

Assignment 1: Port Number and Uses of the Tools and Technologies

Tool	Purpose	Default Port(s)	Common Use Cases
SSH (Secure Shell)	Secure remote login and file transfer	22	Server management, secure file transfers (SFTP).
TELNET (Terminal Network)	Legacy remote access (unencrypted)	23	Remote terminal emulation of both computers and devices
FTP (File Transfer Protocol)	File transfer protocol	20, 21 (Port 21 is referred to as a controlled port, while port 20 is the data port. Port 21 builds a connection with the server, as port 21 automatically opens to transfer the file data.)	transferring files from client to server. Uploading/downloading files (replaced by SFTP/FTPS).
TOMCAT (Apache Tomcat)	Java application server	Default port 8080	It is used widely for hosting Java-based applications on the web. It is built on Java technologies and implements the Java Servlet and JavaServer Pages (JSP) specifications.
HTTPD (Apache) (Hypertext Transfer Protocol Daemon)	Web server for static/dynamic content	HTTP: 80, HTTPS: 443	Plays the role of server in a client-server model using HTTP and/or HTTPS network protocols. Hosting websites, reverse proxying, REST APIs.
NGINX (Engine X)	High-performance web server and proxy	Default ports 80, 443	Web server that also acts as an email proxy, reverse proxy, and load balancer. Web hosting, load balancing, caching.
NODEJS (Node JavaScript Runtime)	JavaScript runtime for backend apps	Defaults to port 3000. Port 3000 is widely adopted as the default port for development environments, especially for web servers.	Port 3000 is widely adopted as the default port for development environments, especially for web servers. Real-time apps, APIs, microservices.
APACHE (Apache HTTP Server)	General-purpose web server	80, 443	Hosting static/dynamic websites.
POSTFIX (Postfix Mail Transfer Agent)	Mail transfer agent	Port 25: Standard SMTP port for server-to-server email relay (often blocked for high spam use) Port 587: Default secure port for email submission (recommended) Port 465: Legacy SMTPS port (use only if required) Port 2525: Alternative port when others are blocked	Sending and receiving emails. Postfix is a hugely-popular Mail Transfer Agent (MTA) designed to determine routes and send emails.
NAGIOS	System and network monitoring	Nagios XI will send requests to nodes on port 161 and receive results and traps on 162. SSH, port 22 Nagios is built to run natively on supported Linux distributions. Web UI on 80/443	an Open Source system and network monitoring application. It watches hosts and services that you specify, alerting you when things go bad and when they get better. Nagios Core was originally designed to run under Linux, Monitoring servers, apps, and services.
GIT (Global Information Tracker)	Version control system	git:// Default Port 9418	Collaborative development, source code management.
JENKINS	CI/CD automation	Port 8080 allows you to access Jenkins through your web browser at the URL http://localhost:8080/	Jenkins is a free, open-source automation tool that's used for continuous integration and continuous delivery (CI/CD). Automate builds, tests, deployments.
MAVEN	Build automation for Java projects	Maven, as a build automation tool, does not have a default port because it doesn't act as a service that listens for incoming network connections	Maven is a build automation and project management tool primarily used in Java development. Its key uses are Dependency management, Build Automation, Project management, Multi-Module Support, CI/CD Integration, Plugins, Standardization, building Java applications.
SONARQube	Code quality and security analysis	Web UI on 9000	SonarQube is a code quality and security tool used to identify issues, enforce coding standards, and reduce technical debt. It integrates with CI/CD pipelines and version control systems, supports multiple languages, and provides detailed reports and dashboards for better collaboration and codebase management. Ensuring code reliability, security, and maintainability.
NEXUS	Repository manager for build artifacts	Web UI on 8081	Nexus is a repository manager for storing, managing, and distributing software artifacts. It supports multiple formats (Maven, npm, Docker), resolves dependencies, caches remote repositories, hosts private repositories, and integrates with CI/CD pipelines. It enhances build efficiency, ensures artifact versioning, and provides secure access control.
DOCKER	Containerization platform	Docker API (2375/2376)	Managing dependencies and build artifacts.
KUBERNETES	Container orchestration	Kubernetes uses multiple ports for different components. Here are the key ports: API Server: Default Port: 6443 (HTTPS for secure communication with the Kubernetes API). Kubelet: Default Port: 10250 (for communication between the API server and the kubelet). Controller Manager: Default Port: 10257 (for HTTPS communication with the controller manager). Scheduler: Default Port: 10259 (for HTTPS communication with the scheduler). Etcd: Default Ports: 2379 (client communication) and 2380 (peer communication between etcd nodes). NodePort Services: Default Range: 30000–32767 (used to expose services outside the cluster). Each port serves a specific purpose in the Kubernetes architecture and can be configured based on your environment.	Packaging and running apps in isolated environments.
ANSIBLE	Configuration management and automation	Ansible itself does not have a specific port number because it is an agentless configuration management tool. It uses SSH (port 22) by default to communicate with remote systems, or WinRM (ports 5985 for HTTP and 5986 for HTTPS) when managing Windows hosts.	Automating server setups, deployments, and orchestration.
CHEF	Infrastructure automation	443	Automating system configurations.
PUPPET	Configuration management and automation	8140	Infrastructure as code for managing servers.
PUTTY	SSH/Telnet client for Windows	PutTY itself does not have a fixed port number, as it is a terminal emulator used to connect to remote systems via protocols like SSH, Telnet, and Rlogin. The port number depends on the protocol being used. SSH (default): 22 Telnet (default): 23 Rlogin (default): 513	PutTTY is a popular SSH and telnet client for Windows that allows secure remote access to servers and network devices. It supports encrypted connections (SSH), file transfers (SFTP, SCP), and can be used for remote administration, troubleshooting, and accessing cloud or server environments.
DNS (Domain Name System)	Domain name resolution	53	Resolving domain names to IP addresses.
DHCP (Dynamic Host Configuration Protocol)	Dynamic IP address allocation	67, 68	Automatically configuring network devices.
SMTP (Simple Mail Transfer Protocol)	Sending emails	25, 465, 587	Email relaying between mail servers.
SNMP (Simple Network Management Protocol)	Network monitoring and management	161, 162	Device and service monitoring.
PROXY (Proxy Server)	Intermediary server for requests	HTTP Proxy: 8080 or 3128 HTTPS Proxy: 443 or 8443 SOCKS Proxy: 1080	A proxy server acts as a middleman to enhance privacy, security, and performance. It hides IP addresses, filters content, caches resources, balances traffic, and bypasses restrictions.
NFS (Network File System)	File sharing on UNIX/Linux systems	2049	Sharing directories over a network.
SAMBA	File sharing between Linux/Windows	139, 445	Sharing files/printers across OS platforms.
MYSQL (My Structured Query Language)	Relational database	3306	Web apps, backend databases.
POSTGRESQL (Post Ingres Structured Query Language)	Advanced relational database	5432	Scalable applications requiring complex queries.
MONGODB (Mongo Database)	NoSQL database for unstructured data	27017	Big data, content management systems.
SAP (Systems, Applications, and Products)	Enterprise resource planning software	SAP uses multiple ports depending on the specific service or application. Common SAP port numbers include: SAP GUI (Client): 3200 SAP Dispatcher (SAP NetWeaver): <Instance Number>00 (e.g., 8000 for instance 00) SAP Gateway: 33XX (e.g., 3300 for instance 00) SAP HANA: 30015 (default port for HANA database) Ports can be customized based on configuration.	SAP (Systems, Applications, and Products) is an enterprise resource planning (ERP) system used to integrate business processes across various departments. It facilitates real-time data processing, financial management, supply chain management, human resources, and more. SAP helps organizations streamline operations, improve efficiency, and make data-driven decisions. Managing business processes (finance, HR, logistics).
STMS (SAP Transport Management System)	Transport management in SAP landscapes	The default port used by the SAP Transport Management System (STMS) is typically <Instance Number>00 for the SAP Dispatcher (e.g., 3600 for instance 00). The specific port can vary based on the SAP system configuration, but generally, the port format is <Instance Number>00 for the SAP instance.	Moving transport requests between SAP systems.