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ydlin@cis.nctu.edu.tw
www.cis.nctu.edu.tw/~ydlin
May 2001

Outline

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Network Equipment Providers

Access

LAN
- Adapter
- HUB
- Layer 2 switch

WAN
- Modem
  - 56K
  - ISDN
  - DSL
  - Cable
- STB
- Access Server
  - RAS
  - Broadband Access Headend

Wireless
- Adapter Card
- Access Point
- Mobile handset/ PDA
- Blue tooth

Core

Tx Media
- Gbit Ethernet
- DWDM
- SONET

Router/ Multilayer Switch
- Pure Router
- MPLS Switch

Service

Intranet
- Network Security
- Bandwidth Management
- Home Gateway
- Layer 4-7/Web Switch
- IP Telephony
  - IAD
  - VoIP Gateway
  - IP Phone

Enterprise Server
- App. Server
  - Web Server
  - Mail Server
  - Proxy Server
  - NAS
- Mng. Server
  - DHCP Server
  - DNS Server

Remote Service/ Content Provider
- ASP
- IDC
- UMS
- E-commerce
- Net Game
- portal
- media

Network Service Providers

Access

- **Dial-in**

- **Wireless**
  - GPRS
  - CSD
  - SMS

- **Leased Line**
  - 64K
  - T1
  - T3
  - OC3
  - OC12

- **Broad-band**
  - ADSL
  - Cable Modem

Core

- **Infras-tructure (lines)**
  - optical
  - Micro-ware
  - satellite

- **ISP**

- **Inter-ISP**

Service

- **Service**
  - Message
    - UMS
  - Storage
    - IDC
  - ASP
    - E-commerce
    - game

- **Content**
  - Portal
  - Media

NCTU Highspeed Networks Lab

4

Who Acquired Who

The Buyer	Corp. been acquired	For What	Date
AT&T	NorthPoint	DSL services	2001/3/22
NetSec	Expiria	Security Services (monitoring & analysis)	2001/3/16
BMC	Perform	Network Management s/w (topology discovery, performance management)	2001/2/21
Intel	Xircom	Mobile Computing over 802.11, GSM, GPRS, Bluetooth	2001/2/8
3COM	Alteon of Nortel	Gigabit Ethernet over IP	2000/12/22
Vivendi	Seagram	Universal Studios & Music Group (content providers & distributors)	2000/6/20
Singapore Tele.Com	C&W Optus (Australia)	New Abroad Market (carrier, broadband & mobile services)	2000/3/26

Source: www.gartner.com

Which corp. has been invested by VC in CORE

NovaLux Inc	$109,100,000	Photonic laser solutions for **optic** fiber comm market	Q3/2000
Pluris Inc	$101,500,000	Internet **backbone router**s	Q3/2000
Chorum Technologies	$92,240,000	Designer, manufacturer, and marketer of advanced **optical** solutions for terabit-scal, active optical networks	Q3/2000
IPG Photonics	$90,000,000	Active **optical** component manufacturer	Q3/2000
PhotonEx Corp	$80,000,000	Developing an optical backbone system	Q3/2000
Nexsi Corporation	$75,000,000	Pioneering a new breed of routers for packet services that serve as an **integrated service** delivery platform from high bandwidth security and traffic management services	Q3/2000
Network Photonics Inc	$70,000,000	Company produces optical networking routers	Q3/2000
Genoa Inc	$67,000,000	Semiconductors for optical communications	Q3/2000
LightChip	$60,000,000	Optical routing and optical monitoring products that advance the deployment of transparent optical networks.	Q3/2000
Mahi Networks, Inc.	$60,000,000	Mfg, optical transport products	Q2/2000
LuxN Inc	$60,000,000	Designs and manufactures optical networking solutons for **high bandwidth data communications applications**	Q2/2000
Alidian Networks, Inc.	$53,500,000	Provider of multi access and transport systems enabling **integration** of voice, data and video services through **optical** networking technology on metropolitan area networks	Q3/2000
Rapid5 Networks Inc.	$53,000,000	Provides both existing and emerging carriers with reliable and cost-effective solutions for the next generation networksof the 21st Century	Q3/2000
WaveSplitter Technologies, Inc	$51,000,000	Develops and manufactures fiber optic couplers, isolators and **DWDM** components	Q3/2000
Maple Optical Systems Inc	$50,000,000	Multi-service optical systems	Q3/2000

Who has been invested by VC in ACCESS

Nishan Systems Inc.	$50,000,000	Storage area network devices.	**Q3**
ZapMedia.com	$24,000,000	Next-generation internet company delivering instant access to movies, music, videos and the web to consumers of all agesthrough existing tv's and stereos.	**Q3**
Mapletree Networks	$15,000,000	Provider of multi-service network access technology	**Q3**
Tellus Technology	$13,928,202	develops, manufactures & supplies cellular packet data modems and other wireless terminal products	**Q3**
Woodwind Communication Systems Inc	$12,256,119	Software systems for the CLEC and telecommunications market. Woodwind is a network access company dedicated to solving the economic and technical challenges of service providers integrating voice, Internet and data services for the small business and remo	**Q3**

Who has been invested by VC in SERIVCE

Relera	$207,500,000	Developer and manager of Internet data centers	Q3
StorageNetworks Inc	$143,000,000	Provider of managed data storage services.	Q1
Intira Corp.	$140,000,000	Builds and operates colocation data centers	Q3
CopperCom Inc.	$90,000,000	Creating voice services over broadband	Q3
Jamcracker	$85,000,000	Centralized platform to consolidate web-based and IT business services from multiple vendors	Q3
Yipes Communications Inc	$77,000,000	Optical provider of managed IP Networks	Q1
Equinix Inc.	$55,500,000	Designs, builds and operates carrier and IP neutral Internet Business Exchanges	Q2
Net Rail Inc.	$55,000,000	Delivers universal networking solutions over its Tier One IP broadband network to both established and emerging NetworkService Providers, including ISPs, CLECs and wireless carriers	Q2
InternetConnect Inc.	$52,600,000	B2B Internet solutions for small and medium sized businesses (broadband connectivity)	Q2

Source: www.siliconvalley.com

Security Gateway (firewall)

☑ *Need License*

Company/ Product	Packet Filter	DMZ	URL Filter		HTTP Content Filter			Stateful Inspection
			Exactly String Match	Regular Expression	Java	Active X	JavaScript	
Linux (Open Source)	✔	✔	✔	✔	✔	✔	✔	*
BorderWare Firewall Server	✔	✔	✔	N/A	✘	✘	✘	✘
CheckPoint VPN/Firewall-1	✔	✔	✘	✘	✘	✘	✘	✔
Cisco PIX 525R	✔	Need Card	External	N/A	✔	✔	✘	✔
NetScreen-100	✔	✔	External	N/A	✔	✔	✘	✔
SonicWall PRO VX	✔	✔	✔	Keyword Only	✔	✔	✘	✔
WatchGuard FireBox Plus	✔	✔	✘	✘	✔	✔	✘	✔

* means available but not implemented by us

Security Gateway (VPN)

Company/ Product	Protocol Support	Encryption Algorithm			Authentication Algorithm			Keying Method	Automatic Key Authentication	
	AH/ ESP	DES	3DES	OTHER	MD5	SHA1	OTHER	**Manual** /**Auto**	PSK	RSA Signature
Linux (Open Source)	✔	✔	✔	✘	✔	✔	✘	✔	✔	✔
BorderWare Firewall Server	**Only ESP**	✔	✔	**Blowfish, CAST**	✔	✔	✘	✔	✔	✘
CheckPoint VPN/Firewall-1	✔	✔	✔	**RC2, CAST, FWZ1**	✔	✔	**CBC-DES MAC**	✔	✔	✘
Cisco PIX 525R	✔	✔	✔	✘	✔	✔	✘	✔	✔	✔
NetScreen-100	✔	✔	✔	✘	✔	✔	✘	✔	✔	Available in ScreenOS2.5
SonicWall PRO VX	✔	✔	✔	**ARCFour**	✔	✘	✘	✔	✔	✘
WatchGuard FireBox Plus	✔	✔	✔	✘	✔	✔	✘	✔	✔	✘

Web Switch (Topologies)

	Alteon WebSystems Alteon 184	F5 Networks Bip-IPController 3.1	Foundry Networks ServerIron XL	Intel NetStructure 7180 e-Commerce Director
10/100/1000 Mbps Ethernet	/ /	/ /	/ /	/ /
# of Interfaces (10 / 100) Mbps	9/9	2/2	8-24/0-2	2/0
Redundant Power Supplies				
Active/asymmetric load-balancing	/	/	/	/
Cookie switching				
URL parsing				
SSL acceleration/ termination				
SSL ID load-balancing				

Web Switch (Fault Tolerance)

	Alteon WebSystems Alteon 184	F5 Networks Bip-IPController 3.1	Foundry Networks ServerIron XL	Intel NetStructure 7180 e-Commerce Director
Port Aggregation		N/A		N/A
Failover via network connection				
Failover via serial link				
Service to VIP bindings				
VRRP				
Backup servers				
SNMP support				

Web Switch (Web Switch Featuers)

	Alteon WebSystems Alteon 184	F5 Networks Bip-IPController 3.1	Foundry Networks ServerIron XL	Intel NetStructure 7180 e-Commerce Director
Rule/expression types	Pattern matching	Intelligent pattern and variable matching	Prefix/suffix pattern matching	Prefix/suffix pattern matching
Configurable rule precedence				
Binding logic	Rule to server	Rule to server group	Server group to rule	Rule to server

Web Switch (Management Features)

	Alteon WebSystems Alteon 184	F5 Networks Bip-IPController 3.1	Foundry Networks ServerIron XL	Intel NetStructure 7180 e-Commerce Director
In service / not in service				
Secure Management	SSH, SSL	SSH, SSL	SSH, SSL	SSH, SSL
Configuration access	CLI, Web	CLI, Web	CLI, Web	CLI, Web
IP filters				
UDP-based service support				
Cache redirection				
Secondary server checking				
Content-aware health checks				
Global load-balancing				
HTTP/DNS redirection methods	/	N/A	/	N/A
802.1p priority				

Bandwidth Enforcement

	Pri-ority	Src /Dst IP Port#	Ser-vice	Sch-edule	Dir-ection (In /Out)	Log /Alert	Diff-serv Mark -ing	Per Class Bandwidth Control		
								MAX	MIN	Guarantee connections in the class
NetGuard	✓	✓	✓	✓	✓	✓	✗	✓	✓	✗
Check Point	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓
WiseWan	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
IPolicer	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓
Packeteer	✗	✓	✓	✗	✓	✓	✓	✓	✓	✓
Sitara	✗	✓	✓	✗	✓	✓	✗	✓	✓	✓

Mail Outsourcing Services

Service provider	POP3 /IMAP4 access	Web access	Anti-virus	Anti-spam	SSL support	Domain hosting	Migration
Yahoo!mail	Yes	Yes	Yes	Yes	Web access	Yes (for individual)	No
Hotmail.com	Yes	Yes	Yes	Yes	Web access	No	No
Critical Path	Yes	Yes	Yes	Yes	Web/POP3/ IMAP4 access	Yes (for enterprises)	No
USA.net	Yes	Yes	Yes	Yes	Web/POP3/ IMAP4 access	Yes (for enterprises)	No
Our system	Yes	Yes	Yes	Yes	Web/POP3/ IMAP4 access	Yes (for enterprises)	Yes

Internet Data Centers

IDC Corpration				
		Inflow	North America & Europe	17 ID Centers(NA)&1 in Ireland
		Optiglobe	Latin America	3 ID Centers
		iAsiaWorks	USA and 13 Asia Countries	3 ID Centers (Taiwan, Korea, H.K.)
		ViaWest	America	1 ID Center & 4 facilities

Hosting

Shared

Dedicated

Connection

• Multi-Homing [Two conn. from redundant internal network to customer equipment]

• Flag-rate Pricing vs Usage-base Pricing

• BGP-4 Routing

High Layer Protocol Supporting

• Server Load Balance
• Identify failure Web site and reroute
• Secure Socket Layer support
• Cookie-Tracking Persistence
• Firewall

Storage

Backup and
Quickly Reboot

EMC²
when information lives.

Paper to Digit Content Service
No Limit Storage Space

MANAGED STORAGE
storage for eBusiness

Monitor & Manage

• Business Report

• Immediate Web Report

• Simulate End-User to connect web site , ftp or send/recv email