Google Cloud Platform DevOps Services

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Learning Objectives

- Overview of Developer Tools and DevOps Services
- Cloud Source Repositories
- Cloud Build
- Container Registry
- IDE Integration

Demo: Storing Docker Images in Container Registry

- Use Cases of Developer Tools and DevOps Services

GCP DevOps Services

Overview of GCP DevOps Services

- DevOps Services provide tools and frameworks for automation
- Cloud Source Repositories store and track source code
- Cloud Build automates continuous integration and deployment
- Container Registry acts as the central repository for storing, securing, and managing Docker container images
- IDE and tools integration enables developer productivity

Google Cloud Source Repositories

Google Cloud Source Repositories

- Acts as a scalable, private Git repository
- Extends standard Git workflow to Cloud Build, Cloud Pub/Sub and Compute services
- Unlimited private Git repositories that can mirror code from Github and Bitbucket repos
- Triggers to automatically build, test, and deploy code
- Integrated regular expression-based code search
- Single source of code for deployments across GCE, GAE, GKE, and Functions

Google Cloud Build

Google Cloud Build

- Managed service for source code build management
- The CI/CD tool running with Google Cloud Platform
- Supports building software written in any language
- Custom workflow to deploy across multiple target environments
- Tight integration with Cloud Source Repo, GitHub, and Bitbucket
- Supports native Docker integration with automated deployment to Kubernetes and GKE
- Identifies vulnerabilities through efficient OS package scanning

Google Container Registry

Container Registry

- Single location to manage container images and repositories
- Store images close to GCE, GKE, and Kubernetes clusters
- Secure, private, scalable Docker registry within GCP
- Supports RBAC to access, view, and download images
- Detects vulnerabilities in early stages of the software deployment
- Supports automatic lock-down of vulnerable container images
- Automated container build process based on code or tag changes

GCP Dev Tools Integration

Integration with Developer Tools

- IDE plugins for popular development tools
    - IntelliJ
    - Visual Studio
    - Eclipse
- Tight integration between IDEs and managed SCM, build services
- Automates generating configuration files and deployment scripts
- Makes GCP libraries and SDKs available within the IDEs
- Enhances developer productivity

Google Cloud Platform Fundamentals

Lab Guide for Google Container Registry

```
# Run the below commands in Google Cloud Shell

gcloud services enable containerregistry.googleapis.com

export PROJECT_ID=<PROJECT ID> # Replace this with your GCP Project ID

docker pull busybox
docker images

cat <<EOF >>Dockerfile
from busybox:latest
CMD ["date"]
EOF

docker build . -t mybusybox
docker tag mybusybox gcr.io/$PROJECT_ID/mybusybox:latest
docker run gcr.io/$PROJECT_ID/mybusybox:latest

gcloud auth configure-docker
docker push gcr.io/$PROJECT_ID/mybusybox:latest
```

GCP DevOps Services – Use Cases

Use Cases

Product	Service Type	Key Feature	Use Case
Google Cloud Source Repositories	Source Control Management (SCM)	Private source code repo	Store code securely in the cloud
Google Cloud Build	CI/CD	Integrated workflow to build and deploy code	Pipelines to deploy code automatically from SCM
Google Container Registry	Private Container Registry	Private image registry close to compute services	Store images in the same region as GKE clusters
IDE Integration	Developer Tools	Developer productivity	Manage and deploy apps from the IDE

Google Cloud Platform Fundamentals

Resources for Google Cloud DevOps & DevTools

Key Links
- Cloud Source Repositories
- Cloud Build
- Container Registry
- Cloud Tools for Visual Studio
- Cloud Tools for Eclipse
- Cloud Code for IntelliJ

References
- Cloud Source Repo Quickstart
- CI/CD on Google Cloud
- Build a Docker Image with Cloud Build