ZABBIX 6.0 WORKSHOP WEEK

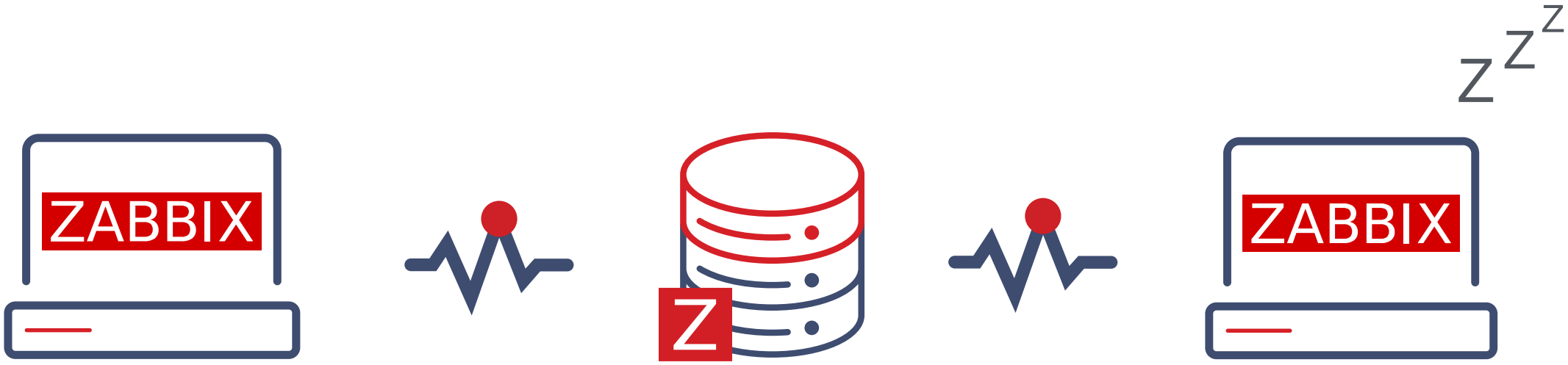
DEPLOYING NATIVE ZABBIX SERVER HA CLUSTER

01

HIGH AVAILABILITY

ZABBIX OFFERS NATIVE HA SOLUTION

- Easy to set up using Zabbix documentation
- Does not require expertise in HA architecture
- Officially supported by Zabbix
- Uses Zabbix database to check node status



STARTING ZABBIX IN A CLUSTER MODE

- To start Zabbix server in HA mode, new configuration parameters were added
- Edit Zabbix configuration file (usually located at /etc/zabbix/zabbix_server.conf)
  - ✓ HANodeName to specify the name of Zabbix cluster node
  - ✓ NodeAddress to specify the address of cluster node
- Restart all Zabbix cluster nodes after making changes to configuration files

ZABBIX HA NODE NAME

- HANodeName specifies the name of the node
- Without HANodeName specified, Zabbix server will start in a standalone mode

```
## Option: HANodeName
#       The high availability cluster node name.
#       When empty server is working in standalone mode.
HANodeName=zbx-node1
```

ZABBIX HA NODE ADDRESS

- Additionally, NodeAddress parameter must be specified for each node
- NodeAddress must match IP or FQDN name of Zabbix server node
- This parameter will be used by Zabbix frontend to connect to active node

```
## Option: NodeAddress
#       IP or hostname to define how frontend should connect to the server.
#       Format: <address>[:port]
NodeAddress=node1.example.com
```

ZABBIX FRONTEND SETUP

- Zabbix frontend will autodetect the active node
  - ✓ Frontend reads settings from the nodes table in Zabbix database
  - ✓ Node address of the active node is used as the Zabbix server address
  - ✓ Zabbix server address and port must be undefined in the frontend configuration

```
// Uncomment and set to desired values to override Zabbix hostname/IP and port.
// $ZBX_SERVER                 = '';
// $ZBX_SERVER_PORT            = '';
```

ZABBIX HA NODE TYPES

- Zabbix has 3 statuses for HA node
  - ✓ Active — only one node can be active at a time
  - ✓ Standby — multiple nodes can be in a standby mode
  - ✓ Shutdown — a node was previously detected, but is shut down now

- There is one more status for unavailable nodes
  - ✓ Unreachable — a node was previously detected, but was lost without a shutdown

ZABBIX HA NODE STATUS

- Status of all HA cluster nodes is displayed on Zabbix frontend

System information

Parameter	Value	Details
Zabbix server is running	Yes	zbx-node1:10051
Number of hosts (enabled/disabled)	1	1 / 0
Number of templates	288	
Number of items (enabled/disabled/not supported)	97	88 / 0 / 9
Number of triggers (enabled/disabled [problem/ok])	55	55 / 0 [1 / 54]
Number of users (online)	2	1
Required server performance, new values per second	1.42	
High availability cluster	Enabled	Fail-over delay: 1 minute

Name	Address	Last access	Status
zbx-node1	zbx-node1:10051	5s	Active
zbx-node3	zbx-node3:10051	3s	Stopped
zbx-node2	zbx-node2:10051	4s	Standby

ZABBIX HA MANAGER

- On every node a special process called HA Manager is started
- This is the only active Zabbix process on standby nodes started after the main process
- All other Zabbix processes will be started when failover happens

```
ps ax | grep zabbix_server
  39177 ?        S      0:00 /usr/sbin/zabbix_server -c /etc/zabbix/zabbix_server.conf
  39179 ?        S      0:00 /usr/sbin/zabbix_server: ha manager
```

SWITCHING ZABBIX HA NODE

- Zabbix will failover to another node automatically on active node stop
- There must be at least one node in standby status

```
systemctl stop zabbix-server
```

HOW A FAILOVER WORKS?

- All nodes report their status every 5 seconds
  - ✓ When a node shuts down the standby node which first detects the lost node will take over

- If the node is lost and will not respond in time
  - ✓ The clock will keep on ticking until it reaches the failover delay (1 minute by default)
  - ✓ When the failover delay is over one of the standby nodes will take over

ZABBIX CLUSTER TUNING

- It is possible to adjust failover delay using ha_set_failover_delay runtime command
  - ✓ supported range is from 10 seconds to 15 minutes

```
# zabbix_server -R ha_set_failover_delay=5m
zabbix_server: command sent successfully
```

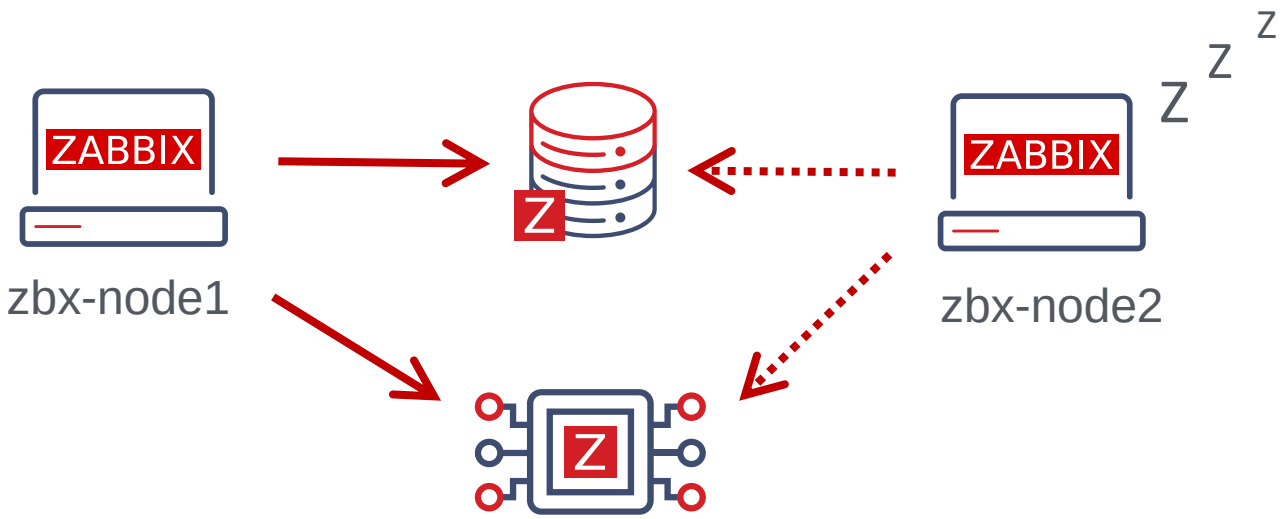
- Nodes can be removed using ha_remove_node runtime command

```
# zabbix_server -R ha_remove_node=3
zabbix_server: command sent successfully
```

WHAT ABOUT ZABBIX AGENTS?

- Zabbix agent requires all nodes to be written in the configuration file
- Nodes are specified in a comma-separated list

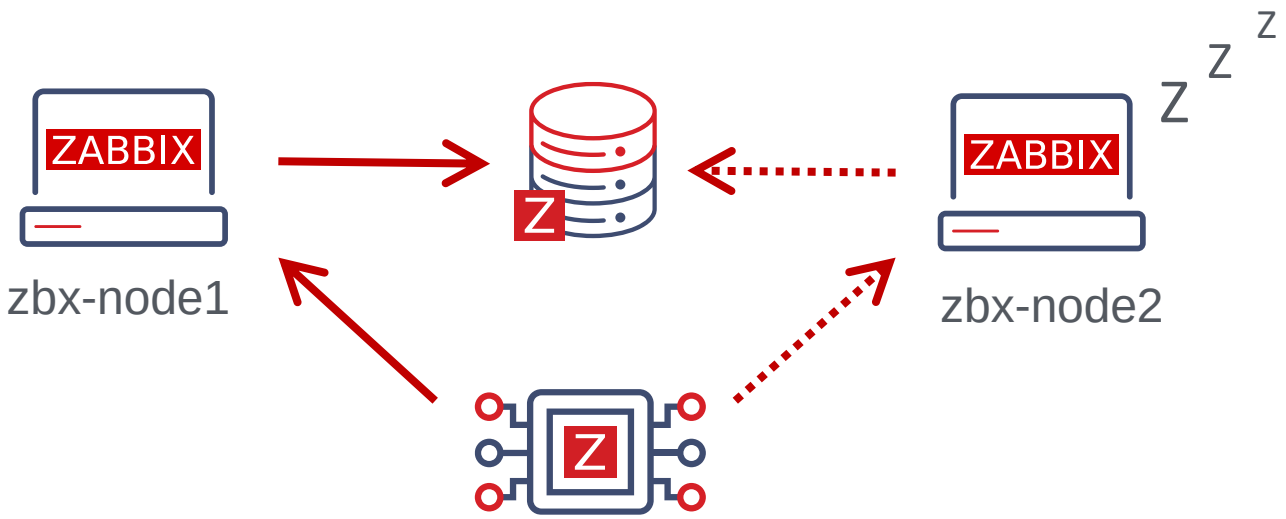
```
### Option: Server
#       List of comma delimited IP addresses or DNS names of Zabbix
#       Incoming connections will be accepted only from the hosts listed here.
Server=zbx-node01,zbx-node02
```



WHAT ABOUT ACTIVE CHECKS?

- Zabbix agent requires all nodes to be written in ServerActive section of the configuration file
- Cluster nodes need to be separated by a semicolon

```
### Option: ServerActive
#       List of comma delimited IP addresses or DNS names pairs of clusters of Zabbix
#       servers for active checks.
#       Cluster nodes need to be separated by semicolon.
ServerActive=zbx-node01;zbx-node02
```



WHAT ABOUT ZABBIX PROXIES?

- Zabbix proxy in passive mode must accept connections from all Zabbix cluster nodes

```
### Option: Server
#       List of comma delimited IP addresses or DNS names of Zabbix server.
#       Incoming connections will be accepted only from the addresses listed here.
Server=zbx-node01,zbx-node02
```

- Zabbix proxy in active mode must connect to all Zabbix server cluster nodes
  - ✓ A semicolon must be used to separate node names

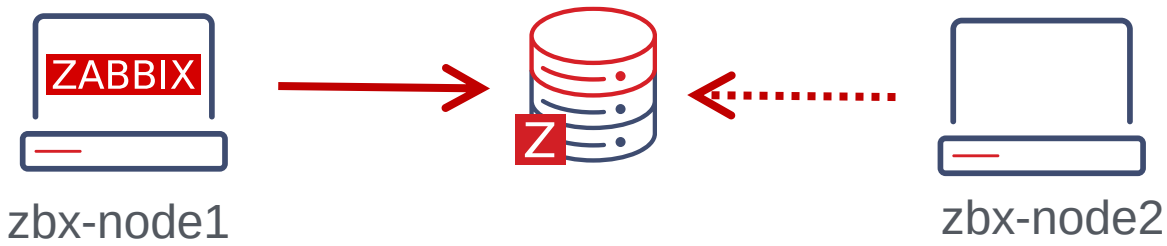
```
### Option: Server
#       IP address or DNS name (address:port) or cluster (address:port;address2:port) of
#       Zabbix server to get configuration data from and send data to.
#       Cluster nodes need to be separated by semicolon.
Server=zbx-node01;zbx-node02
```

02

PRACTICAL SETUP

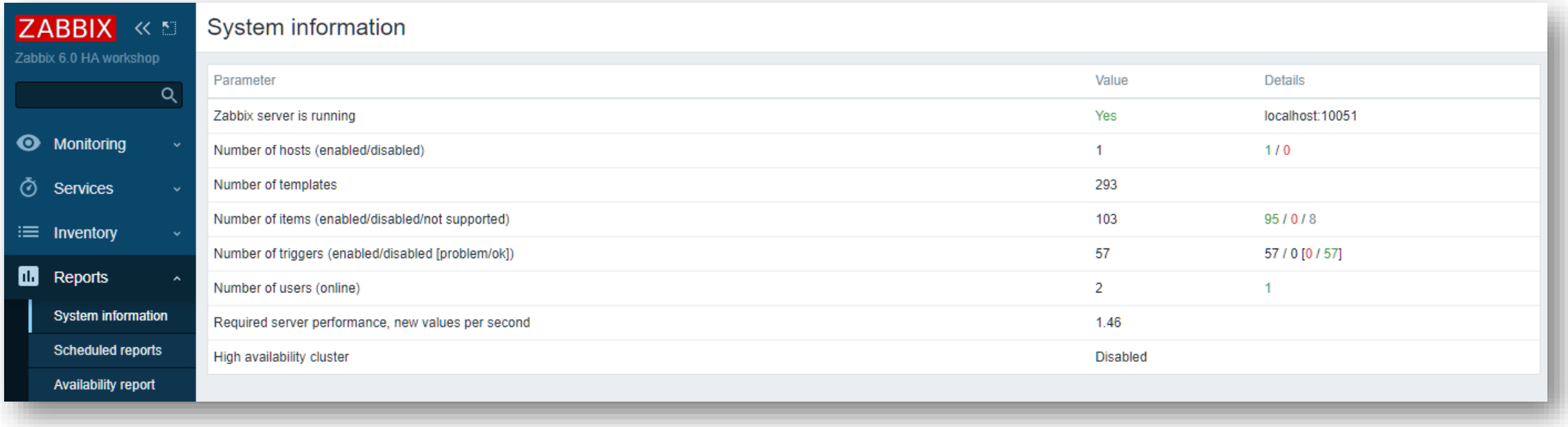
ZABBIX 6.0 WORKSHOP INFRASTRUCTURE

- For the workshop two nodes will be used
  - zbx-node-01
  - zbx-node-02
- Zabbix server 6.0 + MySQL database 8.0 is installed on zbx-node-01
- The zbx-node-02 is empty



HA CLUSTER STATUS

- HA is disabled by default
- Go to Reports -> System information to see cluster status



SWITCH ZABBIX NODE 01 TO HA MODE

- Edit zabbix server configuration file

```
# vi /etc/zabbix/zabbix_server.conf
```

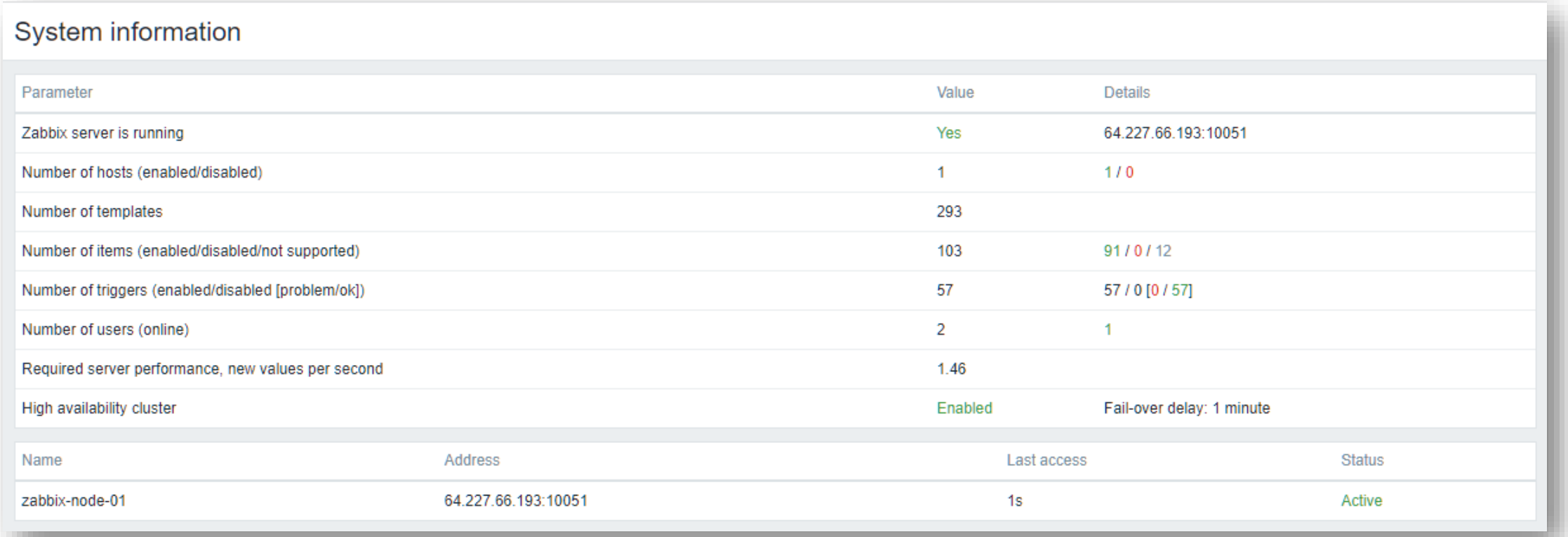
```
## Option: HANodeName
#       The high availability cluster node name.
#       When empty, server is working in standalone mode;
HANodeName=zabbix-node-01

## Option: NodeAddress
#       IP or hostname with optional port to specify how frontend should connect to the server.
#       Format: <address>[:port]
#       This option can be overridden by address specified in frontend configuration.
NodeAddress=127.0.0.1:10051
```

- Restart Zabbix server

```
# systemctl restart zabbix-server
```

HA CLUSTER STATUS

- Go to Reports -> System information to check cluster status
- High availability cluster is enabled with one node



System information

Parameter	Value	Details
Zabbix server is running	Yes	64.227.66.193:10051
Number of hosts (enabled/disabled)	1	1 / 0
Number of templates	293	
Number of items (enabled/disabled/not supported)	103	91 / 0 / 12
Number of triggers (enabled/disabled [problem/ok])	57	57 / 0 [0 / 57]
Number of users (online)	2	1
Required server performance, new values per second	1.46	
High availability cluster	Enabled	Fail-over delay: 1 minute

Name	Address	Last access	Status
zabbix-node-01	64.227.66.193:10051	1s	Active

INSTALL ZABBIX ON THE SECOND NODE

- Open SSH console on the second node
- Install Zabbix 6.0 official repository

```
# dnf -y install https://repo.zabbix.com/zabbix/6.0/rhel/8/x86_64/zabbix-release-6.0-1.el8.noarch.rpm
```

- Install Zabbix 6.0 server

```
# dnf -y install zabbix-server-mysql
```

- Get the IP address of the Zabbix server

```
# hostname -I
```

```
64.227.74.25
```

CREATE DATABASE USER

- Grant database access to the second Zabbix node (use your IP address)

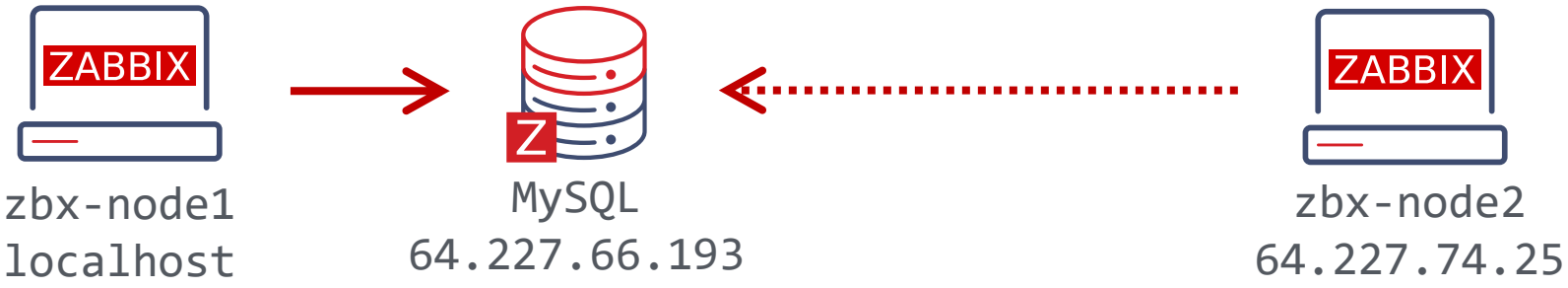
```
# mysql -u root
```

```
mysql> create user 'zabbix'@'64.227.74.25' identified by 'zbx60password';
mysql> grant all privileges on zabbix.* to 'zabbix'@'64.227.74.25';
mysql> quit;
```

- Get the ip address of the database

```
# hostname -I
```

```
64.227.66.193
```



EDIT ZABBIX SERVER CONFIGURATION FILE

- Open SSH console on the second node and edit zabbix server configuration file

```
# vi /etc/zabbix/zabbix_server.conf
```

```
### Option: DBHost
DBHost=64.227.66.193
### Option: DBPassword
DBPassword=zbx60password
## Option: HANodeName
HANodeName=zabbix-node-02
## Option: NodeAddress
NodeAddress=64.227.74.25:10051
```

- Start the Zabbix server

```
# systemctl enable zabbix-server --now
```

ZABBIX SERVER LOG FILE

- Look at the Zabbix server log file

```
# tail -20 /var/log/zabbix/zabbix_server.log
```

```
 6602:20220222:100638.595 Starting Zabbix Server. Zabbix 6.0.0 (revision 5203d2ea7d).
  6602:20220222:100638.595 ****** Enabled features ******
  6602:20220222:100638.595 SNMP monitoring:           YES
  6602:20220222:100638.595 IPMI monitoring:           YES
  6602:20220222:100638.595 Web monitoring:            YES
  6602:20220222:100638.595 Web monitoring:            YES
  6602:20220222:100638.595 VMware monitoring:         YES
  6602:20220222:100638.595 TLS support:               YES
  6602:20220222:100638.595 ******************************
  6602:20220222:100638.595 using configuration file: /etc/zabbix/zabbix_server.conf
  6602:20220222:100638.613 current database version (mandatory/optional)
  6603:20220222:100638.644 starting HA manager
  6603:20220222:100638.658 HA manager started in standby mode
  6602:20220222:100638.658 "zabbix-node-02" node started in "standby" mode
```

THE PROCESS LIST

- Only HA manager is started on the standby node

```
# ps ax | grep zabbix
```

```
   6602 ?        S      0:00 /usr/sbin/zabbix_server -c /etc/zabbix/zabbix_server.conf
   6603 ?        S      0:00 /usr/sbin/zabbix_server: ha manager
   6622 pts/0    R+     0:00 grep --color=auto zabbix
```

- All other Zabbix processes will start only after the node will be switched to active status

HA CLUSTER STATUS

- Go to Reports -> System information to check cluster status
- High availability cluster is enabled with two nodes

System information

Parameter	Value	Details
Zabbix server is running	Yes	64.227.66.193:10051
Number of hosts (enabled/disabled)	1	1 / 0
Number of templates	293	
Number of items (enabled/disabled/not supported)	151	137 / 0 / 14
Number of triggers (enabled/disabled [problem/ok])	73	73 / 0 [0 / 73]
Number of users (online)	2	1
Required server performance, new values per second	1.73	
High availability cluster	Enabled	Fail-over delay: 1 minute

Name	Address	Last access	Status
zabbix-node-01	64.227.66.193:10051	2s	Active
zabbix-node-02	64.227.74.25:10051	3s	Standby

FAILOVER TO SECOND NODE

- Stop zabbix server on the first node and check HA status

```
# systemctl stop zabbix-server
```

- Cluster has switched to the second node, first node is stopped

Name	Address	Last access	Status
zabbix-node-02	64.227.74.25:10051	1s	Active
zabbix-node-01	64.227.66.193:10051	6s	Stopped

- Start zabbix server on the first node and check HA status

```
# systemctl start zabbix-server
```

Name	Address	Last access	Status
zabbix-node-02	64.227.74.25:10051	2s	Active
zabbix-node-01	64.227.66.193:10051	4s	Standby

FAILOVER TO FIRST NODE

- Open SSH console on the second node and look at the ha status

```
# zabbix_server -R ha_status
```

```
Failover delay: 60 seconds
Cluster status:
   #  ID                        Name                Address                Status      Last Access
   1. ckzxxqg7u0001lsropenyzh3m zabbix-node-01      64.227.66.193:10051    standby     0s
   2. ckzxyqo1k00013frpq539e1jp zabbix-node-02      64.227.74.25:10051     active      3s
```

- Restart zabbix server to switch back to the first node

```
# systemctl restart zabbix-server
```

Name	Address	Last access	Status
zabbix-node-01	64.227.66.193:10051	1s	Active
zabbix-node-02	64.227.74.25:10051	5s	Standby

```
# zabbix_server -R ha_status
```

```
Runtime commands can be executed only in active mode
```

ZABBIX AGENT CONFIGURATION

- Open Zabbix agent configuration file

```
# vi /etc/zabbix/zabbix_agent2.conf
```

```
### Option: Server
#       List of comma delimited IP addresses of Zabbix servers and Zabbix proxies.
#       Incoming connections will be accepted only from the hosts listed here.
Server=127.0.0.1,64.227.66.193,64.227.74.25

### Option: ServerActive
#       List of comma delimited IP addresses or DNS names of Zabbix servers and Zabbix
#        proxies for active checks.
#       Cluster nodes need be separated by semicolon.
# ServerActive=zabbix.cluster.node1;zabbix.cluster.node2:20051;zabbix.cluster.node3
ServerActive=64.227.66.193;64.227.74.25
```

- Restart Zabbix agent to apply changes

```
# systemctl restart zabbix-agent2
```

REMOVE HA CLUSTER NODE

- First, stop the unnecessary cluster node on the second node

```
# systemctl stop zabbix-server
```

Name	Address	Last access	Status
zabbix-node-01	64.227.66.193:10051	3s	Active
zabbix-node-02	64.227.74.25:10051	6s	Stopped

- Issue the command to remove the second node on the first node

```
# zabbix_server -R ha_remove_node=zabbix-node-02
```

```
Removed node "zabbix-node-02" with ID "ckzxyqo1k00013frpq539e1jp"
```

Name	Address	Last access	Status
zabbix-node-01	64.227.66.193:10051	3s	Active

- Starting Zabbix server on second node will rejoin in back immediately

03

TRAINING PROGRAMS

ZABBIX STANDARD COURSES

Level 1

Zabbix Certified User

Use Zabbix frontend to view information. Know potential of Zabbix

1 day

Requirements
None

Price in EUR Price in USD

€ 550

Price does not include VAT

Apply for course

Program description

Level 2

Zabbix Certified Specialist

Setup & configure Zabbix in SMBs or configure Zabbix in large companies

5 days

Requirements
Advanced computer literacy

Price in EUR Price in USD

€ 1,950

Price does not include VAT

Apply for course

Program description

Level 3

Zabbix Certified Professional

Manage big, distributed, highly loaded installations in large companies

3 days

Requirements
Zabbix Certified Specialist exam or attendance certificate

Price in EUR Price in USD

€ 1,850

Price does not include VAT

Apply for course

Program description

Level 4

Zabbix Certified Expert

Design & maintain highly efficient & loaded setups with expertise in API, HA/DR, and DB partitioning

5 days

Requirements
Zabbix Certified Professional exam

Price in EUR Price in USD

€ 3,250

Price does not include VAT

Apply for course

Program description

ZABBIX EXTRA COURSES

Automation and Integration with Zabbix API

The course is designed to provide a detailed and in-depth study of Zabbix API functionality - like import host groups, generate reports, or integrate with other systems.

1 day

Requirements
No requirements

Price in EUR Price in USD

€ 490

Price does not include VAT

Apply for course

Program description

Advanced Zabbix Data Pre-processing

The course will cover how to extract and transform information from different sources using Zabbix built-in functionality - without using external tools or scripts.

1 day

Requirements
No requirements

Price in EUR Price in USD

€ 490

Price does not include VAT

Apply for course

Program description

Advanced Zabbix Security Administration

The course will cover how to protect Zabbix internal communications and secure sensitive information like user credentials or encryption keys.

1 day

Requirements
No requirements

Price in EUR Price in USD

€ 490

Price does not include VAT

Apply for course

Program description

Advanced Problem and Anomaly Detection with Zabbix

The course is fully dedicated to problem detection, from creating simple triggers to using new long-term analytics functions.

1 day

Requirements
No requirements

Price in EUR Price in USD

€ 490

Price does not include VAT

Apply for course

Program description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Thank you
www.zabbix.com