

BOSH Introduction



BOSH

Terminology

Deployment

❖ Stemcell

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❖ BOSH release

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❖ Deployment manifest

Stemcell

- ❖ Versioned Operating System image wrapped with IaaS-specific packaging
- ❖ BOSH Agent
- ❖ Different format for different IaaS providers (VMDK for vSphere, AMI for AWS)

Release

- ❖ Software we want to run in the cloud
- ❖ Dependencies (compile and runtime)
- ❖ Configuration templates

Deployment manifest

❖ A YAML file that defines components and properties of a deployment:

- Deployment Identification
- Releases configuration
- Networks configuration
- Types of VMs to be managed by BOSH
- Disks configuration
- Compilation VMs configuration
- Jobs configuration and resource information
- Properties: Global properties and generalized configuration information

Jobs, Errands, Compilation VMs

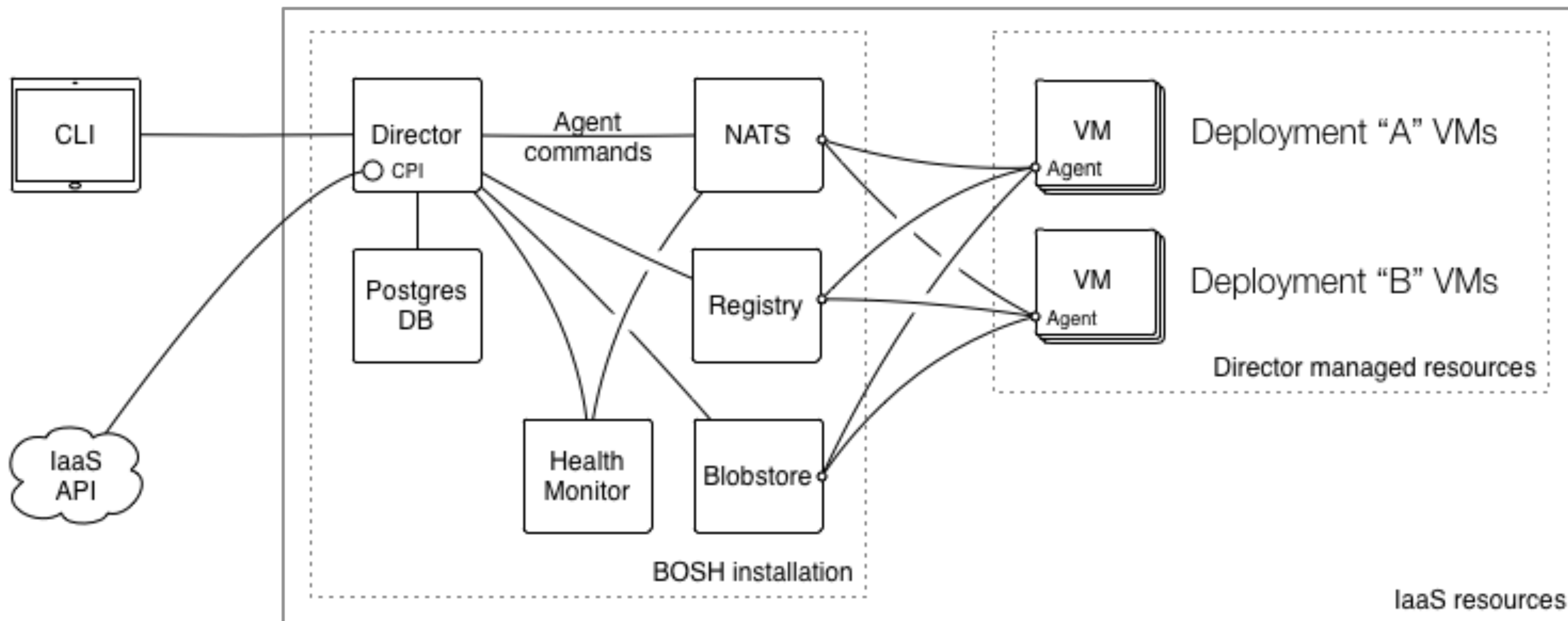
- ❖ Job: Usually referred to a LRP; contains startup, shutdown scripts, and configuration files that tell the Agent how to start, run, and monitor software on a VM. Jobs can depend on packages for necessary software. One VM can have many jobs.
- ❖ Errand: A short-lived job that an operator can run multiple times after the deploy finishes.
- ❖ Compilation VM: A dedicated VM to compile the packages specified in a release. It is short lived and is created and destroyed when a package isn't found in the Blobstore.



BOSH

Architecture

BOSH Architecture



Components: Director

- ❖ Core orchestration component in BOSH
- ❖ Controls VM creation and deployments
- ❖ Manages deployment lifecycle events

Components: Director

Creates actionable tasks to:

- ❖ Translate commands sent by the operator (BOSH CLI)
- ❖ Schedule processes such as backups and snapshots
- ❖ Reconcile expected state vs. the actual state of a VM if needed

Components: Task Queue

- ❖ Asynchronous queue used by the Director and Workers to manage tasks
- ❖ Resides in the database

Components: Director Workers

- ❖ Asynchronous processes
- ❖ Process tasks from the Task Queue

Components: Blobstore

- ❖ Internal storage solution for BOSH
- ❖ Sources, releases (jobs, packages, tgz with release)
- ❖ Saves the uploads from the director
- ❖ Works as an intermediary between the director and the agent for all jobs, packages, and sources
- ❖ Stores other large BOSH payloads, such as log files and output from the BOSH Agent that exceeds the max size for messages over the message bus

Components: Message Bus (NATS)

BOSH component messaging system

- ❖ Provisioning instructions to VMs
- ❖ Monitoring Health of VMs

Components: DNS Server

PowerDNS

- ❖ Provides DNS name resolution across the deployment VMs

Components: Health Monitor

- ❖ Uses status and lifecycle events received from Agents to monitor the health of VMs
- ❖ Can send an alert through notification plugins, or trigger the Resurrector when it finds problems

Components: Resurrector

- ❖ If enabled, the Resurrector plugin automatically recreates VMs identified by the Health Monitor as missing or unresponsive

Components: Registry

- ❖ Stores VM configuration information
- ❖ Is involved during creation and update processes of VMs
- ❖ Helps with the VM bootstrapping process

Components: Agent

- ❖ Installed on each BOSH-created VM
- ❖ Executes Director commands
- ❖ Updates Director with current status

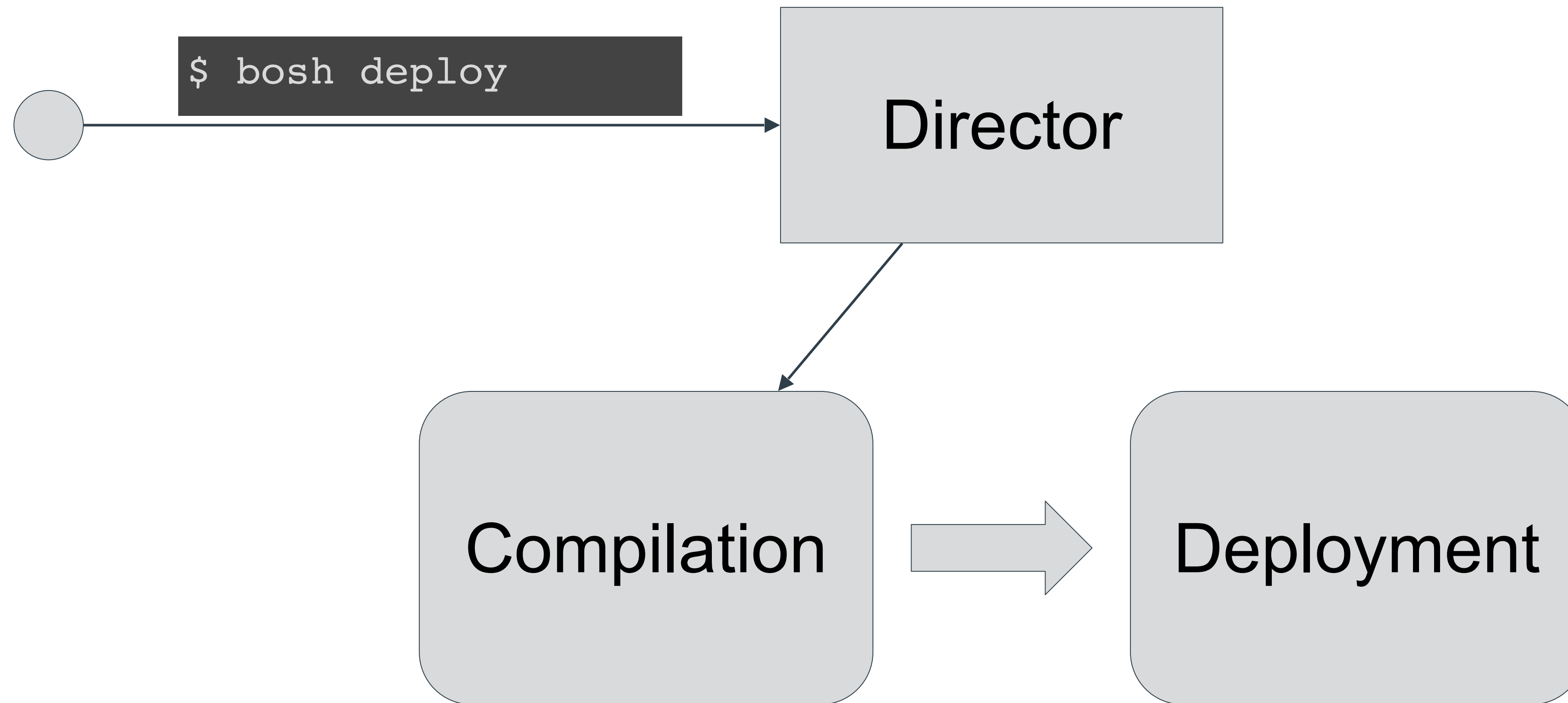
Components: CPI

- ❖ API the Director uses to interact with an IaaS
- ❖ Create and manage stemcells, VMs, disks, network entities
- ❖ Abstracts the cloud infrastructure from the rest of BOSH

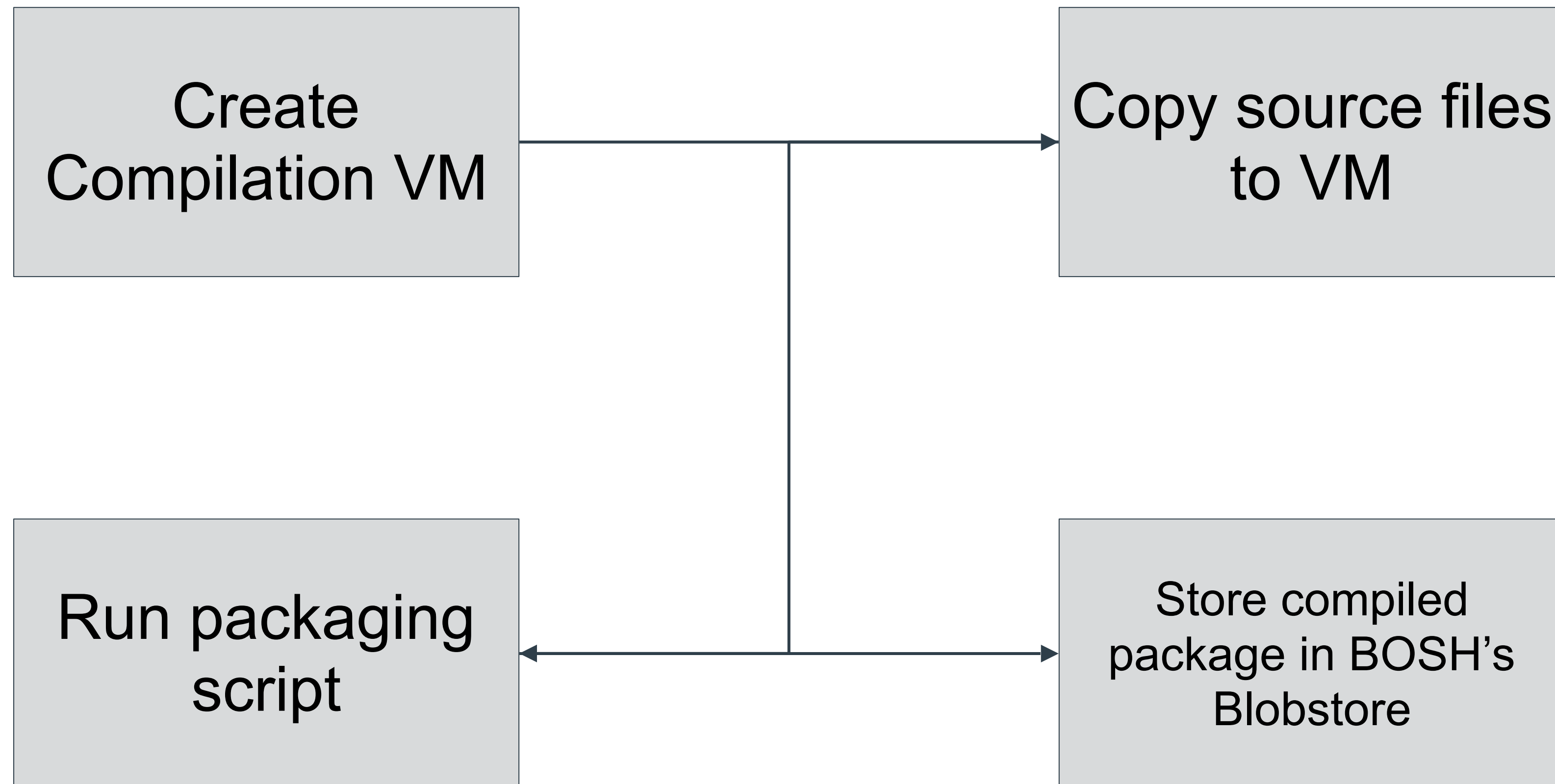
BOSH

Deployment

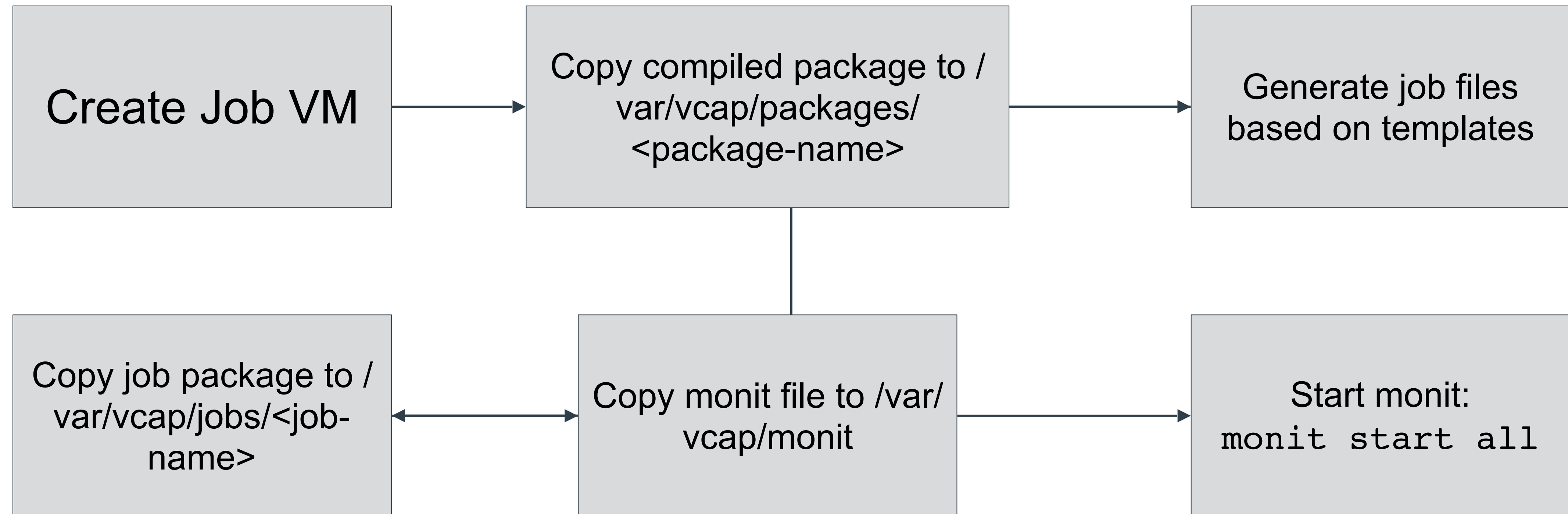
Sequence



Compilation stage



Deployment stage



BOSH: VM creation sequence

