DATA NETWORKING SUPPORT SERVICES OF PUSHCHINO RADIO ASTRONOMY OBSERVATORY, ASTRO SPACE CENTER OF LEBEDEV PHYSICAL INSTITUTE

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ABSTRACT. Growth of local area network Observatory associated with employee needs to access network resources has led to an increase in the number of computing and network devices. Until recently, we tested performance of these systems excellent manual and most of the problems and faults detected already on the fact the accident occurred. For a small number of network nodes, manual monitoring is not a significant problem, but with increasing the number of nodes troubleshooting becomes a very difficult task for network and system administrators and outage in work of netwok services Observatory may becomes critical. Therefore there was a need to automate the monitoring service network resources and servers.

Keywords: Telecommunications: networks: monitoring.

1. The choice of monitoring systems

The key to efficient network monitoring is to ensure that the selected instrument has been configured to monitor what, in fact, vital network availability, speed and utilization. Monitoring network availability allows both internal and external parties to access the services, including websites, DNS, databases and mail server. Monitoring network speed with bandwidth monitoring prevents our websites and other network services from losing visitors or frustrate users due to slow-loading pages, files or images. Finally, the use of monitoring allows to accurately estimate the load on the processor and find out just what type of work the servers are doing at different times of the day.

The criteria for selecting a new monitor for us were the ease of installation, intuitive setup, remote control via web browser, e-mail notifications about critical outages, free software and open source. That is why the choice was made in favor of Zabbix monitoring system. Zabbix is an enterprise-class open source distributed monitoring solution and uses a flexible notification mechanism that allows users to configure e-mail based alerts for virtually any event. This allows a fast reaction to server problems. Zabbix offers excellent reporting and data visualization features based on the stored data.

2. Monitoring LAN of PRAO ASC LPI

For load balancing, we have established a monitoring system on two servers of Observatory (Zabbix server and Zabbix proxy) thanks to its modular structure (Fig.1). As for implementation of the monitoring observatory network at the moment Zabbix server collects in one place and visualize a graphics and diagrams about utilization of RAM and CPU servers and network equipment, about free space remaining in file storages, about the temperature in the buffer data center. Information on the state and loading the main internal and external communication channels as well monitored by Zabbix. Monitoring keeps a history of all events occurred during his work and numerical values of monitored parameters in the MySQL database. User-friendly web-based administration interface allows us to flexibly configure the display of collected information and set how to alert if any error occurs. When thresholds of some critical parameters are exceeded or change the status of network interface, the administrator receive notification by e-mail and sound notifications in the browser web-based interface.

With the help of Zabbix agents that are installed on servers monitoring system collects basic and individually customized parameters for each server and services running on it. In particular mail queues being moni-

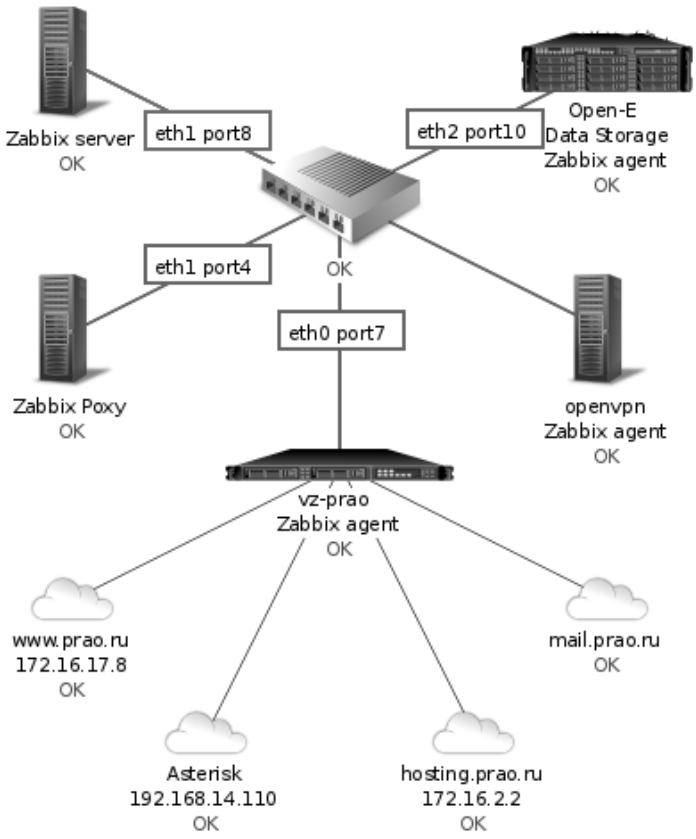

Figure 1: Zabbix monitiring servers map.

tored on the e-mail server and script that can check if the IP address of the e-mail server has been added onto a public DNS black lists what can lead to the inability to send emails from a domain prao.ru.

Zabbix proxy receives information about ethernet interfaces states, errors and utilization from a managed network equipment with the help of snmp (Simple Network Management Protocol) get request and snmp traps.

The current values of monitored parameters monitoring, as well as their changes can be viewed as separate graphs with variable scale from one hour to several weeks. We have split into groups monitoring data and formed so-called complex screens that allow one to display only currently interested graphics, information and network maps.

As a result of implementation a new system for monitoring the local network observatory we found the cause of frequent complaints of users on an error on delivery and sending of e-mails. And some other malfunction caused by network services as a large load on the equipment and malfunction of the individual hardware server components. By monitoring, we also fixed failure of one of the sections of the optical fiber at the territory of the Observatory and fiber breakage of communication channel allocated for data transmission from a space telescope in the experiment Radioastron.