Why Containers

WILL TAKE OVER THE WORLD

@EltonStoneman | elton@docker.com | #gids18
Today

WHY CONTAINERS WILL TAKE OVER THE WORLD

1. Because they solve **real problems**
2. Because they’re **flexible**
3. Because they’re **open**
1. Because They Solve Real Problems
i. To The Cloud!
i. To The Cloud!

- Agility
- Cost
- Freedom
Agility

Cost

Freedom
Agility
- Cost
 ✓ Freedom
TEST | 10x VMs | $1.4K / mth

PROD | 25x VMs | $3.4K / mth
300K

TEST | 10x VMs | $1.4K / mth

PROD | 25x VMs | $3.4K / mth
TEST | 3x VMs | $0.4K / mth

PROD | 7x VMs | $0.9K / mth
Agility
Cost
Freedom
ii. Cloud Native Apps
ii. Cloud Native Apps

- Agility
- Scale
- Fault-tolerance
CLOUD NATIVE COMPUTE FDN

- Container packaged
- Dynamically managed
- Micro-services oriented

* https://www.cncf.io/about/charter/*
 ✓ Agility
 ✓ Scale
 ✓ Fault-tolerance
> demo
PS> docker stack deploy -c sockshop-stack.yml sockshop
Creating network sockshop_default
Creating service sockshop_shipping
Creating service sockshop_rabbitmq
Creating service sockshop_carts
Creating service sockshop_orders-db
Creating service sockshop_front-end
Creating service sockshop_payment
Creating service sockshop_user-db
Creating service sockshop_catalogue
Creating service sockshop_user
Creating service sockshop_orders
Creating service sockshop_carts-db
Creating service sockshop_catalogue-db
<table>
<thead>
<tr>
<th>Status</th>
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</tbody>
</table>
WE LOVE SOCKS!
Fun fact: Socks were invented by woolly mammoths to keep warm. They died out because stupid humans had to cut their legs off to get their socks.

BEST PRICES
We price check our socks with trained monkeys back at the office.

100% SATISFACTION GUARANTEED
Free returns on most items. Hamsters are non-returnable once spoken to.
Modernizing Traditional Apps
iii. Modernizing Traditional Apps

- Portability
- Security
- Efficiency
✓ Portability
✓ Security
✓ Efficiency
PS> docker stack deploy -c signup-stack-v1.yml signup
Creating network signup_app-net
Creating service signup_signup-app
Creating service signup_signup-db
<table>
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</tbody>
</table>
Have you tried Play with Docker?

A simple, interactive and fun playground to learn Docker.

Docker from the comfort of your browser

Play with Docker (PWD) gives you a configured Docker setup running in the cloud, which you manage from your browser.

There's a playground for just trying things out - like Docker Swarm mode - and there are self-paced training labs too.

Interested? Get the newsletter!

Give us your details and we'll keep you posted.

It only takes 30 seconds to sign up.

And we probably won't spam you very much.

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PS> docker stack deploy -c signup-stack-v4.yml signup
Creating service signup_signup-homepage
Updating service signup_signup-db (id: ou76tml3b2ys6k16g9j73jn81)
Updating service signup_signup-app (id: z5sbkiyulf6xdbbki6u5wvm6e)
Creating service signup_message-queue
Creating service signup_elasticsearch
Creating service signup_signup-signup-save-handler
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<td>4 minutes ago</td>
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<td>nats:nanomsg@sha256:4...</td>
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iv. Innovation
iv. Innovation

✓ If we don’t, someone else will
18.04.27 07:42:26.904 nd.platform.docker.runner (D) Executing {"command": "docker version"}
18.04.27 07:42:26.922 nd.platform.docker.runner (D) Command executed successfully {"output": "Client:\nVersion: 17.09.0-ce\nAPI version: 1.30 (downgraded from 1.32)\nGo version: go1.8.3\nGit commit: afdb6d4\nBuilt: Tue Sep 26 22:39:28 2017\nOS/Arch: linux/amd64\n\nServer:\nVersion: 17.06.2-ee-8\nAPI version: 1.30 (minimum version 1.12)\nGo version: go1.8.7\nGit commit: 4e8ed51\nBuilt: Fri Mar 30 01:34:39 2018\nOS/Arch: linux/amd64\nExperimental: false\n"}, "stderr": "", "exitCode": 0}

playground (I) Starting {"name": "local", "noPull": false, "defaultTcRefeshInterval": ""}

playground (I) Read version {"version": {"label":"0.3.4","git_commit":"adcfb8c72d9f067d37b6797c37a7e3e34ae46b167","os":"linux","arch":"amd64","go_version":""}}

18.04.27 07:42:26.923 playground.docker.runner (D) Executing {"command": "docker version"
18.04.27 07:42:26.940 playground.docker.runner (D) Command executed successfully {"output": "Client:\nVersion: 17.09.0-ce\nAPI version: 1.30 (downgraded from 1.32)\nGo version: go1.8.3\nGit commit: afdb6d4\nBuilt: Tue Sep 26 22:39:28 2017\nOS/Arch: linux/amd64\n\nServer:\nVersion: 17.06.2-ee-8\nAPI version: 1.30 (minimum version 1.12)\nGo version: go1.8.7\nGit commit: 4e8ed51\nBuilt: Fri Mar 30 01:34:39 2018\nOS/Arch: linux/amd64\nExperimental: false\n"}, "stderr": "", "exitCode": 0}

18.04.27 07:42:26.941 playground.server (D) Registered resource {"name": "functions"}
18.04.27 07:42:26.942 playground.server (D) Registered resource {"name": "invocations"}
18.04.27 07:42:26.944 playground.server (D) Registered resource {"name": "sources"}
18.04.27 07:42:26.944 playground.server (D) Registered resource {"name": "tunnel"}
18.04.27 07:42:26.944 playground.server (W) Failed to login with docker keys {"err": "Failed to read docker key directory"}
18.04.27 07:42:26.945 playground.server (I) Initialized {"assetsDir": "/etc/nuclio/playground/..."}
```javascript
// Uses moment.js (installed as part of the build) to add a given amount of time
// to "now", and returns this as a string. Invoke with a JSON containing:
// - value: some number
// - unit: some momentjs unit, as a string - e.g. days, d, hours, milliseconds
// For example, the following will add 3 hours to current time and return the response:
{
  "value": 3,
  "unit": "hours"
}

var moment = require('moment');

exports.handler = function(context, event) {
  var request = JSON.parse(event.body);
  var now = moment();
  context.logger.infoWith('Adding to now', {
    'request': request,
    'to': now.format()
  });
  now.add(request.value, request.unit);
  context.callback(now.format());
};
```

Log

2018-04-27T07:59:43.704Z [INFO]: Deploying function
2018-04-27T07:59:43.720Z [INFO]: Building
2018-04-27T07:59:43.742Z [INFO]: Cleaning up before deployment
2018-04-27T07:59:43.778Z [INFO]: Function already exists, deleting
2018-04-27T07:59:44.263Z [INFO]: Staging files and preparing base images
2018-04-27T07:59:44.263Z [INFO]: Building processor image
2018-04-27T07:59:44.426Z [INFO]: Build complete [result: 
"image":"nuclio/processor-dates:latest","UpdatedFunctionConfig":{"metadata":{"name":"dates","namespace":"nuclio"},"spec":{"build":{"commands": ["npm install --global moment"], "path": "/tmp/nuclio-build-400956114/download/dates.js"}, "handler": "dates.js:handler", "replicas": 1, "resources": []},
POST http://ucp.sixeyed.com:39788

Authorization  Headers (1)  Body  Pre-request Script  Tests

- form-data
- x-www-form-urlencoded
- raw
- binary

JSON (application/json)

```json
{
    "value": 3,
    "unit": "hours"
}
```

Body  Cookies  Headers (4)  Test Results

Pretty  Raw  Preview  Text

Status: 200 OK  Time: 62 ms  Size: 143 B

1 2018-04-27T11:01:31+00:00
### 4 Stacks

<table>
<thead>
<tr>
<th>Type</th>
<th>Name</th>
<th>Services/Containers</th>
<th>Networks</th>
<th>Volumes</th>
<th>Secrets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swarm Services</td>
<td>sockshop</td>
<td>12</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Swarm Services</td>
<td>signup</td>
<td>6</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Basic Containers</td>
<td>Docker Universal Control Plane</td>
<td>9</td>
<td>0</td>
<td>0</td>
<td>-</td>
</tr>
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<td>Basic Containers</td>
<td>Docker Trusted Registry 2.5.0</td>
<td>9</td>
<td>0</td>
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v. DevOps
v. DevOps

- Agility
- Quality
- Value
DevOps is C. A. L. M. S.

- **Culture**
- **Automation**
- **Lean**
- **Metrics**
- **Sharing**
Docker Underpins C. A. L. M. S.

- **Culture** | Common artifacts
- **Automation** | Build, ship & run
- **Lean** | Incremental updates
- **Metrics** | Consistent landscape
- **Sharing** | Production-grade OSS
<table>
<thead>
<tr>
<th>MSBuild</th>
<th>NuGet</th>
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<tr>
<td>Make</td>
<td>Maven</td>
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<td>MSIs and ZIPs</td>
<td>JARs and WARs</td>
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<td>PowerShell</td>
<td>Bash</td>
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<tr>
<td>IIS Manager</td>
<td>Bash</td>
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<tr>
<td>SCOM</td>
<td>Nagios</td>
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2. Because They’re Flexible
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<tr>
<th>Migrate as-is</th>
<th>Adopt platform idioms</th>
<th>Adapt to new runtime</th>
<th>Extract key features</th>
<th>Rebuild and renew</th>
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<tr>
<td>• Binaries</td>
<td>• Configuration</td>
<td>• Fault-tolerance</td>
<td>• Performance</td>
<td>• Architecture</td>
</tr>
<tr>
<td>• Setup</td>
<td>• Monitoring</td>
<td>• Scaling</td>
<td>• Functionality</td>
<td>• Tech stack</td>
</tr>
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<td>• Artifacts</td>
<td>• Logging</td>
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- Configuration
- Monitoring
- Logging
- Fault-tolerance
- Scaling
- Statelessness
- Performance
- Functionality
- Architecture
- Tech stack
- Paradigms
- Binaries
- Setup
- Artifacts

https://is.gd/about_mta
3. Because They’re Open
PS> docker …
build
ship
run
NEXT STEPS

• Demos | is.gd/30rcog

• Workshop | is.gd/YvMAAH

• MTA for .NET devs | dockr.ly/mta-dev

• Pluralsight | Modernizing .NET Apps w/ Docker
THANK YOU :)
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Conference: April 23-26, Bangalore

Register early and get the best discounts!

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