Network Operations

Telecom Namibia strives to ensure a high level of network integrity and reliability within the context of high efficiencies, including the development and management of appropriate supporting capacity in terms of performance monitoring and refinement, operational maintenance and fault repair services, projects planning and implementation capacities in the various technological areas as well as the capacities to provide security, power and utilities at operational sites.

During the year under review, Telecom Namibia continued to deploy access technologies with a focus to extend the broad-band capability of the last mile systems. The deployed systems include wireless access (WiMAX), wireline access (ADSL) and mobile access (CDMA - voice, 1x and EVDO).

WiMAX
A number of WiMAX base stations were deployed in rural areas (and a limited number in urban areas) to provide voice and broadband services to rural customers and recover outdated technologies (Ultra-phone, SOR-18, and VSAT) and copper infrastructure. During the year, a total of 2290 CPE's were installed with 3177 customers provided with new voice + data services.

There are presently 43 active WiMAX sites in the country. These are at Geluk, Siemenshof, Hermanstal, Klein Omatako, Maroe-laboom, Kombat, Reoland, Epukiro, Tamariskia, Maltahohe, NBC Windhoek Tower, Stampriet, Epako, The Glen, Channel 7, Rossing Mountain, Okaputa, Omaere, Otavi, Affenberg, Wilhelm-sthal, Nyangana, Tsumore, Walvis Bay, Windhoek Central Hospital, Rocky Crest, Tsumis Park, Hardap, Windhoek NBC, Midgard Lodge, Okaparkaha, Ohangwena, Otjiberg, Brukaros, Gobabis, Omboroko, Kapps Farm, NamPol Windhoek, Eersterus, Elisenheim, Gross Herzog, Adrianopel and Kalkrand.

ADSL
The wireline access ADSL is extensively deployed countrywide as an access broadband system to connect customers. The total port capacity deployed to date is 19 437 with 9 640 customers connected.

CDMA

Telecom Namibia commissioned a new CDMA EVDO site in Oshikango and a further six sites in Windhoek using state-of-the-art 4th Generation base stations that are LTE-ready, bringing the total number of base stations to 66. The new base stations contributed to improved quality of service (QoS) in and around Windhoek in terms of better user experience on network access, download and upload speeds. The new Windhoek sites are in Katutura, Pioneerspark, Otjomuise, Kleine Kuppe and Khomasdal.

A number of sites that were voice and 1x data only were upgraded for 3G-EVDO service, namely Okahandja, Henties Bay, Langstrand, Katima Mulilo and Ondangwa. More data capacity has been provided to the Walvis Bay area mainly for the seasonal traffic.

The company is making final preparations to migrate the CDMA network for MEID compatibility in order to pave the way for the introduction of international roaming and basically eliminate any service offering differences between GSM and CDMA.

IP/MPLS

During the year the roll out of the Internet Protocol/Multi-protocol Label Switching (IP/MPLS) network was completed countrywide with super-, major-, minor- and micro PoPs (points of presence) in all towns and carrying national and international IP traffic successfully. This state-of-the-art IP network allowed the company for the first time to provide IP traffic to Zambia by connecting Telecom Namibia's SDH and MPLS networks at Katima Mulilo to the Zesco and Zamnet networks for services in Lusaka, including a transit route for PCCW from London to Lusaka.

An international peering POP was established in Keetmanshoop to allow for direct IP pipes to SAIX in South Africa and another direct IP pipe (155Mb) to Belgacom and PCCW London via the SAT-3 cable.

Metro Ethernet

With the Metro Ethernet project, Telecom Namibia provides Layer 2 VPN services to corporate customers as well as back-hauling services for broadband access technologies (WiMAX, ADSL & CDMA).

The network has been deployed to all major Telecom Namibia sites in line with the MPLS footprint, reaching exchanges as far as Katima Mulilo.

The majority of the corporate customers are connected in Windhoek where the network capacity was increased by a third to cater for increased demand. Corporate services on offer are point–point and point–multipoint services, while single point connections (half-links) are in place to accommodate inter-connections to the Co-location and Disaster Recovery Centres. Additionally, Metro Ethernet is used as an underlying technology in Ethernet-based MPLS VPN provisioning.

SDH/PHD (Marconi/Digicon)

Telecom Namibia's core business of rests on the backbone network, which is a collection of various subsystems and tech-nologies. The national transport network has been predomi-nantly SDH based. In 2006, the SDH backbone network countrywide (with the exception of the Grootfontein-Rundu-Katima Mulilo STM-4 spur link) was upgraded from an STM-4 (622 Mbps) network to an STM-16 (2.5 Gbps) network.

The upgrade to STM-16 provided some relief but towards the end of 2008 capacity became depleted. As a result, additional IP and TDM interconnect / transit capacity needs with other regional telco's and tier service providers as well as the ring protection requirements for both national and international traffic could not be satisfied with the available capacities. In 2008, Telecom Namibia started upgrading capacity on the national SDH backbone from STM-16 to STM-64, with the upgrade of the primary SDH rings north of Windhoek already completed and carrying live traffic.

Ring networks

Backup transmission routes and self-healing fibre ring networks were also deployed in order to protect the national backbone network from failures resulting from human and natural causes phenomena.

The Omaheke SDH ring is a complete STM-64 ring network constructed with Ericsson OMS1684 transmission equipment. The ring interconnects to the Windhoek STM-16 ring network and stretches from Windhoek (WGG) to Grootfontein via Gobabis and back to Windhoek (WGG) via Karibib connecting Otjiwarongo, Omitara, Witvlei, Omaere, Gobabis, Buitepos, Epukiro, Otjinene, Okonjatu, Okamatapati, Grootfontein, Otavi, Otjiwaro-ngo, Kalkfeld, Omaruru, Karibib and Okahandja.

The Kunene ring is a complete STM-64 ring network constructed with Ericsson OMS1684 transmission equipment and stretches from Otjiwarongo to Grootfontein via Otavi and back to Otjiwarongo via Tsumeb, Oshakati, Ruacana and Kamanjab connecting Oshivelo, Omuthiya, Ondangwa, Outapi, Otjitjekwa and Outjo.

The Southern backbone ring network is a composite ring network consisting of both STM-16 and STM-64 transmission routes. The ring interconnects to the Windhoek STM-16 ring network and stretches from Windhoek (WGG) via Gobabis and Maltahohe to Keetmanshoop and back to Windhoek (WES) via Mariental and Rehoboth connecting Omitara, Witvlei, Omaere, Gobabis, Leo-nardville, Aranos , Stampriet, Maltahohe, Helmeringhausen, Aus, Bethanie, Keetmanshoop, Tses, Gibeon, Mariental, Kalk-rand, and Rehoboth.

Transmission capacity needs to South Africa are constantly growing and all customers as well as Telecom Namibia require full redundancy or at least 99.95% uptime. Due to the constantly growing capacity needs, the Windhoek–Gobabis route and the Aus–Keetmanshoop route were recently upgraded from STM-16 to STM-64. Moreover, there are plans to upgrade the reminder of the routes on the Southern ring network to STM-64.

Fibre Networks

New fibre network routes were completed during the year. They are:

* Karasburg – Velloorsdrift (138km)
* Henties Bay – Kamanjab (504km)
* Tsumeb – Oshakati (267km)
* Keetmanshoop – Zesco Interconnect (4km)

West Africa Cable System (WACS)

The Construction & Maintenance Agreement for the West Africa Cable System (WACS) was signed on 8 April 2009. The WACS project's aim is to construct, install, commission and put in service a four pair optical fibre undersea cable between South Africa and Europe, with spurs landing in most of the west coast African countries along the Atlantic Ocean including Namibia. The landing point in Namibia is Swakopmund and building works for the WACS cable station is well in progress in the coastal town.

The project will connect Namibia to Africa, Europe and the world at large at a very high speed of 10GB/s. The initial capacity equipage (just after PA) is 8 channels each with a transmission speed of 10BG/s (8 x 10GB/s = 80BG/s). The design capacity of the WACS system is 128 channels at 10GB/s (128 x 10GB/s = 1.280TB/s) transmission speed. Thus Namibia will be able to upgrade the system in the future.

The project will give Telecom Namibia customers data and voice services at a high speed and possibly expect changes in the pricing structures to the benefit of the consumers. Furthermore, the company will be able to sell capacity to the land-locked neighbouring countries.

WACS will boost that Namibian economy as the project will make it easier and faster to make business anywhere in the world and access to information will be at Namibia's fingertips. In short, the project contributes significantly to Namibia's efforts towards achieving its Vision 2030 goals.

DCA WAM Project

The project addresses the need of the Directorate of Civil Aviation in the Ministry of Works and Transport for the installation of a Wide Area Multilateration (WAM) system at 36 sites throughout Namibia, together with transmission backhaul of communications to the Control Centre at Eros Airport in Windhoek.

Thirty-six sites were identified and surveyed from March to May 2009 for DCA WAM equipment installation. Four new sites were created for fibre and microwave transmission links to new sites at Rooiberg, Solitaire, Erwee and Grootberg. About a 380km fibre route, four new microwave links and 21 new digicon nodes are in the process of construction for the project, with six nodes being upgraded for increased capacity. Some 44 routers and switches are to be installed at the sites to create a VPN over MPLS/Metro to enable DCA to provide transport for their WAM system data from the outlying sites to the WAM Control Centre at Eros Airport in Windhoek.

Mini Link Management DCN Project

A countrywide site survey was done to collect data on mini links not connected to the Management DCN (Digital Communications Network). Equipment was also procured to provide DCN connectivity to all regions in country for mini link systems.

* 15 Links in South regions are connected to Local Management PCs in Luderitz and Keetmanshoop.

* 10 Links in North-East regions are connected to Local Management PCs in Otjiwarongo and Tsumeb and managed from the TMN Centre.

* 4 Links in Erongo region are connected to Local Management PC in Walvis Bay and managed from TMN Centre.

* 10 Links in Eastern and Central regions are connected to Local Management PCs in Gobabis and Windhoek managed from the TMN Centre.

Switching and Control Projects

A new IP-based system was introduced to cater for announcements on the local exchanges and the mobile (CDMA) environment. The hir220 (announcement system)

consists of a content server and a resource server. The PSTN and CDMA exchanges use an E1 per exchange to connect to the hir220 system via an IP to TDM gateway. The hir220 system handles up to 150 consecutive calls. It provides announcements for, inter alia, number change, code change, number or code does not exist, on-hold announcements (music) to Centrex customers and time and date announcements. The system can also be used to broadcast announcements to all Telecom Namibia customers on, for example, new services, service interruptions, and so on.

Co-location (Site sharing) services

Telecom Namibia provides co-location services on its sites to third parties. Co-location refers to the provision of space for a customer's communication equipment on Telecom Namibia's premises or infrastructure for a monthly rental fee. An advantage of co-location is the efficient use of available space and infrastructure. It also avoids the duplication of infrastructure and thereby reducing capital costs.