

The logo consists of the word "CORNING" in white, uppercase, sans-serif font, centered within a solid blue square.

## Cable Television in China, Japan & India

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While community antenna television (CATV), more commonly referred to as cable TV, got its start in the United States in the 1940s as a solution for providing better reception of broadcast channels in rural areas, it has since become a global phenomenon. Poor television reception, after all, knows no borders.

Today, there are an estimated 250 to 300 million cable subscribers worldwide. But CATV, as an application and as a market, has become as diverse as the world it covers, a phenomenon that is readily seen in Asia, which boasts the most rapidly growing cable TV markets in the world.

According to In-Stat/MDR, despite the overall depression in the market caused by the telecom downturn, cable television service in Asia increased the worldwide subscriber total by 8 percent in 2002. India and China, in particular, accounted for almost 60 percent of all new subscribers that year. And digital cable continues to grow significantly, with an annual growth rate exceeding 40 percent last year worldwide, according to In-Stat/MDR. In North America alone, cable operators added more than 5 million new digital subscribers.

In the U.S., the basic topology of the U.S. cable television system has remained relatively unchanged since its post-World War II beginnings. The so-called "tree and branch" architecture originally used copper wire to bring signals from a local main office, or "headend," where all the signals are assembled to subscribers' homes. Homes were connected to the headend completely with coaxial cable.

However, the introduction of digital delivery and more efficient modulation technologies in the late 1990s dramatically expanded capacity and changed the CATV plant architecture. Optical fiber was introduced to the U.S. CATV infrastructure primarily to reduce equipment and operating costs, segment systems into smaller serving areas and improve system reliability. And while older, coaxial plant is typically 450 MHz or less, the incorporation of optical fiber allowed operators to take advantage of higher frequencies - 750+ MHz. However, fiber's inherently low disposition to noise and ingress, unlike copper, also allowed a return path from the subscriber to the headend. By entrenching optical fiber deeply into the CATV architecture, operators have been able to cost-effectively deploy services like video on demand (VOD), broadband data transmission, interactive TV and telephony. [To learn more about America's CATV history, see the

related article in this issue of GuideLines Online, "[From Hill Country to Home and Garden Television to HGTV.com.](#)"

Throughout Asia, however, fiber deployment, resultant digital services and government involvement do not necessarily follow this model. In this article, GuideLines Online provides an overview of CATV in some of its most dynamic Asian markets: China, Japan and India.

### **China:**

In China, it was poor broadcast reception that initiated CATV in the early 1980s, but unlike the U.S., the Chinese government opted to initiate "formalized" video distribution through government systems rather than rely on entrepreneurs. Today, China claims the largest subscriber base in the world, with more than 100 million households watching cable TV as of January 2003, according to *cncatv.com*. That rate is growing by 10 million households per year, according to the China and Hong Kong arm of the German Chambers of Industry & Commerce (GIC).

China's earliest form of cable TV was actually a combination of coax and multi-channel/multi-point distribution system (MMDS). MMDS is a wireless service that uses microwaves to transmit data. Eventually, MMDS became an inefficient means to transmit due to its asymmetrical nature and susceptibility to object interference. By the 1990s, the more familiar HFC architecture replaced MMDS as the standard architecture in China, though a significant legacy plant remains.

Today, China's CATV infrastructure is three-tiered, with a national fiber-optic trunkline that connects China's many provinces, ensuring distribution of content throughout the nation. At the provincial and local network levels, which have much shallower optical penetration, there are easily two to three thousand cable entities in operation, providing an average of 40 analog channels to the typical Chinese cable subscriber for less than \$2 per month, according to Interfax China Ltd. It is primarily domestic content, though in 2004, pay-per-view services featuring foreign content are expected to be offered. Some cable television infrastructures on the eastern coast of China, which is more urbanized, have been upgraded to allow for two-way data capability.

China's most recent five-year plan includes an ambitious plan for its CATV market. The plan calls for accelerated construction and upgrade of national backbones, as well as improving 750 MHz, HFC network coverage from 40 percent to 80 percent by 2005, according to The China Research Corporation. China's government also wants to boost its cable subscriber rate from 10 million subscribers with HFC connectivity to 20 million in the same time frame.

According to a report by *chinadaily.com*, the five-year plan for broadcasting, film and television also calls for a significant push to digital television, with 30 million households expected to receive digital television via cable by 2005. Another 30 million will receive digital television services via satellite in the same time frame. Interfax reports that the digitization will begin in the country's largest cities, where the first digital TV programs

will be launched, and cable networks will be converted to digital transmission by the end of 2005. It is expected that typical digital service will cost between \$3 and \$6 per month. Digitization should be completed nationwide by 2010, and analog TV content will no longer be aired after 2015.

The State Administration for Radio, Film and Television (SARFT), the regulatory body for cable television, has selected 30 cities for trial broadcast, including Beijing, plus the provinces of Fujian, Jiangxi and Shaanxi, says *chinadaily.com*. SARFT plans to introduce 1 million households to digital television in 2003.

### **Japan:**

Japan's history in cable TV is nearly as old as the United States', having begun also as a solution for poor broadcast TV reception in 1955. In Japan's case, it was not simply its more rural, mountainous regions that required signal improvement via cable -- many of its city residents, while near the broadcast stations, found themselves living in the shadow of large skyscrapers, which effectively limited broadcast transmission much the way a mountain would. Though it wasn't until the mid-1990s that the so-called "metropolitan" CATV service -- offering 50 to 60 channels of viewing pleasure -- began in Japan's largest cities.

As of March 2003, there were about 15 million cable subscribers in Japan, receiving services from more than 670 carriers. Japanese law requires the provision of local licenses for its districts, i.e. local service must be provided by locally established vendors, which has helped drive the number of carriers in this small island nation. The largest multiple systems operator (MSO) in Japan has more than 1 million subscribers. Overall, the Japanese subscriber base has steadily increased at about 2 million subscribers per year for several years.

Japanese cable operators began providing data service in the late 1990s -- the first was found in Tokyo in 1996 -- and as of June 2003, there were about 2 million cable modem subscribers, growing at a brisk 50,000 subscribers per month. More than 280 of the 674 CATV operators in Japan offer broadband services. While early IP services provided by CATV operators in Japan was no greater than 256 kb/s, today several of them offer maximum speeds of 30 Mb/s. Nationally, CATV broadband transmission rates are between 3 to 10 Mb/s.

Because of the nationwide e-Japan initiative, financial support has been provided to the nation's smaller CATV companies, particularly for upgrades of their existing 450 MHz radio frequency analog systems to 770 MHz hybrid fiber coax (HFC) systems by 2005. Additional incentives are provided for those deploying high-speed broadband services.

In Japan, regulatory policy ensures the constant improvement of its CATV infrastructure worldwide. The Nippon Housou Kyokai (NHK), essentially the Japan Broadcasting Association, collects a broadcast fee from each home; the revenue generated from this fee must be used by operators to improve television service, which includes buildout of CATV to areas where broadcast reception is poor.

**India:**

India, which entered the CATV market in the early 1990s, is believed to be the third-largest subscriber base in the world today, though the exact number of subscribers is unknown. India's CATV market is uniquely fragmented: a competition-friendly regulatory environment that has generated a huge number of CATV providers, with just as many franchisers, who own the final meters of connectivity to the customer and who pay the CATV providers for service per-subscriber.

The result is a market that has somewhere between 38 and 70 million subscribers nationwide, depending on whether you ask the operators or the franchisers. Nearly everyone, however, seems to agree that CATV is booming in India, where rapid growth, accessibility and improving regulatory requirements have resulted in an 8 percent compound annual growth rate (CAGR) in subscriber households, according to *pressbox.co.uk*.

India's CATV networks are a blend of hybrid fiber coax, run by the largest CATV providers or MSOs in top metropolitan areas, and lower-bandwidth copper networks mixed with satellite service in the rest of the country. India's subscribers receive rich domestic and foreign television content on 50 to 75 channels. However, with the limitations of a largely copper infrastructure and huge subscribers per node sharing the service, cable broadband transmission is understandably slow in India, typically only 56 kb/s for residential users and up to 1 Mb/s for business users, and only offered in limited areas.

The CATV market in India does have some similarities to the United States, in that MSOs can generate, trade or purchase content. However, there are far fewer MSOs -- fewer than 10, concentrated in metropolitan areas -- in India, and a significantly greater number of franchisers, numbering in the tens of thousands and delivering the last mile of service to the millions of Indian cable subscribers.

Also dissimilar to the U.S. is India's franchise set-up for disseminating MSO content to the end user. Franchisers own the final 50 to 100 meters of connection to the customer, functioning largely as a pass-through service operator. They have the ability to "shop" for the lowest-cost content and service provider of their choice, consolidating billing to the customer. For their role, they earn up to 50 percent of the subscriber fee. According to many analysts, this creates conflict between the MSOs and franchisers: MSOs are unwilling to make long-term infrastructure upgrades for only 50 percent return on investment (via subscriber fees). For their part, franchisers are reluctant to provide a true view of their subscriber base because they must pay MSOs for service on a per-subscriber basis.

However, India is facing a significant shake-up in this area due to a new regulatory environment for the cable television market. The "Conditional Access Bill," passed in late 2002, will require consumers to purchase a set-top box from their CATV operator to receive pay channels (traditionally the most popular ones in India). The government

took this move in an effort to reduce cable piracy, ensure accurate subscriber tallies (to both the benefit of MSOs and their advertisers), and make certain that end users pay only for the channels they watch. Zones in Delhi, Mumbai and Kolkata, as well as the whole of Chennai, were required to convert to the conditional access regime this month as the start of a staggered role-out throughout India.

This is a transition that is not dissimilar to other parts of Asia, including Hong Kong and Taiwan. However, India's industry watchers are concerned because India's cable subscribers have lower income levels than those areas and cable operators there have the cash to subsidize the cost of the set-top boxes. In India, however, the boxes -- which will be at first foreign imports -- will cost consumers \$50 to \$100 each, according to the Far Eastern Economic Review. Indian cable subscribers typically pay between \$4 to 5 per month for their cable service.

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**GuideLines Online Work Savers:**

[chinadaily.com](http://chinadaily.com) -- Bilingual China national news web site

[cncatv.com](http://cncatv.com) -- China CATV website (Chinese)

[SARFT](http://SARFT) -- China's State Administration for Radio, Film and Television (Chinese)

[China Economy](http://China Economy) -- English-language website on Chinese economic issues

[e-Japan summary](http://e-Japan summary) -- From Japan's government website (English)

[Nippon Housou Kyoukai](http://Nippon Housou Kyoukai) -- Official site (English)

[Indiantelevision.com](http://Indiantelevision.com) -- Web site for Indian television programming (English)

[Indiabandwidth.com](http://Indiabandwidth.com) -- Focuses on Indian telecom and bandwidth news

[Convergenceplus.com](http://Convergenceplus.com) -- Online monthly Indian trade journal