SERVICE MANAGERS

BOOTCAMP

CULTURE - AUTOMATION - LEAN - MEASUREMENT - SHARING

DevOps Monitoring and Alerting

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tokopedia

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Let’s get to know each other

Introduction to DevOps

DevOps Philosophy

DEV
COMMUNICATION
COLLABORATION
INTEGRATION
OPS

TODAY'S DEVOPS

DEV + OPS

PART DEV

Application Performance

Modern developers use APM tools to decrease latency, have complete visibility into code, database, caches, queues, and third-party service.

End User Analytics

A great developer understands end users have the best feedback and analytics play an enormous part of understanding users. Developers are constantly monitoring end user latency and checking performance by devices and browsers

Quality Code

Developers need to ensure their deployment and new releases don't implode or degrade the overall performance.

Code-Level Errors

When you have a large distributed application it is vital to lower MTTR by finding the root cause of errors and exceptions

PART OPS

Application Availability

The applications need to be up and running and it's Ops responsibility to ensure uptime and SLAS are in order.

Application Performance

Classic Ops generally rely on infrastructure metrics - CPU, memory, network and disk I/O etc while modern Ops correlate all of those metrics with application metrics to solve problems 10x faster.

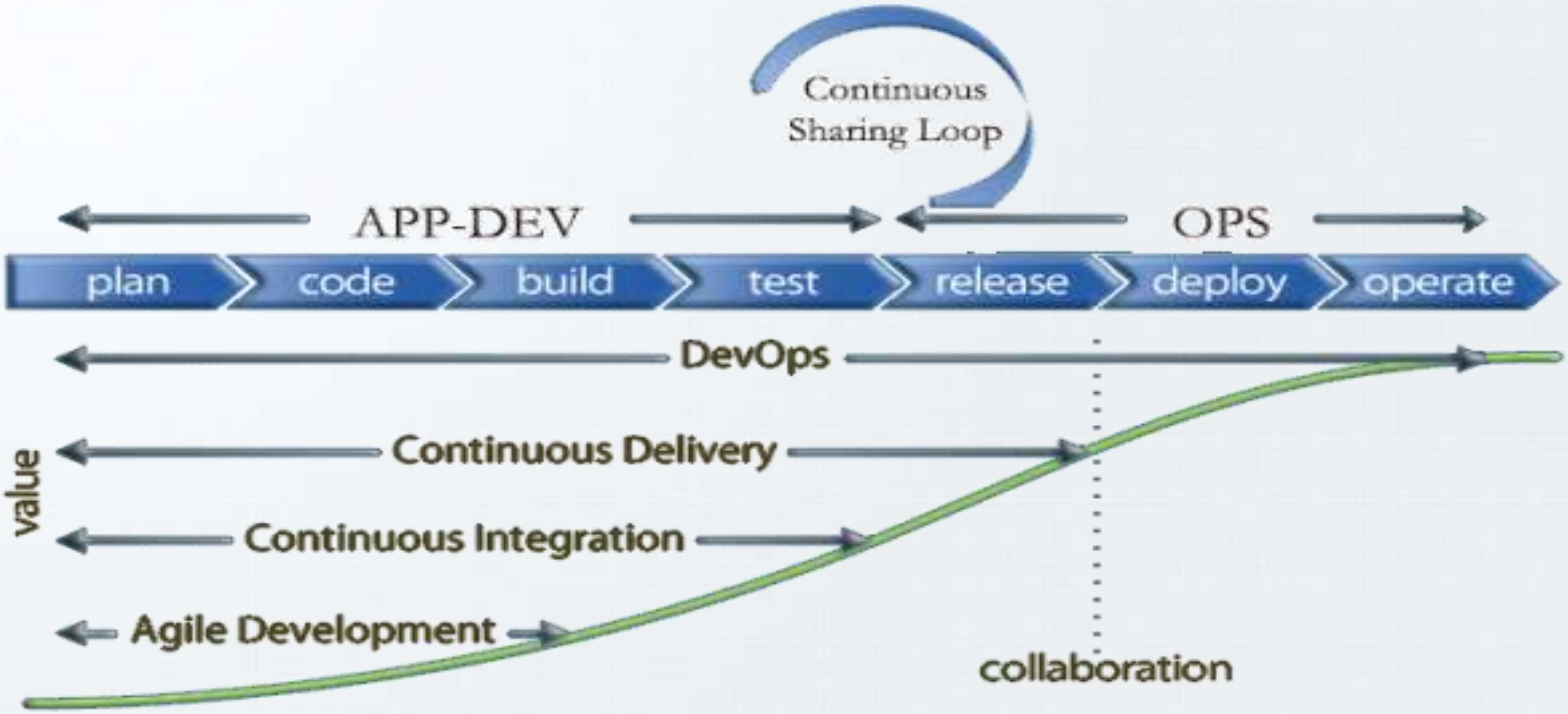
End User Complaints

The goal is to know and fix problems before end users complain, reduce the number of support tickets, and eliminate false alerts.

Performance Analytics

Automatically generated baselines of the metrics help Ops understand what has changed and where to focus their troubleshooting efforts. Alerts are based upon deviation from observed baselines.

DevOps Maturity Pipeline

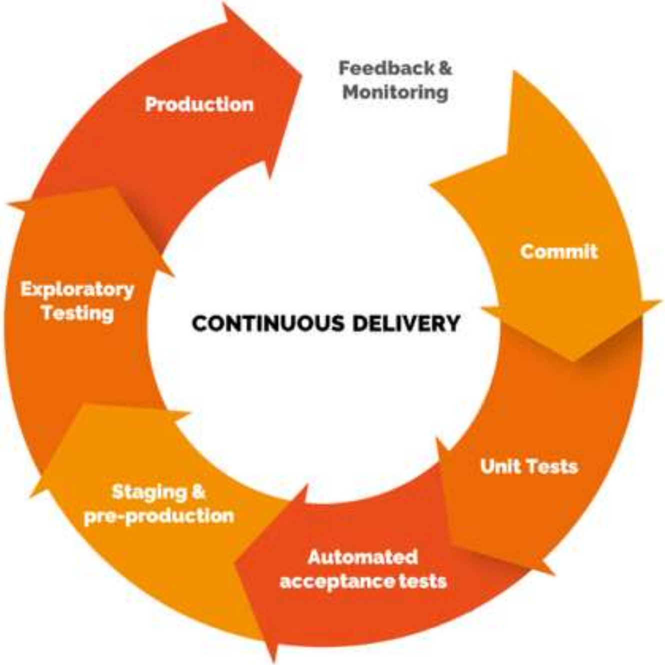


Benefit of adopting DevOps

- Continuous Software Delivery
- Less complexity to manage
- Faster Resolution of problems

- Happier, more productive teams
- Higher employee engagement
- Greater professional development opportunities

- Faster delivery of features
- More stable operating environments
- More time to innovate rather than fix/maintain



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Benefit of adopting DevOps

Everyone is happy

So, What we have to do to...

- To make everyone happy ?
- To cut complexity to manage ?
- To build quality software ?
- To know the problem earlier ?
- To focus on innovation ?
- To keep environment stable ?

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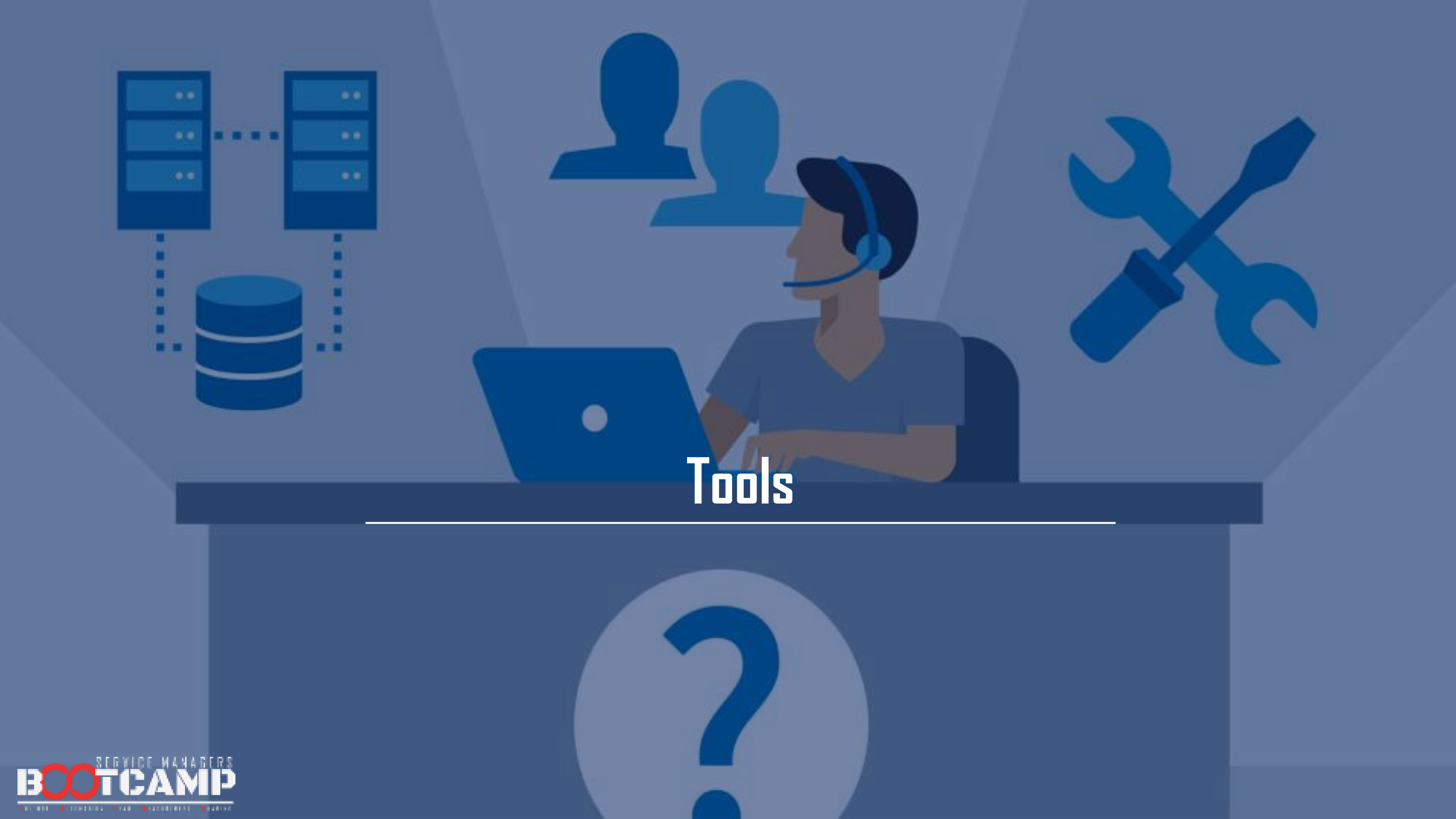
We need to ...

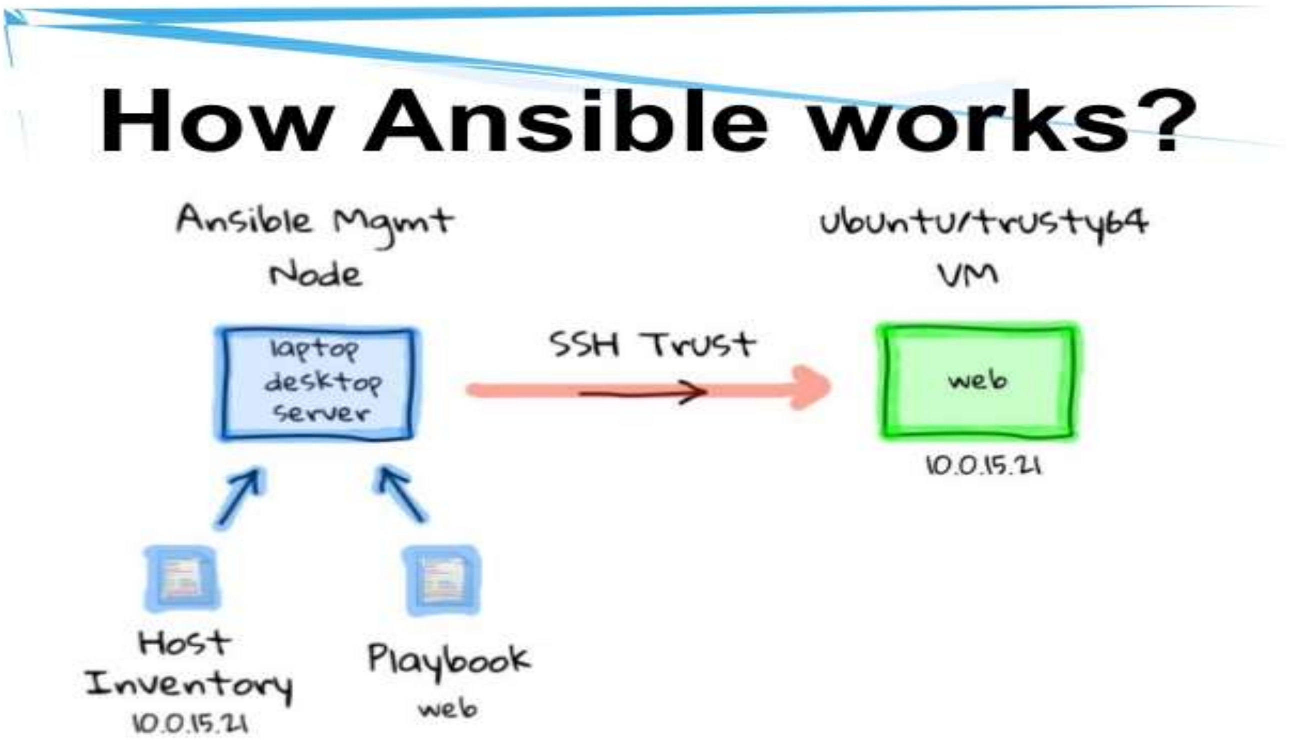
ADOPTING DEVOPS
THEN
BUILD MONITORING AND ALERTING SYSTEM



Tools

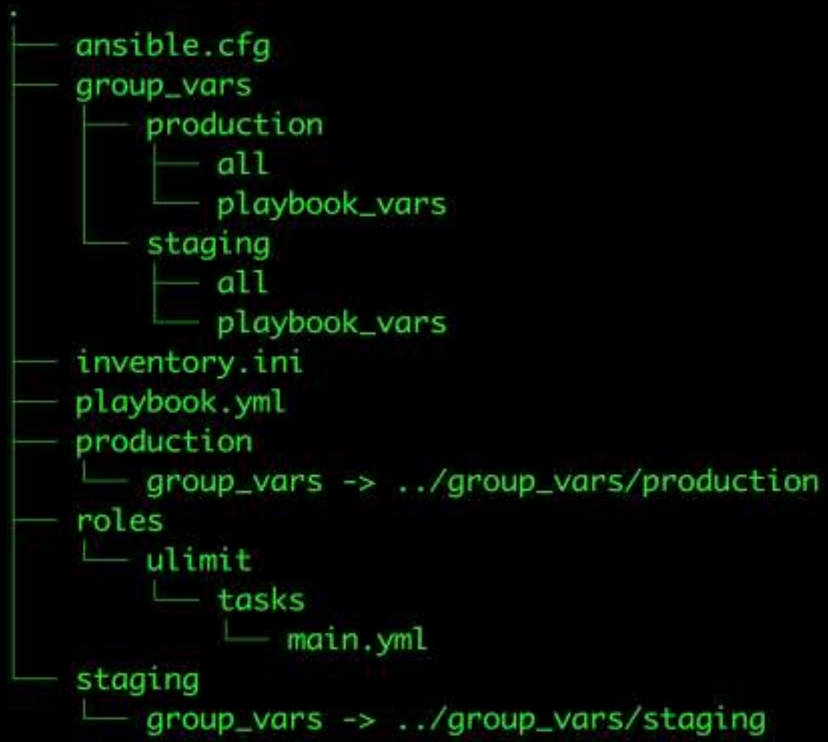
Tools

How Ansible Works



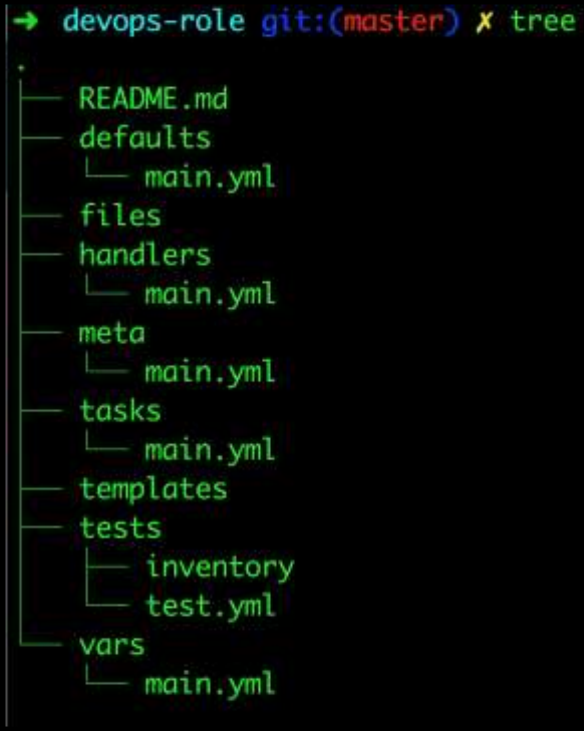
How Ansible works?

Ansible Structures



```
.
├── ansible.cfg
├── group_vars
│   ├── production
│   │   ├── all
│   │   └── playbook_vars
│   └── staging
│       ├── all
│       └── playbook_vars
├── inventory.ini
├── playbook.yml
├── production
│   └── group_vars -> ../group_vars/production
├── roles
│   └── ulimit
│       └── tasks
│           └── main.yml
└── staging
    └── group_vars -> ../group_vars/staging
```

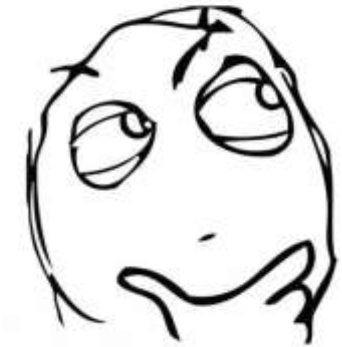
Ansible Roles



```
➜ devops-role git:(master) ✗ tree
.
├── README.md
├── defaults
│   └── main.yml
├── files
├── handlers
│   └── main.yml
├── meta
│   └── main.yml
├── tasks
│   └── main.yml
├── templates
├── tests
│   ├── inventory
│   └── test.yml
└── vars
    └── main.yml
```

Monitoring Tools

Monitoring Tools on Market



ZABBIX

cacti

Nagios

MUNIN

Ganglia

zenoss Own IT.

icinga

Tools - Consul

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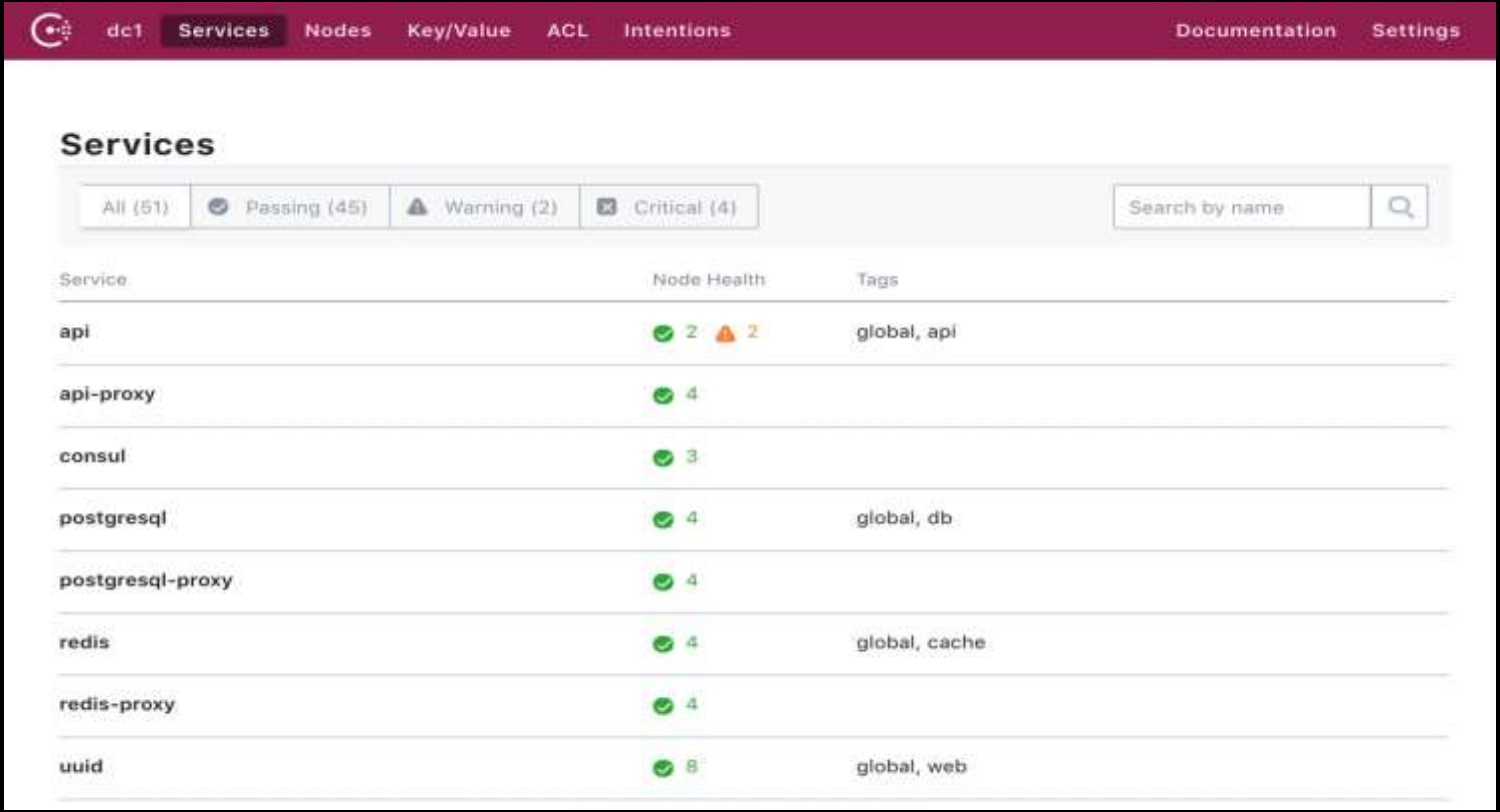
Consul UI



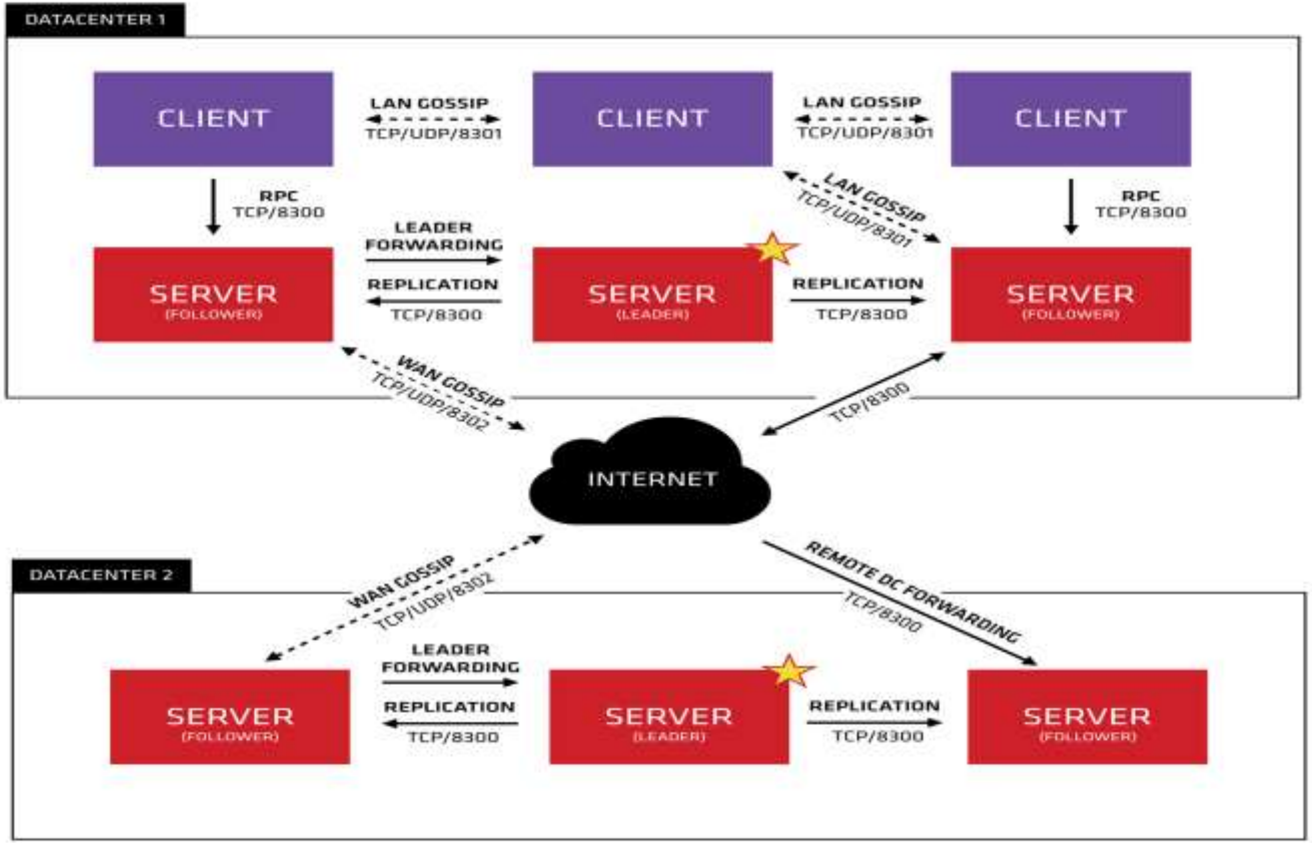
Services

Service	Node Health	Tags
api	✓ 2 ⚠ 2	global, api
api-proxy	✓ 4	
consul	✓ 3	
postgresql	✓ 4	global, db
postgresql-proxy	✓ 4	
redis	✓ 4	global, cache
redis-proxy	✓ 4	
uuid	✓ 8	global, web

Key Feature of Consul

- Service Discovery
- Health Checking
- KV Store
- Secure Service Communication
- Multi Datacenter

Architecture of Consul



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Prometheus with Grafana

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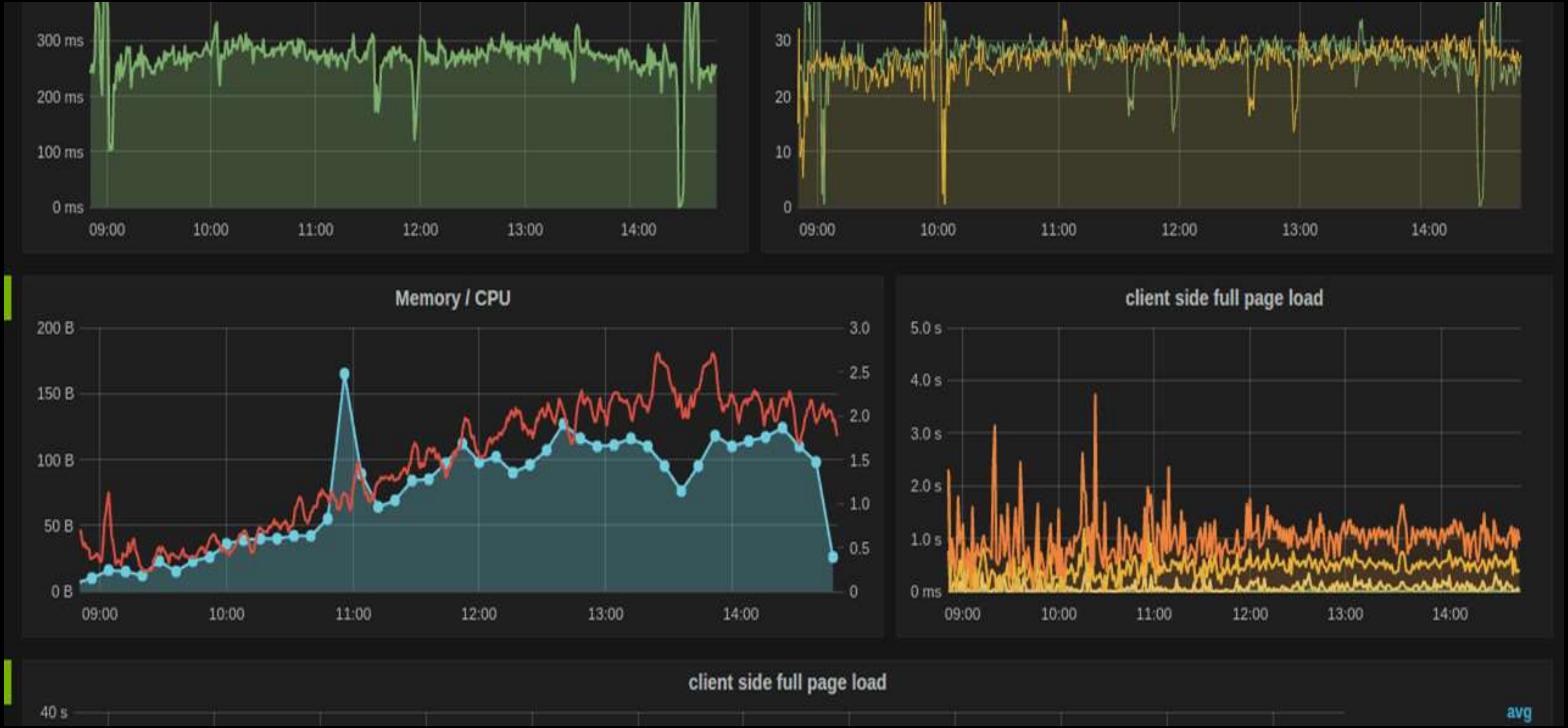
Prometheus with Grafana



Grafana

No matter where your data is, or what kind of database it lives in, you can bring it together with Grafana. Beautifully.

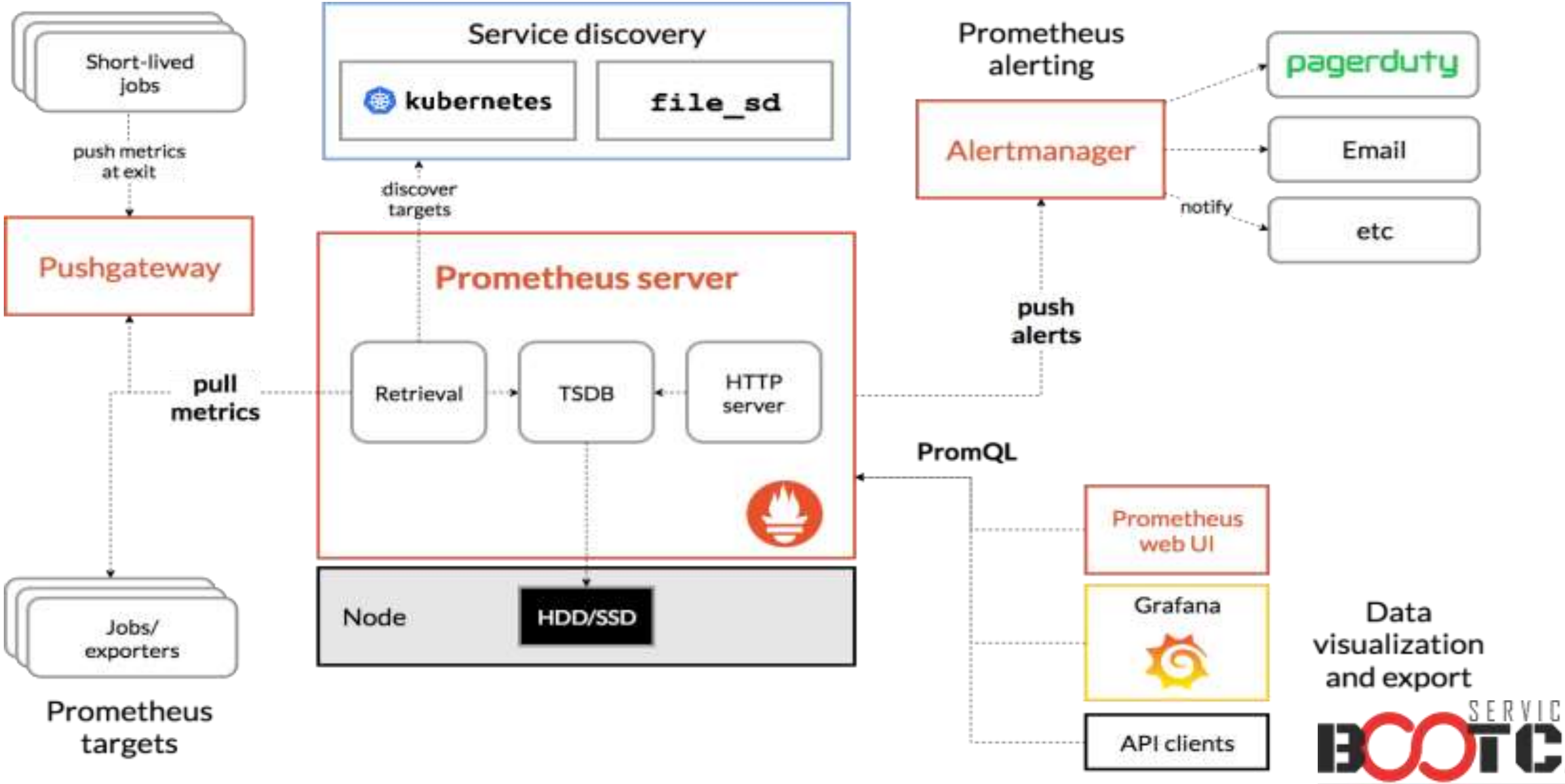
As of ⏲ right now, there are 45 data sources, 37 panels, 16 apps and 1174 dashboards available.

Graphite
Cloudwatch
Prometheus
57
78
Elasticsearch
InfluxDB
Hosted Metrics

Feature of Prometheus

- Multi-dimensional data model with time series data identified by metric name and key/value pairs
- Flexible Query Language
- No Reliance on distributed storage, single server nodes are autonomous
- Time Series Collection via pull mode over http
- Pushing time series is supported via intermediate gateway
- Targets are discovered via service discovery or static configuration
- Multiple modes of Graphing and dashboarding support

Prometheus Architecture



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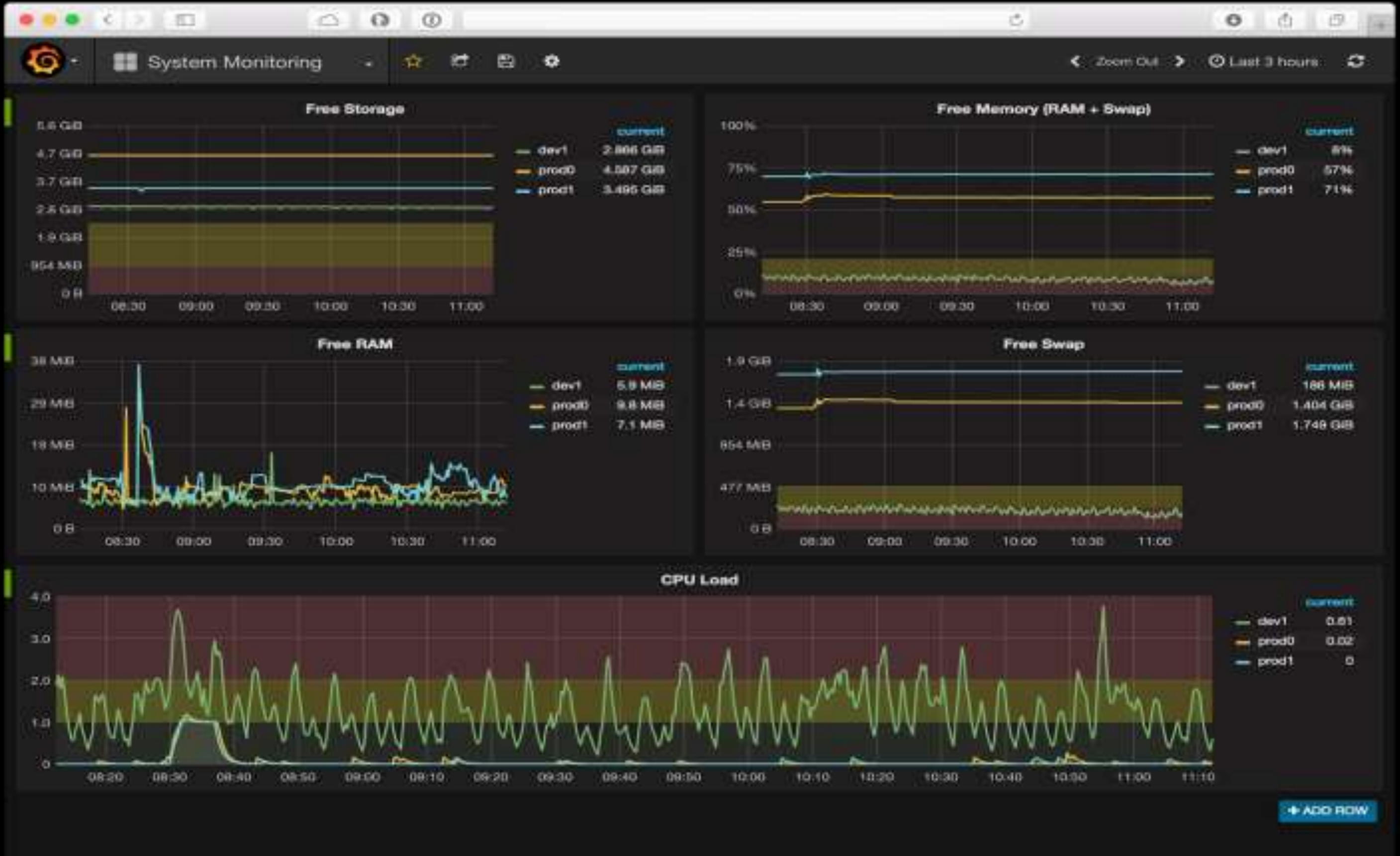
Node Exporter



Free Storage

	current
dev1	2.866 GiB
prod0	4.587 GiB
prod1	3.495 GiB

Free Memory (RAM + Swap)

	current
dev1	8%
prod0	57%
prod1	71%

Free RAM

	current
dev1	5.9 MiB
prod0	9.8 MiB
prod1	7.1 MiB

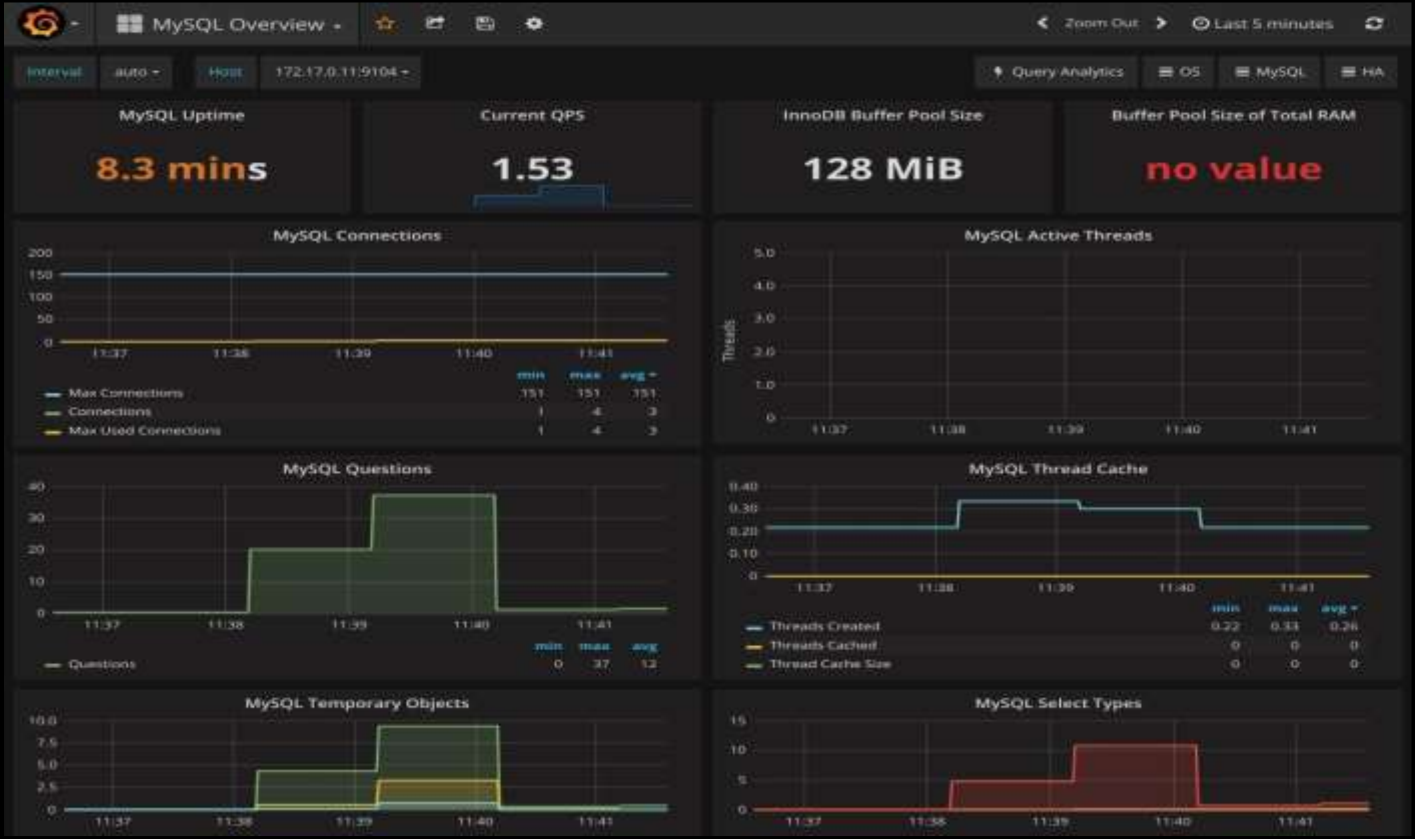
Free Swap

	current
dev1	186 MiB
prod0	1.404 GiB
prod1	1.749 GiB

CPU Load

	current
dev1	0.61
prod0	0.02
prod1	0

MySQL Exporter



MySQL Uptime: 8.3 mins

Current QPS: 1.53

InnoDB Buffer Pool Size: 128 MiB

Buffer Pool Size of Total RAM: no value

MySQL Connections

	min	max	avg
Max Connections	151	151	151
Connections	1	4	3
Max Used Connections	1	4	3

MySQL Active Threads

MySQL Questions

	min	max	avg
Questions	0	37	12

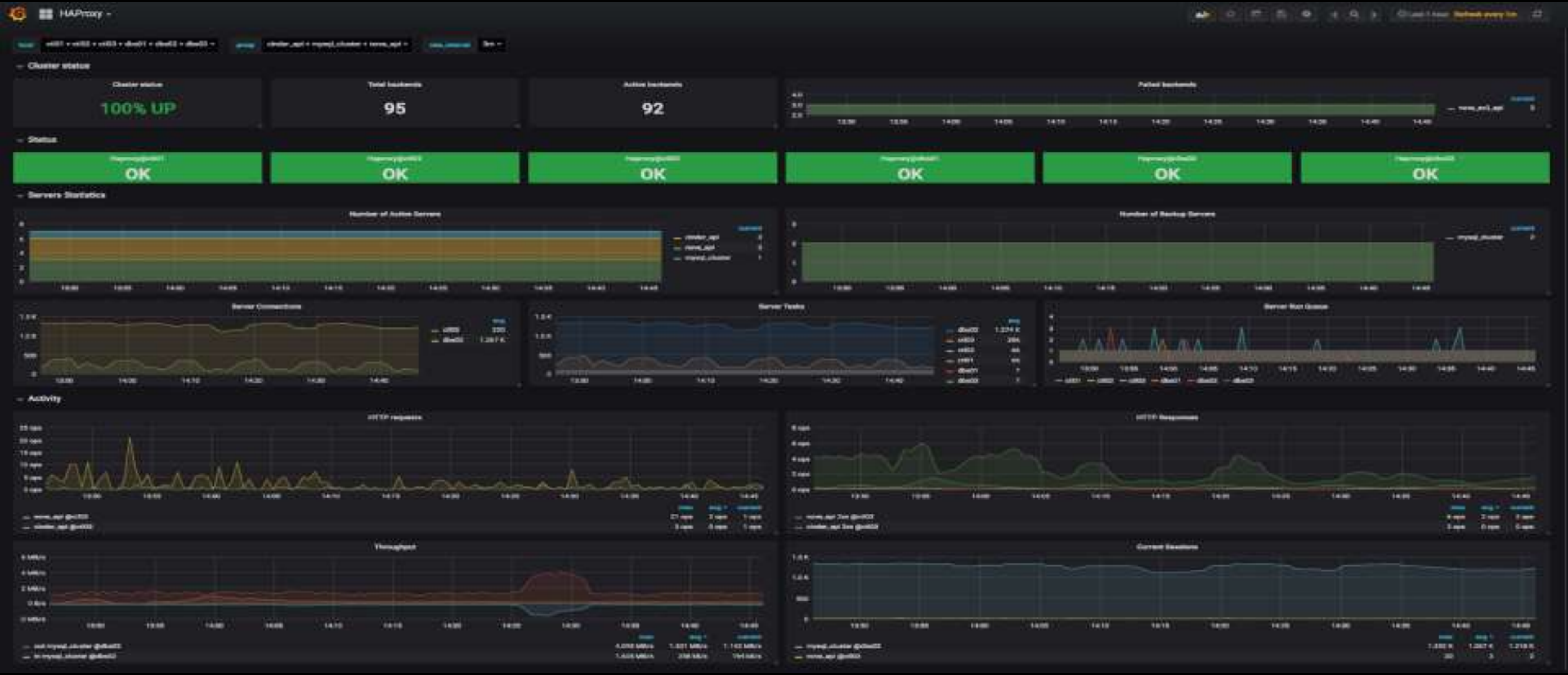
MySQL Thread Cache

	min	max	avg
Threads Created	0.22	0.33	0.26
Threads Cached	0	0	0
Thread Cache Size	0	0	0

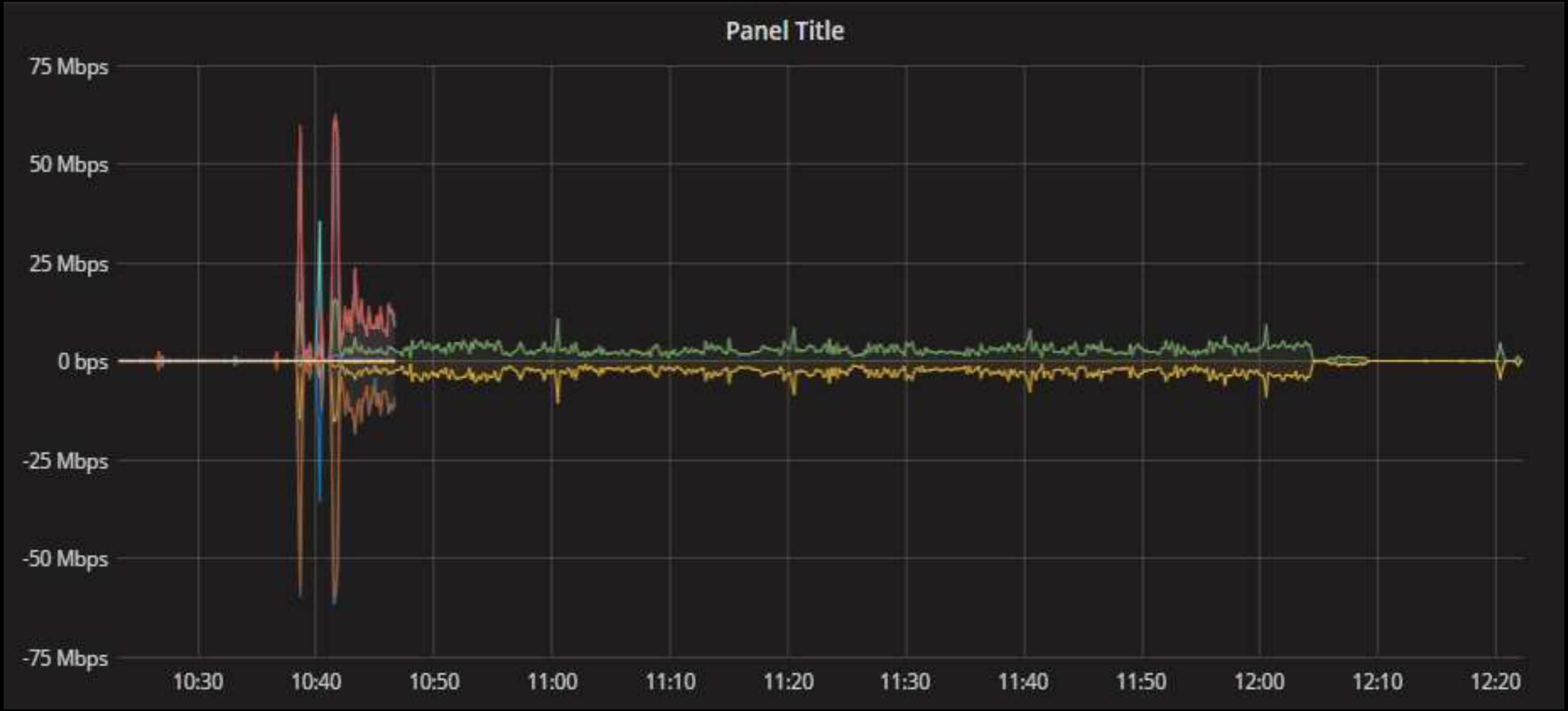
MySQL Temporary Objects

MySQL Select Types

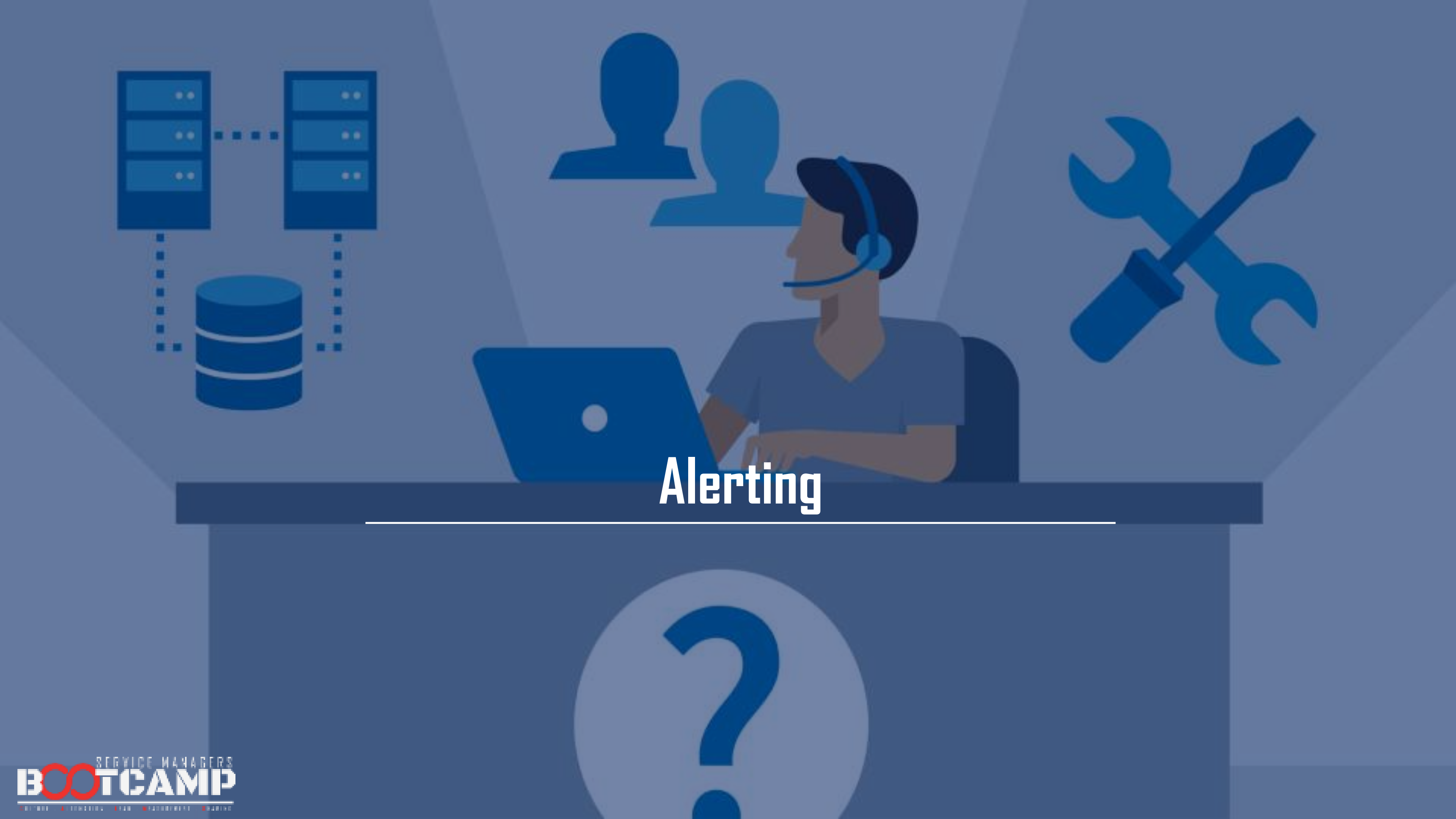
Haproxy Exporter



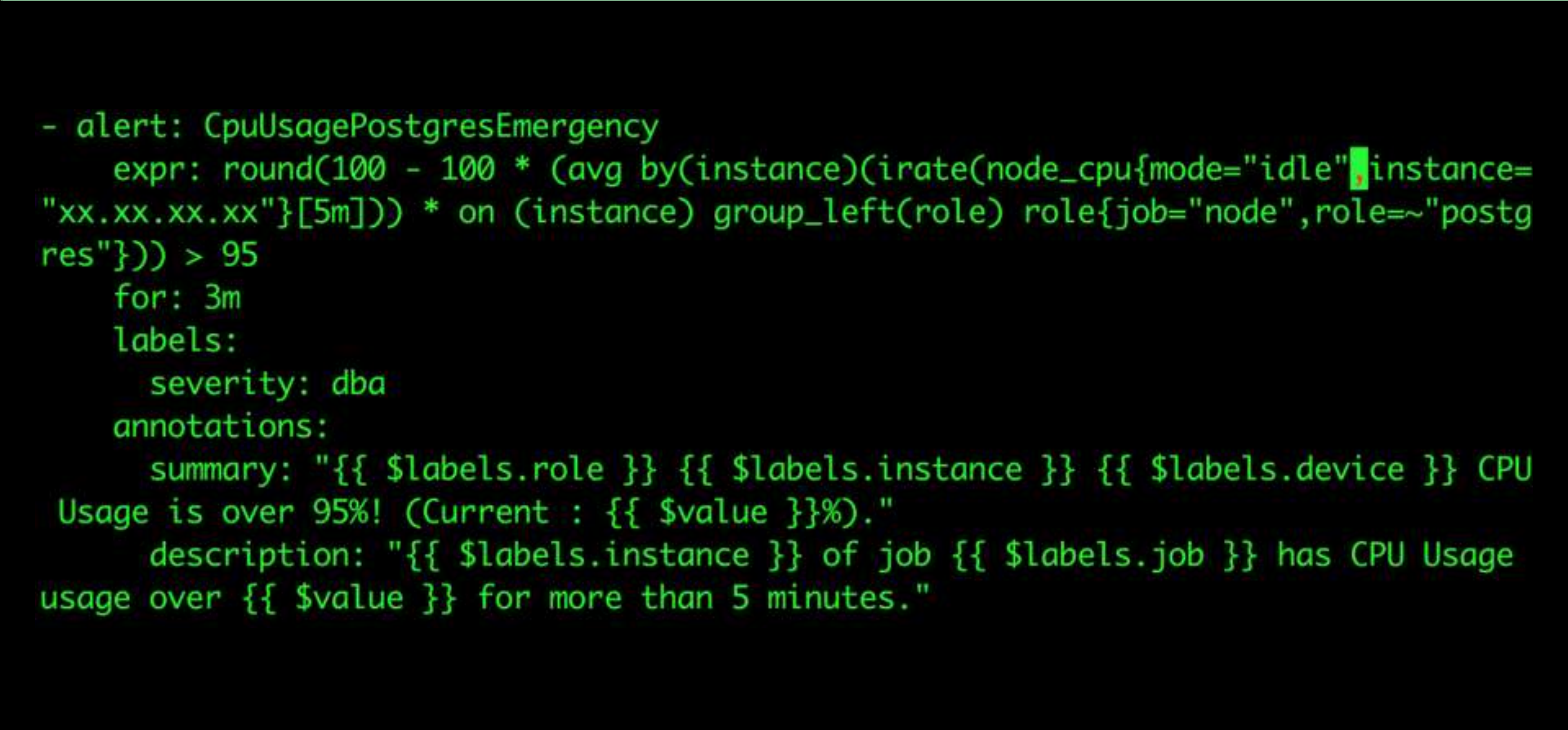
SNMP Exporter



Alerting



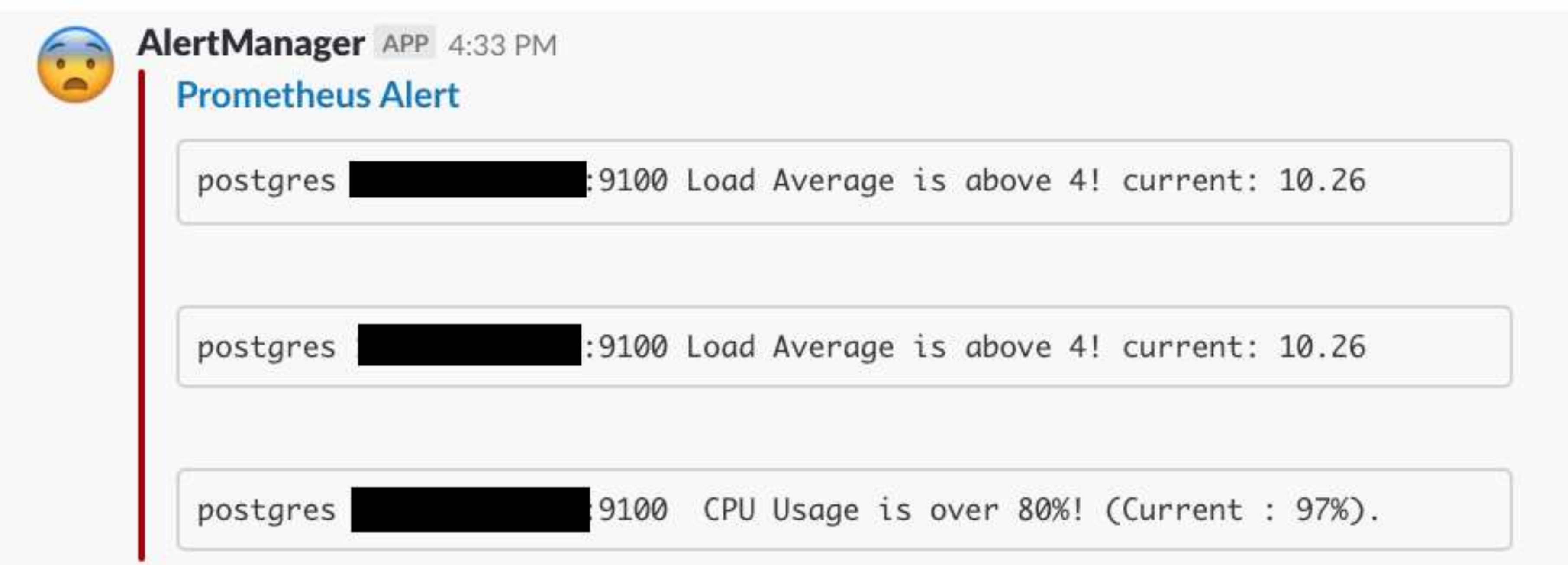
Alert Manager



```
- alert: CpuUsagePostgresEmergency
    expr: round(100 - 100 * (avg by(instance)(irate(node_cpu{mode="idle",instance=
"xx.xx.xx.xx"}[5m])) * on (instance) group_left(role) role{job="node",role=~"postg
res"})) > 95
    for: 3m
    labels:
      severity: dba
    annotations:
      summary: "{{ $labels.role }} {{ $labels.instance }} {{ $labels.device }} CPU
 Usage is over 95%! (Current : {{ $value }}%)."
      description: "{{ $labels.instance }} of job {{ $labels.job }} has CPU Usage
usage over {{ $value }} for more than 5 minutes."
```

Alert Notifications

Slack Notifications



AlertManager APP 4:33 PM

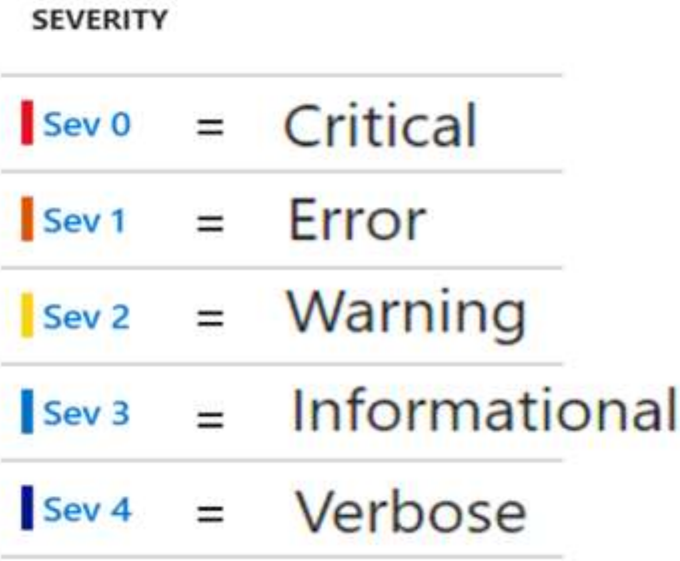
Prometheus Alert

```
postgres [redacted]:9100 Load Average is above 4! current: 10.26
```

```
postgres [redacted]:9100 Load Average is above 4! current: 10.26
```

```
postgres [redacted]9100  CPU Usage is over 80%! (Current : 97%).
```

Alert Severity



SEVERITY		
🟥 Sev 0	=	Critical
🟧 Sev 1	=	Error
🟨 Sev 2	=	Warning
🟦 Sev 3	=	Informational
🟦 Sev 4	=	Verbose

Let’s Ask Yourself

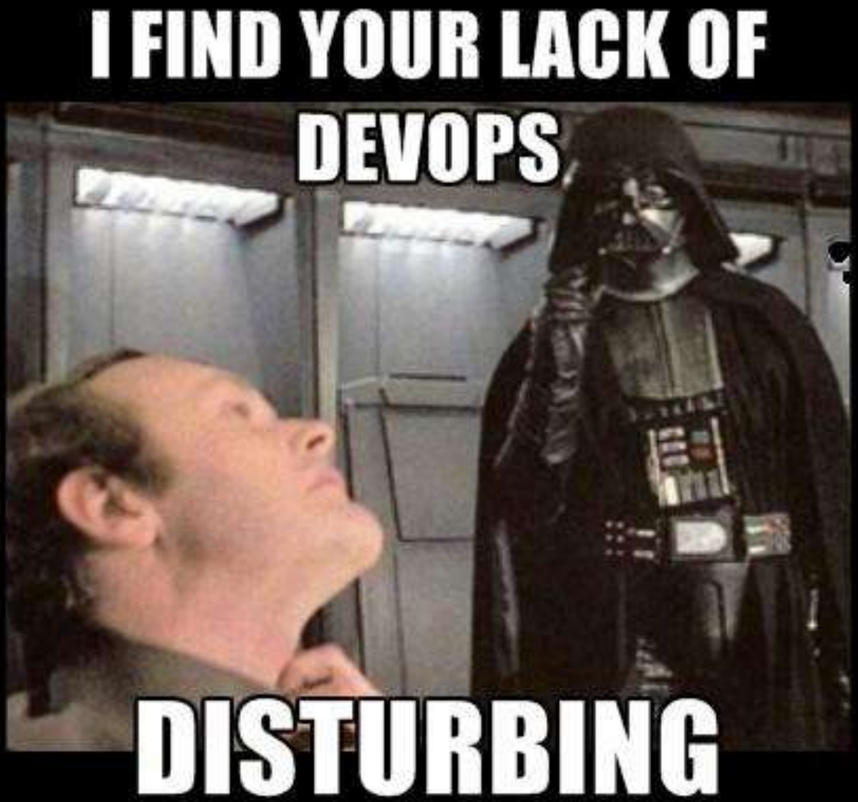
Do you still...

I DON'T KNOW WHO YOU ARE
BUT IF YOU DEPLOY ON A FRIDAY, I WILL FIND YOU AND I WILL KILL YOU
imgflip.com

Do you still...

Do you still...

After all what we've been through...



After all what we've been through...

Which one of you…?

Stay Connected...

Khairul Zebua

DevOps Engineer

https://www.linkedin.com/in/khairulzebua/

https://github.com/khairulzebua
https://github.com/stuckdevops

Thank you...!

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