

FOCUS

Investment Banking

Telecom Technology and Services Group

Enterprise-Focused Telecom Technology Quarterly



Investment Banking and Advisory Services

FOCUS Investment Banking LLC is a leading investment bank with specialized telecom technology and services expertise, concentrating on providing highly tailored services to emerging middle market and larger organizations in this sector:

- Mergers & Acquisition Advisory
- Corporate Development Consulting
- Strategic Partnering & Alliances
- Capital Financing, Debt & Equity
- Corporate Valuations

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Enterprise-Focused Telecom Technology Quarterly

By Richard Pierce, FOCUS Managing Director and Telecom Technology and Services Team Leader

FOCUS believes that the Enterprise-Focused Telecom Technology sector is one of the most exciting in Telecom. Businesses today have an unprecedented opportunity to enhance operating efficiency and reduce costs by converging separate voice and data networks, empowering remote and mobile workers, extending communications to harsh outdoor and industrial environments, enhancing customer service and moving applications to a hosted or “cloud” environment. However, to achieve these benefits organizations must overcome a host of non-trivial challenges including bandwidth management, quality of service prioritization and monitoring, device proliferation and network security. While many of the largest players in the communications equipment industry are indeed helping to meet these challenges, we believe there is significant innovation among middle market technology providers and ample opportunities for them to create meaningful value for their shareholders. FOCUS is proud of its commitment to the Enterprise-Focused Telecom Technology sector and we are excited about the prospects for middle market companies in this space.

The FOCUS Telecom Technology and Services group consists of four professionals with a mix of backgrounds that include both C-level operating expertise and experience at leading middle market investment banks. The FOCUS Telecom team is uniquely qualified to help middle market clients reach their strategic objectives because the group:

- Devotes significant senior level resources to executing transactions for lower middle market clients,
- Has a breadth of knowledge that covers most segments of the telecom industry,

- Has bankers with C-level operating experience in the telecom industry,
- Has a proven transaction methodology for delivering results,
- Is equally comfortable with buy side and sell side M&A,
- Leverages an experienced team of research professionals,
- Has a national presence with coverage of both East and West coasts.

Sub Sector Definitions

Enterprise Networking: Enterprise-grade switches and routers (wireline and wireless), enterprise CPE and application and bandwidth management tools such as WAN optimization and application acceleration

Industrial Networking and M2M: Ruggedized equipment designed for communications in harsh environments as well as equipment utilized for machine-to-machine communications

Network Management: Software used by enterprises to manage and monitor their voice communications and data networks

Network Security: Software applications designed to identify and protect against a wide variety of network security-related threats

Unified Communications and Contact Center: PBXs, videoconferencing-related products and software products designed to enhance the efficiency of contact center networks.

Summary Comments

Public Markets

The Focus Enterprise-Focused Telecom Technology Index (EFTTI) experienced a double-digit loss in our fall reporting period, dropping 11.4% in the past three months. This was despite the fact that the S&P 500 and NASDAQ were up 1.9% and 1.4%, respectively, over the same time period. The EFTTI still remains in positive territory for the full year with a 12-month gain of 6.7%. However, this gain once again trails the broader indices as the S&P 500 is up 12.0% year-over-year and the NASDAQ is up 13.5% year-over-year. Even with the overall decline in the index, sector multiples actually increased compared to this same time last year. The sector revenue multiple went from 3.9x to 4.2x, while the sector EBITDA multiple increased from 16.2x to 17.5x.

Enterprise Networking

The Enterprise Networking sub sector plummeted 11.9% in the past three months. As is usually the case when this happens, Cisco had a difficult reporting period with a loss of 14.2%. However, the declines were not just limited to Cisco as ten of the 12 stocks in the sub sector ended the period trading lower than where they started. For the full year, the sub sector is up 3.6%. All but four of the companies in the sub sector are in positive territory over this time frame, with particularly strong performances coming from A10 Networks, Accton and Unizyx. Sub sector multiples closed out the period at 3.7x revenue and 12.9x EBITDA. This compares to multiples for the year-ago period of 3.7x revenue and 13.4x EBITDA.

Industrial and M2M

The Industrial and M2M sub sector enjoyed a strong gain of 7.8% in the past three months. Gains were broad-based as five of the seven companies in the sub sector turned in positive returns. This included double digit gains at both Belden and Inseego. The full year return for the sub sector is negative 9.7%, so the sub sector is still down meaningfully year-over-year. Over this time frame the sub sector revenue multiple remained unchanged at 1.2x, while the sub sector EBITDA multiple increased slightly from 10.6x to 11.0x.

Network Management

After a steep drop in our summer report, the Network Management sub sector had a relatively flat performance this period with a small gain of 1.3%. This was entirely powered by a 5.7% gain at SolarWinds; all of the other stocks in the index were in negative territory for the period. The twelve-month performance for the sub sector looks significantly better with a year-over-year gain of 19.9%. SolarWinds played a big part in this increase with a nearly 30% gain, and MobileIron also enjoyed a similarly strong return. Over the past year, the sub sector revenue multiple increased from 4.6x to 5.1x, while the sub sector EBITDA multiple increased from 28.7x to 34.1x.

Network Security

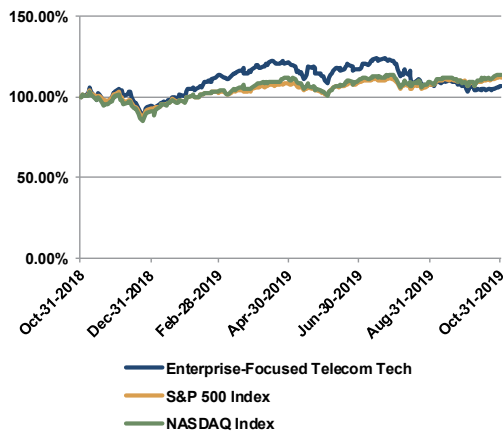
The Network Security sub sector had a second straight reporting period with a negative return, this time dropping 9.5% in the past three months. The majority of the stocks in the sub sector actually delivered a positive return for the period, but this was not enough to counterbalance steep losses at CrowdStrike, CyberArk, Rapid7 and Zscaler. Year-over-year returns continue to dwindle, but still remain in positive territory with a gain of 8.3%. Sub sector multiples were also on the upswing and ended the period at 5.9x revenue and 40.6x EBITDA. Both of these represent increases from year-ago multiples of 5.5x revenue and 32.3x EBITDA.

Unified Communications and the Contact Center

The Unified Communications and the Contact Center sub sector had a "first to worst" performance as its 18.0% loss this period easily made it the worst performing sub sector in the EFTTI. The main culprits behind this decrease were Verint and Zoom, each of which suffered a more than 20% decline. On the plus side, Enghouse Systems, Five9 and Liveperson all saw strong gains this period. On an even more optimistic note, the sub sector is still up 27.5% for the full year period, which actually makes it the best performing sub sector in the EFTTI over this time frame. Sub sector multiples are up sharply compared to a year ago, largely due to the entrance of Zoom into the index. The sub sector revenue multiple jumped from 2.6x a year ago to 6.0x currently, and the sub sector EBITDA multiple had an equally impressive gain from 21.3x to 45.3x.

Enterprise-Focused Telecom Technology: Public Market Summary

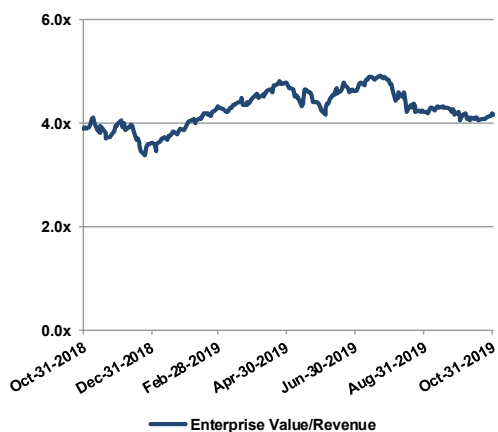
Twelve Month Index Returns



Sector and Sub Sector Returns

	12 Month	3 Month
Enterprise-Focused Telecom Tech	6.7%	-11.4%
Enterprise Networking	3.6%	-11.9%
Industrial and M2M	-9.7%	7.8%
Network Management	19.9%	1.3%
Network Security	8.3%	-9.5%
Unified Comms & Contact Center	27.5%	-18.0%
S&P 500	12.0%	1.9%
NASDAQ	13.5%	1.4%

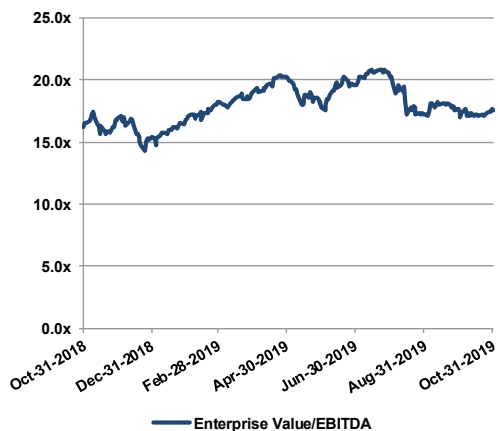
Revenue Multiple Trends



Sector and Sub Sector Revenue Multiples

	10/31/2019	10/31/2018
Enterprise-Focused Telecom Tech	4.2x	3.9x
Enterprise Networking	3.7x	3.7x
Industrial and M2M	1.2x	1.2x
Network Management	5.1x	4.6x
Network Security	5.9x	5.5x
Unified Comms & Contact Center	6.0x	2.6x

EBITDA Multiple Trends



Sector and Sub Sector EBITDA Multiples

	10/31/2019	10/31/2018
Enterprise-Focused Telecom Tech	17.5x	16.2x
Enterprise Networking	12.9x	13.4x
Industrial and M2M	11.0x	10.6x
Network Management	34.1x	28.7x
Network Security	40.6x	32.3x
Unified Comms & Contact Center	45.3x	21.3x

Source: Capital IQ

M&A Summary Comments

M&A

While the total of 40 M&A transactions we counted this period was relatively modest in terms of the total number of deals, with \$18.0 billion in announced transaction dollar volume this period has to be ranked as one of the most active in recent memory. While we had one large transaction that accounted for more than half of this total amount, we still had three other transactions for the period that weighed in at more than \$1 billion each. Year-to-date 2019 we now stand at 139 transactions with a total announced transaction dollar volume of \$23.7 billion. This means that the year is on track to be perhaps the least active of the last five in terms of the total number of transactions, but still very solid in terms of transaction dollar volume.

Enterprise Networking

The lone transaction in the Enterprise Networking sub sector was the acquisition of the Xirrus enterprise Wi-Fi assets of Riverbed Technologies by fixed wireless company Cambium Networks. The purchase price was \$5.0 million.

Industrial and M2M

The Industrial and M2M sub sector had three transactions this reporting period. Beijer Electronics acquired industrial router and gateway company Virtual Access for \$20.0 million. In another transaction in the industrial wireless space, VOGO Société anonyme acquire Vokkero. Finally, Softing acquired Phoenix Digital, a company that provides fiber optic networking products for industries such as energy, mining and utilities.

Network Management

Splunk inked two acquisitions in the Network Management sub sector this period, acquiring both Omnicion and SignalFx. The SignalFx transaction was particularly notable in that it was the only transaction outside of the Networking Security sub sector this period to garner a valuation in excess of \$1 billion. VMware also came off the sidelines this period and acquired network monitoring company Veriflow Systems. In the sub sector's final two transactions, Resolve Systems acquired FixStream Network while Park Place Technology acquired Entuity. Both of these companies provide visibility into data center networks.

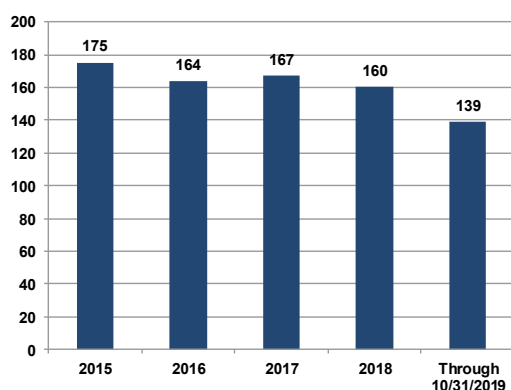
Network Security

Clearly the first transaction to point out in the Network Security sub sector is Broadcom's acquisition of Symantec's enterprise security assets for \$10.7 billion. This is the largest M&A transaction in the EFTTI sector this year by a wide margin. Other notable deals in terms of dollar value were Thoma Bravos' take-private transaction of Sophos for \$3.9 billion and VMware's acquisition of Carbon Black for \$2.1 billion. In addition to these three large transactions, the sub sector was generally active with 25 total transactions this period. Other notable acquirers included SailPoint Technologies (which made two acquisitions) as well as Barracuda Networks, Fortinet, Hewlett Packard Enterprise, Palo Alto Networks and Trend Micro.

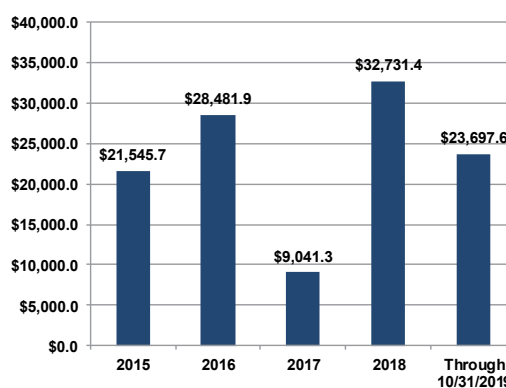
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Enterprise-Focused Telecom Technology: M&A Summary

M&A Activity: Number of Transactions



M&A Activity (\$ Value of Transactions in Millions)



Unified Communications and the Contact Center

It was a second straight period with a high level of activity for the Unified Communications and the Contact Center sub sector with six total transactions. Serial consolidator Enghouse Systems returned to the acquisition table with its purchase of contact center software vendor Eptica. Cisco, Intermedia and Upland Software were also active in acquiring contact center software companies. Finally, PT.ALTAVINDO acquired videoconferencing company V-cube and Voyant acquired mobile softphone company Acrobits.

Transactions with Announced Multiples

This was a good period for transactions with announced multiples with four new transactions. Not surprisingly, the large Network Security transactions went for the most eye-popping multiples. These were the Thoma Bravo acquisition of Sophos (5.5x revenue and 49.2x EBITDA) and the VMware acquisition of Carbon Black (9.3x revenue despite generating negative EBITDA). The final transaction in the Networking Security sub sector with an announced multiple was Hewlett Packard's acquisition of Bromium, which was done at a mere 1.5x revenue. Finally, Beijer Electronics paid 1.5x revenue in its acquisition of industrial router and gateway company Virtual Access.

M&A Announced Transactions (8/1/19 – 10/31/19)

Acquiror	Target	Sector	Date Announced	Purchase Price	Description
Beijer Electronics	Virtual Access	Industrial and M2M	10/30/19	\$20.0	Wireless industrial routers and gateways as well as network performance activators for controlled connectivity.
Bechtle	algacom	Security	10/28/19	NA	Identity management SaaS for businesses that enables verified user access to messaging and collaboration enterprise applications.
Fortinet	enSilo	Security	10/28/19	NA	Provides managed pre and post-infection on-premise, cloud and IoT device and endpoint security services.
Enghouse Systems	Eptica	Unified Comms & Contact Center	10/22/19	NA	Customer service automation software that enables businesses to respond to customer inquiries via web, email, chat and social media.
Trend Micro Incorporated	Cloud Conformity	Security	10/21/19	NA	Cloud infrastructure security and threat management, monitoring, risk assessment and compliance for use with AWS.
SailPoint Technologies	Orkus	Security	10/16/19	\$16.5	Access governance software provider for data, infrastructure and identities in hybrid environments.
SailPoint Technologies	OverwatchID	Security	10/16/19	\$21.0	Supplier of privileged access management software.
Thoma Bravo	Sophos	Security	10/14/19	\$3,913.5	Provides cloud-enabled end-user and network security solutions including endpoint protection, firewall and cloud security analytics.
Outpost24	Rapid Focus Security	Security	10/3/19	NA	Wireless device detection, assessment and threat detection for businesses via connected Wi-Fi and Bluetooth signals.
ReliaQuest	Threatcare	Security	10/2/19	NA	Cyber defense and risk assessment SaaS with features for attack simulation, penetration testing and vulnerability reporting.
Upland Software	InGenius	Unified Comms & Contact Center	10/1/19	\$29.4	Provides contact center software that integrates enterprise telephony with existing CRM systems.
Entourage Investment Group	Axiom Cyber Solutions	Security	9/19/19	NA	Hardware and software solutions for cybersecurity protection of small- and mid-sized businesses.
Hewlett Packard Enterprise	Bromium	Security	9/19/19	\$30.0	Endpoint security SaaS that isolates browser-based attacks, malicious downloads and attachments and other applications.
VOGO Société anonyme	Vokkero	Industrial and M2M	9/17/19	\$7.2	Wireless solutions for various industrial applications such as construction, maritime, security, nuclear and asbestos removal.
HID Global	Avalanche Cloud Corporation	Security	9/12/19	NA	Provides certificate-based public key infrastructure and encryption SaaS to enable digital identity management.
The Stage Fund	Cymmetria	Security	9/4/19	NA	Cyber deception solution that diverts attackers from organizational targets and automatically validates and helps triage alerts.
Splunk	Omnition	Network Management	9/4/19	NA	Open-source application performance management SaaS that enables distributed tracing for monitoring cloud-native environments.

M&A Announced Transactions (8/1/19 – 10/31/19) continued

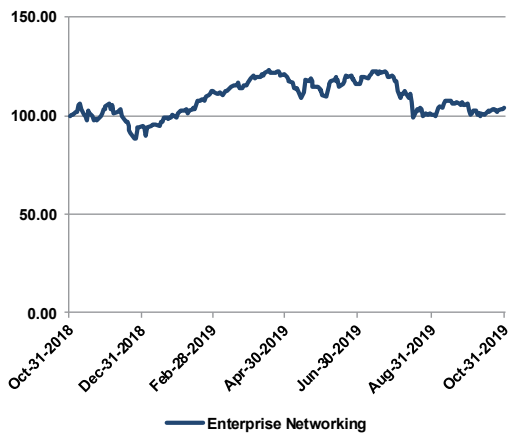
Acquiror	Target	Sector	Date Announced	Purchase Price	Description
Palo Alto Networks	Zingbox	Security	9/4/19	\$75.0	Cloud-based service to discover, identify, secure and optimize IoT devices.
Sectra Communications	Columbitech	Security	9/3/19	\$0.3	Wireless security software products including a mobile VPN.
Voyant	Acrobits	Unified Comms & Contact Center	8/30/19	NA	Mobile communication softphones for smartphones, WebRTC clients for browsers and software development kits.
Cisco Systems	CloudCheery	Unified Comms & Contact Center	8/26/19	NA	Predictive customer analytics SaaS for call center agents in the financial, retail, hospitality, B2B, healthcare and education sectors.
VMware	Carbon Black	Security	8/22/19	\$2,139.7	Cloud-native platform that leverages big data and behavioral analytics to provide comprehensive endpoint protection.
Monterro Holdings	Specops Software	Security	8/22/19	NA	Microsoft Active Directory-based desktop and password management and authentication SaaS to businesses.
BlackRock Private Equity	Cofense	Security	8/21/19	NA	Anti-phishing threat management solutions against phishing, malware and drive-by attacks.
VMware	Intrinsic	Security	8/21/19	NA	Cloud-based web application security SaaS for businesses operating in serverless computing environments.
Splunk	SignalFX	Network Management	8/21/19	\$1,050.0	Real-time cloud performance monitoring SaaS for businesses globally.
PerimeterX	PageSeal	Security	8/20/19	NA	Develops software to block malware on websites.
Softing	Phoenix Digital	Industrial and M2M	8/19/19	NA	Industrial fiber optic networking communications switching modules for the energy, mining, chemicals, utility and public sectors
Resolve Systems	FixStream Network	Network Management	8/18/19	\$24.0	Technology platform that manages data and correlates application instances, storage, flows, paths and network services.
PT.ALTAVINDO	PT. V-cube	Unified Comms & Contact Center	8/14/19	NA	Manufactures and offers visual communication devices and services, such as cloud based video conferencing.
VMware	Veriflow Systems	Network Management	8/14/19	NA	Software that provides features for monitoring network-wide behavior and predicting network outages and vulnerabilities.
Barracuda Networks	InfSecure (Bot Mitigation Technology)	Security	8/13/19	NA	Leverages machine learning to enable automatic and custom profiling of individual applications for bot detection and mitigation.
Intermedia	Telax	Unified Comms & Contact Center	8/12/19	NA	Contact center management, customer service automation, interactive voice response and workforce management SaaS.
McAfee	Nano Sec	Security	8/9/19	NA	Zero-trust cloud, application and datacenter security management SaaS for businesses.
Cambium Networks	Riverbed Technologies (Xirrus Assets)	Enterprise Networking	8/8/19	\$5.0	Portfolio of high performance enterprise Wi-Fi access points and subscription services.
Broadcom	Symantec (Enterprise Security Assets)	Security	8/8/19	\$10,700.0	Endpoint and information protection products including endpoint security, advanced threat protection and information protection.
LogMeIn	No Password	Security	8/7/19	NA	Cloud-based cybervault system that provides protection from hackers and other cyberthreats.
Park Place Technologies	Entuity	Network Management	8/6/19	NA	Network performance monitoring solution that provides the analytics needed to keep networks performing and provide visibility into issues.
GoSecure	EdgeWave	Security	8/1/19	NA	Email and web security SaaS including secure web content management and employee usage policy compliance.
Internetworking and Broadband Consulting	NaviPlus	Security	8/1/19	NA	Cybersecurity SaaS to enable security vulnerability diagnosis, web tampering detection and firewall protection.

M&A Announced Transactions with Revenue Multiples (11/1/18 – 10/31/19)

Acquiror	Target	Sector	Date Announced	Purchase Price	Revenue Multiple	EBITDA Multiple	Description
Beijer Electronics	Virtual Access	Industrial and M2M	10/30/19	\$20.0	1.5 x	NA	Wireless industrial routers and gateways as well as network performance activators for controlled connectivity.
Thoma Bravo	Sophos	Security	10/14/19	\$3,913.5	5.5 x	49.2 x	Provides cloud-enabled end-user and network security solutions including endpoint protection, firewall and cloud security analytics.
Hewlett Packard Enterprise	Bromium	Security	9/19/19	\$30.0	1.5 x	NA	Endpoint security SaaS that isolates browser-based attacks, malicious downloads and attachments and other applications.
VMware	Carbon Black	Security	8/22/19	\$2,139.7	9.3 x	NM	Cloud-native platform that leverages big data and behavioral analytics to provide comprehensive endpoint protection.
Broadcom	Symantec (Enterprise Security Assets)	Security	8/8/19	\$10,700.0	4.6 x	NA	Endpoint and information protection products including endpoint security, advanced threat protection and information protection.
8x8	Wavecell	Unified Comms & Contact Center	7/17/19	\$125.0	3.9 x	NA	Communications platform-as-a-service software that enables SMS, chat, push notifications, voice and video communications.
Westermo Teleindustri	Neratec Solutions	Industrial and M2M	7/8/19	\$5.0	0.8 x	NA	Hardware, software and wireless local area network products for industrial applications.
Extreme Networks	Aerohive Networks	Enterprise Networking	6/26/19	\$228.4	1.5 x	NM	Cloud networking and enterprise Wi-Fi solutions including wireless access points, branch routers and switches.
Enghouse Systems	Vidyo	Unified Comms & Contact Center	5/14/19	\$40.0	0.7 x	NA	Enterprise-class video software solutions that support visual communications across diverse end-points and networks.
SolarWinds	Samanage	Network Management	4/11/19	\$350.0	17.5 x	NA	IT asset and help desk management SaaS for businesses with features for AI-based ticket routing and workflow automation.
Progress Software	Ipswitch	Network Management	3/28/19	\$225.0	3.0 x	NA	Network management, file transfer and messaging software to monitor network activity and performance and transfer files.
Casa Systems	NetComm Wireless	Industrial and M2M	2/21/19	\$97.1	0.7 x	9.7 x	Fixed wireless broadband and wireless machine-to-machine and IoT terminating devices.
Carbonite	Webroot	Security	2/7/19	\$618.5	2.9 x	NA	Anti-malware and firewall software and SaaS for managed service providers, businesses and consumers.
Zix Corporation	AppRiver	Security	1/15/19	\$271.0	2.8 x	23.3 x	Microsoft-based email security and managed messaging SaaS and services for enterprises.
Marchex	Callcap	Unified Comms & Contact Center	11/26/18	\$35.0	4.6 x	NA	Machine learning-based call tracking and monitoring services and call recording for marketing and sales-related analysis.
BlackBerry	Cylance	Security	11/16/18	\$1,400.0	10.8 x	NA	AI-based IT security management SaaS for businesses with features for intrusion protection against malware and viruses.
AMETEK	Telular	Industrial and M2M	11/1/18	\$525.0	3.2 x	NA	M2M mobile asset management SaaS for businesses to track systems and sensors throughout their enterprise.

Sub Sector Analysis: Enterprise Networking

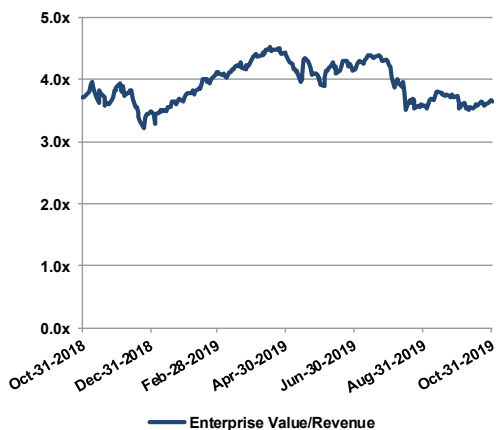
Twelve Month Index Returns



Company Returns

	12 Month	3 Month
Enterprise Networking Index	3.6%	-11.9%
A10 Networks	27.9%	-2.0%
Accton	116.3%	38.2%
Aerohive Networks	-62.9%	-45.5%
Arista Networks	6.2%	-10.6%
Cisco	3.8%	-14.2%
Citrix	6.2%	15.5%
D-Link	0.4%	-7.6%
Extreme Networks	16.0%	-20.9%
F5 Networks	-17.8%	-1.8%
NetGear	-51.0%	-19.7%
Radware	-2.8%	-14.5%
Unizyx Holding (Zyxel)	99.7%	-17.0%

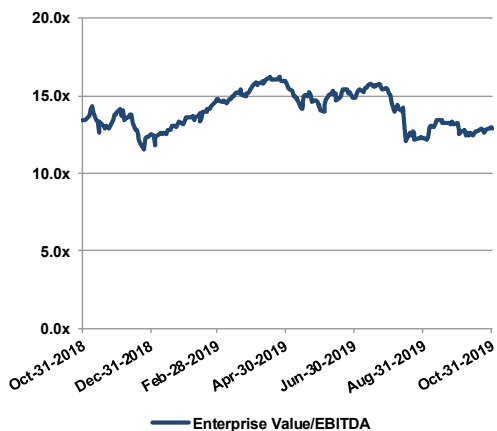
Revenue Multiple Trends



Company Revenue Multiples

	10/31/2019	10/31/2018
Enterprise Networking Index	3.7x	3.7x
A10 Networks	2.1x	1.3x
Accton	1.9x	1.0x
Aerohive Networks	1.2x	3.6x
Arista Networks	6.7x	7.6x
Cisco	3.7x	3.7x
Citrix	4.9x	4.8x
D-Link	0.3x	0.2x
Extreme Networks	1.1x	0.7x
F5 Networks	3.4x	4.4x
NetGear	0.7x	1.6x
Radware	3.4x	3.5x
Unizyx Holding (Zyxel)	0.3x	0.1x

EBITDA Multiple Trends



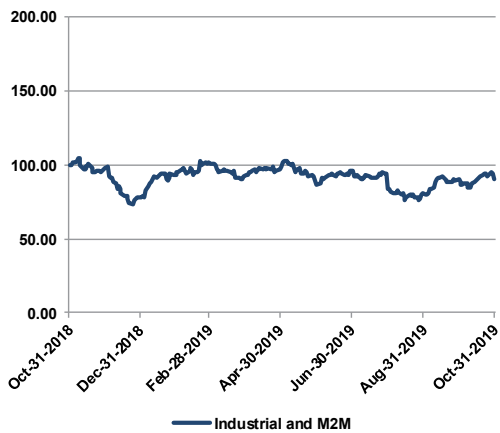
Company EBITDA Multiples

	10/31/2019	10/31/2018
Enterprise Networking Index	12.9x	13.4x
A10 Networks	NM	NM
Accton	19.3x	11.6x
Aerohive Networks	NM	11.0x
Arista Networks	19.1x	23.8x
Cisco	12.1x	12.3x
Citrix	19.6x	15.6x
D-Link	NM	12.0x
Extreme Networks	24.6x	9.4x
F5 Networks	11.6x	14.4x
NetGear	10.6x	84.0x
Radware	30.5x	78.8x
Unizyx Holding (Zyxel)	22.7x	NM

Source: Capital IQ

Sub Sector Analysis: Industrial and M2M

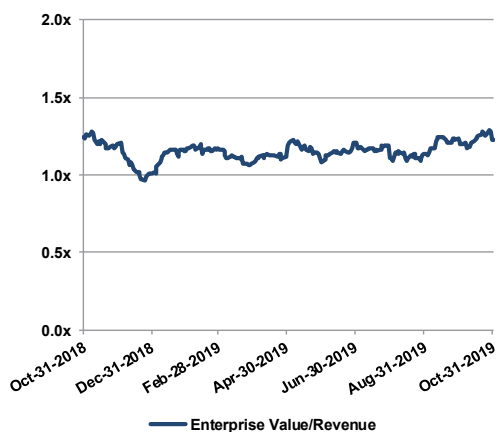
Twelve Month Index Returns



Company Returns

	12 Month	3 Month
Industrial and M2M Index	-9.7%	7.8%
Belden	-5.1%	12.8%
CalAmp	-43.7%	0.5%
Digi International	24.3%	9.8%
Inseego	62.3%	10.2%
Lantronix	-18.2%	-9.9%
Sierra Wireless	-38.8%	-6.8%
Telit Communications	5.0%	6.7%

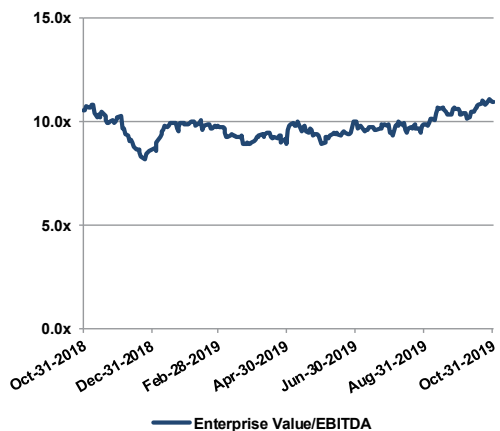
Revenue Multiple Trends



Company Revenue Multiples

	10/31/2019	10/31/2018
Industrial and M2M Index	1.2x	1.2x
Belden	1.4x	1.3x
CalAmp	1.5x	1.7x
Digi International	1.2x	1.2x
Inseego	2.8x	1.9x
Lantronix	1.1x	1.4x
Sierra Wireless	0.4x	0.7x
Telit Communications	0.6x	0.7x

EBITDA Multiple Trends



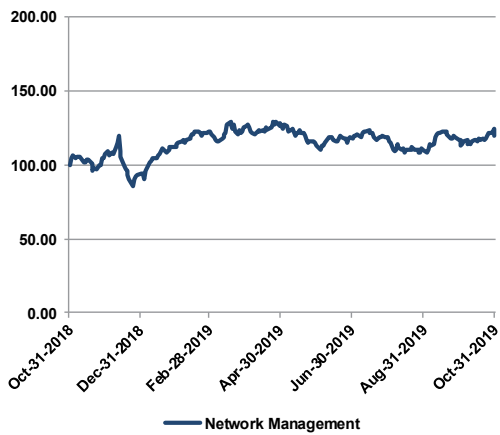
Company EBITDA Multiples

	10/31/2019	10/31/2018
Industrial and M2M Index	11.0x	10.6x
Belden	8.7x	7.5x
CalAmp	15.6x	22.9x
Digi International	12.2x	13.9x
Inseego	99.9x	42.1x
Lantronix	29.4x	31.0x
Sierra Wireless	14.0x	16.8x
Telit Communications	22.9x	NM

Source: Capital IQ

Sub Sector Analysis: Network Management

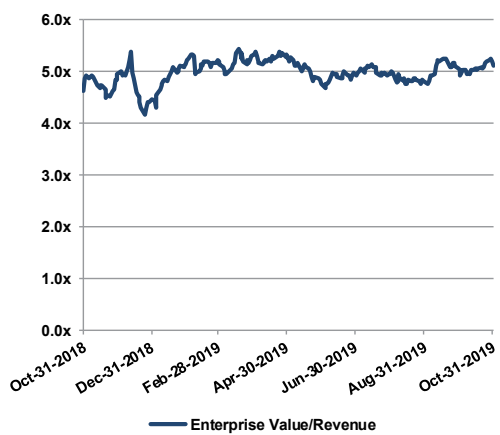
Twelve Month Index Returns



Company Returns

	12 Month	3 Month
Network Management Index	19.9%	1.3%
MobileIron	29.5%	-9.3%
NetScout	-4.1%	-7.0%
SolarWinds	29.9%	5.7%

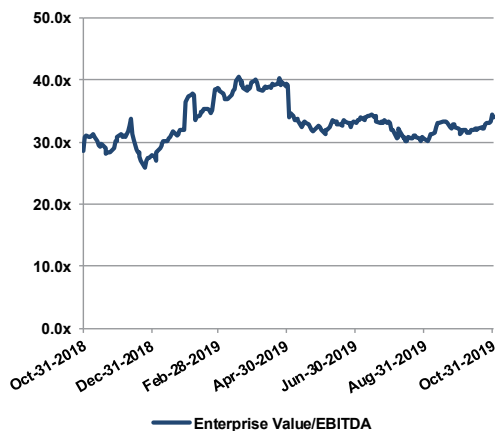
Revenue Multiple Trends



Company Revenue Multiples

	10/31/2019	10/31/2018
Network Management Index	5.1x	4.6x
MobileIron	3.0x	2.1x
NetScout	2.3x	2.3x
SolarWinds	8.3x	7.9x

EBITDA Multiple Trends



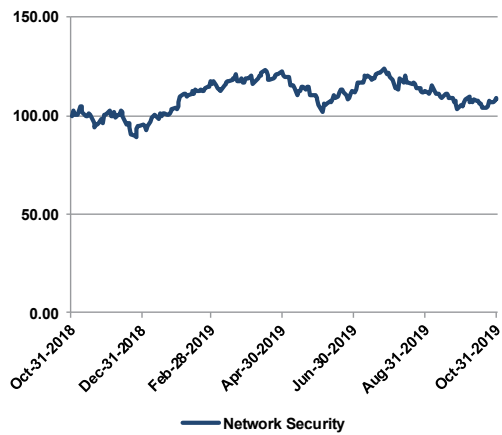
Company EBITDA Multiples

	10/31/2019	10/31/2018
Network Management Index	34.1x	28.7x
MobileIron	NM	NM
NetScout	15.7x	15.9x
SolarWinds	34.3x	34.1x

Source: Capital IQ

Sub Sector Analysis: Network Security

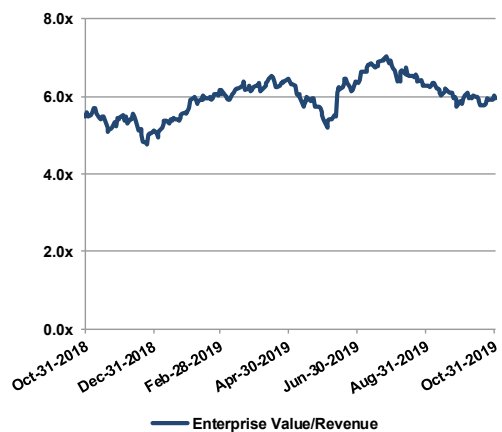
Twelve Month Index Returns



Company Returns

	12 Month	3 Month
Network Security Index	8.3%	-9.5%
Checkpoint	1.3%	0.4%
Cheetah Mobile	-59.4%	18.7%
CrowdStrike	NA	-44.0%
CyberArk	48.8%	-26.9%
FireEye	-14.3%	5.6%
Fortinet	-0.8%	1.6%
Palo Alto Networks	24.2%	0.4%
Ping Identity	NA	NA
Proofpoint	26.8%	-8.6%
Qualys	19.8%	-1.4%
Rapid7	38.2%	-17.4%
SecureWorks	-26.3%	1.8%
Sophos	31.5%	38.1%
Symantec	26.1%	6.1%
Tenable	-11.5%	0.6%
Trend Micro	-11.9%	16.0%
Zscaler	21.2%	-47.8%

Revenue Multiple Trends



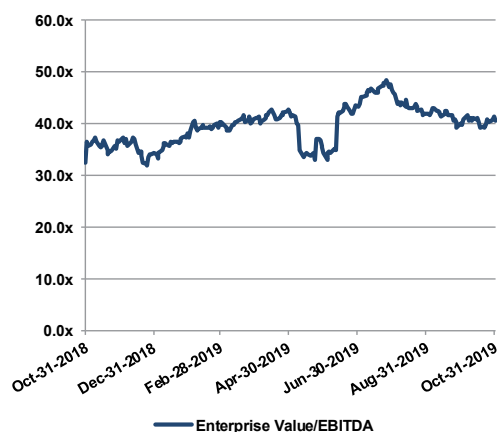
Company Revenue Multiples

	10/31/2019	10/31/2018
Network Security Index	5.9x	5.5x
Checkpoint	7.8x	8.2x
Cheetah Mobile	0.2x	1.3x
CrowdStrike	29.8x	NA
CyberArk	8.6x	6.7x
FireEye	3.9x	4.2x
Fortinet	5.9x	7.3x
Palo Alto Networks	7.1x	6.5x
Ping Identity	6.9x	NA
Proofpoint	7.4x	7.2x
Qualys	9.8x	9.2x
Rapid7	8.7x	6.8x
SecureWorks	1.7x	2.5x
Sophos	5.2x	4.1x
Symantec	3.5x	3.0x
Tenable	6.7x	9.7x
Trend Micro	3.7x	4.8x
Zscaler	17.3x	19.0x

Source: Capital IQ

Sub Sector Analysis: Network Security (continued)

EBITDA Multiple Trends

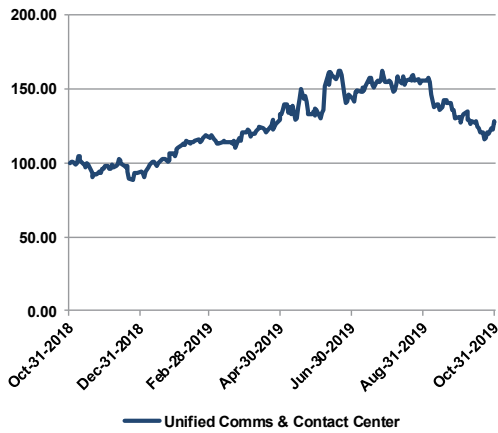


Company EBITDA Multiples

	10/31/2019	10/31/2018
Network Security Index	40.6x	32.3x
Checkpoint	17.1x	16.4x
Cheetah Mobile	5.8x	8.3x
CrowdStrike	NM	NA
CyberArk	45.0x	50.7x
FireEye	NM	NM
Fortinet	32.4x	50.8x
Palo Alto Networks	181.7x	665.8x
Ping Identity	34.2x	NA
Proofpoint	NM	NM
Qualys	31.9x	33.2x
Rapid7	NM	NM
SecureWorks	NM	NM
Sophos	46.7x	72.6x
Symantec	15.7x	14.8x
Tenable	NM	NM
Trend Micro	11.6x	14.1x
Zscaler	NM	NM

Sub Sector Analysis: Unified Communications and the Contact Center

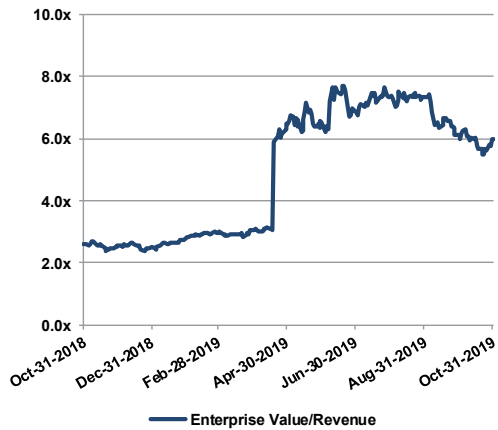
Twelve Month Index Returns



Company Returns

	12 Month	3 Month
Unified Comms & Contact Center Index	27.5%	-18.0%
Avaya	-26.4%	0.4%
ClearOne	-9.1%	-30.6%
eGain	0.7%	-2.8%
Enhouse Systems	5.2%	10.9%
Five9	41.0%	12.4%
Liveperson	81.6%	23.7%
Verint	-0.6%	-21.6%
Zoom	NA	-26.8%

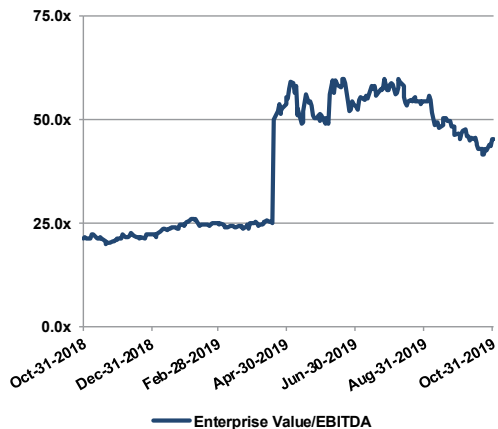
Revenue Multiple Trends



Company Revenue Multiples

	10/31/2019	10/31/2018
Unified Comms & Contact Center Index	6.0x	2.6x
Avaya	1.3x	1.5x
ClearOne	0.8x	0.2x
eGain	2.9x	3.3x
Enhouse Systems	5.4x	5.3x
Five9	11.3x	9.2x
Liveperson	9.5x	5.6x
Verint	2.8x	2.8x
Zoom	39.7x	NA

EBITDA Multiple Trends



Company EBITDA Multiples

	10/31/2019	10/31/2018
Unified Comms & Contact Center Index	45.3x	21.3x
Avaya	8.2x	14.1x
ClearOne	NM	NM
eGain	31.3x	88.8x
Enhouse Systems	18.9x	20.0x
Five9	167.0x	203.6x
Liveperson	NM	568.6x
Verint	19.8x	20.7x
Zoom	929.4x	NA

Source: Capital IQ

FOCUS Telecom Technology and Services Team



Richard H. Pierce

Managing Director and Telecom
Technology and Services Team
Leader, Washington, DC

rich.pierce@focusbankers.com
202-470-1983

Rich Pierce has 20 years of investment banking experience advising middle market clients on a variety of mergers and acquisitions and capital raising transactions. During that time, Mr. Pierce's primary emphasis has been on serving clients in the telecommunications industry including providers of network related hardware and software products, wireless and wireline telecommunications service providers and network engineering and construction companies.



David Freeland

Managing Director,
San Francisco, California

david.freeland@focusbankers.com
978-505-1837

David Freeland, a FOCUS Managing Director, has more than fifteen years of experience providing investment banking and management consulting services to a variety of corporate clients, ranging from the Fortune 500 to start-up businesses. He has been an investment banker since 2003, advising clients on mergers and acquisitions and capital raising transactions. Mr. Freeland has broad experience in the telecom and technology industry and has significant experience with data center companies.

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HEADQUARTERS

FOCUS Investment Banking LLC
8065 Leesburg Pike, Suite 750, Vienna, VA 22182
202.785.9404 | 202.785.9413 (fax)

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