DevOps

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Post Graduate Program in DevOps

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CI/CD Pipeline with Jenkins

Jenkins Plugin

Learning Objectives

By the end of this lesson, you will be able to:

⦿ Outline the need for Jenkins plugins

⦿ Install and uninstall a Jenkins plugin

⦿ Manage an installed Jenkins plugin

⦿ Update a Jenkins plugin

⦿ Discuss how to configure a Jenkins plugin website

Jenkins Plugin

Introduction to Jenkins Plugin

There is a huge possibility to extend the capabilities of Jenkins.

Is an open-source automation server

Is a free Continuous Integration server

Jenkins

Introduction to Jenkins Plugin

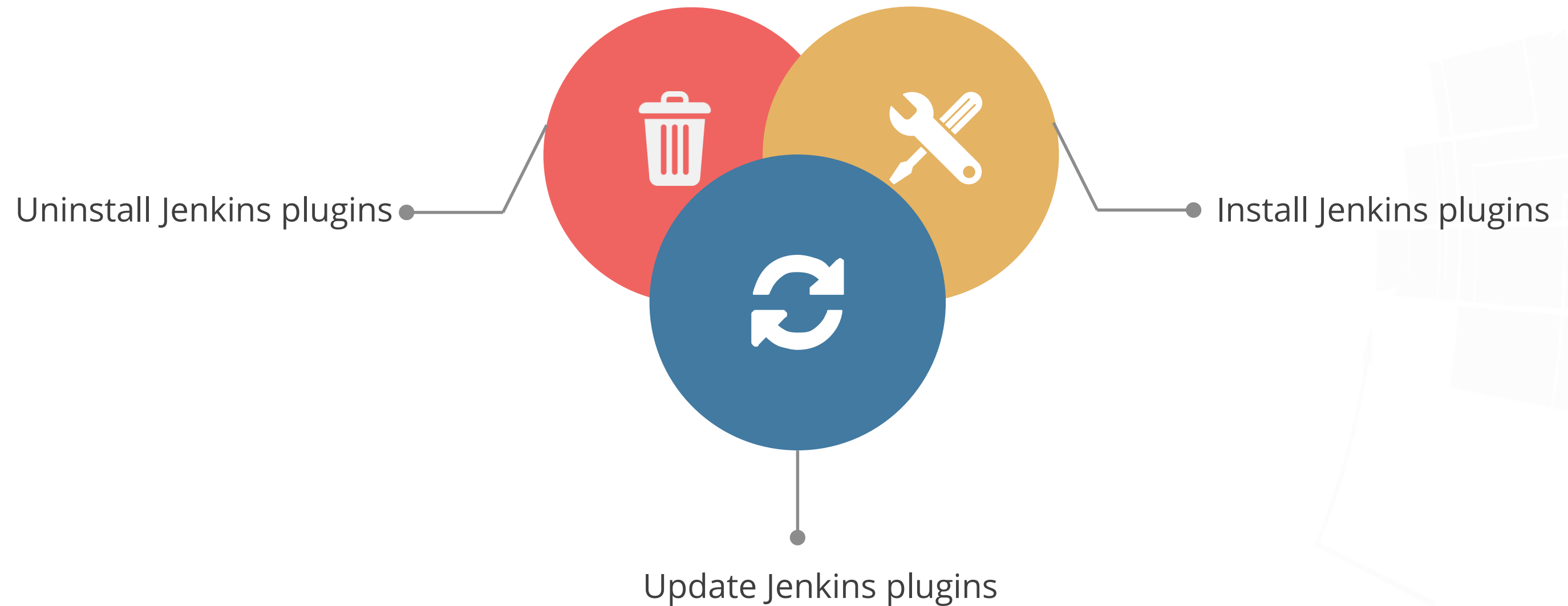There are more than 1700 plugins available as open-source.

Plugins can be easily integrated within the existing Jenkins installation.

Plugins enhance the functionality of the Jenkins environment to suit organization-specific or user-specific needs.
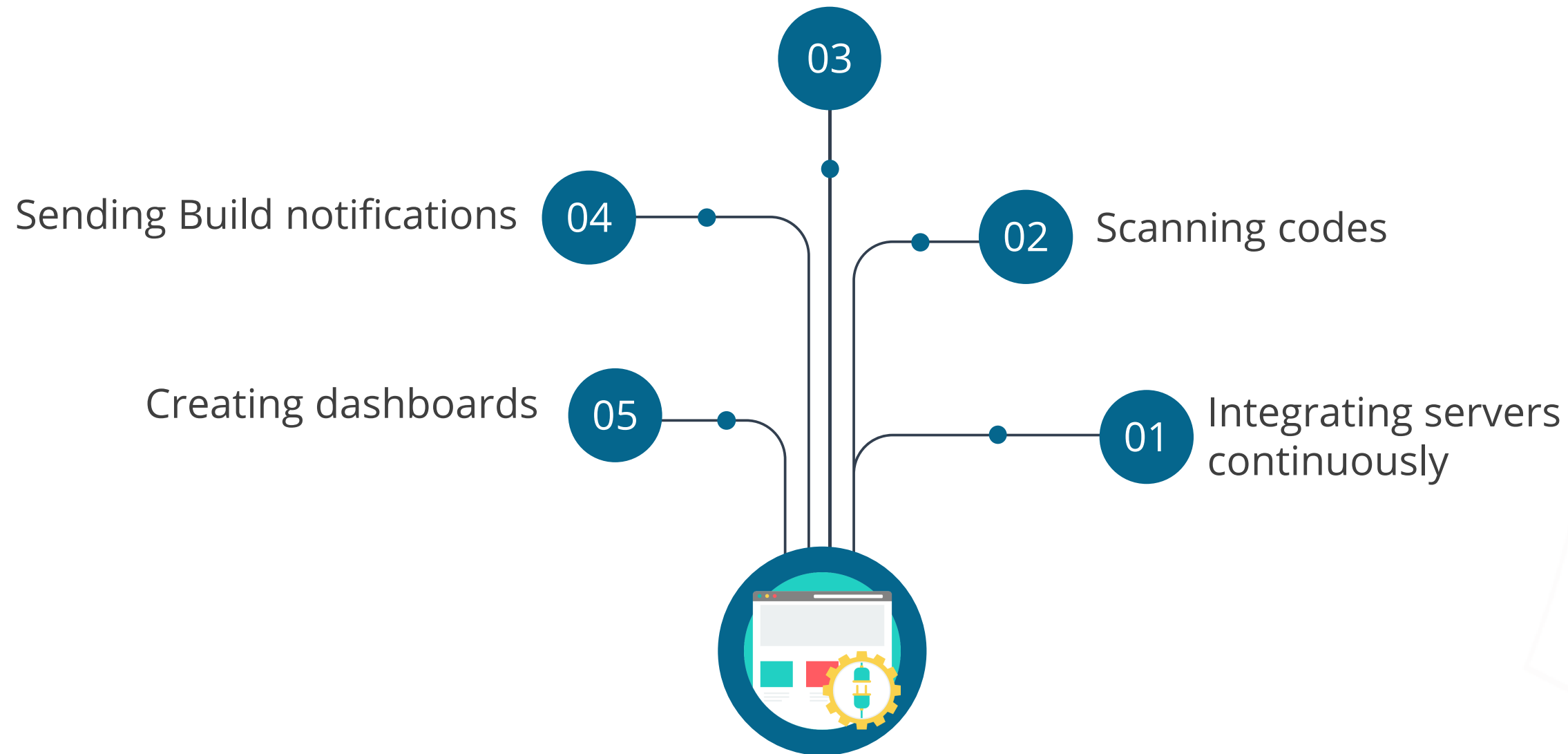
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Introduction to Jenkins Plugin

Jenkins provides a plugin manager, which enables the user to:

Uninstall Jenkins plugins

Install Jenkins plugins

Update Jenkins plugins

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Introduction to Jenkins Plugin

Plugins, once installed, provide support for:

Performing automated deploys

03

Sending Build notifications **04**

02 Scanning codes

Creating dashboards **05**

01 Integrating servers continuously

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Jenkins Plugin Category

The list below mentions some of the categories of Jenkins plugins:

- 1 Productivity
- 2 Performance
- 3 Pipeline
- 4 Monitoring and Alerting
- 5 Source Control Management
- 6 Test Analysis
- 7 Scaling

Plugin Category
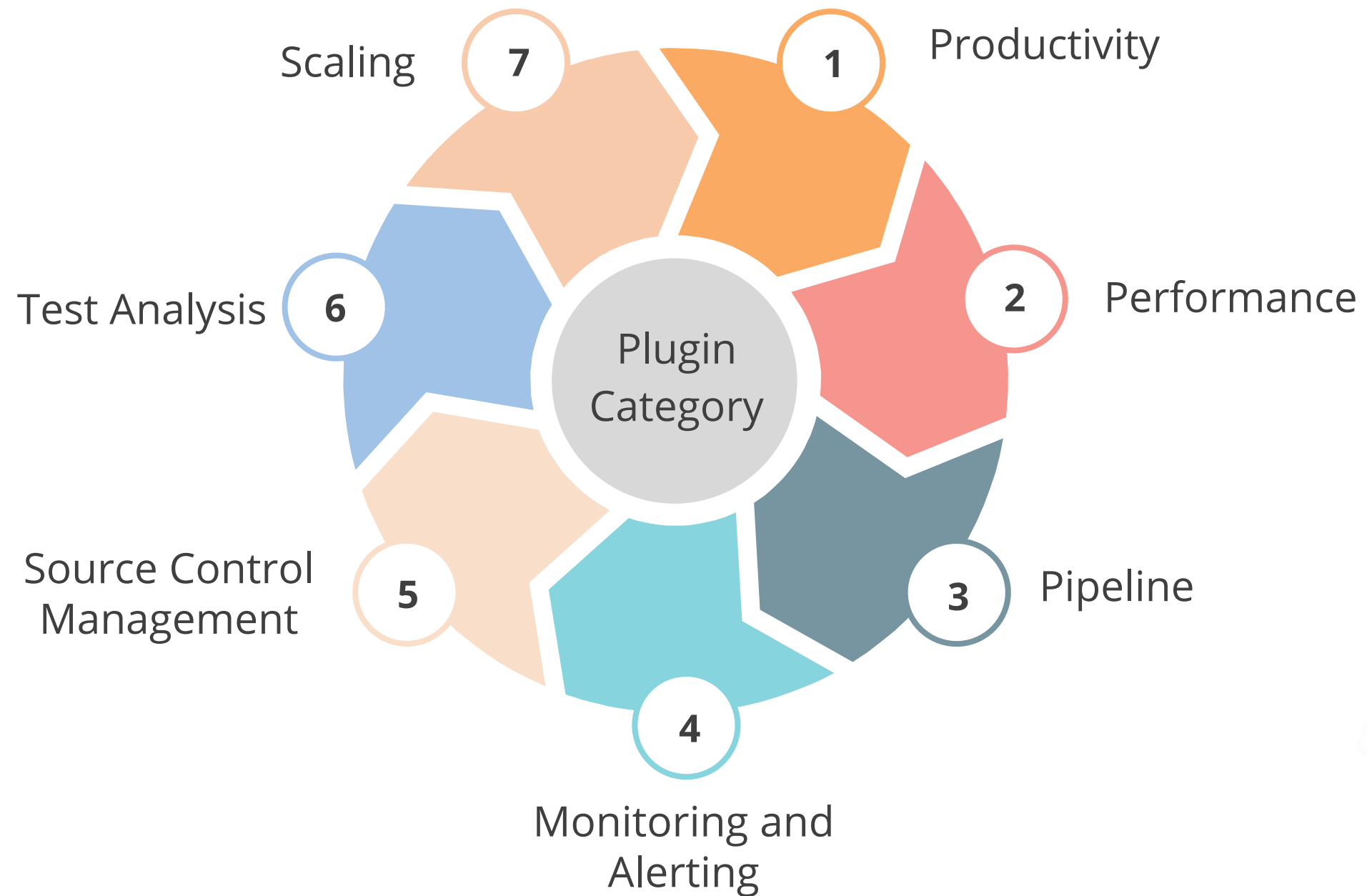
Jenkins Productivity Plugins

Some of the popular Jenkins Productivity Plugins are:

Dashboard View Plugin

- Helps create customized dashboards within the Jenkins CI server

View Job Filters Plugin

- Provides a wide range of filters that can be used to filter jobs as per desired criteria

Jenkins Productivity Plugins

Folder Plugin

- Helps organize Jenkins jobs and group them inside a specific folder

JIRA Plugin

- Helps integrate Jenkins and Atlassian JIRA software

Note

The folder names allowed by the Folder Plugin are either the project name or the name of an environment.

Jenkins Performance Plugins

Some of the popular Jenkins Performance Plugins are:

Performance Plugin

Helps configure performance reports after executing test suites such as Junit, Selenium, and JMeter

Performance Publisher Plugin

Publishes the performance trends in terms of execution time and performance

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Jenkins Pipeline Plugins

Some of the popular Jenkins Pipeline Plugins are:

Job DSL Plugin

- Helps create and manage multiple jobs without manually creating in Jenkins
- Defines jobs using Groovy

Build Pipeline Plugin

- Provides a view of all upstream and downstream jobs
- Helps execute a series of Jenkins jobs without any manual intervention

Pipeline Plugin

- Develops a Jenkins file-based Pipeline to implement CI and CD

Jenkins Monitoring and Alerting Plugins

Some of the popular Jenkins Monitoring and Alerting Plugins are:

Monitoring Plugin

- Uses JavaMelody, an open-source monitoring tool for Java and Java EE
- Monitors errors, HTTP sessions, garbage collector, and heap memory

Disk Usage Plugin

- Shows disk usage being used by different Jenkins projects

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Jenkins Monitoring and Alerting Plugins

Mailer Plugin

- Helps send job results as email notifications
- Gets configured in post-Build action

Metrics Plugin

- Performs standard health checks and gathers standard metrics on Jenkins

Jenkins SCM Plugins

Some of the popular Jenkins Source Control Management (SCM) plugins are:

Git Plugin

Is used to configure Git version control system within Jenkins configuration

GitHub Plugin

Helps configure GitHub version control system within Jenkins configuration

Bitbucket Plugin

Helps configure Bitbucket version control system within Jenkins configuration

Subversion Plugin

Is used to configure Subversion version control system within Jenkins configuration

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Jenkins Test Analysis Plugins

Some of the popular Jenkins Test Analysis Plugins are:

Test Results Analyzer

- Removes the overhead of finding out test results for every individual build

Junit Plugin

- Helps integrate Junit test cases execution within a Jenkins job

HTML Publisher Plugin

- Publishes HTML and XML reports created post-Junit test case executions

Manage Jenkins Plugin

Plugins help enhance the functionalities of the Jenkins application to suit user-specific requirements.

1 Jenkins plugins are available as open-source and can be easily integrated.

2 Jenkins admin can install, update, or uninstall Jenkins plugins.

3 Jenkins plugins can be downloaded here: https://plugins.jenkins.io.

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Update Plugins

While working with Jenkins plugins, there may be frequent updates and upgrades from the publishers of plugins.

| Updates are important as they contain important bug fixes, security patches, and fixes. | Updates must be installed frequently in order to keep Jenkins secure and stable. | Jenkins must be restarted upon installation to activate these new plugins. |

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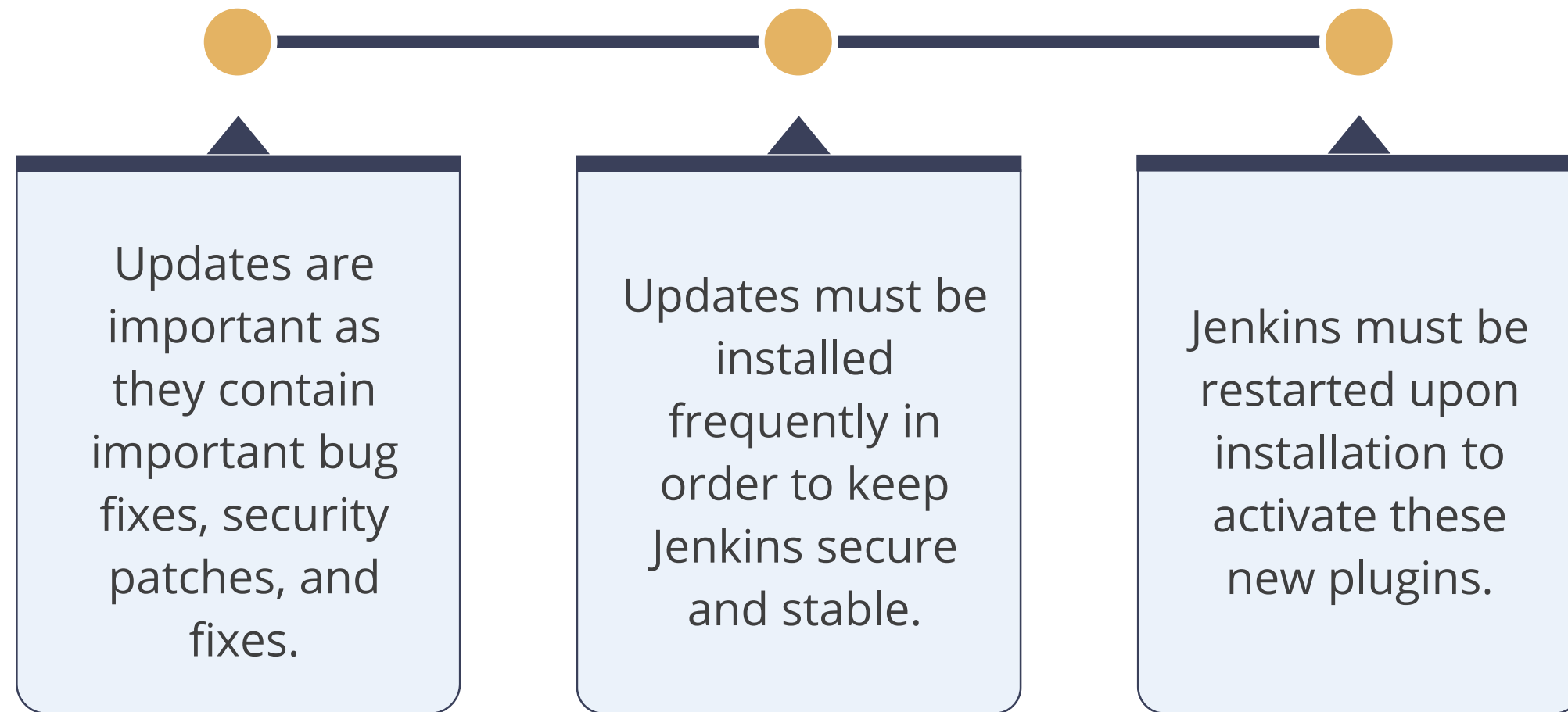
Plugin Update

Shown below is the Jenkins **Updates** tab that lists the plugin update details:

Install a New Plugin

To install a new Jenkins plugin, go to the **Available** tab in the Manage Jenkins page.

The **Available** tab shows all plugins that are available for installation on Jenkins.

The **Available** tab does not display plugins that have already been installed.

The filter option in the **Available** tab can be used to search for a specific plugin.

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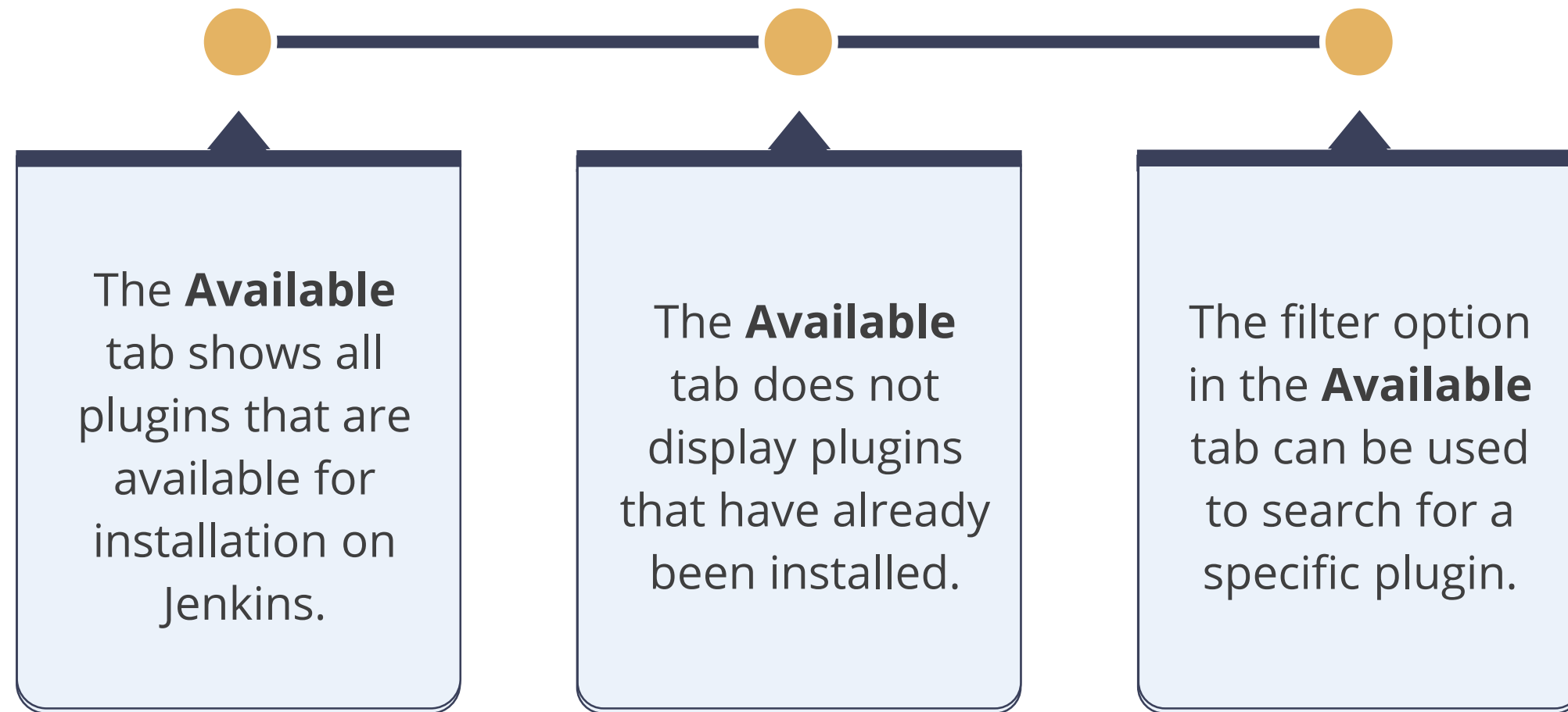
Available Plugin

Shown below is a screenshot of the **Available** tab that displays the details of available plugins.

Manage Installed Plugins

Once a plugin is installed on Jenkins, the **Installed** tab displays the plugin information. Shown below is a screenshot of the Installed tab:

Note

The plugins can be downgraded to an older version or uninstalled.

Custom Jenkins Plugin

Jenkins provides the option to configure proxy settings to connect to the Jenkins site for downloading plugin updates.

Jenkins provides customization to the Jenkins plugin update site URL in Advanced tab.

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Custom Jenkins Plugin

If a plugin is not published on the Jenkins site, admins can download the plugin file and upload in this screen to publish on Jenkins:

Assisted Practice

Problem Statement:

1. Install the Maven integration plugin.

Assisted Practice: Guidelines

Steps to demonstrate how to install Maven integration plugin:

1. Log in to Jenkins CI tool

2. Install Maven Integration plugin

Assisted Practice

Removing any existing Jenkins Plugin   **Duration: 10 min**

Problem Statement:

1. Demonstrate how an existing Jenkins plugin can be removed.

Assisted Practice: Guidelines

Steps to demonstrate how to remove an existing Jenkins plugin:

1. Log in to Jenkins CI tool.

2. Uninstall an existing unused Jenkins plugin.

Key Takeaways

- Plugins can be easily integrated within the existing Jenkins installation.

- Plugins enhance the functionality of the Jenkins environment to suit organization-specific or user-specific needs.

- Plugins provide support for Continuous Integration, scanning code, performing automated deploys, sending Build notifications, and creating dashboards on Jenkins.

- Jenkins provides an option to configure proxy settings for connecting to the Jenkins site to download plugin updates.

Configure Plugin Update Website Configuration

Problem Statement:

Perform the following:

- Configuration of Plugin Update Website

Access: Click on the **Labs** tab on the left side panel of the LMS. Copy or note the username and password that is generated. Click on the **Launch Lab** button. On the page that appears, enter the username and password in the respective fields, and click **Login**.

Thank You