Commonly Used Network Services
Learning Activity

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1. Learning Activity Instructions

1.1. Overview

For this learning activity, you will perform research to identify the function, port number, and common transport protocol assigned to services commonly used on networks and the Internet. Additionally, you will review the DoD Category Assurance List and identify the assurance category for External Network to DoD Gateway (inbound), which is column 01.

Once you have completed this exercise, you should return to the DCWF CDA course to answer some questions about selected protocols. The completed exercise will serve as a reference for you to answer the questions posed within the Ports, Protocols, and Services (PPS) lesson.

1.2. Example:

Terminal Access Control System:

- Description: *authentication protocol used for remote communication with any server within a Unix environment*
- Port: *port 49*
- Transport Protocol: *TCP and UDP*
- Assurance Category for Zone 1: *red (banned) for zone 1 connections*

2. Learning Activity Resources

2.1. Informational Websites

The following websites are excellent resources to assist with this activity.

2.1.1. The Internet Assigned Numbers Authority (IANA):
IANA is responsible for assigning port numbers and transport protocols to internet services; they are also responsible for maintaining the Service Name and Transport Protocol Port Number registry.
Link to the registry is: https://www.iana.org/assignments/service-names-port-numbers/service-names-port-numbers.xhtml

2.1.2.The Internet Engineering Task Force (IETF):
The IETF makes and maintains the agreed standards that are used by the Internet. Standards are associated with a Request For Comment (RFC), which details the services used by computing systems.
Link for the RFC is: https://www.rfc-editor.org/

2.1.3.Techopedia:
Techopedia is an online resource for information technology trends and supplemental knowledge; they provide an online dictionary of terms, which provides technical definition as well as helpful descriptions.
Link to the Technology Dictionary is: https://www.techopedia.com/dictionary

2.1.4.DoD Ports, Protocols, and Services Management:
The DoD PPSM site provides guidance for configuration of approved communications protocols for DoD information systems; the Category Assurance List (CAL) documents assurances for specified ports, protocols, and services.
Link to the DoD CAL is: https://cyber.mil/ppsm/cal/ (CAC Required)

3. Network Services Activity

Fill in the information for each of the services and protocols listed below. Note that to keep similar network functions together, they are grouped and categorized as follows:

- Communication Services
- Secure Communications
- File Transfer
- Web Services
- Directory Services
- Network Management
- Network Time

3.1. Communication Services

Communication services enable data exchange between individuals or organizations.

3.1.1. Electronic Mail (E-mail)

Electronic mail (e-mail) is described as a means or system for transmitting messages electronically between systems.

3.1.1.1. Simple Mail Transport Protocol (SMTP):

- Description:
- Port:
- Transport Protocol:
- Assurance Category for Zone 1:

3.1.1.2. Post Office Protocol 3 (POP3):

- Description:
- Port:
- Transport Protocol:
- Assurance Category for Zone 1:

3.1.1.3. Internet Message Access Protocol 4 (IMAP4):

- Description:
- Port:
- Transport Protocol:
- Assurance Category for Zone 1:

3.1.2. Internet Relay Chat (IRC)

IRC is known as a text-based chat system for messaging within discussion forums known as channels.

3.1.2.1. IRC protocol:

- Description:
- Port:

- Transport Protocol:
- Assurance Category for Zone 1:

3.1.3. Remote Procedure Call (RPC)

RPC allows inter-process communication, enabling process-to-process application communication between remote computers.

3.1.3.1. Distributed Computing Environment (DCE) Endpoint Resolution:

- Description:
- Port:
- Transport Protocol:
- Assurance Category for Zone 1:

3.1.3.2. Sun RPC:

- Description:
- Port:
- Transport Protocol:
- Assurance Category for Zone 1:

3.1.4. Telecommunications Network (Telnet)

Telnet is defined as a telecommunications protocol that provides specifications for emulating a remote computer terminal so that one can access a distant computer and function online using an interface that appears to be part of the user's local system.

3.1.4.1. Telnet protocol:

- Description:
- Port:
- Transport Protocol:
- Assurance Category for Zone 1:

3.2. Secure Communications

Provides security services for application-specific communication channels.

3.2.1. Secure Shell (SSH)

Secure shell (SSH) enables two remotely connected users to remotely connected users to perform network communication and other services on top of an unsecured network.

3.2.1.1. SSH Protocol:

- Description:
- Port:
- Transport Protocol:
- Assurance Category for Zone 1:

3.2.2. Kerberos

Kerberos is used to authenticate client/server applications securely using encrypted tickets

3.2.2.1. Kerberos Protocol:

- Description:
- Port:
- Transport Protocol:
- Assurance Category for Zone 1:

3.3. File Transfer

File transfer refers to the exchange of data files across computer systems.

3.3.1. File Transfer Protocol (FTP)

File transfer protocol is a client/server protocol that is used for transferring files to or from a host computer.

3.3.1.1. FTP:

- Description:
- Port:
- Transport Protocol:
- Assurance Category for Zone 1:

3.3.1.2. FTP Secure (FTPS):

- Description:
- Port:
- Transport Protocol:
- Assurance Category for Zone 1:

3.3.1.3. Trivial FTP (TFTP):

- Description:
- Port:
- Transport Protocol:
- Assurance Category for Zone 1:

3.4. Web Services

3.4.1. Hypertext Transfer Protocol (HTTP)

Hypertext transfer protocol is the means of communication between web users and the servers that house the actual website.

3.4.1.1. Hypertext Transfer Protocol:

- Description:
- Port:
- Transport Protocol:
- Assurance Category for Zone 1:

3.4.1.2. Hypertext Transfer Protocol Secure (HTTPS):

- Description:
- Port:
- Transport Protocol:
- Assurance Category for Zone 1:

3.4.1.3. HTTPS/3

- Description:
- Port:
- Transport Protocol:
- Assurance Category for Zone 1:

3.5. Directory Services

A directory service is a set of software that keeps track of information about your company, customers, or both. Network resource names are mapped to network addresses by directory services.

3.5.1. Domain Name System (DNS):

Domain Name System (DNS) is a database of domain information which is used to translate hostnames to IP address. This can be seen when performing an nslookup query for www.google.com and obtaining the associated IP address of 172.217.18.4. Due to high volume traffic, it is normal for websites like Google to have more than one IP address associated with their hostname.

3.5.1.1. DNS:

- Description:
- Port:
- Transport Protocol:
- Assurance Category for Zone 1:

3.5.2. Lightweight Directory Access Protocol (LDAP):

Industry standard protocol for accessing and maintaining directory information services within an IP based network.

3.5.2.1. LDAP:

- Description:
- Port:

- Transport Protocol:
- Assurance Category for Zone 1:

3.5.3. Network Basic Input/Output System (NetBIOS):

Service that enables applications on separate computers to communicate over a local area network.

3.5.3.1. NetBIOS Name Service:

- Description:
- Port:
- Transport Protocol:
- Assurance Category for Zone 1:

3.5.3.2. NetBIOS Datagram Service:

- Description:
- Port:
- Transport Protocol:
- Assurance Category for Zone 1:

3.5.3.3. NetBIOS Session Service:

- Description:
- Port:
- Transport Protocol:
- Assurance Category for Zone 1:

3.5.4. Microsoft Directory Services:

Microsoft directory services directly correlate to Microsoft Active Directory. The associated port for MS Directory Services is also assigned and used for the Server Message Block (SMB) protocol that runs over TCP/IP.

3.5.4.1. Microsoft Directory Services:

- Description:
- Port:
- Transport Protocol:
- Assurance Category for Zone 1:

3.5.4.2. SMB:

- Description:
- Port:
- Transport Protocol:
- Assurance Category for Zone 1:

3.6. Network Management Services

Network management services aid in the analysis, diagnosis, and maintenance of network health and identify connectivity concerns.

3.6.1. Simple Network Management Protocol

Internet standard protocol used for collecting and organizing information about managed devices on an IP network.

3.6.1.1. SNMP:

- Description:
- Port:
- Transport Protocol:
- Assurance Category for Zone 1:

3.7. Network Time

Time synchronization is critical to network services running properly. Timing is a consistent metric that is used across all devices, and within data packets that are being transmitted.

3.7.1. Timing Protocols:

3.7.1.1. Precision Time Protocol (PTP):

- Description:
- Port:
- Transport Protocol:
- Assurance Category for Zone 1:

3.7.1.2. Network Time Protocol (NTP):

- Description:
- Port:
- Transport Protocol:
- Assurance Category for Zone 1:

4. Completion

Once you have finished compiling the information in this document, return to the lesson to answer a few questions.