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1. Search for the following details:
   - What is your ISP?

     Our Internet Service Provider is Philippine Long Distance Telephone Company (PLDT).

   - What is the ASN of your ISP?

     AS9299

   - What is the Public IP Address provided by your ISP?

     The common IP address for PLDT routers is 192.168.1.1

   - List down the school/university here in the Philippines that have their own ASN.
     a) Ateneo de Davao University
     b) De La Salle – College of Saint Benilde
     c) De La Salle – Zobel
     d) De La Salle – Greenhills
     e) De La Salle University
     f) De La Salle - Lipa
     g) University of the Philippines Diliman
     h) University of the Philippines Los Banos
     i) University of the Philippines Manila
     j) University of the Philippines Visayas
     k) University of the Philippines Baguio
     l) Ateneo De Manila University
     m) Miriam College
     n) Enderun Colleges Inc.
     o) Xavier School
2. What are the advantages of NAT?

   Here are some of the advantages of Network Address Translation

   a) Reusing of IP Addresses.
   b) Improving the security of private networks by having internal addressing private from the external network.
   c) use fewer public (external) IP addresses to connect a large number of hosts to the Internet, hence saving IP address space.
3. What are the types of NAT?
   a) Source NAT – translates only the source IP addresses of packets and is utilized in a scenario where intranet users use the Internet. Depending on the classification, the source NAT is categorized into:

Type	Description	Application Scenario
NAT No-PAT	NAT No-PAT translates only IP addresses but not port numbers. It implements one-to-one translation between private and public IP addresses.	NAT No-PAT applies to scenarios where there are a small number of Internet access users and the number of public IP addresses is the same as the number of concurrent Internet access users.
NAPT (PAT)	NAPT translates both IP addresses and port numbers to allow multiple private IP addresses to be translated into one or multiple public IP addresses. NAPT uses an address pool with multiple public IP addresses into which private IP addresses can be translated.	NAPT applies to scenarios where a limited number of public IP addresses are available but a large number of intranet users require access to the Internet.
Easy IP	Easy IP is a special type of NAPT and uses the public IP address of the outbound interface as the post-NAT IP address.	Easy IP applies to scenarios where only one public IPv4 address is available or the public IPv4 address of the outbound interface is required for Internet access.

b) Destination NAT – translates only the destination IP addresses and the destination port numbers of packets. This also goes the same for the situations where Internet users are recommended to access Intranet services. When a packet that is delivered from an Internet user for using Intranet services approaches a NAT device, the said device translates the public IPv4 address into a private IPv4 address. In doing this, the Internet user is now permitted to use Intranet services.

Destination NAT are classified into the following:

Type	Description	Application Scenario
Static destination NAT	Static destination NAT translates the destination IP addresses of packets, and there are fixed mappings between the pre-NAT and post-NAT IP addresses.	For security reasons, Internet users are generally not granted proactive access to an intranet. In certain scenarios, however, it is expected that internet users are allowed to access the intranet. For example, an enterprise intends to provide intranet resources for its customers or employees on business trips. In this case, static destination NAT can be used.
Dynamic destination NAT	Dynamic destination NAT dynamically translates the destination IP addresses of packets, and there are no fixed mappings between the pre-NAT and post-NAT IP addresses.	Although static destination NAT satisfies the needs of most destination address translation scenarios, dynamic destination NAT is needed in scenarios that require post-NAT IP addresses not to be fixed. For example, when destination NAT is required to allow mobile terminals to access wireless networks, dynamic destination NAT can be used.
NAT Server	NAT Server is a special type of static destination NAT. It translates the destination public IP addresses of packets sent to intranet servers into the mapping private IP addresses.	In some scenarios such as schools or enterprises, certain servers are deployed to provide services for Internet users. However, these servers are usually configured with private IP addresses, which are inaccessible to Internet users. In this case, NAT Server can be used to translate private IP addresses of the servers into public IP addresses to allow access from Internet users.

c) Bidirectional NAT – In this type of NAT,
d) NAT types defined in STUN
   o Full-cone NAT
   o The same private IP address and port are used to map all requests to the same public IP address and port. Additionally, by sending packets to the mapped public IP address and port, any host on the Internet can communicate with the host on the Intranet.
   o Restricted-cone NAT
   The same private IP address are mapped to the same public IP address and port for all queries. If the host on the Intranet has already sent a packet to the host on the internet, then the said host can now send packets to the host on the Intranet.
   o Port-restricted cone NAT
   Together with the restricted-cone NAT, port-restricted cone NAT adds port numbers to the restriction. If the host on the Intranet has already sent a packet to the host on the Internet only then may the internet send packets to a host on the internet.

- o Symmetric NAT
  The same IP address and port are assigned to all requests that are sent from the same private IP address and port to a particular destination IP address and port. A separate NAT mapping is utilized when a host delivers a packet with the same source IP address and port number to a different destination.

4. What is a NAT overload?
   - NAT Overload or also called as Port Address Translation (PAT) is a particular form of a dynamic NAT that enables many-to-one mapping of local addresses to a fewer number of global addresses coming from a pool of global addresses. The said addresses may contain only a single address.

5. Discuss the following:
   - Inside Local - a host that lives physically on the Inside Network that can be viewed from the perspective of the Inside Network.
   - Inside Global – a host that lives physically on the Inside Network that can be viewed from the perspective of the Outside Network.
   - Outside Local – as stated in the name, it is a host that exists on the Outside Network that can be viewed from the perspective of the Inside Network.
   - Outside Global – as stated in the name, it is a host that exists on the Outside Network that can be viewed from the perspective of of the Outside Network.
   - IP NAT translation – this command is used to verify the operation of NAT by assuring whether NAT is doing its purpose by mapping private IPv4 addresses to public IPv4 addresses.
   - IP NAT statistics – will show the specific NAT Statistics and translation that have occurred for the configured NAT mapping.

Reference/s:

- *What is Network Address Translation*. (n.d.). Huawei Info-Finder. Retrieved January 30, 2023, from https://info.support.huawei.com/info-finder/encyclopedia/en/NAT.html

- Harmoush, E. (2021, September 21). Cisco NAT Terminology. Practical Networking .Net. https://www.practicalnetworking.net/stand-alone/cisco-nat-terminology/