

Pentium

The Pentium brand name initially referred only to the fifth-generation microarchitecture of microprocessors from Intel, called Intel P5 and described here, but later it covered also subsequent generations. So, the Pentium as Intel P5, considered here, was a successor to the 486 line, and was first shipped on March 22, 1993. The Pentium was expected to be named 80586 or i586, to follow the naming convention of previous generations. However, Intel was unable to persuade a court to allow them to trademark a number (such as 486), in order to prevent competitors such as Advanced Micro Devices from branding their processors with similar names (such as AMD's Am486).



TECHFOCUS

Fibre optics

Ultra high-speed modern telecom

EDWARD APURBA SINGHA

Let's say you write an e-mail message and then send it to your colleague to inform them about an urgent meeting. Within moments it's in the recipient's inbox. The entire process might look very simple but the story inside is not.

Every time we use internet-based services we in fact send and receive data. Internet is called network of networks and data travels through the network in a discrete form called packet. In order to ensure an uninterrupted communication link, satellites and undersea cables (optical fibre) are used to connect geographically separated places.

Nowadays optical fibre has won popularity for long haul communications. Telecommunications sector has adopted this technology for its huge bandwidth. It has also dramatically reduced international call charge.

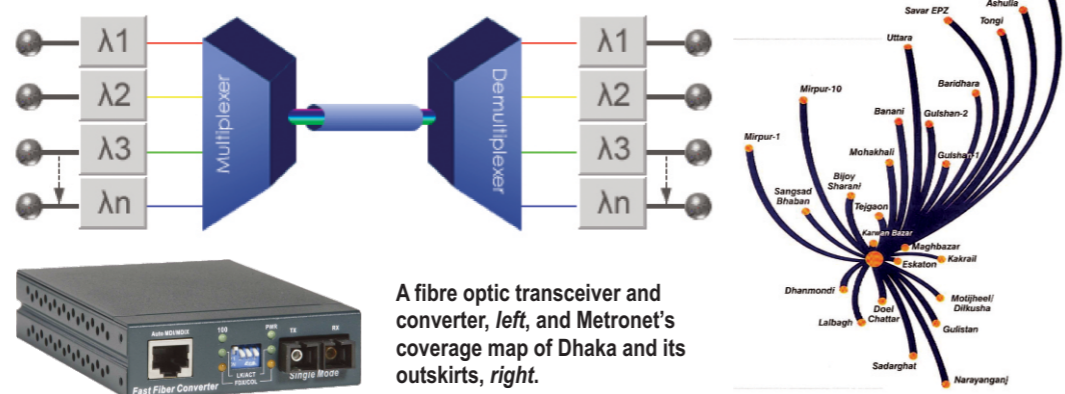
The main drawback of satellite communication is its expensive bandwidth. Moreover, people experience propagation delay during voice communication. Despite these hitches, satellite is still now the only solution to establish communication in remote places.

This article reveals the inside story of optical fibre technology and gives a concise idea for its implementation in Bangladesh as well. Optical fibre is wafer-thin, human hair like entity that is used to transmit light signals over long distances. In general, these are arranged in bundles called optical cables. When these cables are laid across the seabed they are called submarine cables.

Optical fibre consists of three main parts: core, cladding and buffer coating. Core is the centre part of the entire set-up; fibres reside in this area. Cladding is an optical material that circumsvents the core and enables light signals to reflect back into the core.

Buffer coating is the plastic coating that protects the fibre from damage and moisture. Hundreds or thousands of these optical fibres are arranged in bundles in optical cables. The bundles are protected by the cable's outer most protective shield called jacket.

Depending on the mode of light, optical fibres come in two



types: single-mode fibre and multi-mode fibre. Single-mode fibre uses laser (Light Amplification by Stimulated Emission of Radiation) as a source of light and it has very small core, near about 3.5×10^{-4} inches or 9 microns in diameter. Multi-mode fibre has relatively large core near about 2.5×10^{-3} inches or 62.5 microns in diameter and transmits infrared light from LED (Light Emitting Diode).

In a fibre optic cable when light signals travel through the core they follow zigzag paths. Due to

the principle of total internal reflection, light signals are not able to come out from the core. Naturally, light signals travel long distances without significant changes in signal quality.

But in many cases signal quality depends on the purity of the glass and the wavelength of the transmitted light (for example, 850 nm = 60 to 75 percent/km; 1,300 nm = 50 to 60 percent/km; 1,550 nm is greater than 50 percent/km). Some premium optical fibres show much less signal degradation -- less than 10 per-

cent/km at 1,550 nm.

A fibre optic relay system consists of four components such as transmitter, optical regenerator and optical receiver. Transmitter originates and encodes the light signal and focuses it on the optical fibre through a lens. Optical regenerator is essential to regain the signal strength. When light signals travel through long distances, optical regenerator is installed along the cable to boost the signal strength. Optical receiver uses a photocell or photodiode to detect the light and

then convert it into electrical signal for general purposes.

Bangladesh has finally been connected with the long-awaited global fibre optic network through SEA-ME-WE-4 (South East Asia-Middle East-Western Europe 4) submarine cable. SEA-ME-WE-4 is the fourth project in the SEA-ME-WE series. On March 27, 2004, a consortium of sixteen international telecoms companies signed construction and maintenance agreements for the new optical fibre submarine cable system linking South East Asia to Europe via the Indian sub-continent and Middle East with terminal stations in Singapore, Malaysia, Thailand, Bangladesh, India, Sri Lanka, Pakistan, United Arab Emirates, Saudi Arabia, Egypt, Italy, Tunisia, Algeria and France.

SEA-ME-WE-4 system is based on hi-tech DWDM (Dense Wavelength Division Multiplexing) technology to achieve ultra high-speed (terabit per second) connectivity. The total length of this cable is approximately 20,000km and it is capable of supporting telephone, internet, multimedia and various broadband data applications.

In order to spread the benefits of SEA-ME-WE-4 submarine cable, we need a strong optical fibre network in the country. Metronet is playing a significant role to that end by creating fibre optic network in the country. Currently, Metronet services are available in Dhaka metropolitan area, Narayanganj, Gazipur, Ashulia and Savar EPZ.

Metronet provides services which include point-to-point optical fibre connectivity, point-to-multipoint optical fibre connectivity, real time DVD quality video conferencing, real time office/factory video surveillance system, telemedicine and others. In a friendly conversation with StarTech, Almas Kabir, COO, Metronet informed that they are planning to extend their services into Chittagong. He, however, expressed his concern about 15 per cent VAT and said, "the government can take proper steps to bring down this amount in order to facilitate cheap telecoms services to general people".

TECHNEWS

ISL celebrates 12-year partnership with Dell

Information Solutions Ltd (ISL), a sister concern of Genesis Technology Group (GTG), celebrated the 12th anniversary of its partnership with Dell Computer Corporation at Bangladesh-China Friendship Conference Centre (BCFCC) on July 3.

Prior to the main celebration session, a press conference was organised to focus on the achievements of ISL during its twelve years of journey. Andreas Diantoro, regional director, Dell South Asian Developing Market Group, was present at the event along with Shapur Khasru, managing director, GTG and Aweek Mitra, Group COO.

In his inaugural speech, Shapur Khasru briefly stated the success story of ISL in distributing Dell products to corporate segment of the country. He also put emphasis on developing a strong ICT infrastructure in the country to attract more foreign contributions to the country's economy.

Andreas Diantoro stated the global operations of Dell and acknowledged the company's twelve years of relationship with ISL. He said Dell is a US\$57 billion company and it is eager to contribute more to the



From left: Aweek Mitra, Group COO, Shapur Khasru, MD GTG and Andreas Diantoro, regional director, Dell SA

ICT sector of the country. At the end of his speech, he revealed that Dell manufacturing plants require only one-and-a-half minutes to assemble a PC.

ISL is a premier business partner of Dell in Bangladesh. Since its inception, ISL has been trying to provide cutting edge ICT solutions for the business sector of the country. In addition to its regular product pipeline, ISL also offers business integration, network solutions, service and maintenance and technology distribution to its clients. Subject to market condition,

ISL plans to get involved in the SME and consumer sectors of the country in the near future. Genesis Technology Group (GTG) includes two other units -- X-Net and Genesis Systems Ltd. X-Net provides broadband wireless access (BWA)-based data communication service with network across major cities in Bangladesh, while Genesis Systems Ltd provides software applications and system integration services to companies in different sectors.

Edward Apurba Singha

TECHNEWS

iPhone frenzy on hold for some

AP, Wausau

For 21-year-old Kelsy Martin, two words "incredibly disappointed" sum up how she feels about living in an area where the new iPhone can't be used.

AT&T Inc. is the phone's exclusive carrier, but the company's wireless network only covers eastern Wisconsin and the Madison area in the southern part of the state, leaving people like Martin deprived.

"I do want one," she said. "I have nearly every other Apple product that I can get my hands on. iPhone is just all of them put together. Being in Wausau, it is just not possible. All my friends are all quite disappointed."

Apple Inc.'s newest gadget combines the functions of a cell phone, iPod media player and wireless Web browser. People camped out at Apple and AT&T stores in most parts of the country in advance of the iPhone debut Friday.

But not where Martin lives. Or in Vermont, which also has

no service. Coverage is limited in other states, too, like the Dakotas and Alaska, said Chris Bauer, an AT&T spokesman for Wisconsin.



Crystal Peterson of Anchorage, Alaska, said it was unfair that people in her city, the state's largest with about 270,000 people, can't have an iPhone, although she wouldn't

buy one. "This is part of the US, too," she said.

Phil Bennett, purchaser at The Alaska Mac Store in Anchorage, said about 200 people have called the store over the last few weeks asking how they can get an iPhone.

"They're awesome. Of course I want one," Bennett said. "But I don't think I would sink the money into it."

Fletcher Cook, another AT&T spokesman, said the network that's used by the iPhone billed by Apple as the most user-friendly smart phone ever reaches roughly 270 million out of the 300 million people living in the United States. The network is available in more than 13,000 cities and towns and in areas along 40,000 miles of highways.

Cook said AT&T is continually expanding the network, but there was no timeframe for when it would be available for more of Wisconsin.

PHOTOTECH



MENO, THE ROBO DOLL

Japan's toy maker Sega Toys employee, Mineko Sakanoue, displays a baby robot "Meno" which is able to blink eyes, move mouth like munching and cry to ask changing its nappy after drinking water at the annual Tokyo Toy Show on July 1. Sega Toys will put it on the market in November.

PHOTO: AFP

TECHNEWS

Turtles to test wireless network

AP, Deerfield

From the way he thrashed his head, kicked and tried to make a getaway, M16 made it clear he didn't like human contact. But the researchers wrangling with him could be helping to save his species.

Despite his best efforts to escape the clutches of two scientists from the University of Massachusetts and get back to the swamp he was just lifted from, the 40-pound snapping turtle finally gave up and let Mike Jones and Matt Garber do their jobs.

Using a combination of orthodontic cement and duct tape, the students attached a postcard-sized waterproof computer to the turtle's shell. After christening the 16th male turtle he found in the area as "M16," Jones scribbled some information about the turtle's shell markings into a field book and set the snapper free.

Knowing where M16 goes could help scientists protect him.

In an experiment taking place along the Deerfield River in western Massachusetts, two otherwise unrelated groups of researchers are working together: computer engineers like Garber who are testing a new wireless communica-

tion network, and biologists like Jones who are tracking snapping turtles -- a species they worry may be headed for decline as land development shrinks their habitat.

The idea behind the technology is to create a network of constantly moving devices that record and store information, transmit data from one device to another, then



relay all the saved information to a central location while running on self-charging batteries.

"A lot of the existing technology works great as long as you're not moving around and you have stable networks and people who could recharge batteries," said Jacob

Sorber, a doctoral candidate in computer science who designed the network he calls TurtleNet, a project funded by grants from the National Science Foundation.

The solar-powered computers are light enough so they don't weigh the turtles down, and they don't interrupt their mating habits, Jones said.

Stuck to the shells of about 15 turtles found in spots near the Deerfield swamp, the gadgets will take periodic readings of the reptiles' location and body temperature.

When one computer-carrying snapper gets within a tenth-of-a-mile of another, the machines swap information.

The series of short-distance transmissions allows for long battery life in each computer, and the solar panels attached to the units are expected to constantly keep the batteries charged. Without a relay system, a longer transmission would require a larger battery that would drain too quickly or be too big for a turtle to carry.

The turtle-to-turtle relay ends when one of the snappers passes near a single base station that receives all the accumulated information.