Infrastructure and network development

In 2021, as part of the implementation of investment projects for the technical development and support of telecommunications networks, Kazakhtelecom JSC continued to work in the following main areas of development of telecommunications networks:

- backbone and area transport network;
- backbone data transmission network;
- broadband networks;
- switching networks.

As a result, the following indicators were achieved:

Transport network:

- the total capacity of external Internet channels has been increased from 1,580 Gbit/s to 2,100 Gbit/s;
- a new DWDM transit network has been built to pass channels to Russia-China with a capacity of 20 x 100 Gbit/s and expand the border crossings of the RF — RK, RK — China;
- organized 2*100 Gbit/s of the Europe-China transit channel;
- a connection between DWDR Uralsk — Bolshaya Chernigovka of the Russian Federation and the operator VEON 5*100 Gbit/s has been organized;
- The DWDR backbone network has been expanded to meet the needs of broadband broadband services at 30*100 Gbit/s of channels from central hubs to the data center in Almaty and from ALDE to the data center in Shymkent at 18*100 Gbit/s and 20*10 Gbit/s of channels;
- The zone transport network of DWDR in Karaganda oblast has been expanded to connect new optical access network hubs to 6*10 Gbit/s in the Karaganda-Saran, Karaganda-Shakhtinsk, Karaganda-Abay sections.

Data transmission network:

- The the backbone data transmission network has been extended to 383 100G ports, 149 40G ports, 130 10G ports and 30 1G ports;
- the SDN network in Nur-Sultan has been built, and the planned migration of access level equipment to the SDN network in the cities of Aktau and Uralsk has been performed;
- the infrastructure for cash servers has been built in Nur-Sultan, Pavlodar, Almaty, and the port throughput capacity of the Car servers has been increased from 2,260 Gbit/s to 2,854 Gbit/s (from 1,937 Gbit/s to 2,505 Gbit/s in terms of the throughput capacity of server equipment);
- The BNGMX backbone network (Stage 1) in Shymkent, Pavlodar has been expanded;
- ASBR equipment in Nur-Sultan, Almaty, additional ASBR equipment in Nur-Sultan, Aktobe, was upgraded;
- the Mobile Backhaul network has been expanded to provide port capacity for operator connections;
- connected 8*100 Gbit/s from external Internet channels;
- the first PTX10008 flatcars have been put into operation in Nur-Sultan, Almaty and Aktobe.

Access network:

- FTTH networks have been built covering 1,178 apartment buildings, including 122 and 87 in Nur-Sultan, 104 in Almaty, 26 in Turkmenistan, 96 in Kentau, 140 in Shymkent, 247 in Abay, 263 in Saran, 285 in Shakhtinsk, and 2 in Zhanau-33,
- The GPON network was expanded to 1,376 ports.

Implementation and development of the IPTV service:

- a new IPTV/OTT Platform (under the TV+ trademark) developed by LifStream Ltd. with an external interface of 40 Gbit/s has been put into commercial operation in Almaty;
- multiple expansion of the external interface of the TV+ Platform to 120 Gbit/s.

Switching networks:

- decommissioning of the ICC in the city of Aktobe, with the transfer of international relations to SSW in the cities of Nur-Sultan and Almaty;
- decommissioning the ALDE in the city of Aktobe with the transition of long-distance relations to the regional SSW;
- work is being completed to dispose of the ALDE in Almaty and Uralsk;
- SSW SoftX-3000 was optimized by combining two SSW into one centralized SSW.
- implementation of the copper deduplication and migration project to FTTx has begun — more than 17.5 thousand subscribers have been transferred.

Plans and objectives for 2022

Transport network:

- organization of transit channels to Russia-Uzbekistan with a capacity of 2*100 Gbit/s;
- expansion of DWDR equipment to organize lines on the backbone network in accordance with projects to expand the ISDP;
- switching from the decommissioned DWDR ALU equipment to the new DWDR HWT transit network.

Access network:

- expansion of the fiber-optic access network in 14 cities of the Republic of Kazakhstan and in Nur-Sultan, Almaty and Shymkent;
- replacement of obsolete G-PON OLT equipment in Almaty and Karaganda;
- construction of optical access networks using XG-PON/NG-PON2 equipment under development projects and for the gradual replacement of obsolete equipment;
- the use of FWAs is planned for the network with no wired infrastructure for the organization of broadband access services.

Data transmission network:

- migration of services to the new SDN network in Almaty and Nur-Sultan;
- modernization of the city network of Turkmenistan, stipulating a comprehensive upgrade of obsolete equipment with the organization of the SC-level network with the installation of equipment of the service border and aggregation equipment;
- expansion of the equipment of the service border (BNG) of the backbone data transmission network (stage 2) in the cities of Atyrau, Ust-Kamenogorsk, Kokshetau and Aktobe;
- migration to the new IP/MPLS core platform based on PTX10008 devices in Nur-Sultan, Almaty, and Aktobe to ensure further operation of the network at the current level (without critical failures and in constant regular mode);
- organization of infrastructure for the cash servers of the MDPC in Almaty (800 Gbit/s);
- upgrade of the network part of the TV+ platform and migration of services from the Netris platform;
- upgrade of the MBH network to connect mobile banking operators (stage 1).

Switching networks:

- transfer of the ALDE function to the NGN network in the cities of Karaganda, Zhezkazgan, Kyzylorda, Kokshetau, Petropavlovsk, Aktau and Atyrau. To continue the optimization of local computerized banking systems, including a reduction in the installed capacity as subscribers outflow and their migration to other technologies;
- in 2023, completion of the transition of the long-distance/international communications network to the NGN network, with the decommissioning of ICC-1 and ICC-2;
- completion of optimization of NGN SoftX-3000 equipment (decommissioning of two SSWs);
- completion of the decommissioning of the ALDE in Almaty, Uralsk, transfer of the ALDE function to the NGN network in Karaganda, Zhezkazgan, Kyzylorda, Kokshetau, Petropavlovsk, Aktau and Atyrau;
- provision of SORM functionality to 30 C & C08 switching systems;
- Expansion of the SORM Monitoring Center on the vehicle network for connection and certification of 30 C & C08 switching systems.

Implementation and development of the IPTV service:

- expansion of the content delivery network: purchase of 2 routers, 4 server equipment in Aktobe, installation of a back-up platform in Nur-Sultan, and further expansion of the platform in Almaty.