

# Sichuan Telecom

## All-seeing with all-optical



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Sichuan Telecom's all-optical network has slashed OPEX, lowered broadband prices, and solved the problem of running multiple parallel networks. The China Telecom subsidiary sought to bridge the digital divide, resulting in a scheme that's a globally relevant example of delivering universal broadband services.

By Wang Guojun





## Taking the plunge

**P**rior to 2013, Sichuan Telecom was cautious about building an optical network for multiple reasons. The high cost was off-putting and unlikely to be offset by returns, because user demand for upgrading to fiber optic was low, which in turn would lead to low ROI.

Transformation would also be highly complex, both the large-scale construction and issues with widespread site access, coordination, and the inefficiency and expense of laying rubber-insulated fiber optic cables for building entry.

As Sichuan Telecom hadn't promoted FTTH construction on a large scale, it was operating a number of long-term coexisting access networks, including DSLAM, FTTH, FTTB, and DSL. To install and maintain copper networks, the installation and maintenance teams would need telephone lines, DSLAM terminals, separators, and other tools. For

optical networks, these teams would have to re-lay building-entry lines, replace terminals, and bring tools and materials such as cleavers, rubber-insulated fiber optic cables, and quick connectors, greatly increasing complexity.

In response to these problems, the operator devised a completely new solution that was replicable and has practical significance.

## Thinking strategically

**Replacing copper:** Post-construction, Sichuan Telecom had to deal with the retired copper cable. It used the opportunity to generate funds, arranging an online auction that raised 677 million yuan (US\$100.6 million) towards constructing its optical fiber network.

**Closing equipment rooms:** Network infrastructure was increasingly centralized and integrated. Traditional PSTN switches, DSLAM, and other equipment were taken offline and retired, cutting equipment room needs from

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thousands to hundreds of square meters. Specialist power, battery, transmission, and data equipment rooms could be integrated into a single room, reducing the overall number of rooms. By opening up new retail outlets in retired equipment rooms that used to house network wiring, battery, and other equipment, Sichuan Telecom boosted the share of its total retail channels from 21 percent at the end of 2012 to 35 percent by the end of 2016.

**Introducing private capital:** To attract private capital for the scheme, Sichuan Telecom set up a business collaboration model to share the benefits and risks, whereby partners would receive ROI from a set number of years of income sharing. The scheme helped alleviate Sichuan Telecom’s lack of funds for broadband construction, reduced project construction costs, increased network coverage, and led to the formation of a private capital co-development mechanism.

Sichuan Telecom also teamed up with a local Sichuan-based TV manufacturer. The companies’ sales staff in rural areas marketed

both telecoms and TV services. Advertising posters about the IPTV service were installed in the manufacturer’s 800 retail stores across the province, and joint retail outlets were also set up in pilot counties to demonstrate and benchmark the concept. These stores expanded marketing channels and provided a convenient way for users to apply for broadband services and buy TVs at the same time.

Collaboration in this way also lowered product prices by combining telecoms and TV products, genuinely benefiting customers, thus creating a triple win for Sichuan Telecom, the TV manufacturer, and end users.

## Investing wisely

**Panoramic broadband planning:** Sichuan Telecom produced an overall schematic of the whole network that showed natural geographical conditions and current network assets, including current network infrastructure, user distribution, and network asset features. It was possible to visualize existing network assets, including operator



assets, utility poles that could be jointly developed and shared, base stations and equipment rooms, existing broadband coverage methods, and the distribution of residences and existing customers. Sichuan Telecom could then distinguish different levels of construction needs based on market demand and investment returns, and mark these on the schematic so it could adopt different investment and staggered construction strategies in a coordinated way.

The plan helped Sichuan Telecom cut investment by two-thirds by integrating the outcome of the plan into the FTTx system, and formed a whole-process closed-loop management and control system for inventory.

**Collaborating with power companies:**

Sichuan Telecom ran fiber optic cables along electricity poles to lower costs and speed up cabling. However, because traditional overhead cables are made from steel strand suspension wires, safety risks were high. So, the operator selected a new type of non-metal overhead cable that lowered costs, reduced cabling complexity, increased ROI

and efficiency, eliminated the risk of electric shocks, and cut cabling time by 30 percent.

**Outsourcing the building-entry section:**

To lower the cost of provisioning and maintaining the building-entry leg, Sichuan Telecom encouraged local residents to establish businesses and take on broadband provisioning and maintenance work in collaboration with the operator. Sichuan Telecom would handle construction and pay for the trunk cable, while local residents would fund the construction of the entry fiber optic section, splitting monthly costs based on the particular proportion. Understanding local conditions and markets, these local partners had a clear advantage in terms of utility pole construction, maintenance services, and market development. They could also act as a service channel for Sichuan Telecom to cultivate customers, manage services, and handle marketing, which would benefit both customers and generate profits for the operator.

**Hybrid fixed and mobile:** In Sichuan province, many villages are remote and far

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from the nearest towns; however, thanks to fiber optic cabling for FTTN, government, education, and monitoring services, fiber optic networks have reached these outlying areas. But, for this scheme, there weren't enough fiber cores on these networks to meet FTTH network construction requirements, and laying additional fiber optic trunk cables would call for huge lengths of cables at enormous cost. As a solution, Sichuan Telecom opted to move small-capacity OLT equipment down to cover neighboring villages, harnessing the remaining fiber optic cores to act as an OLT upstream fiber optic cable. This significantly reduced the number of fiber optic trunk cables that had to be installed, lowering costs and improving the management of bandwidth resources.

### Three birds with one stone

**Broadband tariff sees average annual fall of 75 percent:** Sichuan Telecom's all-optical network converted analog signals into digital ones, greatly reducing the network infrastructure required, cutting the cost and complexity of O&M, and boosting network quality. Sichuan Telecom was therefore able to lower broadband tariffs year on year

– as 2016 drew to a close, the operator's broadband unit price had dropped from 7.2 yuan per megabyte in 2013 to less than 1 yuan, an average annual fall of 75 percent.

**Tenfold increase in speed made possible:** In China, average broadband speeds over copper wire barely hit 8 Mbps. But, as broadband services like video grow in prominence, network bandwidth of 1 Gbps and more will be required in the future. All-optical network transformation is helping Sichuan Telecom reach its speed goals of 20 Mbps as minimum, 100 Mbps as mainstream, and 1 Gbps as the future.

**Goodbye to silos:** Transforming the entire network to fiber optic resulted in a flat all-IP network, with siloed services becoming all-IP, thus making rollout much faster – three to six months from project initiation to implementation.

By executing a decisive strategy on a network that enables continuous innovation and new business models at minimal cost, Sichuan Telecom has nurtured the capability to adapt to rapidly changing markets. [www](#)