Dynamic DNS Service with Port Redirection

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ABSTRACT—The dynamic DNS service with port redirection technology will direct the connection to its own dynamic DNS server, and then determine the IP address and port that the user wants to connect to, and direct the connection to the correct address. The external users will not be aware of the use or if there have been any changes in behavior.

I - Introduction

DNS is a service on the Internet that can correspond to the Domain Name and IP address, helping users to easily access the Internet without having to remember the IP address.

Each host is assigned an IP address when it is connected to the Internet to transmit data, but this IP address will be dynamic in most cases. When the host leaves the Internet and reconnects, your ISP will randomly assign a different IP address. In this case, the Domain Name and the dynamic IP address cannot correspond to each other, so dynamic DNS technology is using to solve this problem.

The dynamic DNS service can point the Domain Name to a host that may change the IP address frequently. When the host finds that its IP address has changed, it sends a request to the dynamic DNS server to inform the dynamic DNS server of its newly acquired IP address. The dynamic DNS server instantly updates the IP corresponding to the host's Domain Name to other DNS servers. When the user wants to connect to the host, the host's IP address is obtained through DNS all over the world. Finally, the external user can connect to the host of the dynamic IP address user through the Domain Name.

II - Background

In order to prevent personal or small business users from providing services such as WEB and FTP, many ISPs use the method of blocking these external ports, such as blocking the port 80 dedicated to HTTP, so that users cannot set up their own websites on their home network. Therefore, users can only provide web services by using other ports, but this will cause a lot of inconvenience to the people who want to browse this webpage. People must specify a specific port in their browser to use web services.

The dynamic DNS service only converts the Domain Name to an IP address, which cannot solve the situation that the common port is blocked by the ISP. Therefore, we need a new dynamic DNS mechanism to solve such problems.

When the common external port is not available, we use dynamic DNS service with port redirection technology to allow the HTTP service server to direct the external user's connection to the correct port through the Port Redirect dynamic DNS server.

III - how dynamic dns service with port redirection works

Unlike the traditional dynamic DNS server, the port redirect dynamic DNS server allows the HTTP server to specify the IP address and port to be translated. The external user can use the port redirect dynamic DNS server to convert the connection from the Domain Name to the IP address and port specified by the HTTP server.

For example, the HTTP server provides a service port of 10000, and specify http://DomainName to http://SelfIP:10000 to the port redirect dynamic DNS server. When the people wants to connect with the HTTP server, the IP address who obtained from DNS will be the IP address of the port redirect dynamic DNS server. Then the port redirect dynamic DNS server will redirect this connection to the IP address registered by the HTTP server. Allowing people to successfully connect to the services provided by the HTTP server.

During the above process, the people who need to access the HTTP server does not need to make any settings or behavior changes, port redirect dynamic DNS server will automatically guide and transfer, so that the HTTP server can be accessed when the common port is blocked by the ISP. This is illustrated in Fig.1.

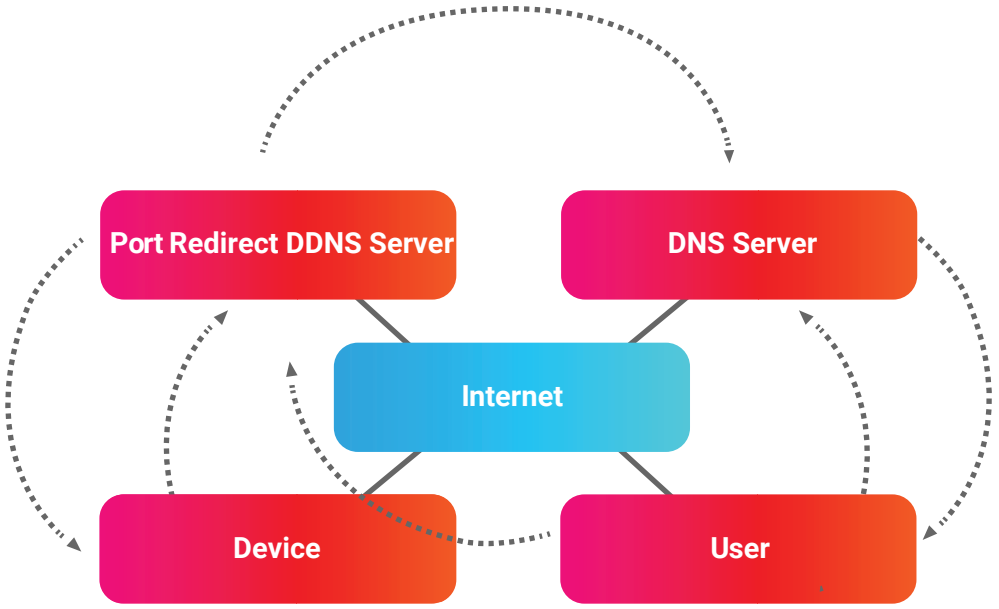

Fig.1. Dynamic DNS Service with Port Redirection Workflow

1. Users set mesh network settings include mesh-ID, channel and 1. Device update its IP, internal port and external port to port redirect dynamic DNS server.

2. Port redirect dynamic DNS server will sync DNS records with worldwide DNS server.

3. People query the Domain Name of device. The DNS server response the IP address of port redirect dynamic DNS server.

4. People connect to port redirect dynamic DNS server.

5. Port redirect dynamic DNS server redirect the connection to the device.

IE and decrypt these information to establish a temporary connection with mesh router.

5. The mesh router produces a candidate list of nodes through the scanning result and WDS temporary connection. APP or GUI gets the list, and user applies the wanted nodes from the list.

6. The mesh router would send authentication information to candidate nodes through temporary connections.

7. The new or un-configured devices get authentication information to establish a formal connection with Mesh router and set itself be configured.

IV - Conclusion

By dynamic DNS service with port redirection technology, the HTTP service server can provide services smoothly through the Port Redirect dynamic DNS server even if some ports are blocked by the ISP.

People can enter their Domain Name on the Internet to direct the HTTP service server via the Port Redirect dynamic DNS server.

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