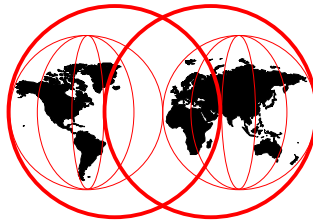


# Exploiting the Web with Tivoli Storage Manager

Oxford University ADSM Symposium  
29th Sept. - 1st Oct. 1999



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## Agenda



**The Web Client Concept**

**Tivoli Storage Manager Web Client Enhancements**

**The Web Administrative Interface**

**Tivoli Storage Manager Secure Web Administrator Proxy**

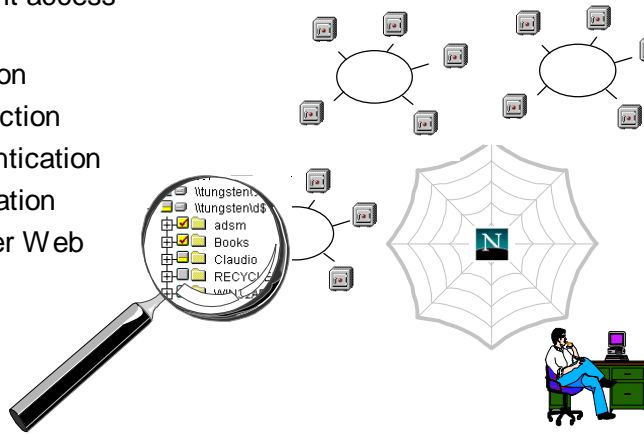
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## Web Backup-Archive Client



- Web client introduction
- Client owner and client access authority
- Web client configuration
- Hyperlink client connection
- Hyperlink client authentication
- Direct client authentication
- Tivoli Storage Manager Web Client Enhancements



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## Web client Introduction



- Remote client GUI
  - Java applet
  - Browser with JDK 1.1
  - Version 3 servers
- Client platforms
  - AIX
  - OS/2
  - Novell NetWare
  - Windows 95, 98, NT
  - Other UNIX clients
- Client functions
  - Backup and restore
  - Archive and retrieve
  - Active and inactive files
  - Registry, bindery, NDS
  - No local access to data
- Access authorization
  - Client owner authorization
  - Client access authorization



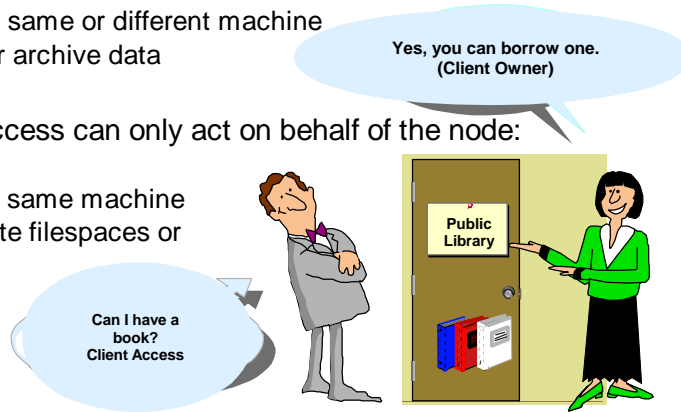
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## Two client authority levels



### There are two authority levels

- Client owner
  - A user with client owner authority is allowed to gain physically access to the data, for example:
    - Backup files
    - Restore files on the same or different machine
    - Delete filespace or archive data
- Client access
  - A user with client access can only act on behalf of the node:
    - Backup files
    - Restore files on the same machine
    - Not allowed to delete filespace or archive data



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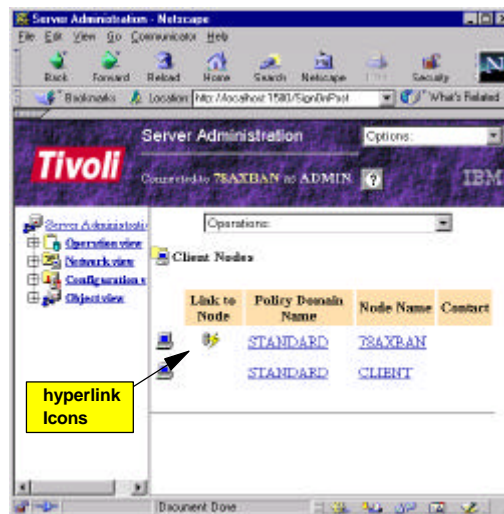
## Web Client Configuration



- Client components
  - Installed with backup-archive client package
  - Client acceptor
  - Remote client agent
- Client options
  - PASSWORDACCESS
  - HTTPPORT
  - REVOKEREMOTEACCESS
- Client connection
  - Hyperlink from Enterprise Console

```
tsm 78AXBAN>update node client
url=http://client:1581
```

- Direct from Web browser with client URL

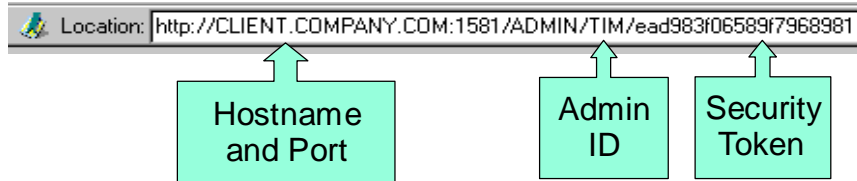


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## Hyperlink Client Connection



- Web client URL
  - ▶ Client hostname and port
  - ▶ Administrative userid
  - ▶ DES encrypted security token



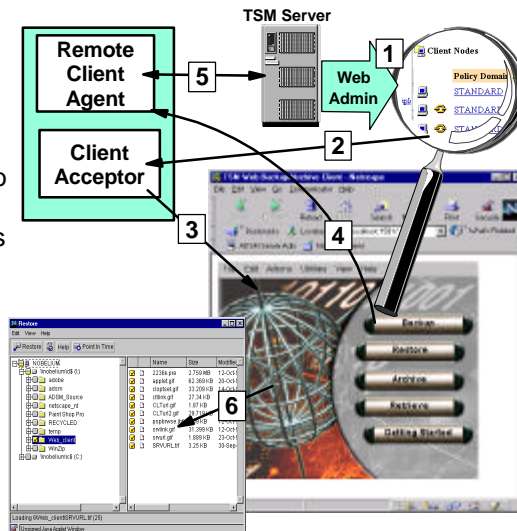
- Remote client agent authenticates access
  - ▶ Administrative userid and password
  - ▶ Client owner or client access authority
  - ▶ Administrative session has not timed out

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## Hyperlink Client Authentication



1. Admin logs in to server and clicks on client hyperlink icon
2. Browser connects to client acceptor and passes encrypted admin security token within URL
3. Web client Java applet served to Web browser
4. Clicking on function button starts remote client agent
5. Agent starts client session with server, using generated client password, and confirms admin credentials
6. Applet displays client function window in Java applet window

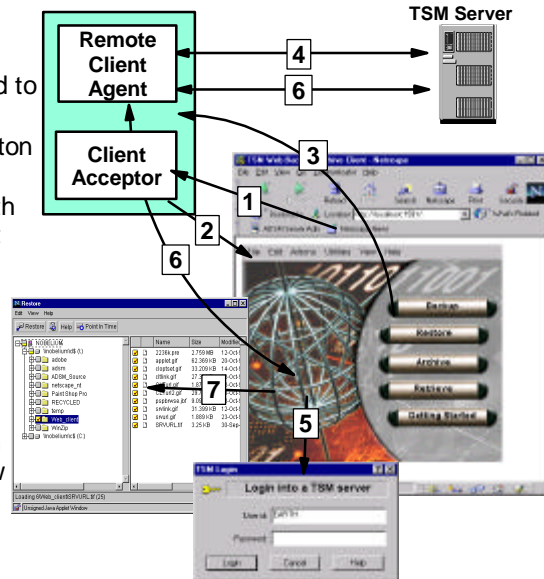


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## Direct Client Authentication



1. URL connection to client acceptor daemon
2. Web client Java applet served to Web browser
3. Clicking on client function button starts remote client agent
4. Agent starts client session with server, using generated client password
5. Applet displays login box in separate Java applet window
6. Agent authenticates admin userid and password entered with server
7. Applet displays client function window in Java applet window



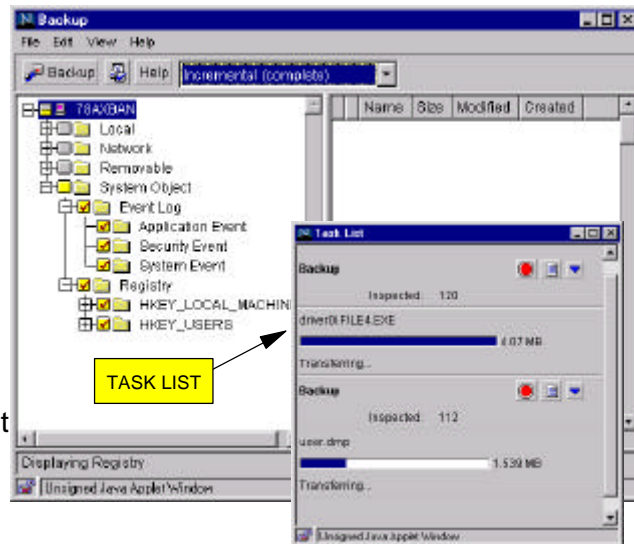
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## Tivoli Storage Manager Web client enhancements



### Web client enhancements include

- Archive delete
- Delete filespace (*NT+Unix*)
- Backup/restore registry
- Backup/restore event log
- Connection information including authorization information and access rights
- Supports multiple concurrent operations for example archive and restore
- View active tasks through task list

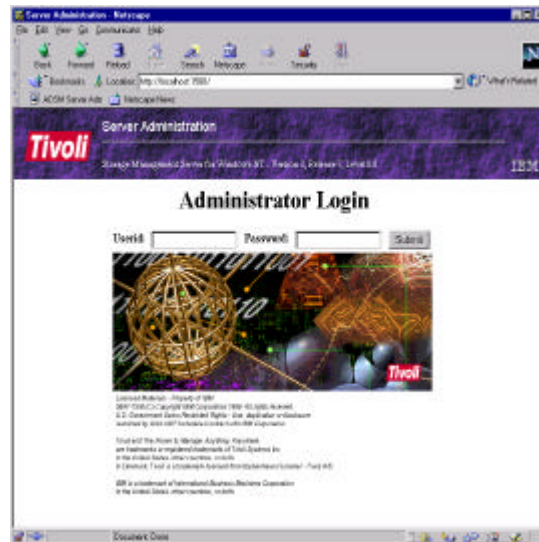


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## Web Administrative Interface



- ADSM enterprise console
  - ▶ Single interface for administration
  - ▶ Multiple servers and clients
- Server function
  - ▶ Integrated Web server
  - ▶ HTTP communications method
- Browser requirements
  - ▶ HTML 3.0 support
  - ▶ Java 1.1 support
- Security
  - ▶ Web session authentication
  - ▶ Secure Sockets Layer (SSL)
- Administrative functions
  - ▶ All administrative functions
  - ▶ Command line
  - ▶ Event viewer

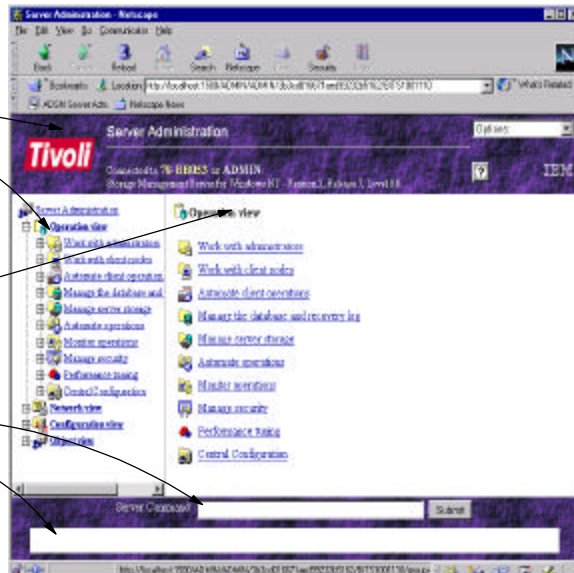


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## Web Admin Interface Structure



- Banner frame
- Tree frame
  - ▶ Operation view
  - ▶ Network view
  - ▶ Configuration view
  - ▶ Object view
- Detail frame
  - ▶ Expansion of view
  - ▶ Manipulation
- Command line
- Event viewer



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## Web Administrative Implementation

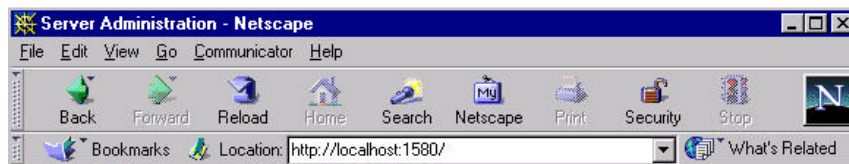


- HTTP communications
  - ▶ COMMMETHOD=HTTP
  - ▶ HTTPPORT=1580, default
- Database definitions
  - ▶ Dynamically defined in server database
  - ▶ Graphics stored in server directory
  - ▶ Defined automatically at installation
  - ▶ Redefined with DSMSEV RUNFILE command



```
dsmserv runfile
```

- ~~dsmserv idl~~

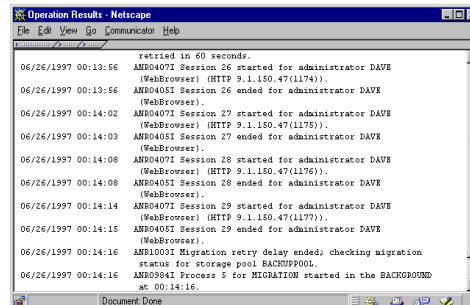


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## Web Session Authentication



- Authorization timeout
  - ▶ SET WEBAUTHTIMEOUT command
  - ▶ Forces administrator to reauthenticate after specified time
  - ▶ Displayed with QUERY STATUS command
- Administrative authority
  - ▶ Automatically detects administrator class
  - ▶ Updates available functions
- Session logging
  - ▶ Each HTTP transfer is an individual session
    - ▶ *Web browser session*
    - ▶ *IP address of browser*



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## Secure Sockets Layer (SSL)



- Encrypted conversations
  - ▶ Netscape and Internet Explorer
  - ▶ AIX, NT, Solaris and HP-UX ADSM servers
  - ▶ Web administrative interface only
- SSL certificates
  - ▶ MKKFE utility
  - ▶ Self-signed certificates
  - ▶ CERTUTIL utility
- SSL configuration
  - ▶ HTTPS commmethod
  - ▶ HTTPS port
  - ▶ DEFINE KEYRING command
- HTTPS prefixed URL



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## Tivoli Storage Manager Secure Web Administrator Proxy



### Proxy caching server

- Less load on Tivoli Storage Manager server with more work done by the proxy

### Better security

- Secure link between proxy server and Tivoli Storage Manager server

### Portable Implementation

- CGI code running on AIX, Solaris, HP-UX, and NT using standard web proxy servers



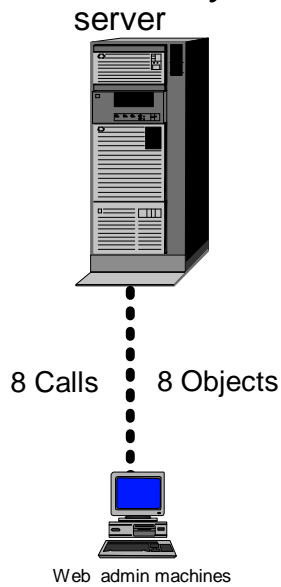
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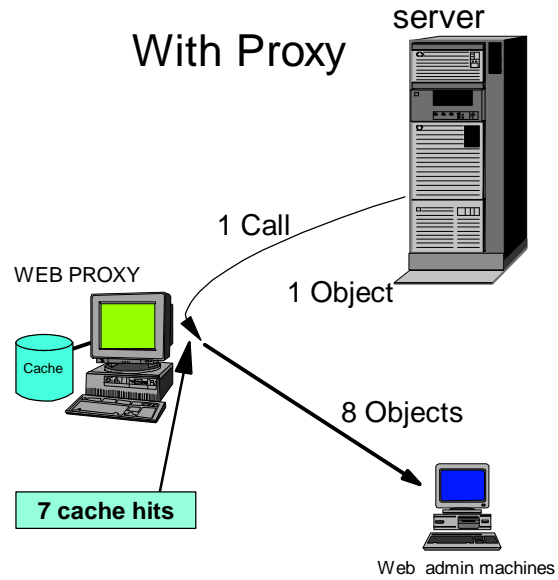
## Web Proxy operation



### Without Proxy



### With Proxy



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## Web Proxy security

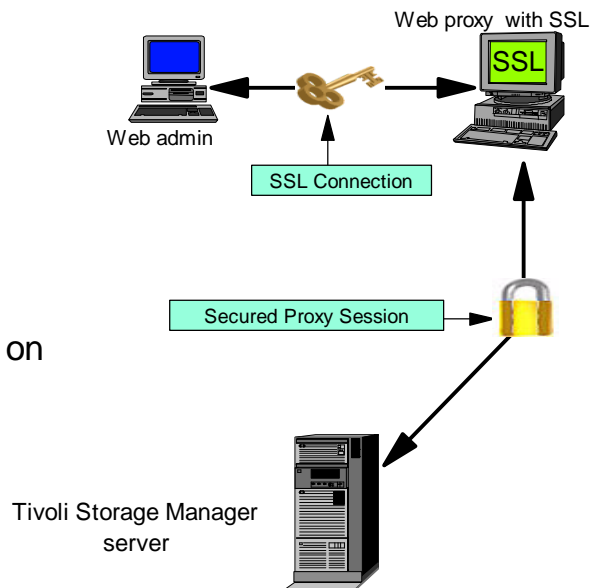


### Secured Proxy connection

- Unique Proxy client session

### Secured Web admin connection

- Standard SSL support on the Web Proxy server



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## Web Proxy installation and configuration



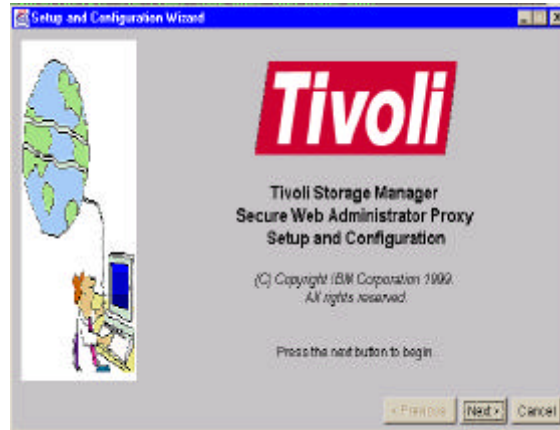
### Installation Prerequisites

- Standard Web Proxy server must be installed
- Must have either JDK 1.1.6 or JRE 1.1.6 installed
- Must set environment variables

### Same method of installation for all platforms

### Installation includes

- Help documents
- Language support
- Communication, path, and session parameter setup



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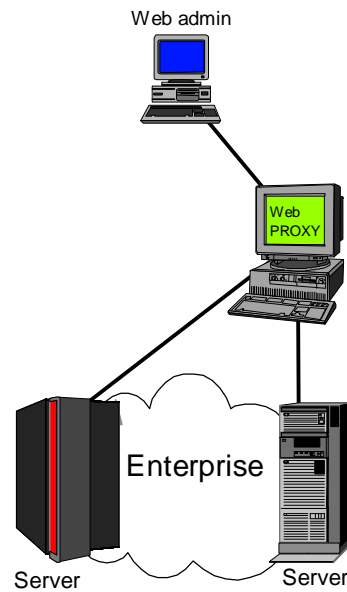
## Web Proxy in an enterprise environment



### Web Proxy can communicate with multiple servers concurrently

### Enterprise administration

- Connection created between defined server
- The URL points to the TCP/IP port not to HTTP Port
- Web proxy establishes the connection from server to server on behalf of the client



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## Enterprise administration using a Web Proxy



### Proxy connection to enterprise managed servers

- Jump from server to server using the hyperlink icon
- Proxy will establish secured Proxy client session on behalf of the Web admin client
- Must have each server defined among each other for easier movement between servers

