

Collaborative Partnership Creates a Unique Diversity Site for ASTRO Satellite TV

Few countries receive as much rainfall as Malaysia. Ranked sixth in the world for precipitation, Malaysia receives on average over 2,300 mm (93 inches) of rain per year, with the heaviest period during the December-February monsoon season. Compare that to 1,400 mm in Japan, 1,200 across the USA and 650 mm in France.

For Measat Broadcast Network Systems (MBNS), operator of Malaysia's ASTRO satellite pay TV network, rain is a serious matter. Raindrops are about half the size of the Ku-band radio wavelengths used for ASTRO service. By the laws of physics, this turns each raindrop into an attenuator that soaks up radio energy. The result is "rain fade" - the weakening or loss of signal in severe rainstorms - which is a serious challenge to customer satisfaction.



ASTRO provides 74 channels of satellite TV to almost 3 million viewers in Malaysia and Brunei, reaching about 35% of television homes. Even though MBNS has an exclusive 20-year license for satellite TV in Malaysia, the company was committed to improving its uplink availability from 99.95% (about 4.4 hours of outage per year) to 99.995% (less than 30 minutes per year) in order to guarantee the availability of pre-mium content that it plans to launch later this year. That commitment brought MBNS to Globecomm's regional office in Hong Kong.

Seeking Diversity

The engineers at MBNS knew what they needed: a diversity site located far enough from the All-Asia Broadcast Center (AABC) in Kuala Lumpur, where ASTRO programming originates, to be unaffected by a thunderstorm over KL. That meant between 20 and 30 km (12 to 19 mi.). The site needed ready access to a fiber network, which would carry the programming between the sites and avoid terrestrial microwave interference. MBNS also wanted a self-contained satellite uplink center that would operate on a "hot standby" basis with

Executive Summary

Measat Broadcast Network Systems operates the ASTRO satellite TV service, providing 74 channels to 2 million customers in Malaysia, Brunei and Indonesia. To improve availability and provide business continuity in one of the rainiest parts of the world, Globecomm designed and installed a diverse uplink facility in Malaysia's Cyberjaya technology hub. The product of three years' work, the multi-site system automatically monitors the satellite's beacon signal level and can automatically switch service between uplink sites in less than a second. ■

the All-Asia Broadcast Center.

In February 2004, MBNS selected a site in Cyberjaya and awarded a contract for development of the diversity site, plus a receive-only program acquisition system, to Globecomm.

Cyberjaya is a planned township and science park forming a key part of the Multimedia Super-corridor, which aspires to be the Silicon Valley of Malaysia. As a technology park, Cyberjaya features an intensive fiber infrastructure, redundant power systems and district-wide cooling, making it an ideal location for the new uplink center.



Collaborative Partnership

For the next two years, Globecomm and MBNS engaged in a collaborative partnership to develop the diversity site. According to Yan Yap Ja, the communications systems project lead for MBNS, "The diversity site idea was constantly evolving, from design review through implementation. The solution we finally developed was unique to our operational needs. It is capable of automatic switching in less than one second by measuring the satellite's beacon signal level, which gives a precise indication of attenuation due to rain or heavy clouds."



"The system monitors the beacon signal at both locations," said Pat Fraser, Senior Director, Broadcast Transmission Systems for Globecomm. "Based on variables we set, the system can alert the operator to prepare for a switchover. If deteriorating conditions pass through a second threshold, the system makes the switch automatically. It took a lot of design discussions with MBNS and a lot of engineering analysis to come up with the algorithm that makes it all work."

By 2006, Globecomm completed the 3,500 square meter uplink site, including antennas, sub-systems, fiber interconnects and a 480 sq. meter

building for the high-powered amplifiers, equipment and control room. Through a second contract awarded in June 2006, Globecomm retrofitted the All-Asia Broadcast Center to enable fully-automated switching between the sites.

Today, according to Yan Yap Ja, the sites run as mirrors of each other. "Normally, each site uplinks half of the ASTRO service traffic. AABC uplinks even-numbered channels and the diversity site at Cyberjaya uplinks odd-number channels. In the event of rain fade exceeding our parameters, either site can instantly offload its traffic to the other."

World-Class

For MBNS, the completion of the diversity site has boosted availability and provided business continuity protection for the ASTRO service, which has translated into reduced insurance premiums. Customer complaints about service disruption due to rain fade have been sharply reduced. And the experience of working with Globecomm? "Two words describe it," says Yan Yap Ja, "competent and attentive." Or as MBNS Chief Technology Officer Graham Stephens put it, "Uplink diversity is central to delivering a world-class service to customers in this region. Globecomm took MBNS-specific requirements and worked closely with us to provide ASTRO with a world-class diverse uplinking solution, on time and within budget." ■



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