



DIS Research

The Ins & Outs of Internet Transaction Management

Laury Behrens
DIS Research



a.) Service Level Management

b.) Web Architecture & Design

c.) Types of Web Transactions

d.) HP's Transaction Monitoring Tools



DIS Research

Service Level Management

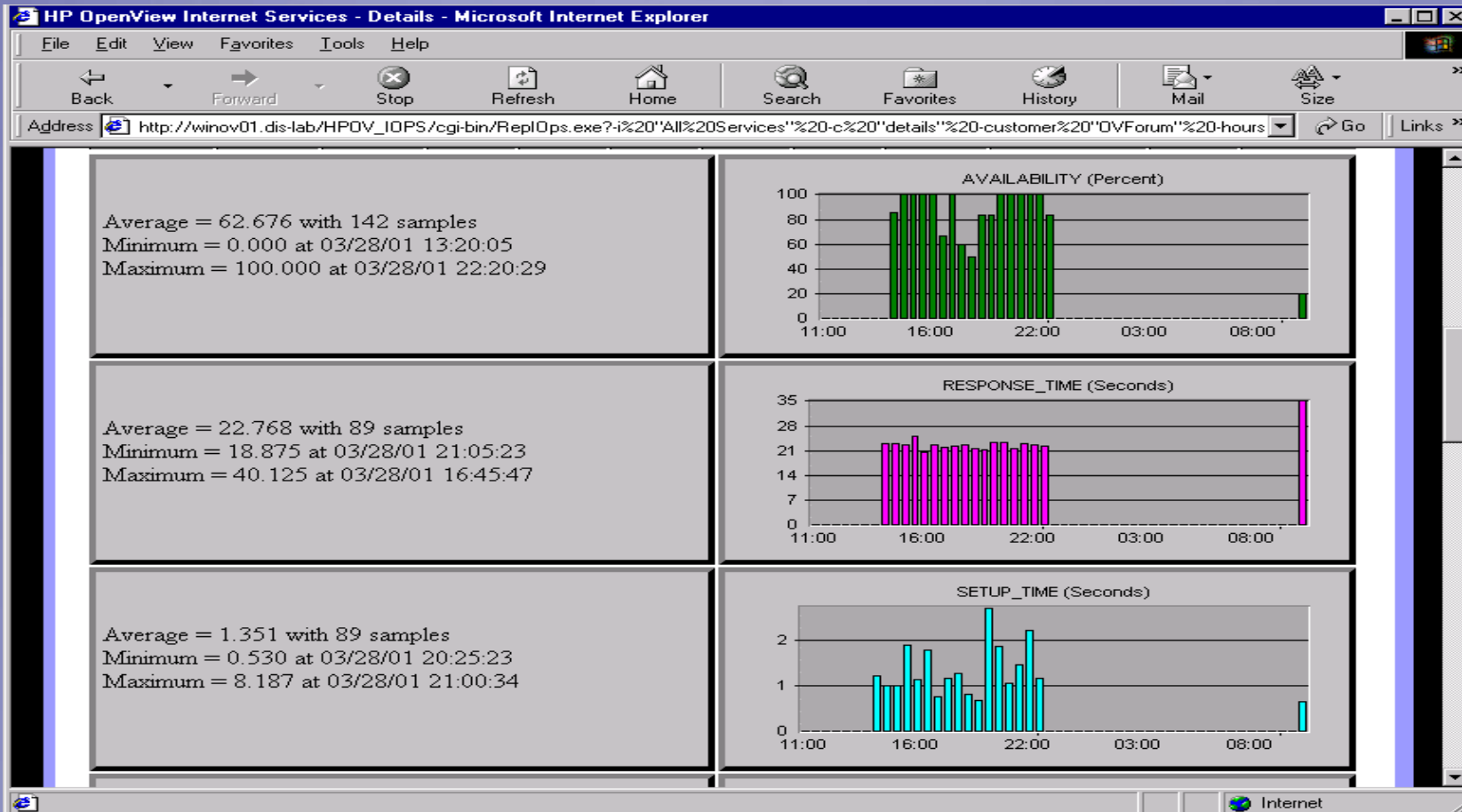


Service Level Management

- Service Level Management (SLM): The continuous process of measuring, reporting, and improving the quality of service provided by the IT organization.
- Service Level Agreement (SLA): A contract between IT and its clients that specifies the parameters of system capacity, network performance, and overall response time required to meet business objectives. The instrument for enforcing SLM.
- Service Level Objective (SLO): The agreed upon levels of service that are to be provided, documented in the SLA.

Examples:

A vailability ; R esponse ; S etup





DIS Research

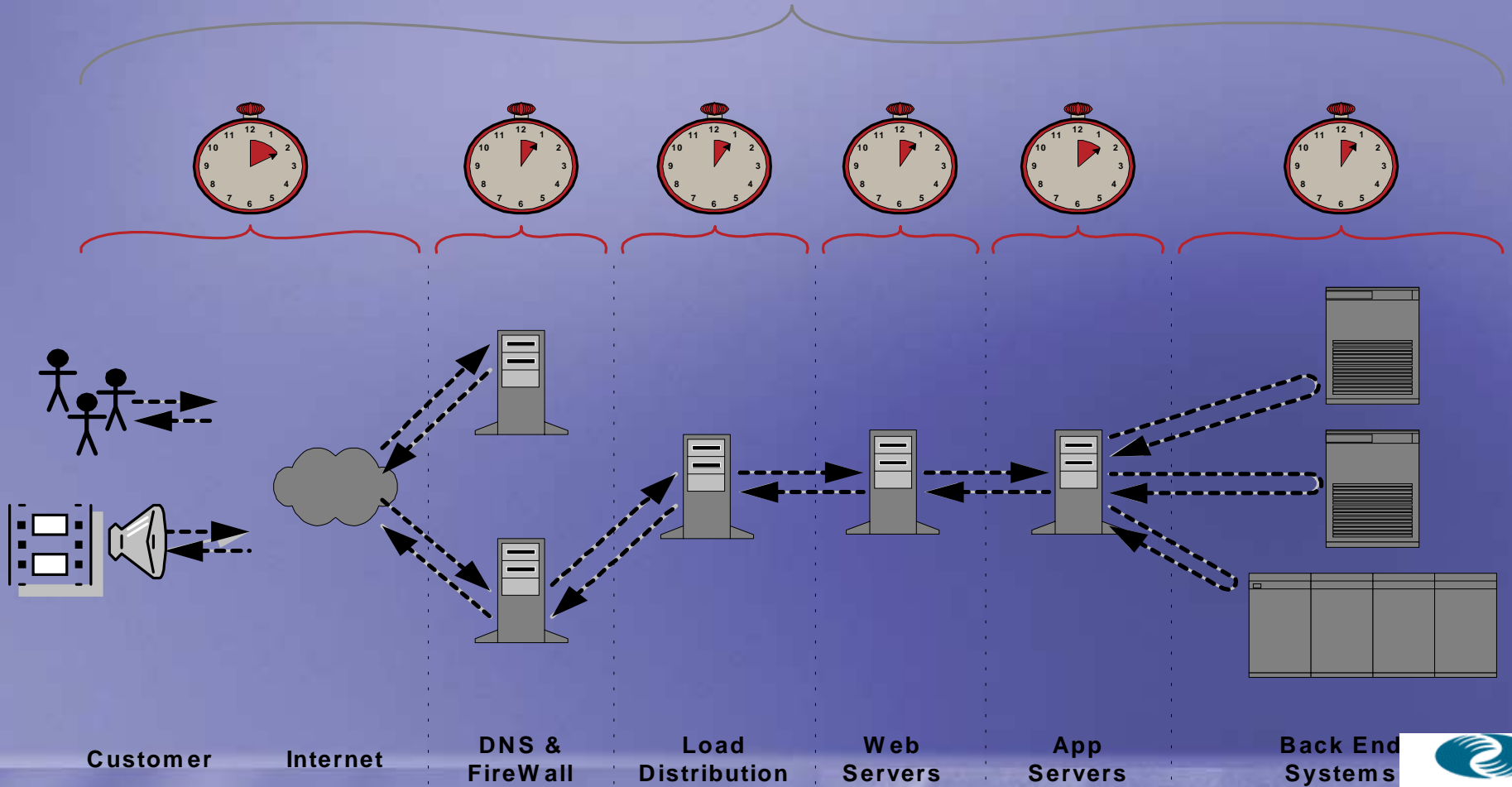
Web Architecture & Design





DIS Research

The Infrastructure



Customer

Internet

DNS &
FireWall

Load
Distribution

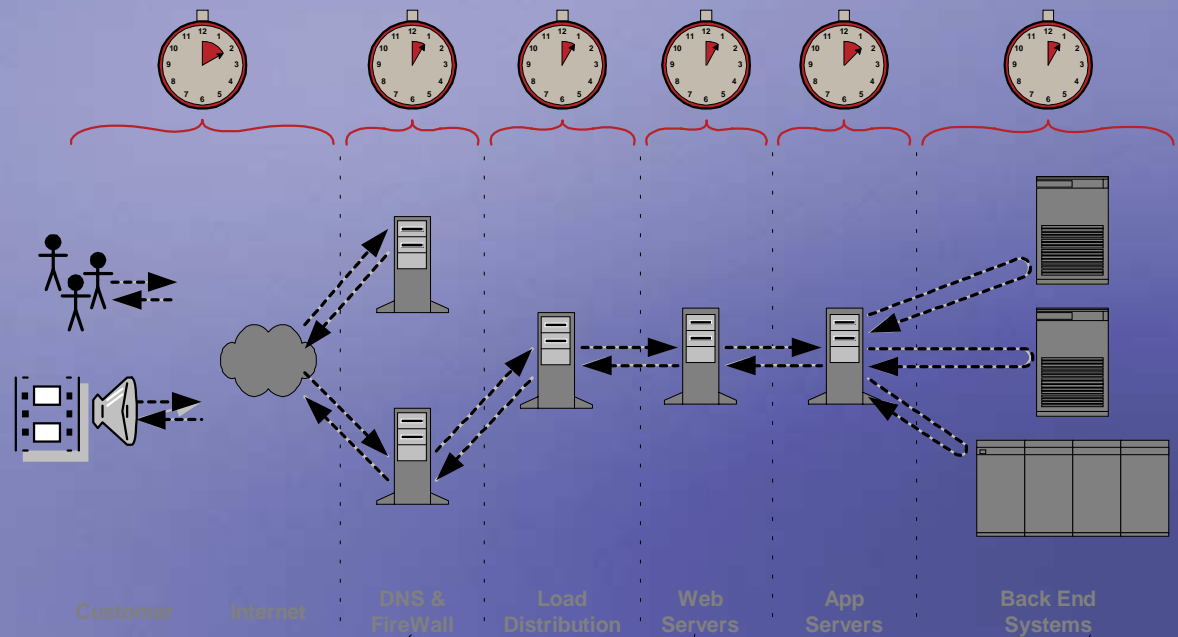
Web
Servers

App
Servers

Back End
Systems



The Transaction



1.) DNS Lookup: For each HTTP the browser may do a DNS Lookup.

2.) TCP/IP: Three-way handshake establishing connection between a client and a server.

3.) URL HTTP GET: Request for a specific URL by a browser to a web server.

4.) Authentication

5.) Content: Request to back-end systems (databases/applications/other) for data needed to create web page.

6.) Page Displayed: Client browser parses HTML sent by the HTML Server. Browser requests the first image or other page component requests to render a page.



Web Applications

Client-Side Technologies

Pros:

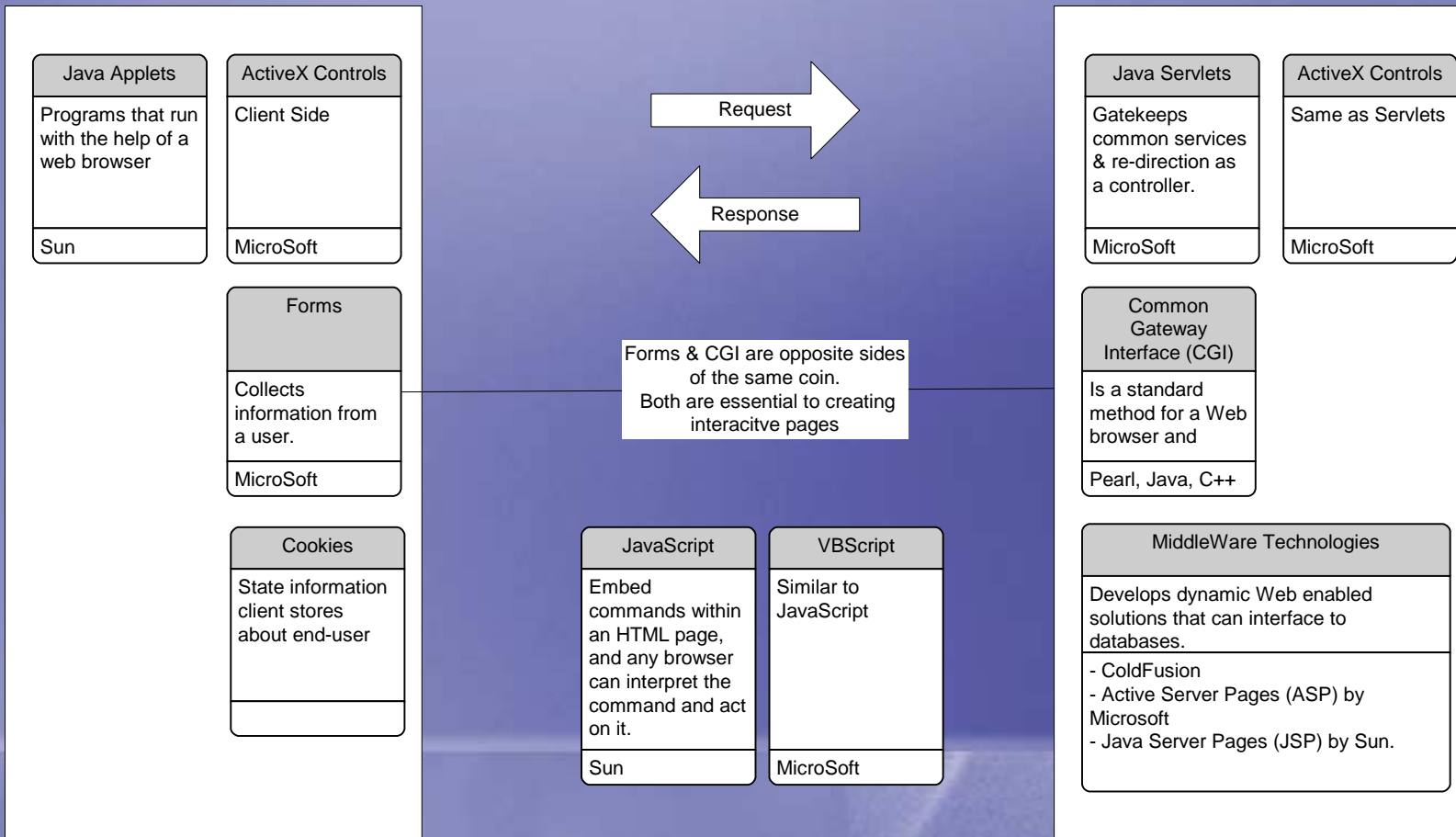
Cons:

- Takes time to download.
- Security holes that can put user's machine at risk.

Server-Side Technologies

- Pros:** Return HTML to a browser, enabling fast download and the security of knowing that no executable files are being placed on user machine.

Cons:





HTML Methods/Tags

- Java applets are normally included in a web page by using the `<APPLET>` tag. Explorer 4 also supports the use of the `<OBJECT>` tag.
- When a user clicks a submit button on a form, the browser does two things:
 - 1.) Encodes form data into single string `NAME=VALUE` pair separated by “&”
 - 2.) Sends encoded string to server by either a `<GET>` or `<POST>` HTTP method.
- JavaScript embedded into HTML `<Script>`
`<\Script>`



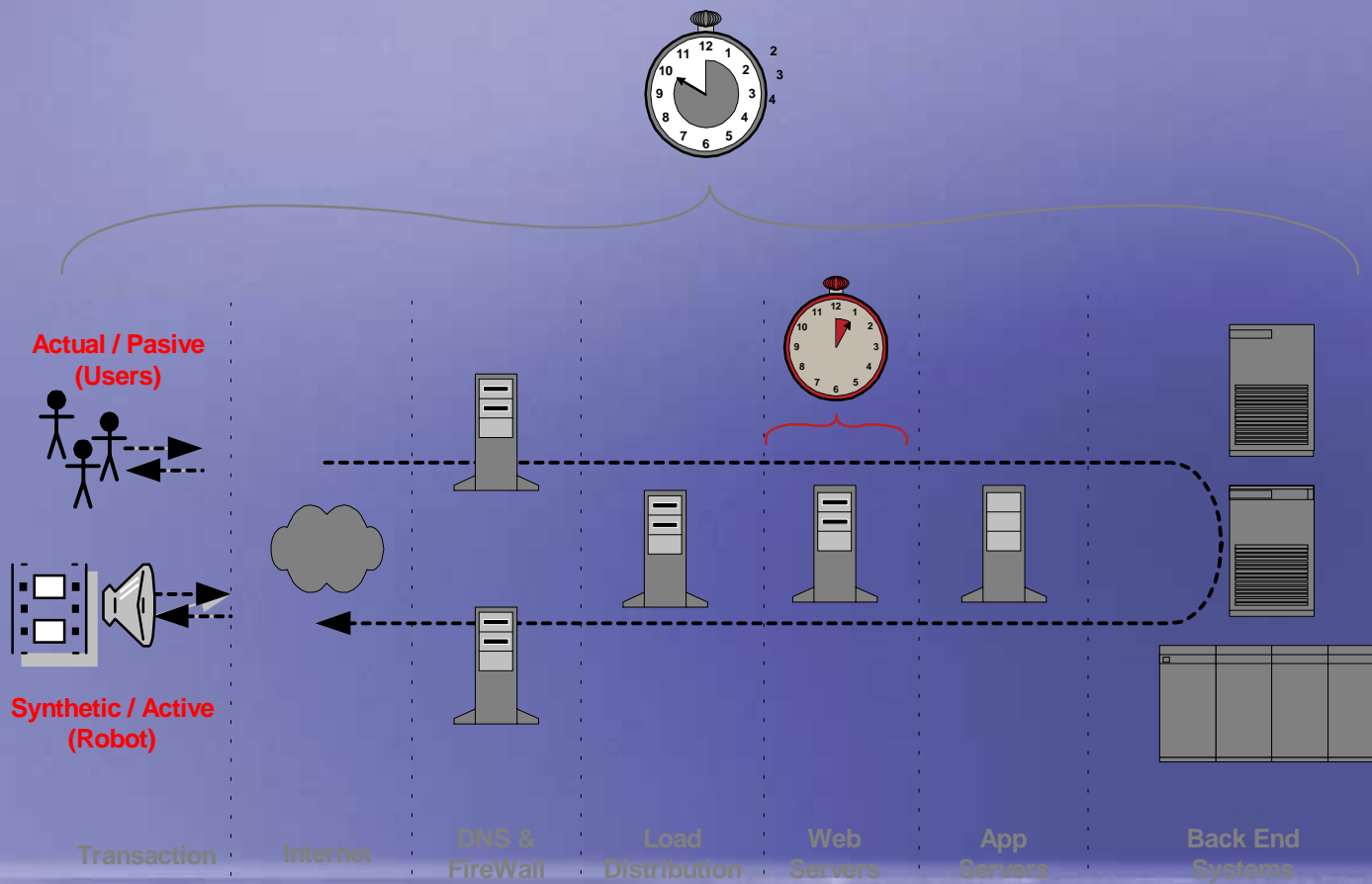
DIS Research

Types of Web Transaction





Transaction Management (End-to-End)





"Synthetic" or "Active" Transaction Monitoring

- Use of “robots” to simulate user activity by running scripted transactions at regular intervals to be baselined and then threshold levels set to generate notification.
- Very effective at detecting and quantifying the impact of any problems that could or do affect real customers.
- Extends Service Health offering by scripting online transactions enabling companies to monitor total end-to-end availability and performance as opposed to the page level tests performed as part of Service Health.
- Active Transaction monitoring is suited for companies whose Internet offering is focused on processing transactions.



“Actual” or “Passive” Transaction Monitoring

- Monitor the actual experience of users on the website. It captures the experience of all users rather than merely sampling website performance.
- Client-based Probes necessary either build into application software or downloaded on end-user pc.
- Work by having the user’s web browser forward transaction timing measurements back to a management server.



Transaction Management Trade-offs

	Scripting On-Line Transactions (Robot)	Client Probes	Monitor how web site is experienced by end-users.	Process Personalized Transactions	Process Complex Transaction
Synthetic / Active	Yes	No	Fair	Fair	Good
Actual / Passive	No	Yes	Good	Good	Fair
3rd Party Monitor	Yes	No	Fair	Fair	Good



DIS Research

HP's Transaction Monitoring Tools





Transaction Monitoring: HP OpenView Solution

Web Transaction Observer (WTO)

- B2C and B2B Features:
JavaScript (B2C)
ActiveX Plug-In (B2B)
- KeyNote Integration

Vantage Point Internet Services (VPIS)

- Probe Technology.
- Can probe from multiple locations for strategic views.



DIS Research

Vantage Point Internet Services (VPIS)

(Synthetic / Active Monitoring)





V P I S Probes

V P I S 3.0 supports

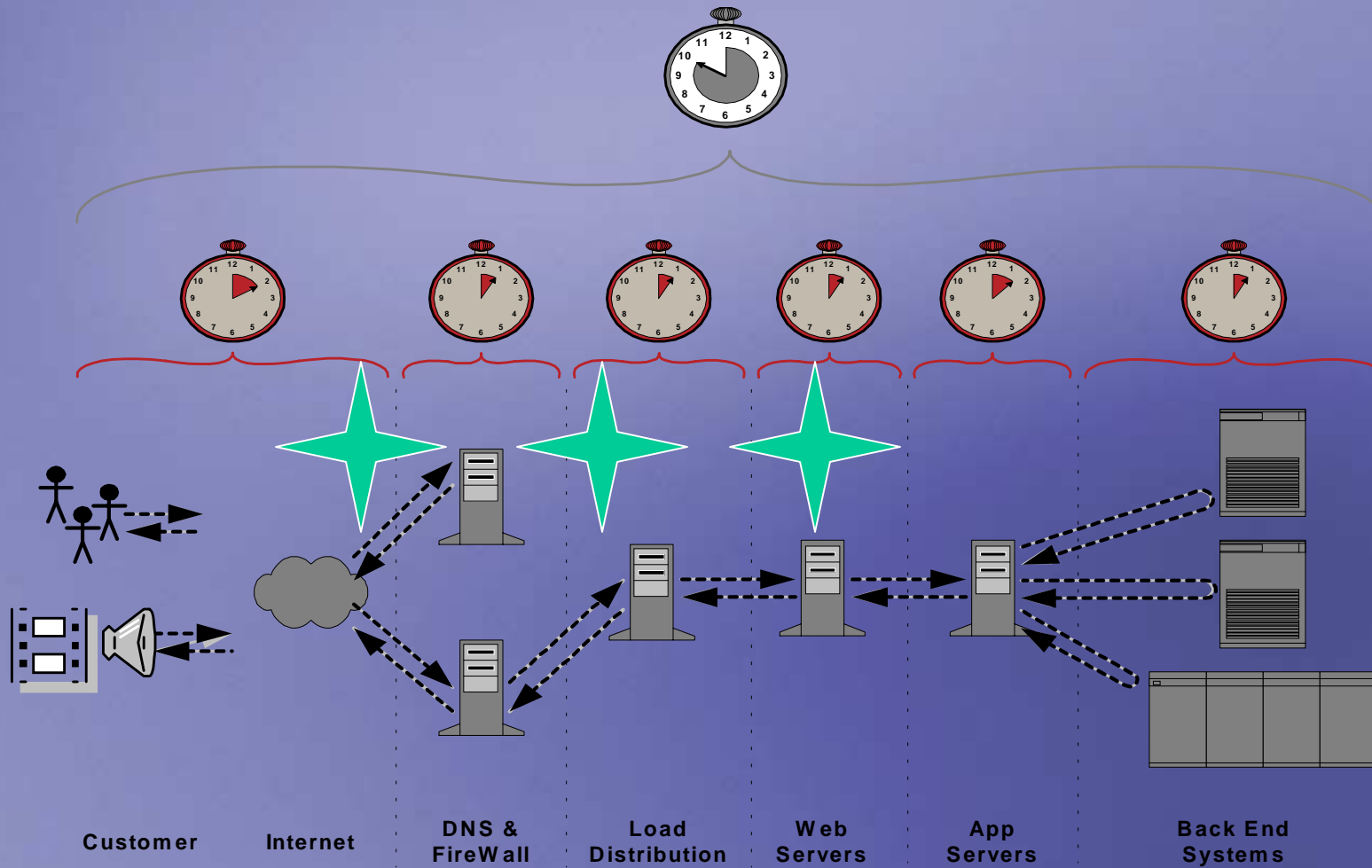
17 protocols

- DNS
- FTP
- HTTP(S)
- ICMP
- NNTP
- POP3
- RADIUS
- SMTP
- WAP
- TCP
- DHCP
- DIAL
- IMAP4
- LDAP
- NTP
- **HTTP_TRANS**





Probe Placement





HTTP_TRANS

- Tracks specific user actions that occur within Web applications, such as the use of catalog lookup, login/logout, shopping carts, etc...
- VPIS's Web Transaction Recorder is the VPIS tool that captures actions and the sequence of accessed pages and links when one navigates through a web site.



VPIIS:HTTP_TRANS

Supported

- Active Server Pages
- CGI Script
- JavaScript on the server
- Static JavaScript on the client
- Dynamic cookies
- HTTP authentication/passwd

NOT Supported

- Java applications
- Dynamic URLs generated by JavaScript on the client
- Pop-up Windows
- Digital certificates
- NT authentication/passwords



VPIS:Web Transaction Recorder

- Supports two navigational modes by
 - a.) URL (can handle Java Script)
 - b.) **Navigation Point** – Tries to emulate and record user navigation for links (HTML Anchors) and forms (HTML Forms), but capturing some context information from anchor and from element.
- There are three views within a transaction:
 - a.) Page (IE)
 - b.) HTML Source (Probe)
 - c.) Probe Output



Service Customers

The screenshot shows the 'Internet Services Configuration Manager' window. On the left is a tree view under 'Customers' with sub-items: Yahoo, DIS, Netledger, OVFocus, and Status. The main area displays a table titled 'All Customers' with the following data:

Customer Name	Service Groups	Service Targets	Objectives	Probes
↑ Yahoo	1	1	2	1
↑ DIS	2	2	3	2
↑ Netledger	2	4	4	2
↑ OVFocus	1	1	11	1



Service Groups; Targets; Objectives

The screenshot shows the Internet Services Configuration Manager interface. The left pane displays a tree view of service groups. The right pane shows a table of service targets for the selected 'Web Site Login' service group.

Service Groups Tree View:

- Customers
 - Yahoo
 - DIS
 - Netledger
 - OVForum
 - Service Groups
 - Web Site Login
 - Service Targets
 - httptrans.dat
 - Service Objectives
 - TRANSFER_TPUT
 - DNS_SETUP_TIME
 - CONNECT_TIME
 - CONNECT_TIME
 - SERVER_RESP_TIME
 - TRANSFER_TIME
 - TRANSFER_BYTES
 - REQUESTS
 - AVAILABILITY
 - RESPONSE_TIME
 - SETUP_TIME
 - Probe Locations
 - Local System

Service Targets Table:

Service Group	Service	Host	Port	Target Information
Web Site Login	HTTP_TRANS		80	httptrans.dat



The Transaction

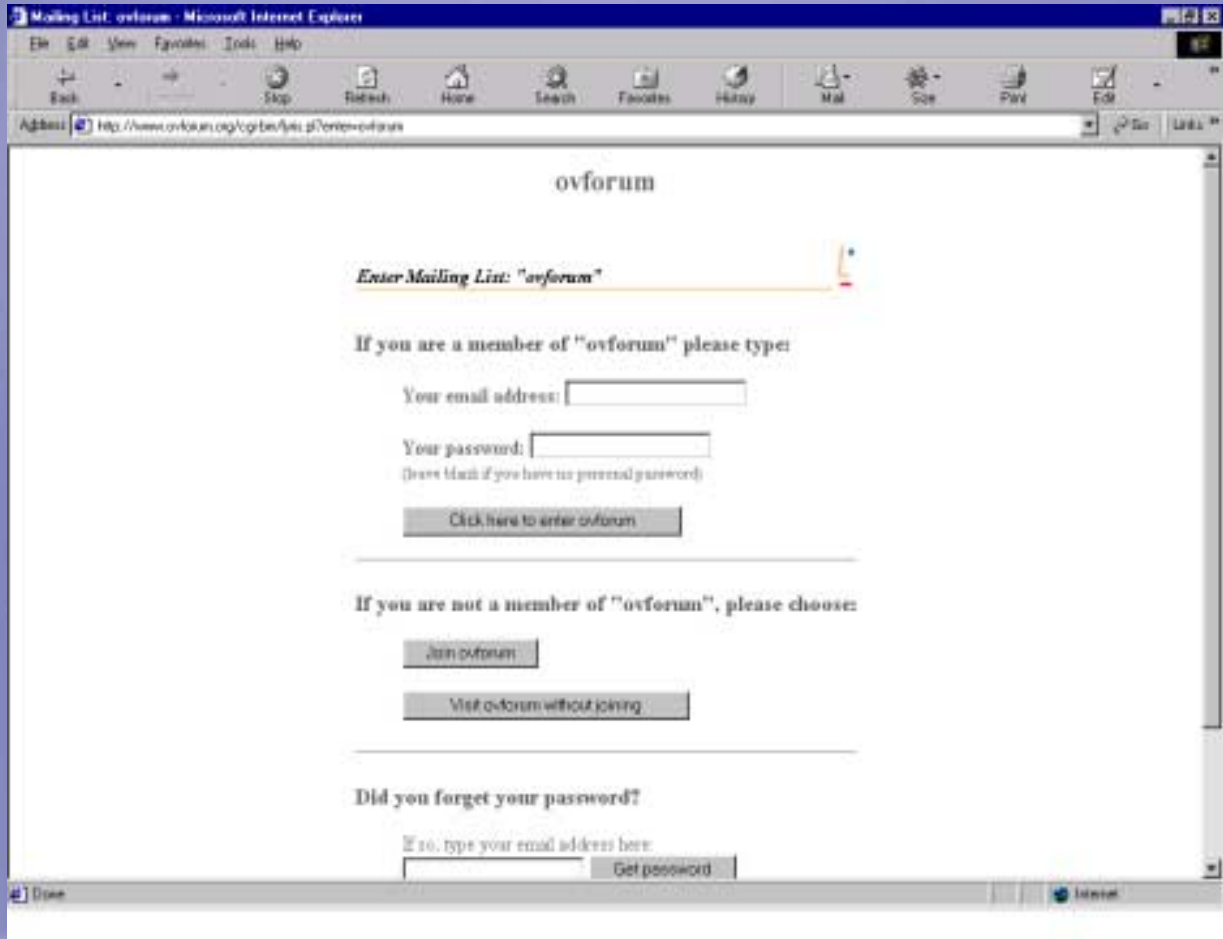
The screenshot shows a Microsoft Internet Explorer browser window displaying an email list from 'ovforum'. The browser's address bar shows the URL 'http://www.ovforum.org/cgi-bin/ovforum.pl?dir=1207&act=14120907'. The page title is 'ovforum' and the sub-header is 'Read Messages'. A message list is displayed with the following entries:

- Node Poking - 8/30/01 [Schmid-1, Patrick]
- LowOptics Ethernet Switches and NNM on NT - 03/08/01 [Dennis Lucas]
- New NNM 1 Patch(es) available PHSS_23688.txt NNM_00685.txt PSOV_02897.txt
- New IT 06 04 Patch(es) available PHSS_22690.txt PHSS_22688.txt - 8/17/01 [j...
- Segment automatic naming - 8/10/01 [Scott Baryada]
- Scott Baryada
- New NNM 1 Patch(es) available PHSS_23653.txt NNM_00684.txt PHSS_23643.txt
- RE: SNMP Community Names (every device uses all the same name) - 8/10/01 [...
- Doug at Home
- Myers, Lisa
- RE: SNMP Community Names (every device uses all the same name) - 8/10/01 [...
- exporting databases to MB Access - 03/08/01 [Kosler Berents]
- Motorol Vanguard Patch - 8/10/01 [Rocher, Donald]
- Wrong MAC addresses - 8/10/01 [Zhe David]
- Roy W Bary

Below the list, there are controls for 'Jump Backward' (288 messages), a search box with 'Search for: any or all of these words', and a 'Search' button. There are also options for 'enter message', 'body', and 'header', and a 'Number of messages' dropdown set to 288.



Login Page





Recorded Transaction in V P IS – Login Screen

The screenshot displays the HP VantagePoint Internet Services - Web Transaction Recorder interface. The window is titled "HP VantagePoint Internet Services - Web Transaction Recorder" and contains two main panes: "Recorder (By URL)" and "Playback Output".

The "Recorder (By URL)" pane includes a control bar with "Record", "Stop", "Play", and "Step" buttons. Below this is a list of recorded URLs:

- http://www.ovforum.org
- http://www.ovforum.org/tech/archives.cfm
- http://www.ovforum.org/cgi-bin/lyris.pl?enter=ovforum
- http://www.ovforum.org/cgi-bin/lyris.pl?site=ovforum&id=144300042 P0
- http://www.ovforum.org/cgi-bin/lyris.pl?sub=12039&id=144300062 P0

At the bottom of this pane are "Add...", "Insert...", and "Delete" buttons.

The "Playback Output" pane has tabs for "Page (IE)", "HTML Source (Probe)", and "Probe Output". The "Page (IE)" tab is active, showing a preview of a login screen. The page content includes:

The OpenView Forum International now include...
for member content areas. If you are unsure of y...
Password please contact member services at the

Member ID

Password

Login

Contact Information

At the bottom of the playback output pane are "Help", "OK", and "Cancel" buttons.



HP VantagePoint Internet Services - Web Transaction Recorder

Recorder (By URL)

Record Stop Play Step

```

http://www.ovforum.org
http://www.ovforum.org/tech/archives.cfm
http://www.ovforum.org/cgi-bin/lyris.pl?enter=ovforum
http://www.ovforum.org/cgi-bin/lyris.pl?site=ovforum&id=144300042 PO
http://www.ovforum.org/cgi-bin/lyris.pl?sub=12039&id=144300062 PO

```

Playback Output

Page (IE) HTML Source (Probe) Probe Output

```

<p>

<hr size="1">
  <p><font face="Arial, Helvetica, sans-serif" size="-1"><b>C
  <hr size="1">
<p> <br>
</p>

<table width="445" border="0" cellspacing="0" cellpadding="5">
<tr>
  <td align="LEFT" valign="TOP">
    <font face="Arial, helv, helvetica, tahoma" size="-1">

    <b>Check Out the OVFI Bookstore!</b><br>
    <A HREF="http://www.amazon.com/exec/obidos/redirect-t
<IMG SRC="http://www.associmg.com/assoc/us/holiday-home-btn-1

```

Target Step Properties

Type:

Target URL:

Post Data:

Pattern:

Pattern Settings:

Username:

Password:

OK Cancel

Help OK Cancel



Recorded Transaction in V P IS – Ending Screen

The screenshot displays the HP VantagePoint Internet Services - Web Transaction Recorder interface. The window is titled "HP VantagePoint Internet Services - Web Transaction Recorder" and contains two main panes: "Recorder (By URL)" and "Playback Output".

Recorder (By URL) Pane:

- Buttons: Record, Stop, Play, Step
- List of recorded URLs:
 - http://www.ovforum.org
 - http://www.ovforum.org/tech/archives.cfm
 - http://www.ovforum.org/cgi-bin/lyris.pl?enter=ovforum
 - http://www.ovforum.org/cgi-bin/lyris.pl?site=ovforum&id=144300042 PC
 - http://www.ovforum.org/cgi-bin/lyris.pl?sub=12039&id=144300062 POS
- Buttons: Add..., Insert..., Delete

Playback Output Pane:

- Page (IE) | HTML Source (Probe) | Probe Output
- Section: **Read Messages**
- Text:
 - Messages are available from 04/01/99 to 03/28/01
 - These 200 messages are from 03/21/01 to 03/28/01
 - Re: Powerbuilder Application sending messages to C**
 - Powerbuilder Application sending messages to Open
 - VPO Performance Agent for NT Templates - 03/28/01
 - Node Polling - 03/28/01 [Schmidt-1, Pamela]
 - LanOptics Ethernet Switches and NNM on NT - 03/28/01
 - New NNM6.1 Patch(es) available PHSS_23668.text N
 - New ITO6.0X Patch(es) available PHSS_22890.text P
 - Segment automatic naming - 03/28/01 [Scott Banyas]
 - Scott Banyas
 - Jeff Law
 - New NNM6.1 Patch(es) available PHSS_23650.text N

Buttons: Help, OK, Cancel

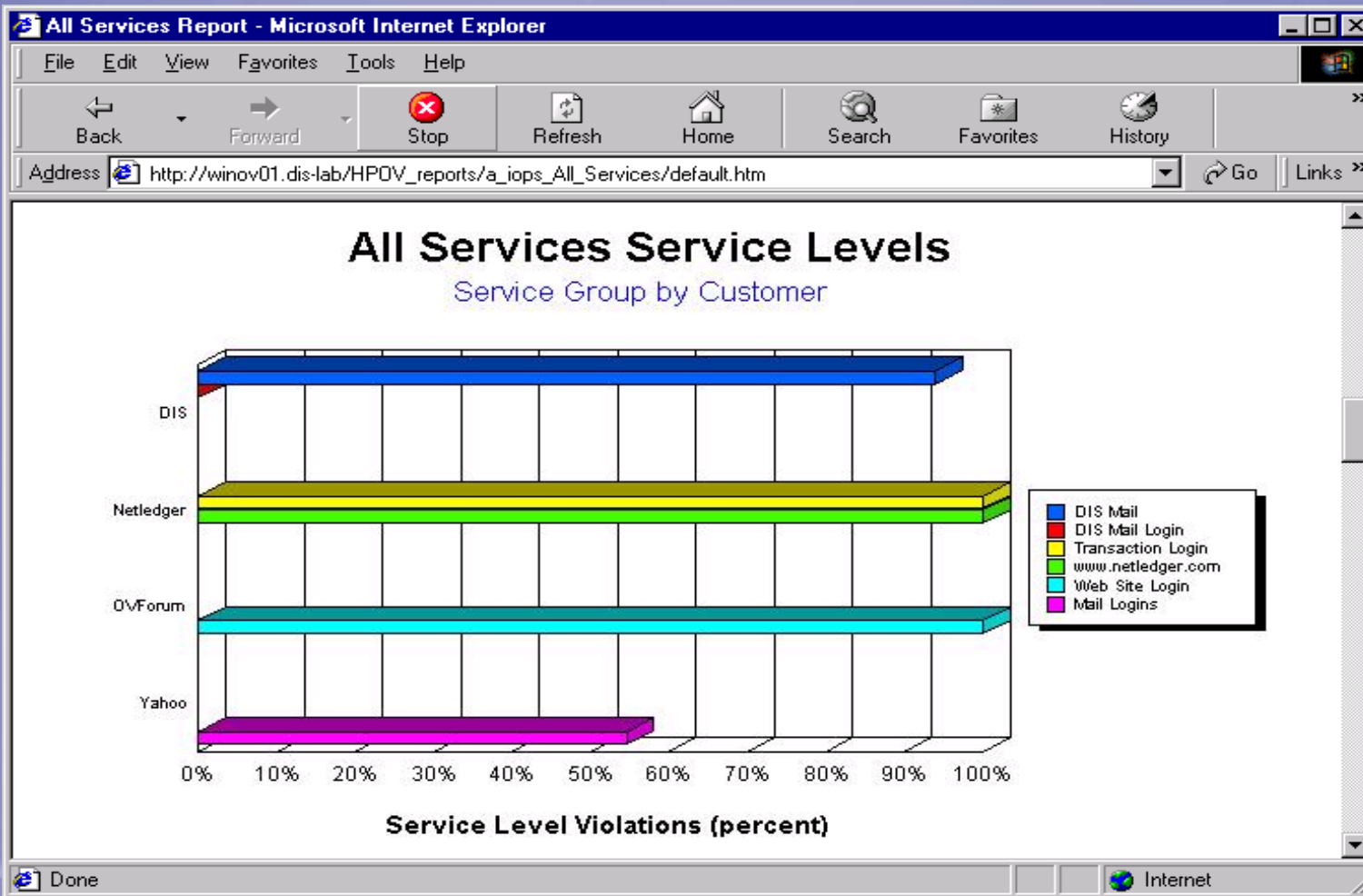


Service Objectives

The screenshot shows the Internet Services Configuration Manager interface. The left pane displays a tree view with 'Service Objectives' expanded under 'Web Site Login'. The right pane shows a table of objectives for the 'Web Site Login' service group.

Service Group	Metric	Warning	Minor	Major	Critical	Service Level	Baseline	Duration	Start	Stop	Days
Web Site Login	TRANSFER_TPUT	-	-	-	-	-	0	10	12:00 AM	12:00 AM	MTWTFSS
Web Site Login	DNS_SETUP_TIME	0.5	1	2	10	-	80	10	12:00 AM	12:00 AM	MTWTFSS
Web Site Login	CONNECT_TIME	-	-	-	-	-	0	10	12:00 AM	12:00 AM	MTWTFSS
Web Site Login	CONNECT_TIME	-	-	-	-	-	0	10	12:00 AM	12:00 AM	MTWTFSS
Web Site Login	SERVER_RESP_TIME	-	-	-	-	-	0	10	12:00 AM	12:00 AM	MTWTFSS
Web Site Login	TRANSFER_TIME	-	-	-	-	-	0	10	12:00 AM	12:00 AM	MTWTFSS
Web Site Login	TRANSFER_BYTES	-	-	-	-	-	0	10	12:00 AM	12:00 AM	MTWTFSS
Web Site Login	REQUESTS	-	-	-	-	-	0	10	12:00 AM	12:00 AM	MTWTFSS
Web Site Login	AVAILABILITY	-	-	-	50	50	80	10	12:00 AM	12:00 AM	MTWTFSS
Web Site Login	RESPONSE_TIME	2	4	6	10	2	80	10	12:00 AM	12:00 AM	MTWTFSS
Web Site Login	SETUP_TIME	-	-	-	3	-	80	10	12:00 AM	12:00 AM	MTWTFSS

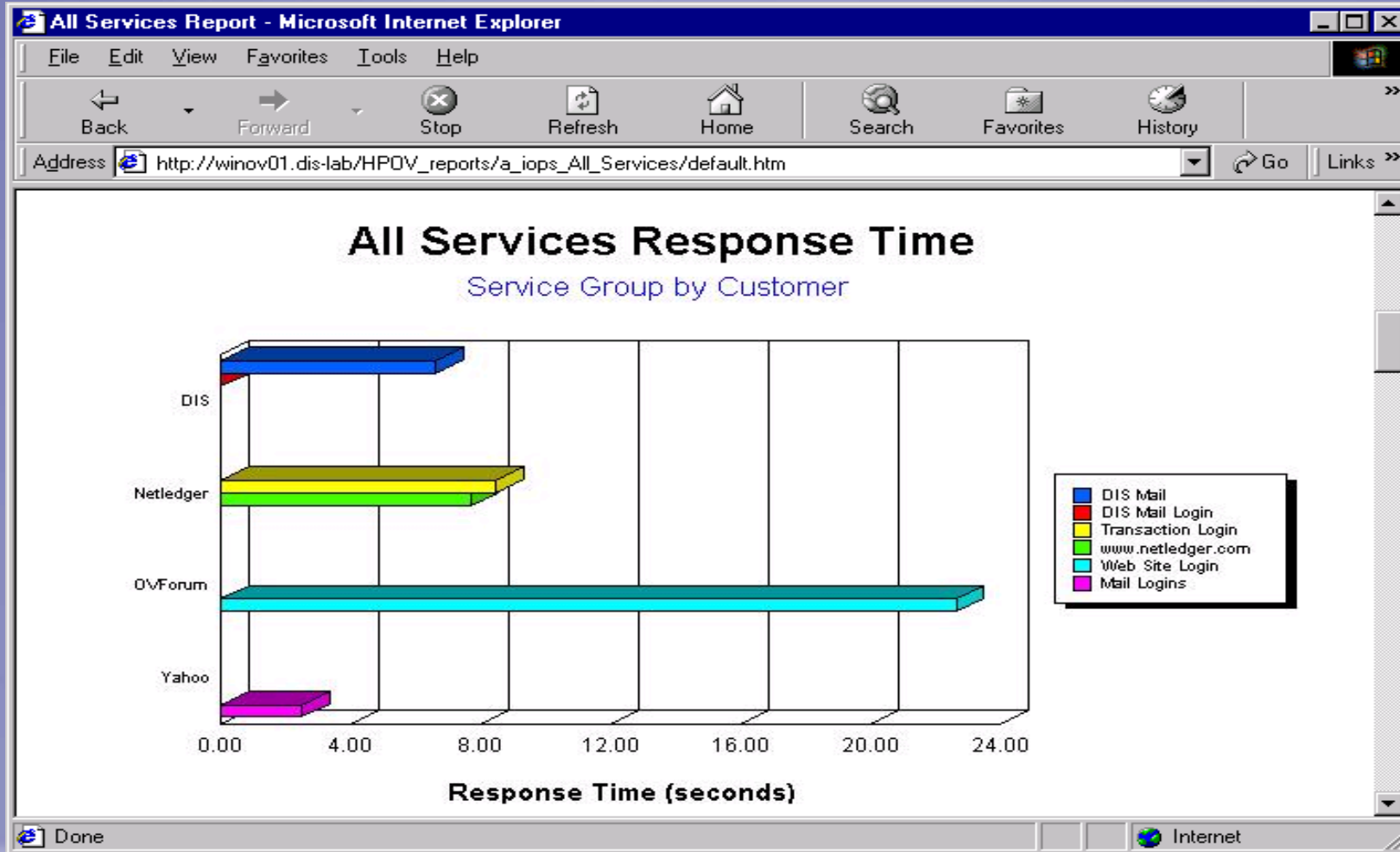
Service Level Summary





DIS Research

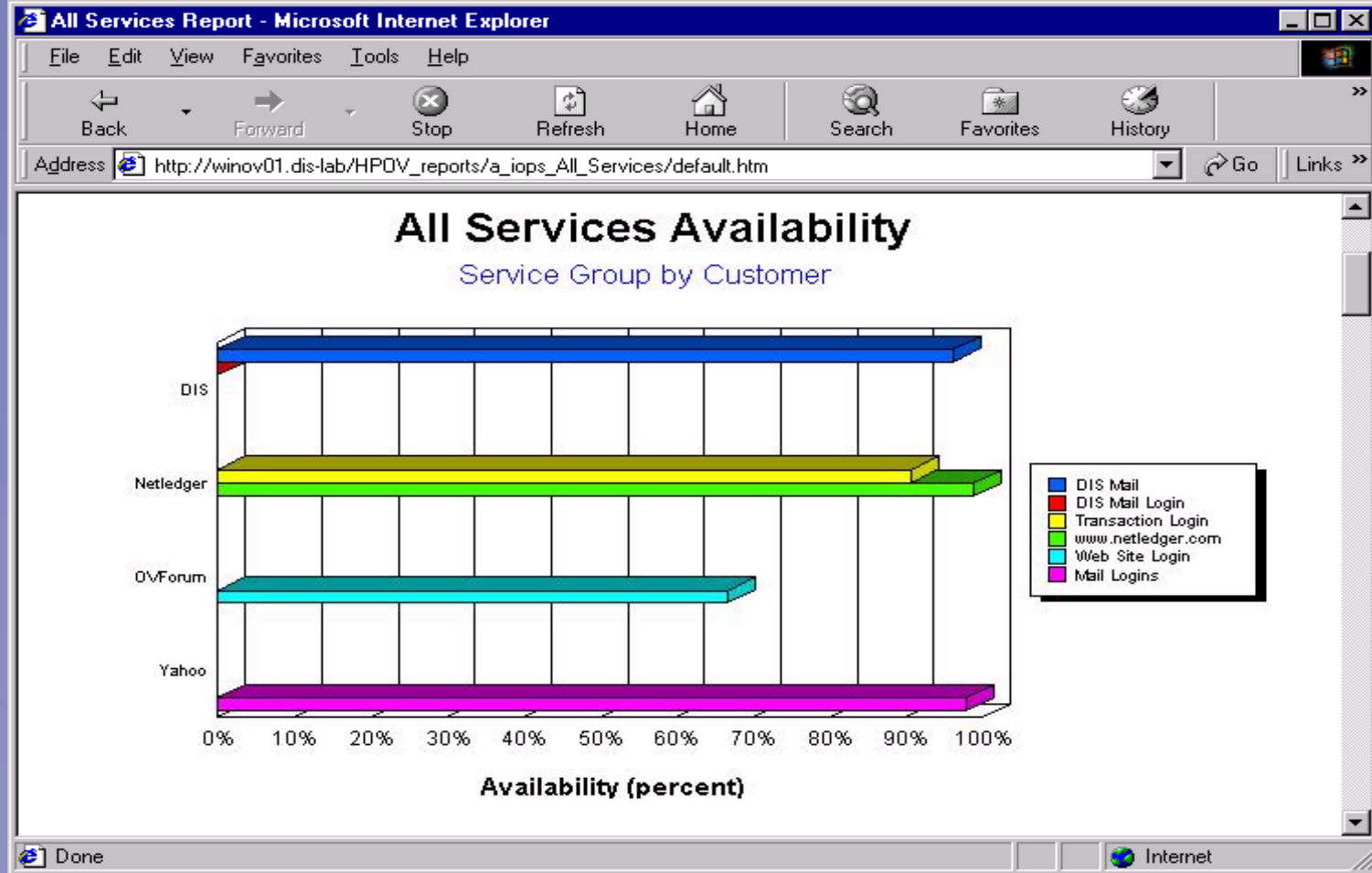
Response Time





DIS Research

A vailability





DIS Research

Web
Transaction Observer
(WTO)
(Actual /
Passive Monitoring)



WTO Implementation Planning Steps

- Determine Measurement Targets.
- Decide which web pages & hyperlinks will trigger the download of the Browser Sensor .
- Provision for WTO Measurement Server
- Determine firewall solutions
- Determine whether to implement the **B2B** (Activex) or **B2C** (JavaScript) solution.
- Design data groups such as applications, transactions and user groups.
- Define service level objectives and alarm thresholds .



DIS Research

Summary





Transaction Management

End-to-End Service Level Management
Solution based upon:

- Service Level Objectives
- Web Site Architecture
- Type of Transaction
- Type of Monitoring tool