

# Azure DevOps Integrations with Jenkins

Arun + Damien



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2016

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# Azure DevOps integration with Jenkins



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- Azure Storage plugin
- Azure Slave plugin v2
- Azure Container Service Plugin
- Azure DevOps Integrations
- Roadmap

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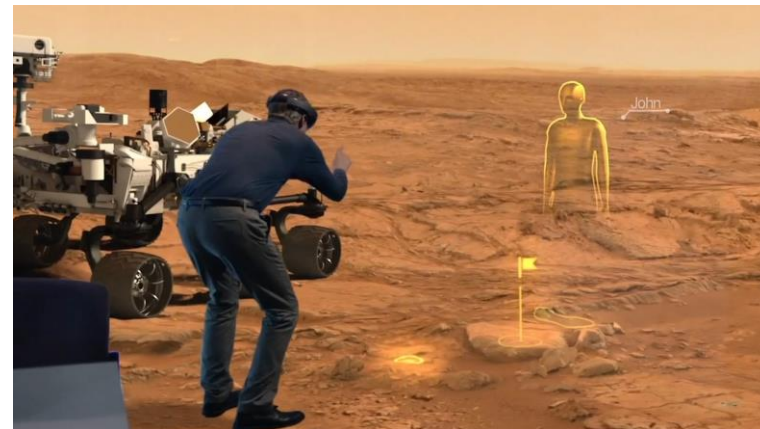
# Working “OnSight” in Mars with HoloLens and Jenkins



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“Most of our terrain pipeline is implemented in [.NET](#). Microsoft released the .NET Core libraries as open source in 2014.

We use the [Jenkins](#) continuous integration system both to compile code for continuous integration and to run our image processing jobs.” – Parker Abercrombie (NASA JPL Engineer)



Source: <https://opensource.com/life/16/1/scale14x-interview-parker-abercrombie-nasa>

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# Azure Plugin Configuration Script

Limited  
Preview



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- Script to configure all Azure plugins to access Azure resources
- Useful scenarios:
  - Configure secrets into the plugin without needing to understand Azure security model
  - Run once, get the relevant keys to use across all plugins
- Available for limited preview:
  - Contact us: [azdevopspub@microsoft.com](mailto:azdevopspub@microsoft.com)



## 0. Pipeline and steps used in the demo

1. Download dependencies from Azure storage

- Use Azure Storage plugin - download



2. Build the application on slaves

- Use Azure slave plugin



3. Upload artifacts to Azure storage

- Use Azure Storage plugin - upload



## We are moving to Azure

- More consistent, uniform infra
- Support the growing needs of the community
- Practice what we preach; kick-ass DevOps for infra



# Azure Storage plugin

Available



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- Azure Storage plugin (0.3.1) that pushes and pulls content from/to Azure Storage
- Useful scenarios:
  - **Upload:** Build and package your app and upload it to Storage so that -
    - You can share with partners,
    - Share across multiple geos
    - Share once, Deploy often
  - **Download:** Download artifacts from storage so that -
    - Share pre-requisites across your org in one central repository
    - Ensure you get the latest version of dependencies

Source: <https://azure.microsoft.com/en-us/documentation/articles/storage-java-jenkins-continuous-integration-solution/>

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# .NET Core on Jenkins in Azure



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- All hosted in Azure with heavy GitHub integration
- Two primary Jenkins instances - One handles CI and other handles perf
- Job DSL + scripting to handle 95% of the system and job configuration.
- Jobs can be rebuilt from scratch from a single job.
- Runs 5000-7000 jobs/day.
- Most resources come from automatically allocated Azure VMs, though there is some real hardware attach too.
- We scale down to < 100 machines at night, up to 300+ during the day.



# Azure Slave v2 plugin

Limited  
Preview



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- Azure Slave plugin (v2) that deploys and controls slaves in Azure VM
- Provisions a VM if no slave is available:
  - Based on the Azure marketplace image or your own custom image
  - Leverages Azure Resource Management to enhance performance via parallelism
- Useful scenarios:
  - Lift and shift what you do on-prem to the cloud
  - Transient dev/test environments to save on costs
  - Elastic CI at scale with 100s of slaves
- Available for limited preview
  - Contact us: [azdevopspub@microsoft.com](mailto:azdevopspub@microsoft.com)

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# Azure Slave v2 plugin



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A screenshot of a web browser window showing the Jenkins configuration page for 'Add Azure Virtual Machine Template'. The browser address bar shows '40.112.214.180:8080/configure'. The page title is 'Jenkins > configuration'. There is a 'Verify Configuration' button in the top right. The main content area is titled 'Add Azure Virtual Machine Template' and contains a 'General Configuration' section with several input fields: 'Name', 'Description', 'Labels', 'Region' (a dropdown menu), 'Virtual Machine Size' (a dropdown menu), 'Storage Account Name' (with a note '(Leave blank to create a new storage account)'), 'Retention Time (in minutes)' (set to 60), 'Shutdown Only (Do Not Delete) After Retention Time' (checkbox), and 'Usage' (set to 'Use this node as much as possible'). At the bottom left, there are 'Save' and 'Apply' buttons.

1. Define the template that you want to use

## 2. Configure the image

A screenshot of a web browser window showing the Jenkins configuration page for 'Image Configuration'. The browser address bar shows '40.112.214.180:8080/configure'. The page title is 'Jenkins > configuration'. The main content area is titled 'Image Configuration' and contains several sections: 'Image Configuration' with radio buttons for 'Custom User Image' and 'Image Reference'; 'Launch Method' (a dropdown menu set to 'SSH'); 'Init Script' (a text area containing the following code: '#Install Java', 'sudo apt-get -y update', 'sudo apt-get install -y openjdk-7-jdk', 'sudo apt-get -y update --fix-missing', 'sudo apt-get install -y openjdk-7-jdk', '# Install Git', 'sudo apt-get install -y git'); 'Username' (input field); and 'Password' (input field). At the bottom right, there are 'Advanced...' and 'Delete Template' buttons. At the bottom left, there are 'Save' and 'Apply' buttons.

# Jenkins infra on Azure



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- “Migrating to Azure simplifies and improves our infrastructure in a dramatic way that would not be possible without a comprehensive platform consisting of: compute, CDN, storage and data-store services.”  
– R. Tyler Croy
- Azure also enables a couple of new projects for the community:
  - End-to-end TLS encrypted distribution of Jenkins packages, plugins and metadata via the [Azure CDN](#).
  - More complete build/test/release support and capacity on [ci.jenkins.io](#) for plugin developers using [Azure Container Service](#) and generic VMs.

Source: <https://jenkins.io/blog/2016/05/18/announcing-azure-partnership/>

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# Azure Container Service plugin

Limited  
Preview



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- Azure Container Service plugin
- How it works:
  - Creates the cluster if it does not exist and deploys per the Marathon file
  - If the cluster exist, only the marathon file deployment will occur
  - Leverages the ARM API
- Useful scenarios:
  - Deploy Docker containers to Azure
  - Simplify complexity of managing and configuring the DCOS cluster
  - Azure takes care of the container orchestration
- Available for limited preview
  - Contact us: [azdevopspub@microsoft.com](mailto:azdevopspub@microsoft.com)

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# Immutable flow with Azure Container Service



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Dev checks in code

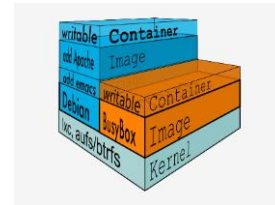
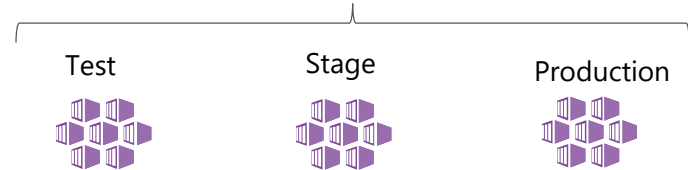
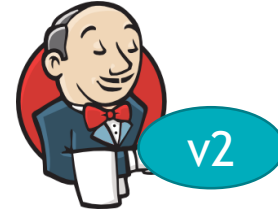


Build app into image



PRIVATE DOCKER CONTAINER IMAGES

Private Container Registry in Azure



Reuse same #JenkinsWorld  
"Golden Image" across stages

# Azure Container Service plugin

New



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## 2. Configure Marathon

### 1. Configure ACS

3. Upload test app. Invoked by pipeline

40.112.214.180:8080/job/3.%20Upload%20test%20app.%20Invoked%20by%20pipeline/configure

General Source Code Management Build Triggers Build Environment **Build** Post-build Actions

### Azure Container Service Profile Configuration

Region	West US
DNS Name Prefix	jfbbf3ea736511605
Agent Count	3
Agent VM Size	Standard D2
Admin Username	ACSAdmin
Master Count	1
SSH RSA Public Key	<input type="text"/>
	SSH RSA Public Key is required.

### Marathon Profile Configuration

Marathon config file path	<input type="text"/>
	Marathon config file path is required.
SSH RSA private file path	<input type="text"/>
	SSH RSA private file path is required.
SSH RSA private file password	<input type="text"/>
	SSH RSA private file password is required.

Save Apply

3. Upload test app. Invoked by pipeline

40.112.214.180:8080/job/3.%20Upload%20test%20app.%20Invoked%20by%20pipeline/configure

General Source Code Management Build Triggers Build Environment **Build** Post-build Actions

Master Count 1

SSH RSA Public Key

SSH RSA Public Key is required.

### Marathon Profile Configuration

Marathon config file path

Marathon config file path is required.

SSH RSA private file path

SSH RSA private file path is required.

SSH RSA private file password

SSH RSA private file password is required.

Upload artifacts to Microsoft Azure Blob storage

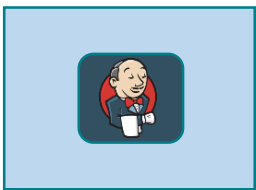
Storage account name devopsintegration1

Container name (Creates new if needed) artifacts

List of artifacts to upload (Follows ant glob syntax) text/\*.txt

Save Apply Advanced...

# Azure Jenkins image in the marketplace



Jenkins Master

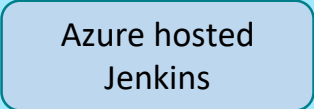
Azure agent plugins  
Azure deploy plugins



Jenkins agents



Azure deploy plugins



Azure hosted Jenkins

# Jenkins in the Azure Marketplace

Available



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jenkins  
Docker



Jenkins  
Bitnami



BYOL CB Jenkins  
Enterprise  
CloudBees



Secured Jenkins  
on centos  
Cognosys Inc.



CloudBees  
Jenkins Platform  
CloudBees



BYOL CB Jenkins  
Ops Center  
CloudBees



BYOL CloudBees  
Jenkins Platform  
CloudBees



Production  
Jenkins  
Bitnami



Secured Jenkins  
on Ubuntu 14.04  
Cognosys Inc.



HP LoadRunner  
Hewlett Packard



JFrog Artifactory  
Pro  
JFrog



Octopus Deploy  
Octopus Deploy

Source: <https://azure.microsoft.com/en-us/marketplace/?term=jenkins>

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- I am familiar with DevOps tool X, show me how to use it with Azure service Y in a scenario Z
- How it works:
  - Try common Jenkins scenarios on Azure for free with minimal configuration
- Available for public preview
  - Link: <http://aka.ms/trydevops>

# Immutable flow with VMs



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Dev checks in code



Trigger Build



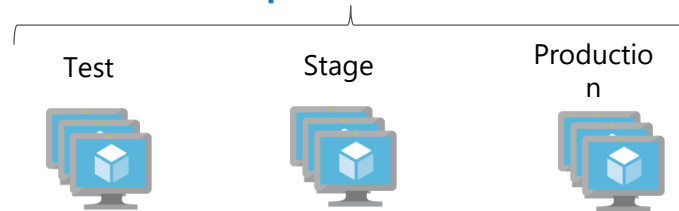
**Build app**



**Packer**



**Bake app into image**



Reuse the same image across stages

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# Azure Jenkins Roadmap



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- Currently available -
  - Azure Storage plugin
  - Azure Slave v1 plugin
- Public Preview over the next few weeks, of the following -
  - Azure Jenkins marketplace image
  - Azure plugin configuration script
  - Azure DevOps integrations portal
- Limited Preview over fall and beyond that will let you -
  - Azure Slave v2 plugin
  - Azure Container Service plugin
- Future -
  - Azure Web Apps plugin
  - Jenkins integrations with Spinnaker
- For limited preview, contact us: [azdevopspub@microsoft.com](mailto:azdevopspub@microsoft.com)

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# Thank you !



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## Questions



## Answers

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