Report of the work project
Develop a reverse proxy server with CERN authorization

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Objective of the project

Develop a reverse proxy server based on Nginx webserver and Shibboleth to authorization CERN users.

The project could be divided into two major objectives:
- Configure reverse proxy server using Nginx.
- Integrate Shibboleth for secured authentication by the CERN SSO (single sign on).

1. Configure reverse proxy server using Nginx

The server should be running on a Linux machine. For that I needed to study and get familiar with:
- Linux environment
- Linux Network tools

What's more, it needed to use a specific webserver - Nginx and its special capabilities. For this I familiarized myself with:
- What is Nginx and how it works
- How to compile Nginx from source code with additional other modules
- How to configure and use Nginx
- How to create reverse proxy server based on Nginx
- What is SSL and how to generate a self-signed certificate
- How to configure and redirect HTTPS requests with Nginx

For developing and testing three virtual machines were used. On first machine developed HTTPS proxy server (master server). On other two machines developed HTTPS servers that returns HTML page for testing (slave1 and slave2). Proxy processes and transmits request to one of two machines and display the corresponding test page (User => Master => Proxy1 or Proxy2 based on header).
2. Integrate Shibboleth for secured authentication by the CERN SSO (single sign on)

Shibboleth integration with Nginx using third party Nginx module (nginx-http-shibboleth module). This part of the work was split into:
- Understand what is Shibboleth and how it works
- How to configure Shibboleth for CERN's SSO.
- nginx-http-shibboleth module and its functionality
- Integrating nginx-http-Shibboleth with CERN's SSO
- Learning about supervisor
- Learning about local and web sockets

Summery

I successfully configured a https capable reverse proxy using CERN's SSO authentication. For that purpose, I used the Linux environments, Nginx webserver, Shibboleth, a Shibboleth third party module and the CERN SSO. Using this solution now users will transparently be redirected to a webpage they request, putting all the authentication configuration on easily manageable and replicable reverse proxy servers, while the main webservers are freed from configuration burdens, thus allowing them to run more complex configurations.