CONFIGURATION AND ADJUSTMENT OF AUTOMATIC DETECTION OF THE THIRD LEVEL SWITCHES IN THE ZABBIX MONITORING SYSTEM

Abstract: This article is about configuring and setting up automatic detection of Layer 3 switches in the Zabbix monitoring system. This article discusses a system consisting of a stand-alone server with the installed Debian 9 operating system and a Zabbix monitoring system, a system administrator workstation with the ability to remotely access the server via the web interface and cloud of the third level switches. Setting automatic detection can significantly reduce the time it takes to add each individual network node to the Zabbix system.

Keywords: OSI third-level network switch, Zabbix, Debian 9, monitoring system.
с возможностью удаленного доступа к серверу через веб-интерфейс и облака коммутаторов третьего уровня. Настройка автоматического обнаружения позволяет существенно снизить время добавления каждого отдельного узла сети в систему Zabbix.

**Ключевые слова:** сетевой коммутатор третьего уровня модели OSI, Zabbix, Debian 9, система мониторинга.

1 System description

After purchasing a large number of switches, it is usually necessary to monitor them. Adding switches to the monitoring system manually is a very time-consuming task. To reduce the time it takes to add already configured switches, an automatic discovery method is considered.

The structural diagram of the system is shown in Figure 1. The system consists of a stand-alone server with the Zabbix monitoring system installed and the Zabbix operating system, a cloud of third-level switches, a march router and a system administrator workstation with access to the Zabbix server via the web interface.

Fig. 1. Structural diagram of the system

As a database for Zabbix, MySQL was chosen with InnoDB tables that support foreign keys and transactions at the individual record level.

As the third level switch, Cisco SF350-24 is selected, shown in Figure 2. This equipment is a suitable option, since it is managed and supports SSH and SNMP protocols.
An important part of the system is the router, since it is connected via a twisted pair cable using an Ethernet connection to a stand-alone server, as well as to the observed network of switches. In the system, the router assigns unique IP addresses to the equipment thanks to the built-in DHCP server.

The router also acts as a DNS server, allowing you to access the equipment not by its IP address, but by the name of the device located on the network (host). As a router, D-Link DGS-3120-24TC / B1ARI is selected, as shown in Figure 3.

2 Configuration

Install the SNMP on a standalone Debian server 9 using commands:

```
apt install snmp
apt install snmp-mibs-downloader
```

Now we can communicate with the switch via SNMP protocol. Figure 4 shows an example of retrieving the name of the first switch using SNMPv2.

```
root@shevtsov:~# snmpget -v2c 192.168.1.101.1.3.6.1.2.1.1.5.0 iso.3.6.1.2.1.1.5.0 = STRING: "switch1.shevtsov.sv"
```

Fig. 4. Obtaining information about the name of the first switch

Install the RSH client on the Zabbix server using the command:

```
apt install rsh-client
```

After installing the RSH client, you can remotely poll network equipment using the CDP protocol. Figure 5 shows the receipt of information about the neighboring devices of the switch.
3 Configuring automatic discovery and adding hosts

To set automatic detection, go to the Zabbix - Discovery - Create discovery rule section. We will indicate the new discovery rule shown in Figure 6. Using this rule, the monitoring system runs through IP addresses by checking the host name using SNMPv2 protocol (instead of the name, you can specify the OID of the name 1.3.6.1.2.1.1.5.0).

Fig. 6. Defining a discovery rule in Discovery rules

The automatic addition of hosts is configured in the Zabbix-Actions-Create action section, as shown in Figure 7. The new action creation form is divided into three sections:
- **Actions** – name of the new action, output of the corresponding communication to the system;
- **Conditions** – a description of the conditions for the occurrence of the event;
- **Operations** – a description of the operations that will occur in the event of an event.

Filling in the Conditions and Operations sections is shown in Figures 8-10. The result of adding hosts to the Zabbix system is shown in Figure 11.
Figure 9. Actions section. Adding a host to the Discovered hosts group

Fig. 10. Actions section. Adding an SNMP Device Template
Conclusions

In this work, we examined the process of configuring and setting up automatic detection of a third-level switch in a Zabbix monitoring system. This method can significantly save time by manually adding a host.

REFERENCES


