Tunneling NFS Over HTTP

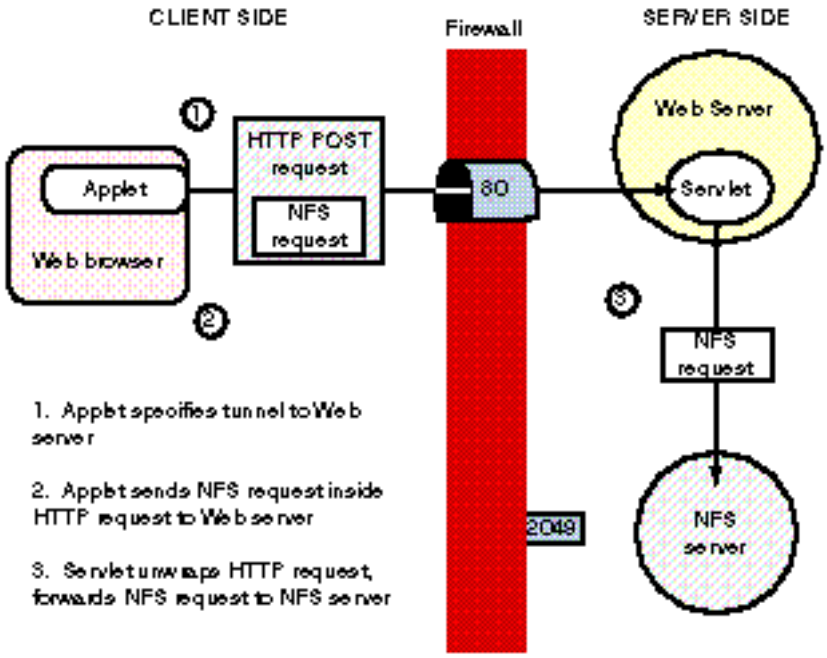
Rao M. Shoaib

rao.shoaib@sun.com

NFS Over HTTP Tunneling

- Problem:
  - WebNFS does not use mount protocol but a large number of sites do not open port 2049 on their firewalls.
- Solution:
  - Enhance WebNFS to Send and Recieve NFS packets over HTTP port 80 which is open.

- Process:
  - A dedicated Servlet or CGI script is run on the Webserver within the firewall.
  - WebNFS bundles all NFS requests in an HTTP request and sends them to the servlet.
  - Servlet forwards requests to the NFS server.
  - Reply from the NFS server is encapsulated in an HTTP response and is sent back to WebNFS.
  - WebNFS unwraps the HTTP response and gets the NFS response.


CLIENT SIDE
Firewall
SERVER SIDE
Web Server
HTTP POST request
NFS request
Applet
Web browser
80
Servlet
NFS request
NFS server
2049
1. Applet specifies tunnel to Web server
2. Applet sends NFS request inside HTTP request to Web server
3. Servlet unwraps HTTP request, forwards NFS request to NFS server

- Usage:
  - This access method can be used by stand alone programs as well as Java applets.
- Security:
  - In the case of applets, the Java applet security model is followed. Java classes are downloaded from the same server as the applet and only that webserver can be contacted to forward NFS Requests.
  - Servlet provides security by checking user credentials in each request and forwarding only the requests that can be validated.

- The API provides the interface for site specific security implementation.

- Miscellaneous
  - Servlet keeps a pool of connections to NFS servers and reuses them to avoid connection setup overhead.
  - Servlet and WebNFS have a predefined protocol that they use to pass information and error codes. In the case of certain errors WebNFS may retry.

- Code Example

```
xf = new Xfile("nfs://foo.eng/export/file1");

com.sun.nfs.XFileExtensionAccessor xfea =
            (com.sun.nfs.XFileExtensionAccessor)
                                    xf.getExtensionAccessor();

//  create the tunnel

fea.setHttpTunnelURL("http://acme.com/servlet.html");
```

Now any attempt to access the remote file will go through the tunnel.