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Triple Play Service using PON

In the late 1980s, NTT started research and development into PON (Passive Optical Networks) in order to increase the capacity of access systems using conventional metal wires. In 1994, the first PON was put into practical use, and at the same time, research and development for video distribution using wavelength multiplexing technology and FM batch conversion technology was also advanced. In 2003, NTT launched the world's first triple-play service for telephone, Internet, and video distribution using PON. The research and development of PON has realized an economical large-capacity optical access system, and the full-scale introduction of FTTH (Fiber To The Home) services has progressed in countries around the world.

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Long Distance Telephone Network with Duplex Loaded Cables and Loading Coils

Conventionally, bare wires have been used for telephone lines, but long-distance transmission has been difficult due to signal attenuation due to capacitance. In 1920, a cable project was launched that could extend the communication distance using a loading method that inserts coils at regular intervals, and long-distance cables of a total of 756.7 km between Osaka and Kobe in 1922, Tokyo and Kobe in 1928, and Tokyo and Okayama in 1930 were successively completed, enabling long-distance direct telephone calls.

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Long Distance Transmission with Unloaded Cables

Conventionally, communications using the loading coil method, which has been mainstream, had the problem of one call per line due to quality degradation caused by delay and phase distortion and a narrow transmission band. In contrast, the unloaded cable system achieves high-quality, multiplexed communication, and economical long-distance transmission by amplifying and compensating for signals using a repeater without using a loading coil. In 1932, a transmission experiment of a long-haul unloaded cable carrier telephone system, with a 458.7km return route between Koyama and Utsunomiya, was conducted as a world first. In 1938, it was first used as a long-distance international circuit including the seabed part starting from Kyushu. This unloaded cable system has been adopted widely not only in

Japan but also abroad, and has made progress in multiplex communication.