# BUILDING NEXT GENERATION NETWORKS

The Anritsu Group will employ its technological strengths to deliver an array of solutions as IP-based fixed mobile convergence drives next generation networks (NGN).



## **Measurement Solutions for Digital Wireless Communications**

Anritsu provides measurement solutions to support the emerging wireless network, including mobile phones, mobile communications infrastructure, wireless LANs, WiMAX and digital broadcasting.

Communications services have progressed day by day from voice communications to the introduction of the Internet and e-mail, and still further to include music and video delivery over networks. As a result, daily life has become richer. Today, content is provided not only via wireline broadband services such as xDSL and FTTx<sup>9</sup>, but also through mobile terminals employing digital wireless communications technology. Fixed mobile convergence (FMC) services that seamlessly fuse wireline terminals and mobile terminals are beginning to appear. Anritsu is contributing to the development of communications services with leadingedge wireless technologies.

(Note 9) FTTx (Fiber-To-The-x): High-speed internet access technology achieved through direct fiber optic connections to homes, apartment buildings, offices and other spaces

#### Contributing to Third-Generation Mobile Phones

Third-generation mobile communications (3G) standards such as W-CDMA and CDMA2000 were developed to provide high speed transfer of large amounts of data at a low cost. The number of 3G subscribers is growing globally. In particular, the number of W-CDMA subscribers tripled during 2005<sup>10</sup>. Currently, W-CDMA is evolving into High Speed Downlink Packet Access (HSDPA), or 3.5-generation (3.5G) services offering high-speed packet transmission. Already offered in parts of the United States, Europe and South Korea and scheduled to debut in Japan during 2006, 3.5G is expanding globally. Anritsu makes 3.5G development and testing more efficient by providing measuring instruments that fully support HSDPA mobile phone standards.

Communications service providers are competing to deliver content with even greater appeal to subscribers by using more advanced technologies. This is driving efforts by manufacturers to develop new chipsets and mobile phones and increasing prospects for Anritsu, which possesses the world's most advanced technologies in this field. For example, we offer a base station simulator as a single device that tests a range of mobile phone applications including voice communications, content download and video calling (see diagram below).

In China, which has the largest number of mobile phone







subscribers in the world, full-scale development of the third 3G standard, TD-SCDMA, is under way. Anritsu was among the first companies to pursue joint development with a Chinese research organization and is currently selling products that contribute to developing TD-SCDMA mobile phone handsets.

The global diffusion of 3G/3.5G has begun to drive demand not just for mobile phone development but also for measuring instruments used in mobile phone handset production. Anritsu offers scalable products to cover all communications standards, from second-generation standards such as GSM to 3.5G. We also help improve manufacturer productivity by offering a measuring instrument that can test two handsets simultaneously.

<sup>(Note 10)</sup> Source: Subscriber statistics from the GSM World website of the GSM Association

#### Contributing to Base Stations, Repeaters and Other Mobile Communications Infrastructure

Anritsu is the industry's leading provider of measurement solutions not only for mobile phone handsets, but for base stations, repeaters and other mobile communications infrastructure as well. By creating smaller, handheld measuring instruments, we contribute to improving the efficiency of base station installation and maintenance while maintaining guality. For example, our battery-operated Site Master, which is used to test the quality of base station cables and antennas, and Spectrum Master, which is used to analyze the signals from transmission equipment and study signal environments at specific sites, are about 10 times lighter than conventional desktop models weighing around 20 kilograms, yet offer the same high performance. Also, in installing and maintaining base stations, transmission signals must be analyzed because communications standards differ depending on the telecommunications carrier. Anritsu responds to such needs and provides its customers with strong support by developing handheld base station testers that incorporate leading edge technologies acquired in designing measuring instruments for mobile phone handset development.

## Contributing to Wireless LANs, WiMAX and Digital Broadcasting

Anritsu's wireless measurement solutions are not limited to mobile phone networks. Two other digital wireless communications media currently share the spotlight: the wireless LAN and its more advanced version, WiMAX. Anritsu provides signal analysis solutions for WiMAX modules, including vector signal generators and signal analyzers.

Leveraging its accumulated technologies in mobile communications, Anritsu also provides solutions for digital broadcasting. In 2006, OneSeg terrestrial digital broadcasting for mobile phones was launched commercially in Japan. Preparations are proceeding toward full-scale commercialization of terrestrial digital broadcasting for mobile phones in Europe in 2007. Anritsu offers an unparalleled lineup of handheld digital broadcast field analyzers to meet anticipated needs in Japan and Europe, and is working to expand this area of business.

### **Measurement Solutions for All-IP Networks**

Communications networks, which serve as social infrastructure, are becoming increasingly based on internet protocol (IP). Anritsu is responding by providing measurement solutions for IP communications equipment and network quality.

Telecommunications carriers have made significant strides toward establishing next generation networks (NGN), which will make backbone communications networks all-IP. This signals the start of a revolutionary shift from the circuitswitched telephone network that has been developed over the last 100 years. Anritsu is helping to make society safer and more secure through the test and measurement of fiber-optic cables, routers and transmitters that compose this new communications network, and the measurement of network quality.

#### **Access Networks**

In the area of access networks, communications bandwidth has expanded in conjunction with an annual increase of more than 30 percent<sup>11</sup> in the number of broadband subscribers and the expansion of triple play services that combine voice, data and video. With the advent of high-definition video, the adoption of fiber-optic cables for access networks will expand beyond telecommunications carriers to include



cable television companies and other service providers as well. Anritsu offers ACCESS Master, a handheld measuring instrument with fiber-optic fault detection and IP connection testing functions necessary for installing and testing fiberoptic cables. In this way, we help improve the quality of fiberoptic networks around the world and spread broadband.

With telecommunications carriers beginning to offer "grand slam" services that combine triple play and mobile phone services, mobile phone networks will rapidly become IP-based. We are responding to such developments as well by generating new measurement solutions that combine the experience and knowledge we have cultivated in our wireless test and measurement and IP network test and measurement businesses.

#### Metro and Core Networks

Traffic on metro and core networks is expanding rapidly<sup>12</sup> with the expansion of triple play. Further increases in traffic are expected due to peer-to-peer (P2P) software, which is representative of file-sharing software. Telecommunications carriers will continue to increase bandwidth and speed to support this growth in traffic.

Voice, video and other mission-critical traffic, in which data loss and delay could have a serious impact, is also on the rise. In order to provide high-quality services, new demand has arisen for service assurance covering communication band, transmission delay and other parameters.

Our leading-edge measurement solutions combine telecommunications and high-speed digital transmission technologies to support network infrastructure quality while expanding our business.

(Note 11) Source: OECD statistics for average annual rate of growth (2001-2005)

(Note 12) According to statistics prepared by Japan's leading Internet exchange JPIX, traffic on metro and core networks increased by a factor of approximately 30 over the five years from 2001 to 2005.

## **Expanding the Service Assurance Business**

In addition to network fault monitoring, Anritsu will provide a diverse range of service quality management (SQM) solutions that help make society safe, secure and comfortable.

In the telecommunications service market, subscriber services such as triple play are becoming more diverse. At the same time, networks that formerly offered separate services are converging at an escalating rate. As a result, more specialized knowledge is required to maintain and manage service quality. Anritsu entered the service assurance business with the 2005 acquisition of the former NetTest A/S (now Anritsu A/S).

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**Data Gathering** 

Analysis/Report

2

#### Network Monitoring Services

#### **Network Monitoring**

Until now, telecommunications services have been provided through dedicated networks such as the telephone system. Soon, however, triple play and grand slam services will be provided through single NGNs. This will increase the social and economic impact of network faults. As a leading supplier of data traffic monitoring and analysis services, Anritsu will continue working to provide optimum monitoring solutions for communications networks, which serve as social infrastructure.

#### Responding to All-IP

IP services have traditionally been provided on a "best efforts" basis with TCP/IP controls configured to achieve fair use. In the near future, however, mission-critical services such as triple play video and voice will also be IP-based. Each service will require its own communications quality assurance. Telecommunications carriers around the world will therefore need to conduct SQM (Service Quality Management) tailored to specific customers and services. Anritsu will help make society safe, secure and comfortable by providing leading-edge SQM and other solutions to meet the needs of the all-IP era.

