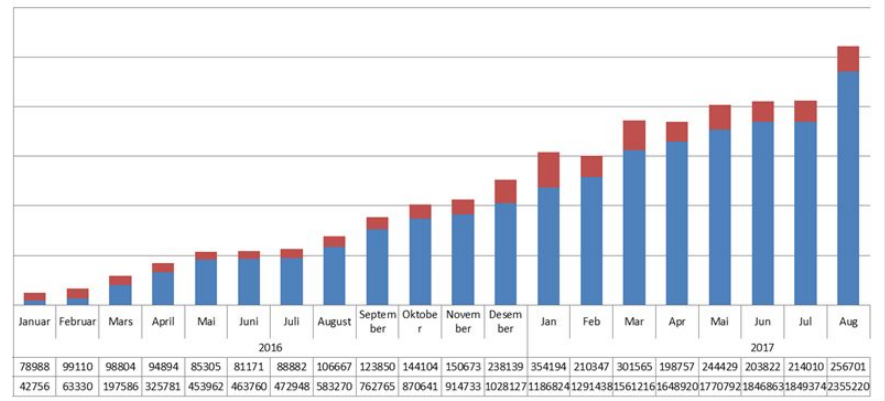
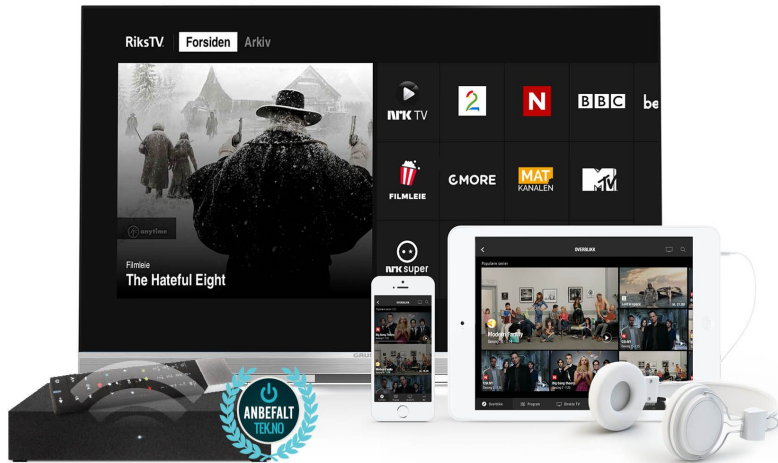


Dynamic Configuration In Service Deployments

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The RiksTV Stack

- The majority of backend: C# “classic”
- A super-duper-critical part of our stack in NodeJS
- Infra/mgmt: Python/PowerShell

The Problem

 Web.Dev.config	3.5 KB	2016-10-10
 Web.Prod.config	3.6 KB	2016-10-10
 Web.Proddev.config	3.1 KB	2016-10-10
 Web.Prodtest.config	3.0 KB	2016-10-10
 Web.UAT.config	3.7 KB	2016-10-10
 Web.config	12.5 KB	2016-10-10

Also: Secrets



What we wanted to do

- ONE config file
- To be able to quickly stand up new environments (canary, A/B etc)
- Keep secrets outside of source control

Stuff we wanted to look at



What we ended up building

Key: rikstv.demo.consulapp.homepagetitle

dev/proddev (for instance)

Add Path

filter anything

Path

dev/proddev/

dev/proddev/semver:7.0.0--8.0.0/

/

test/main/

Go back

What we ended up building

Key: rikstv.demo.consulapp.somepassword

dev/proddev (for instance)

Add Path

filter anything

Path	Value
dev/	{{{password:31}}}
/	123123

Go back

But how to inject?

- Injecting “live”: Too high risk
- Deploy: A “controlled” and actively implemented change

But how to?

Cross-platform (because who knows what OS we'll end up on)

Simple to use (integrate in existing CI/CD tooling)

Independent of our current toolset

ConsulConfigAgent

```
2017-10-31 10:49:45,694 [INFO] Processing file D:\octopusapps\Dev\RiksTV.Web\2.5.6-beta002\ConfigAgentRules.json
2017-10-31 10:49:45,696 [INFO] processing file: D:\octopusapps\Dev\RiksTV.Web\2.5.6-beta002\ConfigAgentRules.json
2017-10-31 10:49:45,698 [INFO] GETVALUE: getting value for key RiksTV.Web.SystemNet.MailSettings.Smtp.Network.Username
2017-10-31 10:49:45,700 [INFO] Attempting to get value from Consul url
http://localhost:8500/v1/kv/appconfig/dev/main/Z490S2SWB111T/RiksTV.Web.SystemNet.MailSettings.Smtp.Network.Username
2017-10-31 10:49:45,736 [INFO]
2017-10-31 10:49:45,737 [INFO] Attempting to get value from Consul url
http://localhost:8500/v1/kv/appconfig/dev/main/RiksTV.Web.SystemNet.MailSettings.Smtp.Network.Username
2017-10-31 10:49:45,773 [INFO]
2017-10-31 10:49:45,773 [INFO] Attempting to get value from Consul url
http://localhost:8500/v1/kv/appconfig/dev/RiksTV.Web.SystemNet.MailSettings.Smtp.Network.Username
2017-10-31 10:49:45,809 [INFO]
2017-10-31 10:49:45,812 [INFO] Attempting to get value from Consul url
http://localhost:8500/v1/kv/appconfig/RiksTV.Web.SystemNet.MailSettings.Smtp.Network.Username
2017-10-31 10:49:45,848 [INFO] Got hit: <<password:150>>
2017-10-31 10:49:46,592 [INFO] Got Passwordstate hit for password Id 150
2017-10-31 10:49:46,594 [INFO] updating value /smtp/network. old: #####, new: *****
-----
```

ConsulConfigAgent

- Written in Python, compiled to standalone exe binary
- Runs at deploy-time
- “Mapping” file(s) lives in app repo
- Can inject settings into xml/yaml/json
- Accessed via Powershell “wrapper” module

But then...

“We must haz testability!”



Integration with Cake build

- Test mode:
Don't change stuff.

```
Task("Verify-Consul-Configuration")  
    .Does(() =>  
    {  
        TestConsulConfig();  
    });
```

Making modern deploys

- We run “utility” services on Kubernetes
- Same need: Keep env config/secrets outside of git!
- Luckily, the agent was already an x-plat Python app

Our Kubernetes secrets look like...

```
1  ---
2  apiVersion: v1
3  kind: Secret
4  metadata:
5  | name: utils-awsinventory-{{ .major_version }}-{{ .environment }}
6  type: Opaque
7  data:
8  | prod_aws_access_key_id: replaced_by_consul
9  | prod_aws_secret_access_key: replaced_by_consul
10 | uat_aws_access_key_id: replaced_by_consul
11 | uat_aws_secret_access_key: replaced_by_consul
12 | dev_aws_access_key_id: replaced_by_consul
13 | dev_aws_secret_access_key: replaced_by_consul
14 | test_aws_access_key_id: replaced_by_consul
15 | test_aws_secret_access_key: replaced_by_consul
16
17 |
```

...And deployments be like

```
2017-10-15 11:12:30,155 [INFO] Got hit: <<password:190>>
2017-10-15 11:12:30,155 [DEBUG] Parsed string <<password:190>> to password Id 190
2017-10-15 11:12:30,346 [INFO] Got Passwordstate hit for password Id 190
2017-10-15 11:12:30,347 [INFO] Base64 is set to True, Replacing retrieved value ***** with base64-encoded version #####
2017-10-15 11:12:30,347 [INFO] updating value data/uat_aws_secret_access_key. old: #####, new: *****
2017-10-15 11:12:30,356 [INFO]
2017-10-15 11:12:30,356 [DEBUG] Processing config rule: {"base64": true, "valueconfig":
"RiksTV.Utils.AwsInventory.devtest_aws_access_key_id", "identifier": "data/dev_aws_access_key_id", "targetfile": "01_secret.yml"}
2017-10-15 11:12:30,356 [DEBUG] Using ruleType value from defaults section: yaml
2017-10-15 11:12:30,356 [DEBUG] Using valueconfigtype value from defaults section: kv
```

Learnings

- We succeeded in catering to both devs and “ops”
- Be compatible with, but not dependent on existing tooling
- Small steps. Walk, THEN run.

Next steps

- Implement Consul for Service Discovery - because we now truly trust it!
- Possibly implement Vault for secrets
- Still accepting PRs for the front-end :-)