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# Manage Jenkins – Components Explained

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## 1. Configure System

- **Global configuration for Jenkins**
- Set environment-wide variables, paths, URLs
- Integrate tools like JDK, Maven, Git, Docker, etc.
- Set Jenkins root URL, email server, quiet period

 Example:

Set `JAVA_HOME`, `MAVEN_HOME`, Git path, Docker host path

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## 2. Global Tool Configuration

- Define tools that jobs can use:
  - JDK installations
  - Maven, Gradle, Ant
  - Git, Docker
  - NodeJS, Python

 Example:

Add Maven 3.8.7 so jobs can use it in pipelines or freestyle projects



## 3. Manage Plugins

- **Install, update, or remove Jenkins plugins**
- Explore available plugins via Update Center
- Plugin types: UI enhancements, SCM, Notifiers, Build tools



Tabs:

- **Updates** – see plugins with updates
  - **Available** – discover and install new plugins
  - **Installed** – view/remove current ones
  - **Advanced** – install manually via `.hpi`
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## 4. Manage Users

- View, create, or delete users
- Change passwords or assign permissions

Note: Only visible if Jenkins is configured with an internal user database

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## 5. Configure Global Security

- Set authentication and authorization:
  - Matrix-based security (RBAC)
  - Project-based Matrix Authorization

- Logged-in users only
- Enable/disable:
  - CSRF protection
  - CLI access
  - Remember Me
  - Agent-to-master security

 Integrate with:

- LDAP
- GitHub OAuth
- SAML
- Active Directory



## 6. Credentials

- Central location to **store and manage secrets** securely
- Types:
  - Username/Password
  - Secret Text
  - SSH Keys
  - AWS Credentials
- Scoped globally, per folder, or per job

 Tip: Use **Credential Binding Plugin** to inject secrets into builds



## 7. Manage Nodes and Clouds

- Manage Jenkins master and agents (nodes)
- Configure:
  - Number of executors
  - Labels (tags for job assignment)
  - Remote FS root
- Connect static/dynamic agents (via SSH, JNLP, Docker, etc.)

Add EC2, Kubernetes, or Docker-based auto-scaling agents

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## 8. Configure Clouds

- Part of **Manage Nodes and Clouds** (for dynamic provisioning)
- Use plugins to connect to:
  - Amazon EC2
  - Kubernetes
  - Azure VM
  - Docker Swarm



## 9. Reload Configuration from Disk

- Re-load Jenkins config from `JENKINS_HOME`

- Useful if configs were modified manually (e.g., job XML files)

 Warning: Doesn't restart Jenkins but re-parses configs

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## 10. Restart Jenkins Safely

- Option to restart Jenkins after current builds complete
- CLI or URL based:  
`http://<jenkins_url>/safeRestart`

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## 11. Manage Old Data / Disk Usage

- Clean up unnecessary job builds, artifacts
- View disk space usage by jobs, plugins, etc.
- Useful for freeing up space in large Jenkins setups

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## 12. System Information

- Shows **environment variables**, **JVM settings**, system properties
- OS, Jenkins version, memory usage, CPU info, etc.

 Debug tool when diagnosing system-related issues

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## 13. System Log

- View logs from the Jenkins instance

- Searchable log console
  - Create custom log recorders (e.g., logs for a specific plugin)
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## 14. Load Statistics

- Graphical charts showing:
    - Queue length
    - Executor usage
    - Build trends
  - Helps analyze Jenkins performance over time
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## 15. About Jenkins

- Shows Jenkins version, build date, license, and component info
  - Helpful for upgrades or plugin compatibility
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## 16. Test Configuration

- Used by some plugins to verify connection (e.g., SMTP, GitHub, Docker)
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## 17. Prepare for Shutdown

- Prevents new builds from being scheduled

- Current builds complete normally
  - Jenkins goes into a "quiet" state
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## 18. Script Console

- Powerful Groovy-based scripting tool to:
  - Modify jobs
  - Change config
  - Access Jenkins internals

 Example:

```
Jenkins.instance.getAllItems().each { println it.name }
```

 Admin access required. Use with caution!

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## Summary Table

Section	Purpose
Configure System	Global config
Global Tool Config	JDK, Maven, Git
Plugins	Install/manage plugins
Security	User/RBAC setup
Credentials	Store secrets
Nodes	Add/manage agents
System Info	View environment
Logs	Jenkins logs

Disk Usage	Monitor space
Restart	Safe reboot
Script Console	Groovy scripting

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