

ThoughtWorks®

Considerations & pitfalls when migrating from on-premise to public cloud

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WHO AM I?



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WHAT'S "SOFTWARE ARCHITECTURE"?

Software = Applications

Architecture = Technical

WHAT'S "SOFTWARE ARCHITECTURE"?

Software = Applications

+ Domains + Infrastructure

Architecture = Technical

+ Data + Security + System + Operations

OUR CLIENTS MOVE TO PUBLIC CLOUD BECAUSE...

“We want to **change** quickly.”

“We want to elastically **scale**.”

“We want to utilize cloud/SaaS **offerings**.”

OTHER MIGRATION PATTERNS

On-Premise to Public Cloud

Hybrid Cloud

Traffic Shifting

The background of the image is a soft-focus photograph of a green field. The green is a vibrant, slightly overexposed shade. Scattered throughout the field are small, white, star-shaped flowers, likely cornflowers or similar wildflowers, which appear as tiny white specks against the green. The overall effect is a peaceful, natural scene.

Pick the First Candidate.

YOUR FIRST CANDIDATE...

Important but not **Critical**

Greenfield vs. Brownfield

Lift & Shift vs. Cloud-Native

Client-Facing vs. Internal

Monolith vs. Microservice

YOUR FIRST CANDIDATE...

Important but not Critical

Greenfield vs. Brownfield

Lift & Shift vs. Cloud-Native

prove VALUE

Client-facing vs. Internal

Monolith vs. Microservice

FOR DATA, CONSIDER...

regulatory
limitations

data transport



cost

performance

backups



Remember the Domain.

REMIND YOURSELF...



business domain



user flow



secret sauce

not the



technical solution

S₁ I₁ M₃ P₃ L₁ E₁

-O

R

A MISCONCEPTION

Public Cloud Migration is **not**
Digital Transformation.

The background of the slide features a soft-focus photograph of a green landscape with rolling hills or fields. The colors are primarily various shades of green, with some darker tones in the shadows and lighter ones in the highlights.

Use Build Pipelines.

WHAT'S A PIPELINE?

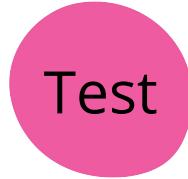
“..is an automated **manifestation** of your process for getting software from version **control** into the hands of your users.”

[Continuous Delivery: Reliable Software Releases through Build, Test, and Deployment Automation](#)

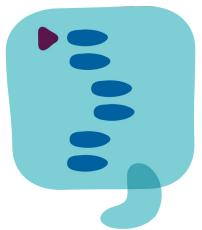
manifest = technical architecture
“we are using containers”

control = auditing architecture
“no direct access”

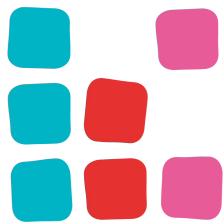
When I need to deploy **anything**,
then I should do it through a **pipeline**.



PIPELINES EVOLVE OVER TIME



Template
Generators



Shared
Libraries



Pipeline-as-
Code

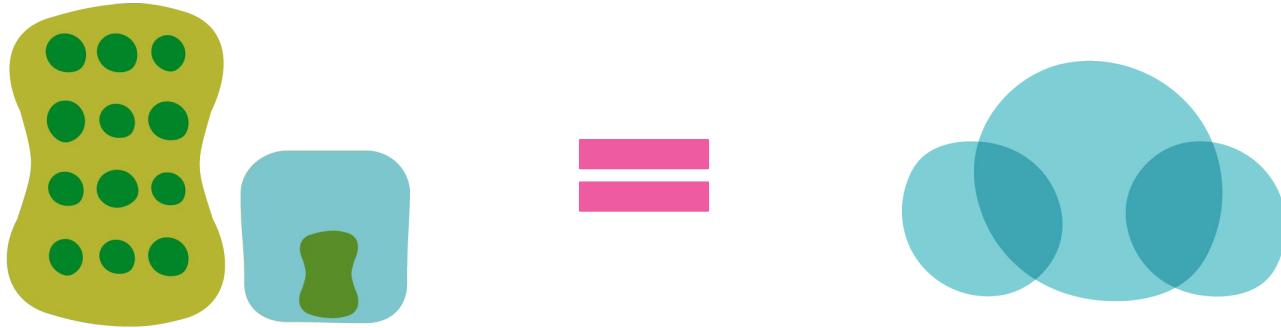


Pipeline-as-
Service



Apply Patterns to Infrastructure.

THE ANTI-PATTERN



On-Premise
Architecture

Public Cloud
Architecture

SELF-SERVICE



Infrastructure
Services

Platform
Services

Self-
Service

INFRASTRUCTURE-AS-CODE

unit test	deploy	integration test	smoke test
<pre>inspec exec -t docker://</pre> 	<pre>docker push</pre> 	<pre>docker compose</pre> 	
<pre>terraform plan</pre> 	<pre>terraform apply</pre> 	<pre>inspec exec</pre> 	"I should be able to deploy a __ on my platform."

The background of the image is a soft-focus photograph of a green field. The green is a mix of various shades, from bright lime to darker forest green. Scattered throughout the field are small, delicate white flowers, possibly dandelions or wildflowers, which are slightly out of focus, giving the image a dreamlike, painterly quality.

**Standardization over
Customization.**

REPLACE HOMEGROWN SOLUTIONS WITH INDUSTRY TOOLS



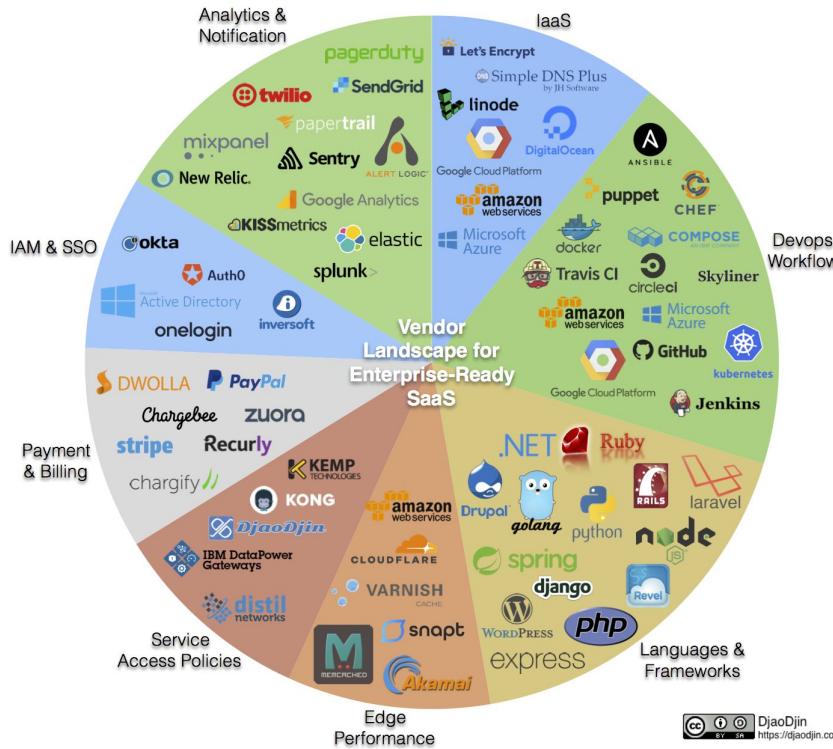
Homegrown
Image Builder



Industry
Tool

SOFTWARE-AS-A-SERVICE

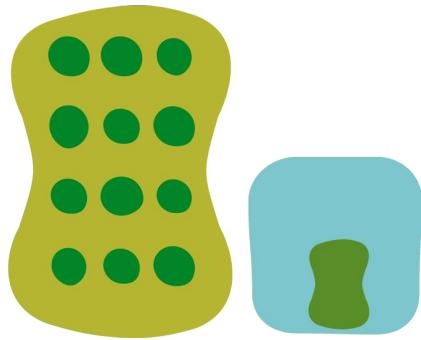
The Landscape for Enterprise-Ready SaaS



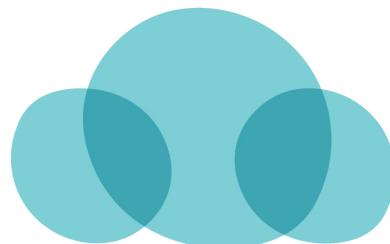


Security First.

WE RECOGNIZE THAT...

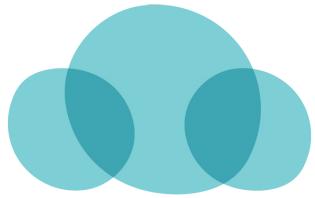


On-Premise
Security



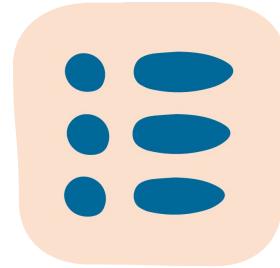
Public Cloud
Security

THE ANTI-PATTERN



We **think** this policy
or configuration
works...

(we'll figure it out
later!)



* add to the list of
tech debt

THE ANTI-PATTERN



Misconfigured Amazon Web Services **bucket** exposes 12000 social ...
SC Magazine - Feb 5, 2018

Another misconfigured Amazon Web Services (AWS) S3 cloud storage **bucket** has been left insecure this time exposing the sensitive data of 12,000 social ...
Researchers noted that while no financial information was **compromised**, the leak damages the brands credibility and more importantly exposes ...

works...

EVERYTHING SECURITY-RELATED...



Identity
Provider



Secrets
Management



Artifact
Management

should be



Self-Service



Pipelines



Cloud-Friendly

The background of the image is a soft-focus photograph of a field of green grass and small white flowers, possibly dandelions, creating a textured, organic pattern.

Reduce the Risk.

ENSURE NON-FUNCTIONAL REQUIREMENTS

Is your system **performant**?

Is your system **resilient**?

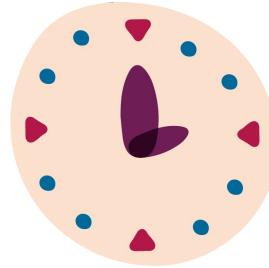
Where are your **bottlenecks**?

Which **parts** need to be highly available?

TAKE SOME MEASUREMENTS



client experience
(business metrics)



mean time to recovery
(devops metrics)



Create a Cloud Culture.

product teams learn

The screenshot shows the Nagios XI web interface with several panels:

- Host Status Summary:** Shows counts for Up (25), Down (1), Unreachable (3), Pending (0), and Unhandled (64) hosts.
- Service Status Summary:** Shows counts for Ok (25), Warning (12), Unknown (8), Critical (2), and Pending (0) services.
- Hostgroup Status Summary:** Shows status for groups like All EMC SAN Hosts, Firewalls, Host Deadpool, Linux Servers, new group, Printers, Websites, and Windows Servers.
- Top Alert Producers Last 24 Hours:** A bar chart showing alert counts for various ports and system components.
- Metric Overview:** A table showing disk usage for localhost, vst.nagios.com, and exchange.nagios.org.



operations & observability

**infrastructure
& security
teams learn**



**development
&
testing**

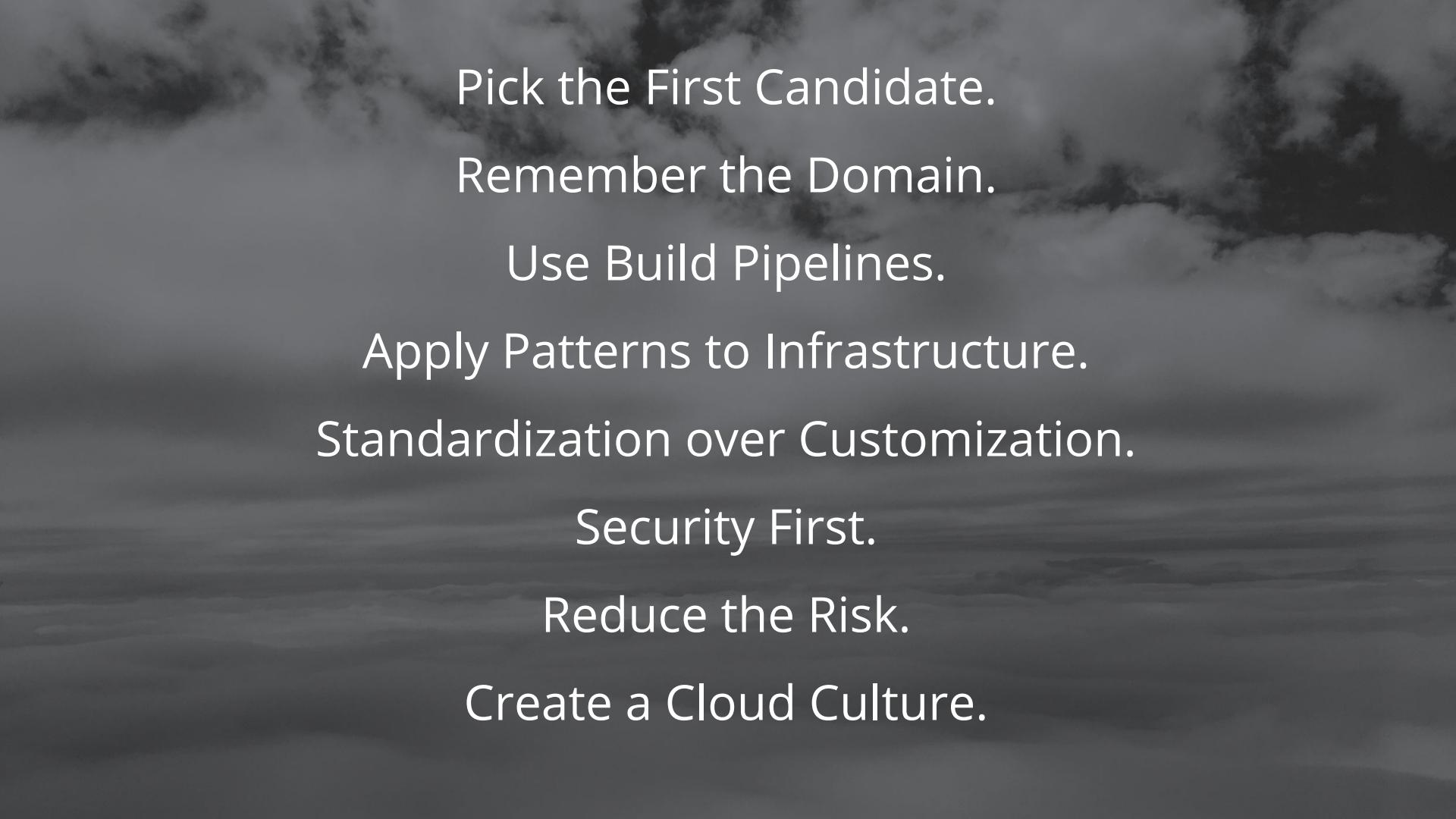
EVERYONE (PRODUCT, INFRA, & SECURITY)...

uses similar **developer workspaces**.

learns **containers**.

learns **pipelines**.

breaks habit of direct access.

The background of the slide features a dramatic, dark sky filled with heavy, billowing clouds, creating a somber and focused atmosphere.

Pick the First Candidate.

Remember the Domain.

Use Build Pipelines.

Apply Patterns to Infrastructure.

Standardization over Customization.

Security First.

Reduce the Risk.

Create a Cloud Culture.

Essential Guide

MANAGE

A comprehensive look at the path to cloud migrations

Despite roadblocks in the process, cloud migrations can bring significant rewards. To successfully move to the cloud, organizations need to craft a migration strategy, assess risks and plan for surprises.



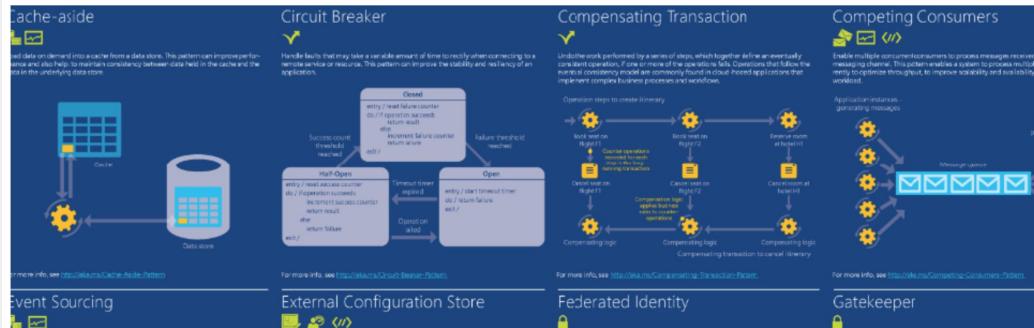
Migrating your Existing Applications to the AWS Cloud

A Phase-driven Approach to Cloud Migration

Cloud Design Patterns

Depicts common problems in designing cloud-hosted applications and design patterns that offer guidance.

Click on the infographic below to zoom in and view in detail or download it straight to your machine.



Gartner Identifies Five Ways to Migrate Applications to the Cloud

Analysts Explore Application Modernization at Gartner Application Architecture, Development & Integration Summit 2011, 16-17 June, London

Organizations seeking to move applications into the cloud have five options: rehost on infrastructure as a service (IaaS), refactor for platform as a service (PaaS), revise for IaaS or PaaS, rebuild on PaaS, or replace with software as a service (SaaS), according to Gartner, Inc.



maps can be useful



journeys will always differ



move only what needs



THANK YOU

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