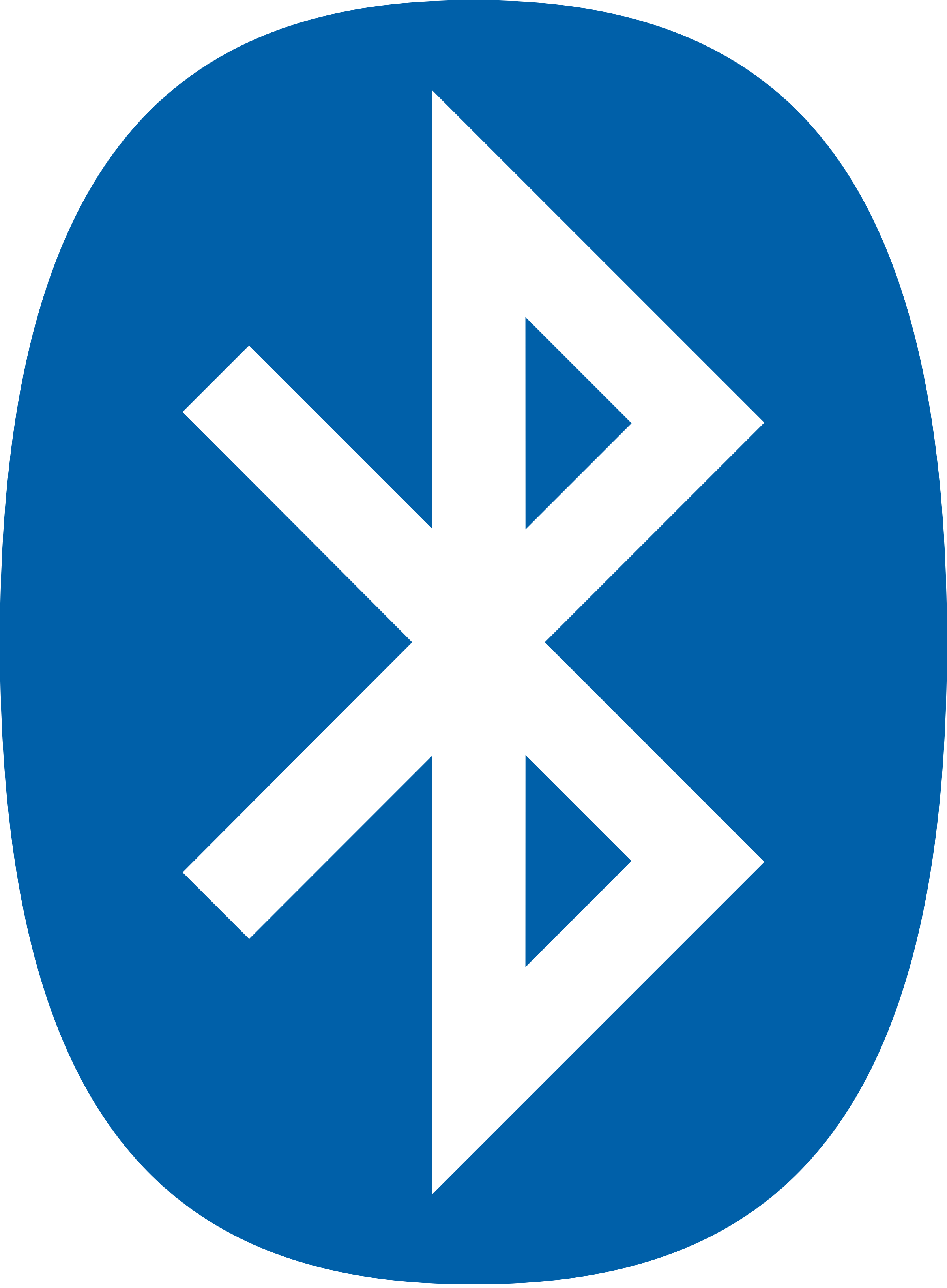


A+



| IEEE  Standard | Operating  Frequency | Typical Data Rate | Maximum  Data Rate | Indoor Range | Outdoor Range |
| --- | --- | --- | --- | --- | --- |
| 802.11b | 2.4 Ghz | 6.5 Mbps | 11 Mbps | 35 Meters | 100 Meters |
| 802.11a | 5 Ghz | 25 Mbps | 54 Mbps | 35 Meters | 125 Meters |
| 802.11g | 2.4 Ghz | 25 Mbps | 54 Mbps | 25 Meters | 75 Meters |
| 802.11n | 2.4 Ghz or 5 Ghz | 200 Mbps | 540 Mbps | 50 Meters | 125 Meters |
| 802.11ac | 5 Ghz | 2.5 Gbps | 6.9 Gbps | 50 Meters | 125 Meters |

Wifi Standards



Bluetooth Classes

| Device Class | Transmit Power | Intended Range |
| --- | --- | --- |
| Class 1 | 100 mW | 100 Meters (328 feet) |
| Class 2 | 2.5 mW | 10 Meters (33 feet) |
| Class 3 | 1 mW | Less than 10 Meters |



Cable Categories

| Type | Speed | Common Use |
| --- | --- | --- |
| CAT1 | 1 Mbps | Phone lines |
| CAT2 | 4 Mbps | Token ring networks |
| CAT3 | 16 Mbps | Ethernet networks |
| CAT4 | 20 Mbps | Token ring networks |
| CAT5 | 100 Mbps | Ethernet networks |
| CAT5e | 1 Gbps | Ethernet networks |
| CAT6 | 10 Gbps | Ethernet networks |
| CAT7 | 10 Gbps | Ethernet networks  (fully shielded cable) |



|  |  |  |
| --- | --- | --- |
| Service | Port | Description |
| Apple filing protocol (AFP) | TCP 548 or 427 | Formerly called AppleTalk Protocol; file services macOS |
| Common Internet file system | TCP 445 | A version of Server Message Block (SMB) |
| Domain Name System | UDP 53 | Used by DNS clients to perform DNS queries against clients |
| Dynamic Host Configuration Protocol | TCP/UDP 67/68 | Used for assigning IP addresses to clients |
| File Transfer Protocol (FTP) | TCP 20/21 | Transfers file between an FTP client and FTP server |
| Hypertext Transfer Protocol (HTTP) | TCP 80 | Web page transmission to the web browser |
| HTTP over Secure Sockets Layer/Transport Layer Security | TCP 443 | Secure transmission of web pages |
| Internet Message Access Protocol (IMAP4) | TCP 143 | Retrieves e-mail; advanced features beyond POP3, such as folder synchronization |
| Lightweight Directory Access Protocol (LDAP) | TCP 389 | A standard method of accessing a network database; often used for authenticating user accounts during a user logon |
| Post Office Protocol Version 3 (POP3) | TCP 110 | Retrieves e-mail from a POP3 mail server |

Well known Ports



|  |  |  |
| --- | --- | --- |
| Service | Port | Description |
| Remote Desktop Protocol (RDP) | TCP 3389 | Used remotely access a Windows desktop |
| Secure File Transfer Protocol | TCP 22 | Uses an SSH-encrypted terminal emulation that replaces telnet |
| Secure Shell (SSH) | TCP 22 | Secure (encrypted) terminal emulation that replaces Telnet |
| Server Message block | TCP 445 or TCP 137 -139 | Windows file and print sharing service |
| Service Location Protocol (SLP) | TCP/UDP 427 | A LAN service discovery protocol used by older versions of macOS, NetWare, and some LAN–enabled printers |
| Simple Mail Transfer Protocol (SMPT) | TCP 25 | Sending e-mail |
| Simple Network Management Protocol (SNMP) | UDP 161/162 | Queries network devices for status and statistics |
| Telnet | TCP 23 | Terminal emulation; all data sent in clear text |
| Trivial File Transfer Protocol | UDP 69 | Differs from FTP in that there is no option for authentication |
|  |  |  |

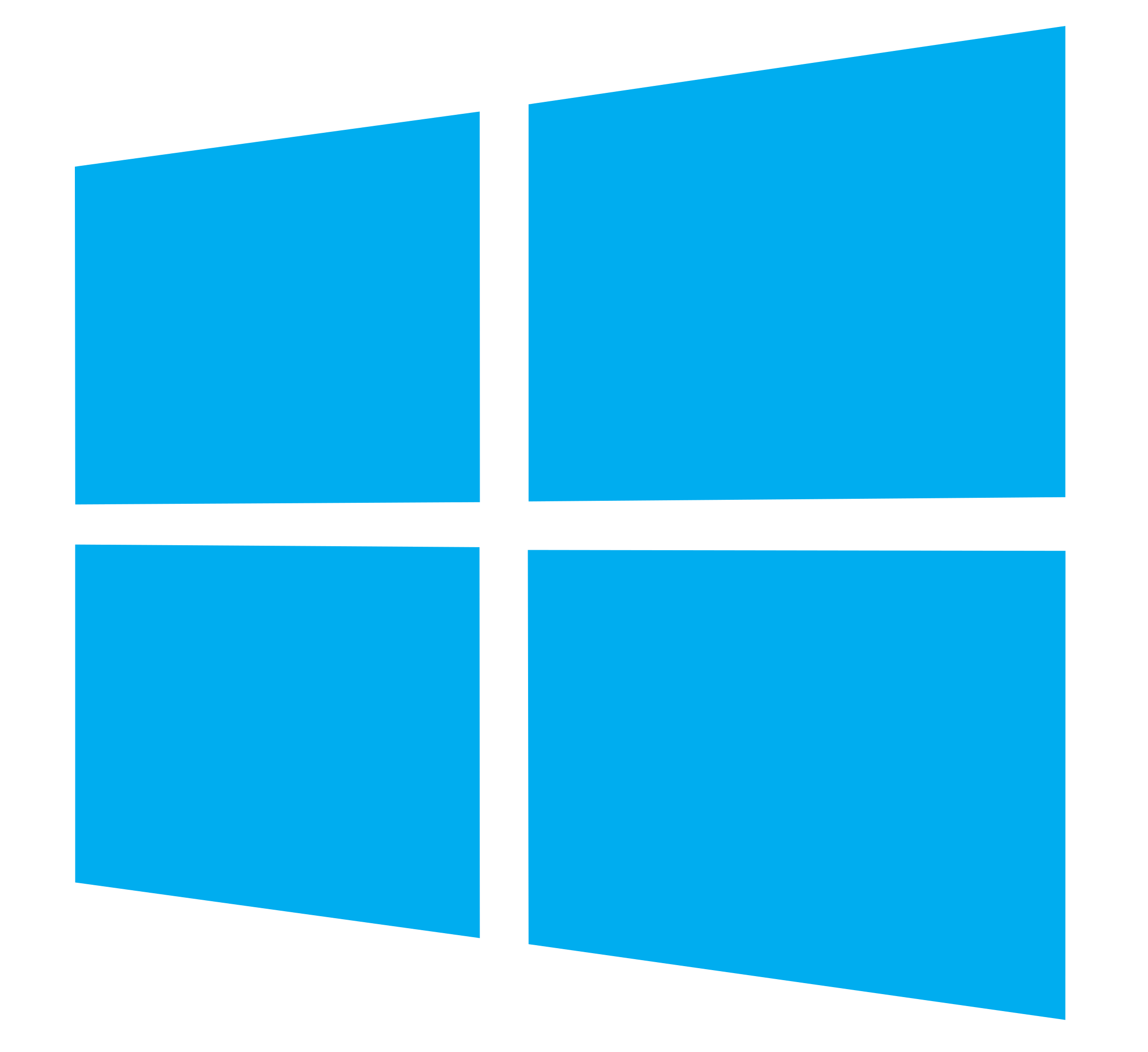


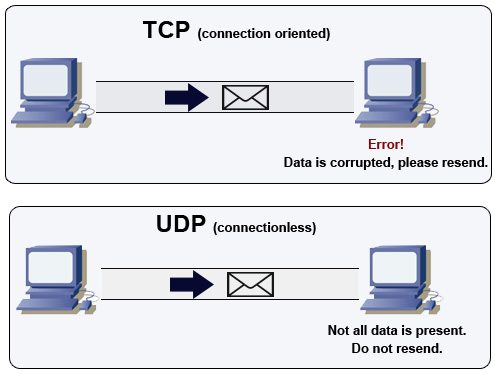
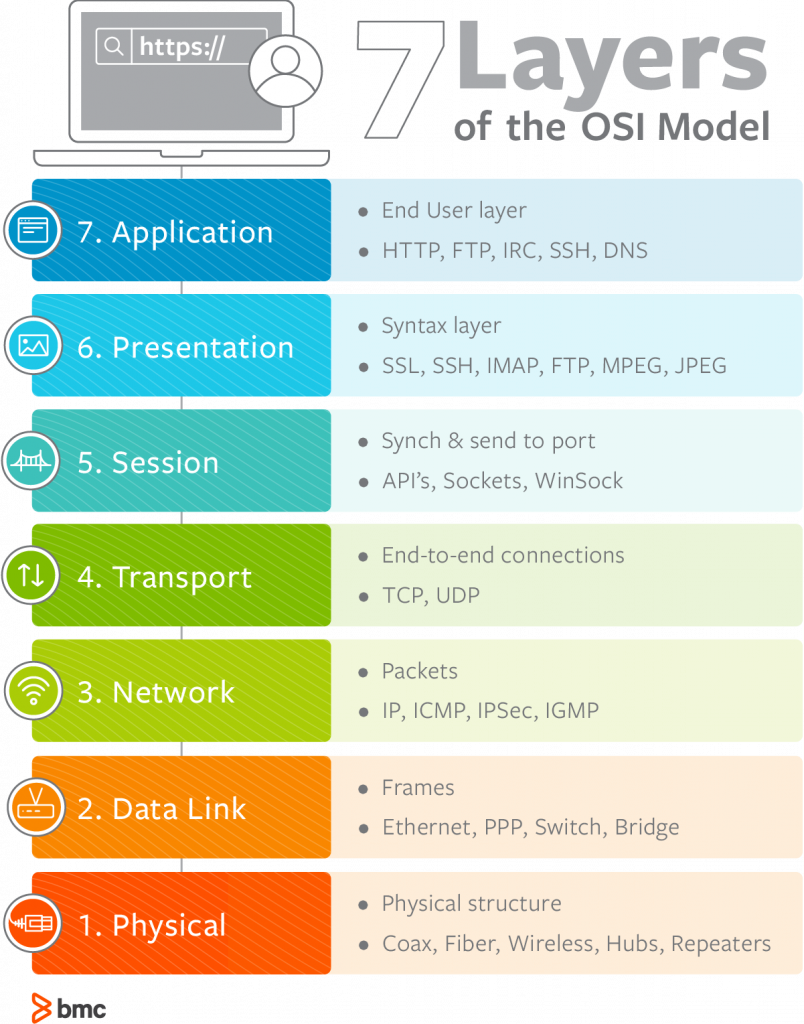
Linux Commands

|  |  |
| --- | --- |
| Command | Use |
| ls | Lists files |
| grep | Search plain-text data sets |
| cd | Changes Directory |
| shutdown | Shutdown PC |
| pwd | Print the current directory |
| passwd | Used to change password of current user |
| mv | Move files |
| cp | Copy files |
| rm | Removes files |
| chmod | Change the access permissions |
| chown | Change the owner of file systems |
| ifconfig | Shows all connected interfaces |
| iwconfig | Shows wireless connections |
| mkdir | Makes a new directory |
| ps | Show current running processes |
| su | Change current user |
| sudo | Execute commands which need admin rights |
| apt-get | Install applications |
| vi | Graphical text editor |
| dd | Copy and convert files |
| kill | Used to stop or kill a process |
| nano | Text editor |
| cat | Shows the text inside a file |

|  |  |
| --- | --- |
| Command | Use |
| - dir | List the content of one or more directory |
| - cd | Change directories |
| - .. | Go up one level in the directory tree |
| • ipconfig | View network adapter settings and values |
| • ping | Test and send information to another network computer or network adapter |
| • tracert | View network packets route across a network |
| • netstat | Display the TCP/IP network protocol statistics and information |
| • nslookup | Look up an IP address of a domain or host on a network |
| • shutdown | Shutdown the computer |
| • dism | Deployment Image Servicing and Management |
| • sfc | System file checker to scan and restore your files |
| • chkdsk | Check the hard drive running FAT for errors |
| • diskpart | Manage PC drives, partitions, volumes or virtual HDDs |
| • taskkill | Kill a task (end a program) |
| • gpupdate | Update group policy |
| • gpresult | Display the group policy objects that are applied to a user and computer |
| • format | Formats a drive |
| • copy | Copy one or more files to a different location |
| • xcopy | Copy multiple files, directories, or drives from one location to another |
| • robocopy | A robust file copy command |
| • net use | Connect to, remove and configure connections to mapped drives or resources |
| • net user | Add, remove or make changes to the user accounts |
| [Command]/? | Get help of what the command does |

Windows Commands





TCP vs UDP

And OSI layer