NETWORK DEVELOPMENT OF THE PUSHCHINO RADIO ASTRONOMY OBSERVATORY OF ASC LPI

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ABSTRACT. All main changes in the network of the Pushchino Radio Astronomy Observatory has been related to introduction of the buffer data center in the recent years, upgrading internal and external communication channels and the exploitation of ip-telephony.

Key words: Networks: voip.

The main challenges of the buffer data center is to maintain the channels for scientific and telemetry data transfer and backup of the data in the storage as part of the space radio telescope project known as "Radioastron. The channel connects the tracking station RT-22, buffered data center, located in the territory of the observatory and data center ASC LPI, Moscow. This channel with bandwidth of 1 Gbit/s is provided by Stack Group companies and stretched using technology MPLS (Multiprotocol Label Switching) to the M9, where is connected to the ASC LPI. Currently obtained from a space telescope experimental records are passed through this channel in Moscow, and at the same time are stored in the data center buffer storage with a capacity of 20 terabytes.

However, the work buffer data center is not limited to these tasks, it is also used to host the servers that serve the local network of the observatory. Here the servers for the storage of observational data obtained from three radio astronomy systems, database servers, mail and web-server, DNS, and server of network time synchronization. Through the further development of the data center, we have increased capacity networked storage (Open-E DSS v6) from 24 to 48 terabytes, and install additional UPS for servers and switches.

A new server with two processors Intel Xeon 22.53-2.80 GHz and 12GB of RAM designed for database storage and processing of astronomical catalogs is purchased. We installed virtualization platform based on a system of native container lxc instead used on another server system Openvz to the new server. This system does not require additional manipulation with operating system kernel and further more meets the safety requirements as distributive kernel is updated more frequently than the core OpenVz. Web-servers and database server Observatory were transferred to the new system virtualization.

Additional Gigabit Ethernet managed switches to provide backup links and connect servers purchased. In order to improve ip-telephony in the Observatory, as well as voice channels with ASC LPI we replaced old Voip equipment with more reliable solution from the company addPack.

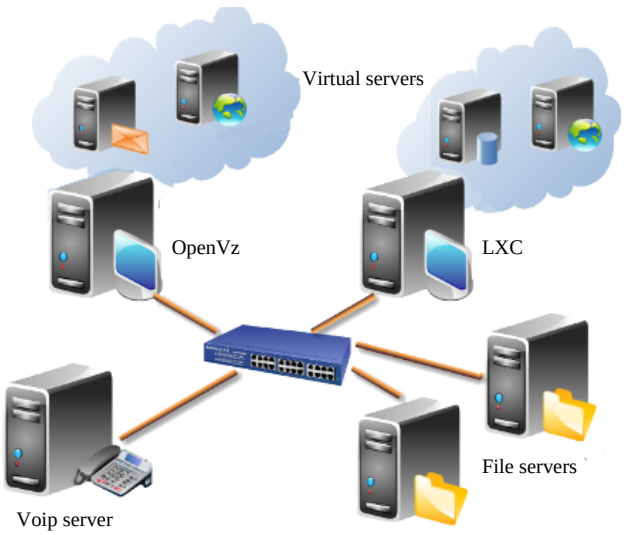

Figure 1: PRAO Data center servers