Monitoring & Alerts for HA/SAP Clusters

Agenda:

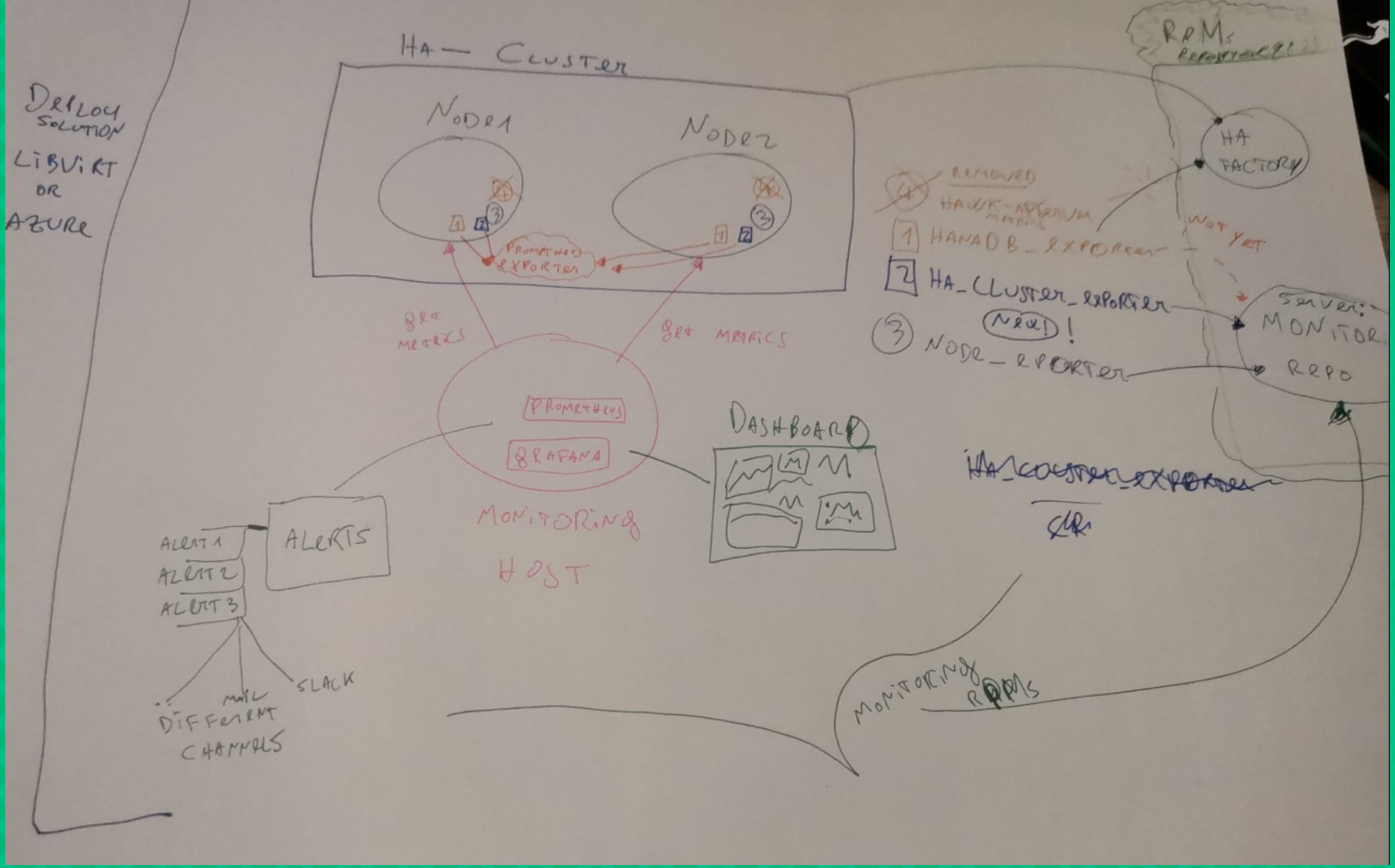
1) The monitoring architecture. Where we are, a global overview.

2) Monitoring Use-cases:

- Visualization and Alerts:
  * Raise alerts when some cluster resource fail
  * Raise alert when there is a failover/promotion mechanism

3) Reflections and next steps.

1) The monitoring architecture in SAP/HANA Cluster context


HA — CLUSTER
NODE1
NODE2
PROMETHEUS EXPORTER
GET METRICS
GET METRICS
PROMETHEUS
GRAFANA
MONITORING HOST
DASHBOARD
ALERTS
ALERT 1
ALERT 2
ALERT 3
MAIL
SLACK
DIFFERENT CHANNELS
DEPLOY SOLUTION
LIBVIRT OR AZURE
RPMs
HA FACTORY
REMOVED
HANA DB_EXPORTER
NOT YET
HA_CLUSTER_EXPORTER
NEW!
NODE_EXPORTER
SERVER: MONITOR
REPO
MONITORING RPMs

```
# HELP cluster_node_resources metric inherent per node resources
# TYPE cluster_node_resources gauge
cluster_node_resources{managed="false",node="dma-dog-hana01",resource_name="rsc_saphanatopology_prd_hdb00",role="started",status="active"} 1
cluster_node_resources{managed="false",node="dma-dog-hana02",resource_name="rsc_saphanatopology_prd_hdb00",role="started",status="active"} 1
cluster_node_resources{managed="true",node="dma-dog-hana02",resource_name="rsc_ip_prd_hdb00",role="started",status="active"} 1
cluster_node_resources{managed="true",node="dma-dog-hana02",resource_name="rsc_saphana_prd_hdb00",role="master",status="active"} 1
cluster_node_resources{managed="true",node="dma-dog-hana02",resource_name="stonith-sbd",role="started",status="active"} 1
# HELP cluster_nodes cluster nodes metrics for all of them
# TYPE cluster_nodes gauge
cluster_nodes{node="dma-dog-hana01",type="expected_up"} 1
cluster_nodes{node="dma-dog-hana01",type="member"} 1
cluster_nodes{node="dma-dog-hana01",type="online"} 1
cluster_nodes{node="dma-dog-hana02",type="dc"} 1
cluster_nodes{node="dma-dog-hana02",type="expected_up"} 1
cluster_nodes{node="dma-dog-hana02",type="member"} 1
cluster_nodes{node="dma-dog-hana02",type="online"} 1
# HELP cluster_nodes_configured_total Number of nodes configured in ha cluster
# TYPE cluster_nodes_configured_total gauge
cluster_nodes_configured_total 2
# HELP cluster_resources_configured_total Number of total configured resources in ha cluster
# TYPE cluster_resources_configured_total gauge
cluster_resources_configured_total 6
```

Monitoring: Alerts and visualisation

Raise alerts when some cluster resource fail (VISUAL)

Raise alerts when some cluster resource fail (ALERT)

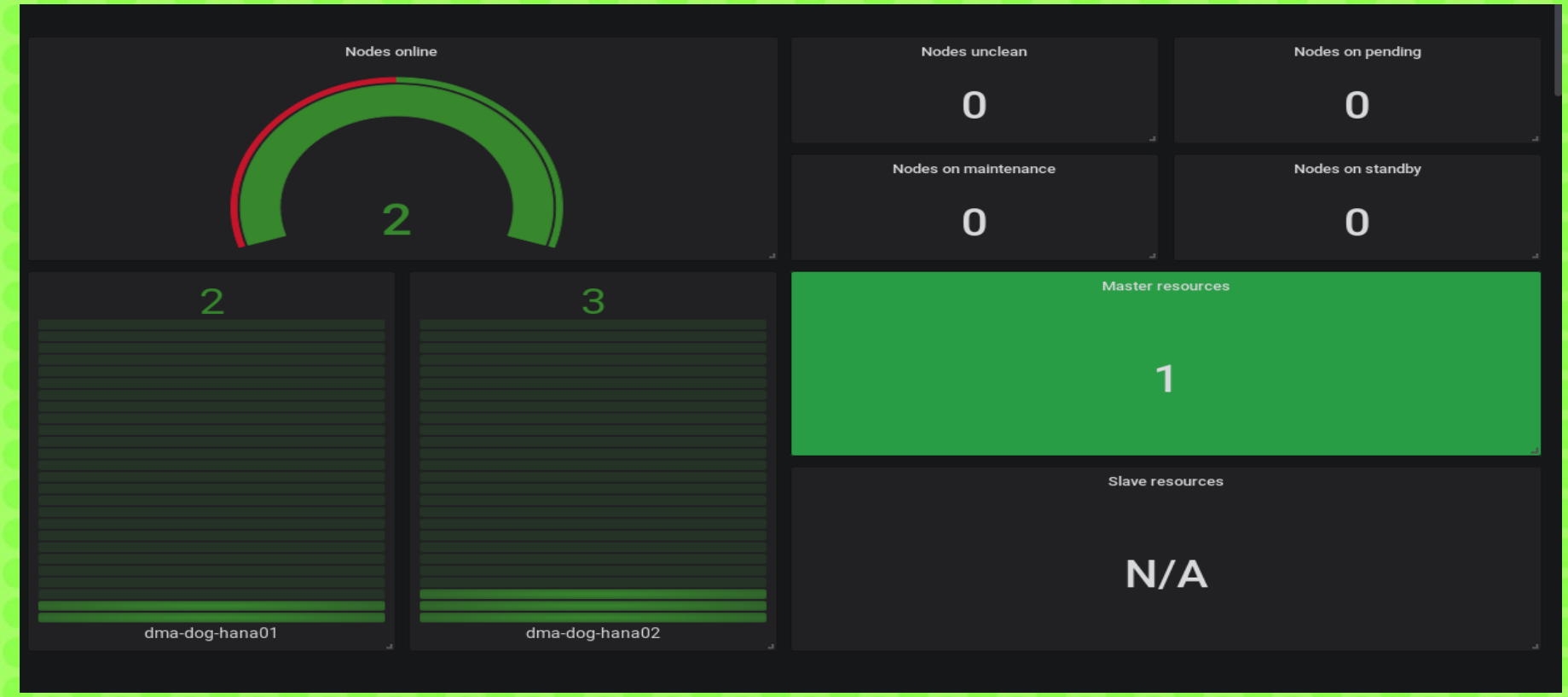
aResourceFailed (1 active)

```
alert: aResourceFailed
expr: count(cluster_node_resources{status="failed"})
  > 0
labels:
  severity: page
annotations:
  summary: a cluster resource failed
```

Labels	State	Active Since	Value
alertname="aResourceFailed" severity="page"	FIRING	2019-09-20 16:31:01.472076032 +0000 UTC	2

This can be a slack/mail notifications etc

Raise alert when there is a failover/promotion mechanism (visual)

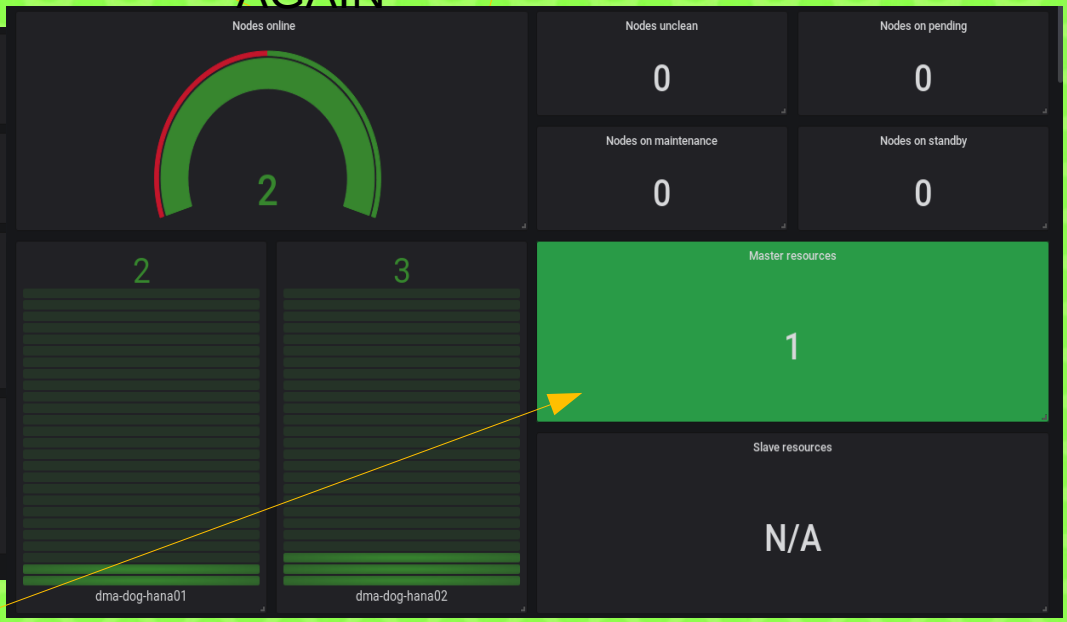


TRANSITION, master resource from node1 to node2

```
cluster_node_resources{managed="true",node="dma-dog-hana01",resource_name="rsc_saphanatopology_prd_hdb00",role="started",status="active"} 1
cluster_node_resources{managed="true",node="dma-dog-hana01",resource_name="stonith-sbd",role="started",status="active"} 1
cluster_node_resources{managed="true",node="dma-dog-hana02",resource_name="rsc_ip_prd_hdb00",role="started",status="active"} 1
cluster_node_resources{managed="true",node="dma-dog-hana02",resource_name="rsc_saphana_prd_hdb00",role="master",status="active"} 1
cluster_node_resources{managed="true",node="dma-dog-hana02",resource_name="rsc_saphanatopology_prd_hdb00",role="started",status="active"} 1
# HELP cluster_nodes cluster nodes metrics for all of them
```

MASTER RESOURCE FAILED

MASTER RESOURCE UP AGAIN



Raise alert when there is a failover/promotion mechanism (alerts/mails)

aResourceFailed (1 active)

```
alert: aResourceFailed
expr: count(cluster_node_resources{status="failed"})
  > 0
labels:
  severity: page
annotations:
  summary: a cluster resource failed
```

Labels	State	Active Since	Value
alertname="aResourceFailed" severity="page"	FIRING	2019-09-20 17:02:11.472076032 +0000 UTC	1

secondarySAPHANAResourceSlaveRoleChanged (1 active)

```
alert: secondarySAPHANAResourceSlaveRoleChanged
expr: absent(cluster_node_resources{resource_name="rsc_saphana_prd_hdb00",role="slave",status="active"})
labels:
  severity: page
annotations:
  summary: secondary SAP-HANA resource role slave changed
```

Labels	State	Active Since	Value
alertname="secondarySAPHANAResourceSlaveRoleChanged" resource_name="rsc_saphana_prd_hdb00" role="slave" severity="page" status="active"	FIRING	2019-09-20 16:32:25.462257804 +0000 UTC	1

3) Reflections and next steps (visualization)

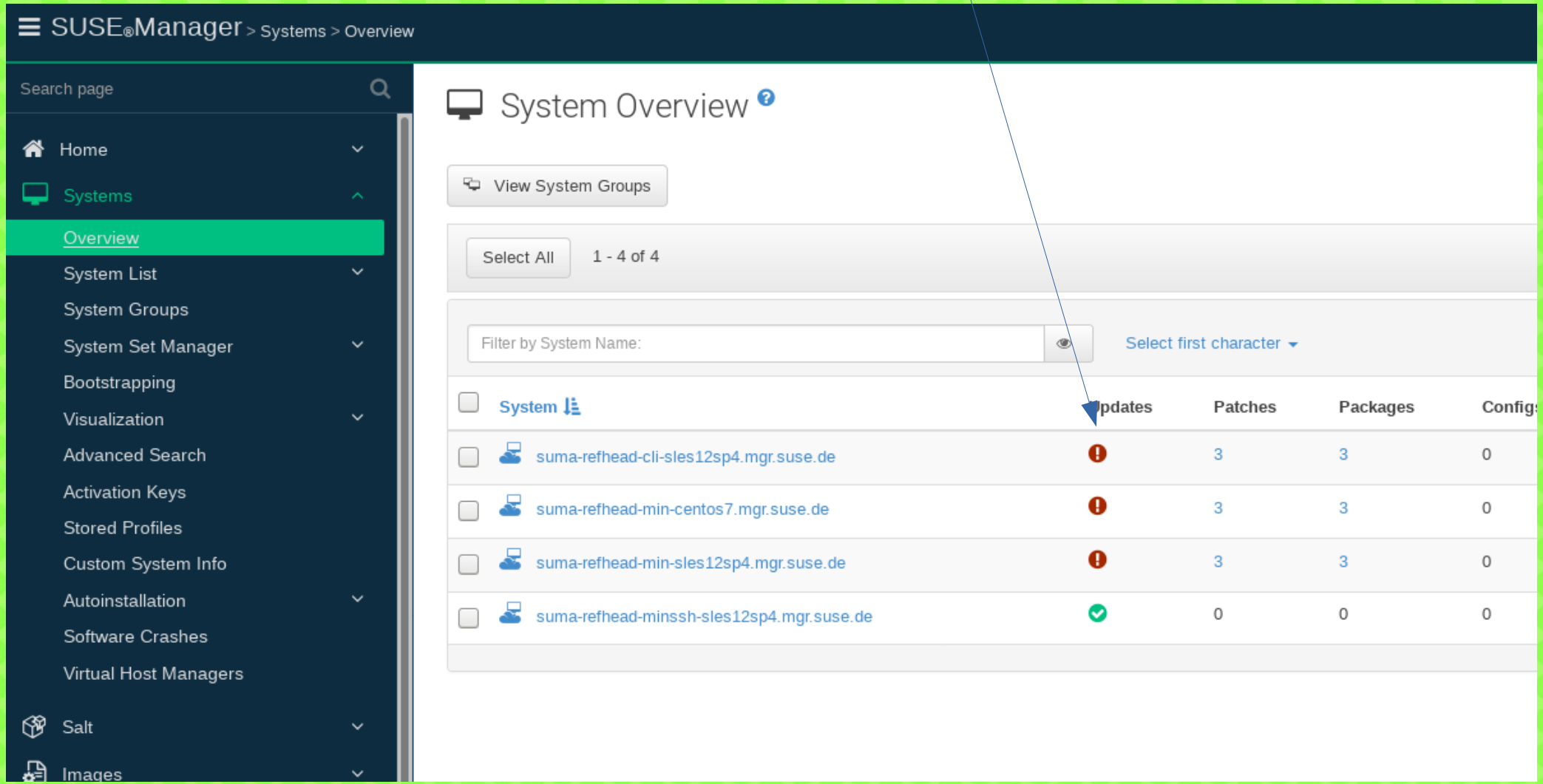
Next sprint Investing in visualization:

Avoiding the wall of graphs

GOALS: “Provide more actionable, simple alerts/dashboards”

USE-CASE: “As admin I can react on Red/green with a specific action to make it green again”

EXAMPLE: this is an actionable alert (red: need patch, green updated)



We need more alerts with concrete actions

Research/exploration:

provide different dashboard(?), specialized on use cases