

Pipeline Quick Reference

Quick Commands

Deploy to Development Only

```
Pipeline: Single Environment Pipeline
Branch: develop
Auto-triggered: Yes
```

Deploy All Environments

```
Pipeline: Multi-Environment Pipeline
Branch: main
Parameters:
  applicationName: step
  environmentsToDeploy: [dev, test, uat, prod]
```

Emergency Hotfix

```
Pipeline: Hotfix Pipeline
Trigger: Manual
Parameters:
  targetEnvironment: prod
  justification: "Critical fix for [issue]"
  changeTicketNumber: CHG-XXXXX
```



Pipeline Overview

Pipeline	File	Trigger	Environments	Approvals
Multi-Environment	azure-pipelines-enhanced.yml	Auto (main)	All	UAT, Prod
Single Environment	pipelines/examples/single-environment-pipeline.yml	Auto (develop)	Dev	None
Hotfix	pipelines/examples/hotfix-pipeline.yml	Manual	Any	Required
Multi-Application	pipelines/examples/multi-application-pipeline.yml	Auto (main)	Configurable	Based on env
PR Validation	pipelines/examples/pr-validation-pipeline.yml	PR	None (validate only)	None



Variable Groups

Common Variables (bicep-common)

```
azureLocation: eastus
deploymentScope: subscription
vmImageName: ubuntu-latest
```

Environment-Specific Variables

bicep-dev

```
azureServiceConnection: azureServiceConnection-dev
environment: dev
vmSize: Standard_B2s
enableBackup: false
```

bicep-test

```
azureServiceConnection: azureServiceConnection-test
environment: test
vmSize: Standard_B2ms
enableBackup: false
```

bicep-uat

```
azureServiceConnection: azureServiceConnection-uat
environment: uat
vmSize: Standard_D2s_v3
enableBackup: true
```

bicep-prod

```
azureServiceConnection: azureServiceConnection-prod
environment: prod
vmSize: Standard_D4s_v3
enableBackup: true
alertEmailAddress: ops@company.com
```

⌚ Stage Execution Times

Stage	Duration	Notes
Build & Lint	2-3 min	Fast
Validate	1-2 min per env	Parallel
Preview (What-If)	2-3 min per env	Parallel
Deploy Dev	10-15 min	VM deployment
Deploy Test	10-15 min	VM deployment
Deploy UAT	10-15 min + approval	Manual gate
Deploy Prod	15-20 min + approval	Enhanced verification

Total Time (All Environments): ~45-60 minutes + approval time

Service Connections

Required Connections

azureServiceConnection-dev	→ Dev Subscription
azureServiceConnection-test	→ Test Subscription
azureServiceConnection-uat	→ UAT Subscription
azureServiceConnection-prod	→ Prod Subscription

Permissions Needed

Role: Contributor (subscription level)
 Additional: Managed Identity Operator

Environments

Environment	Approval	Timeout	Approvers
Development	No	-	-
Test	No	-	-
UAT	Yes	24 hours	QA Team
Production	Yes	24 hours	Ops Team, App Owner

Common Pipeline Parameters

Multi-Environment Pipeline

```

applicationName: step
environmentsToDeploy:
  - dev      # Deploy to dev
  - test     # Deploy to test
  - uat      # Deploy to UAT (requires approval)
  - prod     # Deploy to prod (requires approval)
skipValidation: false
skipWhatIf: false
deploymentMode: Standard # or HotFix, Rollback
  
```

Hotfix Pipeline

```
targetEnvironment: prod
applicationName: step
justification: "Emergency fix for [issue]"
changeTicketNumber: CHG-XXXXX
```

Multi-Application Pipeline

```
applications:
  - step
  - webapp
  - api
deploymentStrategy: Sequential # or Parallel
targetEnvironment: dev
```

Template Usage

Lint Template

```
- template: pipelines/templates/lint-template.yml
parameters:
  applicationPath: 'applications/step'
  modulesPath: 'modules'
  azureServiceConnection: $(azureServiceConnection)
```

Validate Template

```
- template: pipelines/templates/validate-template.yml
parameters:
  applicationName: 'step'
  environment: 'dev'
  azureLocation: 'eastus'
  azureServiceConnection: $(azureServiceConnection-dev)
  deploymentScope: 'subscription'
```

What-If Template

```
- template: pipelines/templates/whatif-template.yml
parameters:
  applicationName: 'step'
  environment: 'dev'
  azureLocation: 'eastus'
  azureServiceConnection: $(azureServiceConnection-dev)
  deploymentScope: 'subscription'
  resultFormat: 'ResourceIdOnly'
```

Deploy Template

```
- template: pipelines/templates/deploy-template.yml
  parameters:
    applicationName: 'step'
    environment: 'dev'
    azureLocation: 'eastus'
    azureServiceConnection: $(azureServiceConnection-dev)
    deploymentScope: 'subscription'
    runWhatIf: true
    verifyDeployment: true
```

🔍 Useful Azure CLI Commands

Check Deployments

```
# List recent deployments
az deployment sub list \
  --query "[].{Name:name, State:properties.provisioningState,
Timestamp:properties.timestamp}" \
  --output table

# Get deployment details
az deployment sub show \
  --name "step-dev-20250108-123456" \
  --query "properties.{State:provisioningState, Duration:duration, Outputs:outputs}"

# Get deployment errors
az deployment sub show \
  --name "step-dev-20250108-123456" \
  --query "properties.error"
```

Check Resources

```
# List resources in resource group
az resource list \
  --resource-group "rg-step-dev-eas" \
  --output table

# Check VM status
az vm list \
  --resource-group "rg-step-dev-eas" \
  --show-details \
  --query "[].{Name:name, PowerState:powerState, Provisioning-
State:provisioningState}" \
  --output table
```

Manual Deployment

```
# Validate template
az deployment sub validate \
--location eastus \
--template-file applications/step/main.bicep \
--parameters applications/step/dev/dev.bicepparam

# What-if analysis
az deployment sub what-if \
--location eastus \
--template-file applications/step/main.bicep \
--parameters applications/step/dev/dev.bicepparam

# Deploy
az deployment sub create \
--name "manual-deploy-$(date +%s)" \
--location eastus \
--template-file applications/step/main.bicep \
--parameters applications/step/dev/dev.bicepparam
```



Troubleshooting Quick Fixes

Pipeline Fails at Validation

```
# Check Bicep syntax
az bicep build --file applications/step/main.bicep

# Check parameter file
cat applications/step/dev/dev.bicepparam
```

Service Connection Error

```
# Verify service principal
az ad sp show --id <app-id>

# Check role assignment
az role assignment list \
--assignee <app-id> \
--subscription <subscription-id> \
--output table
```

Resource Already Exists

```
# List existing resources
az resource list \
--resource-group "rg-step-dev-eas" \
--output table

# Delete if needed
az group delete \
--name "rg-step-dev-eas" \
--yes \
--no-wait
```

Deployment Timeout

```
# Increase timeout in pipeline
jobs:
- deployment: Deploy
  timeoutInMinutes: 180 # Default is 60
```

Quick Links

- **Azure Portal:** <https://portal.azure.com>
- **Azure DevOps:** <https://dev.azure.com/{YourOrg}>
- **Project:** <https://dev.azure.com/{YourOrg}/{YourProject}>
- **Pipelines:** https://dev.azure.com/{YourOrg}/{YourProject}/_build
- **Environments:** https://dev.azure.com/{YourOrg}/{YourProject}/_environments
- **Library:** https://dev.azure.com/{YourOrg}/{YourProject}/_library

Learning Resources

- [Azure Bicep Docs](https://docs.microsoft.com/azure/azure-resource-manager/bicep/) (<https://docs.microsoft.com/azure/azure-resource-manager/bicep/>)
- [Azure DevOps Pipelines](https://docs.microsoft.com/azure/devops/pipelines/) (<https://docs.microsoft.com/azure/devops/pipelines/>)
- [YAML Pipeline Schema](https://docs.microsoft.com/azure/devops/pipelines/yaml-schema) (<https://docs.microsoft.com/azure/devops/pipelines/yaml-schema>)

Checklists

Pre-Deployment Checklist

- [] Code reviewed and approved
- [] Parameter files updated
- [] Variable groups configured
- [] Service connections verified
- [] Approvers notified (for UAT/Prod)
- [] Change ticket created (for Prod)

Post-Deployment Checklist

- [] Deployment succeeded
 - [] Resources created in Azure Portal
 - [] VMs running and accessible
 - [] Monitoring configured
 - [] Tags applied correctly
 - [] Documentation updated
 - [] Team notified
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