



## **CYPERPATH INTRODUCTION**

### **1 Company Overview**

CyberPath, Inc., based in Piscataway, New Jersey, was established in 1999 as a spin-off from OpenCon Systems, Inc. to develop, manufacture and market a next generation network infrastructure platform to provide broadband connectivity of integrated services. Led by its Founder and President, Dr. Jonathan Ma, CyberPath had assembled a first rate technical team with superior skills in the areas of traffic aggregation, subscriber management, service and feature selection and Voice over IP. Additionally, the team possesses deep knowledge and experience in Ethernet, IP and relevant communication protocols as well as Synchronous Optical NETWORK (SONET) technology. The team's prior experience in developing high-speed interfaces including Packet Over SONET (POS), high speed backplanes and core competency in service and subscriber management functionality provide a strong foundation for developing competitive Gigabit Ethernet products.

The original objective for CyberPath was to develop, manufacture and market a hardware platform for the next generation network infrastructure, to provide broadband connectivity and integrated services. CyberPath successfully closed a round of funding of \$21.46 million in September 2000 from a group of venture capitalists and angels. After the investment transactions, CyberPath continued the development of strong capabilities and expertise in communication protocols, Subscriber Management, Packet Over SONET (POS), High Speed Backplane (Carrier Class Quality) and Service Selection/Mediation.

CyberPath's original product vision was to develop an Integrated Services Gateway (ISG), which could aggregate various traffic types from the access side, ranging from channelized voice to derived voice, to IP data, and feed such traffic to appropriate backbone networks, PSTN or IP networks. The initial emphasis of the ISG was on agnostic access and TDM voice. Such an offering could facilitate Competitive Local Exchange Carriers (CLECs) to quickly build competitive infrastructure and provide voice service from broadband access technologies.

Starting from early 2001, however, the US economy stepped into recession. Massive layoffs and spending cutbacks have been commonly observed across the country. The telecommunication industry, in particular, faced unprecedented challenges. With the demise of a majority of CLECs and slowed capital spending by the Incumbent Local

Exchange Carriers (“ILECs”), it is projected that the telecommunication industry will continue to show weakness into year 2003. In light of dramatic changes in the market and the economy, it was clear to both CyberPath investors and management that the original product direction and business vision need to be revised to accommodate the changes.

With the consensus of the investors, CyberPath quickly restructured its ownership structure and modified its business direction and plan. Instead of continuing its initiative to develop a telecommunication product for the carrier market, CyberPath adjusted its product direction and refocuses to an enterprise solution.

Within seven-month, CyberPath successfully completed its Ethernet Smart Switch (ESS) products, **ESS-F100** and **ESS-F1000**. **ESS-F100** and **ESS-F1000** are Gigabit multi-layer Smart Ethernet Switches which combine layer-2 switching, layer-3 routing, layer-4 security function and WAN interface, all in one box. However, the cost of ESS-F100 and ESS-F1000 is less than half of the Cisco equivalent.

**ESS-F100** and **ESS-F1000** have passed the network certification test required by the Ministry of Information Industry (MII) in China and are permitted to be sold in the China market. CyberPath has successfully established its partners for manufacturing, marketing and sales in the China market. The first batch of medium quantity is already in production. Customer trials are under way in China by potential customers for the first production units. CyberPath is already in negotiation with approximately 20 resellers and OEM customers in USA and other markets for potential business. In seven months, CyberPath has successfully repositioned itself for growth and success.

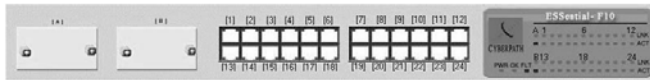
From various marketing analysis and feedback, it becomes apparent that established vendors, such as Cisco, have a very strong embedded customer base and are determined to defend their market share, especially in the higher-end Ethernet switch market. It would be difficult for a young company such as CyberPath to directly attack the strongholds of such established giants especially in the area of higher-end Ethernet switches. It is clear to CyberPath management that in order to penetrate more effectively into the Ethernet Switch market, CyberPath need to offer a low cost and easy to manage Layer 2 switch to go along with its ESS-F100 and ESS-F1000. The surveys also indicated that the demand for this type of switch in China market is very high. Although the margin for this type of switch is on the low end, CyberPath immediately noticed that this is a very good opportunity to create brand recognition and at the same time, help promote the Layer 3 varieties that CyberPath currently offer.

Recognizing the importance of making a ‘grand entrance’, thus, with the same tenacity and commitment, CyberPath quickly completed a very economical, managed Layer 2 Ethernet switch – ESS-F10 product, which offers 24 10/100 ports plus 2 independently configurable. At the same time, by teaming up with its partners, such as Fujitsu, CyberPath will also provide application oriented total solutions, which include ADSL modem, wireless modem, and VoIP gears to complement its ESS-F10 offering.

## 2 Product

### 2.1 Current Product Offering

➤ **ESS-F10: Managed Layer 2 Switch**



**ESS-F10** is a Layer 2 Ethernet switch with performance and features that are required to support Enterprise LAN based applications. It offers 24 10/100 Mbps Ethernet ports plus 2 uplink Ethernet ports. The uplink Ethernet ports are available in standard 100 Base-FX, 1000 Base-T, GBIC, SFP, as well as SX (multi-mode) and LX (single-mode) plug-in modules. The ESS-F10 features include:

- Up to 24 auto-MDIX 10/100 ports
- 2 independently plug-in slots
- Choice of 100 Base FX, 1000 Base-T, 1000 Base-SX and 1000 Base-LX, SFP and GBIC for plug-in
- 8.8 Gbps switching capacity
- Layer 2 switch features including:
  - MAC learning, aging and forwarding
  - MAC filtering
  - STP, fast STP and multiple STP, MAC Filtering
  - Port based network access control (802.1x)
  - Port based and Protocol based VLAN, VLAN tagging, GVRP
  - Independent and Shared VLAN
  - Priority Queuing
  - IGMP snooping
  - Flow control
  - Broadcast storm control
- Uni-directional and Bi-directional Port mirroring
- Layer 2+ and additional features
  - Head of Line Blocking Prevention
  - Bandwidth Allocation on a per port basis
  - Port Security and Access control
  - Stackable
- OAMP Features

- BOOTP/DHCP
- Software and configuration updates using TFTP, XMODEM
- User Interface (CLI, Telnet, WBI)
- RADIUS (to support port security)
- SNMP, RMON

➤ **ESS-F16: Manageable Gigabit Layer 2 Switch**



**ESSential F-16** is a multi-gigabit Layer 2 Ethernet switch designed to support LAN switching needs of an enterprise with a growing number of desktop PCs and servers with gigabit Ethernet network interface. It is a fully featured Layer 2 switch with 16 10/100/1000 Base T Ethernet ports. The ESS-F16 features include:

- 16 10/100/1000 Base T ports
- Auto MDI/MDI-X support
- 32 Gbps switching capacity
- Optional CAMs to support large number of MAC addresses
- Power Over Ethernet support (Future)
- Stackable up to 8 units
- Layer 2 switch features including:
  - MAC learning, aging and forwarding
  - MAC filtering
  - STP, fast STP and multiple STP, MAC Filtering
  - Port based network access control (802.1x)
  - Port based and Protocol based VLAN, VLAN tagging, GARP
  - Independent VLAN
  - Priority Queuing
  - IGMP snooping
  - Flow control
  - Broadcast storm control
- Uni-directional and Bi-directional Port mirroring
- Layer 2+ and Additional Features:
  - Head of Line Blocking Prevention
  - Bandwidth Allocation on a per port basis

- Port Security and Access control
- OAMP Features
  - BOOTP/DHCP
  - Software and configuration updates using TFTP, XMODEM
  - User Interface (CLI, Telnet, WBI)
  - RADIUS (to support port security feature)
  - SNMP, RMON
- **ESS-F100: Feature-rich Layer 3 Switch**



**ESS-F100** is a fully featured L2, L3 and L4 switch with 24 Fast Ethernet ports and 4 Gigabit ports and an aggregate switching capacity of 12.8 Gbps. ESS-F100 supports two type of plug-in modules: a 4-port gigabit module or the combination of a two independent one-port user-installable gigabit module and two-port fixed gigabit interface, which can be either GBIC or SFP. Copper (TX), fiber (SX, LX) gigabit, 100FX, SFP and GBIC plug-in are available.

- **ESS-F1000: Sophisticated Gigabit Layer 3 Switch**



**ESS-F1000** is also fully featured L2, L3 and L4 switch with 16 Gigabit ports and an aggregate switching capacity of 32 Gbps. There are four, 4-port gigabit modules in each unit. Either copper (TX) or fiber (SX, LX) based module can be installed in each slot. These modules are same as the ones used in the all ESS series.

Both ESS-F100 and ESS-F1000 products support an optional WAN interface card. The WAN interface card supports the following features:

- Integrated CSU/DSU with up to 2 T1/E1 lines
- Support for business DSL links using HDSL-2/G.SHDSL
- Integrated voice/data traffic transport over a single T1/E1 link
- Channelized voice drop and insert capability
- Future support for packetized voice

- Integrated firewall and VPN features
  - Common firewall features such as ACL, DoS attack prevention, NAT
  - IPSec, L2TP/PPTP VPN
  - Authentication using RADIUS and SecureID
  - Firewall and VPN throughput scalable from 100 Mbps to 1 Gbps
  - Intrusion detection and Content Filtering

The WAN card includes all the features needed to meet the Internet requirements for a small/medium sized business enterprise. The WAN cards can be ordered with either T1/E1 ports or DSL ports. Each WAN card can support up to 2 WAN ports. It can also include firewall and VPN software with hardware acceleration for encryption and decryption purposes. Future version of this card will include voice gateway functions to convert packetized voice to channelized TDM voice streams.

ESS-F100 and ESS-F1000 also meets the intranet requirements of a medium to large sized corporation. The following features of the ESS products can be used to meet the intranet requirements:

- Wire speed L2 and L3 switching
- Multi-gigabit Ethernet ports to facilitate deployment of gigabit Ethernet backbone
- Rich L2 features
  - MAC filters
  - STP and Fast STP
  - Port based and Protocol based VLAN (802.1Q)
  - Link Aggregation (802.1ad)
  - Layer 2 traffic priority (802.1p)
- Complete L3 feature set
  - Static routing
  - Dynamic routing: RIPv1, RIPv2, OSPF and BGP
  - Route redistribution between routing domains
  - Multicast routing protocols: IGMPv2, DVMRP, PIM-DM and PIM-SM
- Layer 3+ features
  - Control bandwidth usage limits on a per application or on a per user group basis
  - Virtual Router Redundancy Protocol to support against single point of failure
  - Traffic classes and sophisticated queue management
  - Bootp and DNS relay
- Management Capabilities
  - Command Line Interface
  - Web Based Interface

- SNMP
- RMON

ESS-F100 and ESS-F1000 are also uniquely designed to meet the intranet security requirements of a company. Both products support the following intranet security features using an optional add-on card.

- Policy based Access Control List
- Protection against denial of service attacks
- Intrusion detection and real time intrusion alerts
- Stateful inspection of application level messages
- Secure tunnels between application servers
- Layer 7 firewall functions (future release)
  - Single login for access to multiple services/data stores
  - Stateful inspection of XML transactions
  - Policies to monitor user activities based on authorized transaction profile for user
  - Wire-speed (2 Gbps) intrusion detection

## 2.2 Product Roadmap

CyberPath's product map includes three new products: **ESS-M1000**, **ESS-M10000** and **ESS-C10000**. These products are high-end multi-gigabit port layer 3 switches. **ESS-M10000** is a L2/L3 switch with 10gigabit uplink. A brief description of these products is presented below:

### ➤ **ESS-M1000**



The **ESS-M1000** is a modular Layer 3+ switch that can accommodate up to eight hot swappable plug-in modules. Two types of **ESS-M1000** products are available: **ESS-M1000/64** which can support up to 64 gigabit ports (8 ports per module) and **ESS-M1000/96** which can support up to 96 (12 ports per module) gigabit ports. **ESS-M1000** is non-blocking layer2/layer 3 switch with an aggregate switching capacity in excess of 160 Gbps

➤ **ESS-M10000**



The **ESS-M10000** is a modular Layer 2/3 switch that can accommodate up to six hot swappable plug-in access modules. Each plug-in access module can support up to 24 Fast Ethernet and 2 gigabit Ethernet ports. **ESS-M10000** has a fixed 10 Gigabit Ethernet port for uplink purposes.

➤ **ESS-C10000**



The **ESS-C10000** is a modular Layer 2/3 switch that can accommodate up to twelve hot swappable plug-in access modules. Each plug-in access module can support either twelve, one gigabit ports or one, ten gigabit Ethernet port. **ESS-C10000** is a chassis based system with redundant switch fabric and control modules. It includes a switching fabric with an aggregate switching capacity in excess of 240Gbps.

### 3 Management Team

CyberPath, Inc. has a talented and balanced management team, which consists of business leaders with business acumen and technical managers who have established track record in delivery.

CyberPath is managed by a seasoned team of senior executives. The top three executives have over 60 years of combined business, networking and high technology experience. They are regarded as experts in the data communications, networking and network management disciplines. Additionally, they have had significant experience creating and successfully nurturing numerous companies. A brief description of each is provided below:

**Dr. Jonathan Ma** is the Chief Executive Officer of CyberPath, Inc. He has over 25 years of extensive business technology experience, including work as one of the key contributors for AT&T's large Network Management Systems. Dr. Ma pioneered breakthroughs in SONET, OSI, and various next generation telephony products, including Network Management Systems.



As a veteran senior executive in the telecommunications and data communications industry, Dr. Ma is part of a small group of engineers/entrepreneurs worldwide who have consistently proven their ability to take telephony and data communications standards and apply them to solutions well ahead of the marketplace. He founded OpenCon Systems, Inc. in 1991, leading the company from a startup to a highly profitable middle-market company. Dr. Ma was recognized recently as one of finalist the Ernst and Young Entrepreneurs of the Year and he was also elected as one of fifty outstanding Chinese Americans in Business. He has spoken and participated in numerous panel discussions at key technical forums worldwide.

Dr. Ma holds a Ph.D. in Computer Science from University College London and a bachelor's degree in Electrical Engineering from the Chinese University of Science and Technology.

**Dr. Stephen Israel** is the Vice President of Engineering at CyberPath, Inc., where he oversees the company's technology operations and strategies.

Dr. Israel has over 15 years experience in the design and development of real-time embedded software for telecommunications equipment, data communications equipment and telecommunications network management software.

Dr. Israel played a major role in the development of Multi-layer Smart Ethernet Switches. His technical leadership was invaluable in developing a number of mediation products including the TMN Gateway and Billing Mediation Platform. He played a key role in assisting customers in the design and development of Next Generation Digital Loop Carrier (NGDLC) systems, SONET/SDH/WDM systems and ATM edge switches.

Before joining the Company, Dr. Israel worked for a large communication equipment supplier in India, where he was involved in the design and development of Automated Test Equipment used for testing V/UHF transceivers. He developed a test language for automating testing of micro-controller based industrial equipment.

Dr. Israel holds a Ph.D. in Computer Science from Stevens Institute of Technology, and both a master's degree in Computer Engineering and a bachelor's degree in Electronics and Telecommunications from the University of Madras in India.

CyberPath core competence lies in telecommunication and data communication, which has been well recognized in the industry.

**Dominic DiSario:** is responsible for Marketing and Sales. He has over 15 years experience in marketing and sales to the telecommunications and financial services industries. Prior to joining CyberPath, he worked at such industry leaders such as General DataComm, Integrated Network Corp., and Bunker Ramo Corp.in which Mr. DiSario held responsible positions in Product Line Management and Product Marketing. Mr. DiSario worked, both domestically and internationally forging alliances with enterprise organizations, distributors, OEM's and outside vendors.

He has experience working with engineering, manufacturing, and sales and has brought Telco central office and enterprise telecommunications products to market as well as data communication products to the banking and stock brokerage industries.

Mr. DiSario holds a Bachelor of Science Degree in Electronics and a Masters of Business Administration Degree in Finance.