Azure DevOps Project Setup – Java Maven Application

We have implemented a complete **CI/CD pipeline** for a Java Maven project using **Azure DevOps** with the following setup:

Infrastructure & Tools

- **Azure DevOps Project** created for source code management and pipeline execution.
- **Kubernetes Cluster** (AKS) provisioned for application deployment.
- **Self-Hosted Agent VM** configured to run Azure Pipelines.
- **Azure Container Registry (ACR)** (private) created for storing Docker images and artifacts.
- **Source Code Repository** maintained in the Azure DevOps project.
- **Agent VM** integrated with the project and configured with additional tools:
    - **SonarQube (containerized)** → for code quality analysis.
    - **Trivy** → for container image security scanning.

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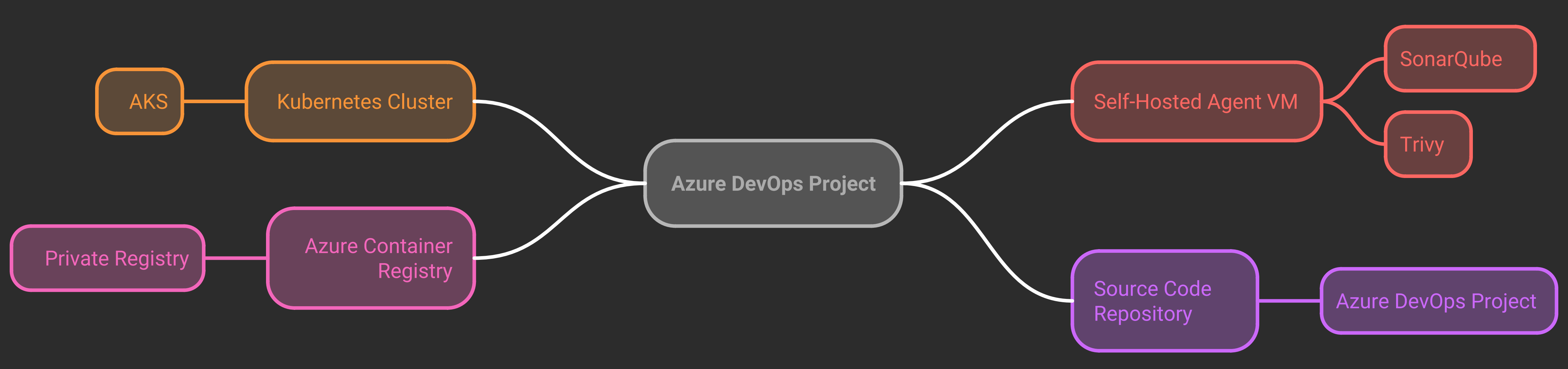

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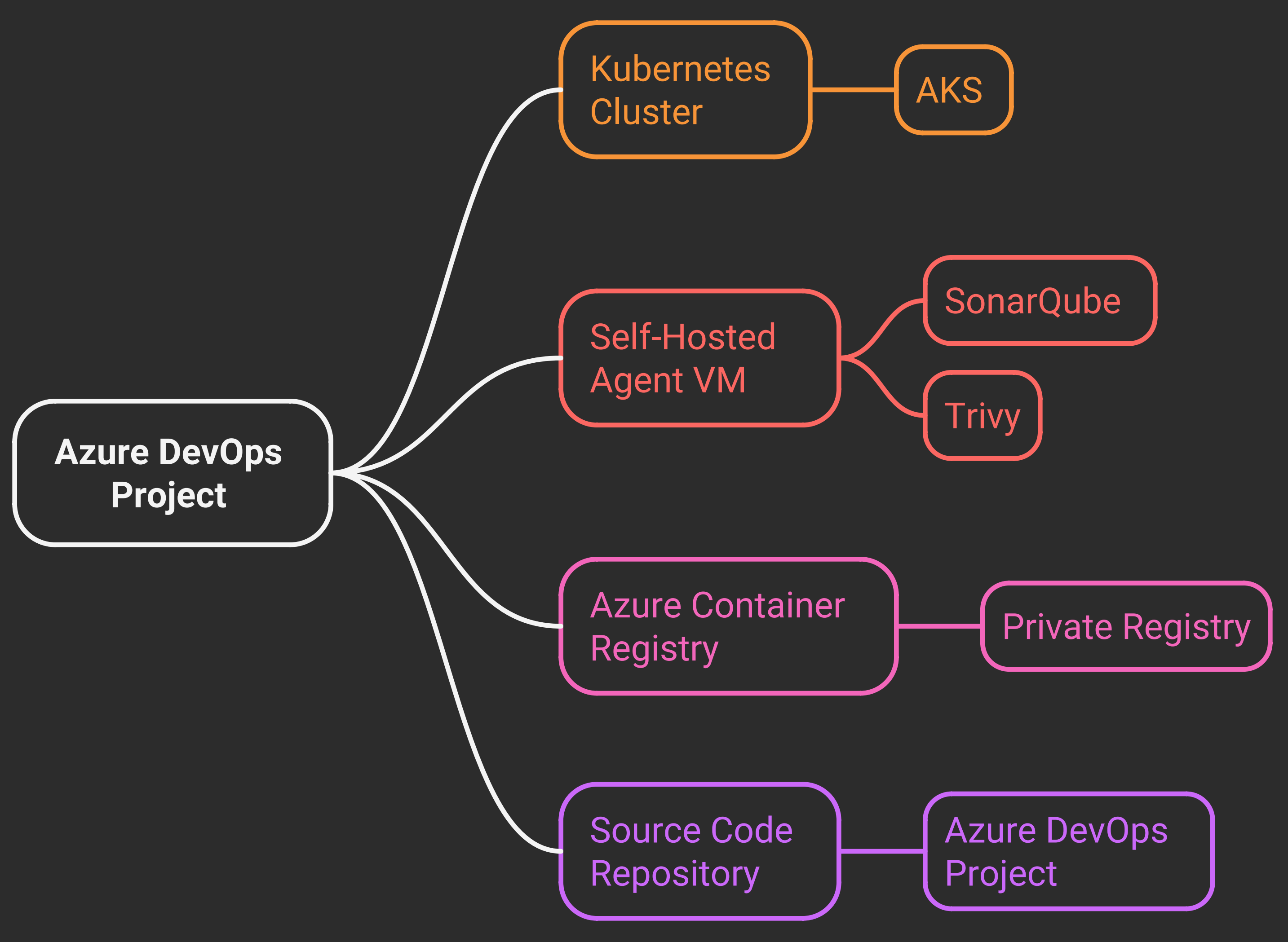

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CI Pipeline (Classic Pipeline)

The CI pipeline is configured with multiple tasks/stages:

1. **Run Unit Tests** → Execute test cases for validation.
2. **Copy YAML Files** → Copy Kubernetes manifests from source code repository.
3. **Publish Artifact (drop)** → Store build outputs for further use.
4. **SonarQube Analysis** →
    - Prepare SonarQube analysis.
    - Run code analysis.
    - Publish results.
5. **Maven Packaging** → Build and package the application.
6. **Trivy FS Scan** → Perform filesystem-level security scan.
7. **Docker Build & Push** → Build Docker image and push it to Azure Container Registry.

CD Pipeline (Release Pipeline)

For deployment, a **Release Pipeline** is set up:

- Kubernetes cluster authentication configured.
- YAML manifests are applied to deploy the application on AKS.
- Application is exposed via **External Load Balancer (Public IP)**.
- Deployment verification performed by accessing the application externally.

☑ With this setup:

- CI handles **build, test, quality check, and image scanning**.
- CD handles **deployment and delivery to Kubernetes**.