Paradigm Solutions

Welcome

Mr. Swarner

March 1, 2005

TCP/IP Packet Descriptor

Detailed Design

Detailed Design Presentation

Presentation Agenda

Jon Baker:	Introduction & Conclusion
Ryan Fischer:	GUI Design
Mark Mossman:	GUI Design
Justin Waterman:	Testing

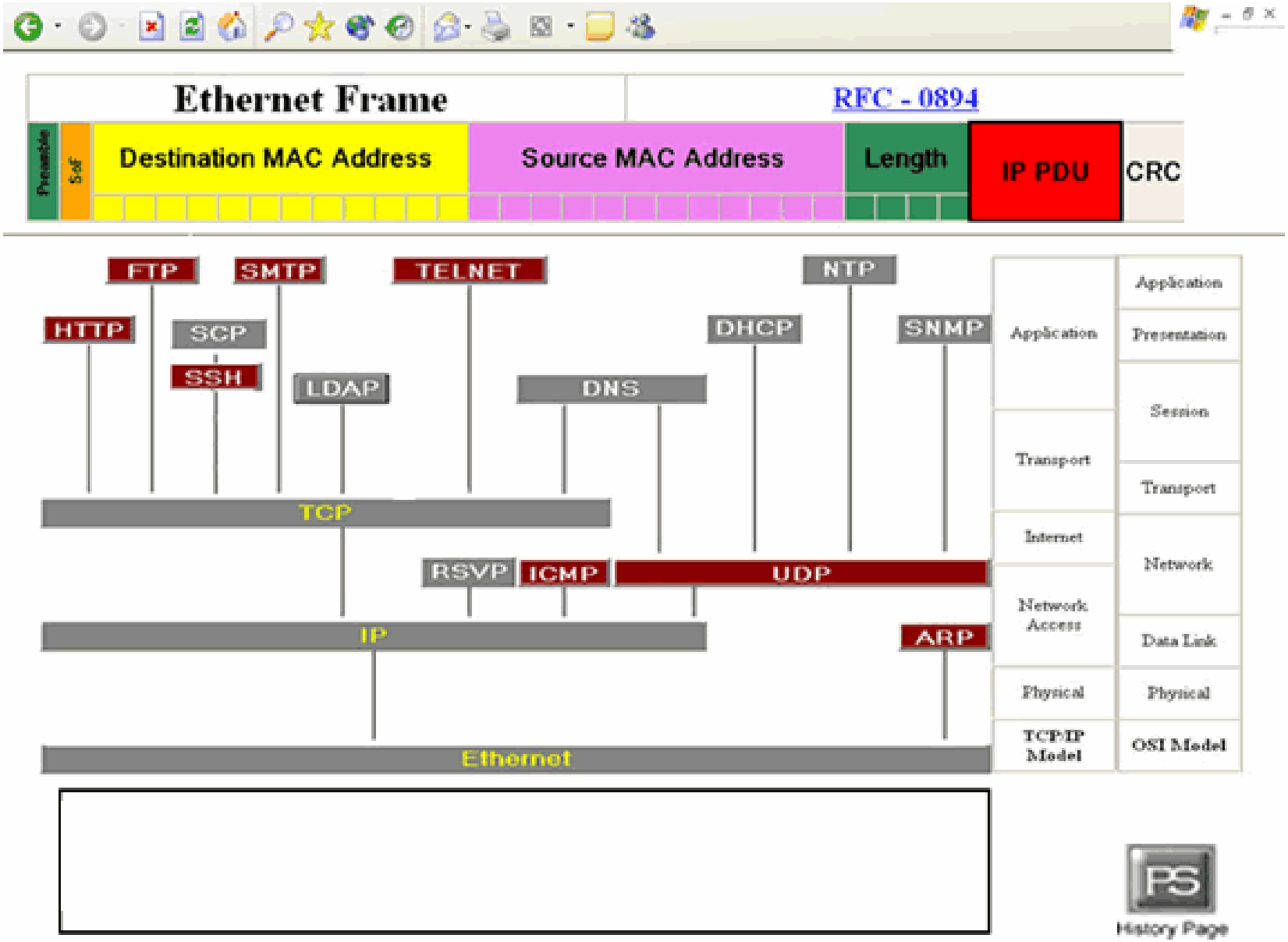
Agenda

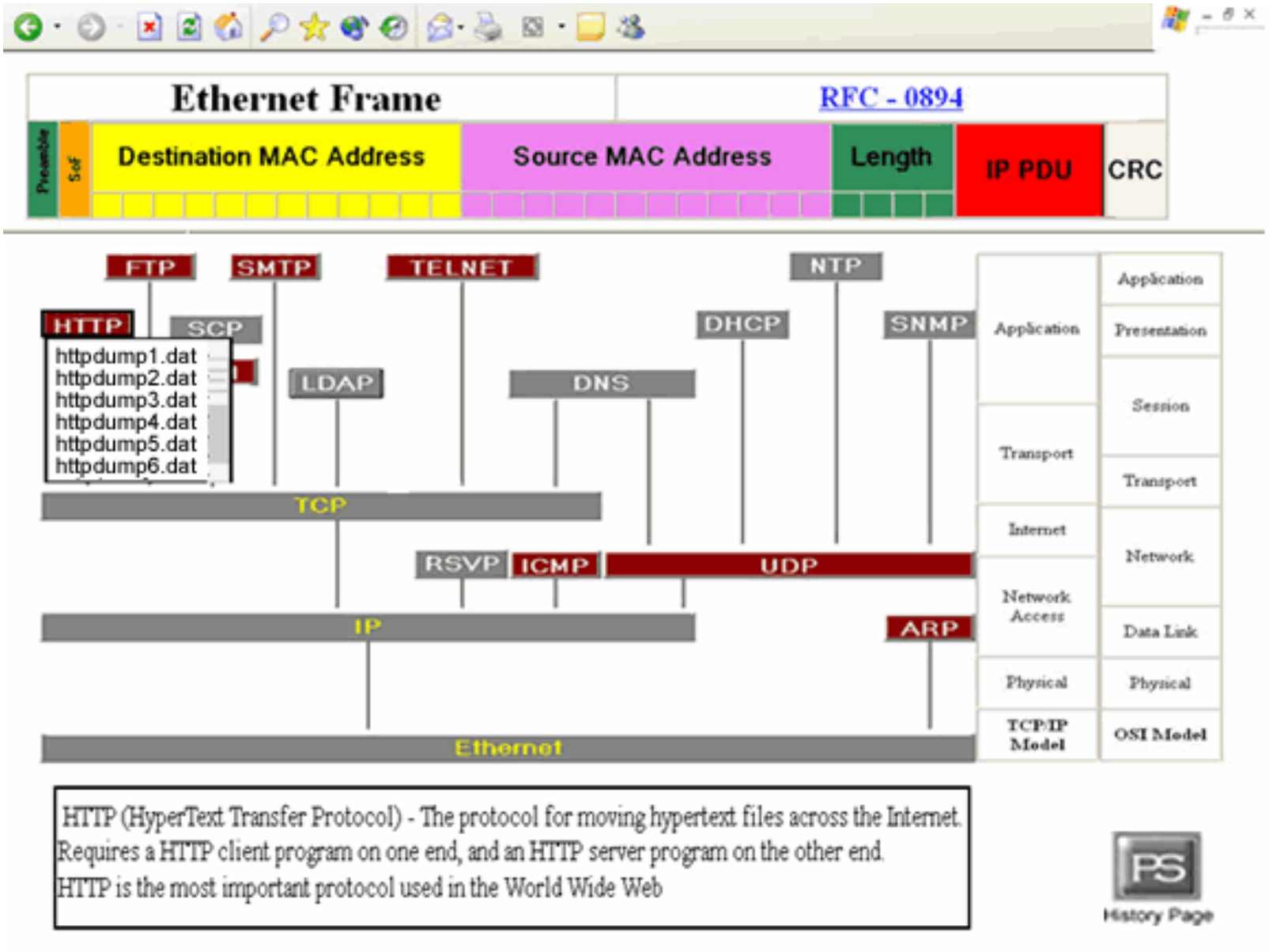
Introduction

GUI Design

Testing

Conclusion


Ethernet Frame
RFC - 0894
Preamble
SoF
Destination MAC Address
Source MAC Address
Length
IP PDU
CRC
FTP
SMTP
TELNET
NTP
HTTP
SCP
SSH
LDAP
DNS
DHCP
SNMP
TCP
RSVP
ICMP
UDP
IP
ARP
Ethernet
Application
Presentation
Session
Transport
Internet
Network Access
Physical
TCP/IP Model
Application
Transport
Network
Data Link
Physical
OSI Model
History Page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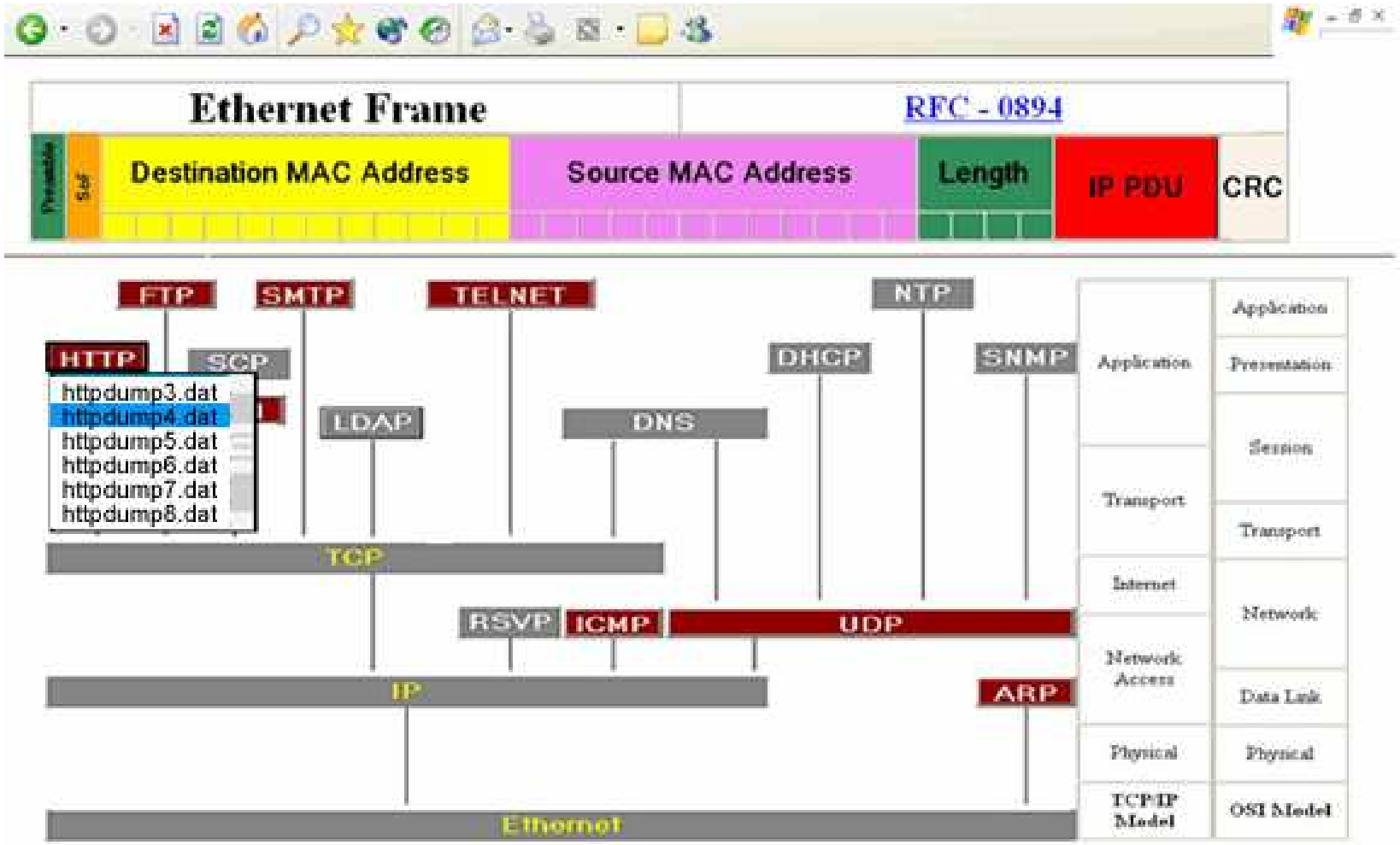
HTTP (HyperText Transfer Protocol) - The protocol for moving hypertext files across the Internet.
Requires a HTTP client program on one end, and an HTTP server program on the other end.
HTTP is the most important protocol used in the World Wide Web
PS
History Page



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History Page

file:///C:/Documents%20and%20Settings/Mark/Desktop/History%20Page.htm

History of the TCP/IP Packet Descriptor

The purpose of the TCP/IP Packet Descriptor is to create an educational tool that displays and interprets the contents of a packet in a graphical and meaniful way.

Requested by: Ken Swarner, System Administrator, Siena College

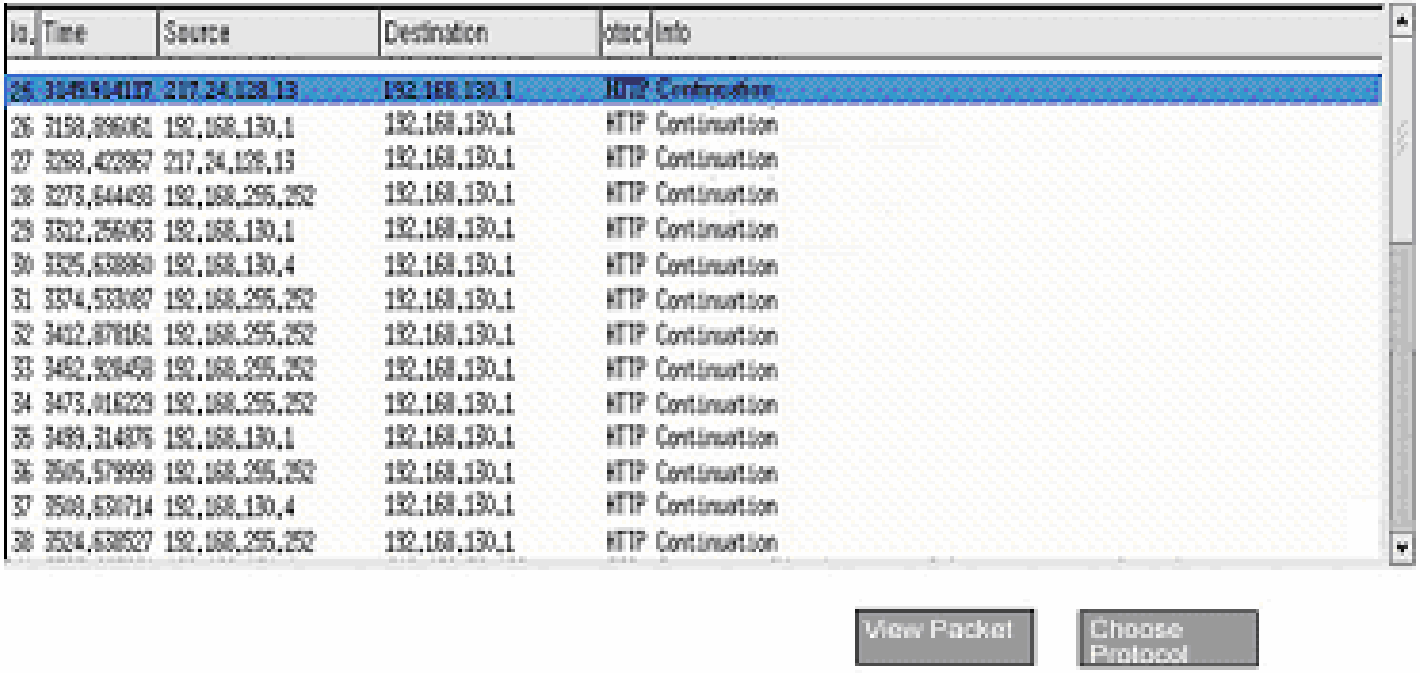
Mirage Incorporated, established 2003-04

Blue Technologies, established 2003-04

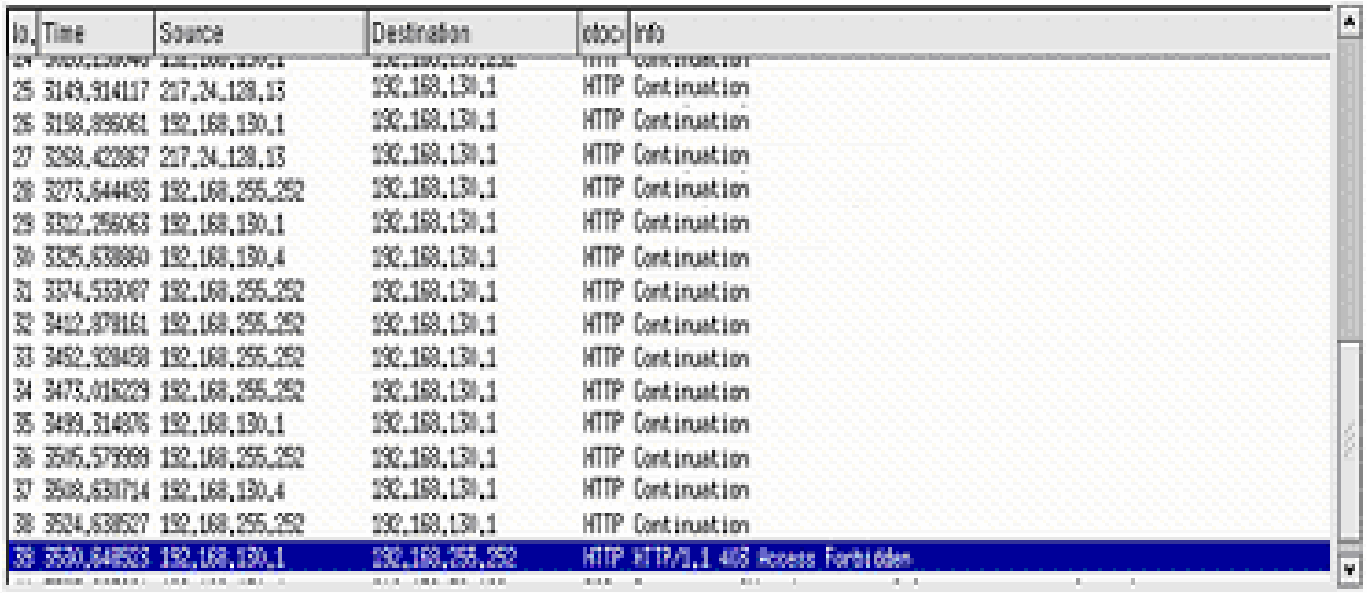
Paradigm Solutions, established 2004-05

Back

HTTP Packet Selector



HTTP Packet Selector



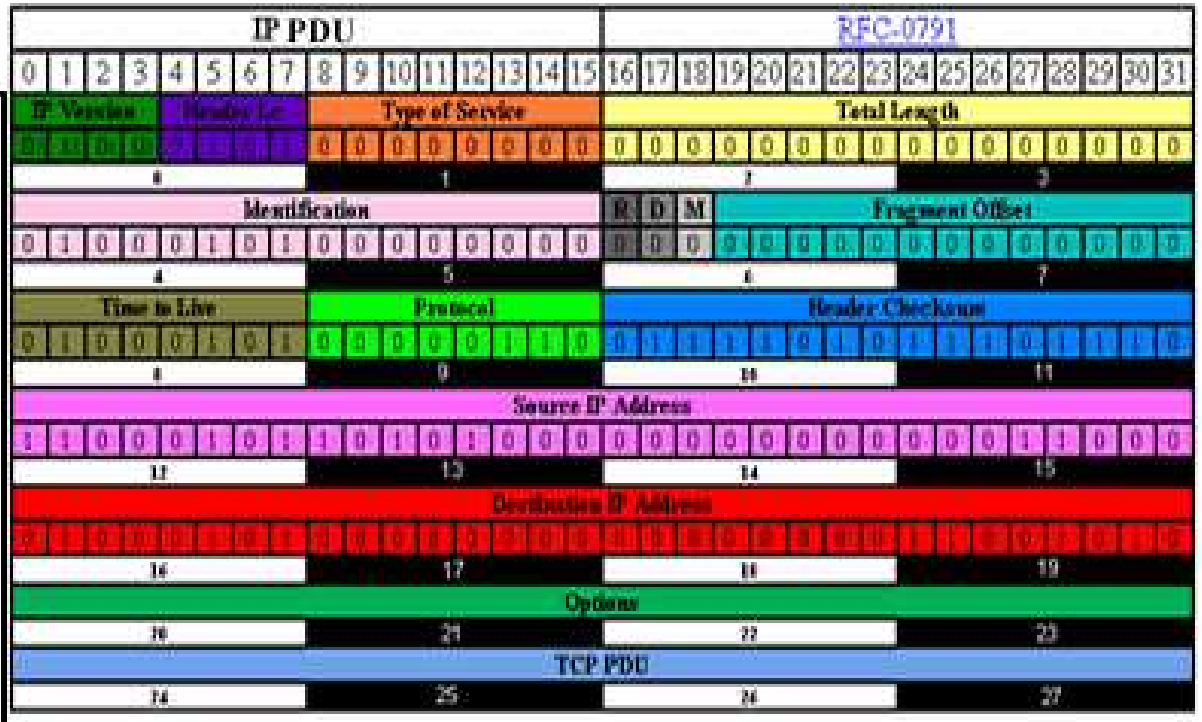
Choose Packet

Choose Protocol

HTTP Session

IP > TCP > HTTP

Internet Protocol, the most basic protocol to communicate on the Internet. An IP number is a numerical address consisting of four numbers seperated by periods. Each IP address uniquely identifies a certain computer on the Internet. The domain name is used to make using them easier.



History Page

Choose Packet

Choose Protocol

HTTP Session

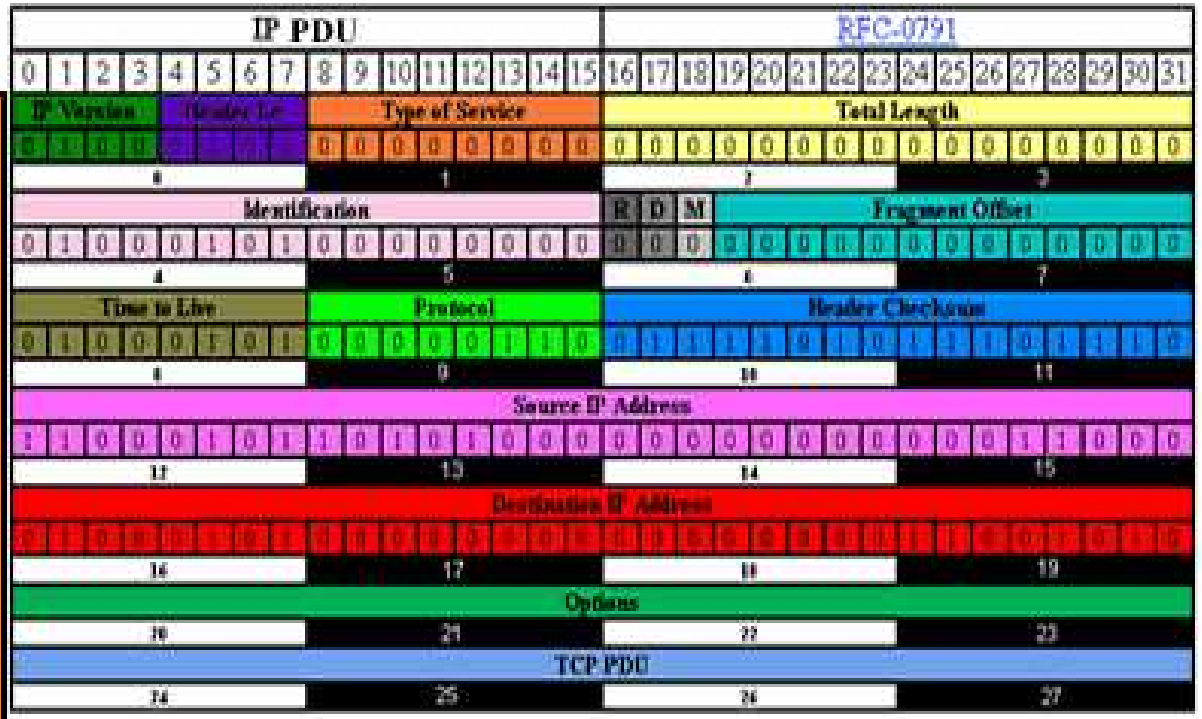
IP > TCP > HTTP

Type of Service Field

Hex	10
Decimal	16
Binary	00010000

Start bit: 8
Length: 8 bits

Service level to be used with this IP datagram.
(PreDTRCx) --> Differentiated Services
Precedence (000-111) 000
D (1 = minimize delay) 0
T (1 = maximize throughout) 0
R (1 = maximize reliability) 0
C (1 = minimize cost) 1=ECN capable
x (reserved and set to 0)
1=congestion experienced



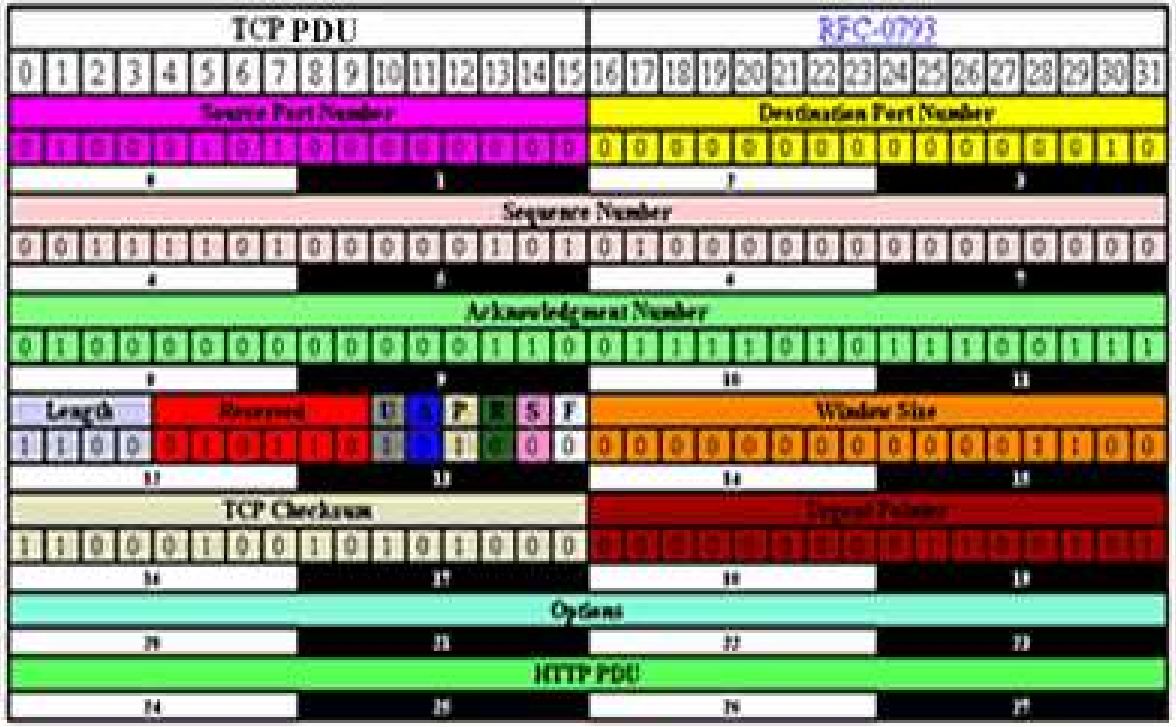
Choose Packet

Choose Protocol

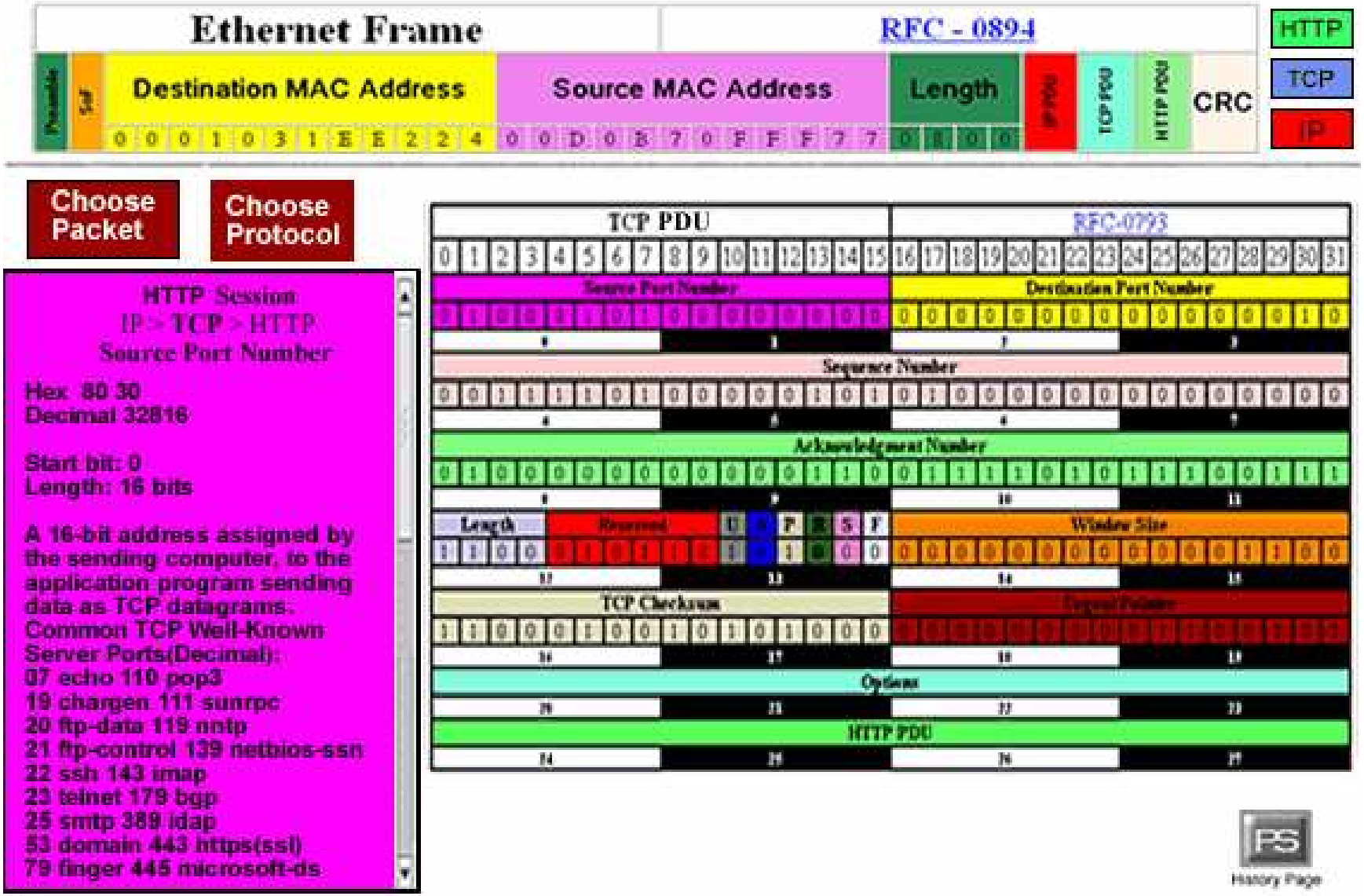
HTTP Session

IP > TCP > HTTP

Internet networking software that controls the transmission of packets of data over the internet. Among its tasks, TCP checks for lost packets, puts the data from multiple packets into the correct order, and requests that missing or damaged packets be resent. Computers must run TCP to communicate with world wide web servers.



History Page


Ethernet Frame
RFC - 0894
HTTP
TCP
IP
Destination MAC Address
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Choose Packet
Choose Protocol
HTTP Session
IP > TCP > HTTP
Source Port Number
Hex 80 30
Decimal 32816
Start bit: 0
Length: 16 bits
A 16-bit address assigned by the sending computer, to the application program sending data as TCP datagrams.
Common TCP Well-Known Server Ports(Decimal):
07 echo 110 pop3
19 chargen 111 sunrpc
20 ftp-data 119 nntp
21 ftp-control 139 netbios-ssn
22 ssh 143 imap
23 telnet 179 bgp
25 smtp 389 ldap
53 domain 443 https(ssl)
79 finger 445 microsoft-ds
TCP PDU
RFC-0793
Source Port Number
Destination Port Number
Sequence Number
Acknowledgment Number
Length
Reserved
Window Size
TCP Checksum
Options
HTTP PDU
History Page

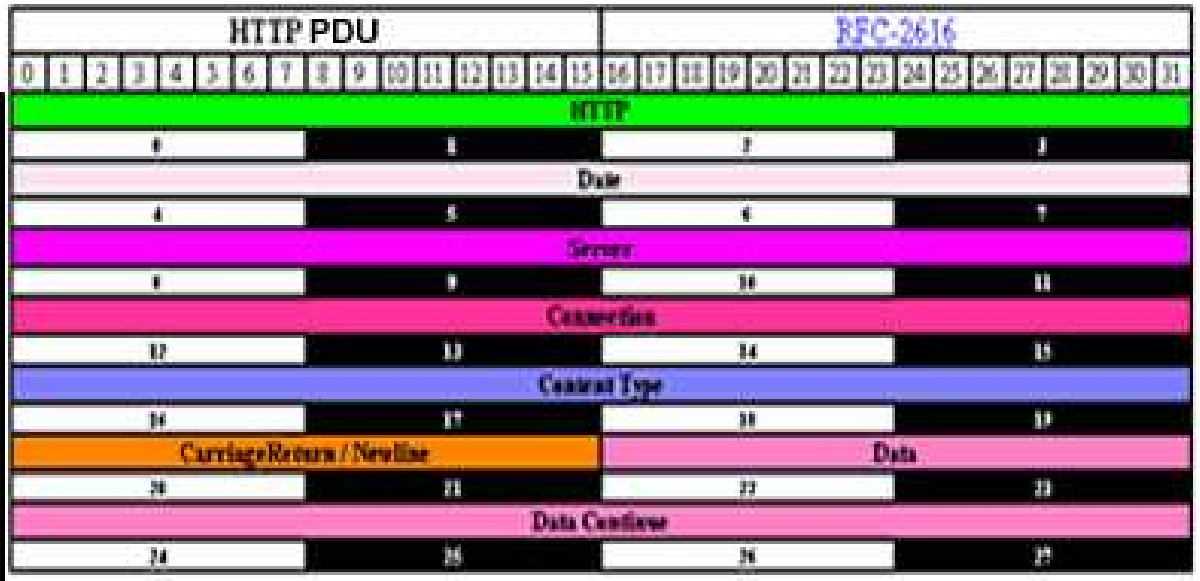
Choose Packet

Choose Protocol

HTTP Session

IP > TCP > **HTTP**

The protocol for moving hypertext files across the Internet. Requires a HTTP client program on one end, and an HTTP server program on the other end. HTTP is the most important protocol used in the World Wide Web .



History Page

Choose Packet

Choose Protocol

HTTP Session

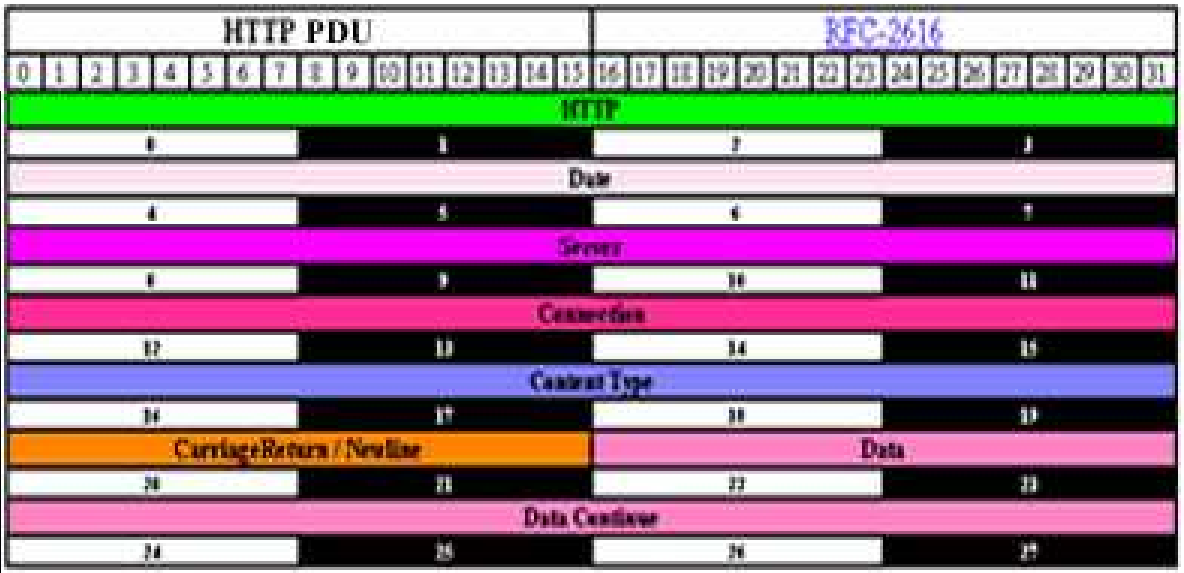
IP > TCP > HTTP

HTTP PDU

Hex
48 54 50 2F 31 2E 31 20 34
20 4E 6F 74 20 46 6F 75 6E
64 0D 0A

8-bit ASCII
HTTP/1 404 Not Found"

Start bit: 0
Length: 48 octets
Header field consists of a name followed by a colon(" :")and the field value. Field names are case-insensitive.



Agenda

Introduction

GUI Design

Testing

Conclusion

Testing Overview

- During the unit and functional testing phase, Black Box testing will be used.
- With Black Box testing, possible inputs are inserted into the program, and a successful test includes observing expected outputs.
- For functionality testing, there will be no need to look at what is happening inside the program itself.
- For this testing phase, the testing subset of the team will test every facet of the program.

Testing Overview, Cont.

- The web site will contain four screens:
  - Protocol Selector Screen
  - Packet Selector Screen
  - Information Display Screen
  - History Page

Protocol Selector Screen

- Active Protocols:
  - SNMP
  - FTP
  - SMTP
  - HTTP
  - PING
  - TELNET
  - ARP
  - SSH

Protocol Selector Screen, Cont.

- Inactive Protocols:
  - SCP
  - DHCP
  - DNS
  - RSVP
  - LDAP
  - NTP

Protocol Selector Screen, Cont.

- When the user first accesses the TCP/IP Descriptor, this is the first screen he or she will see.
- Within the protocol hierarchy display, a picture of the TCP/IP and Open Systems Interconnection (OSI) layers will be displayed alongside the protocol hierarchy, with an emphasis on which protocols reside within each layer.

Protocol Selector Screen, Cont.

- There will be a button that will link the user to the History Page. This page will display all groups that have worked on the project, both past and present.
- Selecting a protocol will cause a drop down menu containing all ethereal data sessions in the /home/csis4100405/EtherealSessions folder of Oraserv.
- Selecting one of those data sessions will move the user to the Packet Selector screen.

Packet Selector Screen

- If there are more packets than our displaying window will allow the user will be able to scroll down and highlight a different packet.
- There will be a button that will link the user to the History Page. This page will display all groups that have worked on the project, both past and present.
- The user is able to return to the Protocol Selector Screen by clicking on the “Choose Protocol” button.

Packet Selector Screen, Cont.

- To select a highlighted packet, the user will be able to either double-click the packet, or click the “View Packet” button.
- Selecting a packet will bring the user to the Information Display window where a picture of that protocol, and any lower level protocols, will be displayed

Information Display

- The user is able to return to the Protocol Selector Screen by clicking on the “Choose Protocol” button.
- The user is able to return to the Packet Selector Screen by clicking on the “Choose Packet” button.
- There will be a button that will link the user to the History Page. This page will display all groups that have worked on the project, both past and present.
- Each PDU picture will be broken up into its component fields. Bit and octet positions will be shown.

Information Display, Cont.

- Each picture of each protocol will show the Request for Comments (RFC) number. The number will be a link to a homepage containing comprehensive information about that protocol.
- There will be a protocol stack displayed in the upper right section of the Information Display Screen, allowing the user to be able to switch between the selected protocol and any of the lower level protocols.
- In each picture, field names and protocol data will be displayed.
- Selecting a field in one of the displayed units will cause information about that field to be displayed in the Information Box on the left side of the screen.

Information Box

- The Information Box is part of the Information Display Screen
  - When a field is selected, that field will be highlighted, and a display of that field, with the contained data and bit positions, will be shown.
  - Along with the display, information about the selected field will also be shown.

History Page

- This page will contain links to every group's home page as well as to the Software Engineering website, and back to the user's previous screen
- This page will also contain a description of the project as given to us by Mr. Ken Swarner.

Testing Form Example

What being tested	Tested for	Expected Outcome	Pass/Fail	Comments on Fail
Protocol Selector Screen (PrSS)	Does it load?	The PrSS page loads when access is attempted		
PrSS	Is the protocol tree displayed correctly?	The connecting lines on the protocol tree connected are correctly and contains both active and inactive protocols		
PrSS	Is the TCP/IP Model present?	The TCP/IP Model appears to the right of the protocol tree		

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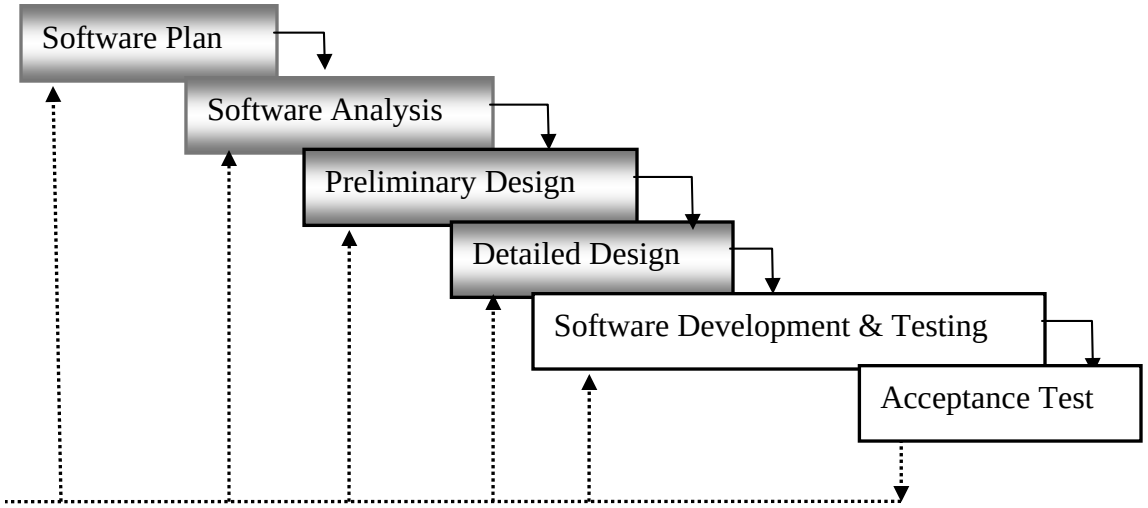
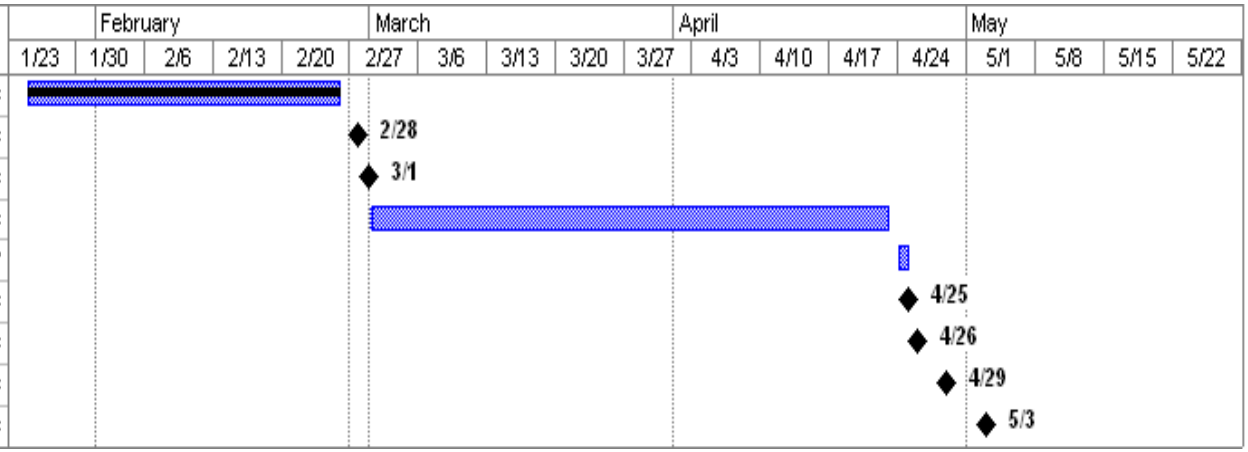
Project Plan

- Waterfall Model
  - Software Plan
  - Requirement Specifications
  - Preliminary Design
  - Detailed Design
  - Software Development & Testing
  - Acceptance Test



Gantt Chart

ID	Task Name	Duration
1	Detailed Design	24 days
2	Detailed Design Delivered	0 days
3	Detailed Design Presentation	0 days
4	Software Development & Testing	39 days
5	Acceptance Test	1 day
6	Acceptance Test Delivered	0 days
7	Acceptance Test Presentation	0 days
8	Academic Celebration	0 days
9	Client/Team Party	0 days



Upcoming Dates

Acceptance Test Delivered:	April 25
Acceptance Test Presentation:	April 26
Academic Celebration:	April 29
Client/Team Party:	May 3

Summary

Questions and Comments

Thank You

Paradigm Solutions

Team Leader:	Jon Baker
Software Consultant:	Mark Mossman
System Administrator:	Mike Sebast
Librarian:	Justin Waterman
Public Relations:	Jim DeSario
Webmaster:	Ryan Fischer