ZABBIX
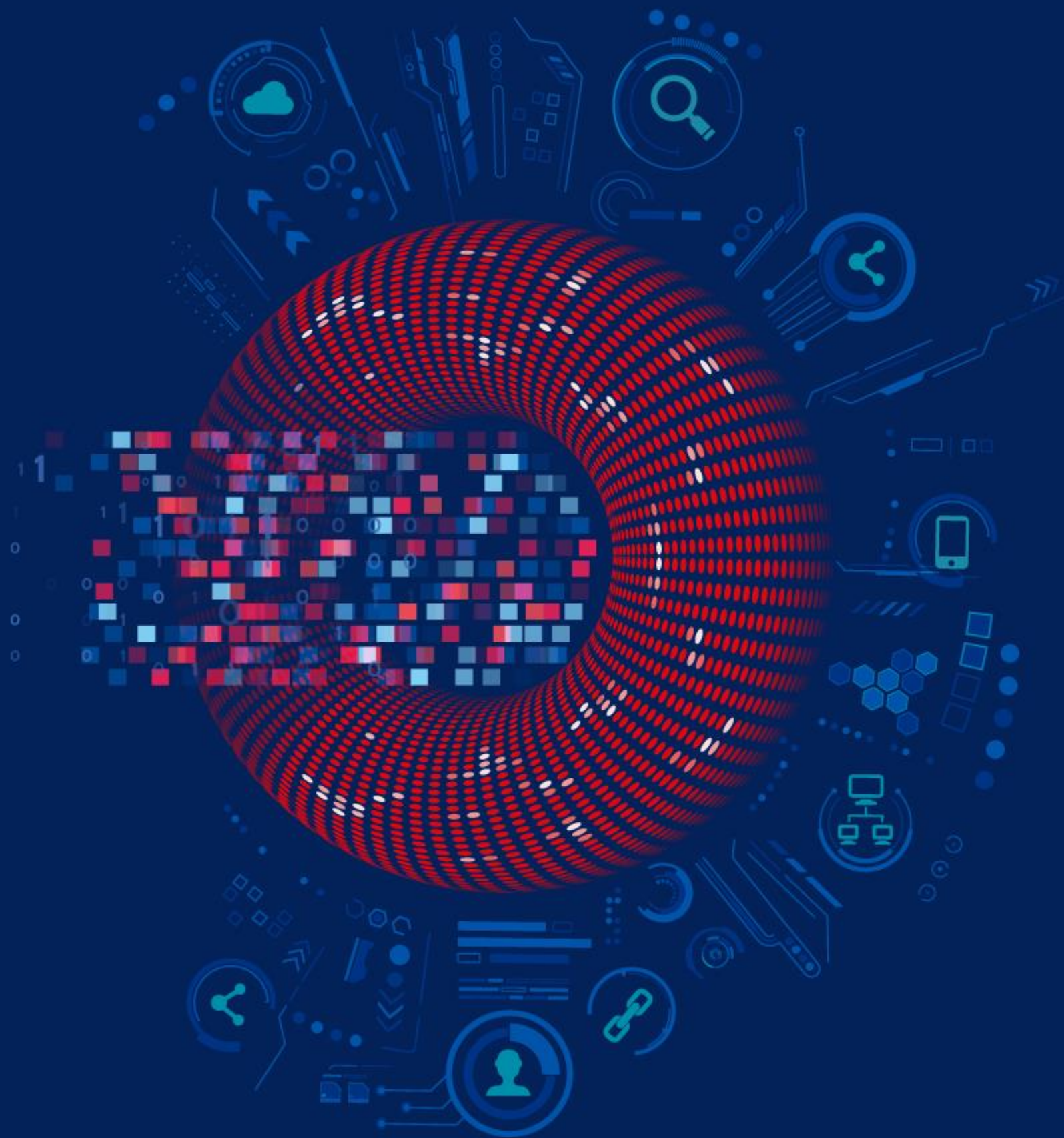
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OVERVIEW OF ZABBIX MONITORING SOLUTION

Kārlis Saliņš
Technical Support Engineer

ZABBIX

ZABBIX is an open source enterprise-level monitoring solution designed to monitor millions of metrics in real time, collected from tens of thousands of servers, virtual machines, network devices and applications

Over 300 000+ installation worldwide.

ZABBIX is trusted by customers all over the globe.

WHAT TO MONITOR?

SOLUTIONS FOR DIFFERENT INDUSTRIES, APPLICATION AREAS AND USE CASES

- Access control: Monitor changes in room temperature, use of access cards and other sensors and logs.

- KPI monitoring: Use collected metrics to create dashboards for your business KPI monitoring: number of web visitors, number of purchases, amount of devices manufactured per hour, etc.

- Capacity monitoring: Monitor your infrastructure resource utilization and let Zabbix help you plan your IT budget accordingly.

- Configuration monitoring: Use Zabbix to enable monitoring of software versions, keep track of installed applications and updates

- Inventory monitoring: Utilize Zabbix to manage the inventory of your devices – hardware , software serial numbers and much more!

- Security monitoring: Monitor security risks by monitoring network ports, malicious software, password files and other security entities.

CLOUDS
CONTAINERS
VIRTUAL MACHINES
SERVICES
ZABBIX
HARDWARE
APPLICATIONS
DATABASES
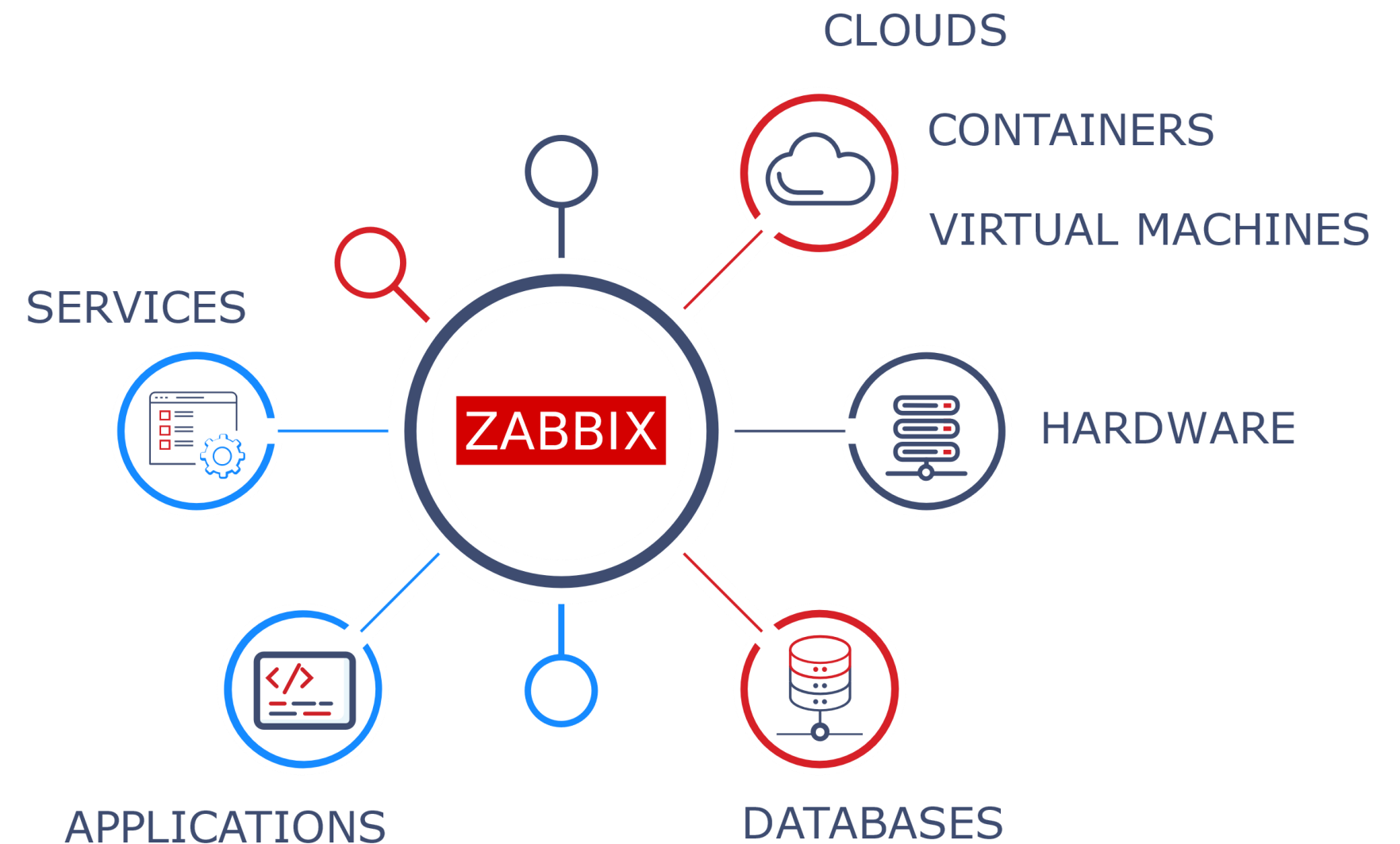
# BASIC ARCHITECTURE

ZABBIX SERVER BACKEND

- Core process responsible for data collection and analysis
- Can be deployed on Linux, BSD, Raspbian and other Unix-like operating systems
- Native Zabbix server high availability cluster

DATABASE

- Data and configuration storage
- MySQL and Community forks
- PostgreSQL + TimescaleDB
- Oracle

FRONTEND

- PHP frontend for configuration management and data visualization.

4
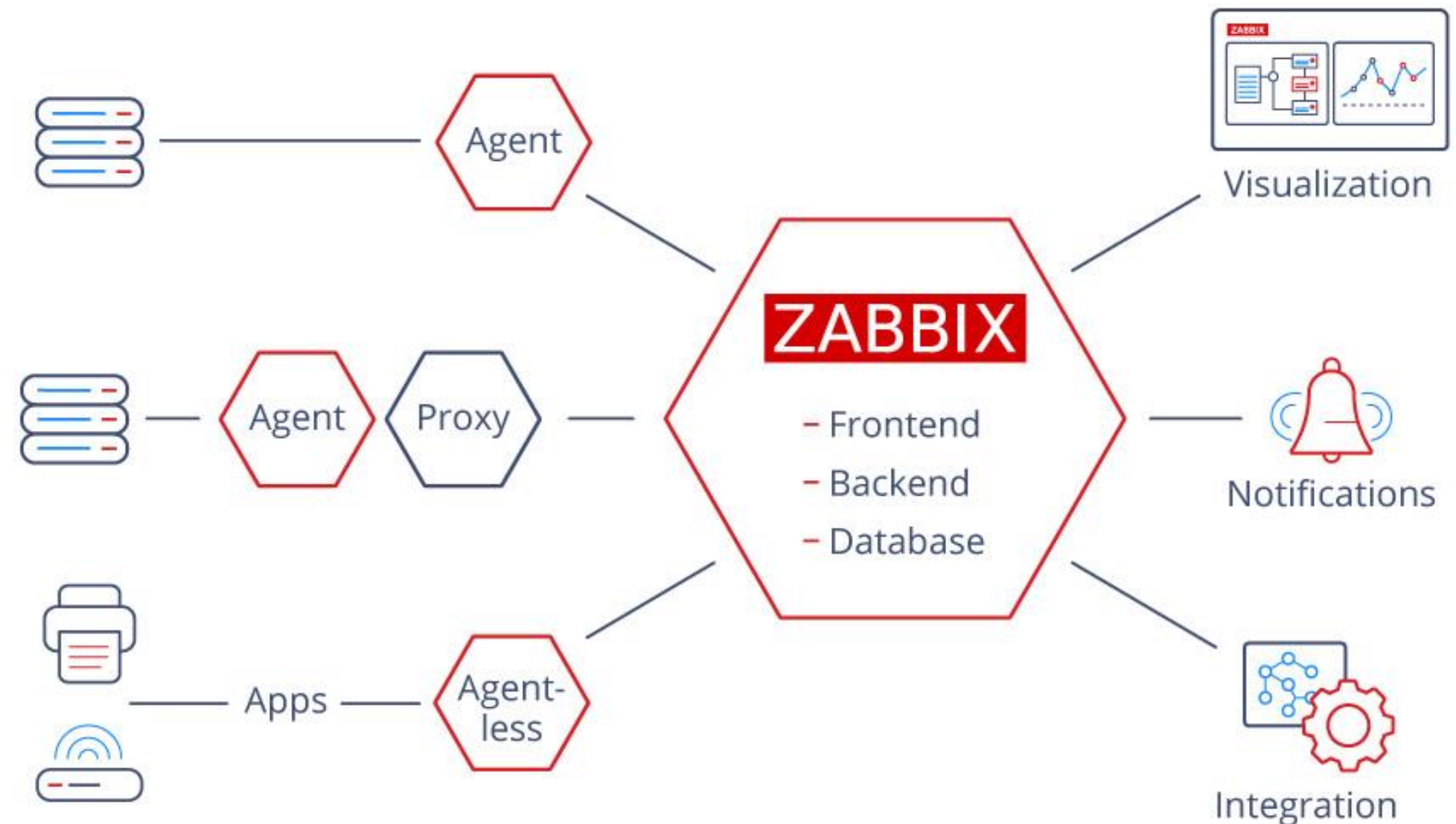
DISTRIBUTED MONITORING

Deploy Zabbix proxies in remote sites for added redundancy and ease of configuration

- ⊘ Select the direction of communication between Zabbix server and Zabbix proxies

- ⊘ Zabbix supports unlimited number of proxies

- ⊘ Scale up your monitoring by adding extra Zabbix proxies to your environment
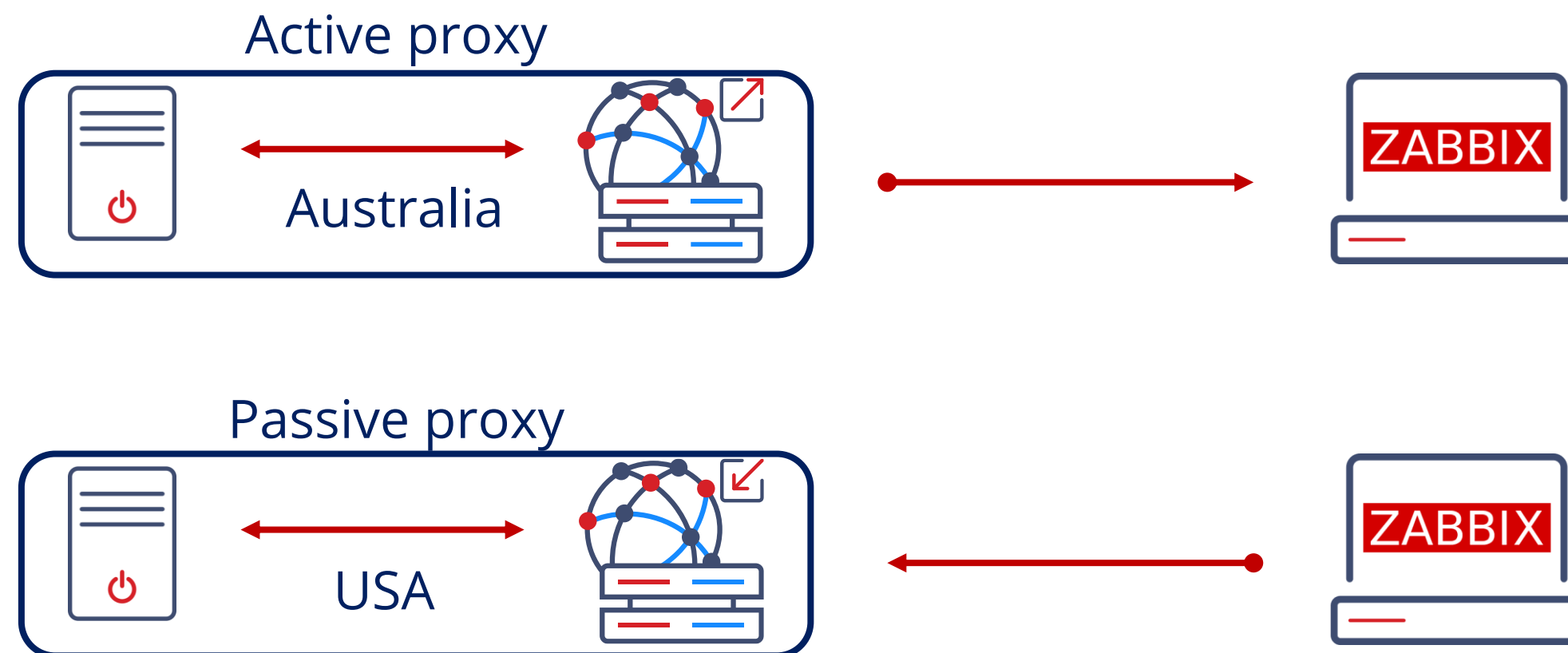
DISTRIBUTED MONITORING

Collect data from thousands of monitored devices:

- ⊘ Data compression

- ⊘ Monitor behind the firewall, DMZ

- ⊘ Collect data even in case of network issues

- ⊘ Remotely run custom scripts on monitored hosts

- ⊘ Control all Zabbix proxies from a single pane of glass

- ⊘ No requirement to upgrade proxies together with server (from 6.4)
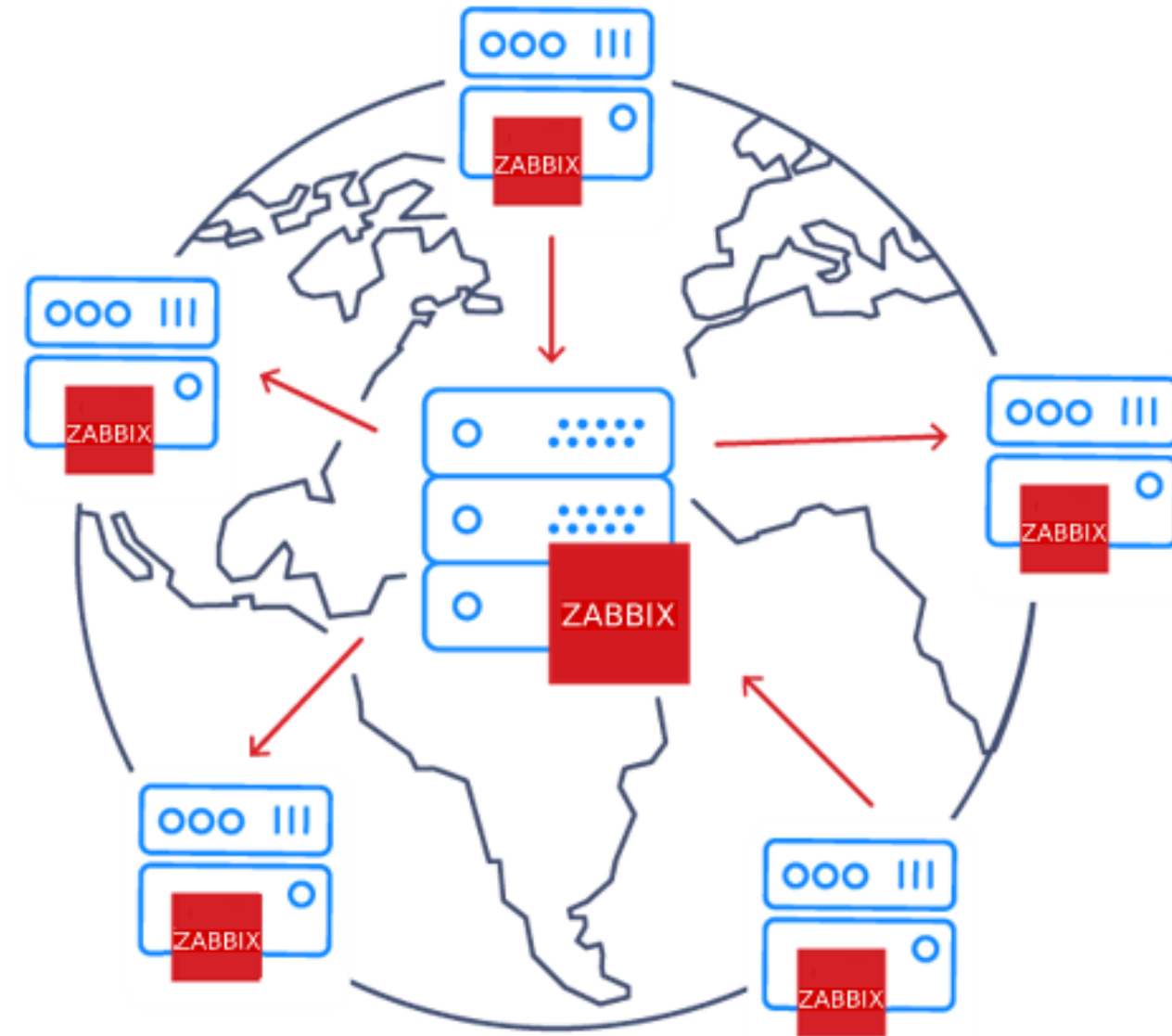
EFFORTLESS DEPLOYMENT

Install Zabbix in minutes

Deploy Zabbix on the most popular Linux distributions with the official Zabbix packages
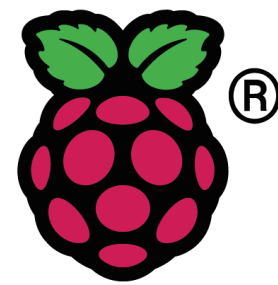
EFFORTLESS DEPLOYMENT

Deploy Zabbix In the cloud with just a few clicks

Zabbix cloud images are available for the most popular cloud vendors

EFFORTLESS DEPLOYMENT

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Deploy Zabbix in Docker containers and Kubernetes

⎯⋏⎯ Images are available for different Zabbix components

⎯⋏⎯ Images based on multiple Linux distributions: Alpine, Ubuntu, Oracle Linux
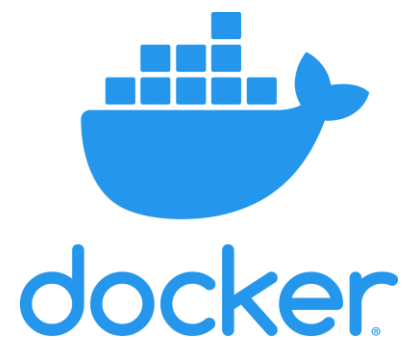
kubernetes

Zabbix web interface images

These are the only official Zabbix
20.04 (focal), 22.04 (jammy), C
interface are:

```
Zabbix web interface 4.0
Zabbix web interface 4.0.
Zabbix web interface 5.0
Zabbix web interface 5.0.
Zabbix web interface 6.0
Zabbix web interface 6.0.
Zabbix web interface 6.2
Zabbix web interface 6.2.
Zabbix web interface 6.4
```

Zabbix proxy images

These are the only official Zabbix p
(focal), 22.04 (jammy), CentOS Stre

```
Zabbix proxy 4.0 (tags: alpi
Zabbix proxy 4.0.* (tags: al
Zabbix proxy 5.0 (tags: alpi
Zabbix proxy 5.0.* (tags: al
Zabbix proxy 6.0 (tags: alpi
Zabbix proxy 6.0.* (tags: al
Zabbix proxy 6.2 (tags: alpi
Zabbix proxy 6.2.* (tags: al
Zabbix proxy 6.4 (tags: alpi
```

Zabbix server images

These are the only official Zabbix server Docker images. They are based on Alpine Linux v3.12, Ubuntu 20.04 (focal), 22.04 (jammy), CentOS Stream 8 and Oracle Linux 8 images. The available versions of Zabbix server are:

```
Zabbix server 4.0 (tags: alpine-4.0-latest, ubuntu-4.0-latest, centos-4.0-latest)
Zabbix server 4.0.* (tags: alpine-4.0.*, ubuntu-4.0.*, centos-4.0.*)
Zabbix server 5.0 (tags: alpine-5.0-latest, ubuntu-5.0-latest, ol-5.0-latest)
Zabbix server 5.0.* (tags: alpine-5.0.*, ubuntu-5.0.*, ol-5.0.*)
Zabbix server 6.0 (tags: alpine-6.0-latest, ubuntu-6.0-latest, ol-6.0-latest)
Zabbix server 6.0.* (tags: alpine-6.0.*, ubuntu-6.0.*, ol-6.0.*)
Zabbix server 6.2 (tags: alpine-6.2-latest, ubuntu-6.2-latest, ol-6.2-latest, alpine-latest, ubun
Zabbix server 6.2.* (tags: alpine-6.2.*, ubuntu-6.2.*, ol-6.2.*)
Zabbix server 6.4 (tags: alpine-trunk, ubuntu-trunk, ol-trunk)
```

EFFORTLESS DEPLOYMENT

Use out-of-the-box templates for most of the popular platforms

Apache HTTP Server	.NET	((OTRS)) Community Edition	1C:Предприятие	3com	Cisco	Cisco Meraki	Citrix	Clickhouse	ClickSend
3CX	actidata	Active Directory	ActiveMQ	Adaptec	Cloud Foundry	Cloud monitoring	Cloudera	Cloudflare	Cloudstack
ADVA	Airco	AKCP	Alcatel Lucent	Alerta	ClusterControl	CockroachDB	Confluence	Cooling	CoreOS
Alvarion	AMD	Android	Ansible	Antivirus	Corosync	Couchbase	Covid-19	cPanel	Crypto Currency
Apache Ignite	APC	Appdynamics	Application monitoring	Aranet	CTC Union	Cyberpower	D-Link	Dahua	Database monitoring
Arbor	arcserve	Arduino	Arista	Arrow	Datacom	DB2	DCM	Debian	Dell
Aruba	AsGa	Asigra	Asterisk	ASUS	Delta	DEVA	DHCP	DIGISOL	Digital Devices
ASUSTOR	Audemat	Avaya	Avid	AVTECH	Discord	DNS	Docker	DOCSIS	Domination
AWS	AWS CloudWatch	AWS EC2	AWS RDS	AWS S3	Drupal	E2guardian	Eaton	Elasticsearch	Eltek

EFFORTLESS DEPLOYMENT

Receive Zabbix alerts by using out-of-the box media type integrations

CMBD and ticketing systems:

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EFFORTLESS DEPLOYMENT

Receive Zabbix alerts by using out-of-the box media type integrations

Alerting and messaging systems:

STAY IN CONTROL OF YOUR DATA

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- ⊘ All of the collected metrics, problem history, trends remain in your control

- ⊘ In addition to collecting history, Zabbix provides the ability to store hourly trend data – min, max, avg and count of collected values per hour.

- ⊘ Define flexible data storage periods for History, Trends, Events and other data

- ⊘ None of the data or telemetry gets transferred to Zabbix or any other 3rd party

History   Events   Trends
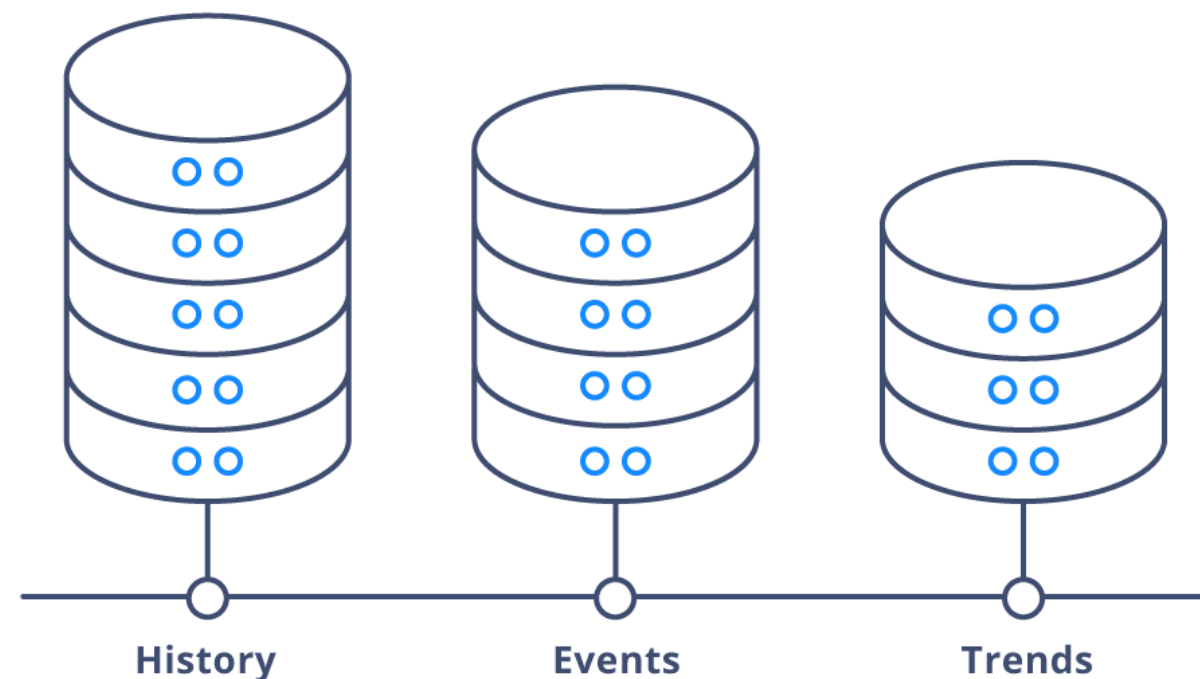
Example: Store 1 year of history, 6 months for events, 2 years for trends.

DATA COLLECTION: AGENTLESS

- Simple ping and port checks

- SNMP(v1, v2c, v3), HTTP, IPMI and SSH checks

- Database monitoring via ODBC

- Java applications monitoring

- Custom metrics/scripts

- Aggregation and calculated checks

- VMware monitoring

- Web monitoring

- Synthetic monitoring
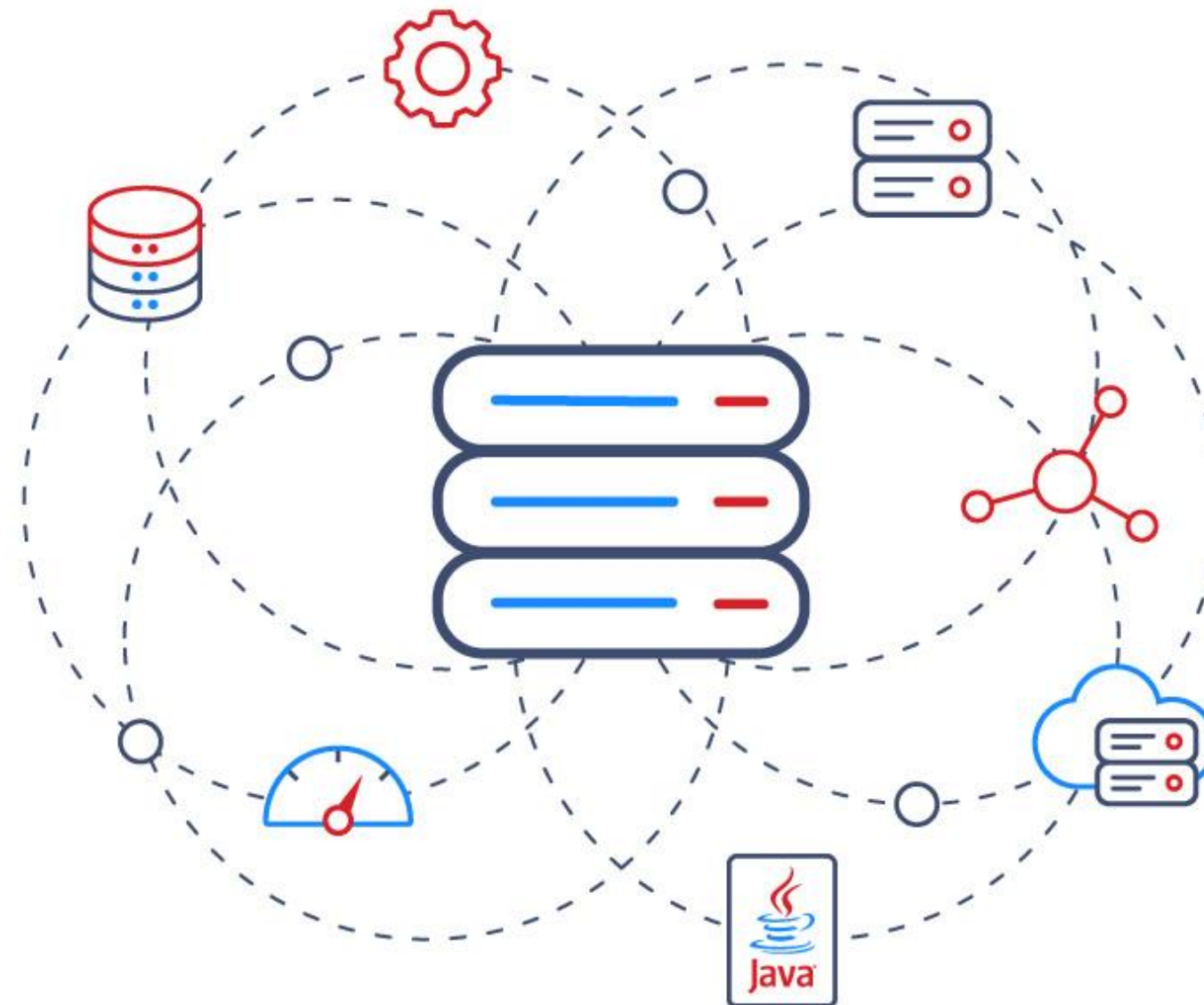
DATA COLLECTION: ZABBIX AGENT

Zabbix Agent can be deployed on any Unix-like or Windows platforms and collect metrics from any device or application.

Collect data from thousands of monitored devices:

- ☑ Collect OS level performance and availability metrics

- ☑ Supports polling and sending traps

- ☑ Provides native log monitoring

- ☑ Create your own custom metrics
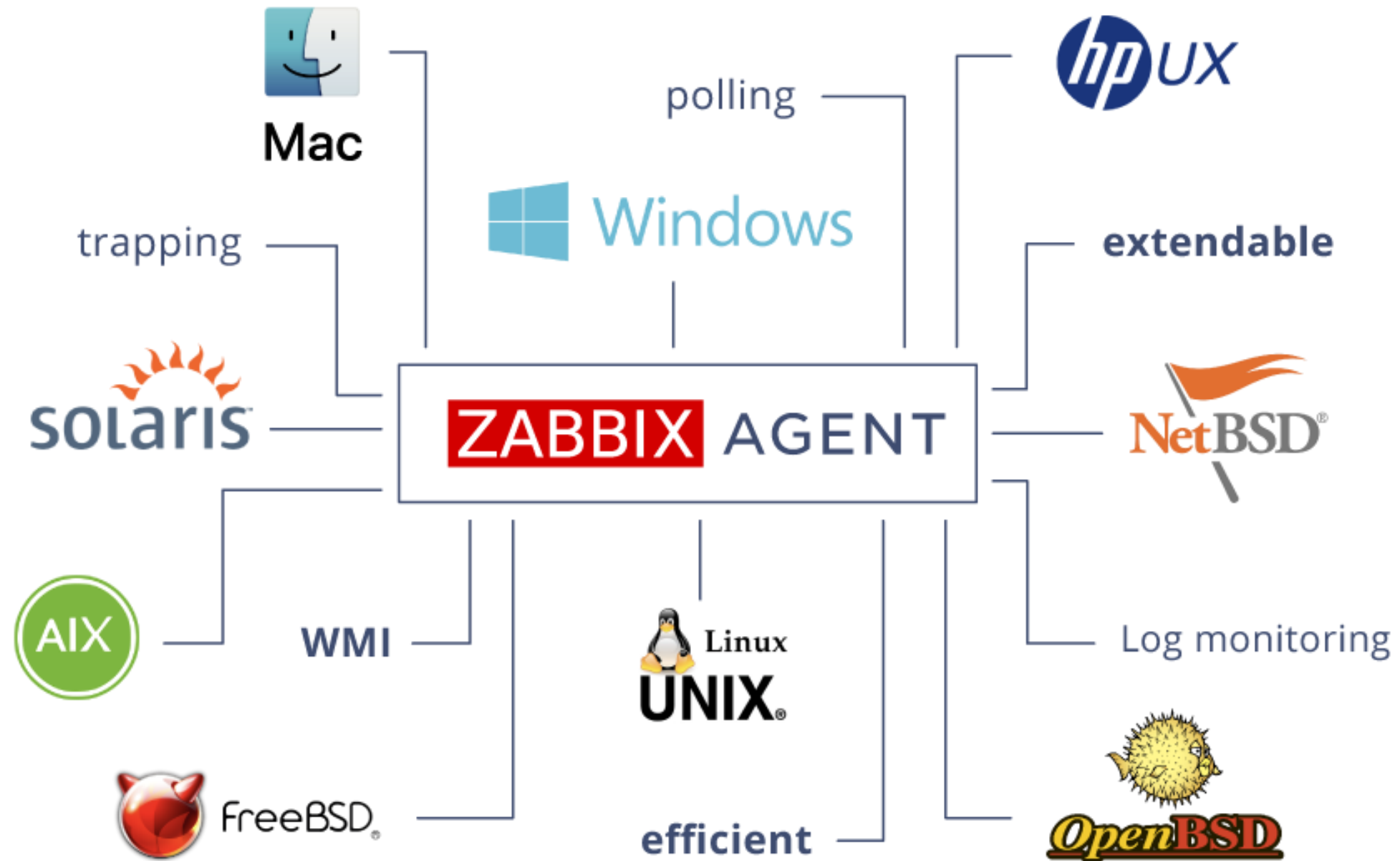
DATA COLLECTION: PREPROCESSING

Zabbix offers a variety of approaches to transform the data before storing it in the database

12 C	Right trim	Temperature: 12
{"users":10004}	JSON	User count: 10004
"GET /index.html HTTP/1.0" 200 28083	Regexp	Response code: 200 Size:28083
Unstructured text	Regexp	Version: Apache 2.2.15 (Unix) DNS lookup threads: 10

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DATA COLLECTION: PREPROCESSING

Zabbix offers a variety of approaches to transform the data before storing it in the database

Temperature in F: **32**	⇨	JavaScript	⇨	Temperature in C: **0**
Repeating values: v1=1, v2=1, v3=1	⇨	Throttling	⇨	Discard value, if it duplicates the previous value: v1=1
Prometheus data: jvm_buffer_memory_used_ bytes{id= "direct",} 81920	⇨	Regexp	⇨	Response code: 200 Size:28083
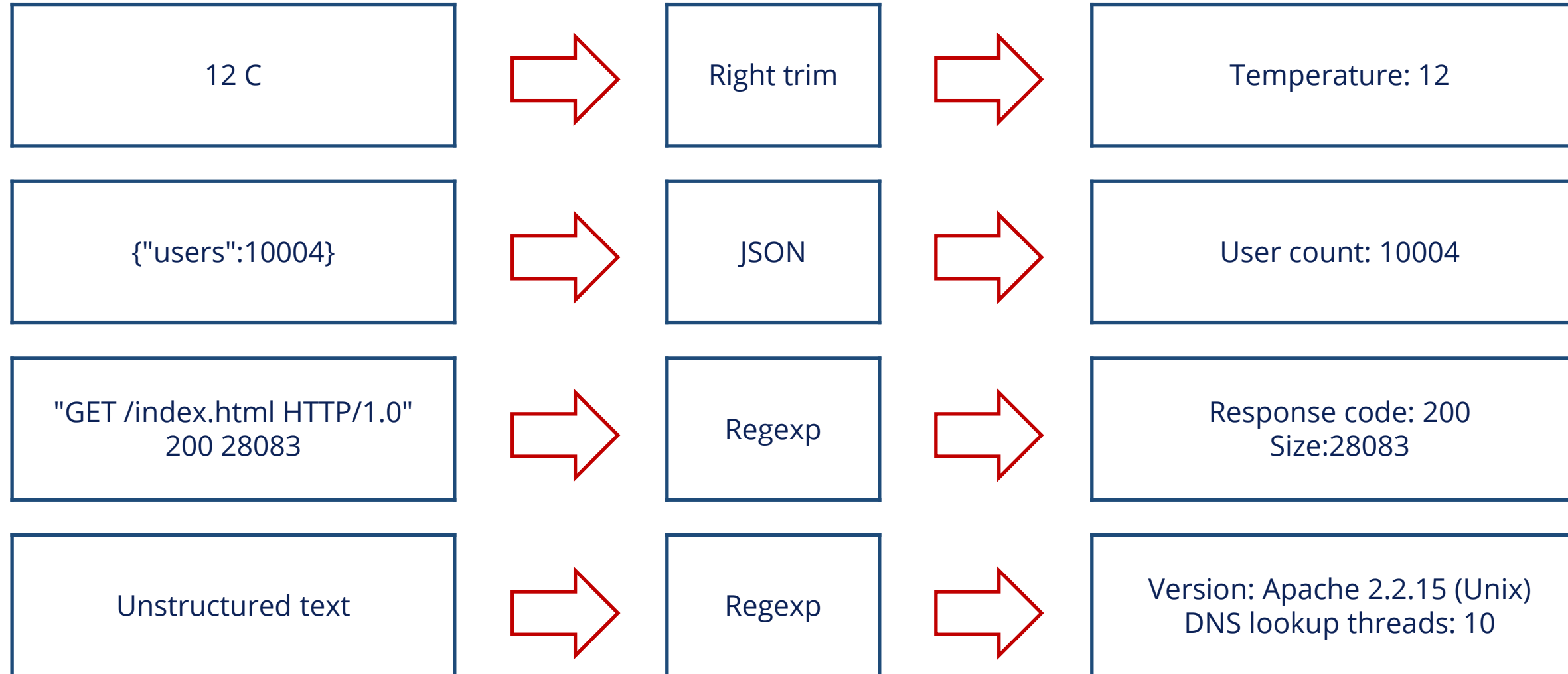
ZABBIX
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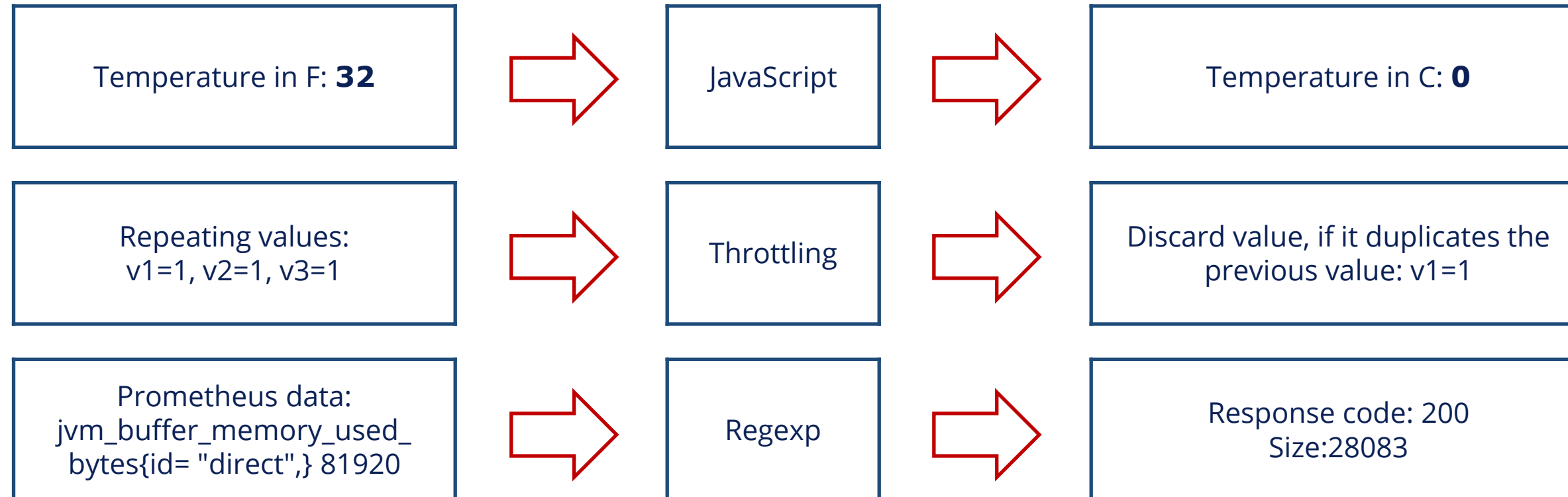
PROBLEM DETECTION

DETECT PROBLEMS FROM THE INCOMING DATA FLOW AUTOMATICALLY

- Flexible problem definitions
- Multiple problem severity levels
- Correlation/root cause analysis
- Anomaly detection
- Baseline monitoring
- Data trend analysis

Problems by severity

3 Disaster	
4 High	
26 Average	
23 Warning	
2 Information	
0 Not classified	

Problems

Time ▼	Recovery time	Status	Info	Host	Problem • Severity	Duration	Ack	Actions
03:38:00		PROBLEM		Oracle DB 19c	Oracle: Shared pool free is too low (less 5% for 5m)	16h 40m 5s	No	
2021-04-27 17:36:39		PROBLEM		Oracle ODBC 01	Oracle: Port 1521 is unavailable	9d 2h 41m	No	
2021-04-27 17:36:32		PROBLEM		Oracle DB 19c	Oracle: Port 1521 is unavailable	9d 2h 41m	No	
2021-04-27 17:36:31		PROBLEM		Oracle ODBC 03	Oracle: Port 1521 is unavailable	9d 2h 41m	No	
2020-12-07 20:44:01		PROBLEM		Oracle DB 19c	Oracle: Number of REDO logs available for switching is too low (less 3 for 5 min)	4m 29d 22h	No	
2020-11-19 11:39:00		PROBLEM		Oracle ODBC 03	Oracle: Number of REDO logs available for switching is too low (less 3 for 5 min)	5m 18d 7h	No	

PROBLEM DETECTION

USE TREND PREDICTION TO REACT PROACTIVELY AND PREVENT THE IMPACT OF THE PROBLEM.

- ☑ What is the value of the data item after a certain time?

Example: how much free space will there be on the server in a week's time?

- ☑ When will the value of the data item approach the threshold?

Example: when will the server reach less than 1GB of free space?

ANOMALIES

ROOT CAUSES

TRENDS
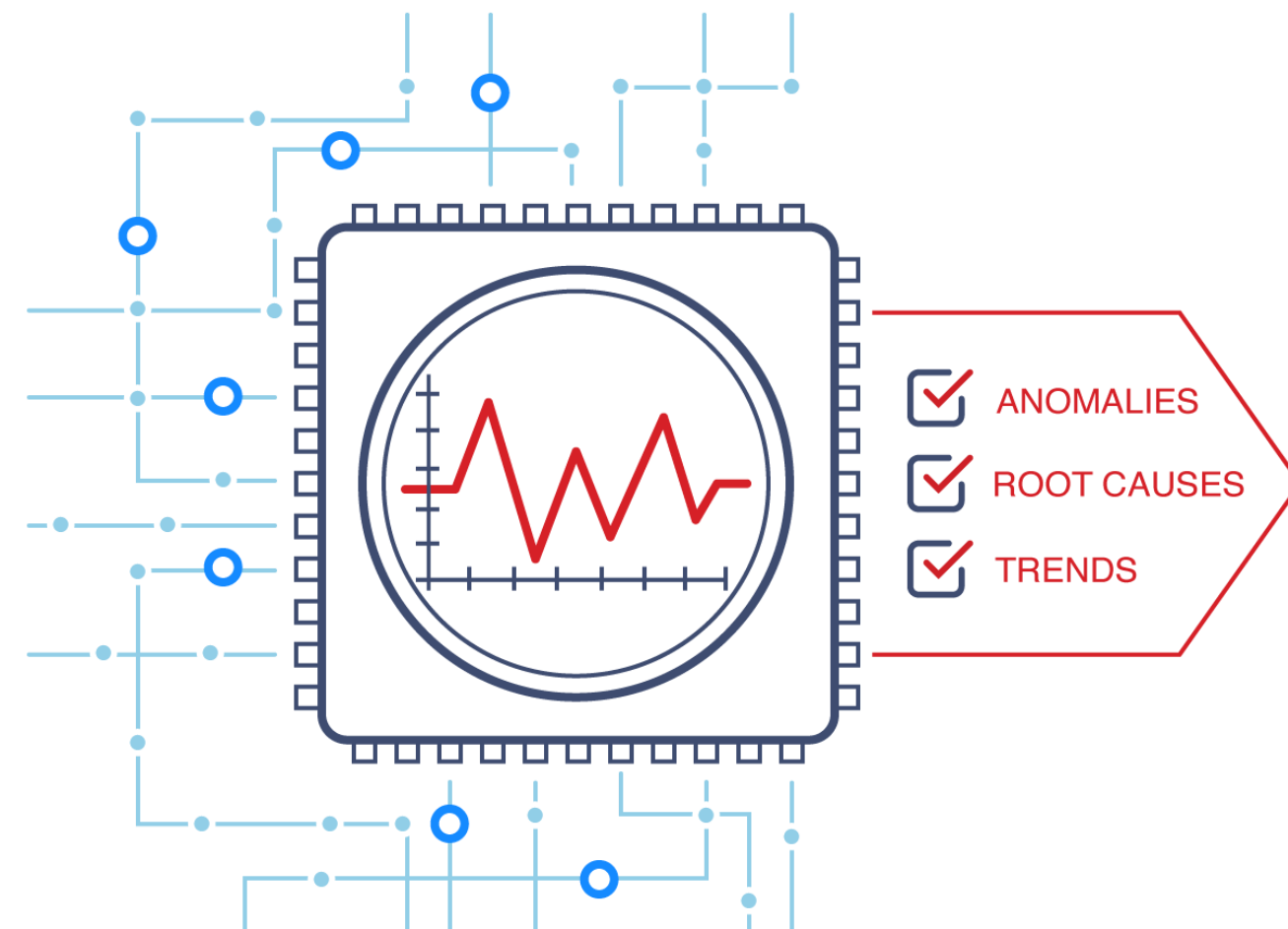
ALERTING & NOTIFICATIONS

GET NOTIFIED IN CASE OF ANY ISSUES USING DIFFERENT CHANNELS:

- Send messages via E-mail, SMS, Webhooks

- Remediate issues automatically by executing commands/scripts on agent or core server

- Escalate problems according to flexible user-defined Service Levels

- Customize messages based on recipient's role

- Customize messages with runtime and inventory information

PROBLEM

REMEDIATE   NOTIFY   ESCALATE
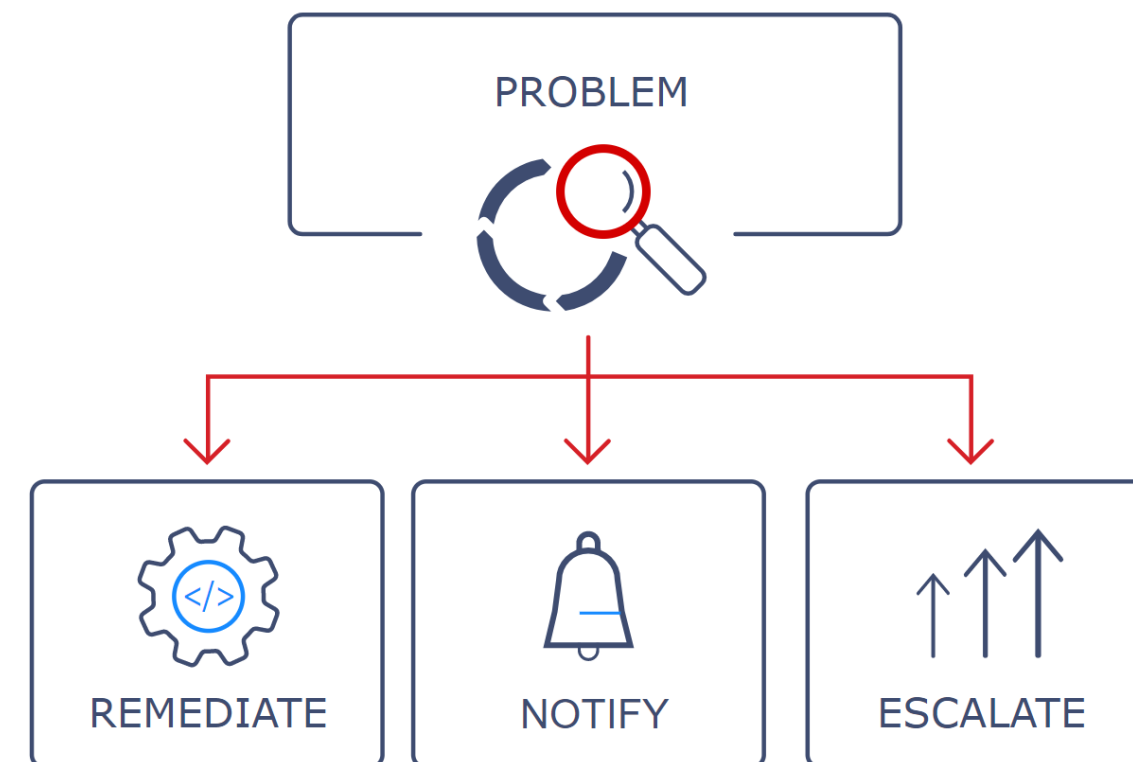
ITSM AND MESSAGING SYSTEM INTEGRATIONS

- ⊘ JavaScript webhooks are open for customization and sharing

- ⊘ Vast selection of official integrations with the option to import custom community integrations

- ⊘ Out of the box integrations for solutions such as Jira ServiceDesk, Slack, Opsgenie and many more.
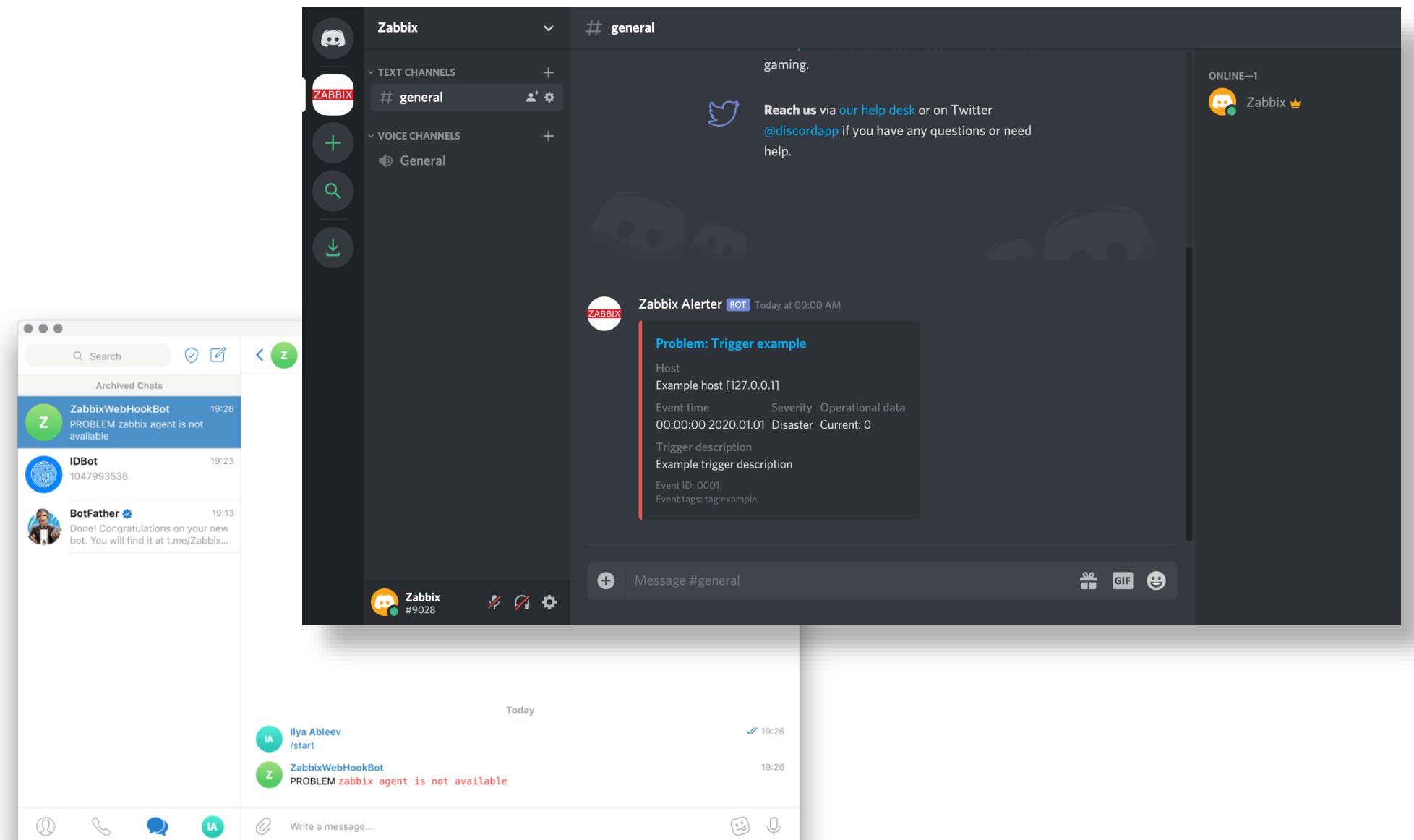
HOST DISCOVERY

NETWORK DISCOVERY:

periodically scans the network to detect changes and performs user specified actions.

Scan network for new hosts

- ⊘ Create a new host in Zabbix
- ⊘ Assign host to a host group
- ⊘ Assign the corresponding templates
- ⊘ Notify a user
- ⊘ Execute a script

HOST DISCOVERY

AGENT AUTO-REGISTRATION:

configure automated monitoring of new equipment with Zabbix agents installed. Newly deployed agents will send their metadata to the Zabbix server and an autoregistration request will be received.

Network

I am a **new** Server
Metadata: **Linux / MySQL**

Zabbix Server

Automate host creation - example

- ⊘ New MySQL hosts created and linked to Linux/MySQL templates

- ⊘ Assign a host to the DB server host group

- ⊘ Notify the DB admin

- ⊘ Execute an onboarding script on the host

LOW LEVEL DISCOVERY

Let Zabbix automatically create items, triggers and graphs on your hosts, depending on the host entities

Linux hosts

Template OS Linux Filesystems
with one LLD rule

```
/
/data
/opt
```

```
/
/opt
```

```
/
/home
/data
/opt
```

Discover, monitor and alert on Filesystem partitions per host
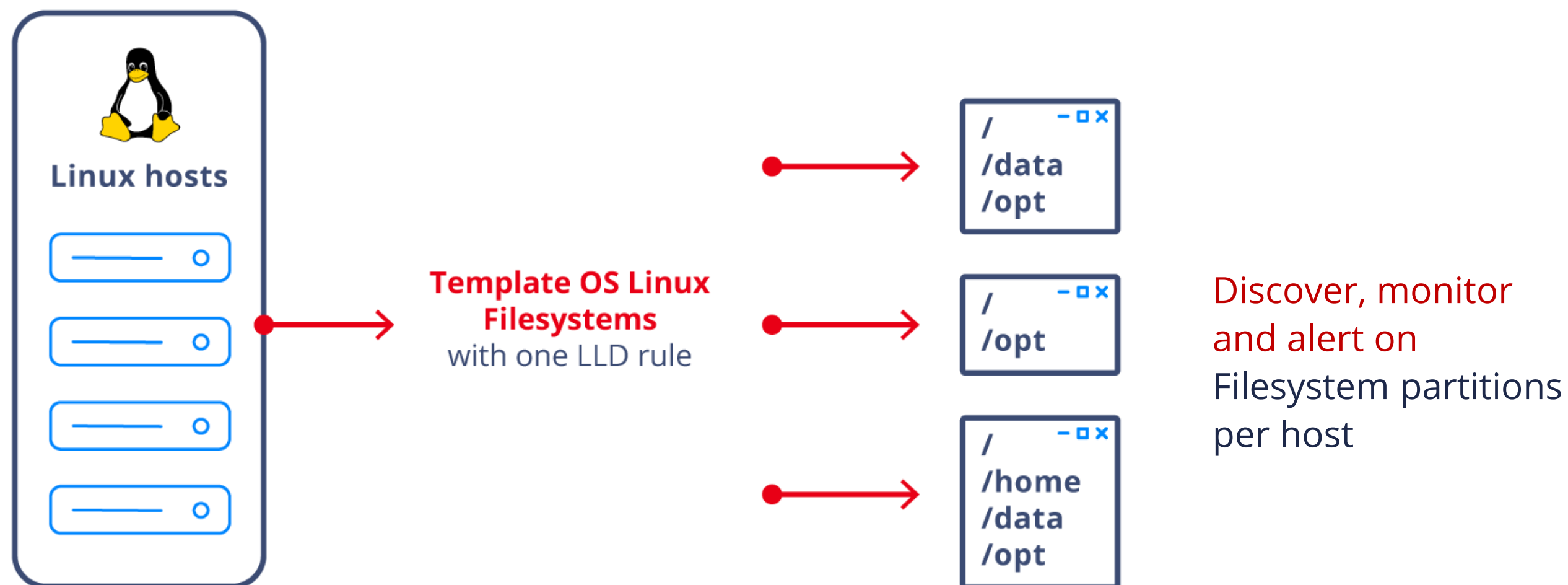
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DATA VISUALIZATION

PRESENT YOUR IT ENVIRONMENT ON WEB INTERFACE USING:

Widget-based dashboards

Graphs
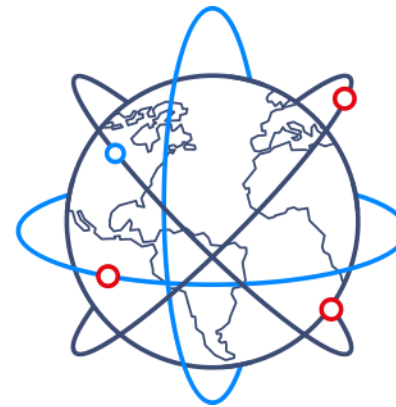
Network maps
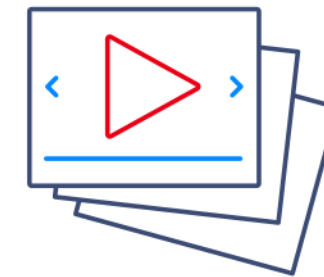
Slideshows

Scheduled reports

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VISUALIZATION: DASHBOARDS

Zabbix Dashboard is a central place in the web frontend that provides personalized details about the monitored environment:

- Top or bottom hosts sorted by metric
- Item values
- Network and geographical maps
- Graphs
- Problem lists
- Host status
- Status of Zabbix server
- SLA reports

VISUALIZATION: GEOMAPS

Zabbix geomaps enable Zabbix administrators to view the state of their infrastructure displayed on a geographical map.

⊘   See real location

⊘   Observe the status of the
    infrastructure

⊘   Easily identify weak points
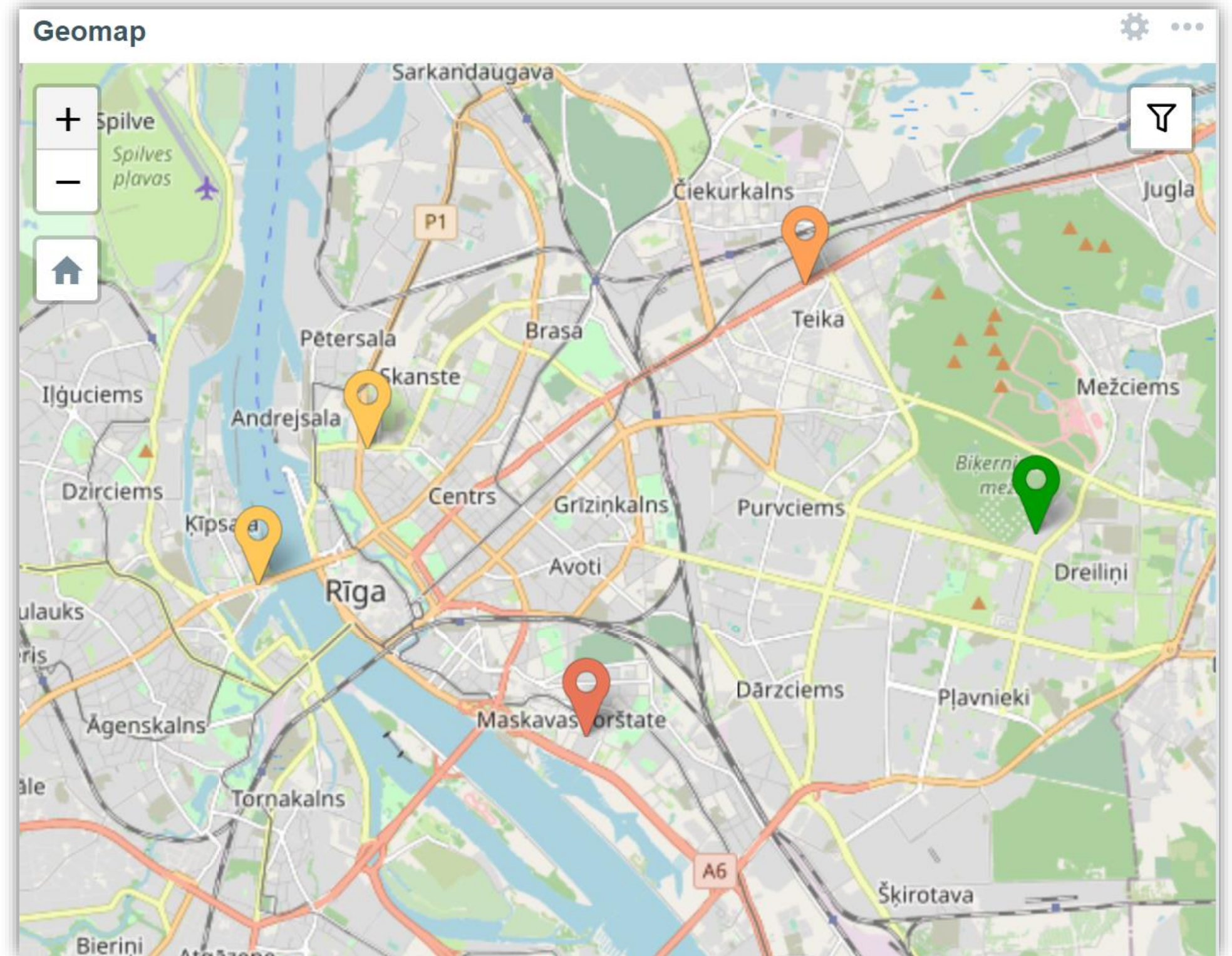
VISUALIZATION: NETWORK MAPS

Create an interactive overview of your environment on multiple levels by using nested maps. Zabbix maps are capable of displaying real-time status and values received by your monitored entities.
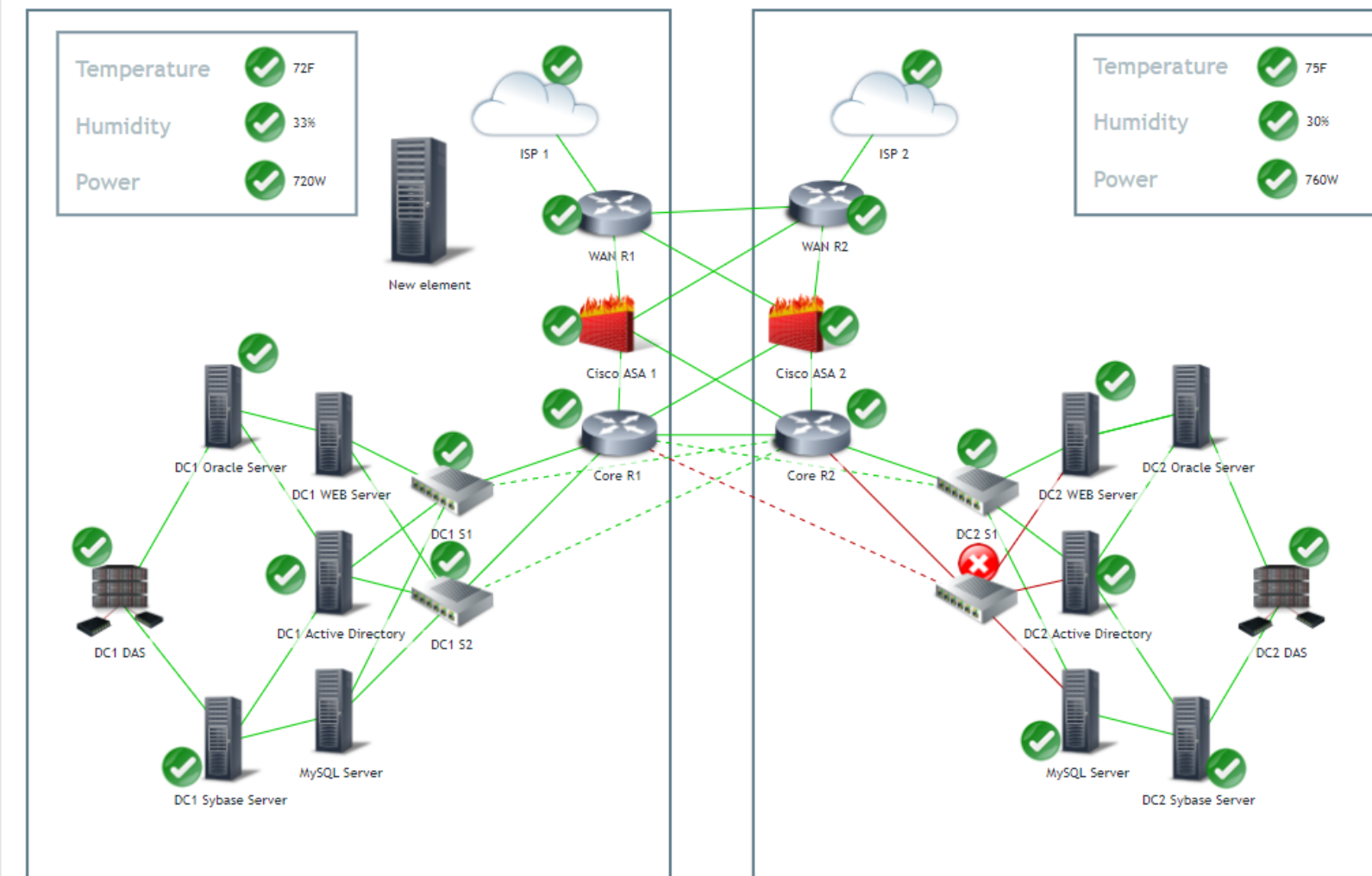
VISUALIZATION: REPORTS

SCHEDULE AN E-MAIL REPORT BASED ON ANY OF YOUR EXISTING DASHBOARDS

- Daily/Weekly/Monthly/Yearly reports

- Select the period for which the data should be provided in the report – previous Day/Week/Month/Year

- Send reports to individual users or members of a user group

- Send reports with either the report recipient or report creator permissions

- Customize report message and subject

	Name ▲	Owner	Repeats	Period	Last sent
☐	Customer ABC management report	Lars	Monthly	Previous month	2021-07-01 09:00
☐	Customer ABC report	Lars	Weekly	Previous week	2021-07-30 17:00
☐	Customer XYZ management report	Melanie	Daily	Previous month	2021-07-01 09:00
☐	Customer XYZ report	Melanie	Weekly	Previous week	2021-07-30 14:00
☐	Daily network report	Admin (Zabbix Administrator)	Daily	Previous day	2021-07-30 09:00
☐	NOC team report	Admin (Zabbix Administrator)	Daily	Previous day	2021-07-30 09:00

BUSINESS SERVICE MONITORING

With Zabbix you can monitor your business services and receive alerts about business service status change, receive root cause analysis and monitor business service SLAs.

BUSINESS SERVICE MONITORING

Service monitoring provides a business view of the monitored infrastructure:

- ⊘ Show availability of service provided by our IT department
- ⊘ Identify weak places of IT infrastructure
- ⊘ Display structure of the existing IT infrastructure
- ⊘ Calculate SLA of various IT services
- ⊘ Services provide a hierarchy representation of monitored data
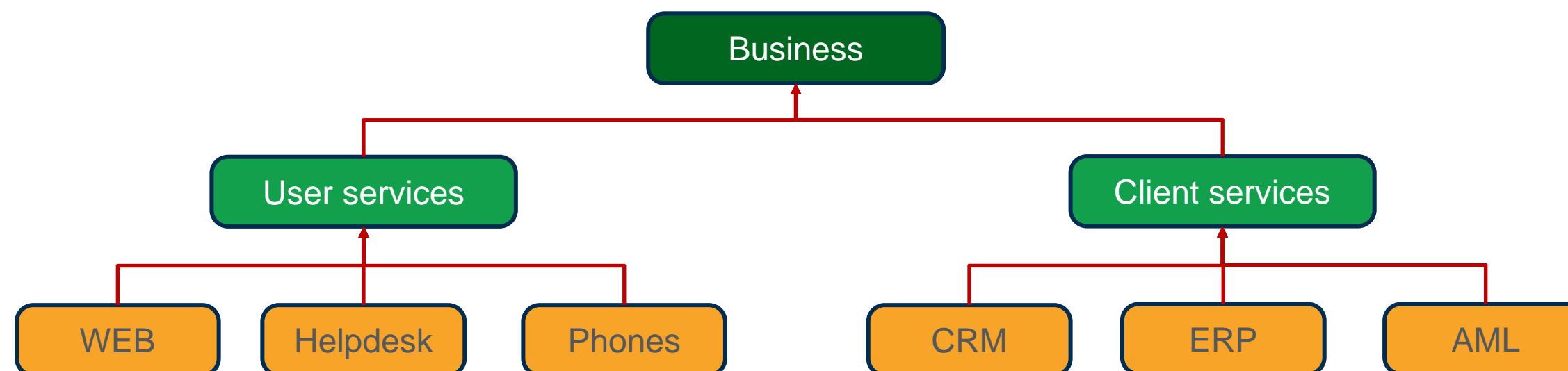
SECURITY

Protect your data

- ⊘ Strong encryption between all Zabbix components

- ⊘ PSK and certificate encryption support

- ⊘ TLS v. 1.2 and 1.3 support

- ⊘ Option to store all of your sensitive credentials in an external vault

- ⊘ Multiple authentication methods: Open LDAP, Active Directory

- ⊘ Flexible user permission and role schema

- ⊘ Full isolation between user groups and host groups for multi-tenant deployments

- ⊘ Zabbix code is open for security audits
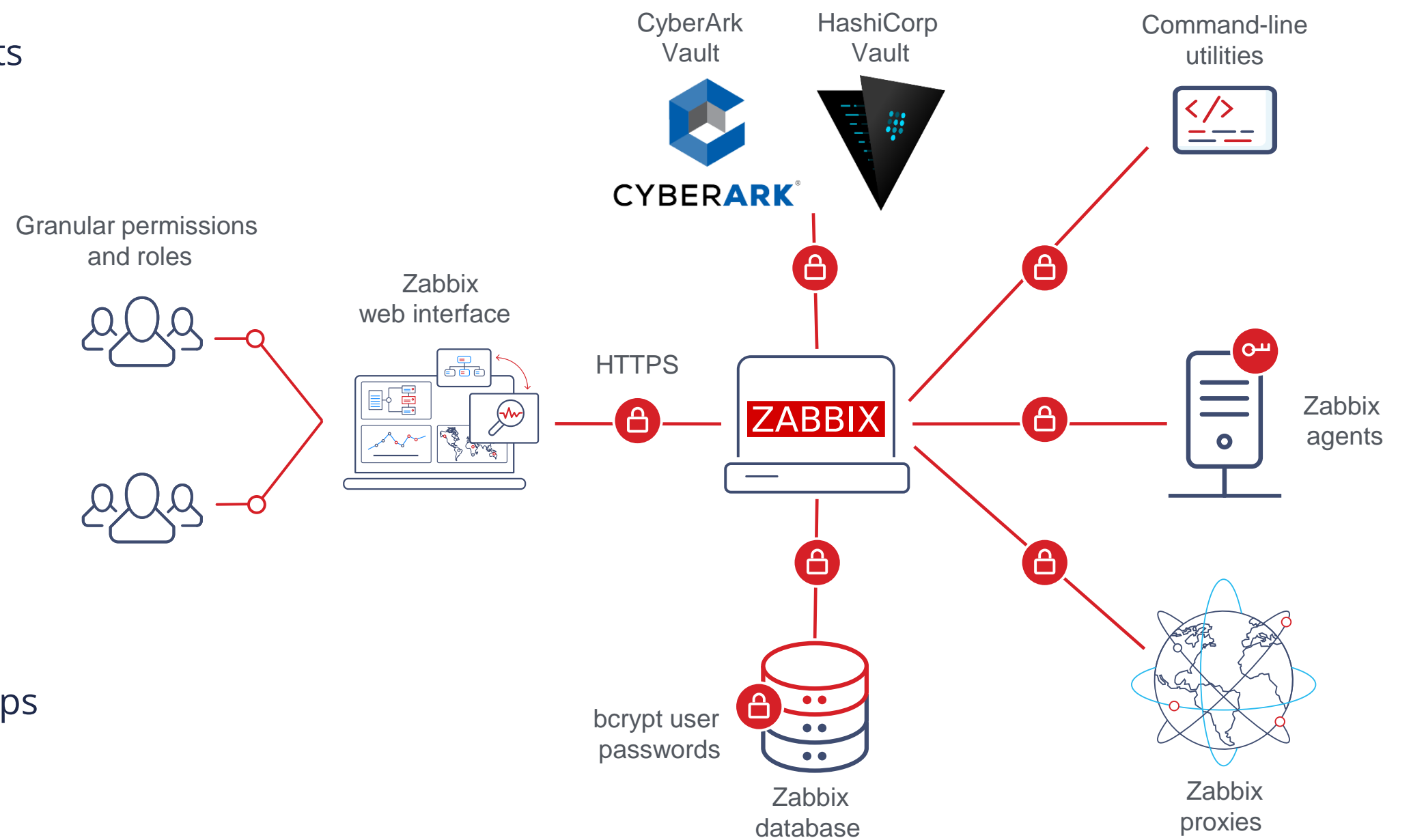
ZABBIX API

Integrate Zabbix with any part of your IT environment

Get access to all Zabbix functionality from external applications through Zabbix API:

- ☑ Uses JSON-RPC 2.0 protocol

- ☑ Requests and responses are encoded using JSON format

- ☑ Automate Zabbix management via API

- ☑ Integrate Zabbix with third party software: Configuration management, ticketing systems

- ☑ Retrieve and manage configuration and historical data
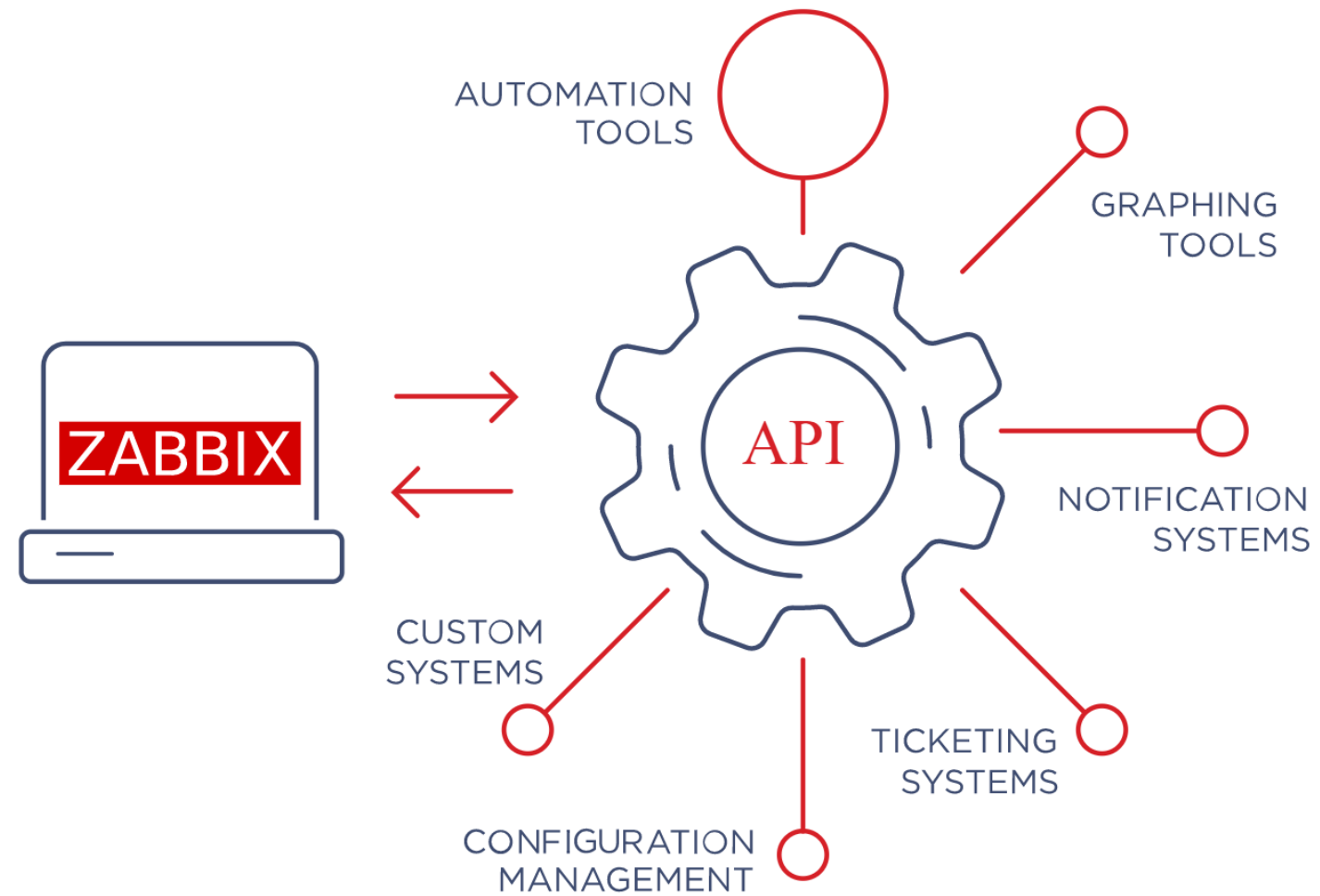
BACKED BY PROFESSIONAL SERVICES

Delivered by Zabbix or Zabbix official partners – regardless of time zone or your preferred language.

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Anything from
deployment or migration

to hands-on
Professional Training

24/7 global
technical support

and everything
else Zabbix related

DOWNLOAD & GET STARTED IN 10 MINUTES

ⓧ Choose your platform for Zabbix server

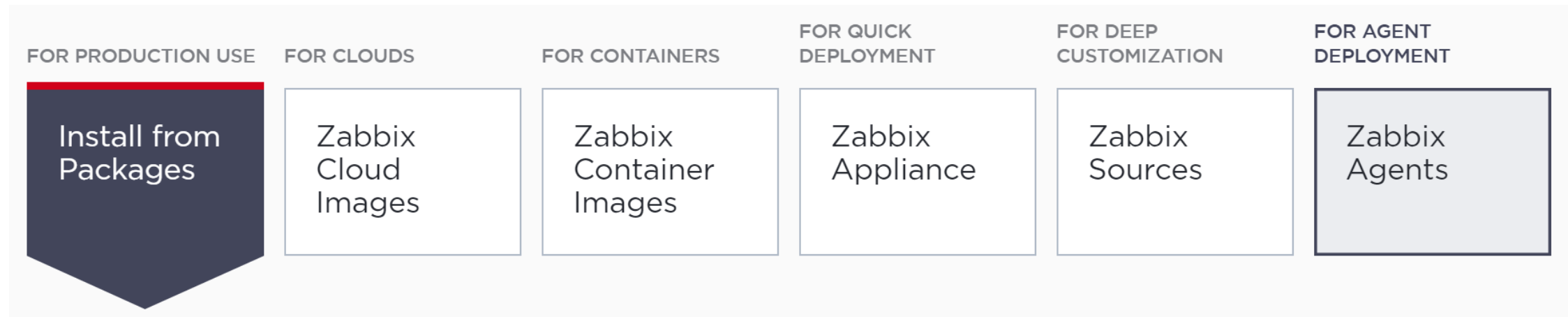| FOR PRODUCTION USE	FOR CLOUDS	FOR CONTAINERS	FOR QUICK DEPLOYMENT	FOR DEEP CUSTOMIZATION	FOR AGENT DEPLOYMENT
Install from Packages	Zabbix Cloud Images	Zabbix Container Images	Zabbix Appliance	Zabbix Sources	Zabbix Agents

ⓧ Install and configure Zabbix server

ⓧ Configure Zabbix frontend

ⓧ Start using Zabbix

ZABBIX VERSION	OS DISTRIBUTION	OS VERSION	DATABASE ❓	WEB SERVER
5.2	Red Hat Enterprise Linux	8	MySQL	Apache
5.0 LTS	CentOS	7	PostgreSQL	NGINX
4.0 LTS	Oracle Linux	6		
3.0 LTS	Ubuntu			
	Debian			
	SUSE Linux Enterprise Server			
	Raspbian			

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THANK YOU!