One-click Solution for Tizen Image Creation Based on Jenkins Framework

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2014
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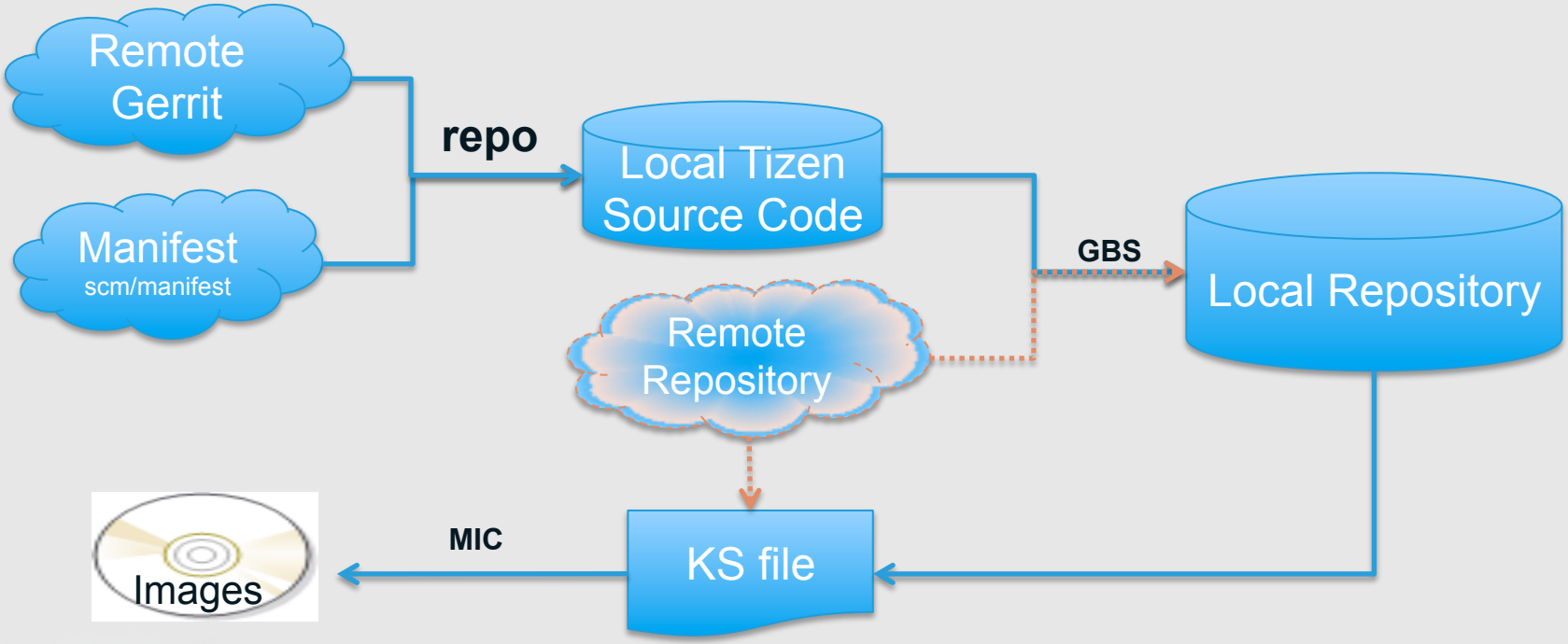
Tizen Build Workflow Overview



Detailed Steps

Git Hosting

- **Gerrit**
  - Tizen Gerrit URL: https://review.tizen.org/gerrit
  - Register: https://www.tizen.org
  - Follow guide to upload ssh public key
  - Local config: `~/.ssh/config`
- **Code clone**
  - git clone
  - repo & manifest (recommended)
- **Examples:**
  - `$ ssh tizen gerrit ls-projects`
  - `$ git clone tizen:apps/home/memo`

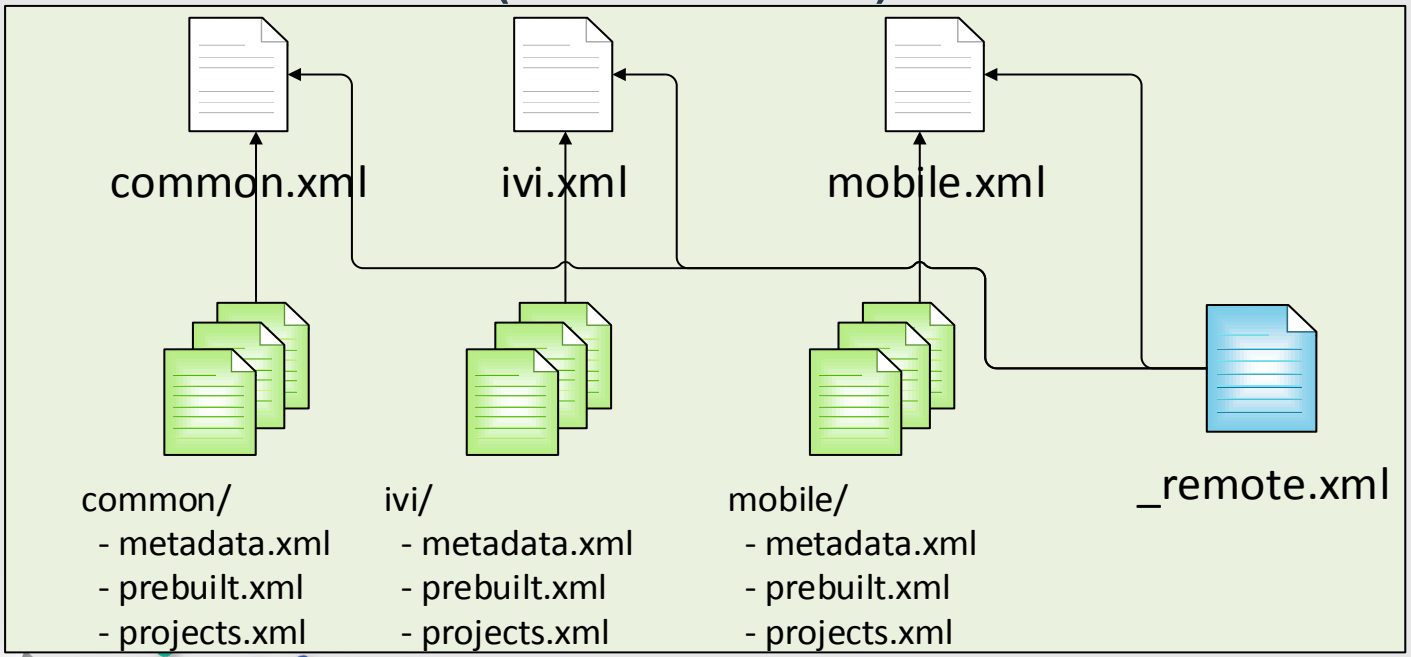
```
Host review.tizen.org
    Hostname review.tizen.org
    Port 29418
    User <User>

Host tizen
    Hostname review.tizen.org
    Port 29418
    User <User>
```

Tizen Source Manifest

- **Manifest for Tizen source code**
  - git project path: scm/manifest
- **Branches:**
  - tizen2.x
  - tizen (for current Tizen 3.0)
- **Supported Profiles**
  - Common
  - IVI
  - Mobile

Tizen Source Manifest (Cont.)

- **Manifest Structure (latest tizen 3.0)**



Download Tizen Sources

- Download `repo` script

```
$ mkdir ~/bin/
$ wget https://dl-ssl.google.com/dl/googlesource/git-repo/repo -O ~/bin/repo
$ export PATH=~/bin/:$PATH
```

- Download Tizen source code with `repo`

```
$ mkdir ~/tizen_ivi_src & cd ~/tizen_ivi_src
$ repo init -u tizen:scm/manifest -b tizen -m ivi.xml
$ wget https://download.tizen.org/releases/milestone/ivi/latest/builddata/manifest/tizen_20140422.1_ia32.xml
      -O .repo/manifests/ivi/projects.xml
$ sed -i '3,4d' .repo/manifests/ivi/projects.xml # remove duplicated <remote> and <default> lines
$ repo sync -j 32 # sync code
```

Build Tizen Source using GBS

- **Check and Update default gbs.conf**

  Default gbs conf ~/tizen_ivi_src/.gbs.conf

```
[general]
tmpdir=/var/tmp/
profile = profile.tizen3.0_ivi
work_dir=.

[repo.tizen3.0_x86]
url=${work_dir}/pre-built/toolchain-x86/
# Newly added repo
[repo.tizen3.0_ivi]
url=https://download.tizen.org/releases/milestone/tizen/ivi/tizen_20140422.1

[profile.tizen3.0_ivi]
repos=repo.tizen3.0_x86, repo.tizen3.0_ivi
repos=repo.tizen3.0_x86
buildconf=${work_dir}/scm/meta/build-config/build.conf
exclude_packages = libtool,gettext
```

Build Tizen Source using GBS (Cont.)

- **Full gbs build command**

```
# For Devices image
$ nohup gbs build -A i586 --threads=4 --exclude=emulator-yagl >build.log 2>&1 &

# For emulator image
$ nohup gbs build -A i586 --threads=4 --exclude=mesa >build.log 2>&1 &

$ tail -f build.log
```

Get & Update Ks file

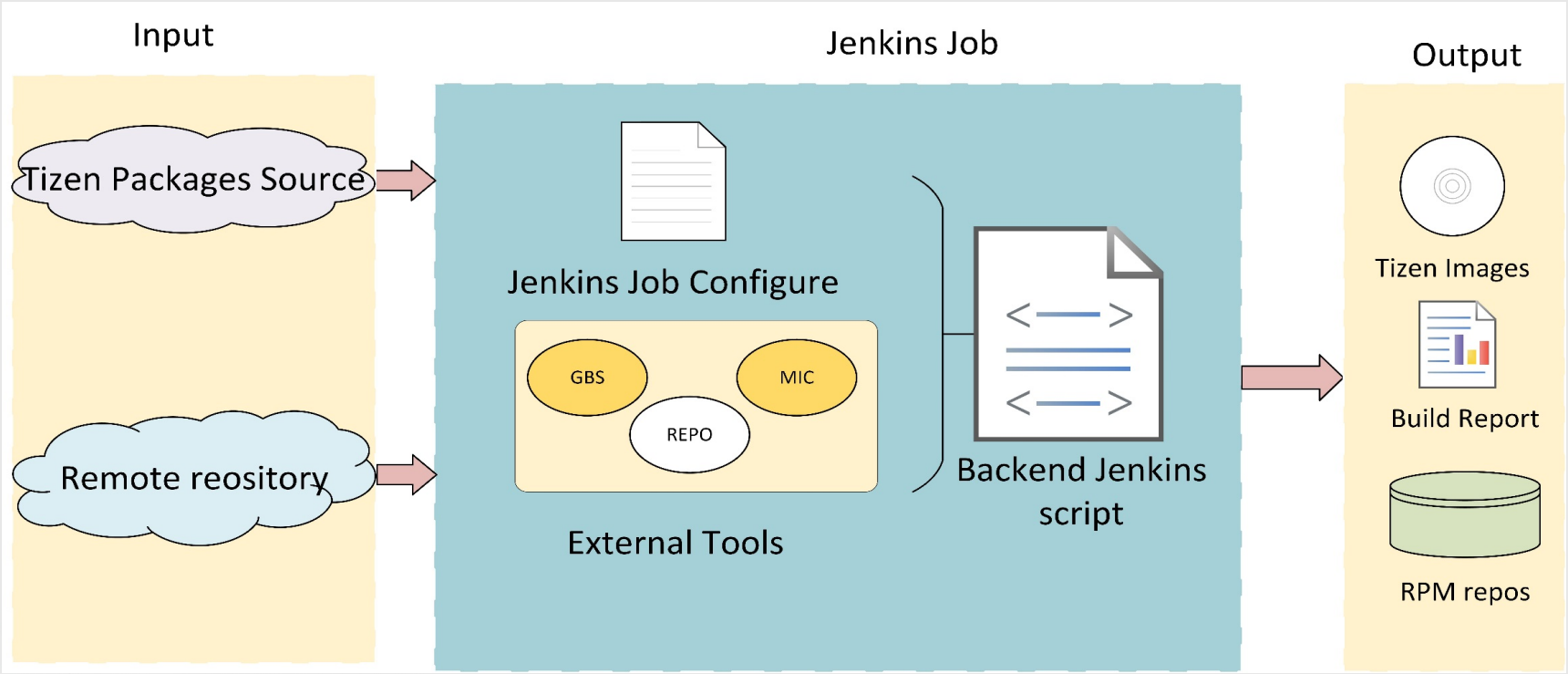
```
# -*-mic2-options-*- -f raw --fstab=uuid --copy-kernel --compress-disk-image=bz2 --generate-bmap -*-mic2-options-*-
lang en_US.utf8
keyboard us
timezone --utc America/Los_Angeles
part /boot --size 64 --ondisk sdb --fstype=ext4 --label boot --active --align 1024 --fsoptions=noatime
part / --size 3748 --ondisk sdb --fstype=ext4 --label platform --align 1024 --fsoptions=noatime...

# Add local repo generated by gbs
repo  --name=local --baseurl=file:///home/<user>/GBS-ROOT/local/repos/tizen3.0_ivi/i586   --priority=1

repo --name=ivi \
     --baseurl=http://download.tizen.org/releases/milestone/tizen/ivi/tizen_20140422.1/repos/ivi/ia32/packages/ \
     --save --ssl_verify=no


%packages
...
%end

%post
...
%end
```

Create image using mic

- **Options for image creation**
  - `mic cr --help` or `mic cr <image type> --help`
  - Image types supported: `loop, raw, fs, livecd, liveusb`
  - special type: `auto`
- **Basic usage of mic**
  - `$ mic cr loop --pack-to=@NAME@-rs.zip <tizen.ks>`
  - `$ mic cr auto <tizen.ks>`

One Click Solution for Image Creation

One-Click Solution Architecture



Jenkins Job Overview

Advantages of Jenkins-jobs

- Build can be triggered based on changes and/or periodically
- Developers can pass parameters for builds in CI UI
- Builds can be reproduced in clean environment
- Results of builds are published to centralized storage and can be used by other developers
- Easy to deploy, to configure, and to maintain

Deployment

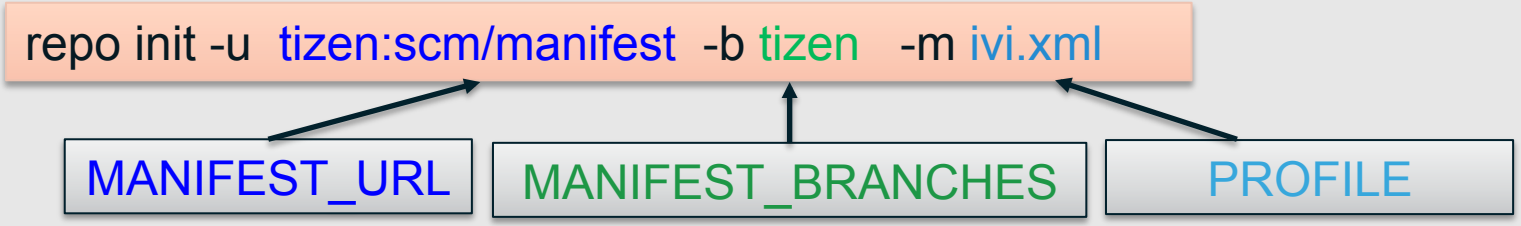
- **Jenkins Master**
  - Additional packages
  - ✓ `gbs-build-Jenkins-jobs`
- **Jenkins Slave nodes**
  - Additional packages
  - ✓ `gbs-build-Jenkins-scripts`
- **Central downloading service**
  - Store Jenkins jobs' artifacts, including images, build reports and repos
  - Provide retrieve services for access
- **Additional customization**
  - Set periodic scheduler
  - Set default values, including central download server, etc.

Jenkins Jobs Usage Scenarios

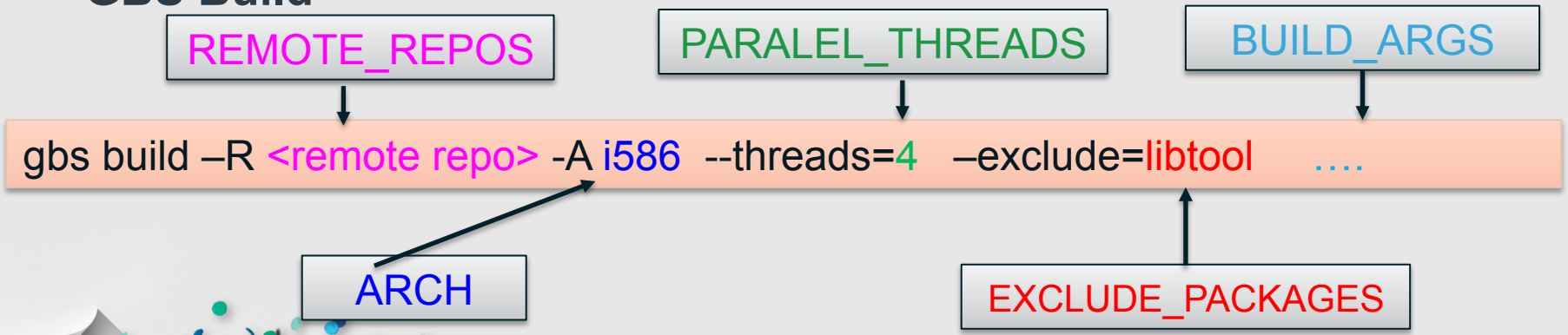
- **Case 1**
  - Create daily repos and images based on latest source code
- **Case 2**
  - Verify a group of packages which introduced new features to the trunk

Parameters Description

- **Source Code Clone**



- **GBS Build**



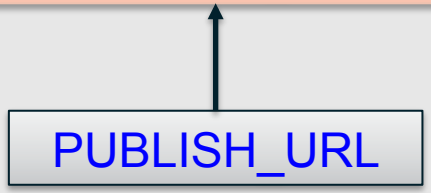
Parameters Description (Cont.)

- **Image Creation**

```
sudo mic cr auto <ks_file>
```

- **Publish Artifacts**

```
rsync -avzk "$WORKSPACE/$JOB_NAME"    $PUBLISH_URL
```



Trigger Build Manually

MANIFEST_URL

review.tizen.org:scm/manifest

The manifest url, which should be recognized by repo command, for example: *review.tizen.org:scm/manifest*, where *review.tizen.org* is the alias name set in ~/.ssh, like:

```
Host review.tizen.org
Hostname review.tizen.org
Port 29418
User <username>
#ProxyCommand connect -S <proxy>:<port> %h %p
```

and, *scm/manifest* is the manifest path in remote tizen.org gerrit.

MANIFEST_BRANCH

tizen

This option specifies the manifest branch used for syncing code, this value will be passed to repo command directly.

PROFILE

ivi ▼

This option specifies the target profile, valid values: *IVI*, *Mobile*.

REMOTE_REPOS

http://download.tizen.org/releases/milestone/tizen/ivi/tizen_20140422.1/

The remote repos for doing local full build using gbs, and get ks file for image creation. Example:
http://download.tizen.org/releases/milestone/tizen/ivi/tizen_20140422.1/

ARCH

i586 ▼

This option specifies the arch to be built, valid values: *i586*

PARALEL_THREADS

4

This option determines how many builder gbs should run in parallel.

EXCLUDE_PACKAGES

texinfo,aul,gettext

This option specifies the packages that does not participate in building. And also can be used to break dependency cycles.

BUILD_ARGS

platform/upstream/image-configurations

Specify more gbs build options. For more gbs build options and usage refer to gbs build usage. Default value: empty.

PUBLISH

☑

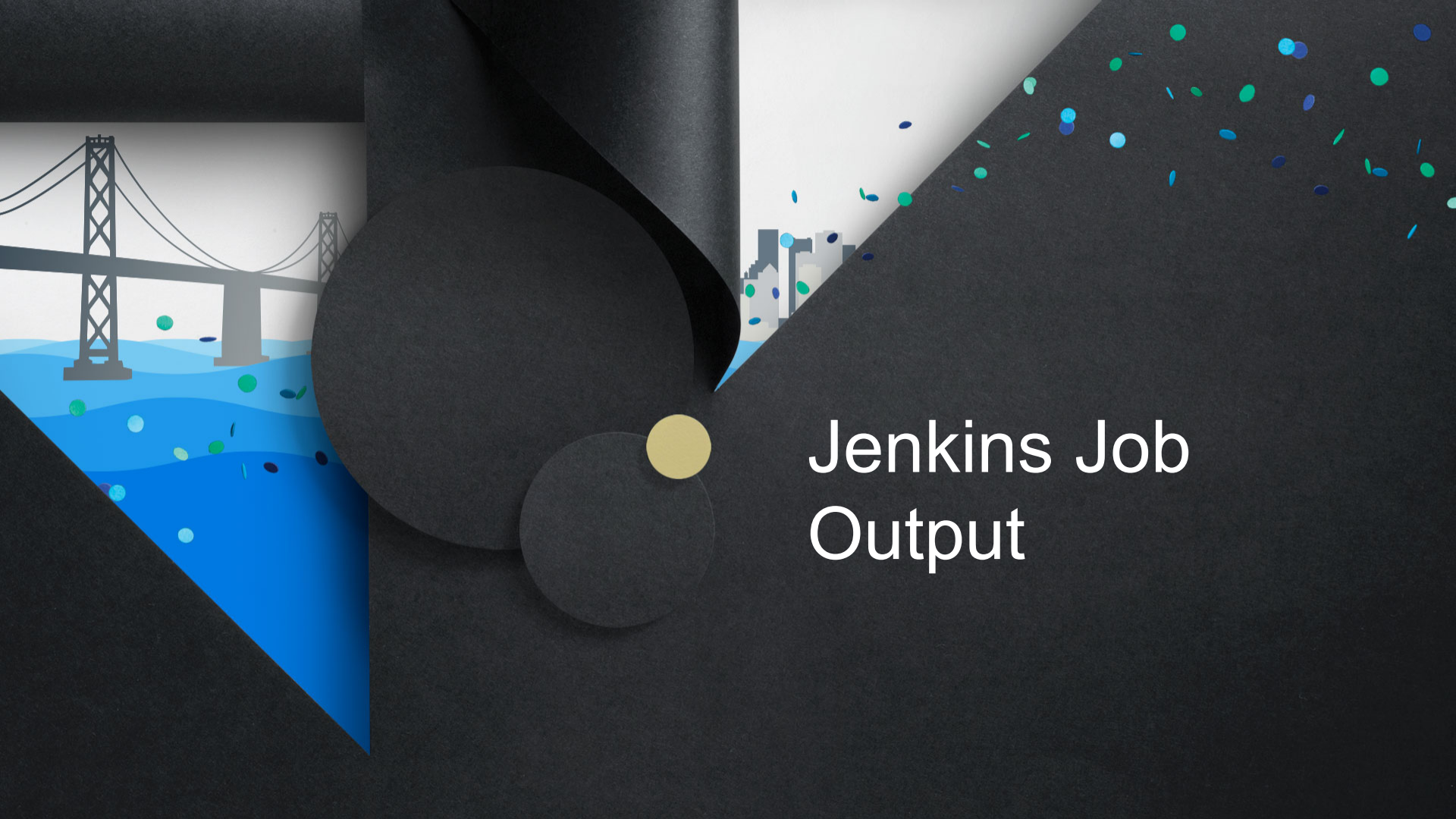
This option enables the publishing of build artifacts to respective download servers. Build artifacts include report, images and repos..

PUBLISH_URL

jenkins@junchun-mirror.bj.intel.com:/srv/mirror/GBS-OUTPUT

Specify the URL address to publish build artifacts. The format of *PUBLISH_URL* should be the same as rsync format which can be a local path or remote url like: *user@hostname:/path/to/publish_dir*.
This option only take effect if PUBLISH is enabled.

Build


Jenkins Job
Output

Jenkins job output

http://downloadserver/GBS-OUTPUT/Tizen-local-full-build-ivi/

Name	Last modified	Size	Description
Parent Directory		-	
tizen_20140218#60/	18-Feb-2014 09:48	-	
tizen_20140219#65/	19-Feb-2014 16:12	-	
tizen_20140219#66/	19-Feb-2014 19:13	-	
tizen_20140220#67/	20-Feb-2014 02:18	-	
tizen_20140306#71/	06-Mar-2014 14:31	-	
tizen_20140310#72/	10-Mar-2014 16:42	-	
tizen_20140417#73/	17-Apr-2014 10:53	-	
tizen_20140424#74/	24-Apr-2014 18:10	-	
tizen_20140425#75/	25-Apr-2014 10:59	-	
tizen_20140526#76/	26-May-2014 11:23	-	

http://downloadserver/GBS-OUTPU

Index of /GBS-OUTPUT/Tizen-local-full-build-ivi/tizen_20140526#76

Name	Last modified	Size	Description
Parent Directory		-	
builddata/	26-May-2014 12:27	-	
images/	26-May-2014 12:27	-	
repos/	26-May-2014 12:37	-	

http://downloadserver/GBS-OUTPUT/Tizen-local-full-bu

GBS Local Full Build Report

Profile: tizen3.0_ivi

Arch: i586

Start Time: 2014-04-26 19:16 +0800

Build Status Summary

Total Packages	succeeded Packages	Export Error Packages	Expansion Error Packages	Build Error Packages
1	1	0	0	0

Build Statis Details

Package Name	Package Path	Build Status
image-configurations	/home/jenkins/tizen/platform/upstream/image-configurations/	Succeeded

Summary

- Introduced Tizen source code maintain & development models
- Introduced basic workflow of creating Tizen images from source code
- Make Tizen image build more easily by utilize Jenkins framework
- Secondary development based on current Jenkins prototype

References

- [1] https://source.tizen.org/documentation/developer-guide/all-one-instructions/creating-tizen-ivi-images-scratch-one-page
- [2] https://source.tizen.org/documentation/developer-guide/all-one-instructions/one-click-solution-tizen-image-creation-based-on-jenkins-framework
- [3] https://source.tizen.org/documentation/reference/git-build-system
- [4] https://source.tizen.org/documentation/reference/mic-image-creator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