

## Dubai Internet City—A Real Broadband Oasis



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Farid Faraidooni  
Director of Telecommunications  
Dubai Internet City

**High tech customers are flocking to a new global ICT hub emerging in Dubai for its state-of-the-art metro Ethernet communications infrastructure.**

### Background

Sitting at the crossroads of the Middle East, the Asian subcontinent, East Africa, the Eastern Mediterranean, Russia, and Central Asia, the United Arab Emirates (UAE) encompasses both continents and cultures, and has long been regarded as the trading hub for a huge region that is home to more than one billion consumers.

Dubai, one of the seven emirates that make up the UAE, is the second-most populous and the second-largest state of the federation. Approximately 90 percent of the emirate's 858,000 residents live in the capital city of Dubai, which is the largest city in the UAE.

### Challenge

While oil has historically been the main trading commodity of the region, the UAE recognised that this natural resource would not last indefinitely. A new direction was required. The Crown Prince of Dubai, His Highness General Sheikh Mohammed bin Rashid Al Maktoum, initiated an economic transformation by launching several ventures to diversify the economy. His initiatives created high-tech, zero-tax business environments for the world's leading companies.

### Solution

To realise his objective of putting Dubai and the UAE at the very forefront of the high-tech industry's advancement, the Crown Prince conceived Dubai Internet City—a facility that offered a high-quality infrastructure and environment for leading ICT companies to operate globally and regionally.

Dubai Internet City was constructed in one year, with Cisco Systems® providing technological vision and expertise. Its metro Ethernet infrastructure today provides international companies with 100Mbit/s to every desk, complete IP telephony facilities including private branch exchange functionality realized in software, and universal 2Mbit/s Internet access.



## Results

Dubai Internet City achieved break-even financial status in just two-and-a-half years. It strengthened its relationship with Cisco by signing a 10-year partnership agreement. Dubai Internet City committed to use Cisco® technology for the full 10-year term while Cisco committed to put its full resources at the disposal of Dubai Internet City in an active advisory role. Meanwhile, similar projects—using Cisco metro Ethernet infrastructures—took shape throughout the Middle East, in Bahrain, Oman, Kuwait, Egypt, and elsewhere.

## Internet Hub

Always a leading trading hub in the Middle East, Dubai is one of the most attractive global business centres in the world. Today it is a strategic base for multinational companies targeting markets extending from the Middle East to India and from Russia to South Africa. In addition to access to such markets, overseas companies operating in Dubai can secure cost advantages not generally available, such as the ability to operate free from corporate or income taxes, foreign exchange controls, and trade barriers.

With the opening of Dubai Internet City, in October 2000, Dubai sought to extend this value proposition to the global ICT industry. It offered a world-class business environment for ICT companies to innovate and grow.

Dubai Internet City was established in the Dubai Technology and Media Free Zone—a tax-free commercial site set up to support the development of knowledge-based industries. Apart from Dubai Internet City, this Free Zone today includes separate clusters for the media and education industries.

In line with Dubai's liberal economic policies and regulations, Dubai Internet City offered foreign companies 100-percent tax-free ownership, 100-percent repatriation of capital and profits, no currency restrictions, easy registration and licensing, stringent cyber regulations, and stringent protection of intellectual property.

Over the past three years, Dubai Internet City has been developed to provide a complete business and community infrastructure for ICT companies. There are now 16 office buildings in Dubai Internet City—with an 80-percent occupancy rate. The buildings are set amidst an exquisitely designed landscape of lakes and gardens. Along with its sister organisation Dubai Media City, Dubai Internet City is home for about 1,200 companies. Dubai Internet City accounts for more than 10,000 knowledge workers. In addition, there are 220 luxury residential villas. Continued growth will see these numbers rise—construction is soon set to begin on 14 new high-rise towers.

The total investment to date by the Dubai Technology and Media Free Zone Authority in the project stands at US\$700 million—a figure that does not include land-acquisition costs. A new phase in the expansion of this project will see an additional investment of US\$800 million. This will see the creation of Dubai Pearl, a development of hotels, office buildings, movie theatres, restaurants, boutiques, and shopping malls.

All major players in the global ICT community are now present in Dubai Internet City, including Cisco Systems, Microsoft, Oracle, Hewlett-Packard, IBM, Dell, Siemens, Canon, Logica, and Sony Ericsson. As a magnet for companies and talented professionals from around the world, Dubai Internet City is making a mark on both the region and the business world at large.

## Advanced ICT

When its forthcoming creation was announced in late October 1999, the intention of the project planners was to have Dubai Internet City move from concept to realisation in just 12 months. The planners engaged with Cisco Systems to specify their requirements and benefit from the wealth of knowledge Cisco could provide in delivering complex ICT solutions in rapid timescales. Together, the project planners and Cisco envisioned a leading-edge, converged architecture capable of delivering data, voice, and video services, as well as a host of other innovative features.

Farid Faraidooni, director of telecommunications at Dubai Internet City, explains. "We did not inherit any existing technology, so IP and Ethernet was definitely the right way to go. We can deliver data, voice, and video to our commercial tenants and residents over the same infrastructure in a way that is familiar and requires no conversion at the interface."

## New-Generation Transport Technology

The technology platform created at Dubai Internet City is one of the most advanced metro Ethernet environments in the world. "Cisco was with us from the very beginning in designing the metro Ethernet infrastructure," Faraidooni says. "We worked very closely together to develop ideas, and then worked through the planning, implementation, and commissioning stages."

Dubai Internet City's business district is structured as separate campuses. The campuses are connected via a core network comprised of bidirectional, dual counter-rotating 2.5Gbit/s fibre rings using the Cisco Dynamic Packet Transport (DPT) technology with its underlying Spatial Reuse Protocol (SRP) technology.

Cisco DPT is a new-generation transport technology, and is optimised for packet-based optical transport. Principally designed for metropolitan-area applications, the Cisco DPT solutions enable service providers to cost-effectively scale and distribute Internet and IP services. DPT combines the bandwidth-efficient and service-rich capabilities of IP routing with the bandwidth-rich, self-healing capabilities of fibre rings to deliver fundamental cost and functionality advantages over existing solutions. Cisco SRP technology uses Synchronous Digital Hierarchy (SDH) framing to allow interworking with SDH or wavelength-division multiplexing (WDM), and offers the high capacity and low overhead inherent in SDH architectures in an IP environment.

Each campus network consists of 1000Mbit/s DPT fibre rings interconnected with the core network fibre rings at a node formed by Cisco 12400 Series routers. Nodes on the campus rings, formed by Cisco 10720 routers, serve individual office buildings. Dual fibres within the buildings interconnect Cisco Catalyst® 4000 Series switches on each floor, aggregating the 100Mbit/s copper-pair feeds to individual desks and other devices.

Cisco Catalyst 6500 Series switches—connected directly to the Cisco 12400 Series routers forming the campus core network nodes—provide voice connectivity through the Cisco Catalyst 4000 Series floor switches. Each campus has its own Cisco CallManager server cluster to manage the IP telephony environment, providing fully redundant remote call-processing functionality across the IP WAN, and maintaining a common ‘publisher’ database for call-routing tables and so on. A Cisco IOS® gateway monitors voice traffic and allocates IP WAN resources when necessary.

Retail parks and residential districts of villas and apartment blocks are served by a similar topology, which relies on Cisco 7200 Series routers fed from Cisco 12400 Series routers in the core fibre rings, with Cisco Catalyst 3500 Series switches for service distribution, providing 100Mbit/s feeds to both dwellings and retail outlets.

Internet connectivity is provided at a universal rate of 2Mbit/s. The network core is spread across two separate, fully redundant locations. Separate gateways to Public Switched Telephone Network (PSTN) service providers ensure full redundancy and availability of telephony services, and a dual connection to two separate ISPs helps to ensure the same level of availability for Internet services.

### New Services, New Revenues

A company moving into a Dubai Internet City office facility has no need to create any ICT infrastructure whatsoever. LANs are pre-connected and preconfigured, using VLAN technology that maps workstations and peripheral devices on a logical,

geographically independent basis. This provides maximum flexibility and totally secure and robust connectivity. The benefits to companies include:

- Investment-free infrastructure
- Reduced operations costs by outsourcing network components
- Easy and automatic network deployment
- Flexibility in physical and logical reconfiguration
- The ability to focus on core business

The IP telephony solution provides companies with the option of using a virtual PABX (Private Automatic Branch Exchange), eliminating the need to invest in their own PABX platform and the cost and complexity of managing and maintaining voice and data networks. The benefits include:

- Continuous access to the latest technology
- Feature-rich IP phones, for which regular upgrades are supplied
- Flexibility in reconfiguration, such as adding lines and moving extensions
- Instant scalability

Within villas and apartments, residents gain 100Mbit/s broadband Internet access. Feature-rich IP telephony also allows transparent interconnection with corporate telephony facilities where required. Free-to-air broadcast television services are also supplied to residents over the metro Ethernet broadband infrastructure, with cable channels, pay-to-view, and video-on-demand services available as extra cost items.

All these services are included in the rental fees for the office or residence. Before moving in, customers complete an application form that indicates which specific services or facilities that they require. This system is so popular with Dubai Internet City customers that the complex reached break-even status a mere two and a half years after opening.

Furthermore, the metro Ethernet infrastructure means that new ICT services, such as wireless access, IP VPN connectivity for multinationals, hosted contact centres, unified messaging, and new IP telephony offerings, can be provided at marginal extra cost to consumers. Revenue from these new services represent almost pure profit for Dubai Internet City.

SchlumbergerSema is typical of the high-tech companies that have taken up residence in Dubai Internet City. Tarek Ghoul, business development manager at SchlumbergerSema in Dubai, says: “As a company, we have an end-to-end Ethernet environment already—with an MPLS (Multiprotocol Label Switching) based global IP WAN—and we deliver 100Mbit/s to people’s desks as a matter of course. So it was great to be able to move straight into Dubai Internet City and get instant connectivity.

“The hard benefits of an end-to-end Ethernet environment include the greatly reduced costs that come with standardisation, and the savings on management and support costs,” he continues. “For instance, we can take advantage of the IP and Ethernet expertise that we already have on board without needing to invest in additional skills and systems. But there are soft benefits too, such as mobility within the organisation and total accessibility to corporate resources wherever an individual might be.

“If I were to offer advice to another company considering a similar move, I would say, ‘Build value from the bottom up’,” Ghoul concludes. “Consolidate systems and tools first so that one can cut the costs of technology acquisition, and then realise the benefits of converged voice and data networks.”

### Catering to Hybrids

When asked whether there were any problems for customers as a result of Dubai Internet City’s decision to deploy a totally metro Ethernet solution, Faraidooni replies, “Customers are accustomed to using a variety of traditional connectivity models—analogue lines, leased lines, ISDN (Integrated Services Digital Network), ADSL, and so on. So there can be some resistance to a totally Ethernet approach at first. However, once they’d experienced the convenience and high service levels associated with metro Ethernet, whatever apprehensions early customers had soon evaporated,” he adds.

Dubai Internet City has encouraged clients to embrace the new technology through a learning programme: a new customer moving in to Dubai Internet City is allocated a technical account manager whose role is to educate the customer as to the advantages of end-to-end Ethernet. “For highly strategic customers, we call upon Cisco to help in that education process. It works very well,” Faraidooni explains. “About 80 percent of our customers live very happily in a totally metro Ethernet environment, enjoying state-of-the-art benefits such as full-motion video, 2Mbit/s Internet connectivity as standard, and full IP telephony, including virtual PABXs.”

The remaining 20 percent include some large corporations that have global standards, such as worldwide use of proprietary PABXs served by ISDN primary rate connections. In such hybrid environments, Dubai Internet City also offers the full range of traditional circuits and technologies, including analogue and ISDN lines. Dubai Internet City is able to offer these customers:

- Leased circuits ranging from 64kbit/s to 2Mbit/s with connectivity to major cities worldwide
- Asynchronous Transfer Mode (ATM), Frame Relay, and X.25 networking protocols that are also supported at Dubai Internet City to protect existing customer investments

### Providing Flexibility and Control

An IP-enabled contact centre and hosting facilities (which provide such services as virtual Web space, colocation services, and application service provision) are also helping to drive Dubai Internet City further up the service-provision value chain. Additional services offered include domain name registration, File Transfer Protocol (FTP), Web hosting, virtual e-mail services, and static IP addresses.

Dubai Internet City’s network operations centre, the heart of the whole site, maintains the environment that keep clients’ servers and applications available 24 hours-a-day, seven days-a-week.

“The network operations centre controls not only the hosting services, but also every active network component—keeping our network operating around the clock,” Faraidooni explains. “Our support staff and technical people are located there, which gives us flexible control and response to the whole of Dubai Internet City. One of the main concerns with new technology is technical support, and we’ve had truly excellent rapport with Cisco.”

### New Investments...and New Entrants

The Dubai Internet City concept has now set the momentum in the region for a new breed of developments and innovation in services, such as the Amwaj Island project in Bahrain, the Knowledge Oasis Muscat (KOM) in Oman, Technology World in Kuwait, and both Citystar and the Smart Village in Egypt.

Cisco Systems and Dubai Internet City have signed a 10-year partnership agreement. Under the terms of that agreement, Dubai Internet City will exclusively purchase Cisco hardware and software to meet the rapidly developing technological needs of its customers. In return, Cisco will provide a full range of free services, including training and knowledge exchange, service creation and provisioning skills, and marketing expertise.

“Our metro Ethernet infrastructure is very efficient and has great commercial value,” Faraidooni concludes. “We have made substantial savings in capital and operational expenditure. For our customers, the financial benefits are that they get the full range of the latest IP-enabled services, as well as traditional functionality, with virtually zero up-front investment and hugely reduced cost of ownership.”

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