

Real-Life Examples:

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# Unleashing the Power of Zabbix Item Scripts for Automation



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ZABBIX can't do ....

# Really?

# Challenge 01



Zabbix can't discover the SNMP community string.



Zabbix can't discover the SNMP community string.

You can't guess the community string. What do you really need?





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No external scripts are allowed. Everything must be configured inside of Zabbix frontend.





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No external scripts are allowed. Everything must be configured inside of Zabbix frontend.

Okay, That's challenge!



## CHALLENGE 01

# TASK DEFINITION

- ✓ Customer has plenty of devices **configured by partners** with set of SNMP community strings
- ✓ We need to **automate adding these devices** to Zabbix, set correct community string, move to target Group, Link Templates
- ✓ **All devices are also monitored** by ICMP ping. But some devices will be monitored only by ICMP

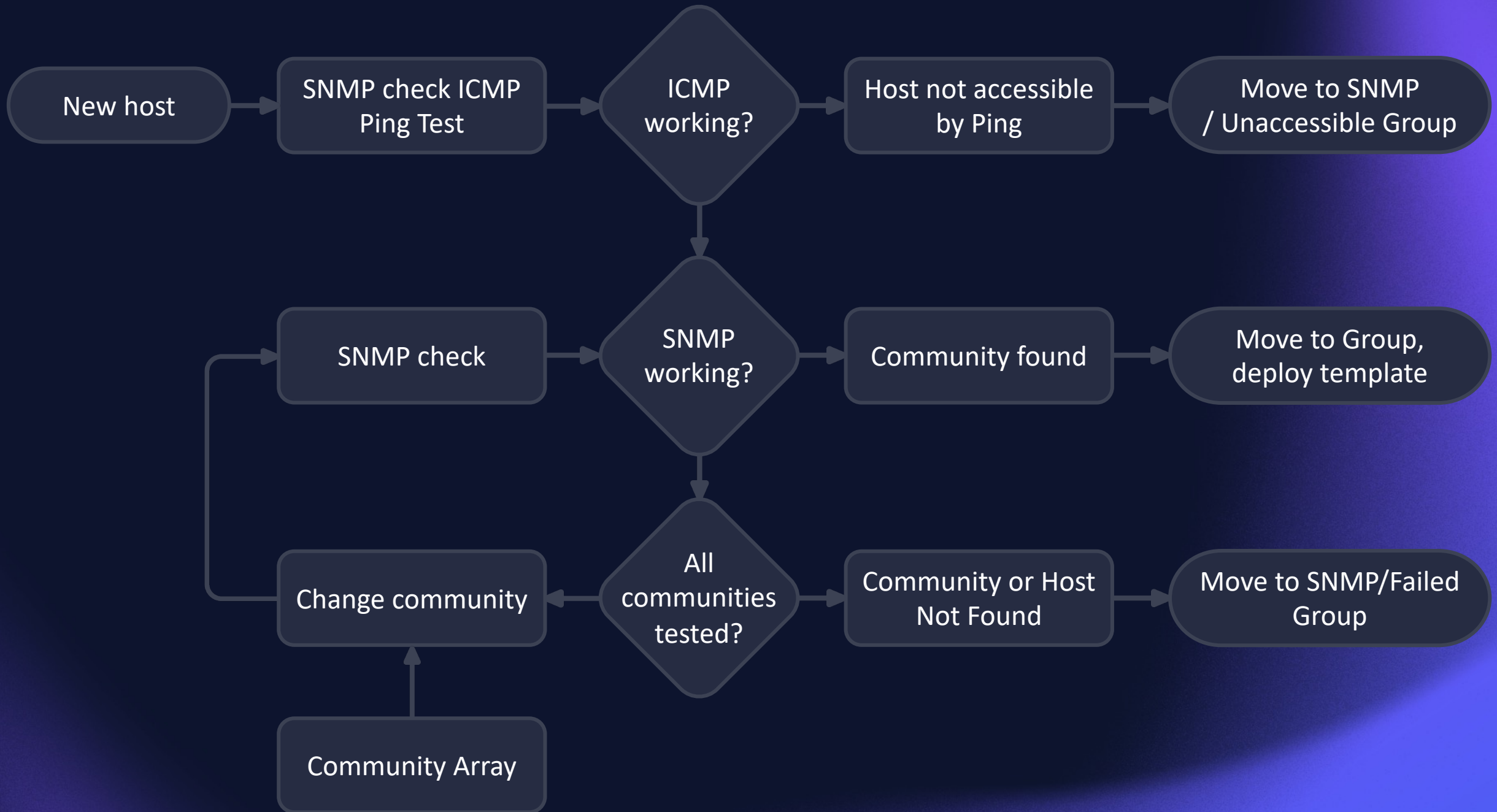


CHALLENGE 01

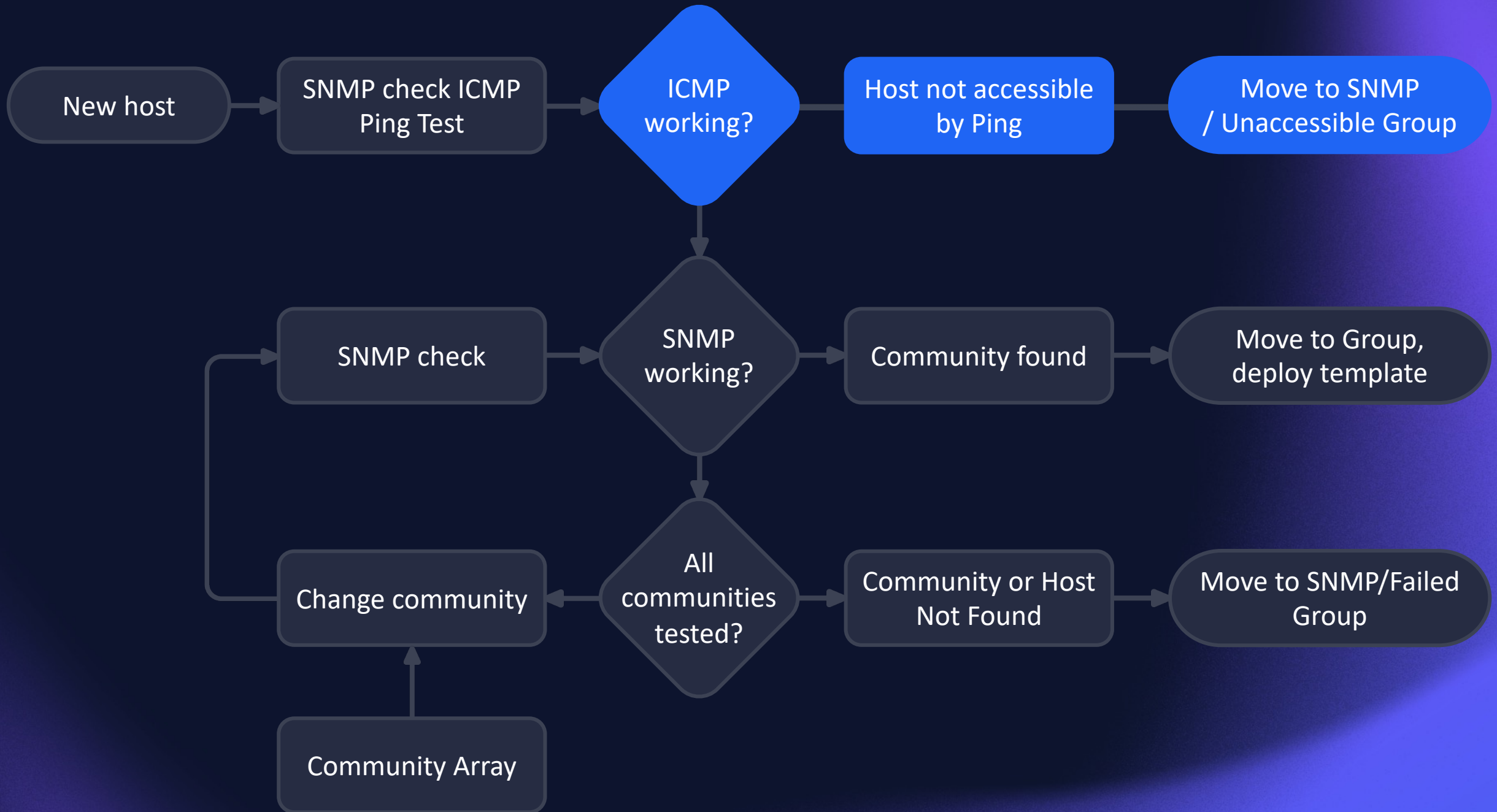
# TASK DEFINITION

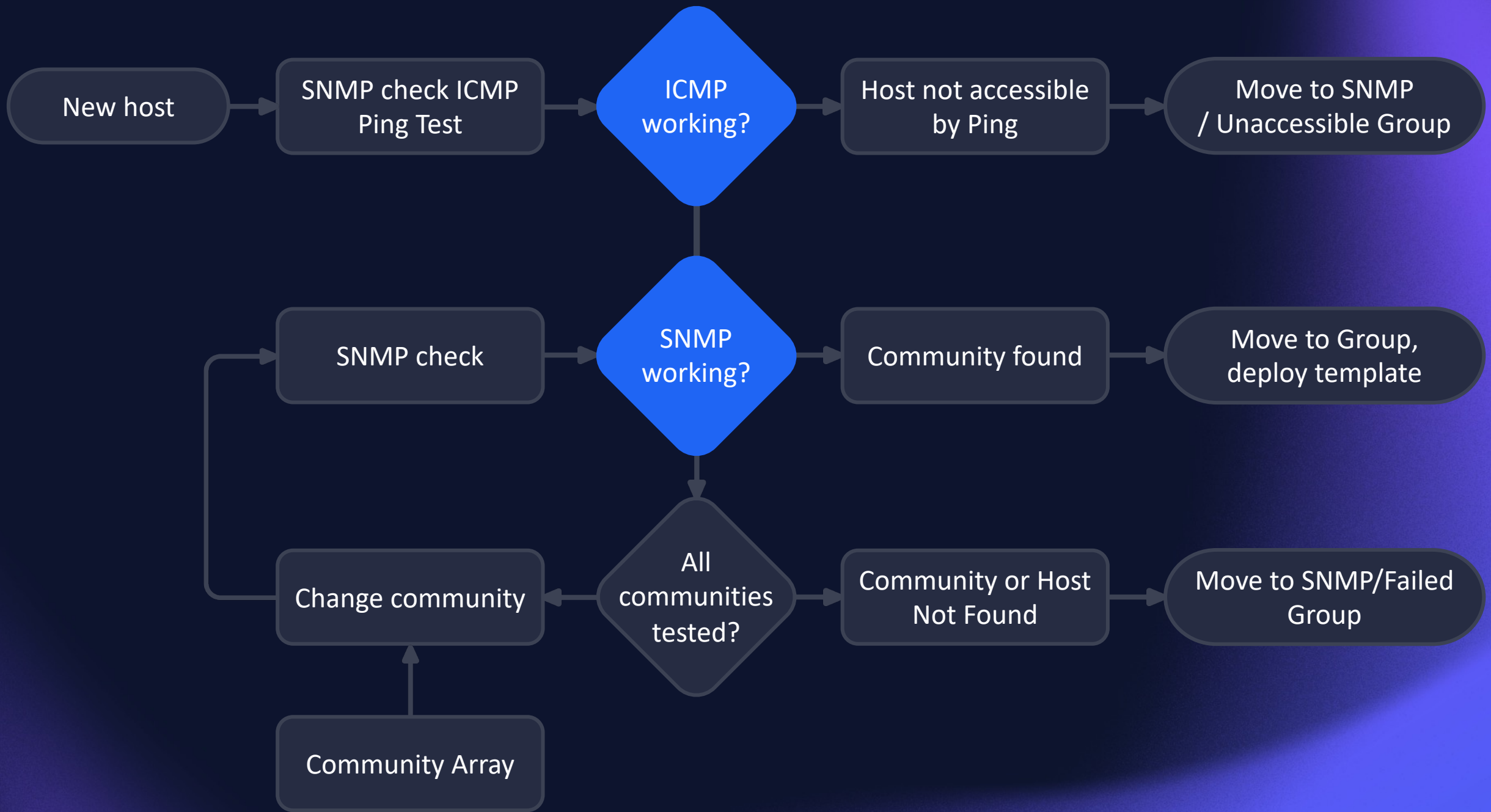
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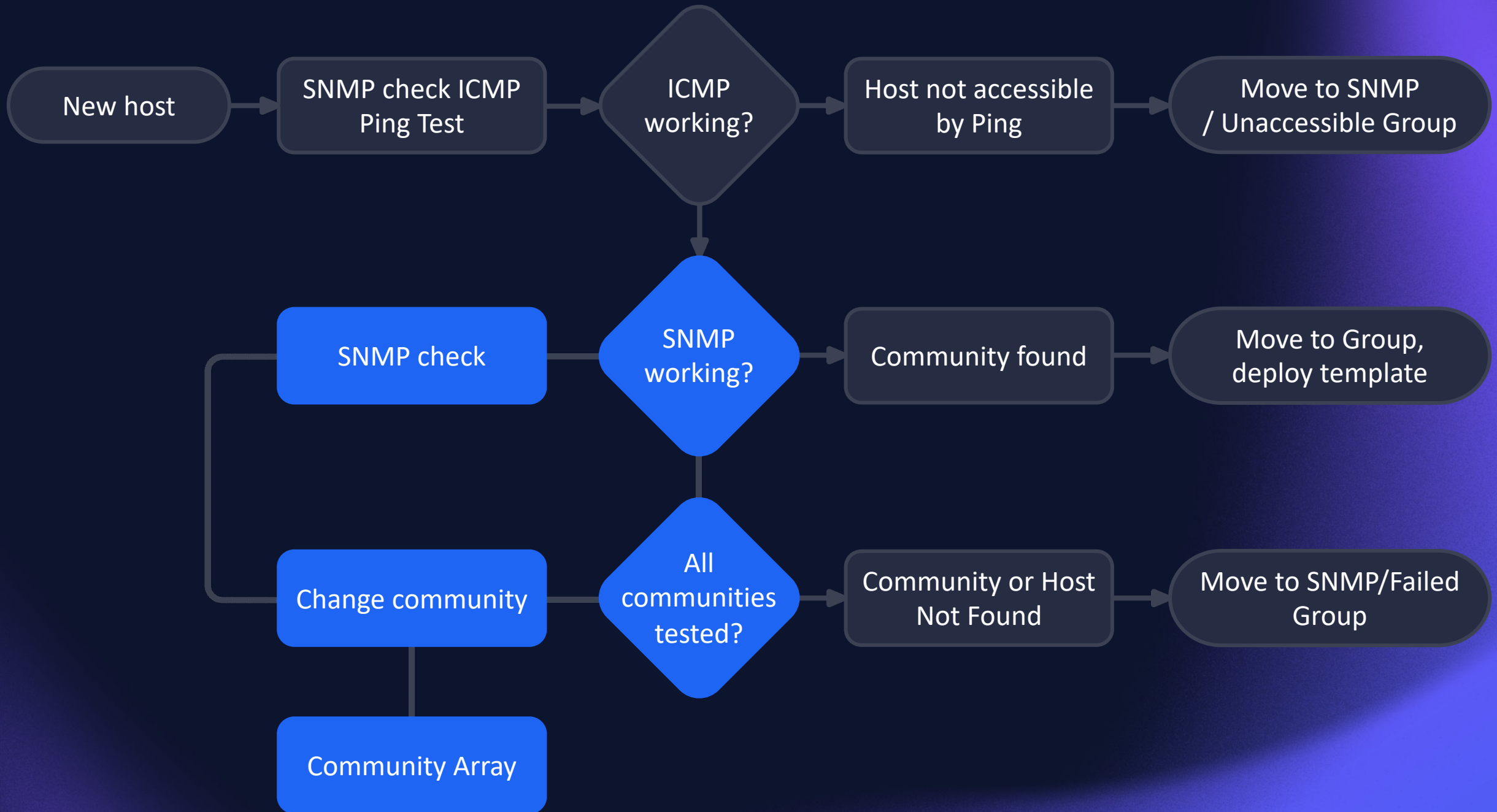




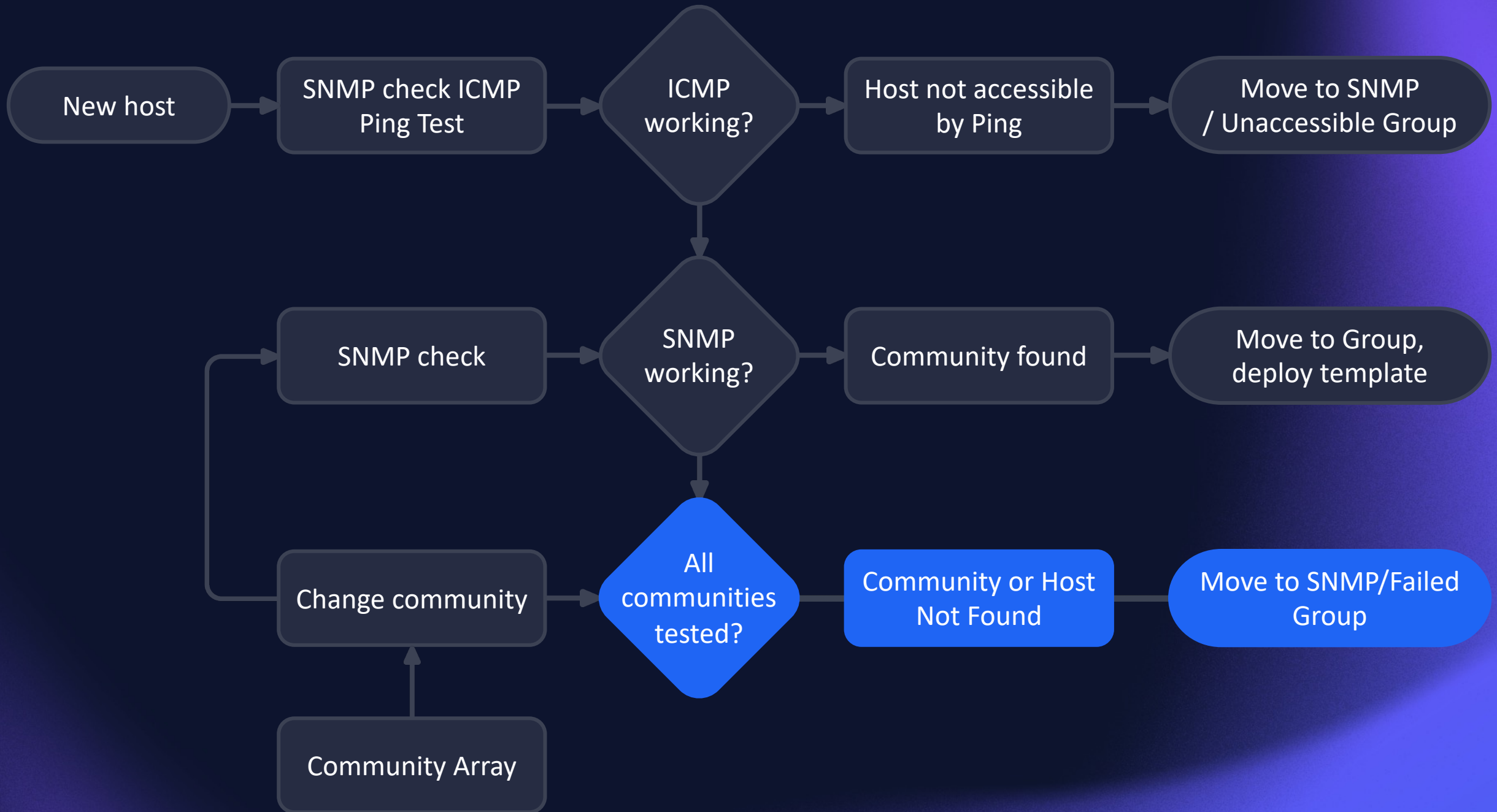














# HOW TO CHECK ICMP?

## Items:

ICMP status

## Triggers:

Ping Failed

`max(/SNMP community discovery/icmpping[{HOST.IP},3],#2)=0`



# HOW TO CHECK SNMP?

## Items:

SNMP cycle check

common OID - 1.3.6.1.2.1.1.1.0 - sysDescr

SNMP Availability internal check

## Triggers:

SNMP community found

```
last(/SNMP community discovery/snmp.cycle2)<>"fail" or last(/SNMP community discovery/zabbix[host,snmp,"available"])=1
```

SNMP failed - change community

```
last(/SNMP community discovery/snmp.cycle2)="fail" or last(/SNMP community discovery/zabbix[host,snmp,"available"])<>1
```

The screenshot shows the configuration for an SNMP interface in Zabbix. The interface is named 'SNMP' and has the IP address '10.1.1.210'. The SNMP version is set to 'SNMPv2'. The SNMP community is set to '{\${SNMP\_COMMUNITY}}'. The Max repetition count is set to '10'. The 'Use combined requests' checkbox is checked.

Interfaces	Type	IP address
SNMP		10.1.1.210

\* SNMP version: SNMPv2

\* SNMP community: \${SNMP\_COMMUNITY}

Max repetition count: 10

Use combined requests



## CHALLENGE 01

# SET COMMUNITY STRING

Macros:            {\$SNMP\_COMMUNITY}  
                  {\$SNMP\_COMMUNITY\_ARRAY}

Macro	Value
{\$SNMP_COMMUNITY_ARRAY}	public;initMAX;snmp_community;NotFound <span>T v</span>

## Script:

```
if (zbx_macros != null) {
    curentValue = zbx_macros.value;
    position = arr.indexOf(curentValue);
    hostmacroid = zbx_macros.hostmacroid;
    update_result = updateHostMacros(hostmacroid,arr[position + 1]);
} else {
    update_result = createHostMacros(zbx_hostid,macro_name,new_value);
}
```



## CHALLENGE 01

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# ALL COMMUNITIES TESTED?

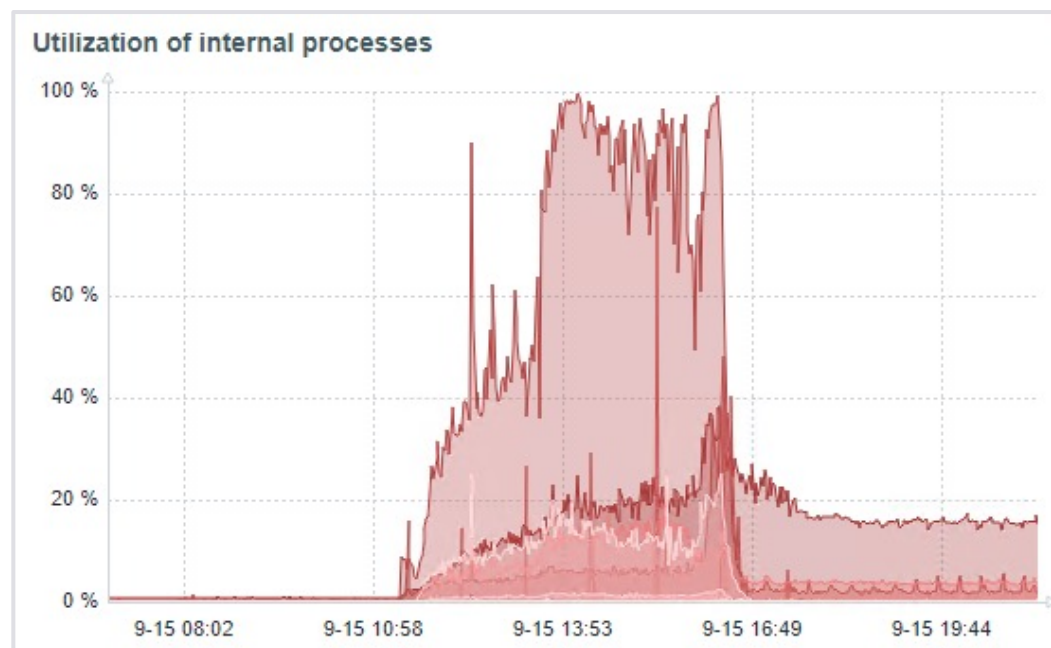
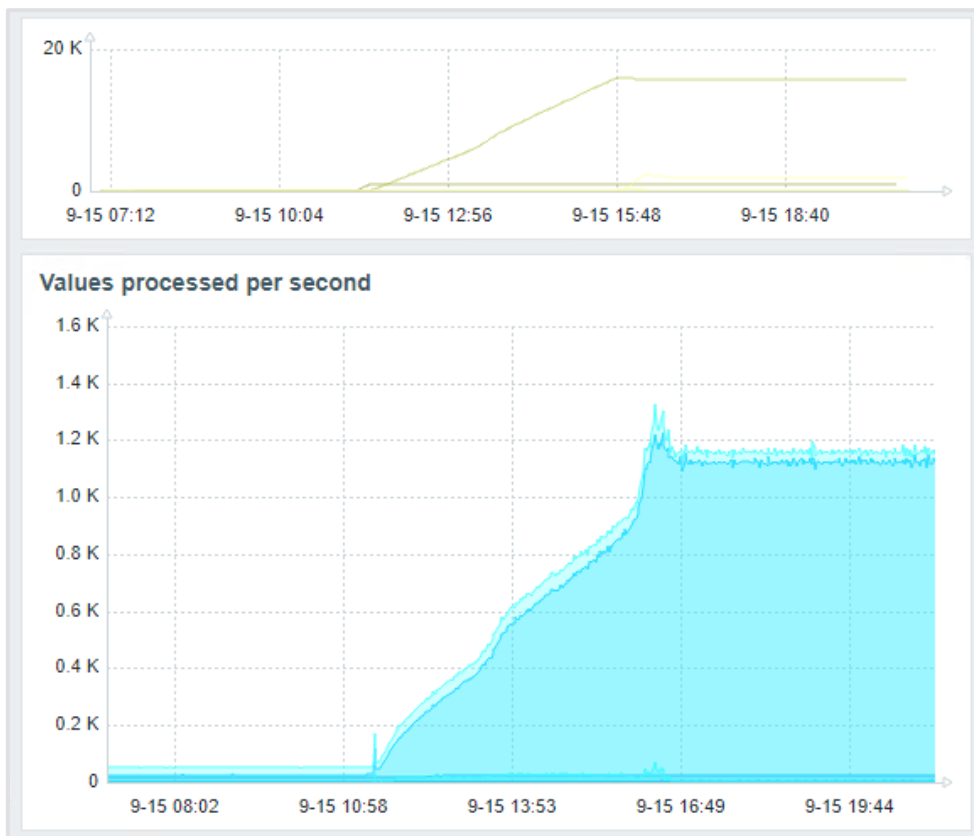
```
last(/SNMP community discovery/zabbix[host,snmp,"available"])<>1 and  
{$SNMP_COMMUNITY} = "NotFound"
```

SNMP failed - Cycle completed



## CHALLENGE 01

# REAL IMPORT 20k HOSTS







# TECHNICAL DECISIONS

In a real world there is much more complexity

ICMP only devices, ...

Add host -> detect SNMP -> Move to Group -> Link Templates -> Enable | Disable Host

## Timing

ICMP Timeouts

SNMP Timeout

Update interval

Trigger settings

Configuration cache + Proxy update interval

User macros can be used as secret macros

# Challenge 02



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Only for passive SNMP check monitored by SNMP agent.

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We need to automate switching to failover proxy.

Okay, that's a challenge!





## Challenge 02

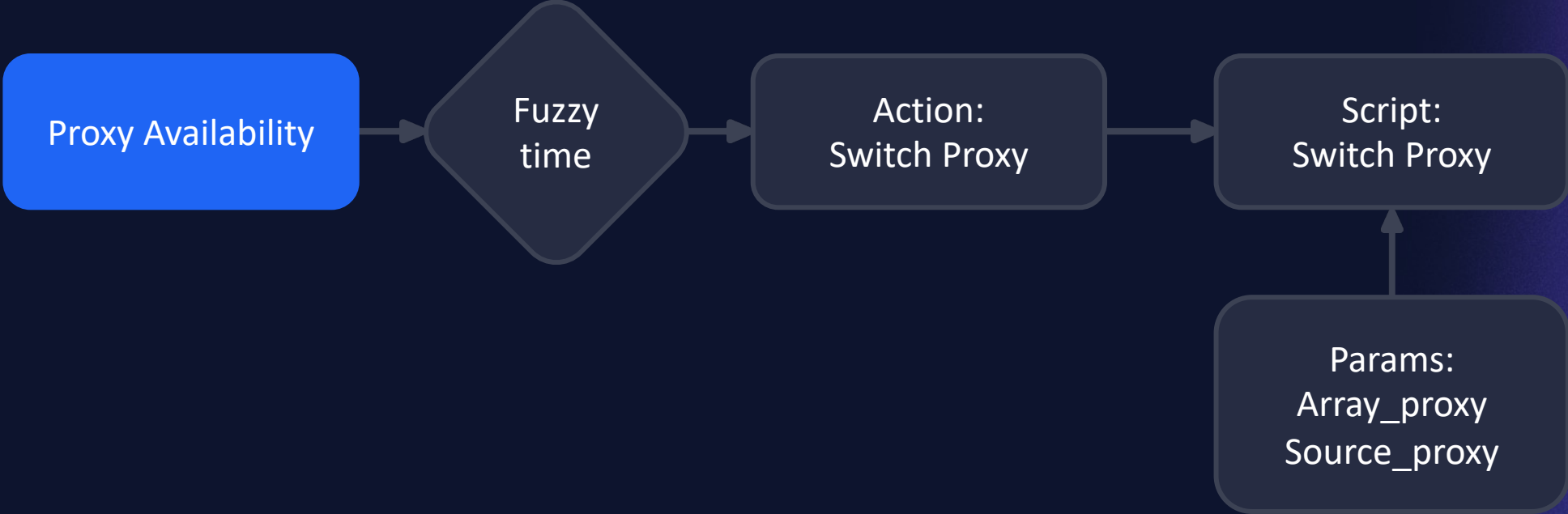
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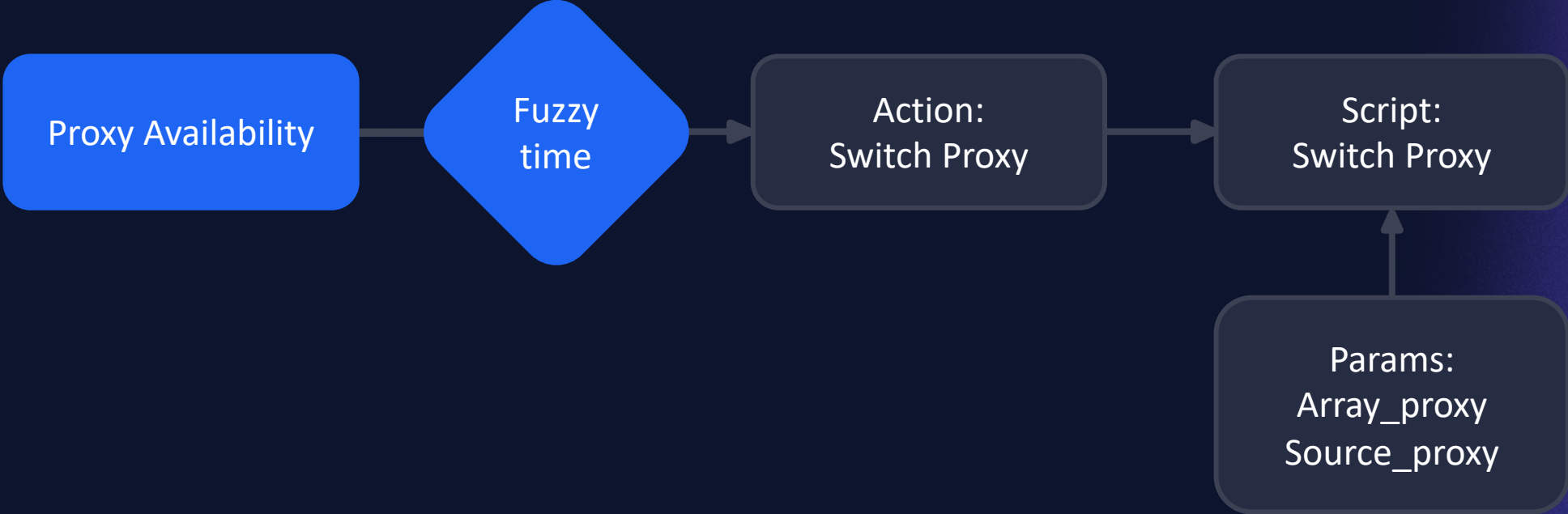
# TASK DEFINITION

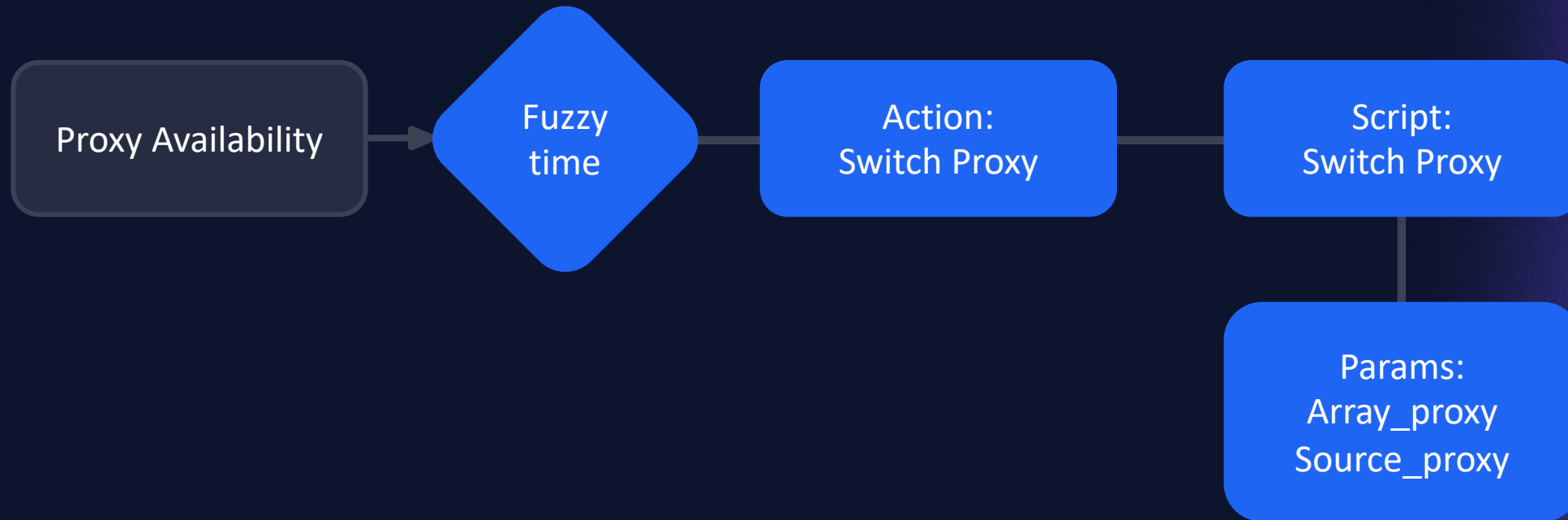
- ✓ **ZABBIX proxy in HA** mode is a necessary condition for the project
- ✓ **Whole automation** must be configured using the Zabbix frontend
- ✓ **No advanced features** such as failback or load balancing are required













## CHALLENGE 02

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# PROXY AVAILABILITY

## Macros, Tags:

{\$HA.PROXY}

HA: Proxy01,Proxy02

## Item:

```
zabbix[proxy,{ $HA.PROXY}{HOST.NAME},lastaccess]
```

## Trigger:

```
fuzzytime(/Proxy HA/zabbix[proxy,{ $HA.PROXY}{HOST.NAME},lastaccess],1m)=0
```



## CHALLENGE 02

# SWITCH PROXIES

Action -> Script:

```
if(arrayProxy[0] === sourceProxy){
  newProxyID = proxies[proxies.map(function(e) { return e.host;
    }).indexOf(arrayProxy[1])].proxyid;
} else {
  newProxyID = proxies[proxies.map(function(e) { return e.host;
    }).indexOf(arrayProxy[0])].proxyid;
}

var hostsToChange =
(JSON.parse(getProxyHosts(sourceID)).result).concat(JSON.parse(getProxyHosts(newProxyID)).result);
```



# ADVANCED HA

Failback – not in project scope

Macro with „default proxy“.

Balancing of proxy utilization

Can be done by balancing check.

Active checks

Can be solved partially by using Auto-registration.

Zabbix 6.4 - cache update - default - 10s

Zabbix 7.0 - ?

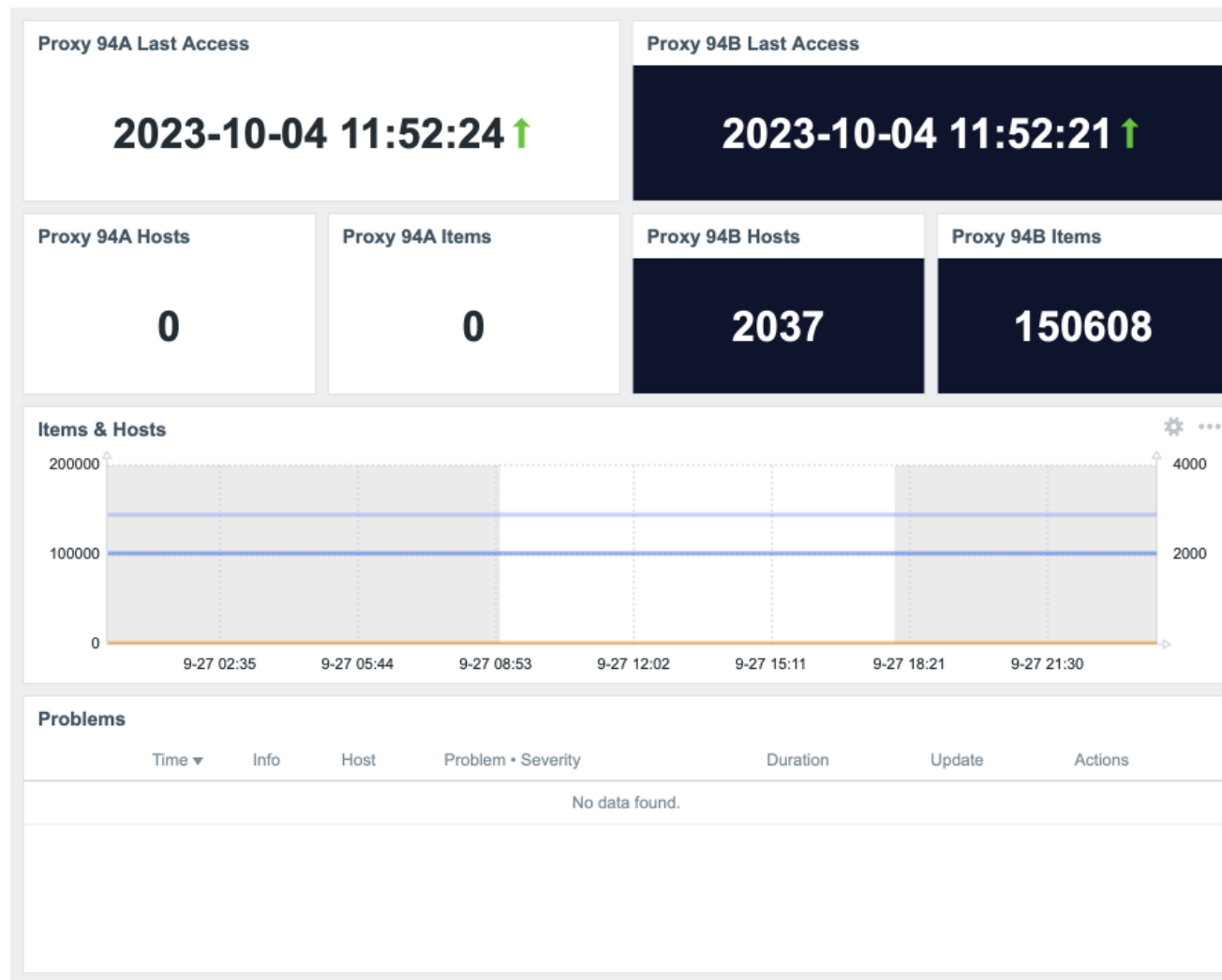
- Proxies to provide automatic load balancing and HA In design  
[ZBXNEXT-5911](#) ★ Top voted!





## CHALLENGE 02

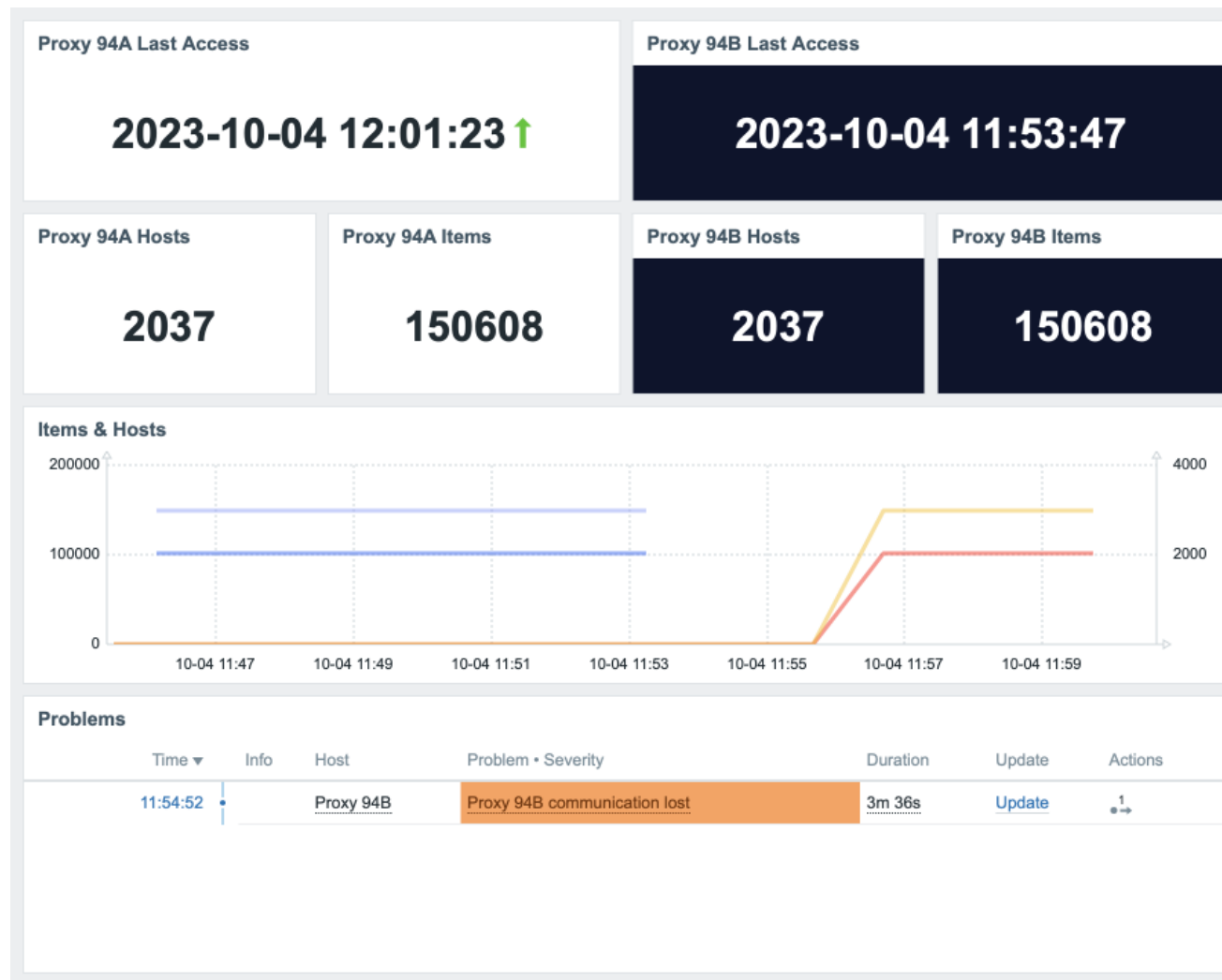
# Proxy 94B offline





## CHALLENGE 02

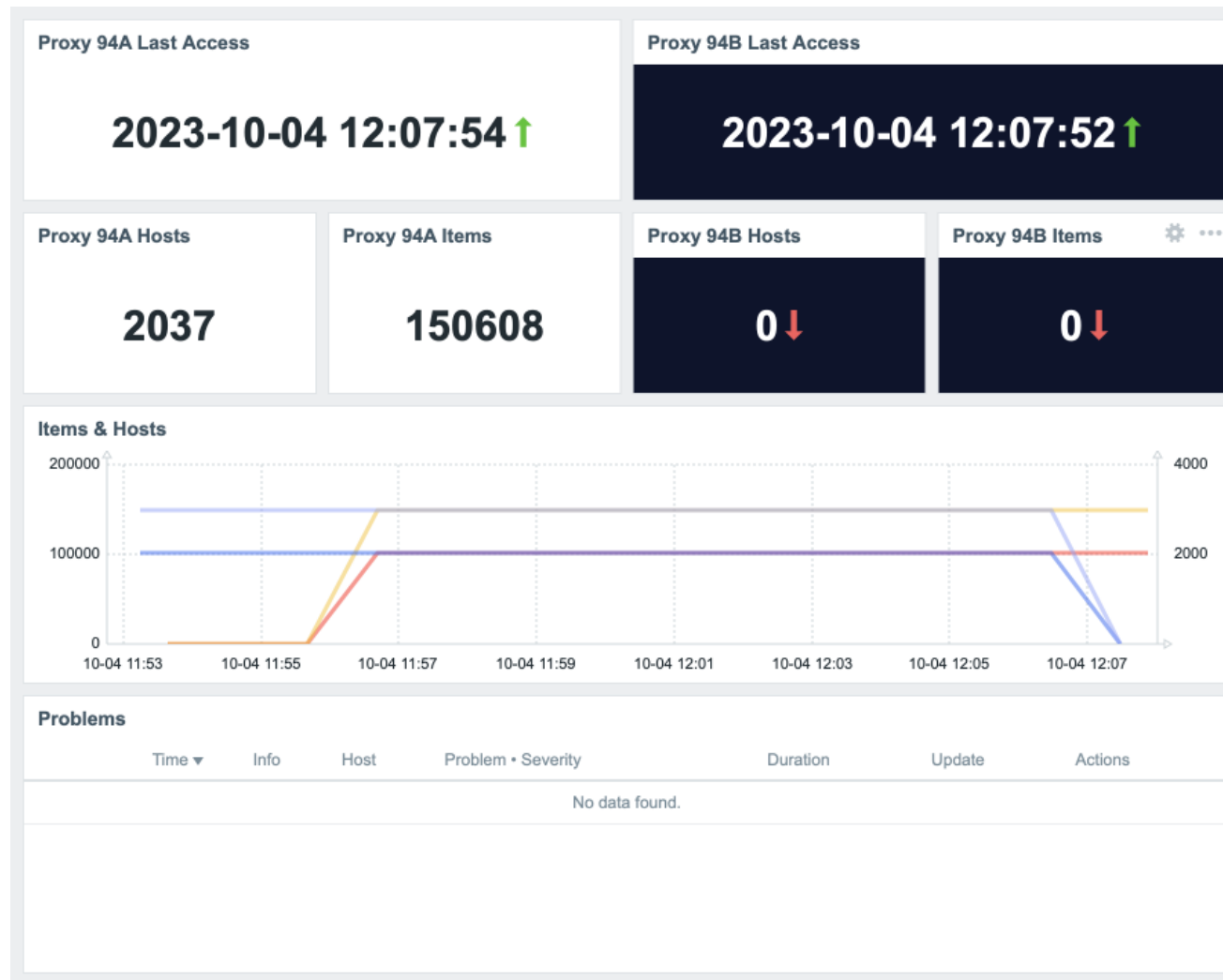
# Proxy 94A have all hosts and checks





## CHALLENGE 02

# Proxies are online again



# Challenge 03



We want to use single template for more setups!



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Can Zabbix read config somewhere?





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No, it has to be configured manually and the configuration must be as simple as possible.



We want to use single template for more setups!

Can Zabbix read config somewhere?



No, it has to be configured manually and the configuration must be as simple as possible.

OK, let's use „Static“ LLD







## CHALLENGE 03

# „Static“ LLD

Copy of a template, macro name change, key conflicts and more -  
Solution?

Macro with array of values -> LLD on script item

Template based on macro value  
What if You want more?

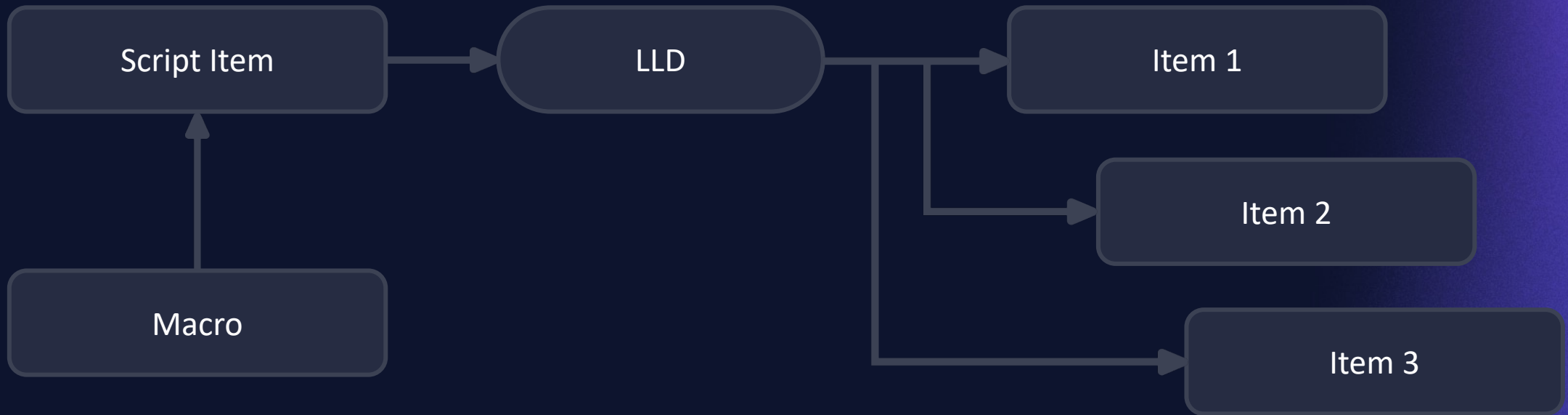
<input type="checkbox"/> Name ▲	Hosts	Items	Triggers	Graphs	Dashboards	Discovery	Web	Vendor	Version
<input type="checkbox"/> Multiple Website certificate by Zabbix agent 2	Hosts 1	Items 1	Triggers	Graphs	Dashboards	Discovery 1	Web	initMAX s.r.o.	1.0
<input type="checkbox"/> Website certificate by Zabbix agent 2	Hosts 2	Items 13	Triggers 3	Graphs	Dashboards	Discovery	Web	Zabbix	7.0-0

## CHALLENGE 03

# TASK DEFINITION

- ✓ **Single host** for multiple checks of the same type
- ✓ **Manual configuration** and as simple as possible definition of monitored items
- ✓ **User friendly** configuration
- ✓ **Simple example** certificate monitoring







# CASE STUDIES




- ✓ **More certificates** monitored on one host with a single template
- ✓ **More DNS targets** on one host with a single CloudFlare template
- ✓ **Interconnection checks** between database instances





## CHALLENGE 03

# ONE HOST CERTs

initmax.cz	<b>2023-11-06 22:18:09</b> Expiration time	 0 days 100 days 33 days Cert: Days to Expire of initmax.cz	<b>valid</b> Validation result
git.initmax.cz	<b>2023-12-26 22:14:40</b> Expiration time	 0 days 100 days 83 days Cert: Days to Expire of git.initmax.cz	<b>valid</b> Validation result
initmax-cz.mail...	<b>2024-03-06 00:59:59</b> Expiration time	 0 days 365 days 153 days Cert: Days to Expire of initmax-cz....	<b>invalid</b> Validation result

# Challenge 04



We need Geomaps.



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OK, where can Zabbix get locations?







We need Geomaps.



We don't have locations 😞  
But we have addresses.

OK, where can Zabbix get locations?





We need Geomaps.



We don't have locations 😞  
But we have addresses.

OK, where can Zabbix get locations?



Okay, that's a challenge!





## CHALLENGE 04

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# CASE STUDIES

- ✓ Convert **Address** to geolocation coordinates.
- ✓ **Do it automatically** as simple as possible.





# TECHNICAL DECISIONS

Many online geoAPIs available – my choice:  
Google geocoding API

```
var request = new HttpRequest();
    request.addHeader('Content-Type: application/json');
    request.setProxy("${HTTP_PROXY}");
var apiKey = "${GOOGLE.GEOAPIFY.KEY}";

var address = encodeURI(address);
var url = "https://maps.googleapis.com/maps/api/geocode/json?address=" + address +
"&key=" + apiKey;

response = request.get(url);
return response;
```



# TECHNICAL DECISIONS

## Zabbix 6.4 - Script item

{INVENTORY.LOCATION} can be used as Script item parameter

## Zabbix 6.2 and older - Dependent item with JavaScript preprocessing

{INVENTORY.LOCATION} cannot be used in script item.  
Master Item gets the address.



## CHALLENGE 04

# CONFIGURATION

## Dependent Item with script preprocessing

Preprocessing steps ?

	Name	Parameters
1:	Does not match regular expression	.*(P p)repared .*
	Custom on fail	Discard value Set value to Set error to
2:	Does not match regular expression	^(#NVA).*\$
	Custom on fail	Discard value Set value to Set error to
3:	Matches regular expression	^(IT, CZ, PL, RO, RS, SK, \d\d\d \d\d,).*\$
	Custom on fail	Discard value Set value to Set error to
4:	JavaScript	<code>var request = new HttpRequest();...</code>

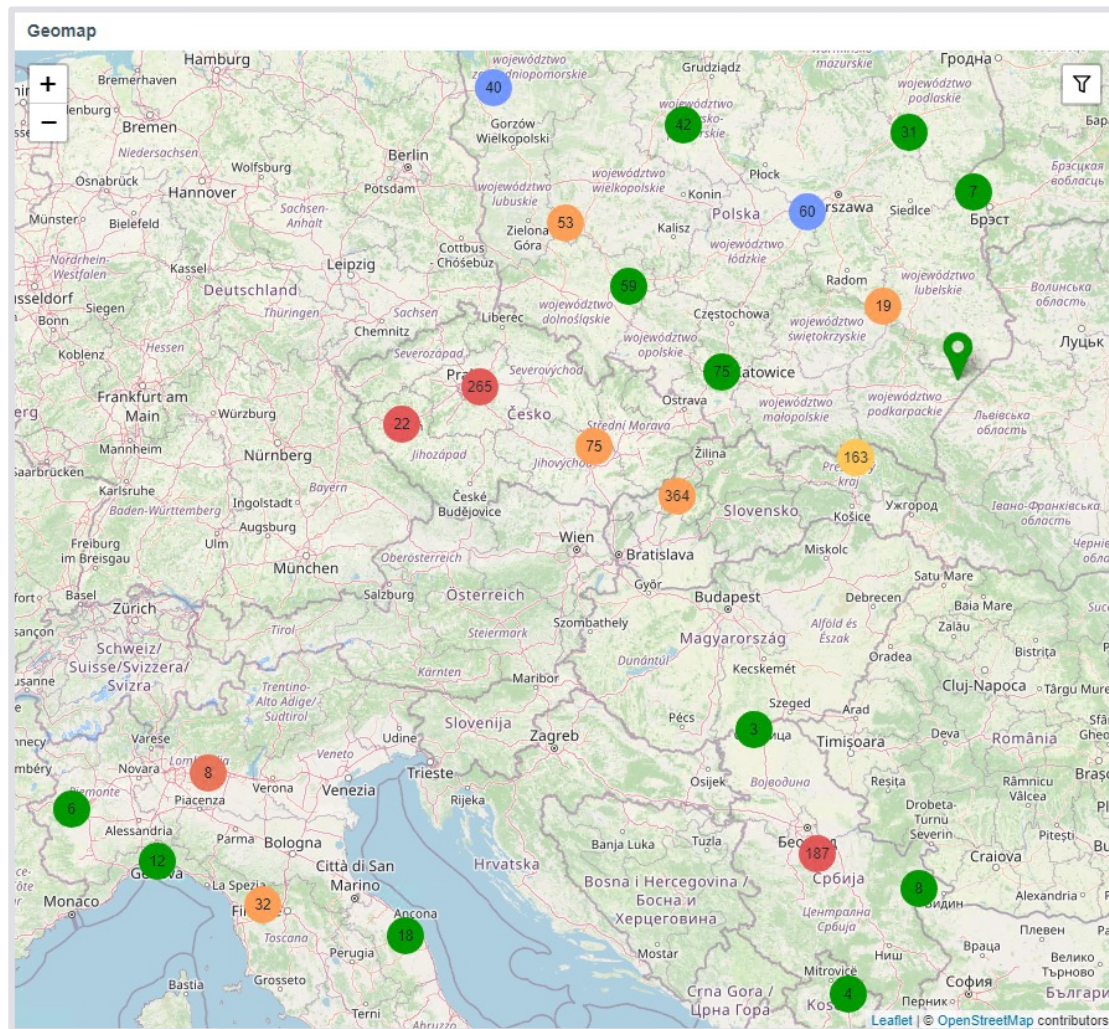
## Use throttling



## CHALLENGE 04

# RESULT

## Geomap widget



# MEET WITH US

**ZABBIX**  
PREMIUM PARTNER

**ZABBIX**  
CERTIFIED TRAINER



**Tomáš**

CEO



**Tomáš**

Developer



**Alois**

Technical consultant



**Miroslav**

Technical consultant



**Marek**

Technical consultant














# GIFTS

Same as last year, we've prepared a **few gifts** for you!


- ✓ A **free** template for monitoring **multiple certificates** on one host.
- ✓ Because we're fans of **AI**, we've prepared a new custom **ChatGPT widget** and we're giving it to you for free!



-  Dashboards
-  Monitoring ▼
-  Services ▼
-  Inventory ▼
-  Reports ▼
-  Data collection ▼
-  Alerts ▼
-  Users ▼
-  Administration ▼

## OpenAI widget



Send a message 

# EXAMPLES

Each of our examples is freely available in our GIT repository:  
<https://git.initmax.com/initMAX-Public>

Source code is commented and provides examples.

- ✓ Template for multiple website certificates
- ✓ ChatGPT widget

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- ✓ Widget Header
- ✓ Zabbix Compact Dashboard
- ✓ Enhanced Problems





# THANK YOU & SEE YOU ON SUMMIT



[www.initmax.com](http://www.initmax.com)



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Visit our booth or explore hands on examples at our GIT on [git.initmax.com](http://git.initmax.com)