

Networking & Communications Equipment

February 15, 2020

Information Technology Sector

Industry Rating

Overweight

Investment Thesis

We recommend an overweight rating for the Networking & Communications Equipment industry over the next 12 months. Enterprises will invest in next-generation networks and multicloud structures as they gradually recover from the pandemic. Global growth in the number of connected devices and IP traffic will drive revenues from spending on new infrastructure platforms, Software-as-a-Service, and Network Security.

Drivers of Thesis

- Customers will increase on-premise infrastructure spending and deploy next-generation networks as employees return to the workplace
- The ever-accelerating pace of innovation has led to enterprises and service providers investing in more digitized networks
- Transition to Software-as-a-Service business model allows for customized subscription offerings that benefit both buyers and vendors
- Spending on Network Security will surge as the growth in digital transformations leads to a rapid rise in cyber-attacks. The global cyber security market is expected to grow at a 12.6% CAGR from 2019 to 2027¹

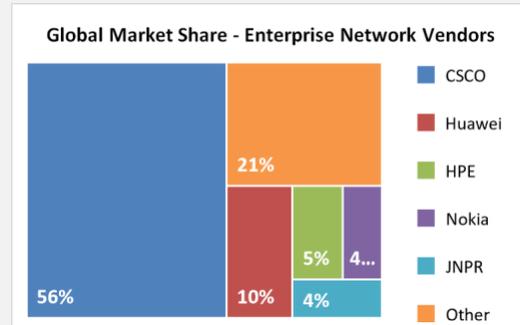
Risks to Thesis

- A slower-than-expected pandemic recovery for enterprises would halt spending on infrastructure updates
- Legacy product gross margins have declined since 2011. A decline in R&D investments for innovative products could increase pressure on margins

Key Industry Metrics

Data Source: Mergent

Market Cap (Billions)	
Cisco Systems (CSCO)	\$199.83
Fortinet (FTNT)	\$37.62
Palo Alto (PANW)	\$26.74
Arista Networks (ANET)	\$24.46
Hewlett-Packard (HPE)	\$18.60
Juniper Networks (JNPR)	\$8.33
Operating Margin (3Y Avg)	
CSCO	26.66%
ANET	25.46%
FTNT	23.28%
JNPR	10.07%
HPE	2.93%
PANW	N/A
Price/Sales	
ANET	11.5
FTNT	10.6
PANW	10.5
CSCO	4.2
JNPR	1.9
HPE	0.7



Source: Bloomberg

12 Month Performance



Source: Yahoo Finance

FDMIX is a mutual fund consisting of US and International Communications Equipment equities
Data Source: Yahoo Finance⁽²⁾

Industry Description

Networking & Communications Equipment consists of the essential technology infrastructure that connects business devices to each other and to the internet. The technologies include both hardware and software offerings, including switches, routers, data centers, and wireless products. Products in this industry are constantly evolving as technology requirements change for its customers. The major competitors in the industry include Cisco (CSCO), Huawei, Hewlett-Packard (HPE), and Arista Networks (ANET).

EXECUTIVE SUMMARY

Businesses in all industries are undergoing rapid transformations to their networking and digital infrastructures. These transformations began well before the Covid-19 pandemic but have only accelerated due to work from home trends driven by the virus. As the economy recovers and businesses re-open, enterprises will continue to invest more in cloud technologies, security software, and Software-as-a-Service (SaaS) because of digital transformations to their operations. Devices and applications are becoming more interconnected through multicloud environments, and customers are demanding efficient and secure technology solutions from networking equipment providers.

We also anticipate businesses will upgrade on-premise Information Technology equipment as more employees return to work in the latter half of 2021, which will drive growth for hardware infrastructure like routers and switches. We have an optimistic outlook on the Communications Infrastructure industry over the next 12 months and believe the best companies in the industry are those who are focusing their strategy on the shift to cloud technology.

INDUSTRY DESCRIPTION

Companies in the Communications Equipment industry design, manufacture, and sell networking equipment and technologies to businesses of all industries that need the infrastructure platforms to connect their devices to each other and to the internet. Infrastructure platforms include switches, routers, data centers, and wireless products.

Switches and routers are the essential pieces of equipment to build networks in a business. Switches connect devices like computers and printers within small networks so that they can share information and talk to each other. Routers can then connect multiple switches, and their respective networks, to create larger networks in a single location or across many locations.

In addition to the infrastructure platforms that Communications Equipment companies sell, businesses in the industry typically compete through IT services, applications, and security. Services include end-to-end support and maintenance for hardware and software products. Applications are primarily software offerings, including collaboration tools for users to connect through

multicloud environments. Security is a rapidly growing segment and consists of offerings like network security, cloud and email security, and identity and access management. As networking evolves, all of these product offerings are becoming much more connected and dependent on one another.

Businesses in the industry earn revenues by selling their products to enterprises, smaller commercial businesses, governments, educational institutions, and service providers. Increasingly, customers can choose between purchasing the products and services via perpetual licenses or subscription arrangements.

Companies differentiate themselves in this industry by innovating to provide superior products in terms of speed, scale, and security. Customers are demanding highly secure and reliable connectivity to their networks as they continue to shift to more digital infrastructures and multicloud environments.

Exhibit 1 lists major players in two sub-industries: Technology Hardware & Equipment and Communications Equipment. Cisco dominates the Communications Equipment industry, which is a sub-industry of Technology Hardware & Equipment. Companies are listed by market cap and revenue.

Technology Hardware & Equipment		
Member Companies	Mkt Cap	Revenue
Apple Inc	2.27T	274.52B
Samsung Electron	441.45B	201.06B
Hon Hai	56.19B	172.95B
Dell Technologies	59.61B	92.15B
Hitachi LTD	45.59B	80.65B
HP Inc	35.31B	56.64B
Legend Holdings	3.59B	56.35B
Lenovo Group	15.53B	50.72B
Cisco Systems	200.84B	49.30B
HNA Technology	828.26M	47.37B

Communications Equipment		
Member Companies	Mkt Cap	Revenue
Cisco Systems	200.84B	49.30B
Ericsson	45.9B	25.33B
Nokia	23.57B	24.97B
ZTE Corp	21.33B	13.14B
Commscope	3.00B	8.35B
BYD Electronic	15.85B	7.68B
Motorola Solutions	30.82B	7.41B
Hengtong Optics	4.42B	4.60B
Juniper Networks	8.49B	4.45B
Arista Networks	24.06B	2.41B

Figure 1: Industry Major Players
Source: Bloomberg⁴

INDUSTRY TRENDS

COVID-19 Impact

The pandemic has had an adverse effect on technology hardware demand. Small and medium sized customers have been cautious with their spending on new hardware as their employees shifted to a work-from-home style and economic outlooks were uncertain. Spending by larger enterprises has been more stable, though they have had less need for hardware as their employees also work from home. Industry competitors like Cisco were already changing their strategies to offer more cloud-based offerings and Software-as-a-Service, and the virus has sped up that transition. Digital transformation will continue accelerating post-pandemic. Companies will continue investing in both hardware and software infrastructure as their technological requirements change.

Growth in Number of Connected Devices

The Covid-19 outbreak has accelerated business reliance on technology services. This trend is likely to outlast the pandemic as companies continue spending on software applications and connecting more devices to IP networks. Cisco expects global IP traffic to increase at a 26% CAGR globally between 2017 and 2022, and they expect the number of devices connected to IP networks to be more than three times the size of the global population by 2023.⁷ Figure 2 shows there will be 3.6 networked devices per capita by 2023, up from 2.4 in 2018.⁷ Many of these connected devices are now on the edge; employees take connected devices like laptops home and connect personal devices like cellphones to corporate networks through the cloud. We predict the growth in number of devices will drive revenues for networking infrastructure, applications, and network security.

Average Number of Devices Per Capita

Region	2018	2023
Global	2.4	3.6
Asia Pacific	2.1	3.1
Central and Eastern Europe	2.5	4.0
Latin America	2.2	3.1
Middle East and Africa	1.1	1.5
North America	8.2	13.4
Western Europe	5.6	9.4

Figure 2

Source: Cisco Annual Internet Report

Network Security is Critical

As customers add more connections to their enterprises, and as applications move to a multcloud environment, network security will be a top priority. Customers need to protect against the evolving cyber threat landscape as they want their business assets to always be available and secure. Businesses in the Communications Equipment industry must be expanding investments in all aspects of network security to create effective cybersecurity architectures. Many serious data breaches have occurred in recent years; there was 776% growth in cyberattacks between 100Gbps and 400Gbps from 2018 to 2019, and that trend is expected to increase.⁷ Figure 3 below shows the number of Distributed-Denial-of-Service attacks, in which a system is targeted and flooded with traffic, will double by 2023 globally.⁷ Commercial Networking companies need to continuously mitigate cyber threats like DDoS attacks, ransomware, viruses and more.

Number of DDoS Attacks Globally

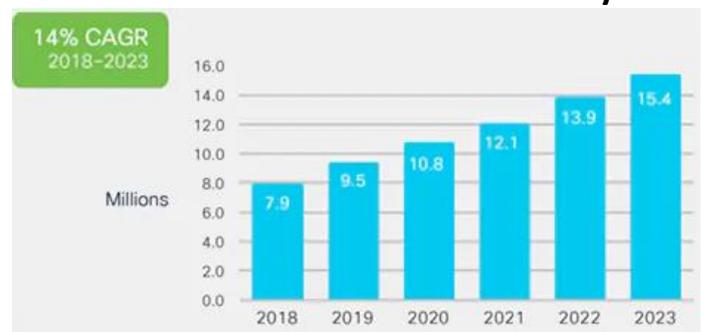


Figure 3

Source: Cisco Annual Internet Report

5G on the Horizon

Service providers AT&T, Verizon, and T-Mobile are beginning to offer more devices that support 5G coverage. As these products roll out, Networking Equipment competitors are investing in or acquiring companies that produce optics capable of supporting the bandwidth requirements and the economics of next-generation networks. This is important because, as shown in Figure 4, service provider networks have been generating more revenues than enterprise networks. We do not expect the T-Mobile and Sprint merger to hurt demand for equipment because their combined assets should help them push further into 5G. The shift to 4G wireless technology was a catalyst for wireless infrastructure spending, and now the shift to 5G deployments is having the same effect.

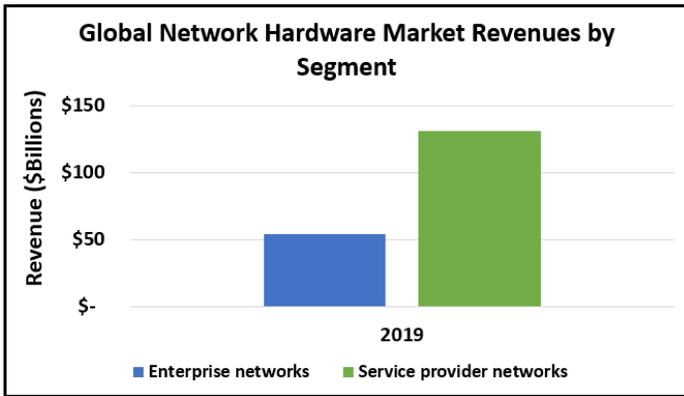
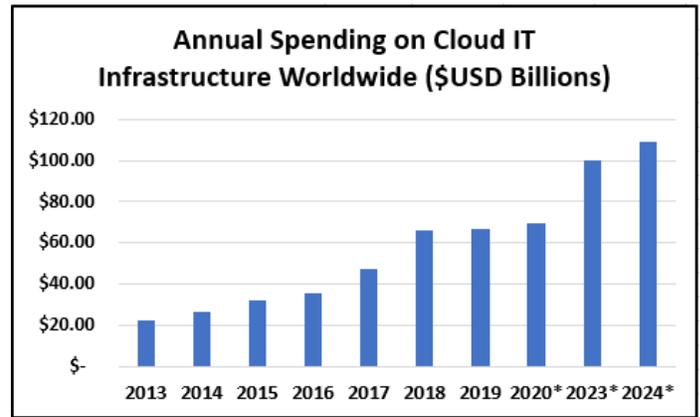


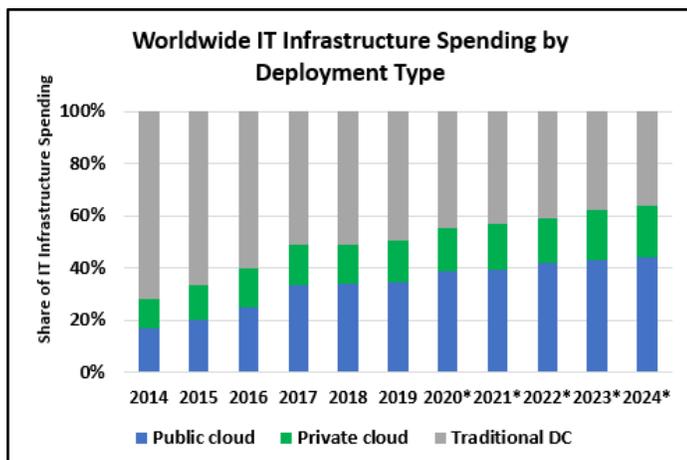
Figure 4
Source: Statista



Figures 5 and 6
Source: Statista

Applications Move to Multicloud

Customers are operating in multicloud environments, deciding to use private, public, and hybrid clouds. This way, they can choose which information to keep on-premises versus on the cloud. Industries are moving to multicloud environments because it increases scalability and speed of data storage and applications, and customers spend less on maintenance and capital costs than they would with larger, personal data centers.⁹ Every industry can leverage this transition, such as governments, education, healthcare, insurance, and utilities. Figure 5 below shows the shift in IT infrastructure spending from traditional data centers to public and private clouds. The acceleration in annual spending on cloud infrastructure worldwide can be seen in Figure 6. This transition toward cloud is a positive for the Communications Equipment Industry, as customers will invest in related equipment and subscription purchases. Competitors must be able to manage the complicated multicloud environment to supply efficient and secure cloud products and services.



Software-as-a-Service vs. Perpetual License

Business technology requirements are constantly evolving and changing. SaaS allows companies to subscribe to certain software they need on a pay-as-you-go basis, rather than buying a perpetual license on software and needing to pay for another license every time hardware and software needs updated. Companies in the industry are shifting their strategy to increase SaaS offerings, so they will be paid for their services on a monthly basis. We view this shift as a positive as they earn recurring revenues for their various types of subscription arrangements.

Strength in M&A Activity Continues

Mergers and Acquisitions continued to be strong despite Covid-19. Many companies are emphasizing M&A to expand their security offerings.¹ Cisco recently made a \$4.5 billion acquisition of Acacia, which will help them grow their optical systems portfolio and support its “Internet for the Future” strategy.¹⁰ This strategy involves addressing multicloud environments and will give Cisco a clearer path into spending linked to 5G network rollouts. Cisco’s competitors have continued M&A activity for similar reasons.

MARKETS AND COMPETITION

The Networking & Communications Infrastructure industry is subject to rapid technological changes and expanding customer requirements. Innovation that is necessary to compete requires hefty research and development investments in areas like cloud security, cloud collaboration, and application insights.

As the industry has evolved, the number of products and service lines offered have grown. Companies in the

industry now sell a broad range of technologies across networking, security, applications, collaborations, and cloud, though some competitors still focus mainly on the infrastructure platforms. Many enterprises in the industry have a global presence and face competition from foreign competitors, especially in China. We have broken down the industry peer comparisons to reflect this.

Networking Infrastructure Peer Comparisons

Companies in the Communications Equipment industry mainly compete within infrastructure platforms. Cisco is a behemoth in the Communications Equipment industry, representing 68.4% of the S&P1500 Communications Equipment Index by market cap. Their 2020 revenue of \$49.3 billion is more than all the other companies in the index combined.¹

The other main industry competitors who sell networking infrastructure include Aruba Networks, Juniper Networks, and Arista Networks. Aruba was acquired by Hewlett Packard Enterprise in 2015. Financial metrics of these industry peers are shown in Figure 7.

Company Name	Revenues	Gross Margin	Net Income	EBITDA	PE Ratio
Cisco Systems	49,301	64%	11,214	13,776	19
Arista Networks	2,411	64%	860	895	36
Hewlett Packard Enterprise	26,982	32%	(322)	2,656	-
Juniper Networks	4,445	59%	345	608	22

Company Name	Total Assets	Total Liabilities	Market Cap	Employees	Share Price
Cisco Systems	94,853	56,933	199,825	77,500	47
Arista Networks	4,185	1,291	24,462	2,300	323
Hewlett Packard Enterprise	54,015	37,966	18,601	59,400	14
Juniper Networks	8,838	4,227	8,326	9,419	25

Figure 7
Source: Mergent³

Market cap and revenue metrics reflect that Cisco and Hewlett Packard are much larger and more experienced businesses in the industry, while Juniper and Arista are relative newcomers.

However, both newer companies have shown a lot of potential by offering trusted and efficient products. They continuously innovate their hardware, software and cloud infrastructure products to serve customers globally, which has led to high year-over-year growth for each of them. Arista has been especially well-positioned for the transition to a multicloud environment as they modeled their business around cloud networking solutions to support large-scale datacenter and campus environments. Microsoft and Facebook have been two of its largest customers.¹¹

Each peer has a gross margin around 60% besides HPE, whose revenues and cost of sales are different because of the many products they focus on besides networking infrastructure. Cisco and Juniper trade at 19 and 22 Price-to-Earnings ratios, respectively. Arista's higher P/E ratio of 36 is likely because they are a newer company that has been growing fast and still has strong growth prospects.

Overall, the financial metrics illustrate that Cisco is the dominant player in terms of scale. However, newcomers like Arista and Juniper are growing quickly as they focus on cloud innovation and SaaS.

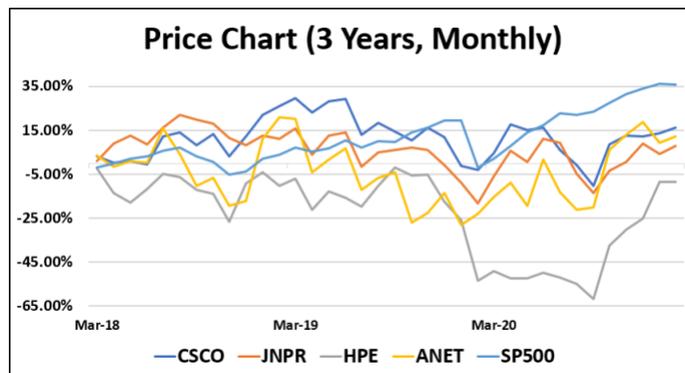
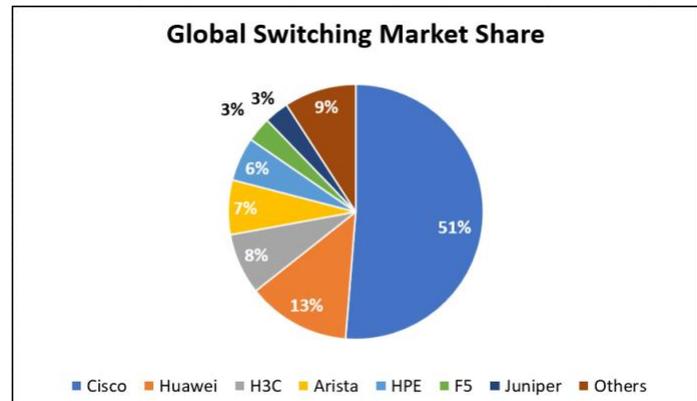
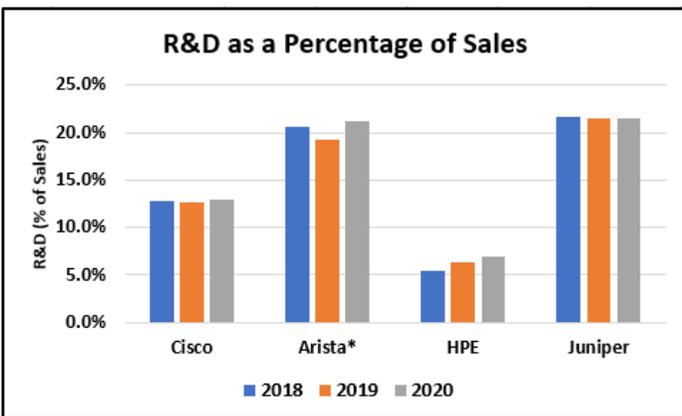
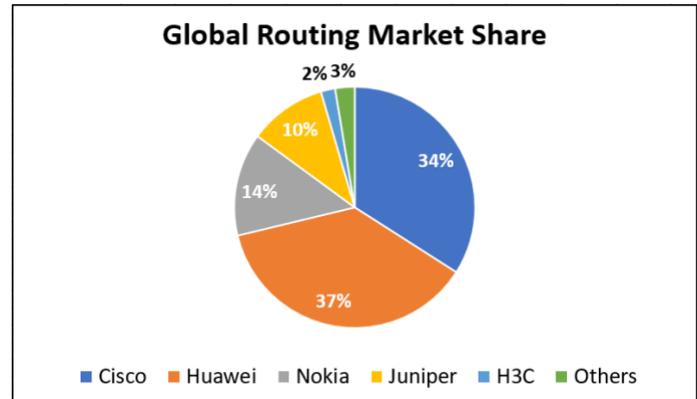
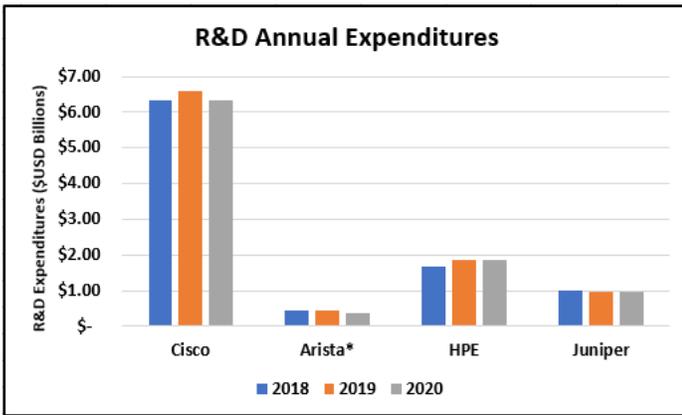


Figure 8

Source: Yahoo Finance

Figure 8 above shows that Cisco's stock price has grown more than competitors over the past three years. The pandemic hit HPE especially hard in 2020, but they have begun recovering as the economic outlook has become more positive over the past few months. Each of the industry peers is now trading at or slightly above their pre-pandemic prices, but the overall industry has lagged the market. We believe Cisco has suffered the least compared to its peers due to its continued dominance in the industry. Although they have not seen as much growth as the newcomers in recent years, they are still earning high revenues and generating high margins as a trusted company for networking.

Research & Development is crucial in this industry. More networked connections are being made and the technology needs of businesses are ever-changing. Figures 9 and 10 below show how competitors are spending on R&D overall and as a percentage of sales.



*Arista 2020 data only includes first 3 quarters
Figures 9 and 10 Source: 10Ks

Figure 11 and 12
Source: Bloomberg⁴

Cisco has been known for high spending into R&D, which works in their favor as a catalyst for continued innovation of products and services. They are focusing investments on cloud security, cloud collaboration, application insights and analytics, automation, multicloud environments, and 5G. These are all critical areas for the future of networking infrastructure and are the same areas where the newer players have focused their R&D expenses, which is an investment positive for these companies and the Communications Equipment industry.

Switching vs Routing Market Share

Figures 11 and 12 below show Cisco and Huawei's dominance in terms of market share for both routers and switches, the legacy products of networking infrastructure. The market share data is as of Q2 2020.

Although competitors like Arista and Juniper are growing, they have not been able to take market share from Cisco in the overall routing and switching markets. However, Arista is rapidly growing in High-Speed Data Center Switching, as can be seen in Figure 13. This type of switching focuses on cloud networking that automates IT workflows and provides faster problem resolution.¹² The switches use 100 Gigabit Ethernet (GbE) to make servers and storage faster, which is increasingly attractive as enterprises continue to digitize their networks. Cisco still accounts for the majority of data center switch shipments, but Arista's exposure to cloud service providers has given it an edge in share position for 100GbE switches.

The reason why companies might choose Arista over Cisco is because it has earned a reputation for manufacturing some of the fastest ethernet switches on the market. They have earned that reputation because, unlike Cisco's broad portfolio of switching, routing, security, applications and more, Arista has mainly focused on software for its ethernet switches. We believe Cisco's continued shift into software will keep Arista from gaining more switching market share. Cisco has invested in or acquired companies

that expand their hybrid cloud capabilities in their switching portfolio with faster speeds and better security.

High Speed Data Center Switching Market Share – Cisco vs. Arista

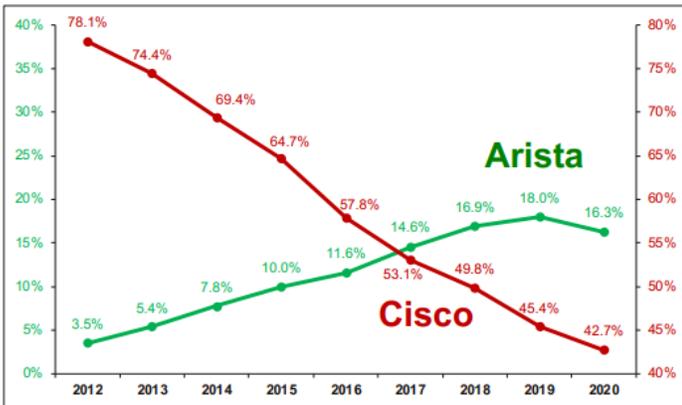


Figure 13

Source: Crehan Research Datacenter Switch Market Share Report¹⁴

Note: 10GbE and Higher – Excludes Blade Switches

End-Markets

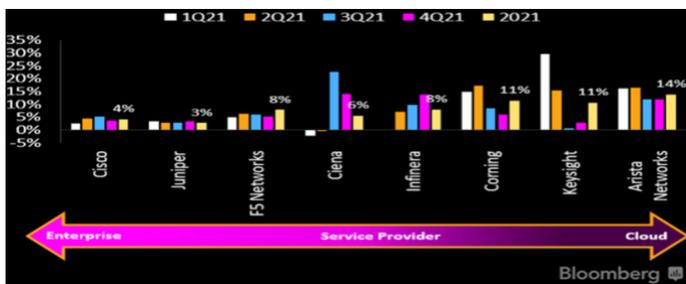


Figure 14

Source: Bloomberg

End-markets for Networking Equipment vendors will be an important aspect of their growth prospects going forward. Business shifts to multicloud environments for applications and data, and service providers rolling out 5G networks, gives competitors an edge if they have more exposure to spending in those areas. Hyperscale cloud service suppliers continued to spend on data center ethernet switches throughout the pandemic.¹⁴ As seen in Figure 14 above, this makes Arista more poised for higher growth in the near term. However, Cisco and Juniper, which are both more exposed to enterprise spending, should still see modest growth as the economy recovers and businesses spend on upgrading their IT infrastructures. These companies are also set for long term growth as they shift to providing more SaaS and cloud subscriptions.

Security Peer Comparisons

Network security is of utmost importance for enterprises as more networked connections are made between devices. Cyber-attacks are harder to prevent due to more potential entry points for security breaches. Cisco is an industry leader in network security, competing with Palo Alto Networks and Fortinet. Figure 15 below shows the leading cybersecurity vendors globally in terms of market share. Cisco will benefit from being a large end-to-end network security vendor as enterprise spending on cybersecurity continues to grow. The other Communications Equipment competitors are increasingly incorporating security into their products and services, but none have networking security market presence anywhere near Cisco's.

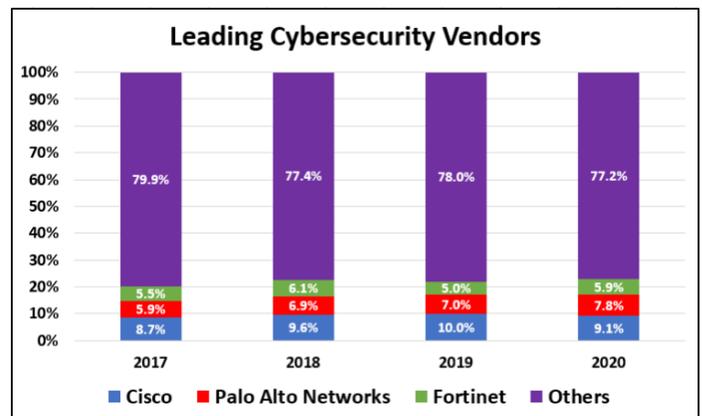


Figure 15

Source: Statista

In addition, many enterprises have historically used multiple vendors for their cybersecurity needs, with some using upwards of 50. Managing that multi-vendor environment was very challenging for businesses, which is why security vendor consolidation is on the rise. Today, 86% of organizations use between 1 and 20 security vendors, with only 13% using more than 20, as shown in figure 16 below.¹⁸

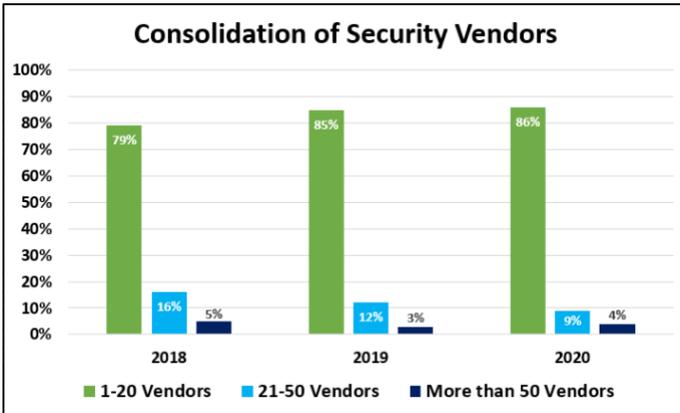


Figure 16

Source: Cisco 2020 CISO Benchmark Survey

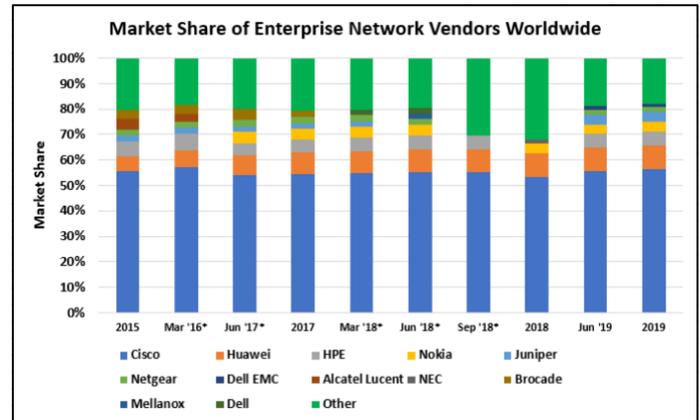


Figure 17

Source: Statista

Global Competition

The Networking Equipment Industry faces intense competition globally, especially coming out of China. Huawei Technologies is one of Cisco's biggest competitors globally. The Chinese company is one of the largest technology enterprises in the world and mainly competes in the Networking Equipment industry with its infrastructure business of networking, optical transmission, and cloud data center. This division of Huawei represented 10.4% of their almost \$133 billion total revenues in 2019.¹⁵

Huawei will continue to be a strong competitor as they grow in scale and invest in R&D for new communications infrastructure products. However, Cisco still dominates the Communications Equipment industry for enterprises worldwide with 56.4% market share versus Huawei's 9.5%. None of the industry competitors, including Huawei, have been able to gain much market share from Cisco in the Enterprise segment, as can be seen in Figure 17 below. Part of this has to do with hesitancy from companies and governments to trust Chinese equipment. Although some cities and enterprises around the world use Huawei as a partner for their digital transformations, many have chosen to not use Chinese hardware and have even replaced their Chinese hardware with other vendors' equipment.¹ This bodes well for other companies in the industry that do not face the same regulatory scrutiny.

While Cisco has the advantage as an enterprise network vendor, Huawei is the clear leader when it comes to global service provider networks due to their success in providing components for 5G mobile networks. They made up 35.4% of global market share for service provider networks. Cisco is not as large of a player in the service provider space, making up only 3.2% of worldwide market share, but they continue to invest in products for 5G spending and may be helped by the political attacks on Chinese equipment. Overall, Cisco's smaller market share as a network vendor for service providers is an investment negative for them because of the relative revenues coming from the service provider market versus enterprise market, as seen in Figure 4. Companies with more exposure to service providers, like Arista, will likely see more growth in this area.

ECONOMIC OUTLOOK

Real GDP

Real Gross Domestic Product (GDP) increased 4.1% in the fourth quarter of 2020. The growth reflects a continued economic recovery from the pandemic. We expect real GDP to continue growing modestly throughout 2021 and into 2022 as more people are vaccinated and businesses open across the nation. This forecast bodes well for the Communications Equipment industry, which will benefit

from the economy reopening as businesses spend on IT infrastructure and accelerate their digitization.

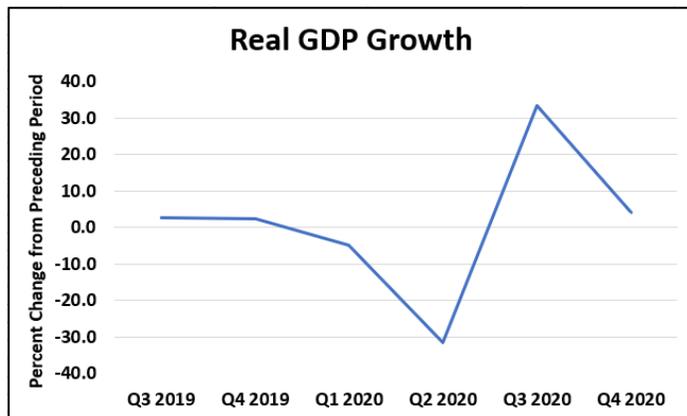


Figure 18

Source: FRED Economic Data¹⁶

Business Confidence Index



Figure 19

Source: OECD¹⁷

The business confidence indicator (BCI) is used to monitor output growth and predict changes in economic activity. A BCI above 100 suggests increased confidence in the performance of businesses in the near term, while numbers below 100 indicate the opposite. The BCI recently rose above 100 as the economy has begun to reopen and vaccinations have been administered. As business confidence continues to increase, enterprises will invest in upgrades to their IT infrastructures to support their recoveries.

Interest Rates

The United States has experienced a historically low interest rate environment during the pandemic due to low treasury yields. The fed plans to hold steady on low short-term interest rates through 2023, but we are seeing increased pressure on long term interest rates with the 10-year moving as high as 1.75% and the bond hitting 2.50%.

Increasing long-term rates will make borrowing more costly for growing companies in the industry, such as Arista.

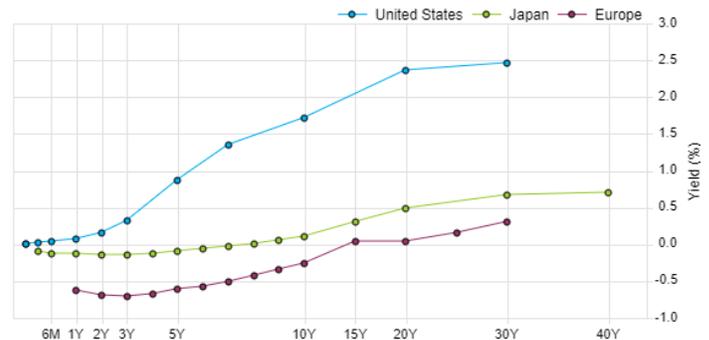


Figure 20

Source: FactSet

Rising interest rates are mostly due to sell-offs because of economic recovery expectations. This could hurt growth stocks in the networking equipment sector in the short term, but we do not believe it will be a significant negative as these companies will benefit overall from the pandemic recovery.

KEYS TO MONITOR

Tailwinds

- Accelerated digitization and cloud investments in wake of the pandemic
- On-premise infrastructure spending will increase as employees return to workplace
- Surge in spending on network security

The Communications Equipment industry is well-positioned to grow as the economy recovers and employees return to work. Enterprises and service providers are digitizing their networks rapidly as they add new connections to their businesses and move applications to a multicloud environment. Although on-premise infrastructure like routers and switches have taken a hit from Covid-19, there should be a rebound in spending related to that infrastructure as the economy recovers.

Headwinds

- Corporate IT infrastructure spending will remain low if pandemic persists
- Competitors not positioned for digital transformation of networks will underperform

There are a few risks to our investment thesis, but we do not anticipate that they will be an issue. Corporate spending on IT infrastructure will continue to rebound, as industry peers have already given encouraging views of enterprise and public sector spending for 2021. Although some competitors are not as prepared for a shift to software and services as others, there are plenty of competitors capitalizing on the transformation which should be a boon to the industry.

In conclusion, Cisco remains the titan in the Communication Equipment industry. Their scale, product portfolio, and continued transformation into software and subscriptions as-a-service position them well to capitalize on secular opportunities in multicloud environments, 5G, and network security. However, Cisco is increasingly facing competition from newer and foreign competitors. Arista's innovation in software-driven cloud networking is helping them take some market share in sub-segments of the industry that are poised for relatively high growth. Their exposure to hyperscale cloud companies and service providers will help them in the long term. Chinese competitors like Huawei and HP3 also continue to innovate and are helped by their exposure to 5G networks. If governments and companies were to ease up on their reluctance to trust Chinese equipment, those global competitors would be able to compete with Cisco on a much higher level. We believe Cisco, Huawei, and Arista are best positioned in this industry going forward.

REFERENCES

1. Snyder, K., & See Lee, L. (2020, November). Industry Surveys - Communications Equipment [PDF]. New York, NY: CFRA Research.
2. Fidelity advisor Communications (FDMIX) stock Price, NEWS, quote & history. (2021, February 28). Retrieved February 28, 2021, from https://finance.yahoo.com/quote/FDMIX/?guccounter=1&guce_referrer=aHR0cHM6Ly93d3cuZ29vZ2xllmNvbS8&guce_referrer_sig=AQAAACs4JuXQaBnE2OFwALpkC5uOtFuZu0Rd9Dn_o3BG5Nh55Bt51QMRYXEQmPiqaXN0NbNfvCEEmbPOFEwod2A1U9eQg7M1G0q8jS9WrUy4-fjggloPUvAmYIvE76AXh97QsaxzbFvHM4Buuk9SRAh02NiT3Lu3h1XbAADX9P6vy984
3. Mergentonline.com. (n.d.). Retrieved February 28, 2021, from <https://www.mergentonline.com/basicsearch.php>
4. Bloomberg.com
5. Cisco 10Q (Q2FY21)
6. Cisco Q2FY21 Press Release
7. Cisco annual Internet report - Cisco annual Internet REPORT (2018–2023) white paper. (2020, March 10). Retrieved February 28, 2021, from <https://www.cisco.com/c/en/us/solutions/collateral/executive-perspectives/annual-internet-report/white-paper-c11-741490.html>
8. Cisco [PDF]. (n.d.). Statista Research.
9. How are cloud computing and data CENTERS Related? (2021, February 19). Retrieved February 28, 2021, from <https://www.connectria.com/blog/how-are-cloud-computing-and-data-centers-related/>
10. Cisco 10K
11. Morgan, T. (2021, February 22). Arista networks brings the battle for routing to cisco. Retrieved February 28, 2021, from <https://www.nextplatform.com/2021/02/22/arista-networks-brings-the-battle-for-routing-to-cisco/>
12. Arista Advantage White Paper (<https://investors.arista.com/Home/default.aspx>)
13. Arista 2020 Q4 Highlights Presentation (<https://investors.arista.com/Home/default.aspx>)
14. Crehan Research (<https://www.demandtalk.com/news/it-infra-news/datacenter-solutions-news/crehan-research-inc-data-center-ethernet-switch-shipments-increased-by-12-in-2020/>)
15. Huawei 2019 Annual Report (<https://www.huawei.com/en/annual-report/2019>)
16. FRED St Louis (<https://fred.stlouisfed.org/series/A191RL1Q225SBEA>)
17. OECD (<https://data.oecd.org/leadind/business-confidence-index-bci.htm>)
18. <https://blogs.cisco.com/security/when-it-comes-to-security-how-many-vendors-is-too-many#:~:text=Today%2C%2086%25%20of%20organizations%20are,network%20and%20all%20threat%20ectors.>

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