

Volition™ Network News

Summer 2000

VF-45™ Support Announcement by Taiwan's LAN Industry Rocks Networking World

The announcement in early May by 14 Taiwanese networking companies to support the VF-45 standard has the networking industry buzzing. Companies representing approximately 25% of the world's production of workstation and desktop LAN hardware have united behind a single standard for low-cost optical fiber networking solutions.

This represents not only the victory of a superior technology but, much more importantly, a major thrust towards making low cost, high bandwidth fiber the medium of choice to home and business markets.

The broader implications of the announcement are the reason why it was covered not only in networking and electronics trade

press but also by major mainstream media such as The Economist, Financial Times, Dow Jones, Asian Wall Street Journal and Investor's Business Daily.

Taiwan's networking industry has come a long way in the last 10 years. Taiwanese companies originally entered the networking business around 1990 as suppliers of low-end NIC cards.



Roger H.D. Lacey, division vice president, 3M Telecom Systems, discusses the future of fiber-based networks in Taipei, Taiwan.

In the mid 1990s, these companies began producing lower priced hubs and switches under their own names and for OEMs. Recently, they have moved into the market for more complex switches for Gigabit Ethernet and Layer 3 applications, while maintaining their practice of driving prices down to commodity levels.



S.T. King, chairman, Accton Electronics Corporation, Roger H.D. Lacey, division vice president, 3M Telecom Systems, Dr. D.Y. Yang, chairman and general manager of Winbond Electronics Corporation, and Dr. Chintay Shih, President of Taiwan's Industrial Technology Research Institute announce support of VF-45 fiber networking technology.

In effect, Taiwan's LAN equipment makers have become the engineering and manufacturing arms of some of the networking industry's biggest players. The country's networking manufacturers have a strong base in equipment design, strong local ASIC manufacturing infrastructure and world-class PCB design skills. This announcement and the flood of exciting products that have already resulted demonstrate the move by the Taiwanese industry to the forefront of technical innovation in the local area networking market.

Why 3M's VF-45?

Why did so many of the world's leading networking companies make the decision to devote their development and manufacturing resources towards products based on the 3M VF-45 standard? "Up to now the proliferation of fiber optics in local

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3M *Innovation*

VF-45™ Support Announcement

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area networks has been hindered by the high cost of traditional fiber systems,” said H.Y. Lee, President of Accton.

“The networking industry has been awaiting a breakthrough to allow fiber optic links to expand from long-distance backbones to short distance local area and access networks that deliver high bandwidth directly to the user. The VF-45 systems, priced at half the cost of current fiber optic cabling systems, provide that breakthrough. That’s why we are moving at full speed to deliver high-performance VF-45-based networking equipment at low prices to the market. Our goal is to help the networking industry take a major step forward by advancing the last 100 yards from the backbone to the end user.”

What makes this significant?

The real significance of this announcement is not what it will do for the Taiwanese networking industry or for 3M, but the impact that it will have on home and business computing users. The dramatic expansion of the Internet is clear evidence that the network, rather than the application, has become the force driving technological innovation.

Under today’s conditions of rapidly growing bandwidth requirements, a copper network has a life of about five years while optical fiber has virtually unlimited information-carrying capacity. By increasing the pace of innovation and driving down costs in the VF-45 market, the Taiwanese networking industry will dramatically increase the rate at which high speed links are made available to local area networks in businesses, homes, schools, or anywhere else that communications are required. This trend, which many call Fiber-to-the-X, has already brought fiber bandwidth to tens of thousands of end users at U.S. West, Bally’s Las Vegas, Microsoft, IBM, the University of Wisconsin, the Louvre, Wright Patterson Air

Standards Update

At the May TR-42.1 meeting, ballot resolution was held on the pending 568-B.1 standard which addresses the use of small form factor connectors. As a result of the resolution of comments, a default ballot is to be issued on seven technical issues. Since this default ballot will not address optical fiber connectors, the 568-B.1 standard will accept all small form factor connectors that meet the performance specifications of 568-B.3 and have an ANSI approved FOCIS standard. Withstanding a contested ballot, the VF-45 connector will be accepted in the 568-B.1 standard when finalized and released later this year.

Force Base and many other organizations.

So it’s no wonder that many of the world’s leading business publications recognized the significance of this event.

The Economist said: “Still, so far Taiwan has always been a follower, making things invented elsewhere more cheaply. By taking the initiative in fibre-optic networking, however, Taiwan is for the first time attempting to lead the world in a next-generation industry.”

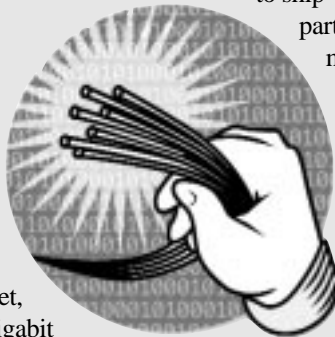
The Financial Times said: “The 14 Taiwanese

companies hope to establish 3M’s VF-45 technology for fibre-optic cables and sockets as a global standard by ensuring the rapid release of product ranges from network hardware to plug-in surveillance cameras and television set-top boxes.”

The Asian Wall Street Journal said: “The VF-45 standard represents a technological breakthrough that makes fiber LANs more economical than earlier generations of optical networks and existing copper LANs. Taiwanese companies supporting VF-45 include Accton Technology Corp., Winbond Electronics Corp. and 12 other unlisted technology companies.”

The Other Shoe Drops: Transceiver Manufacturers Support VF-45

Just a few days after the announcement by Taiwanese networking manufacturers, two transceiver manufacturers and a switch manufacturer provided important new support for the VF-45 standard. Radiantech and Infineon, two leading suppliers of networking components, will provide VF-45-based transceivers to Accton and other networking equipment suppliers. Radiantech and Infineon will team up to provide VF-45 transceivers for high speed networking architectures including Ethernet, Fast Ethernet, ATM, Fibre Channel and Gigabit Ethernet. Infineon, which became a VF-45 licensee in early 1999, has established an agreement with Radiantech to improve their time-to-market and develop further VF-45 cost reductions.



“VF-45 is the ideal technology for both inexpensive network backbone connections and cost-effective fiber-to-the-X links,” said Dag Neumeuer, Vice President of Fiber Optics for Infineon. “We were among the first companies to ship VF-45 technology, and we are delighted to partner with two leading high-volume manufacturers to build momentum for this exciting new standard.”

“By providing high-performance, low-cost components, we will help drive the high bandwidth offered by fiber cabling all the way to the end user,” said Robert Chiang, President of Radiantech. “The seal of approval by these leaders in the networking industry provides a major step towards the establishment of VF-45 as a true industry standard,” said Mike Lynch, 3M Volition Marketing Director.

Volition™ Plays Key Role in World's Largest Temporary Network

Volition fiber optic networking products played a key role in providing a high-bandwidth infrastructure to the world's largest temporary network -

the InteropNet eNet at NetWorld+Interop 2000 in Las Vegas. "We selected Volition fiber because we had an enormous task at hand and were working under an extremely tight time frame," said Erik Cummings, Network Engineer for Key3Media, the producer of the event. "Volition's VF-45 connectors took the pressure off by making it easy to terminate two strands of fiber in only two minutes."

In the past, traditional SC or ST fiber solutions were used for offshow floor areas, meeting rooms and classrooms in both the Las Vegas Convention Center and Las Vegas Hilton. The challenge was that the length of time required to terminate the cable made it very tough to complete the show network in the small amount of time allotted. The high cost of this approach was also a concern.



"3M presented Volition's VF-45 connector as a possible solution to this problem," Cummings said. "We evaluated the new connectors as well as the switches, patch cords, fittings and all the other elements of their solution. We discovered that they were right. Their cables are as easy to terminate as RJ-45 connectors. On the other hand, the longer link lengths offered by fiber helped us overcome the difficulties of constructing a temporary network, such as having to take a circuitous route between two points in order to avoid creating an obstruction."

The Volition fiber system was used in the offshow floor areas, meeting rooms and classrooms in the Las Vegas Convention Center as well as classrooms in the Las Vegas Hilton. The show floor was connected using a high-density fiber cabling structure that was custom-built for the show several years ago.

Cummings noted that the Volition fiber solution worked well with the Extreme Alpine and Black Diamond switches that constitute the core of the network. "We used Volition 4016, 4024 and 5000 switches connected through a Gigabit uplink to our core," Cummings said. "Most of the ports on these switches were used to deliver fiber bandwidth directly to users while a few served copper hubs that provide lower-speed connectivity. The entire setup went together smoothly and performed exactly as expected."

VF-45™ Products

Network Hubs and Switches

- Accion Technology
- Alcatel/Xylan
- Allied Telesyn
- BATM
- Cabletron Systems
- Canary Communications
- Cisco
- Garrett Communications
- Gemflex Networks
- EtherWAN
- IMC Networks
- Lantech
- MICROSENS
- NBase
- Olicom
- Racore
- RubyTech
- Volktek Corporation
- 3M Volition

Camera/Video

- Atop
- Dynacolor

Building Control

- Axlon

Systems

Integration

- UniSVR
- Baycom
- Radianetech

Horizontal and Backbone Cable:

- Corning

Media Converter Transceivers

- AS ICs

VF-45 Socket Patchcords

- Baycom
- Siemens
- UConn
- 3M Volition

Media Converters

- Allied Telesyn
- Canary Communications
- Gemflex Networks
- IMC Networks
- Omnitron Systems Technology
- RubyTech
- Volktek Corporation
- 3M Volition

AS ICs

- Davicom
- MicroLinear
- Microcom Communications
- Winbond

Transceivers:

- Honeywell
- Infineon Technologies
- Radianetech
- Sumitomo

Network Interface Cards:

- Accion Technology
- Alcatel
- Canary Communications
- Gemflex Networks
- EtherWAN
- IMC Networks
- MICROSENS
- Phobos
- Racore
- RubyTech
- Volktek Corporation
- 3M Volition

Patchcord Fiber

- Prime Optical Fiber
- 3M Volition

Print Servers

- Extended Systems



Volition™ Network Solutions

Facts on the 14 Taiwanese Companies that Have Standardized On VF-45 Technology

Name	Revenues	VF-45 products
Accton Technology Corp.	\$298 million in 1999, \$416 million forecast for 2000	Accton CheetahSwitch Workgroup-3508A (EM3526-VFL module included) Accton CheetahSwitch Workgroup-3526F Accton Etherpower II 10/100 - 9432 VFL Accton Cheetah PCI Adapter En1407 - VFL
ATOP Technologies, Inc.	\$4 million in 1999; \$8 million forecast for 2000	GW27: LAN Camera GW23: 4 channel Digital Video Converter GW29: 1 channel Digital Video Converter GW26: Access Controller GW30:MP3 broadcast controller
Axlon Electronics Corp.	Not available	Opto LON OptoLON Hub, OptoLON TCP/IP LON Router LonWorks Devices with VF-45 LonWorks Router
Baycom Opto-Electronics Technology Co., Ltd.	\$17 million in 1999; \$33 million forecast for 2000	(A) Volition Cabling System including: (1) Patch-cords (2) Sockets and Kits (3) Fiber optic cables (4) Outlets & Patch-panels (B) System Integration
DynaColor, Inc.	\$15 million for 1999; \$23 million forecast for 2000	D74GM Ethernet Color CCD Camera D7720 High Speed Dome Camera & D750 Video Gateway
EtherWAN Systems Inc.	\$620 million in 1999; \$1.35 billion forecast for 2000	Xpresso3224: Modular Gigabit Ethernet Switch with 2-port Gigabit, 8-port VF-45 Fiber Optic, and 16-port 10/100TX Xpresso3017: 17-port Modular VF-45 Fiber Optic Smart Ethernet Switch Xpresso2000: 12-port Modular VF-45 Fiber Optic Smart Ethernet Switch FN201V: 100BASE-FX Ethernet Card with VF-45 connector
Lantech Computer Company	\$35 million in 1999; \$45 million forecast for 2000	MaxSwitch II M
Prime Optical Fiber Corp.	\$4.33 million in 1999; 14 million forecast for 2000	Polymer coated fiber
Radiantech Inc.	Not available	VF-45 Fiber Optic NIC, 850nm, 10 MB VF-45 Fiber Optic NIC, 1300nm, 100 MB VF-45 Digital Camera VF-45 Switch, 4-port x 2-slot with SNMP VF-45 Switch, 48-port 100MB (8-port x 6-slot) + 2 ports Giga VF-45 Switch, 24-port 100MB + 2 ports Giga VF-45 1 x 5 pin 10MB Transceiver VF-45 1 x 9 pin 100MB Transceiver VF-45 2 x 5 pin 100MB Transceiver
Ruby Tech Corporation	\$10 million in 1999; 13 million forecast for 2000	FE-1430VF.W PCI 100BASE Fiber LAN Card FE-C106VF 100BASE-TX TO 100BASE-FX Converter SF-3004VF 4PORT 100BASE Fiber Switch SF-8VF 8PORT 100BASE Fiber Switch SF16VF 16PORT 100BASE Fiber Switch GE-1000VF GIGABIT Fiber LAN CARD SH-9108VF 1*GIGABIT + 8*10/100 Gigabit Switch SF-9108VF 1*GIGABIT+ 8*100BASE-FX Gigabit Switch
U-CONN Technology	\$7 million in 1999; 17 million forecast for 2000	Connectors, Patchcord
UniSVR Global Information Technology Corp.	Not available	VF-45 Fiber Networks System Integration
Winbond Electronics Corp.	\$1.043 billion in 1999	PA-RISC 32bit CPU for IA application. Video/Audio/communication peripheral IC for the VPhone, IP Phone (VOIP), @Box, and Surveillance system solution.



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