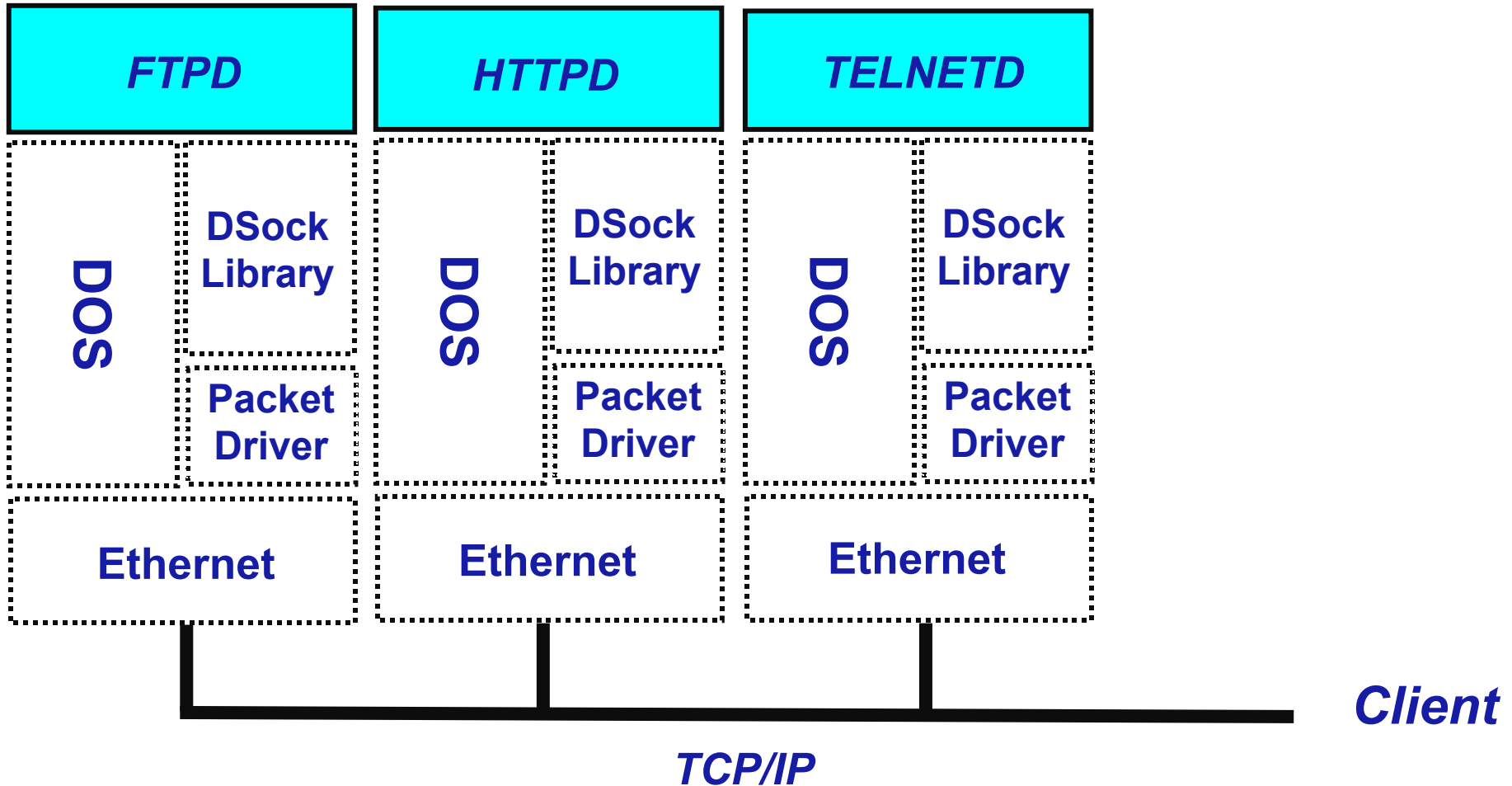
Example of DSocket to DSocket



Example of DSocket to WinSock



Example of DSocket Servers



Why DSocket?



Advantages of DOS TCP/IP

- **Running under dedicate operating system – DOS**
 - **100% dedicate for single tasking**
- **Complete development tools for x86 and DOS**
 - **C compiler**
 - **Debug tools**
- **Easy to up-to-date**
- **Fast time-to-market**
- **Lowest cost of TCP/IP solution**
(Compare with simple work under Windows system)
- **Small size and low cost of storage for software**
 - **Can store in a 512k single chip flash disk**

