sonarqube integration with jenkins

Prerequisites

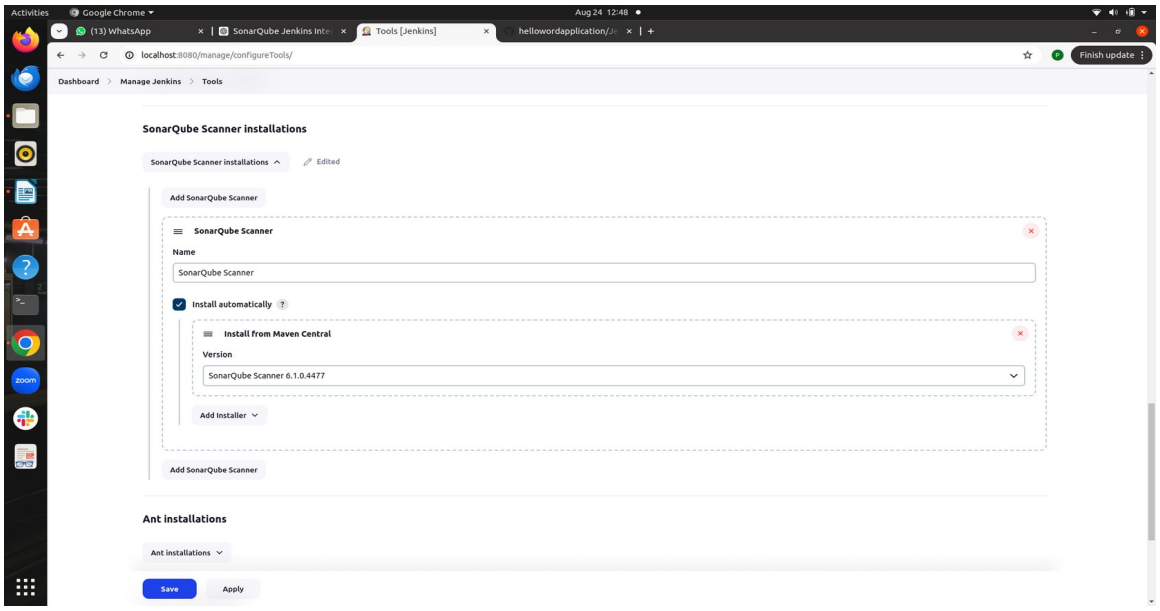
- **SonarQube**: Installed and running. Ensure you have administrative access.
- **Jenkins**: Installed and configured. Ensure you have administrative access.
- **Maven or Gradle**: Depending on your project, have either Maven or Gradle installed and configured in Jenkins.
- **SonarQube Plugin for Jenkins**: Installed in Jenkins.

Step 1: Install SonarQube Scanner on Jenkins

1. **Install the SonarQube Scanner Plugin**:
    - Go to Jenkins Dashboard > Manage Jenkins > Manage Plugins.
    - Search for `SonarQube Scanner` in the Available tab.
    - Install the plugin and restart Jenkins if required.

Configure SonarQube in Jenkins:

- Go to Jenkins Dashboard > Manage Jenkins > Configure System.
- Scroll down to the `SonarQube servers` section.
- Click on `Add SonarQube`.



- Enter the `Name`, `Server URL`, and authentication token.

    - **Name**: A name to identify this SonarQube server.
    - **Server URL**: URL of your SonarQube server (e.g., `http://your-sonarqube-server`).
    - **Authentication Token**: Use the token credential ID `sonar_token` (you can create a secret text credential in Jenkins and use its ID here).
- Click on `Save` to apply the settings.

- Step-by-Step Guide to Create a SonarQube Token

1. **Login to SonarQube**:
    - Open your web browser and navigate to your SonarQube instance (e.g., `http://your-sonarqube-server`).
    - Log in with your SonarQube credentials. You need to have sufficient permissions (typically an administrator or project-level admin) to create a token.
2. **Access Your User Account Settings**:
    - After logging in, click on your user profile avatar or your username in the top-right corner of the SonarQube dashboard.
    - From the dropdown menu, select **My Account**.
3. **Navigate to Security**:
    - In the **My Account** section, click on the **Security** tab on the left sidebar.
4. **Generate a New Token**:
    - Under the **Generate Tokens** section, you will see an option to create a new token.
    - Provide a name for your token (e.g., `Jenkins Integration Token`). This name is just a label for you to recognize the token later.
    - Click the **Generate** button.
5. **Copy the Token**:
    - Once the token is generated, it will be displayed on the screen. **Copy the token immediately** as it will only be shown once.

- Store this token securely, as you'll need it to configure the SonarQube integration with Jenkins.

6. **Use the Token in Jenkins**:
    - Go to your Jenkins dashboard.
    - Navigate to **Manage Jenkins** > **Manage Credentials**.
    - Add a new **Secret text** credential where the secret is the SonarQube token you just generated. Assign an ID (e.g., `sonar_token`) that you can reference in your Jenkins pipeline.

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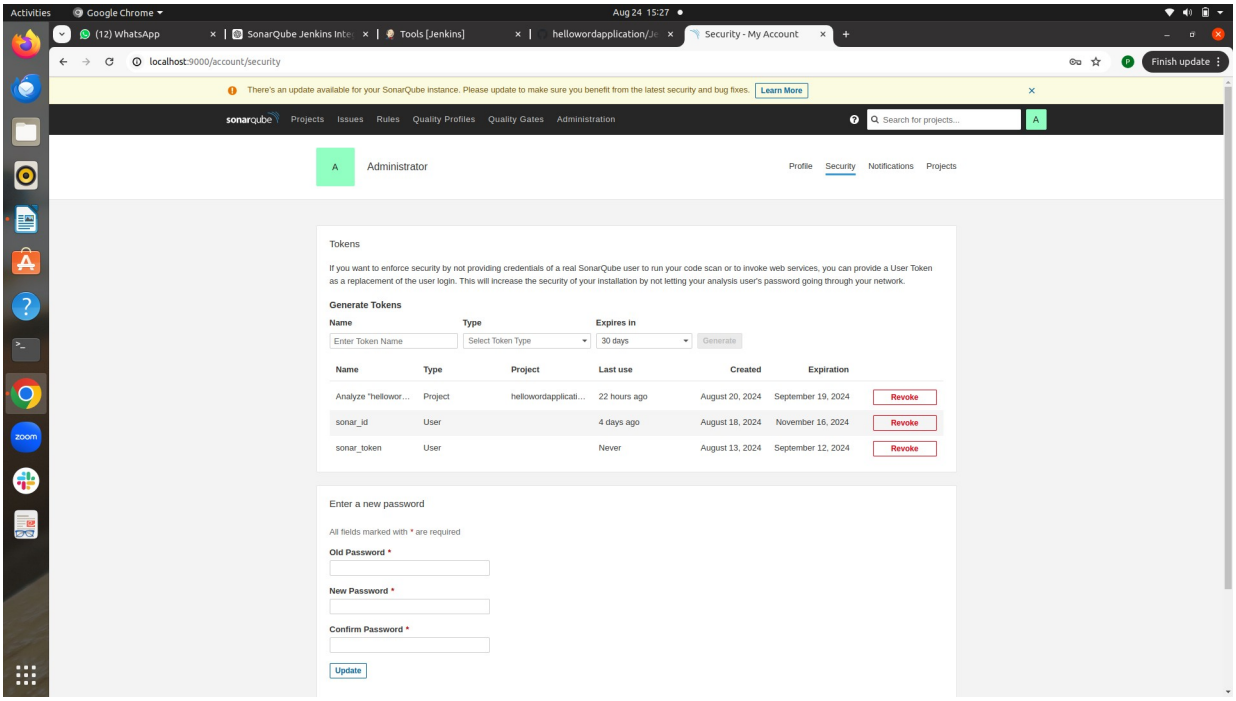

Step 2: Configure Jenkins Pipeline for SonarQube Analysis

1. **Modify Jenkinsfile**: Add the SonarQube analysis steps in your Jenkinsfile.

   Here's an example for a Maven project:

```
pipeline {
```

```
    agent any
    tools {
        maven 'maven'  // Ensure this matches the Maven name in Jenkins Global Tool Configuration
        jdk 'JDK 17'  // Ensure this matches the JDK name in Jenkins Global Tool Configuration
    }
    environment {
        SONARQUBE_SERVER = 'SonarQube'  // Ensure this matches the name given during SonarQube server configuration in Jenkins
        JAVA_HOME = "${tool 'JDK 17'}"  // Set JAVA_HOME to the correct JDK path
        PATH = "${JAVA_HOME}/bin:${env.PATH}"  // Add JAVA_HOME to the PATH
        SONAR_HOST_URL = 'http://localhost:9000'  // Replace with your actual SonarQube server URL
        SONAR_LOGIN = 'sqp_e416b2afb062e02b47abcac20f29bb6a77092f72'  // Retrieve SonarQube token from Jenkins credentials
    }
    stages {
        stage('Checkout') {
            steps {
                git url: 'https://github.com/pramilasawant/hellowordapplication.git', branch: 'main'
            }
        }
```

```
        stage('Build') {
            steps {
                dir('hellowordapplication') {
                    sh 'mvn clean install'
                }
            }
        }

        stage('SonarQube Analysis') {
            steps {
                withSonarQubeEnv('SonarQube') { // 'SonarQube' is the name of the SonarQube server configured in Jenkins
                    dir('hellowordapplication') {
                        sh """
                        mvn clean verify sonar:sonar \
                            -Dsonar.projectKey=hellowordapplication \
                            -Dsonar.host.url=${SONAR_HOST_URL} \
                            -Dsonar.login=${SONAR_LOGIN} \
                            -X
                        """
                    }
                }
            }
        }

        stage('Quality Gate') {
```

```
            steps {
                waitForQualityGate abortPipeline: true
            }
        }
    }


    post {
        success {
            echo 'Build and SonarQube analysis succeeded.'
            slackSend(channel: '#builds', message: "SUCCESS: Build and SonarQube analysis succeeded.")
        }
        failure {
            echo 'Build or SonarQube analysis failed.'
            slackSend(channel: '#builds', message: "FAILURE: Build or SonarQube analysis failed.")
        }
    }
}
```

withSonarQubeEnv: Configures the environment to use the SonarQube instance.

- **waitForQualityGate**: Ensures that the pipeline waits for the analysis report. The pipeline fails if the quality gate does not pass.

2. **Trigger a Build**:

- Trigger a build on Jenkins for your project. The build process will include running SonarQube analysis.
- After the build, navigate to the SonarQube dashboard to review the analysis results.

Step 3: Setting up Quality Gates in SonarQube

1. **Login to SonarQube**:
    - Go to your SonarQube instance and log in with an admin account.
2. **Create or Customize Quality Gates**:
    - Go to `Quality Gates` in the main menu.
    - Create a new quality gate or edit an existing one.
    - Add conditions (e.g., code coverage, critical issues, duplications) that must be met for the gate to pass.
3. **Assign Quality Gates to Projects**:
    - Assign the quality gate to your specific project by going to the project's administration page in SonarQube.
    - Select the desired quality gate from the `Quality Gate` section.

Step 4: Verifying Integration

1. **Review Jenkins Build**:
    - After running a Jenkins build, verify that the SonarQube analysis has been executed.
    - Check the `Quality Gate` step to ensure the pipeline adheres to the set quality standards.
2. **Check SonarQube Dashboard**:
    - Navigate to the SonarQube dashboard for your project and review the analysis.
    - Ensure that the quality gate results are reflected and that your Jenkins pipeline behaves accordingly.