Networking Protocol Numbers

Overview:

As part of your assigned readings and material covered in your class lecture you have learned that computer systems and networking equipment utilizes numbers (typically in binary) and not names for the determination and reference of many things. Items such as host names, protocol names, and services (HTTP, DNS, etc) are converted by the computers and networking devices to IP addresses, protocol numbers, and ports. For this assignment you are going to perform research utilizing the methods provided below to gather more information on protocol numbers. You will also research the type and code of ICMP messages. The most common type being ICMP Echo and Echo response messages which are the underlying datagrams produced by the ping utility. Lastly you will also research port numbers utilized by common Internet applications.

Resources:

* Required
  + Internet access
* Optional
  + ITT Tech Virtual Library

Internet Research Requirements:

Use the Internet to find various sources for information on protocol numbers and types. Additionally, find background information the assignment of protocol numbers.

Deliverables

* Answer the questions in the following section.
* Turn in your responses to your instructor.
* Provide a listing of sources you used for your responses.

Questions:

1. What organization has been given the responsibility for assigning protocol numbers?
2. Determine the protocol numbers for the protocol names:

|  |  |
| --- | --- |
| **Protocol** | **Number** |
| IPv4 |  |
| IPv6 |  |
| TCP |  |
| UDP |  |
| ICMP |  |
| VRRP |  |
| IPSEC ESP |  |
| L2TP |  |
| OSPF |  |
| EIGRP |  |

1. Determine the correct ICMP type based on the description provided:

|  |  |  |
| --- | --- | --- |
| **ICMP Message Description** | **Type** | **Code\*** |
| Echo |  |  |
| Echo Reply |  |  |
| Time Exceeded |  |  |
| Port Unreachable |  |  |
| Fragmentation Needed |  |  |

\* If applicable

1. What are the valid ranges of protocol numbers?
2. What protocol number(s) is/are specified for experimentation and testing?
3. What organization has been given the responsibility for assigning port numbers, sometimes referred to as “Well Known Ports or Registered Ports”?
4. Determine the protocol numbers for the protocol names:

|  |  |
| --- | --- |
| **Port** | **Application / Protocol** |
| TCP -23 |  |
| TCP -443 |  |
| UDP -53 |  |
| UDP -123 |  |
| TCP -110 |  |
| TCP -25 |  |
| TCP -80 |  |
| UDP -88 |  |
| TCP -22 |  |
| UDP -161 |  |

1. What numeric range is commonly referred to as the “well-known ports”?
2. What numeric port range is commonly used by clients in a client -> server communication session?
3. What do you believe would be the result of installing and configuring a web server to “listen” on ports other than 80 and 443?

List your sources for the answers provided: