

Single Pane of Glass With Multiple Zabbix Instances

Zabbix – Zabbix replication
using the power of Zabbix API and LLD

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Zabbix Certified Expert & Trainer



OCTOBER 7 ■ 9, 2026
RIGA ■ LATVIA

Father of 4

Swimmer, life guard

Wind surfing

Paragliding

Padel tennis



Multiple Zabbix installations

How can we have a single complete overview of all our monitored environment, when we have multiple Zabbix installations ?

Replication means the act of making an exact copy or repeating a process so that results or structures are duplicated

- **High Availability**

Performance and/or uptime

Replication, why ?

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Protect against data loss and/or performance

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- **Miscellaneous**

Datawarehouse, Reporting etc.

- **Physical**

Active-Active or Read-only (standby)

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- **Logical**

Single master, Multi master (difficult)

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Log based

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Log based

- **Miscellaneous**

Snapshots, materialized views

Customer case: What & why

We were approached by a customer with many facilities around the world, and a need for monitoring of equipment in every facilities

BUT

- Potentially unstable internet connections



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Customer case: What & why

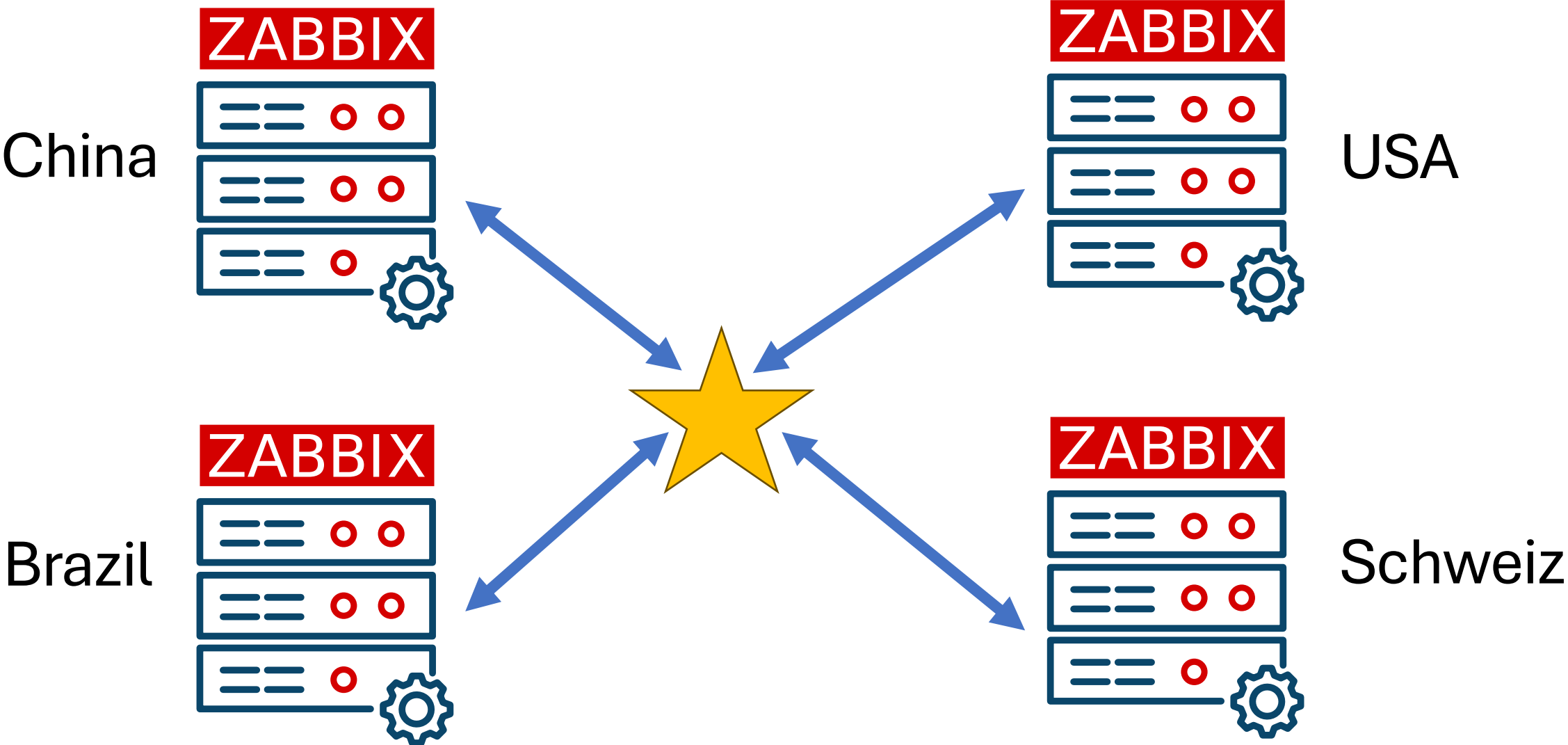
We were approached by a customer with many facilities around the world, and a need for monitoring of equipment in every facilities

BUT

- Potentially unstable internet connections
- Monitoring and alerting must be done locally
- A central overview is also required



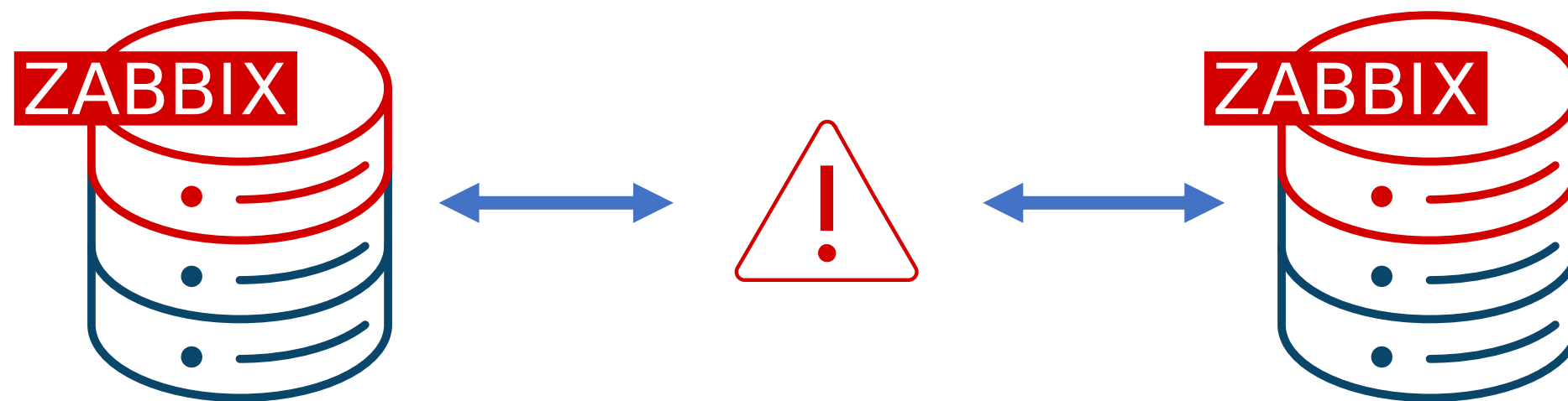
Brainstorm



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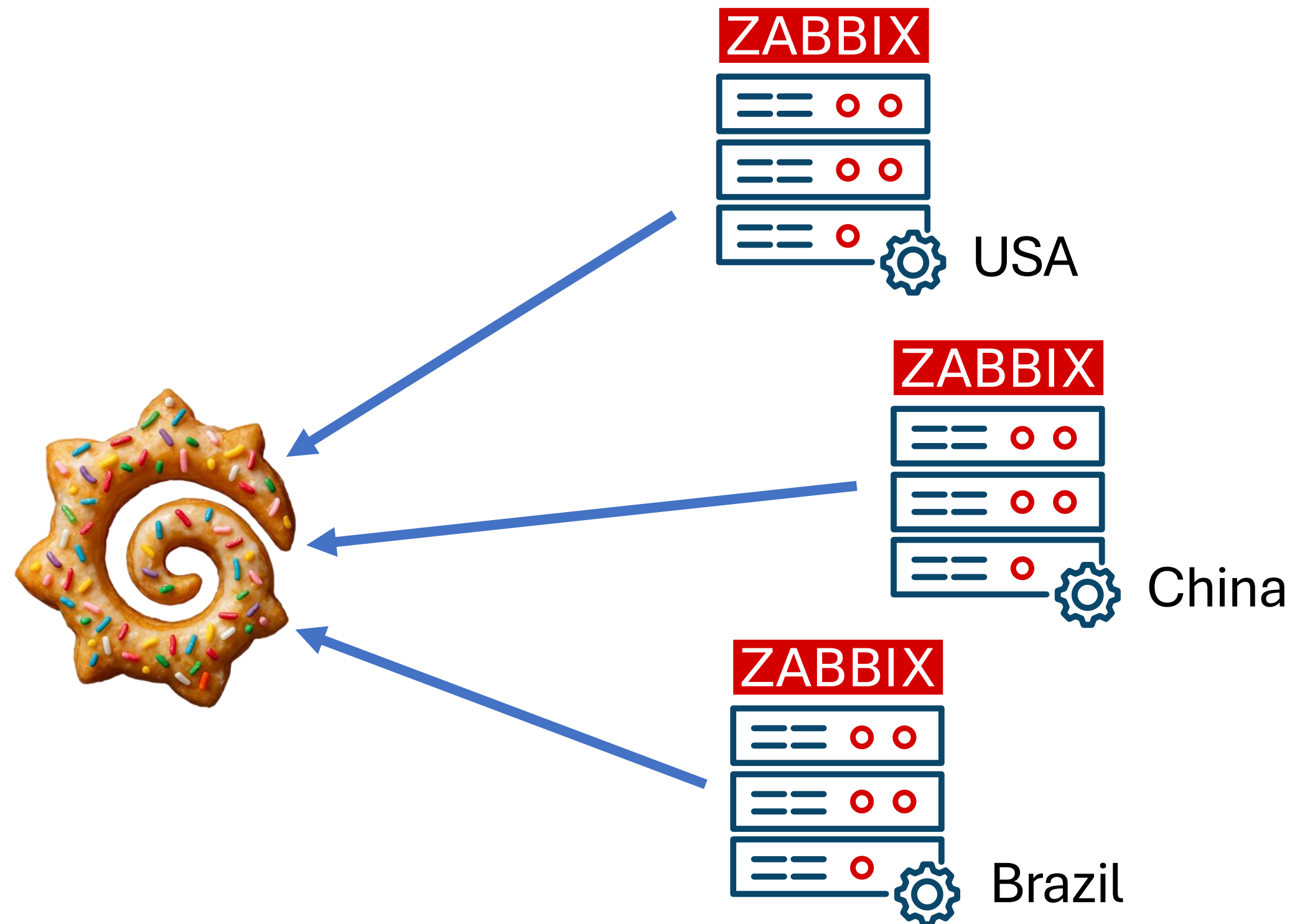
- Database replication ?

This approach has been attempted before



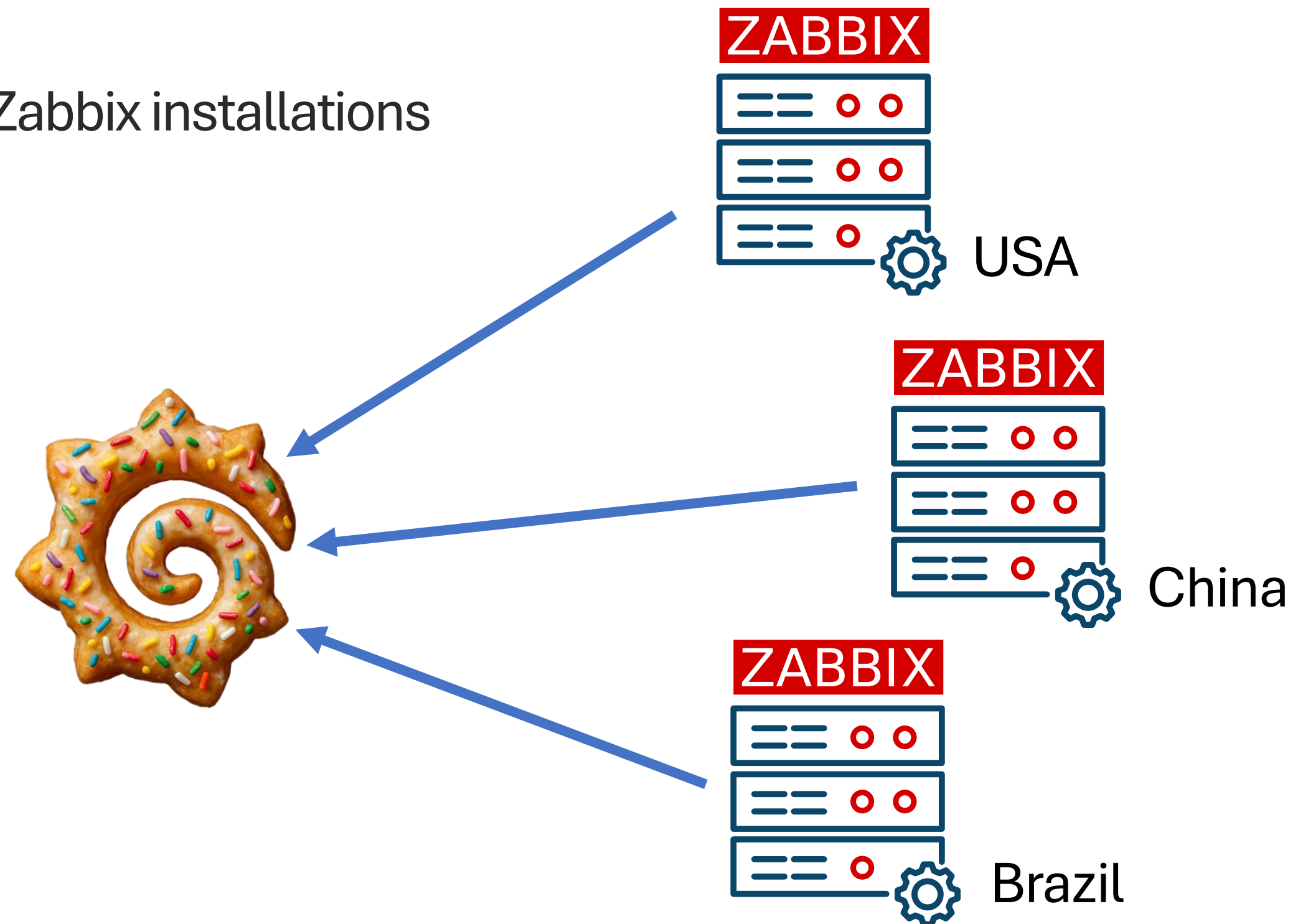
Brainstorm

- Grafana as the central system ?



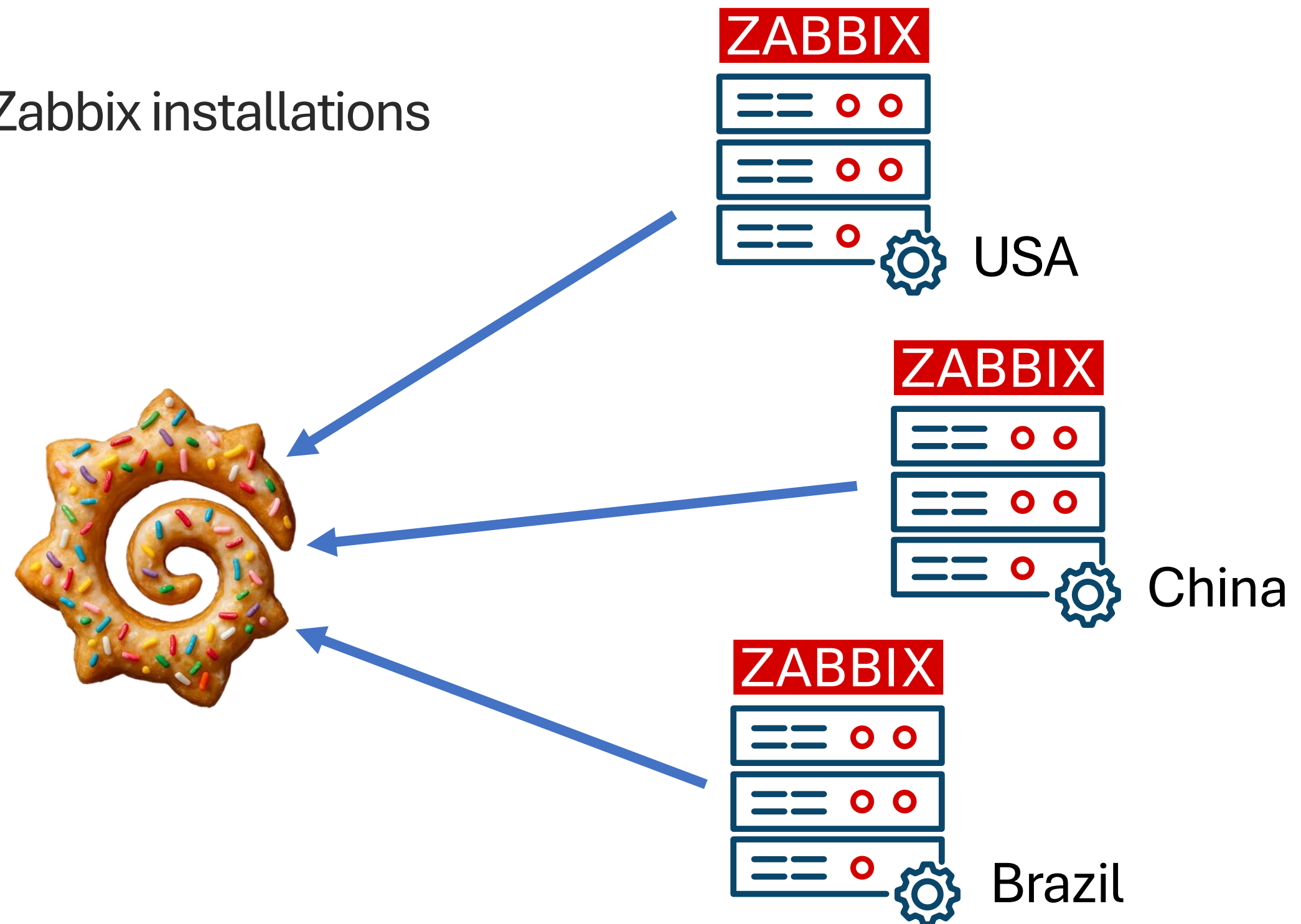
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- **Grafana as the central system ?**
- ✓ Ability to retrieve data from multiple Zabbix installations



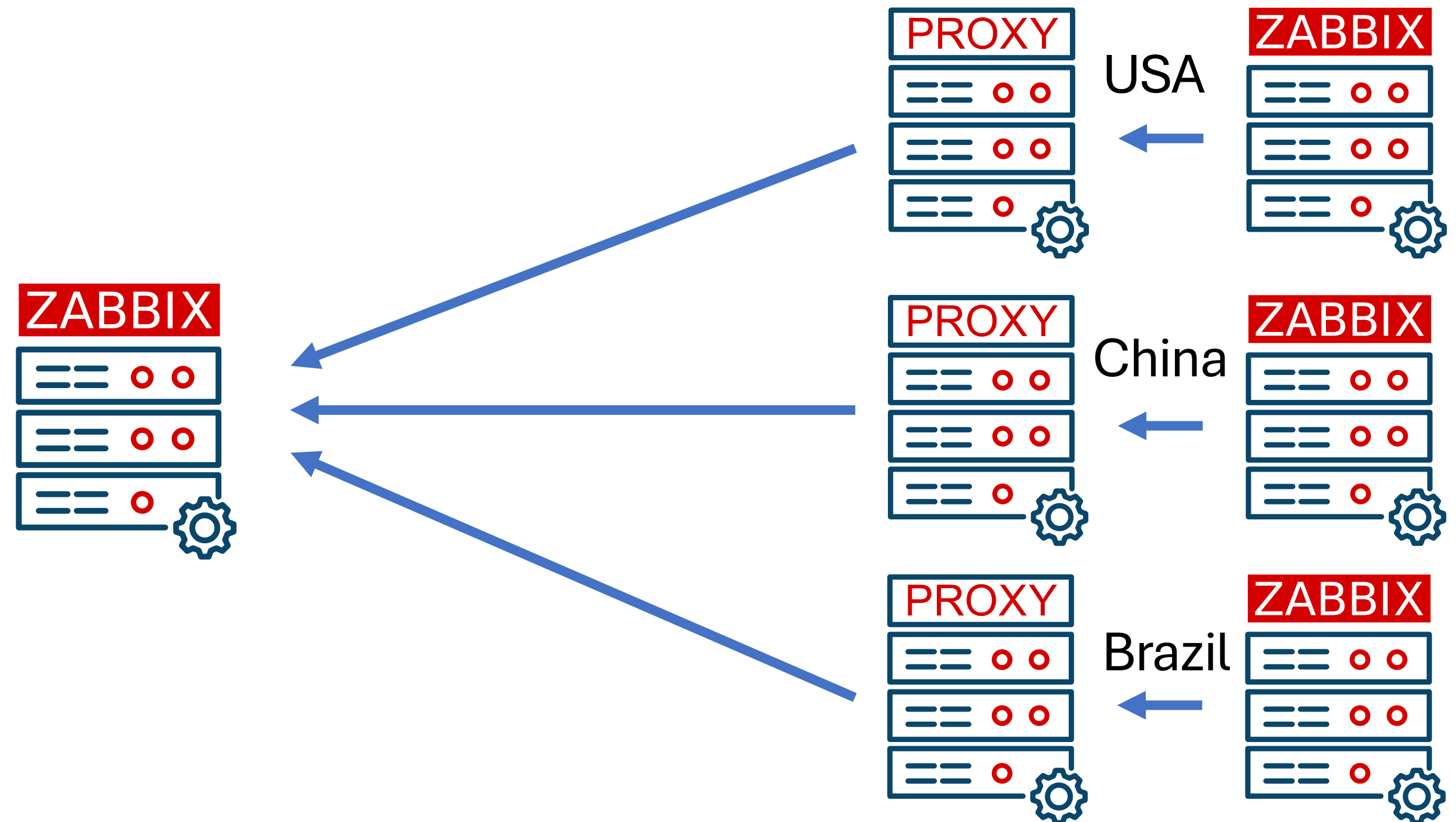
Brainstorm

- **Grafana as the central system ?**
- ✓ Ability to retrieve data from multiple Zabbix installations
- ❖ But... latency/connectivity issues



Brainstorm

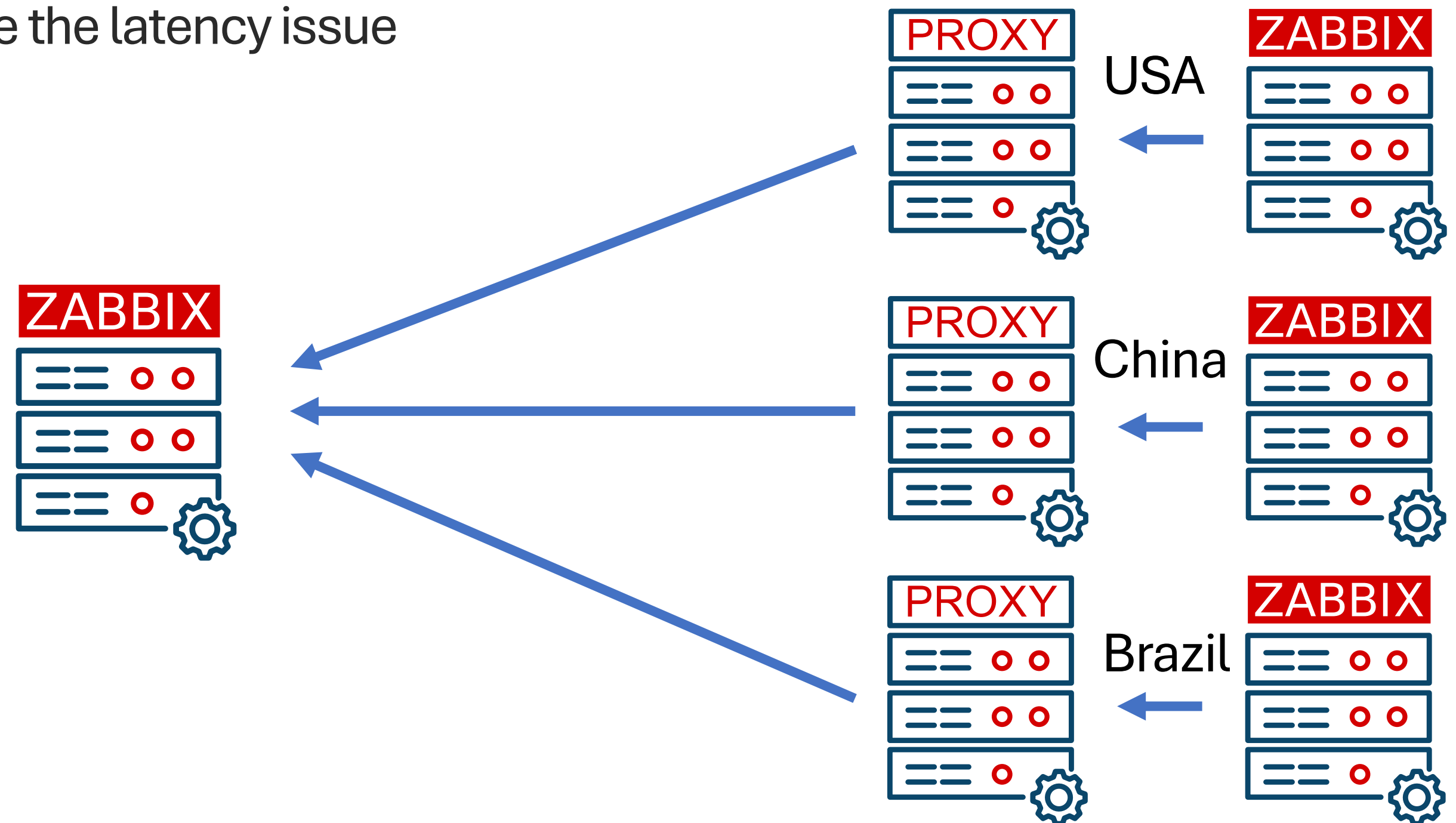
- Zabbix Proxies + Zabbix API ?



Brainstorm

- Zabbix Proxies + Zabbix API + LLD ?

✓ Proxies solve the latency issue



Zabbix API + Zabbix LLD

Zabbix API is a powerful feature, allowing us to instrument Zabbix

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Create host

Request:

```
{
  "jsonrpc": "2.0",
  "method": "host.create",
  "params": {
    "host": "Linux server",
    "interfaces": [
      {
```

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  "jsonrpc": "2.0",
  "method": "host.create",
  "params": {
    "host": "Linux server",
    "interfaces": [
      {
        "ip": "10.0.0.1",
        "type": "eth",
        "name": "eth0"
      }
    ]
  }
}
```

Create item

Request:

```
{
  "jsonrpc": "2.0",
  "method": "item.create",
  "params": {
    "name": "Device uptime",
    "key_": "sysUpTime",
    "hostid": "10084",
    "type": "log"
  }
}
```

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Create host

Create item

☐	Name ▲	Triggers
☐	... Linux by Zabbix agent active: Active agent availability	Triggers 1
☐	... Linux by Zabbix agent active: Available memory	Triggers 1
☐	... Linux by Zabbix agent active: Available memory in %	

Request:

```
{
  "jsonrpc": "2.0",
  "method": "host.create",
  "params": {
    "host": "Linux server",
    "interfaces": [
      {
        "ip": "10.0.0.1",
        "dns": {
          "hostname": "server1"
        }
      }
    ]
  },
  "id": 1
}
```

Request:

```
{
  "jsonrpc": "2.0",
  "method": "item.create",
  "params": {
    "name": "Device uptime",
    "key_": "sysUpTime",
    "hostid": "10084",
    "type": 3
  },
  "id": 2
}
```

Request:

```
{
  "jsonrpc": "2.0",
  "method": "item.get",
  "params": {
    "output": "extend",
    "hostids": "10084",
    "with_triggers": true,
    "sortorder": "ASC"
  },
  "id": 3
}
```

Zabbix API + Zabbix LLD

LLD = Low Level Discovery

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LLD allows us to monitor dynamically based on data we collect

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By using LLD we can dynamically create:

- Hosts
 - Items
 - Triggers
 - Graphs

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LLD = Low Level Discovery

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By using LLD we can dynamically create:

- Hosts
 - Items
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 - Graphs

https://www.zabbix.com/documentation/7.4/en/manual/discovery/low_level_discovery

If You do not know already....

New

LLD-driven automation for Zabbix

This course provides an in-depth introduction to Zabbix Low-Level Discovery (LLD) and its role in automating monitoring for dynamic environments.



Level: Intermediate



Automation and Integration with Zabbix API

This course gives a detailed study of Zabbix API functionality and explains multiple use cases, from sending JSON-RPC requests to writing scripts using the Python API wrapper.



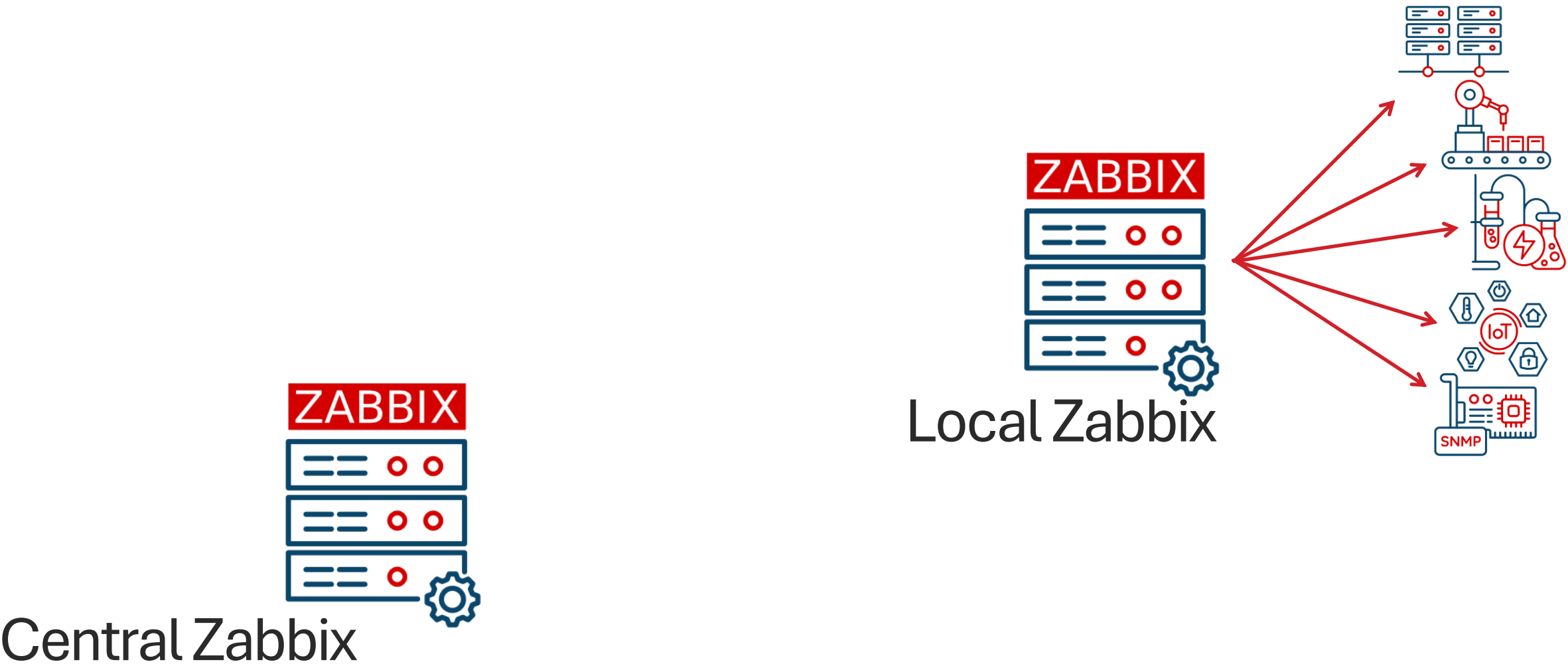
Level: Advanced

[Course description](#)

<https://itm8.dk/application-services/zabbix-kurser>

Attempt #1 - Scripted Zabbix API

The idea

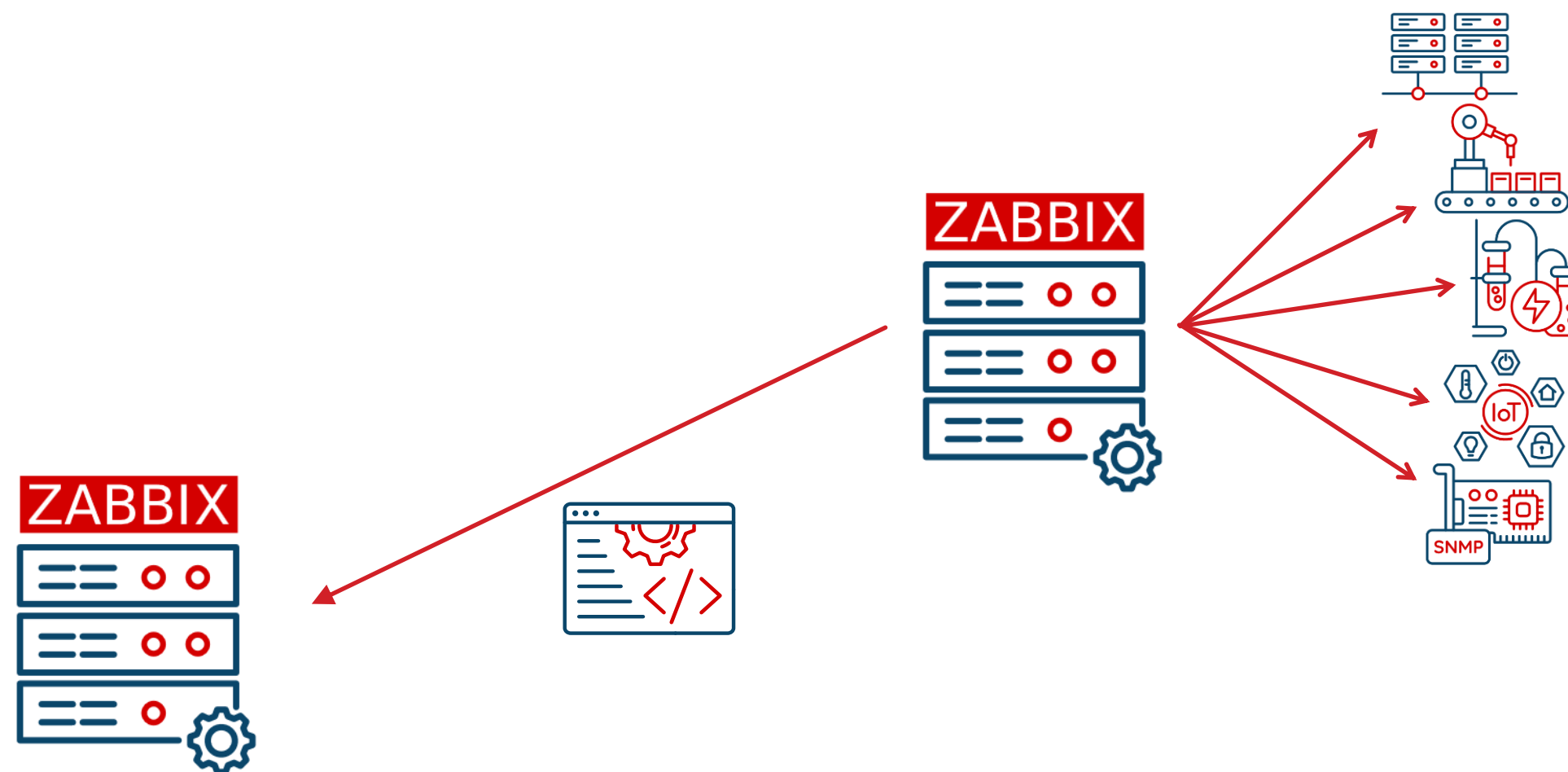


Attempt #1 - Scripted Zabbix API

The idea

Using the API

- read the monitoring configuration

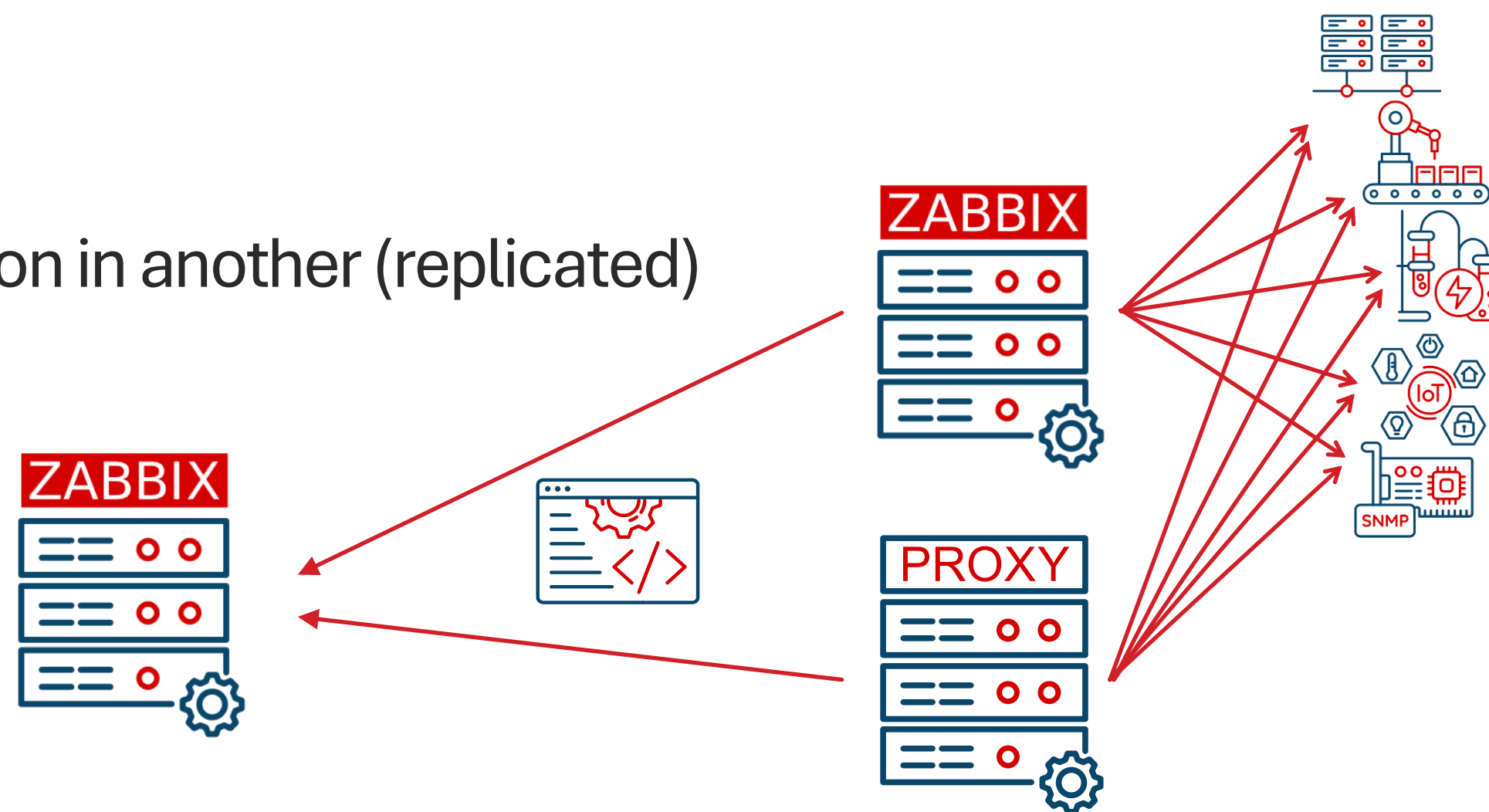


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The idea

Using the API

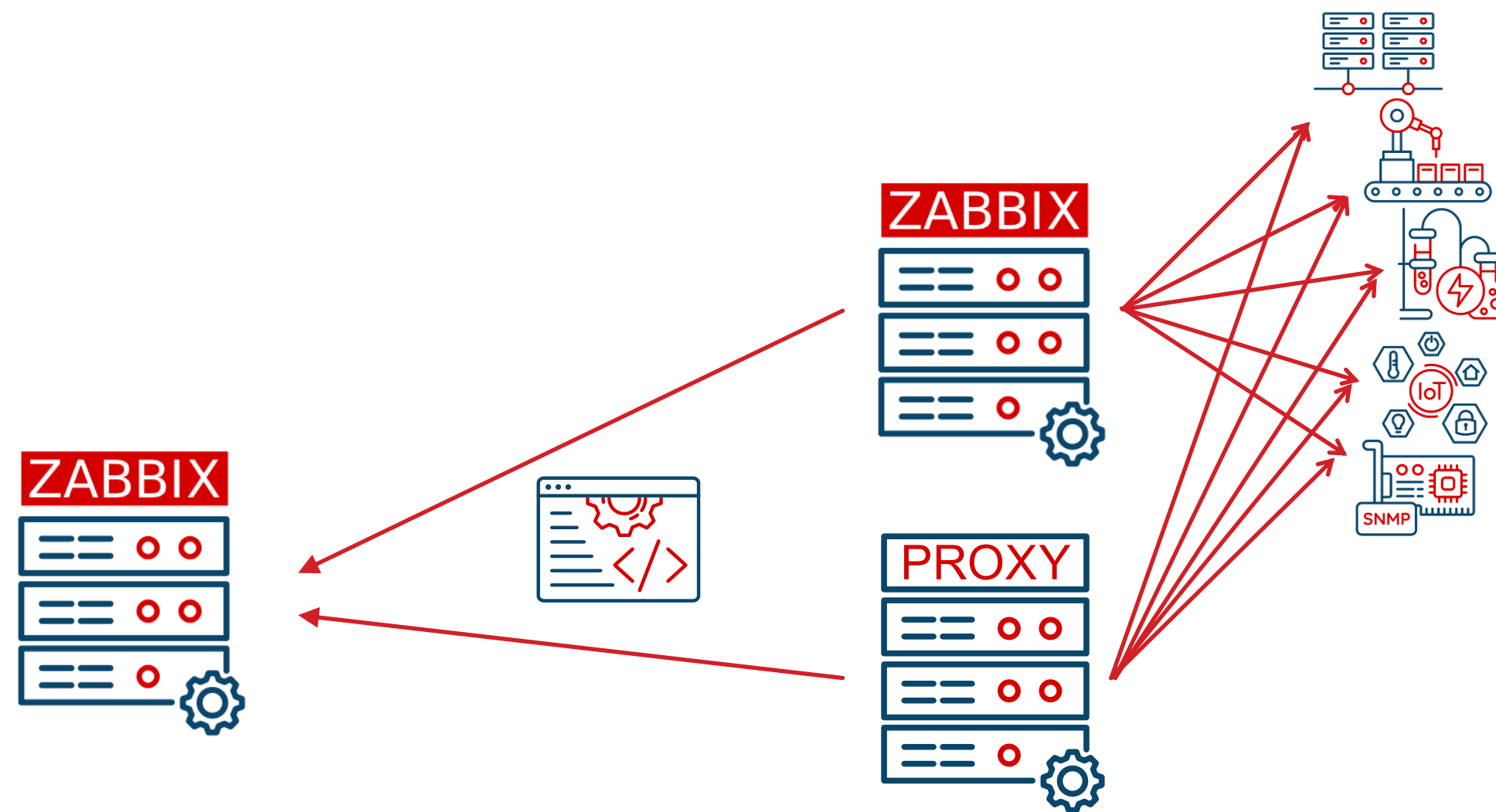
- read the monitoring configuration
- re-create the monitoring configuration in another (replicated) Zabbix



Attempt #1 - Scripted Zabbix API

Issues

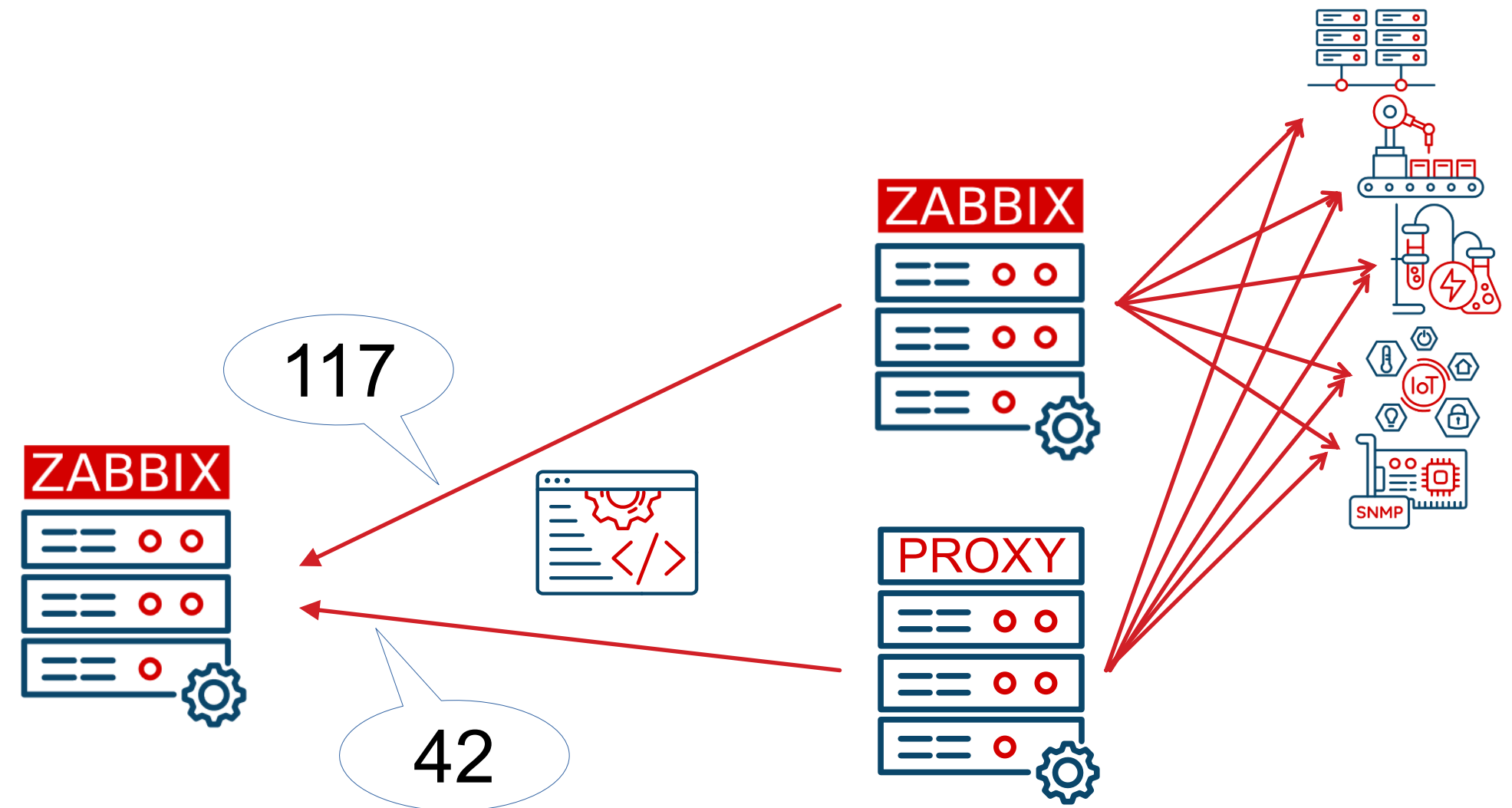
- Complexity (ID's)



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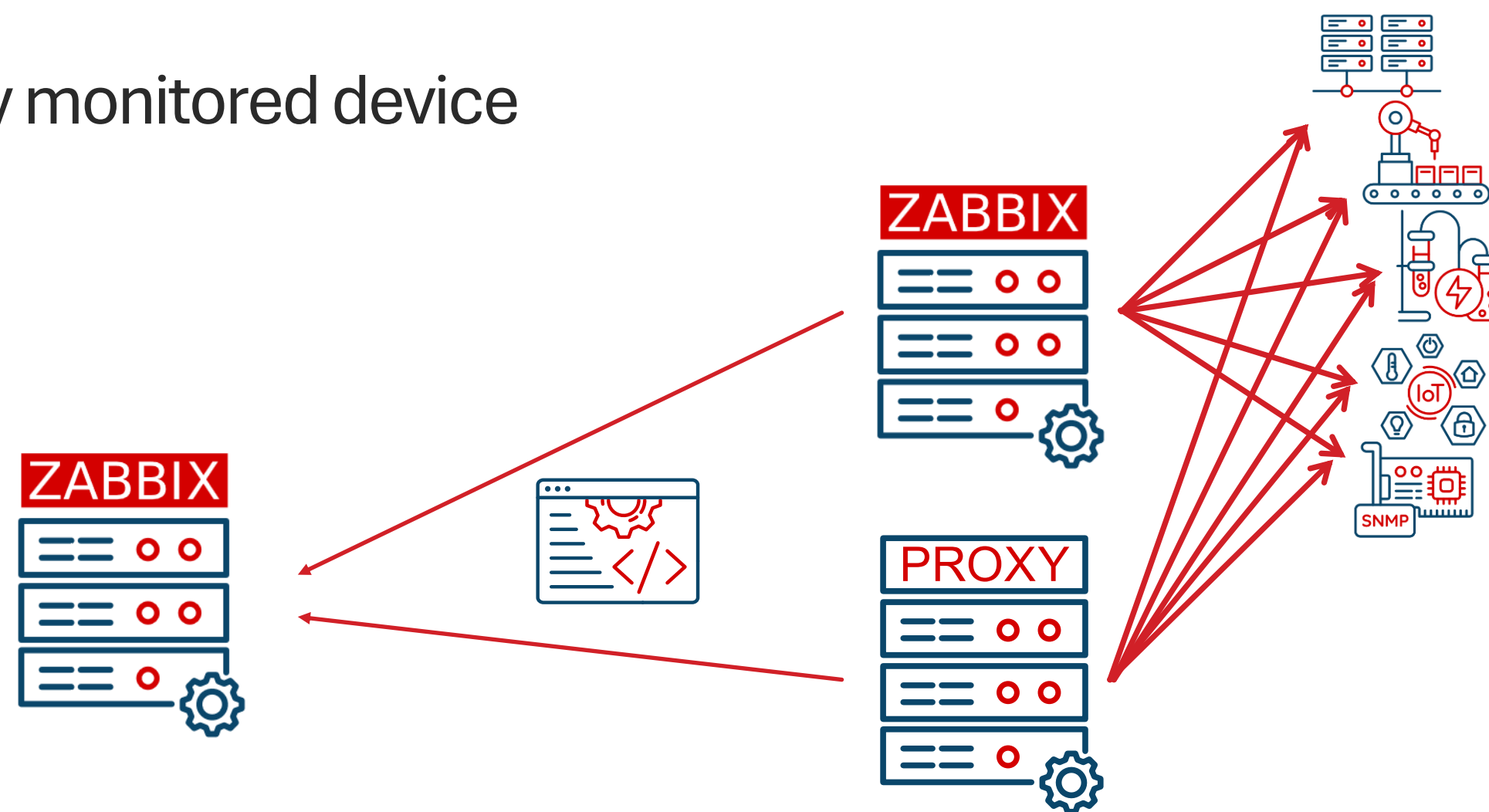
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Issues

- Complexity (ID's)
- Double the monitoring load on every monitored device

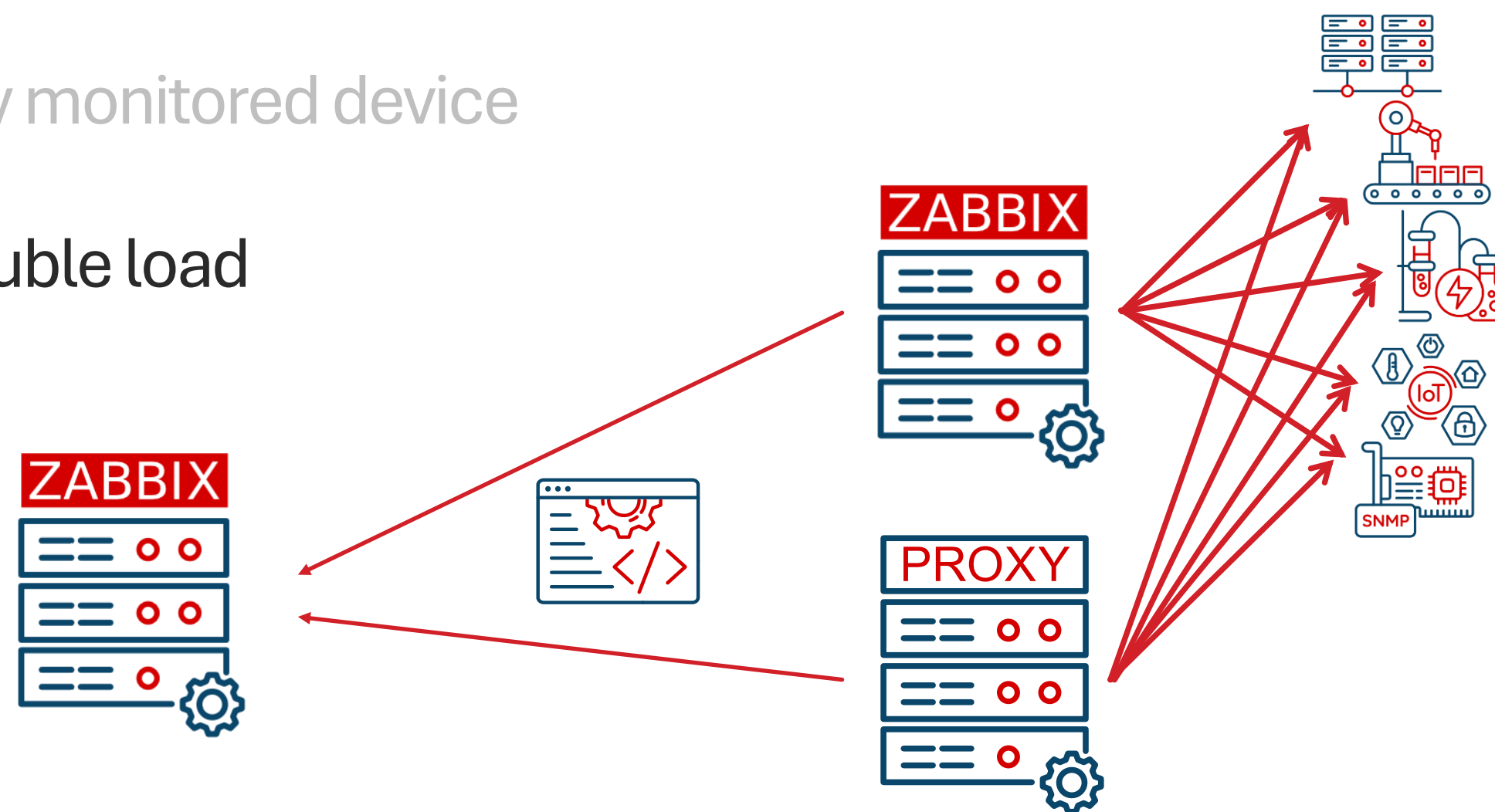


Attempt #1 - Scripted Zabbix API

Issues

- Complexity (ID's)
- Double the monitoring load on every monitored device

Solution eventually dropped, due to double load



Let's revisit this...

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- Continuously retrieve data using Zabbix API

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- Recreate the structure centrally using LLD
- Continuously retrieve data using Zabbix API
 - Treat values and problems as data

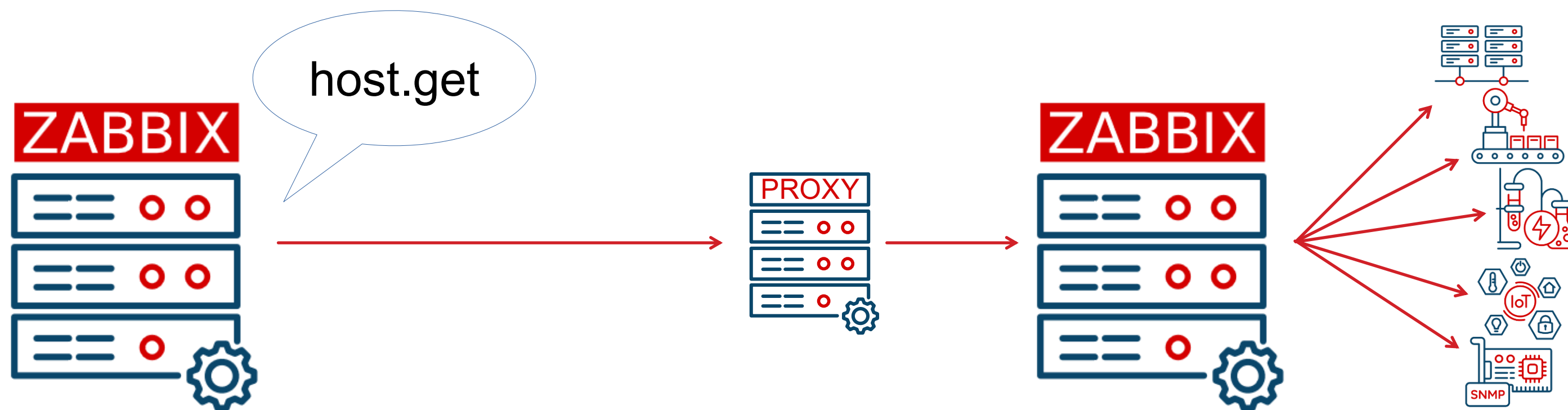
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New idea

Treat the local Zabbix API's as data input to LLD

Recreate the same structure centrally

Then continuously retrieves data



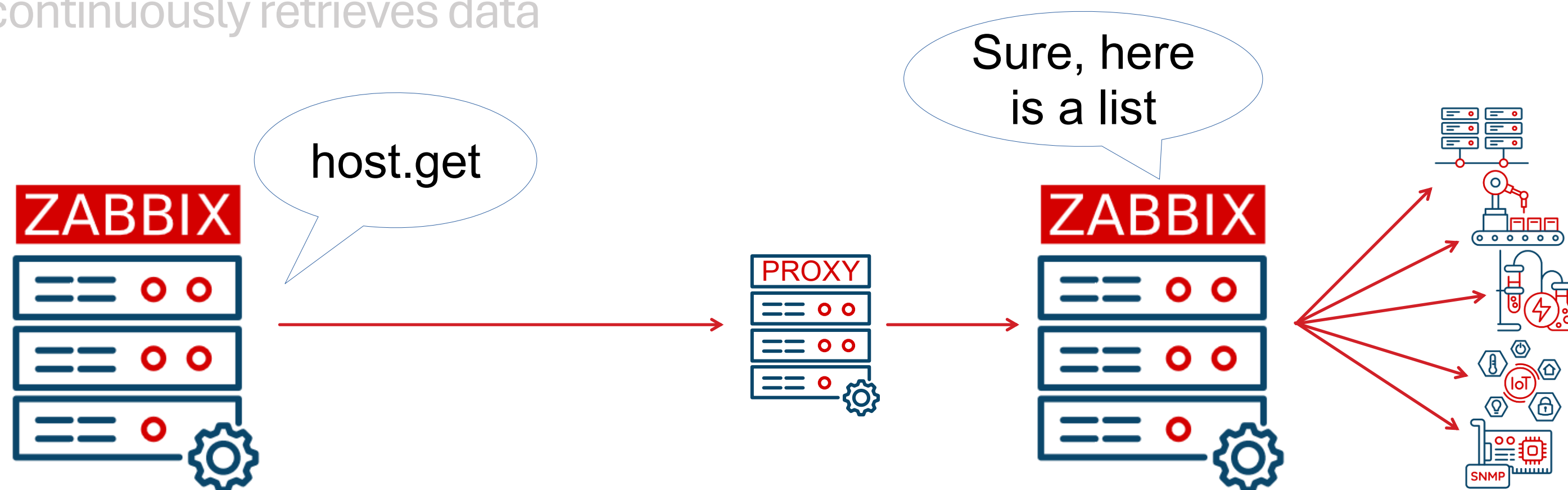
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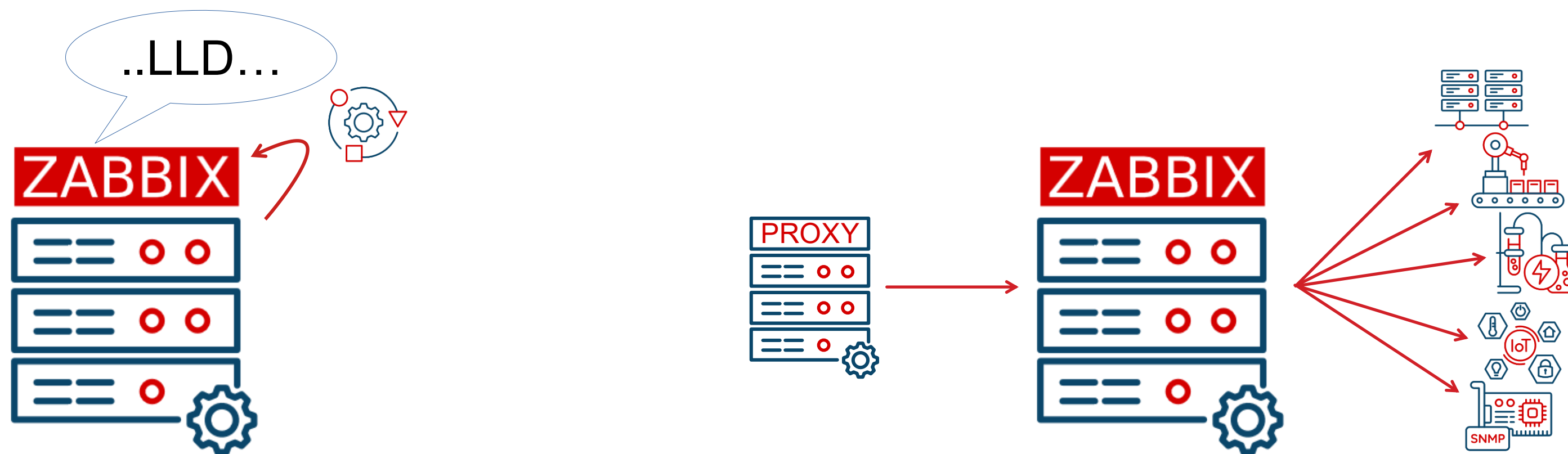
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Then continuously retrieves data using a proxy



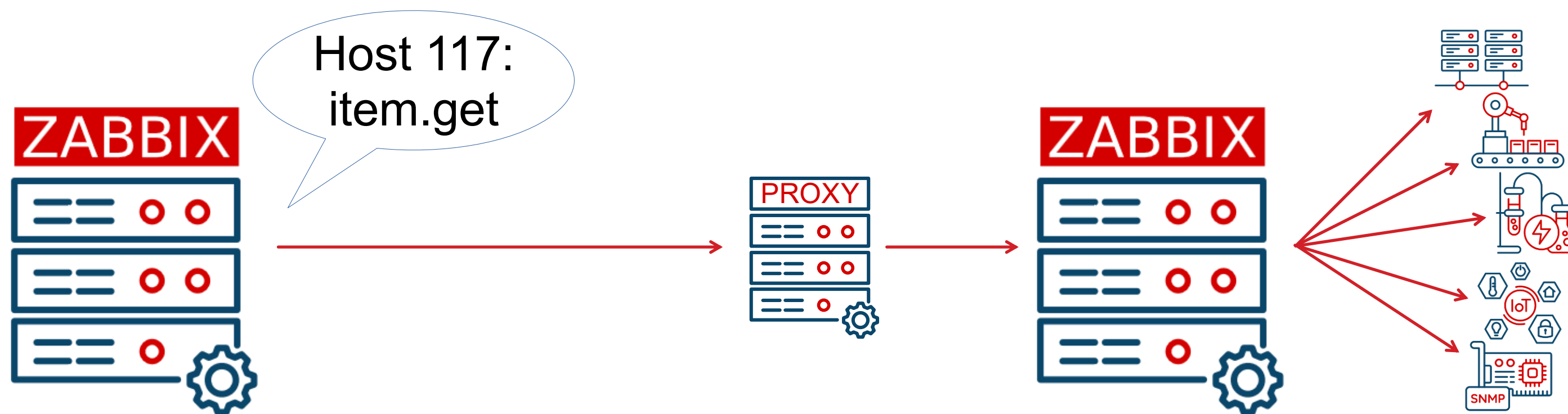
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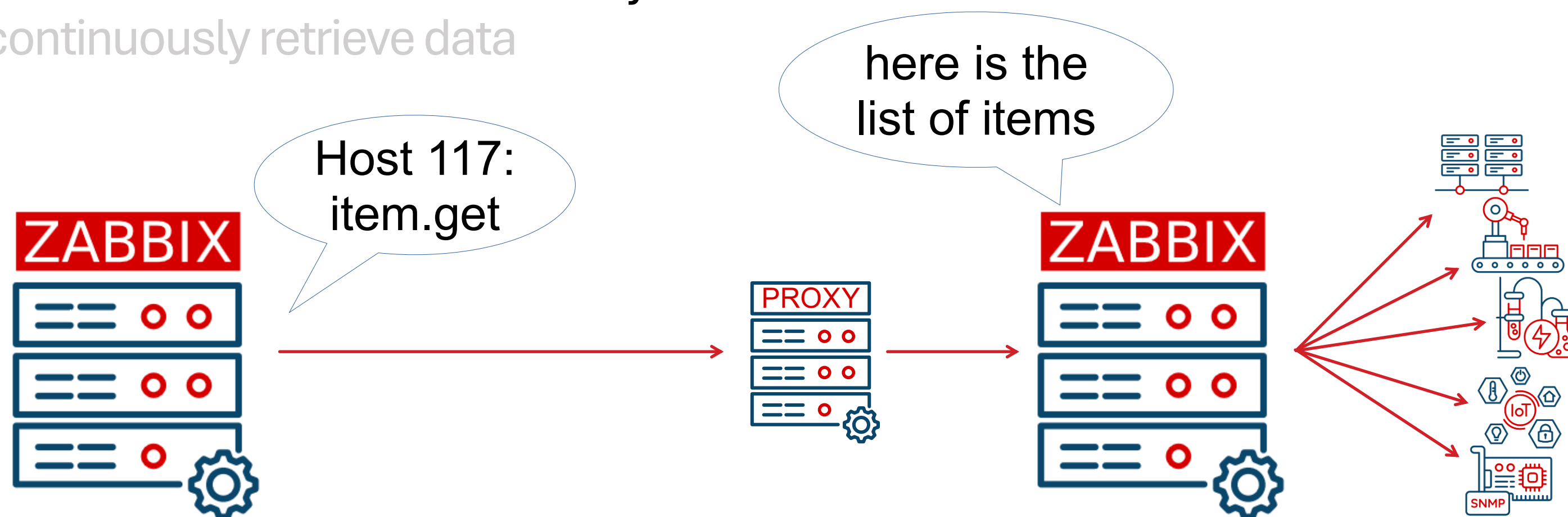
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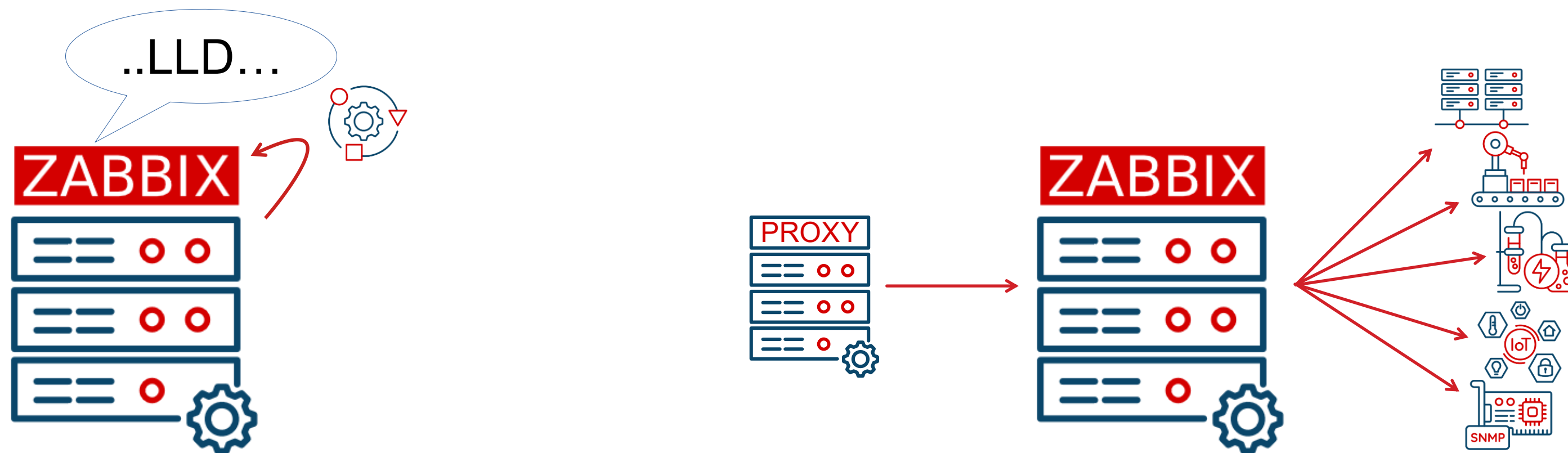
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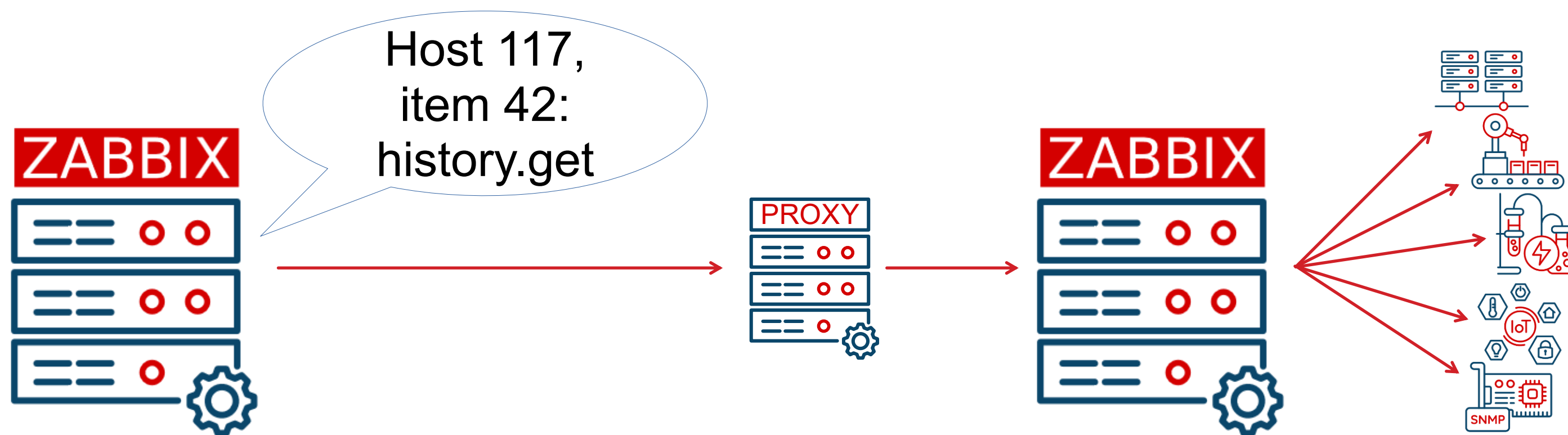
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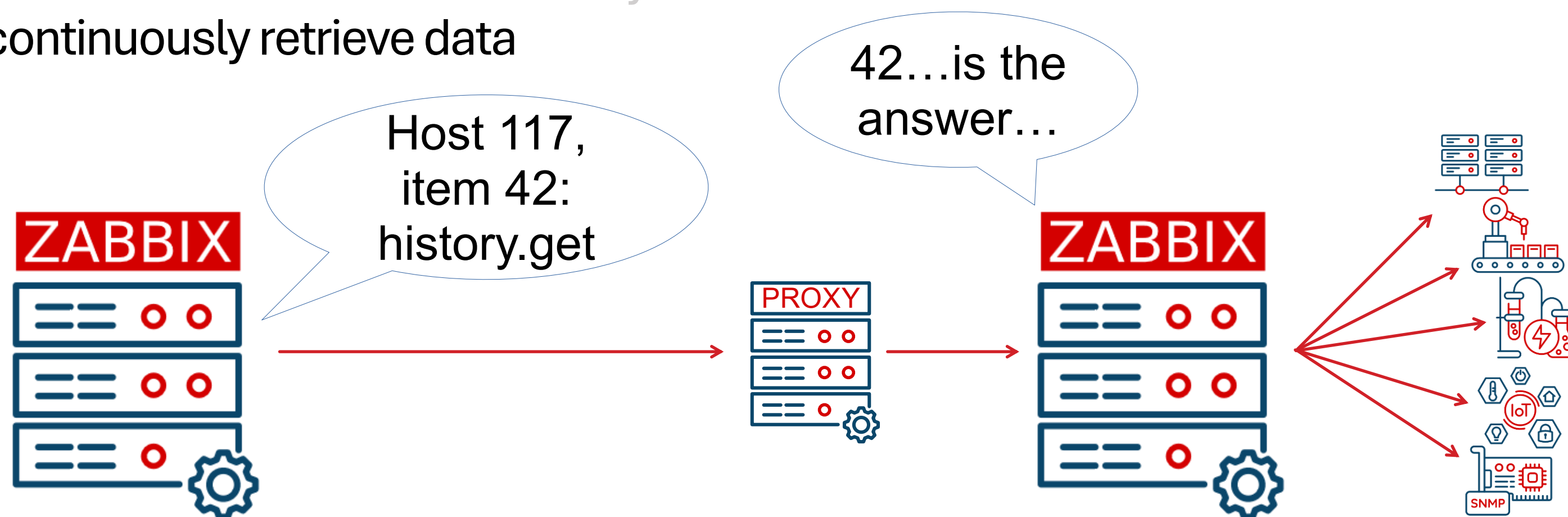
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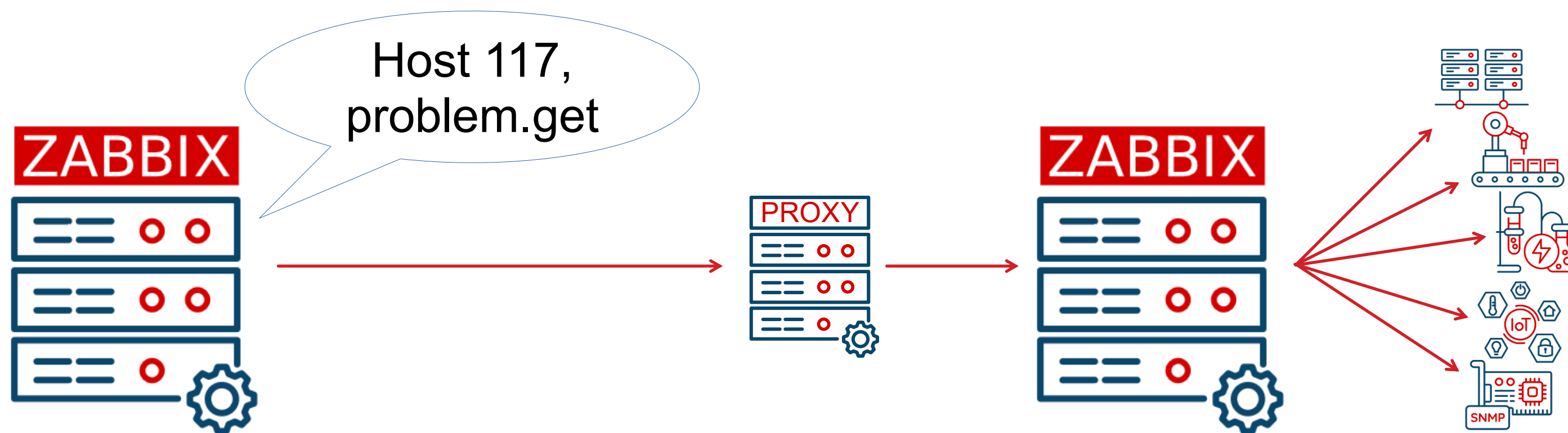
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 - Discovers hosts and recreates these, each host containing the following template:

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- Item replication template
 - Discovers items and recreates these
 - Each item then retrieves the latest value
 - Discovers problems and recreates these
 - Closes the problems, when solved

Attempt #2 - Zabbix API and LLD

Any questions ?

Customer case #3: What & why

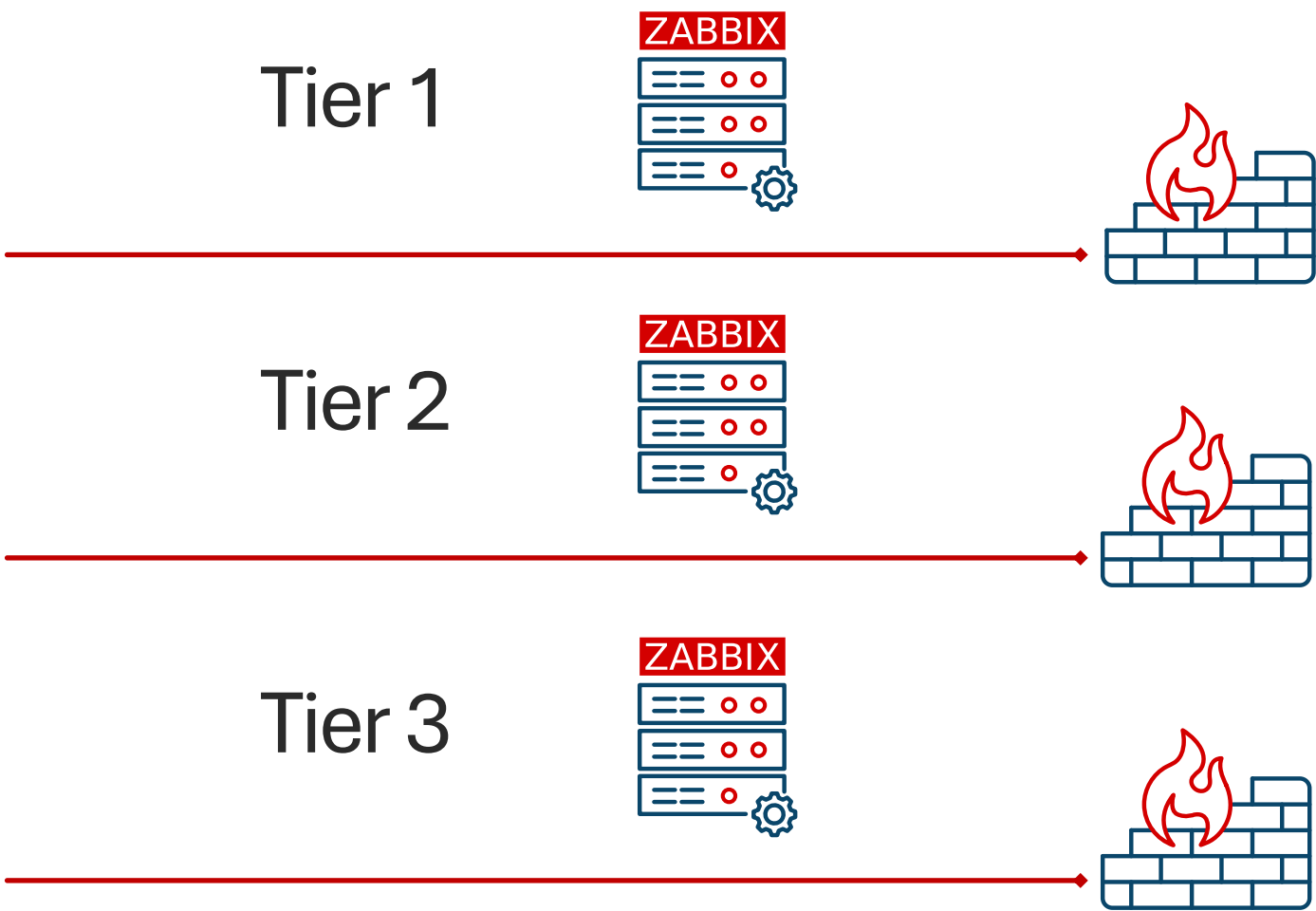
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Customer case #3: What & why

New customer with multiple Zabbix installations and a very secure network

Limitations

- ❑ Tiered network

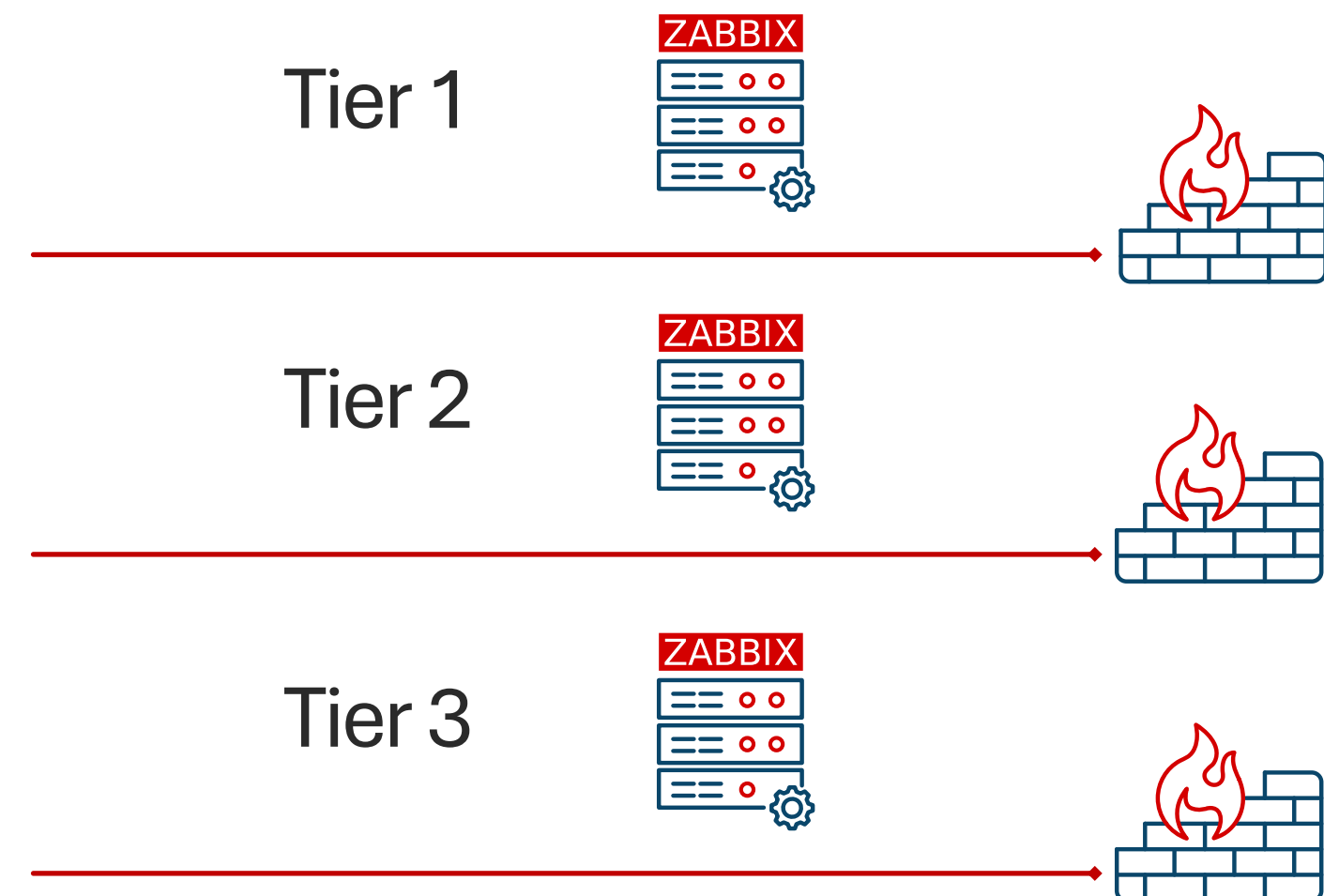


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Limitations

- ☐ Tiered network
- ☐ Connections between tiers is not allowed

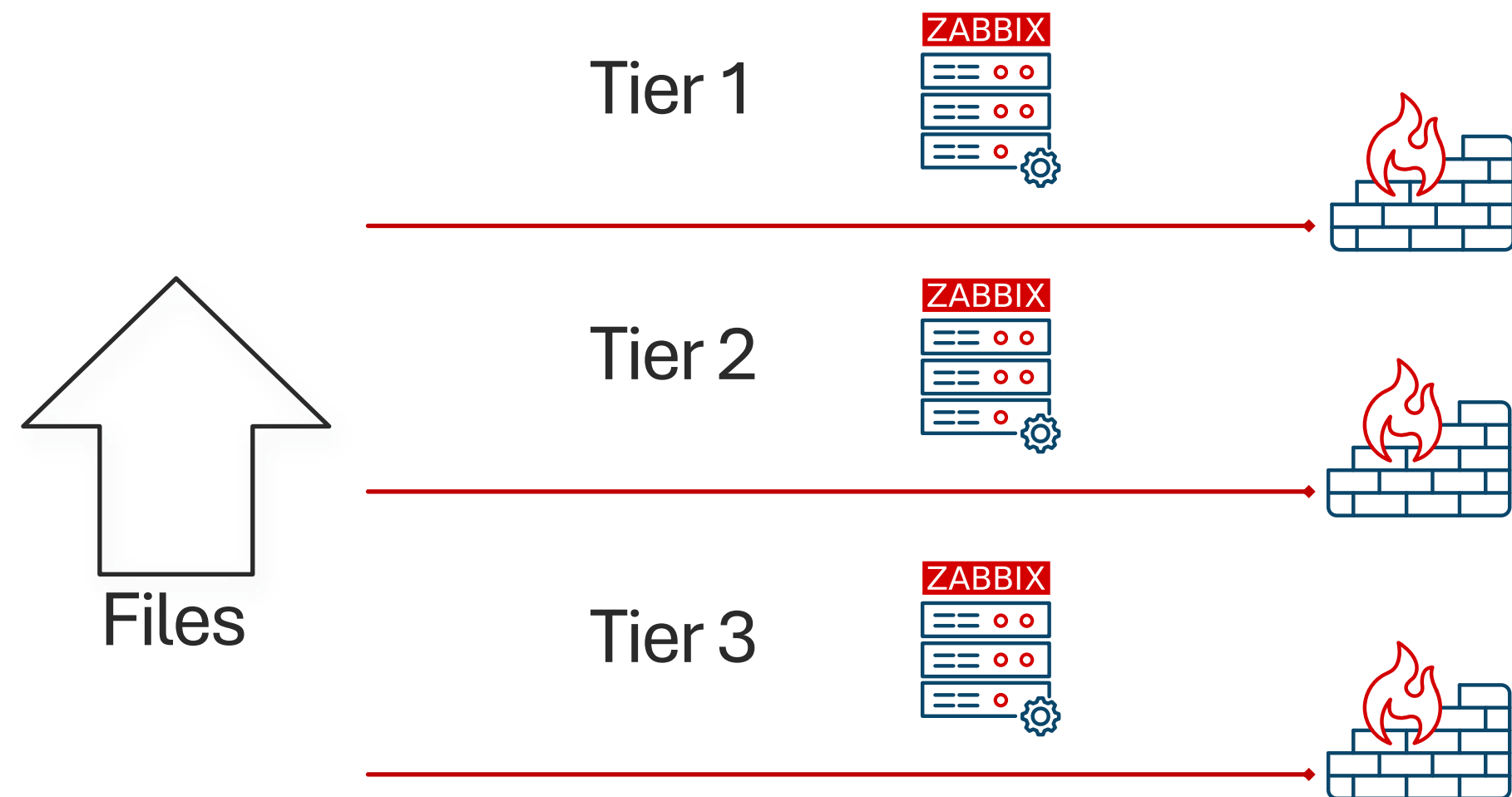


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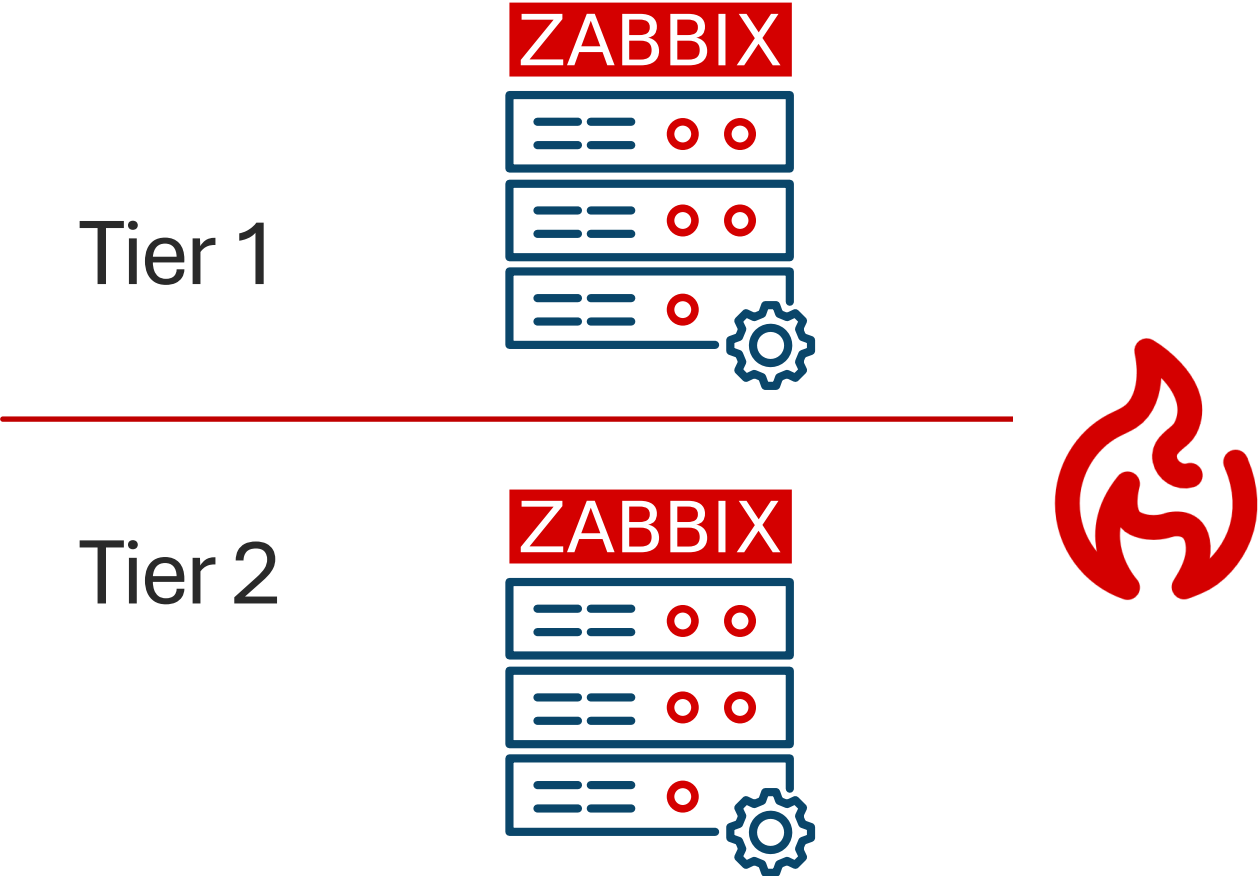
- ☐ Tiered network
- ☐ Connections between tiers is not allowed
- ☐ Files can be transferred up



Attempt #3 - Zabbix export ++

Complex solution based on Zabbix export, API and LLD

Idea:

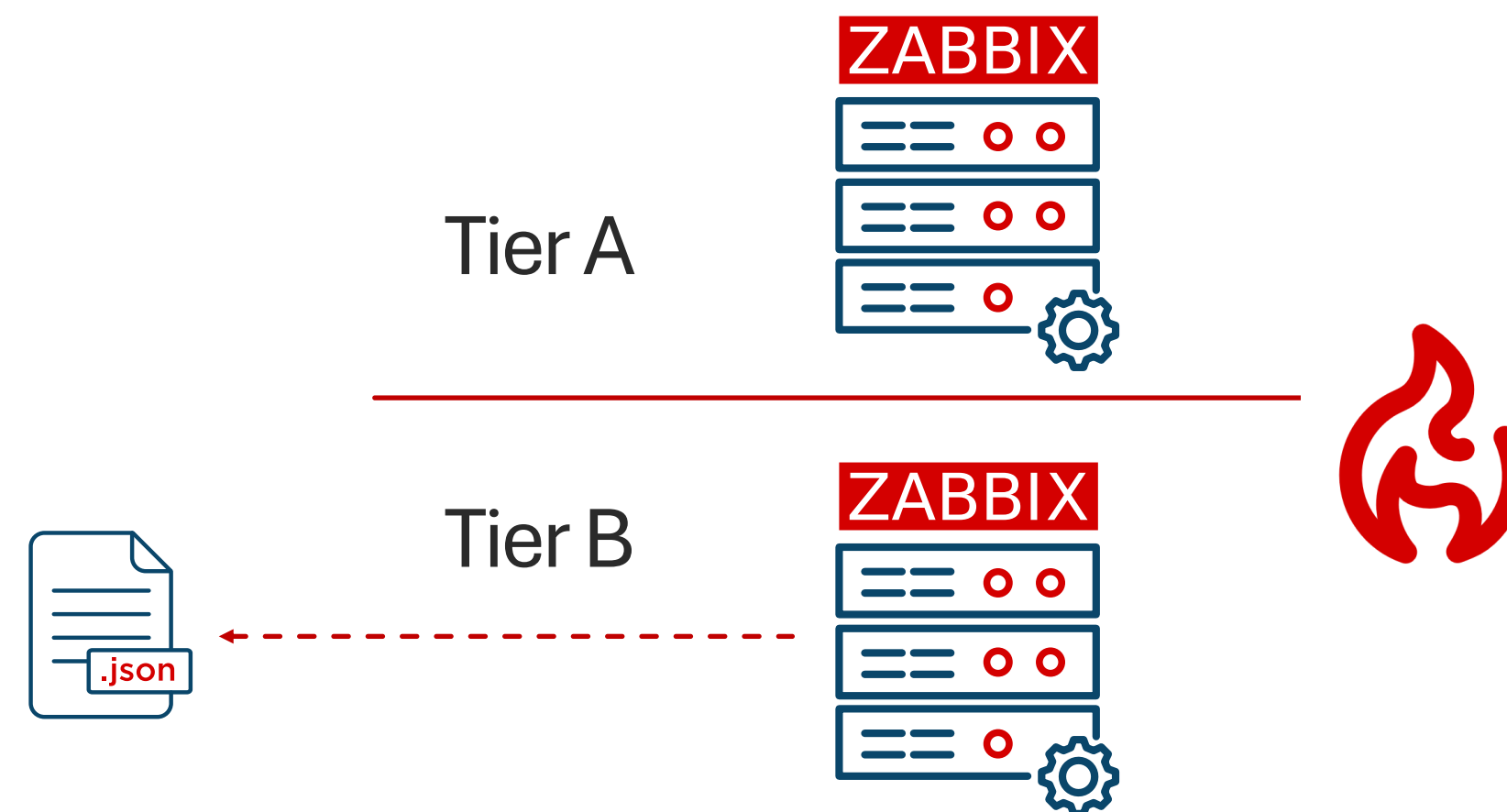


Attempt #3 - Zabbix export ++

Complex solution based on Zabbix export, API and LLD

Idea:

- Zabbix exports trends and events



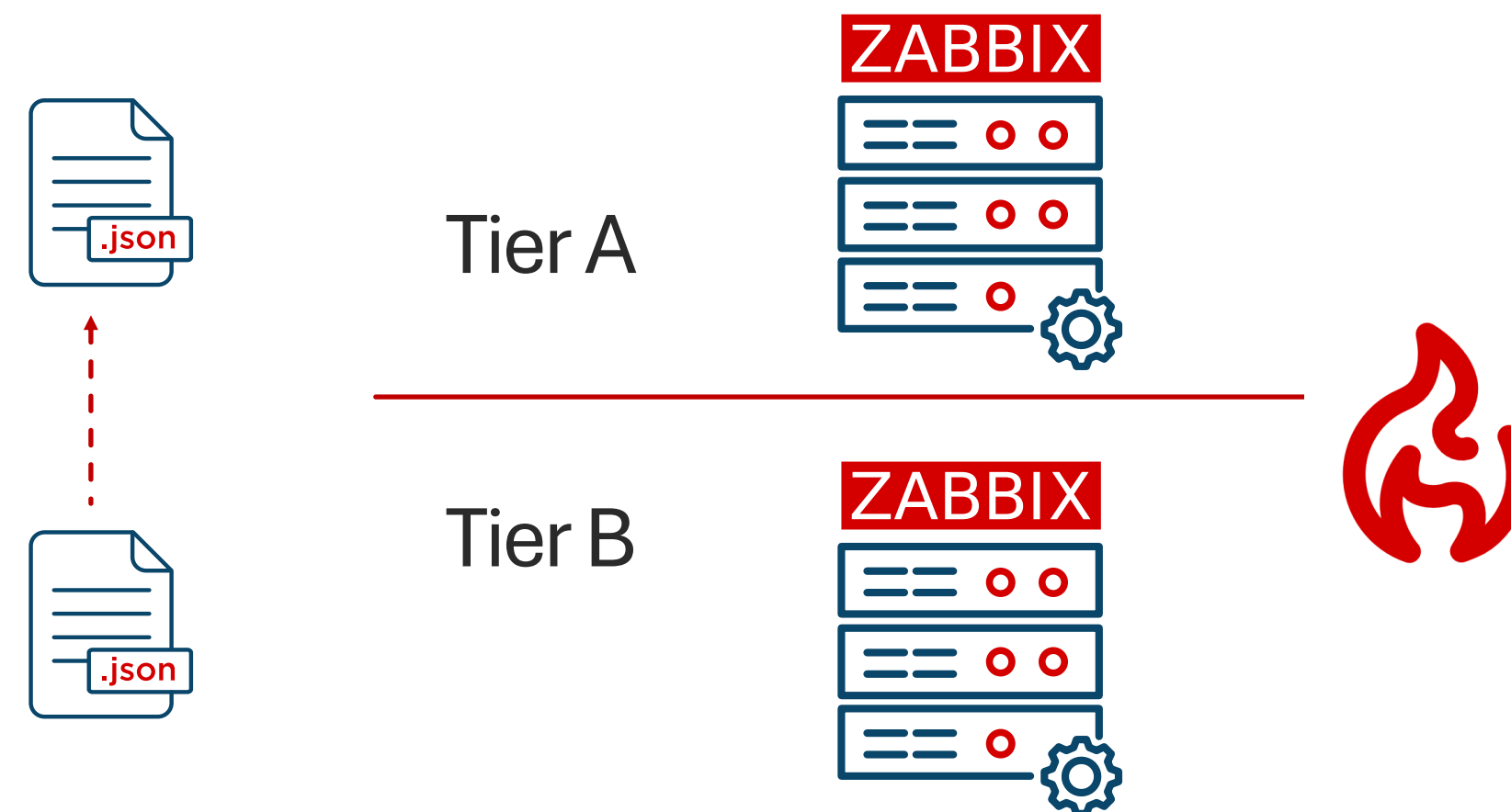
https://www.zabbix.com/documentation/7.4/en/manual/appendix/protocols/real_time_export

Attempt #3 - Zabbix export ++

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Idea:

- Zabbix exports trends and events
- These files are then transferred



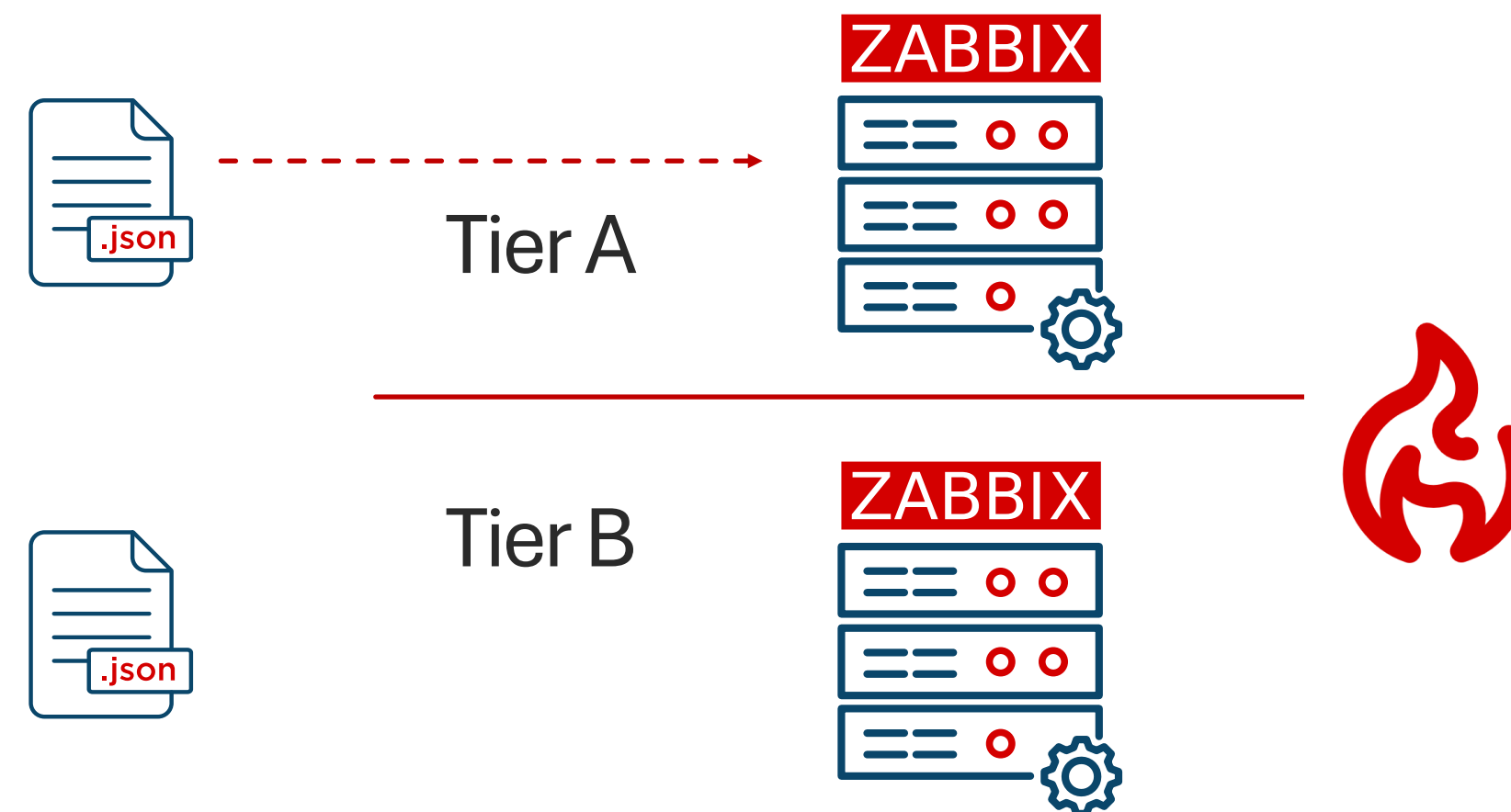
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Attempt #3 - Zabbix export ++

Complex solution based on Zabbix export, API and LLD

Idea:

- Zabbix exports trends and events
- These files are then transferred
- Files are imported



https://www.zabbix.com/documentation/7.4/en/manual/appendix/protocols/real_time_export

Attempt #3 - Zabbix export ++

Complex solution based on Zabbix export, API and LLD

File import - Idea:

- The files contains
 - Hostname, Hostgroup(s)
 - Tags
 - Itemid, name and value or eventid, event name

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File import - Idea:

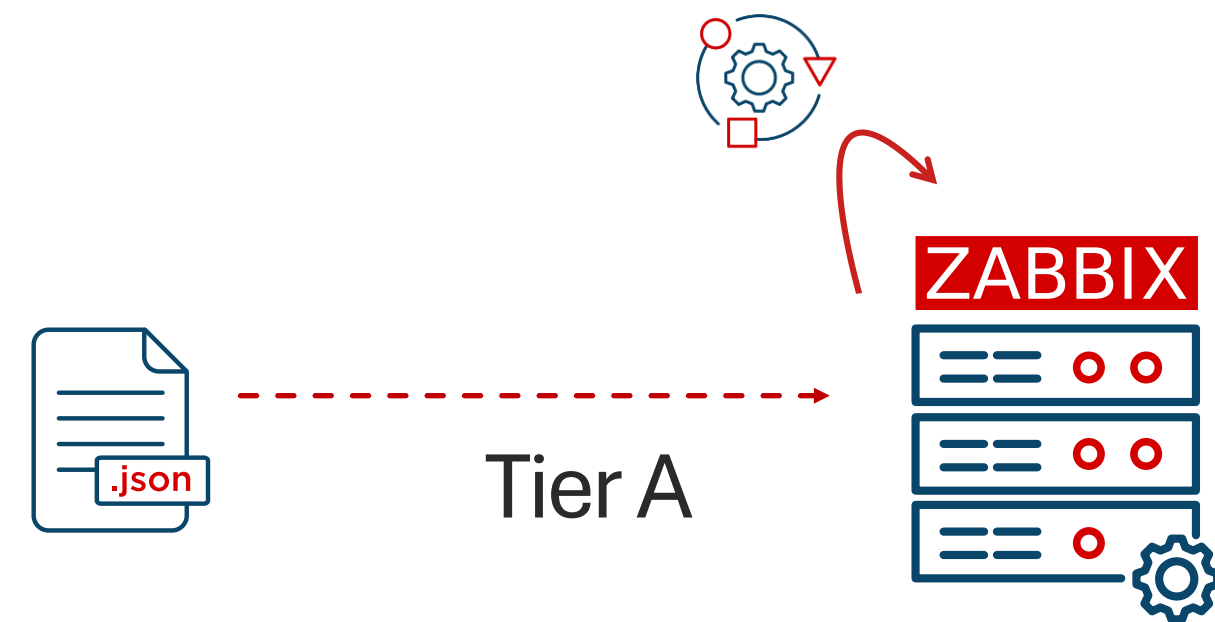


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File import - Idea:

- LLD Creates/maintains hosts and items and problems



Attempt #3 - Zabbix export ++

Complex solution based on Zabbix export, API and LLD

File import - Idea:

- LLD Creates/maintains hosts and items and problems
- Values are imported into Zabbix



Attempt #2 - Zabbix API and LLD

Any questions ?