ZABBIX MEETUP ONLINE '21

DEPLOYING AND CONFIGURING ZABBIX 5.4 IN A MULTI-TENANT ENVIRONMENT

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MONITORING REQUIREMENTS OF MULTI-TENANT ENVIRONMENTS

- Granular role/permission schema
- Ability to process large amounts of data
- Redundancy
- Infrastructure scalability
- Support of different monitoring approaches

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SUPPORTED MONITORING APPROACHES - AGENT

- Supports passive (polling) and active modes (trapping)

Supports deployment on different platforms (Windows/Unix-like) and provides access to OS level metrics, collecting data from log files and metric collection via custom scripts and commands.

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WHAT IF AGENT IS NOT AN OPTION?

- SNMP, HTTP, IPMI and SSH agenteless monitoring
- Simple checks (ICMP pings, port status)
- Database and Java monitoring
- External scripts
- Data aggregations and calculations
- VMware monitoring
- Web monitoring
- Synthetic monitoring

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LATEST IMPROVEMENTS

- Version 5.2
  - Permission logic reworked – user roles have been implemented
  - Support for external vault
  - Granular frontend configuration
- Version 5.4
  - Ability to send scheduled reports
  - Performance improvements

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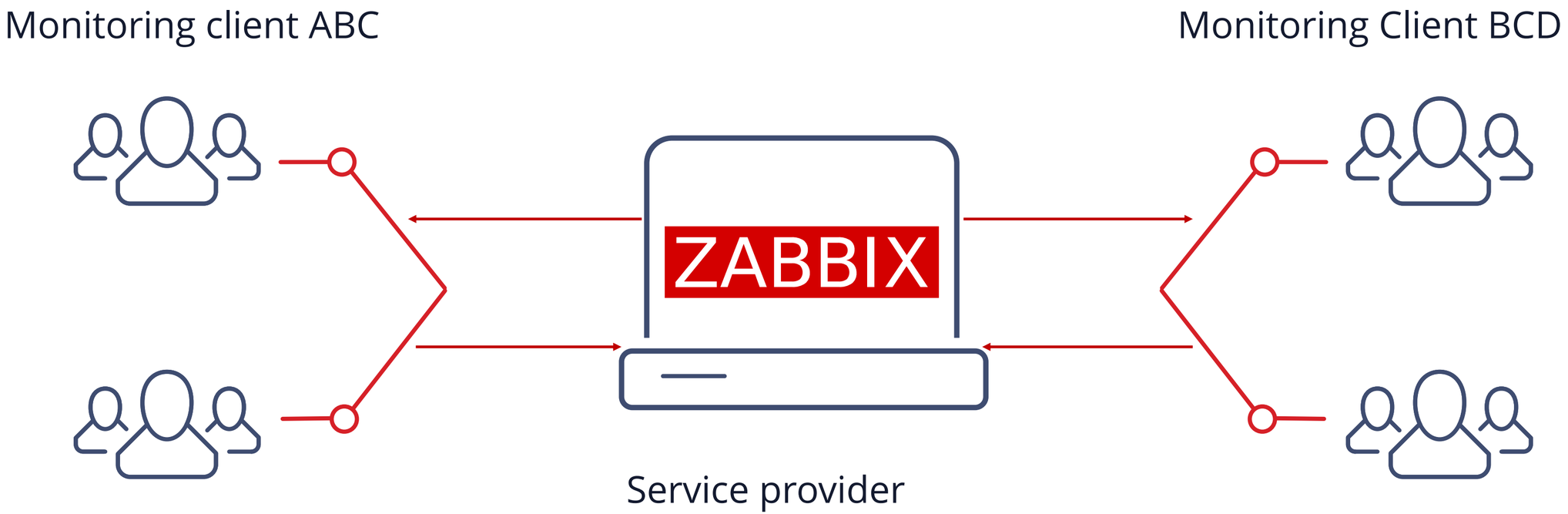
ZABBIX AND MULTI-TENANT ENVIRONMENTS



ZABBIX PROXY

Collects and preprocesses the data. Supports all of the metric collection methods.

- Data gets compressed before forwarding it to the server
- Data collection continues even in case of network interruptions
- A single connection is used to send the data to the server
- Enables remote script execution
- Can be used to improve scalability

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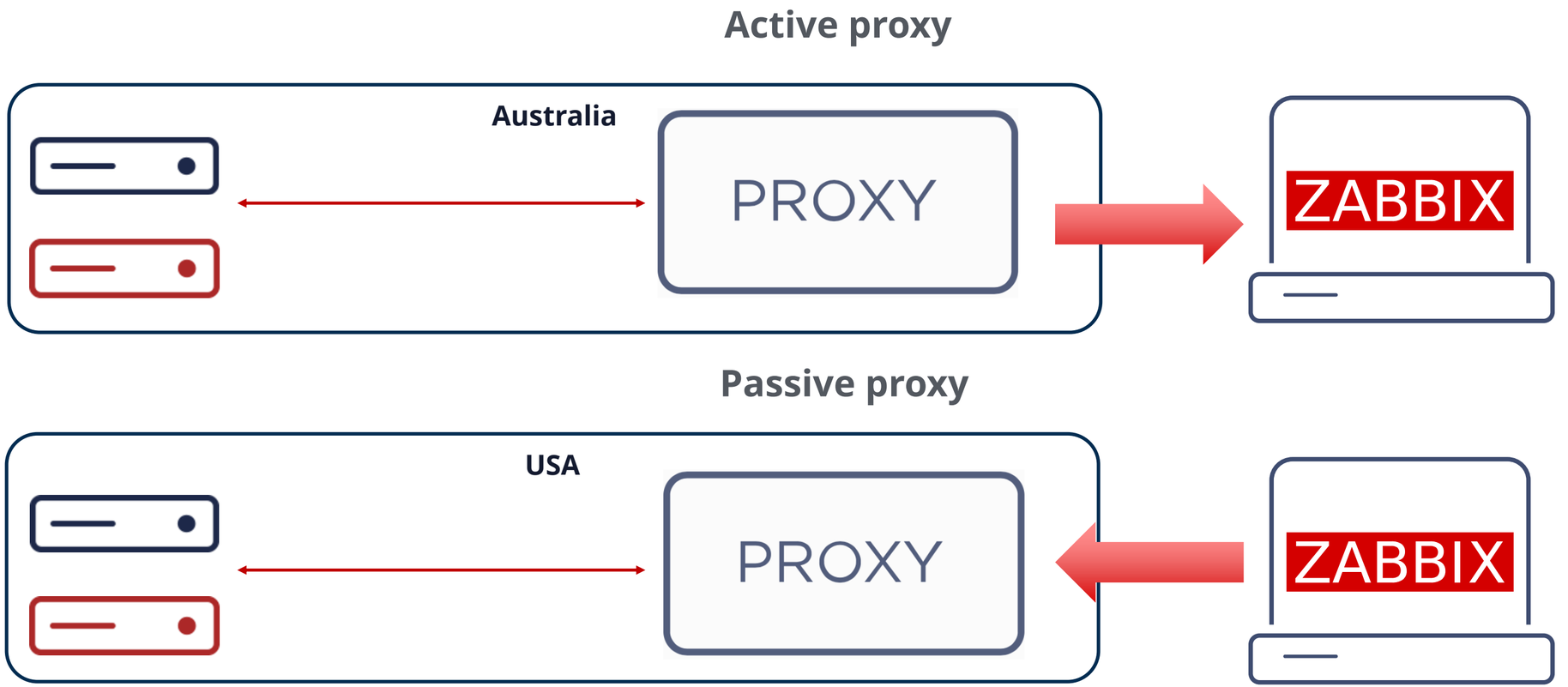
ZABBIX PROXY

- Select the direction of the connection



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DATA PREPROCESSING - THROTTLING

- By using preprocessing, we can decrease the amount of stored data by discarding repeating values
- This preprocessing method is called Throttling

discard unchanged

00:00 value - 1
00:01 value - 2 OK
00:02 value - 2 DROPPED
00:02 value - 2 DROPPED
10:02 value - 2 DROPPED
50:02 value - 2 DROPPED

discard unchanged heartbeat 2minutes

00:00 value - 1
00:05 value - 1 dropped
01:05 value - 1 dropped
01:55 value - 1 dropped
02:00 value - 1 SENT
02:01 value - 1 dropped

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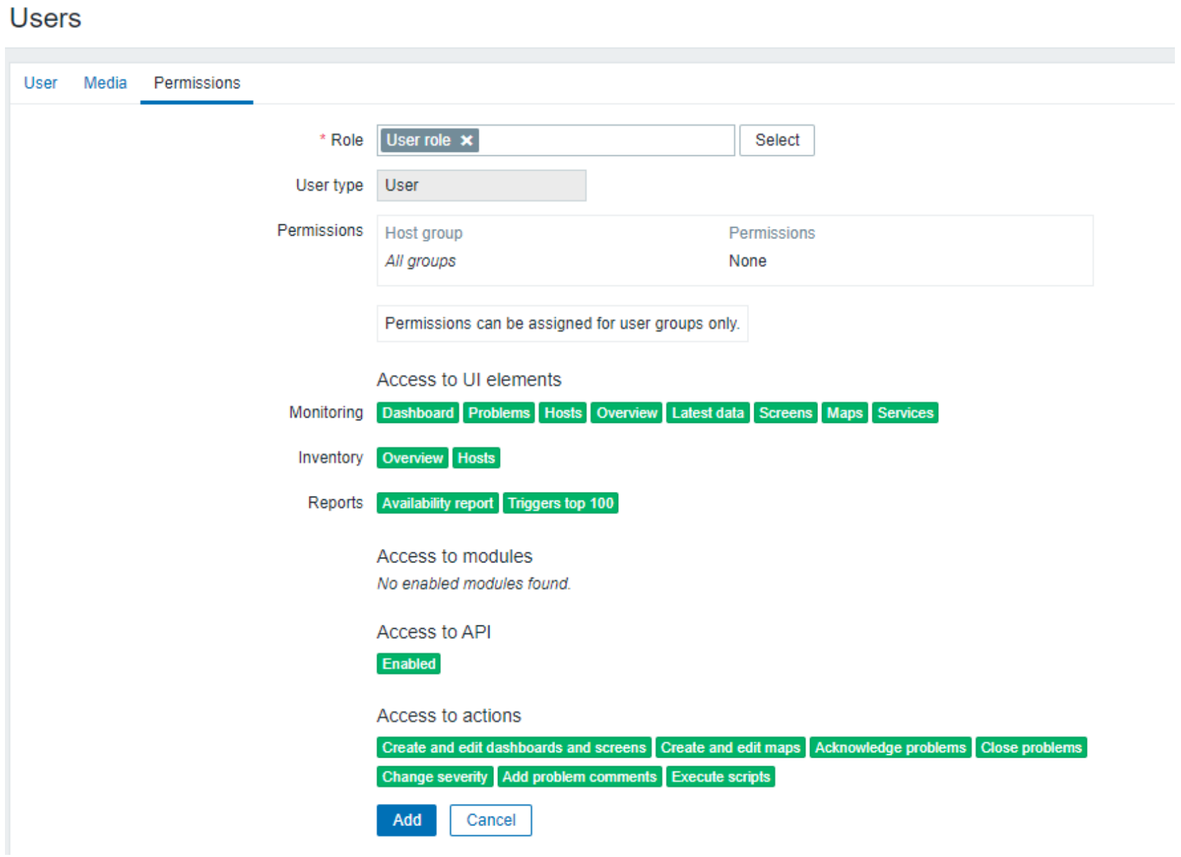
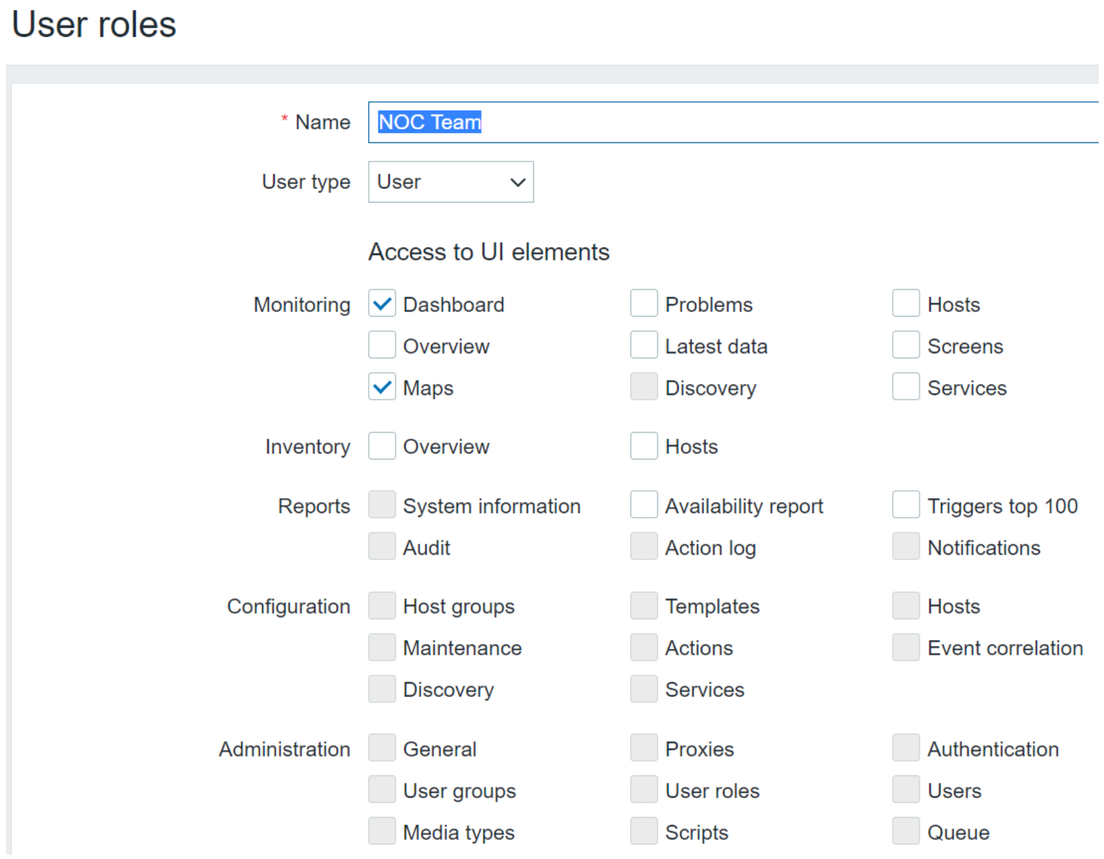
PERMISSIONS

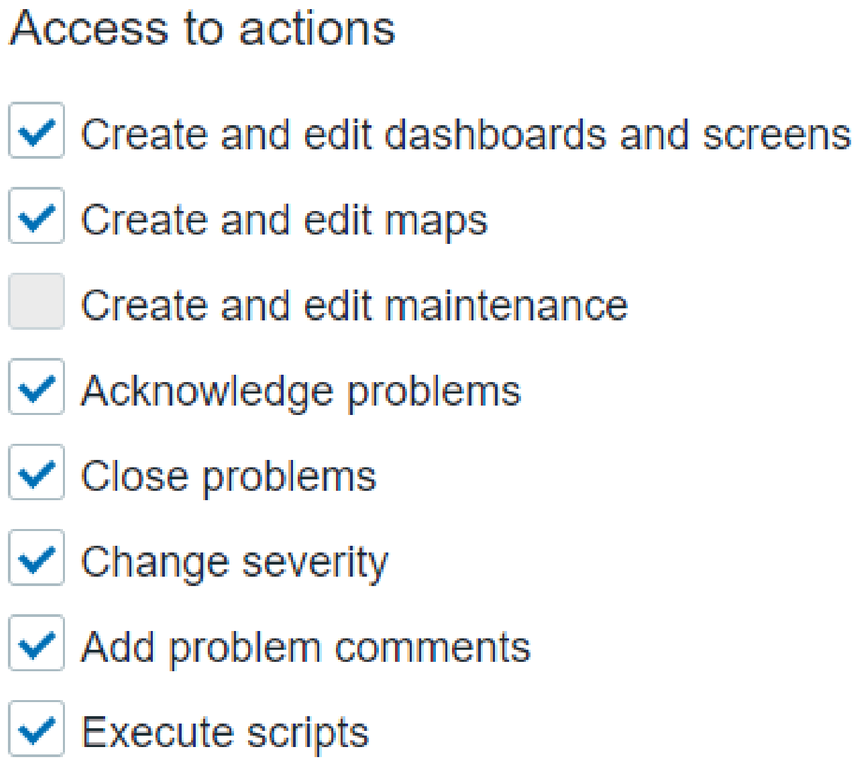
- Permissions are based on User group to host group relations
- Three user types – User, Admin, Super admin
- User Roles



PERMISSIONS - ROLES

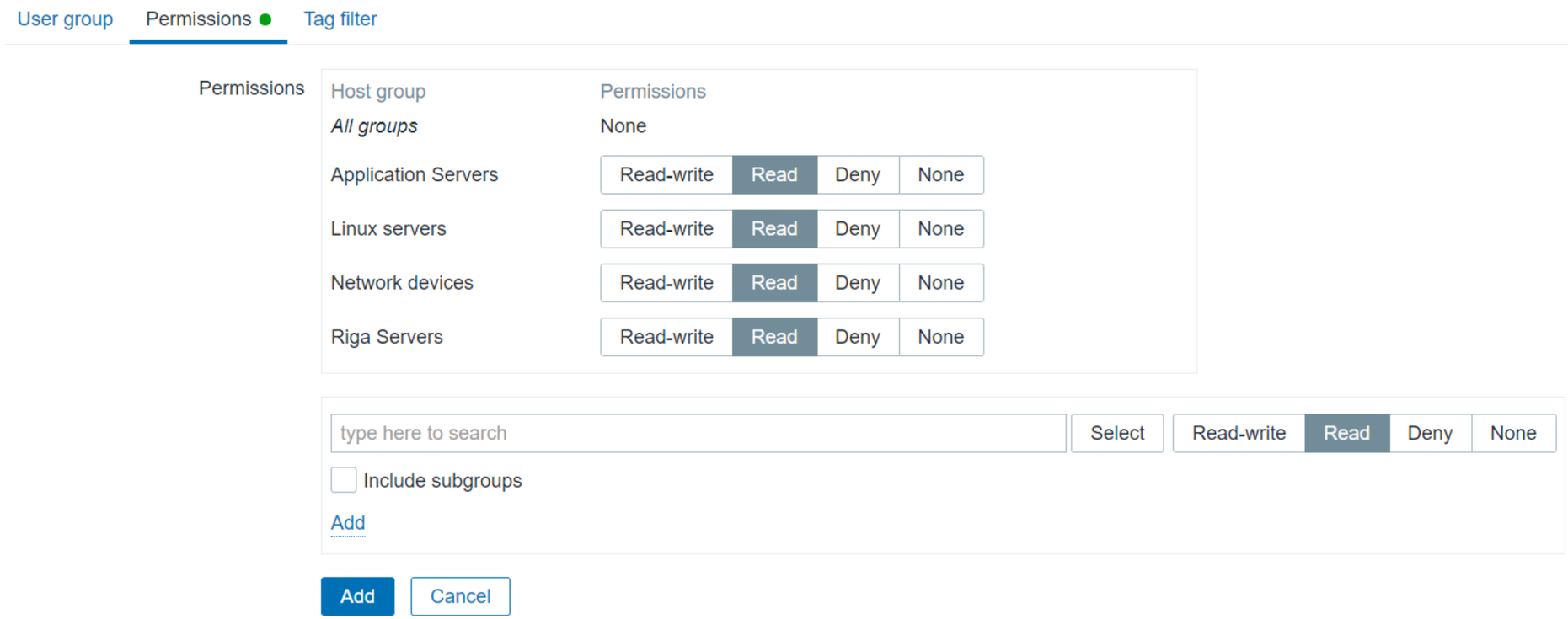
- Roles grant the ability to configure access to specific UI elements, actions and restrict API calls in a granular fashion.





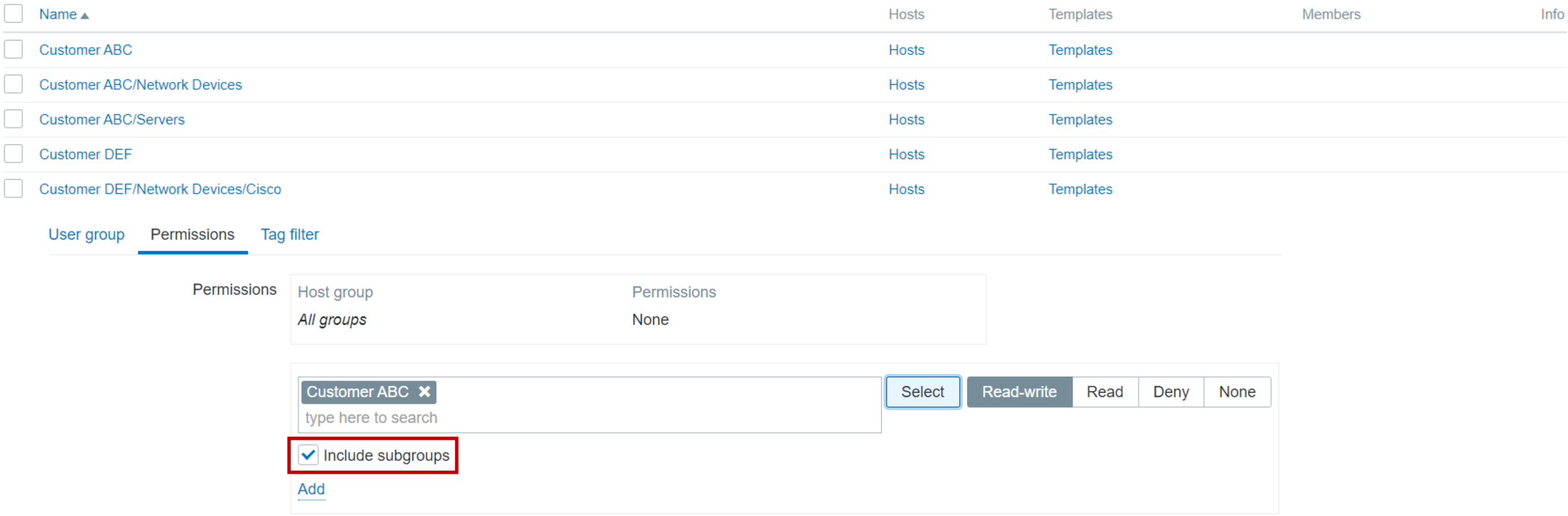
PERMISSIONS – USER GROUPS

- Access to hosts is defined on User group level
- Users can have Full/Read only/Deny permissions on particular host groups



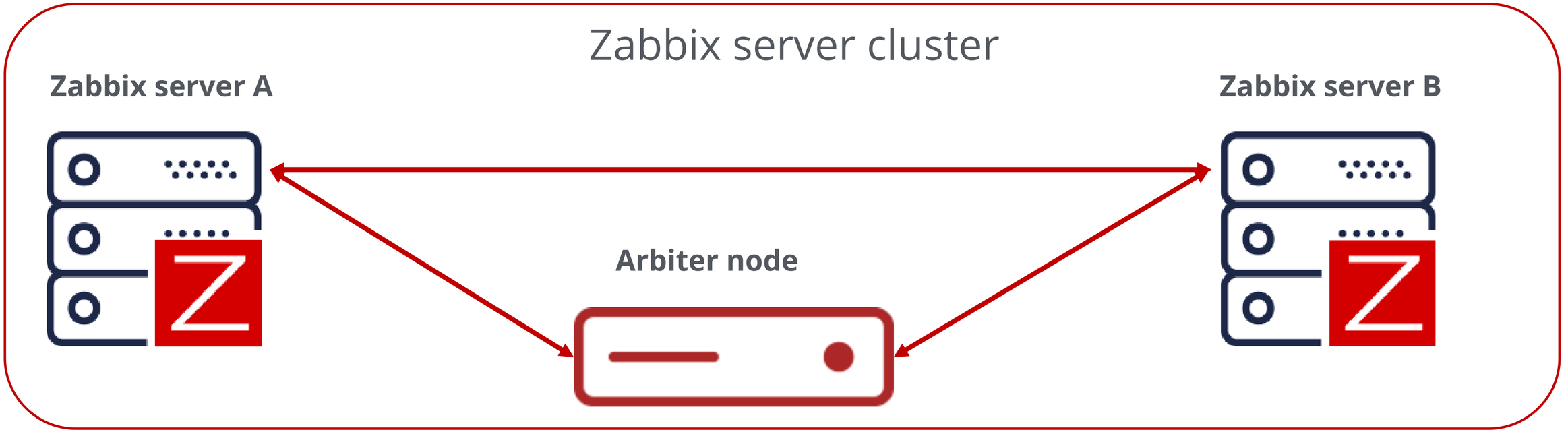
PERMISSIONS – HOST GROUPS

- Using group hierarchy can be very beneficial in such scenarios



HIGH AVAILABILITY

- Having near 100% uptime can be especially critical for such environments
- HA can be used to minimize downtime and add redundancy
- Tools such as PCS, Corosync, Pacemaker are used to enable the HA
- Out of the box HA planned for Zabbix 6.0



HIGH AVAILABILITY - NOTES

- Odd number of nodes should be used to achieve quorum
- Only Active/Passive cluster architecture is supported
- Two nodes should never be active at the same time
- STONITH mechanism can prevent such a scenario (recommended)
- Failure to abide by these restrictions can result in database consistency issues

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HIGH AVAILABILITY - PROXY

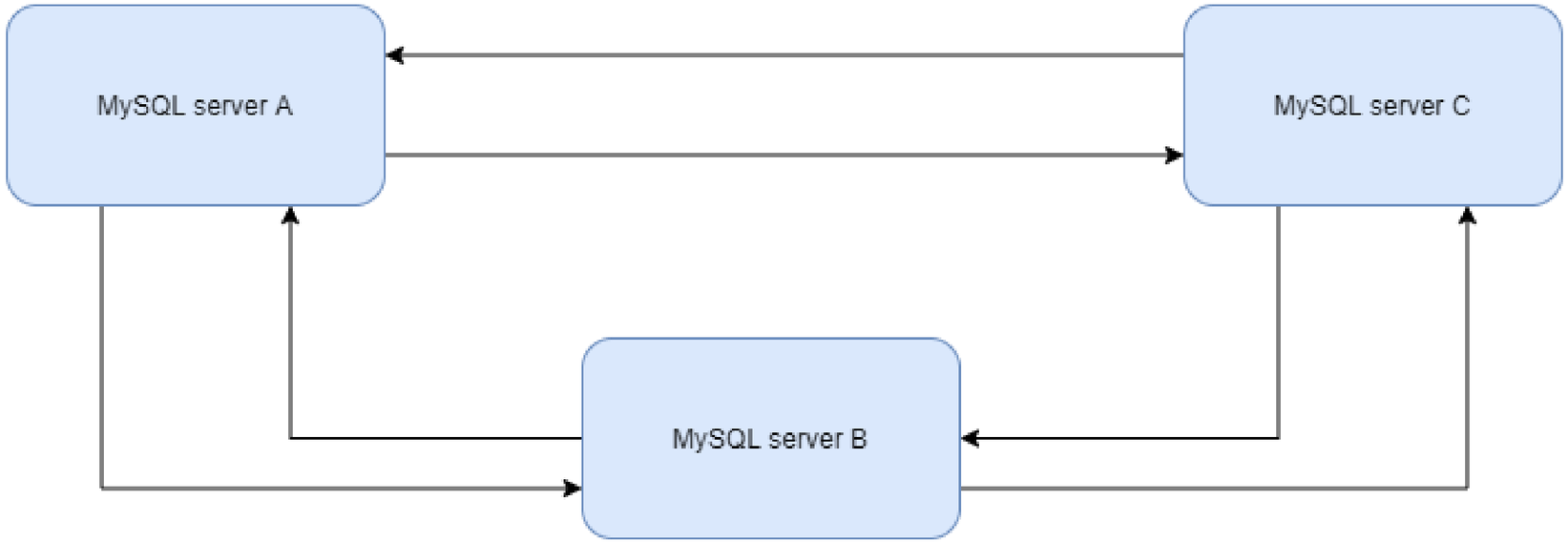
HA solution can also be implemnted for Zabbix proxies, though it can add a signficiant HA configuration management overhead

HA for proxies can also be implemnted by using Zabbix API scripts

```
{
    "jsonrpc": "2.0",
    "method": "host.massupdate",
    "params": {
        "hosts": [
            {
                "hostid": "10396"
            },
            {
                "hostid": "10397"
            }
        ],
        "proxy_hostid": 10398
    },
    "auth": "d9040f24a183638e00940fe64059420b",
    "id": 1}
```

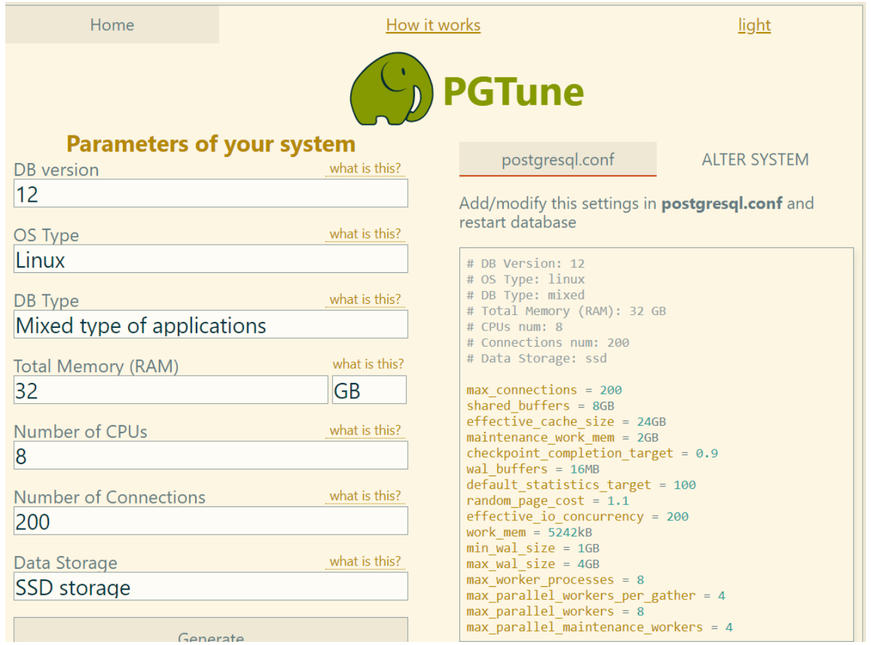
DATABASE REPLICATION

- Database replication can be used as a form of redundancy for the Zabbix DB
- Multiple replication approaches are supported (Master/Slave, Master/Master, Multi-master)



DATABASE PERFORMANCE TUNING

- In most scenarios using the default DB settings is not sufficient in such environments
- Hardware requirements should also be taken into account. The DB hosts should have sufficient memory and storage should be selected according to the I/O requirements (SSD/RAID setup)
- Ideally, consult a DBA for optimal DB configuration



HISTORY TABLE PARTITIONING

- On large instances the Housekeeper cannot keep up with cleaning out history and trend tables in a timely fashion
- This has a negative effect on overall DB performance
- Partitioning is recommended for history/trend tables
- This is supported out of the box with PostgreSQL + TimescaleDB

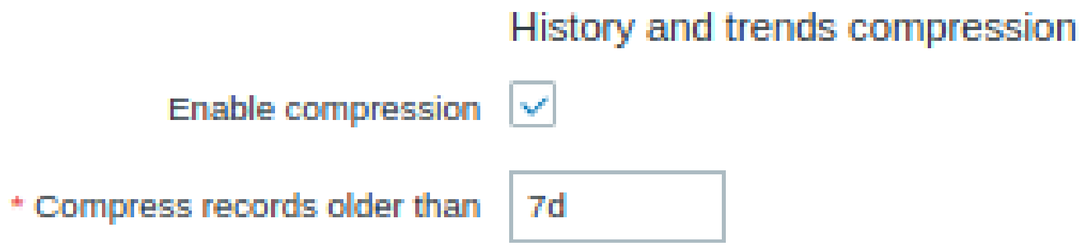
```
ALTER TABLE trends_uint PARTITION BY RANGE ( clock)
(PARTITION p2020_10 VALUES LESS THAN (UNIX_TIMESTAMP(“2020-11-01 00:00:00”)) ENGINE = InnoDB,
PARTITION p2020_11 VALUES LESS THAN (UNIX_TIMESTAMP(“2020-12-01 00:00:00”)) ENGINE = InnoDB,
PARTITION p2020_12 VALUES LESS THAN (UNIX_TIMESTAMP(“2021-01-01 00:00:00”)) ENGINE = InnoDB,
PARTITION p2021_01 VALUES LESS THAN (UNIX_TIMESTAMP(“2021-02-01 00:00:00”)) ENGINE = InnoDB,
PARTITION p2021_02 VALUES LESS THAN (UNIX_TIMESTAMP(“2021-03-01 00:00:00”)) ENGINE = InnoDB,
PARTITION p2021_03 VALUES LESS THAN (UNIX_TIMESTAMP(“2021-04-01 00:00:00”)) ENGINE = InnoDB);
```

- Community provided partitioning scripts are publicly available

https://github.com/OpensourceICTSolutions/zabbix-mysql-partitioning-perl

HISTORY TABLE PARTITIONING - TIMESCALEDB

- TimesacleDB plugin for PostgreSQL DB backends supports out of the box partitioning
- No need to rely on community scripts
- TimescaleDB parameter *chunk_time_interval* defines the partition chunk size.
- In addition, TimescaleDB provides the compression of history/trends
- Compressed data becomes read-only and cannot be changed post compression



TO-DO LIST

- Zabbix version with role support is deployed (>=5.2)
- Proxy servers are deployed in the client data centers
- Application and DB servers use HA/Replication solutions
- Partitioning has been implemented to improve the DB performance
- Throttling has been implemented to reduce the amount of incoming data
- Data base is tuned in accordance with the available hardware resources

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QUESTIONS?

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THANK YOU!

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