Orchestration and Automation: The Big Picture

AUTOMATION: WHAT IT IS AND WHY YOU SHOULD INVEST IN IT

Josh Duffney
DEVOPS ENGINEER

@joshduffney http://duffney.io/

Intended Audience

Developers

IT Operations

IT Managers

Storyline

Quinn
Systems Administrator

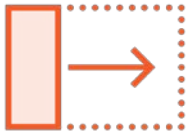
Problems

- Overworked
- Understaffed
- Backlogged
- Lots of manual repetitive work

Strengths

- Willingness to learn
- Passionate about technology

Reasons for Learning About Automation



Automate routine manual tasks

Free up time & reduce workload

Unblock backlogged work

What Is Automation?

Automation

Is the technique, method, or system of operating or controlling a process by highly automatic means, reducing human intervention to a minimum

The Case for Automation

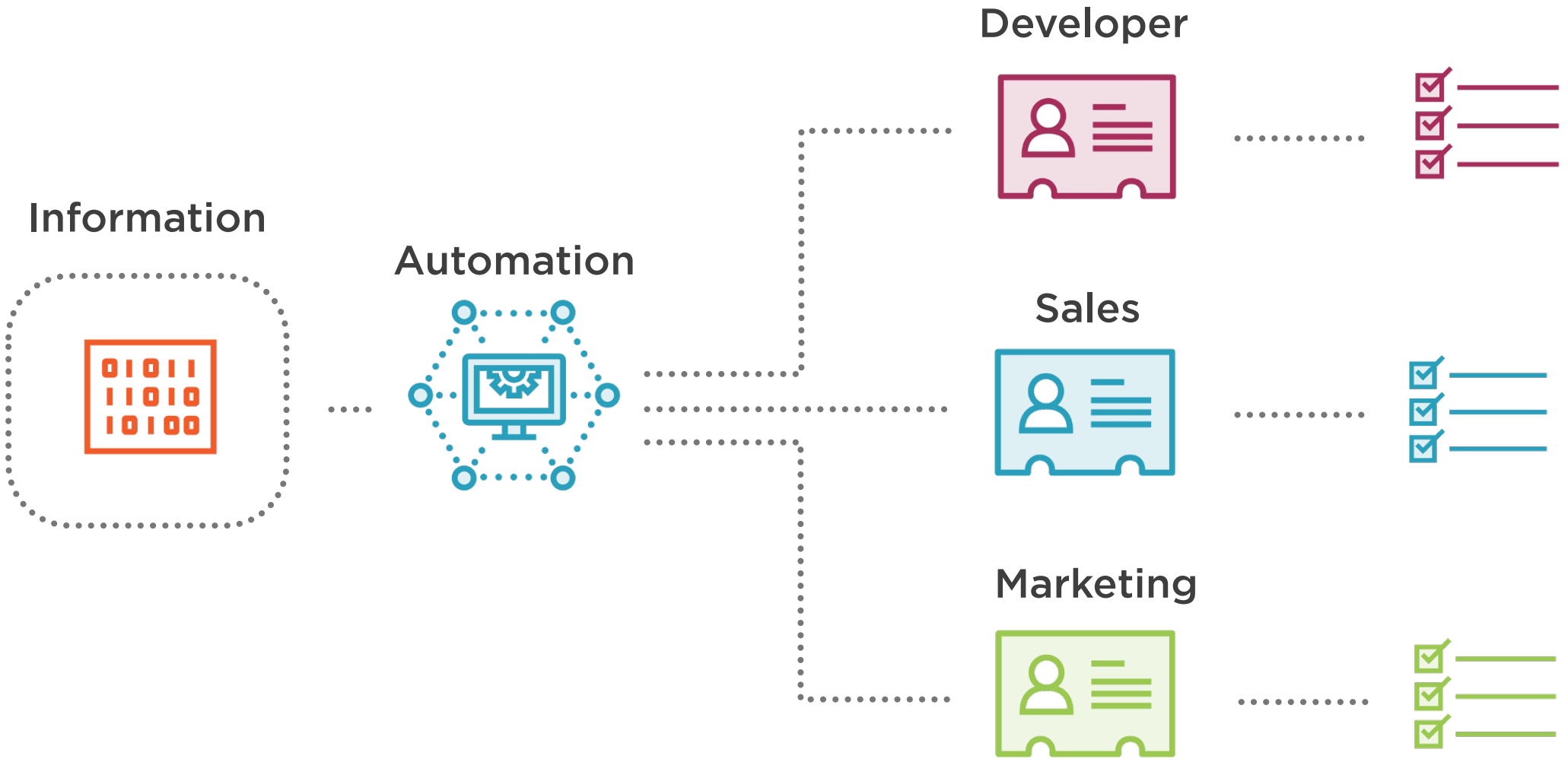
Onboarding a new user

Create new user account

Add to groups

Create user share

What Automation Looks Like



A Closer Look at Automation

(1) Inputs [New User Information]

(2) Trigger Automation

(3) Evaluate Inputs

  (1) If Developer do X

  (2) If Sales do Y

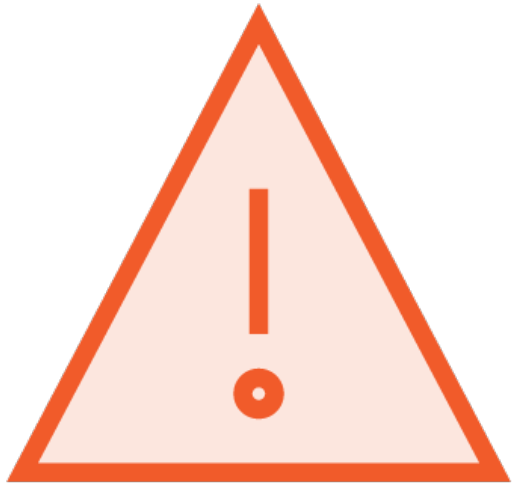
  (3) If Marketing do Z

(4) Execute X, Y, or Z Tasks

Types of Automation

Manual

Scheduled



Event

Self-Service

Summary

Reasons for automation

- Reduce manual effort
- Free up your time
- Focus on more important things

What automation is

- Reducing human intervention

What automation looks like

Different types of automation

- Manual, scheduled, events, self-service

Discovering the Benefits of Automation

Josh Duffney
DEVOPS ENGINEER

@joshduffney http://duffney.io/

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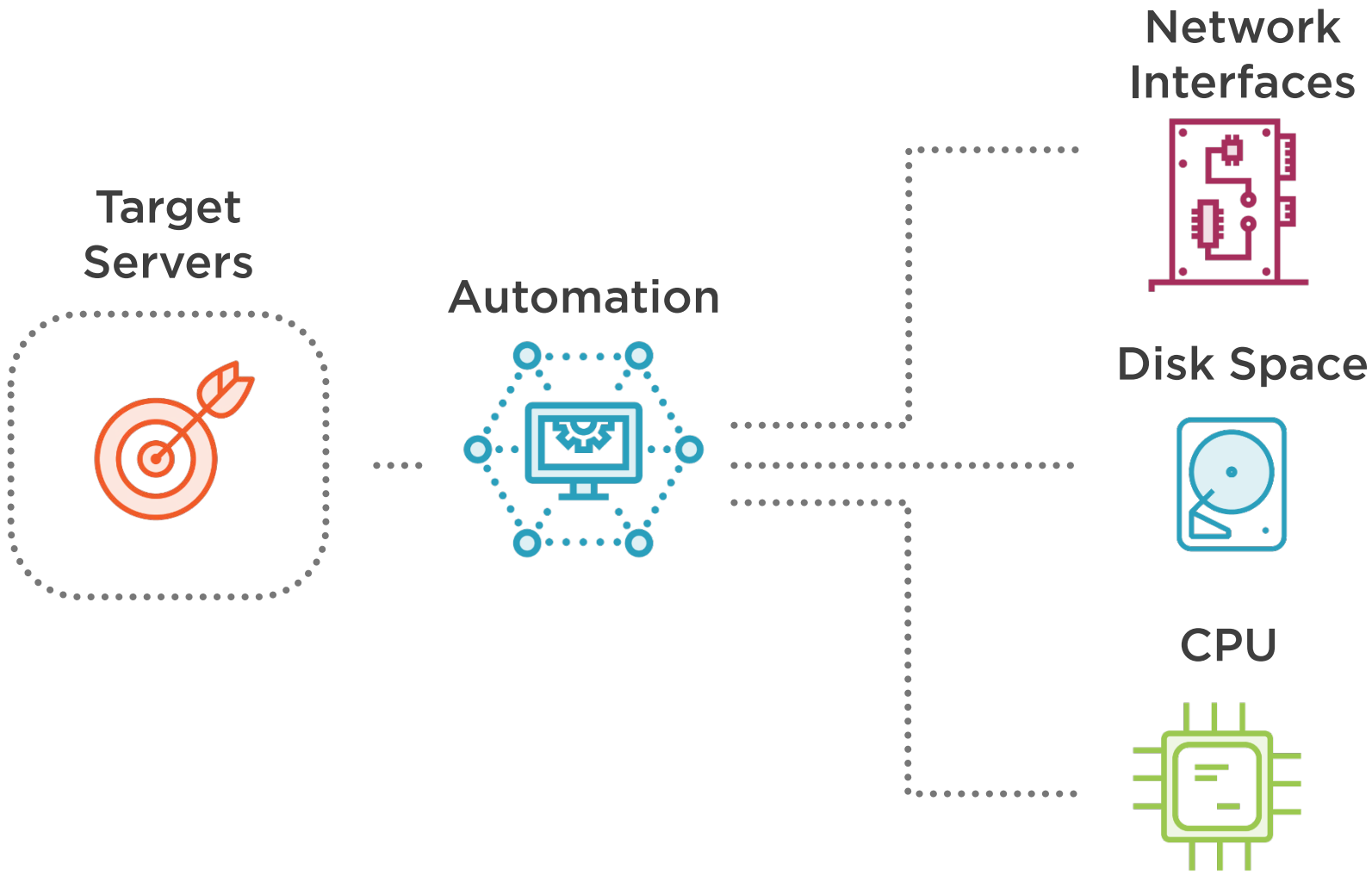
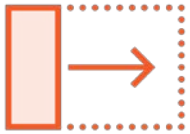
Progress

- Gather system information from servers
- Scheduled updates and restarts of servers
- Low diskspace remediation
- Software install requests

Gather System Information from Servers



Benefits of Automation



Reduced time to complete request

Less effort required when gathering additional information

Repeatable

Scheduled Updates and Restarts

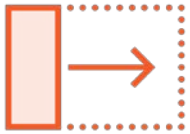
Scheduled automation

Run updates

Reboot server after updates

Verify server is online

Benefits of Automation



Improved process

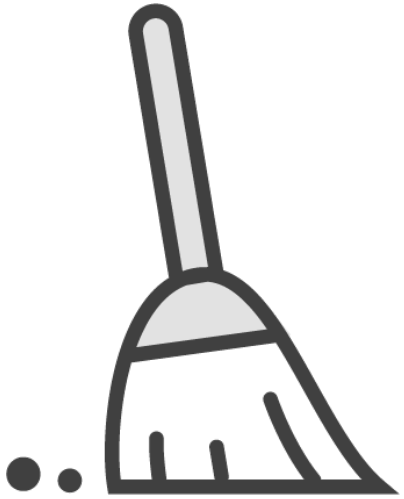
Consistency

Reliable

Remediate Low Diskspace

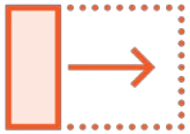
Search logs

Low diskspace detected



Run cleanup automation

Benefits of Automation

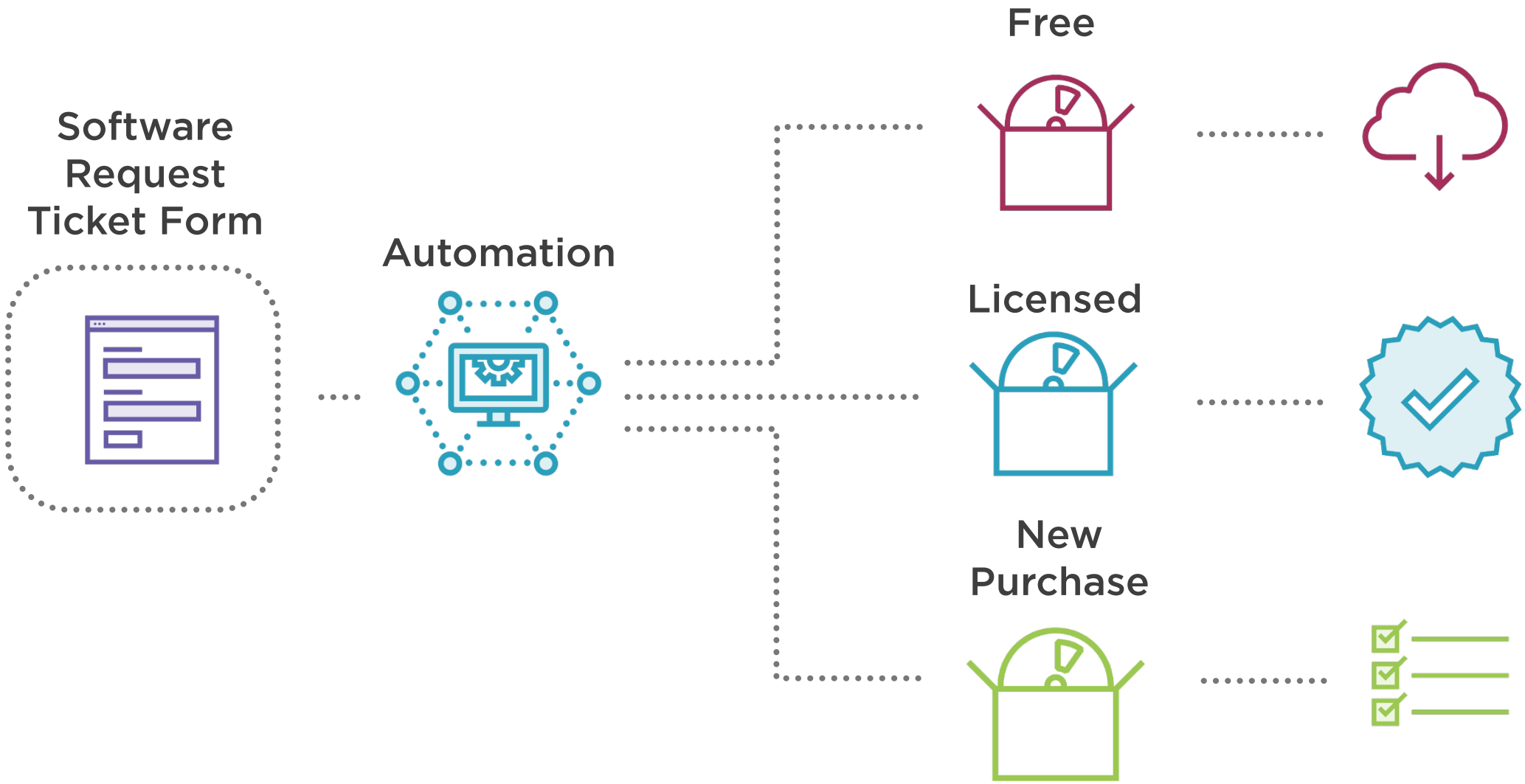


Proactive vs. reactive

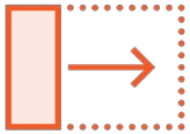
Improved confidence

Less context switching

Software Requests



Benefits of Automation



Faster completion of requests

Happier end users

Reduced effort and time saved

Individual Benefits of Automation

Increased speed

Reduce errors

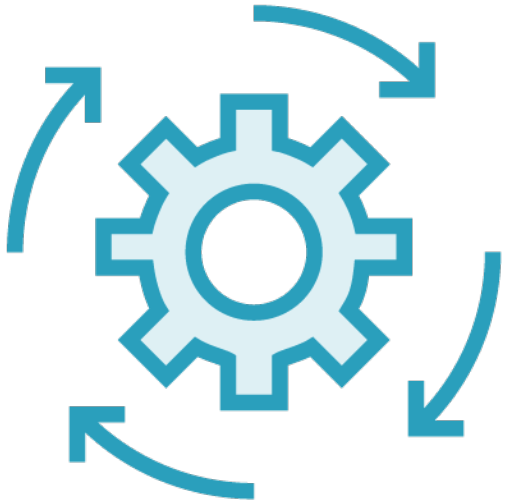
Repeatable

Shareable

Documented

Fun

Organizational Benefits of Automation



Operational Efficiency

Quality

Reduced Cost

Summary

Examples of Automation

Individual Benefits of Automation

- Increased Speed
- Reduced Effort and Errors
- Repeatable and Reliable
- Shareable
- Documented
- Fun

Organizational Benefits of Automation

- Increased Operational Efficiency
- Improved Quality
- Reduced Cost

Managing Automation with Orchestration

Josh Duffney
DEVOPS ENGINEER

@joshduffney http://duffney.io/

Storyline

Quinn
Systems Administrator

Problem

Unmanageable automation

- What runs where?
- Who ran what?
- When did it run?

Uncoordinated automation

- How do you connect automation?

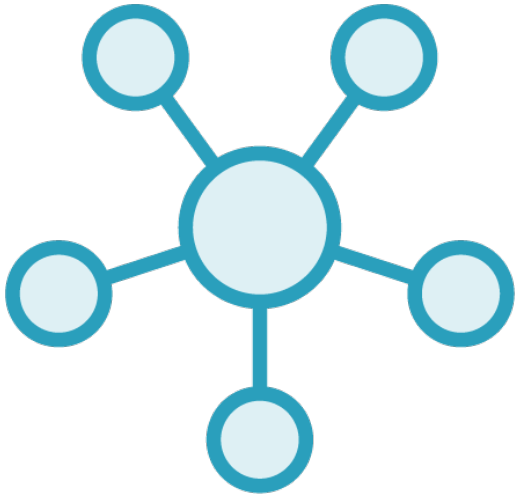
Solution

- Implement orchestration

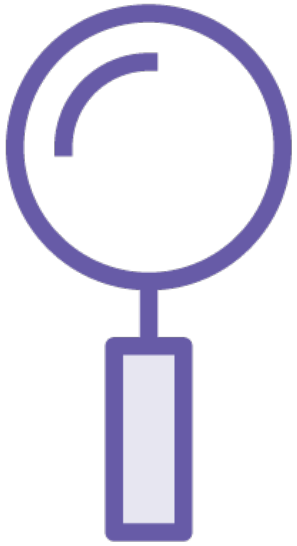
Orchestration

Describes the arranging and coordinating of automated tasks.

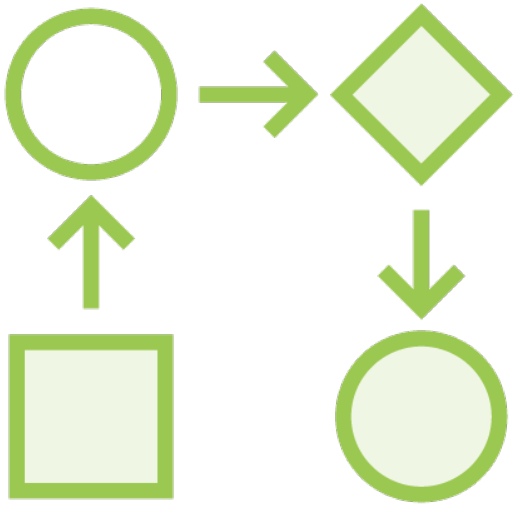
Why Orchestration?



Centralized management



Auditing

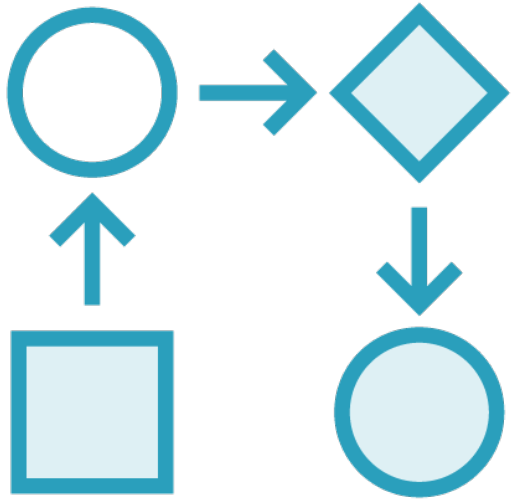


Enhanced workflow

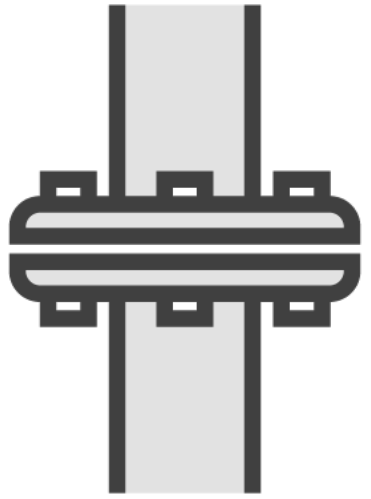
Self-service portal

How Does Orchestration Work?

Runbooks



Workflows



Pipelines

Workflow

Copy production databases to staging

Mask databases

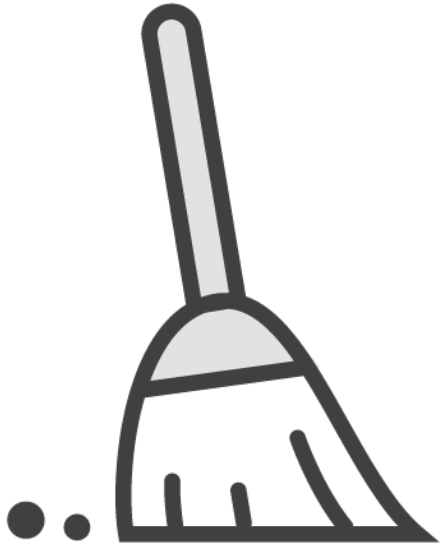
Refresh QA databases

Runbook

Detach existing databases

Copy masked databases

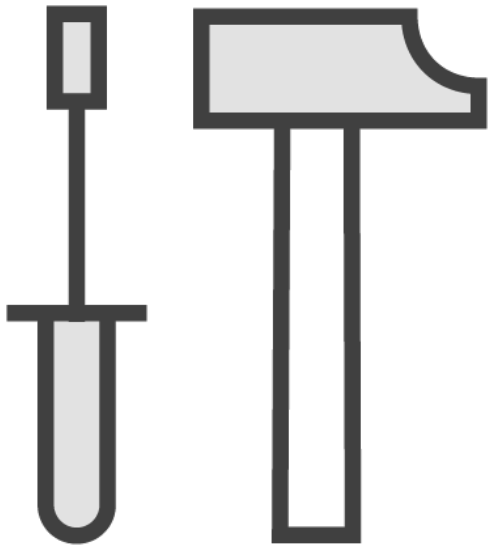
Attach masked databases



Cleanup databases and logs

Pipeline

Source code



Build

Test

Release

Summary

Introduced orchestration

Benefits of orchestration

- Centralized management
- Auditing
- Enhanced workflows

How orchestration works

- Workflows
- Runbooks
- Pipelines

Types of Orchestration

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DEVOPS ENGINEER

@joshduffney http://duffney.io/

Storyline

Quinn
Systems Administrator

Problem

- What type of orchestration to use?

Questions

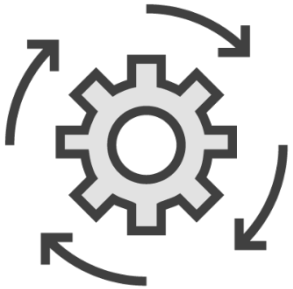
- What types are there?
- How do they work?

Types of Orchestration

Operating system task schedulers

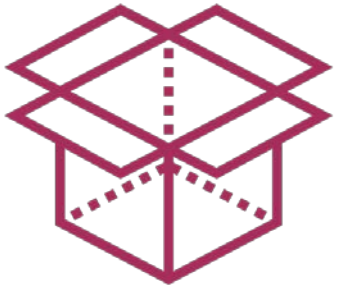
Runbook orchestration

Cloud-based automation



Configuration management

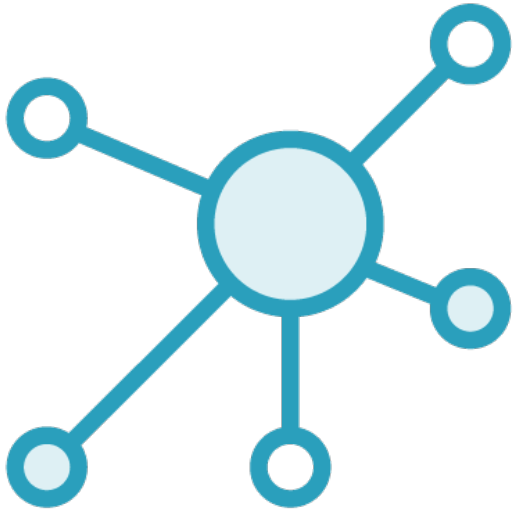
Continuous integration



Continuous deployment

Orchestration Communication Methods

Locally



Remoting protocol

Agent

Service

Operating System Task Scheduler

Is a built in service that allows you to perform automated tasks on a chosen computer

Operating System Task Schedulers

Triggers

- Scheduled time
  - Hourly, daily, weekly, monthly
- Events

Actions

- Run a specified program, script, or automation

Communication method

- Local

Runbook Orchestration

A workflow management system that allows you to coordinate, deploy, and monitor automation

Runbook Orchestration

Requires

- Management server
- Runbook runners
- Database

Web portal or graphical interface

- Creating, edit, monitoring and auditing workflows and runbooks

Communication method

- Agent

Cloud-based Automation

Provides end-to-end automation workflows that coordinate lower-level automation though an API and/or a web portal for cloud resources

Cloud-based Automation

Provided as a service

- API
- Web portal

Manages and coordinates

- Cloud runbooks
- Cloud workflows
- Lower-level automation tasks
- Cloud resources

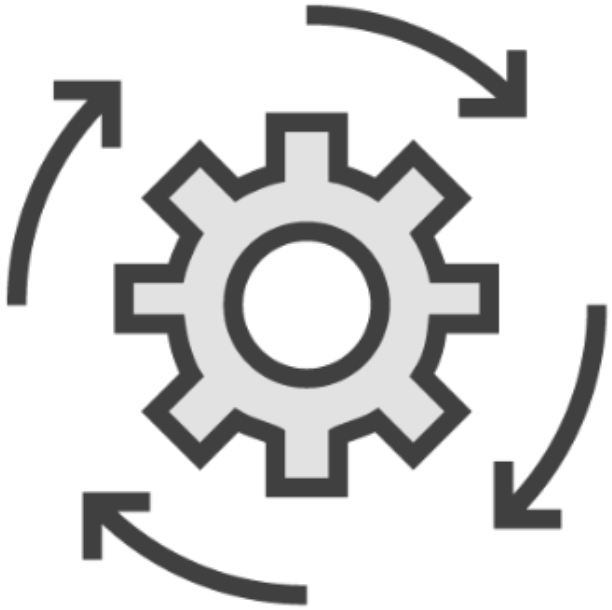
Communication method

- Cloud service

Configuration Management Tools

Provides the ability to manage system state changes and provisioning of infrastructure through automation

Configuration Management Tools



Requires

- Central server
- Agents or remote protocol

Declarative infrastructure

- DSL (Domain Specific Language)

Communication method

- Agent or remoting protocol

Continuous Integration Tools

Automates software development build processes that are triggered by code changes to central code repositories

Continuous Integration Tools

Requires

- Continuous integration server
- Database
- Build agents

Provides automation

- Software build process
- Testing

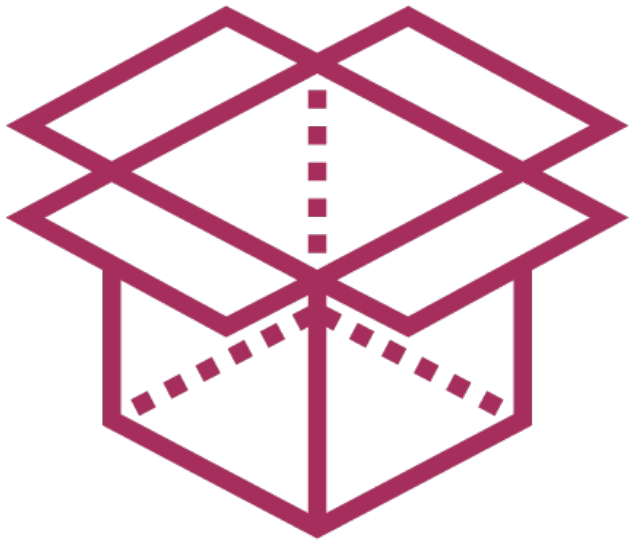
Communication method

- Agent

Continuous Deployment Tools

Are designed for automating the deployment of software releases

Continuous Deployment Tools



Requires

- Continuous deployment server(s)
- Database
- Agents

Provides automation

- Deployment of software across different environments

Communication method

- Agent

Summary

Types of orchestration

- Built-in, runbook platforms, cloud-based, pipeline tools

How the different types of orchestration work

Orchestration communication methods

- Local
- Remoting protocol
- Agent
- Cloud service