Report on File Download via Squid Proxy Server:

Setting up Squid proxy server using VitualBox(Ubuntu 23.04)

I'd like to note upfront that this report will describe the process of downloading a file using the `curl` command through a Squid proxy server with the IP address 192.168.59.101 and port 3128, which is hosted on a VirtualBox virtual machine.

For this example, let's assume that we intend to download a 100MB file from the web server http://speedtest.tele2.net/100MB.zip.

Step 1: Preparation. To begin, I configured a virtual machine within VirtualBox with with a properly installed and configured operating system (Ubuntu 23.04 version). Additionally, I set up a Squid proxy server to facilitate the proxying of HTTP requests.

Step 2: Modifying the Squid Configuration File. To enable continued downloading even in the event of a network interruption, I made changes to the Squid configuration file (`squid.conf`). I added the parameter `offline_mode on`, which allows the server to continue servicing requests even if the client temporarily loses network connectivity. The `offline_mode on` option in Squid proxy server's configuration is used to enable a feature that allows the proxy server to continue servicing requests and providing cached content even when the client's network connection is temporarily lost or disrupted. This means that if a client (in our case a local machine) requests content that has been previously cached by Squid and the client loses internet connectivity, Squid will still try to serve the requested content from its cache. When offline_mode is turned on, Squid will prioritize serving cached content over trying to retrieve the content from the origin server. This can be useful in scenarios where clients are in an environment with unstable or intermittent internet connectivity, allowing them to continue accessing previously cached resources without interruption. Here's a summary of what offline_mode does:

- Continued Service: Even if a client's network connection is temporarily disrupted, Squid will still try to serve cached content to the client.
- Improved User Experience: Users won't experience service interruption for previously cached resources even when they are offline.
- Reduced Bandwidth Usage: Squid serves cached content from its local storage instead of fetching it from the origin server, reducing the need for external bandwidth.
- Enhanced Availability: The proxy can act as a local cache for users, especially in scenarios with limited or unreliable internet connectivity.

Step 3: Starting the Squid Proxy Server. After modifying the configuration, I restarted the Squid proxy server to apply the changes: ```` ```sudo service squid restart ``` ````

Step 4: File Download via Squid. The process of downloading the 100MB file was initiated using the `curl` command. Here's the command that was used:

```` ```curl --verbose --proxy 192.168.59.101:3128 -O http://speedtest.tele2.net/100MB.zip ``` ````
````

This command sent a download request for the file through the Squid proxy server with the IP address 192.168.59.101 and port 3128. In response, the server began downloading the file from the specified URL.

```
C:\Windows\System32>curl --verbose --proxy 192.168.59.101:3128 -O http://speedtest.tele2.net/100MB.zip
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
  0     0    0     0    0     0      0      0 --:--:-- --:--:-- --:--:--     0*   Trying 192.168.59.101:3128...
* Connected to 192.168.59.101 (192.168.59.101) port 3128 (#0)
> GET http://speedtest.tele2.net/100MB.zip HTTP/1.1
> Host: speedtest.tele2.net
> User-Agent: curl/8.0.1
> Accept: */*
> Proxy-Connection: Keep-Alive
>
< HTTP/1.1 200 OK
< Server: nginx
< Date: Thu, 24 Aug 2023 15:11:35 GMT
< Content-Type: application/zip
< Content-Length: 104857600
< Last-Modified: Fri, 18 Mar 2022 15:14:58 GMT
< ETag: "6234a1f2-6400000"
< Accept-Ranges: bytes
< Age: 500
< X-Cache: HIT from eugenemdk-VirtualBox
< X-Cache-Lookup: HIT from eugenemdk-VirtualBox:3128
< Via: 1.1 eugenemdk-VirtualBox (squid/5.2)
< Connection: keep-alive
<
{ [102008 bytes data]
100  100M  100  100M    0     0  13.8M      0  0:00:07  0:00:07 --:--:-- 13.8M
* Connection #0 to host 192.168.59.101 left intact
```

Step 5: Analyzing the Squid Access Log. After the file was downloaded, I reviewed the Squid access logs to confirm that the download occurred in offline mode. Within the log, there was an entry with the status code `TCP_OFFLINE_HIT`, indicating that Squid successfully provided the cached file even during offline mode.

```
1692890403.112    7207 192.168.59.1 TCP_OFFLINE_HIT/200 104857992 GET http://spee
dtest.tele2.net/100MB.zip - HIER_NONE/- application/zip
```

Conclusion: The setup and execution of file download through the Squid proxy server using the `curl` command effectively demonstrated the offline mode functionality. Even in the case of a network disruption, Squid continued servicing requests and offering cached data, ensuring uninterrupted file downloading. This functionality can be valuable for enhancing reliability and improving user experience when downloading large files.