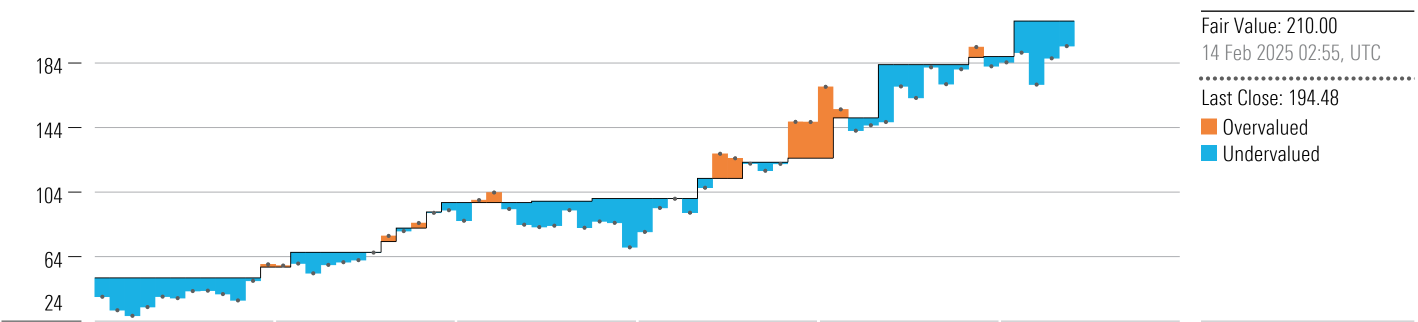
Morningstar Equity Analyst Report | Report as of 21 May 2025 01:45, UTC | Reporting Currency: USD | Trading Currency: USD | Exchange: NASDAQ - ALL MARKETS

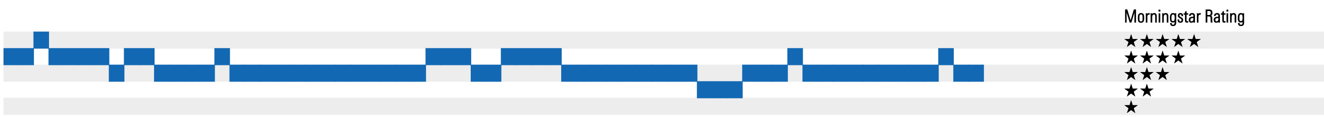
Palo Alto Networks Inc PANW ★★★ 20 May 2025 21:40, UTC

Last Price	Fair Value Estimate	Price/FVE	Market Cap	Economic Moat™	Equity Style Box	Uncertainty	Capital Allocation	ESG Risk Rating Assessment[1]
194.48 USD 20 May 2025	210.00 USD 14 Feb 2025 02:55, UTC	0.93	128.77 USD Bil 20 May 2025	Wide	Large Growth	High	Exemplary	7 May 2025 05:00, UTC

Price vs. Fair Value



	2020	2021	2022	2023	2024	YTD	
	1.03	0.95	0.70	1.18	0.97	0.93	Price/Fair Value
	53.68	56.66	-24.81	111.32	23.41	6.88	Total Return %



Total Return % as of 20 May 2025. Last Close as of 20 May 2025. Fair Value as of 14 Feb 2025 02:55, UTC.

Contents

[1]The ESG Risk Rating Assessment is a representation of Sustainalytics' ESG Risk Rating.

Palo Alto Earnings: Strong Execution on Platformization Marks Another Solid Quarter

Analyst Note Malik Ahmed Khan, CFA, Equity Analyst, 21 May 2025

Palo Alto reported a strong third quarter, with sales growing 15% year over year to $2.3 billion and adjusted operating margins expanding 180 basis points year over year to 27.4%. Annual recurring revenue from the firm's next-generation security business grew 34% to $5.1 billion.

Why it matters: As vendor consolidation continues to inform security purchasing decisions, we view Palo Alto as uniquely advantaged due to the firm's strong security solutions across multiple key end markets.

- To catalyze further spending on its platforms as customers seek to consolidate security spending, Palo Alto has been incentivizing customers to onboard more security spending on its platform. We see this platformization strategy as sound and prescient, given the market dynamics.
- With each platformization loosely defined as a customer spending more than $1 million on one of its security platforms, Palo Alto closed 90 platformizations in the quarter, up from 75 the previous quarter and 65 a year earlier.

The bottom line: We maintain our $210 per share fair value estimate for wide-moat Palo Alto and retain our optimism that the firm is well-positioned to benefit from multiple secular tailwinds in security, including vendor consolidation, increased artificial intelligence usage, and the shift to cloud.

- The firm's forward-looking demand indicators also remained solid in the quarter, with remaining

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Sector	Industry
Technology	Software - Infrastructure

Business Description

Palo Alto Networks is a platform-based cybersecurity vendor with product offerings covering network security, cloud security, and security operations. The California-based firm has more than 80,000 enterprise customers across the world, including more than three fourths of the Global 2000.

performance obligations up 19% year over year. We see this strong RPO growth as a good omen for the firm's top-line growth prospects going into fiscal 2026.

- We believe investors were expecting a stronger outlook for the fourth quarter, with the firm's shares sliding after hours. With shares trading at the cusp of 4-star territory, any further weakness could signal a buying opportunity for this high-quality name.

Coming up: Palo Alto's updated 2025 guidance calls for sales and adjusted margin of $9.18 billion and 28.4%, respectively. We don't forecast any trouble hitting these targets.

Business Strategy & Outlook Malik Ahmed Khan, CFA, Equity Analyst, 21 Nov 2024

We view Palo Alto Networks as a leader in the cybersecurity space, with cybersecurity platforms spanning network security, cloud security, and security operations. We believe the firm stands to materially benefit from secular tailwinds across its three key end markets as cloud migrations, shift to zero-trust security, and increased automation in cybersecurity increases Palo Alto's value proposition to its clients. In our view, the firm's sticky platforms, combined with the broad range of its cybersecurity solutions have helped Palo Alto build a wide economic moat around its business.

The cybersecurity segment continues to increase in threat complexity and intensity. A typical enterprise's digital footprint has exponentially increased over the years leading to the creation of new attack vectors that nefarious players can exploit. The number of attack vectors has increased, as has the damage from cybersecurity lapses with companies facing punitive regulatory fines along with reputational and commercial damage.

In this evolving landscape, we see IT security teams looking for platforms that offer more holistic security coverage versus point solutions that can inadvertently create data silos. This shift toward consolidation is an opportunity for platform cybersecurity vendors such as Palo Alto. By providing a broad range of cybersecurity solutions under the same platform, Palo Alto can alleviate the toolset management burden for its clients. At the same time, Palo Alto can upsell its customers other modules within the same platform or cross-sell them additional platforms.

We are encouraged by Palo Alto's ability to sell more of its solutions to its customers. The firm's success in cross-selling existing/new customers its three security platforms spanning network, cloud, and security operations, is evidence of vendor consolidation – a trend that we see likely to continue. As Palo Alto up/cross-sells its customers more solutions, we also see the firm entrenchment in its clients' ecosystems increasing, driving retention rates and customer lifetime values higher.

Bulls Say Malik Ahmed Khan, CFA, Equity Analyst, 14 Feb 2025

- Palo Alto has strong secular tailwinds behind its back as security operations, cloud security, and the convergence of networking and security are projected to grow rapidly.

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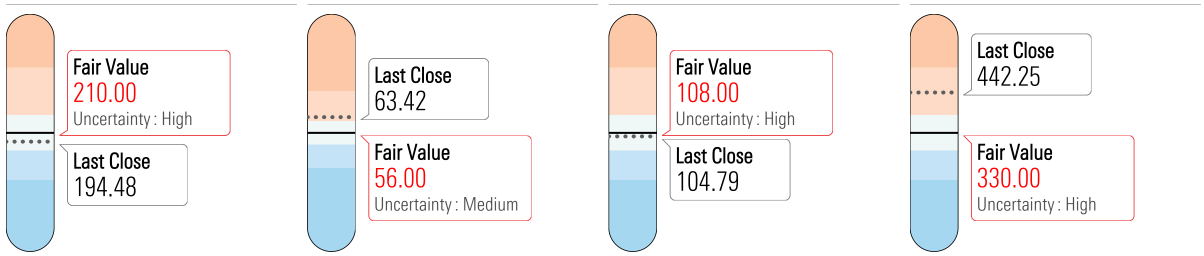
Competitors



	Palo Alto Networks Inc PANW	Cisco Systems Inc CSCO	Fortinet Inc FTNT	CrowdStrike Holdings Inc Class A CRWD
Economic Moat	Wide	Wide	Wide	Narrow
Currency	USD	USD	USD	USD
Fair Value	210.00 14 Feb 2025 02:55, UTC	56.00 15 May 2025 01:12, UTC	108.00 7 Feb 2025 04:07, UTC	330.00 5 Mar 2025 00:51, UTC
1-Star Price	325.50	75.60	167.40	511.50
5-Star Price	126.00	39.20	64.80	198.00
Assessment	Fairly Valued 20 May 2025	Overvalued 20 May 2025	Fairly Valued 20 May 2025	Overvalued 20 May 2025
Morningstar Rating	★★★20 May 2025 21:40, UTC	★★20 May 2025 21:28, UTC	★★★20 May 2025 21:34, UTC	★★20 May 2025 21:45, UTC
Analyst	Malik Ahmed Khan, Equity Analyst	William Kerwin, Senior Equity Analyst	Malik Ahmed Khan, Equity Analyst	Malik Ahmed Khan, Equity Analyst
Capital Allocation	Exemplary	Exemplary	Standard	Exemplary
Price/Fair Value	0.93	1.13	0.97	1.34
Price/Sales	16.07	4.61	13.19	27.51
Price/Book	20.13	5.54	41.05	33.59
Price/Earning	109.47	24.24	45.28	—
Dividend Yield	0.00%	2.52%	0.00%	0.00%
Market Cap	128.77 Bil	252.30 Bil	80.21 Bil	110.15 Bil
52-Week Range	142.01—208.39	44.50—66.50	54.57—114.82	200.81—455.59
Investment Style	Large Growth	Large Value	Large Growth	Large Growth

- Palo Alto's strength in the high-margin firewall space should allow the firm to generate substantial free cash flow in the future.
- The company stands to benefit as clients consolidate vendors and opt for a platform-based cybersecurity approach.

Bears Say Malik Ahmed Khan, CFA, Equity Analyst, 14 Feb 2025

- Large public cloud vendors often offer their own cybersecurity solutions, which could hamper Palo Alto's growth opportunities.
- Palo Alto's competitors also utilize a platform approach, thereby entrenching them in their clients' ecosystems and making them harder to displace.
- There always remains a risk that Palo Alto may miss out on the next big technology, thereby allowing its competitors to catch up.

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Economic Moat Malik Ahmed Khan, CFA, Equity Analyst, 21 Nov 2024

We assign Palo Alto Networks a wide moat rating owing primarily to strong customer switching costs, and second to a network effect associated with its offerings. We view Palo Alto as a leader in multiple categories spanning network security, cloud security, and security operations. Palo Alto's three platforms, spanning the three verticals mentioned above, have resonated exceptionally well in the enterprise market, with the firm selling into all the Fortune 100 and more than three fourths of the Global 2000 firms. The firm's platform approach to cybersecurity has also enabled it to increase its wallet share among existing clients while adding new ones at a fast clip. We expect this dominance to persist, and we expect Palo Alto's land-and-expand model to allow the firm to gain operating leverage and produce excess returns for the foreseeable future.

Palo Alto offers its clients three platforms: Strata, Prisma, and Cortex. Strata is the firm's network security offering that helps secure a client's network via next-generation firewalls. Prisma is Palo Alto's cloud security platform that focuses on securing processes running on the cloud. Cortex, the latest of Palo Alto's platforms, is geared toward security operations and includes endpoint security and automated security responses, among other modules. Put together, Palo Alto's platforms enable it to cover multiple attack vectors spanning critical areas of a modern enterprise. From a client's perspective, having one vendor managing key parts of its cybersecurity helps to alleviate challenges associated with having disparate security solutions for various parts of the overall IT stack.

When examining the competitive dynamics of the three verticals Palo Alto operates in, we view all three as conducive to the presence of economic moats as enterprise spending in these spaces is sticky with significant risks and upheaval required to switch away from existing vendors.

As we look at the broader cybersecurity space, we believe the complexity and intensity of threats are ever-increasing. As enterprises continue to adopt SaaS solutions, undergo digital transformations, and migrate to the cloud, we see the number of attack vectors (or entry points for nefarious players) growing rapidly. A modern enterprise has to maintain robust security while maintaining resources on the cloud and on-premises. To further magnify the complexity, we suspect that most enterprises will adopt a hybrid model with employees working remotely for at least a couple of days a week—thereby strengthening the need for securing workforces beyond the office. The intensity of digital threats is also on the rise, with higher costs of a data breach, including punitive fines for any customer data theft.

As a result of this dramatic shift in how enterprises run, a trend exacerbated by the pandemic, there has been a similarly dramatic increase in the number of software tools enterprises deploy to secure their infrastructures. However, such a sprawling toolkit comes at a cost—primarily the creation of silos in which individual portions of an enterprise's IT stack are secured by disparate solutions that do not work together effectively. We see this approach as untenable for the future as rising IT threat complexity and intensity will force enterprises to opt for platforms that offer to secure key cybersecurity areas.

Based on various industry reports, we estimate that enterprises currently use 60-80 different security solutions, but wish to narrow that number down to 15-20 key solutions. Amid this changing landscape, we see an opportunity for platform-based cybersecurity vendors, such as Palo Alto, to help enterprises consolidate their digital footprints while maintaining a secure ecosystem. Additionally, while we do not see cybersecurity as a winner-take-all market, we believe that platform vendors stand to become dominant players as the cybersecurity vendor list shrinks for enterprises. Due to the sheer expanse of the market, estimated to be north of $130 billion, we think multiple platform vendors can carve out wide economic moats while facing competition between each other.

Across our coverage, we see high switching costs for enterprise-focused cybersecurity vendors, such as Palo Alto. We believe security-related IT decisions are driven by security analysts and engineers, not accountants. Put another way, we do not think that a company will nickel-and-dime their way to picking security vendors, especially in the network security segment. Customers who adopt security solutions do so to take uncertainty off the table—switching vendors often brings uncertainty back into play. Additionally, entrenched platform vendors, such as Palo Alto, also have an expansive footprint across an enterprise. To uproot such a vendor requires not only a competitive offering from another vendor, but often retraining staff to use the new platform, a period of increased vulnerability.

As we think of Strata, Palo Alto's network security platform, we see evidence of strong customer switching costs. Network security spending, of which firewalls are a significant portion, is sticky. Palo Alto has firewalls that can be deployed via hardware and software form factors. Additionally, the firm has been a pioneer in the Secure Access Service Edge segment—a novel concept regarding the convergence between networking and security. By remaining agnostic to form factor and deployment, Palo Alto is able to land customers with varying network security needs. Following initially getting customers, Palo Alto has shown excellence in upselling customers by adopting additional modules within the network security platform. This upselling not only contributes to Palo Alto's top-line growth, but also expands the firm's presence within its client's enterprise, which in turn entrenches Palo Alto further into a client's security apparatus and makes churn less likely.

A similar argument for high customer switching costs can be constructed for Prisma and Cortex, Palo Alto's cloud security and security operations platforms. Across both platforms, we have seen strong upselling and cross-selling activity by Palo Alto, with more than half of the Global 2000 firms adopting all three platforms. With increased adoption of the more nascent Prisma and Cortex platforms, we expect Palo Alto to continually expand its footprint in its clients' security systems.

Along with high switching costs, we believe a network effect reinforces Palo Alto's wide moat. Cybersecurity, in its essence, is a data problem, as nefarious activity is data streaming into an enterprise's ecosystem and latching onto, and exploiting, valuable resources. With the exponential increase in data, we are past the point of manual intervention in cybersecurity to detect, prevent, or mitigate a cyberattack. As a result, cybersecurity vendors have invested a great deal of capital and talent into developing AI solutions to automate processes and pick up threats (especially never-seen-before, zero-day attacks). However, artificial intelligence and ML solutions are only as good as the data that is fed to them. This need for good-quality data is where we see entrenched platform vendors, such as Palo Alto, having an edge as they have data streaming into their security solutions from across the enterprise.

By collecting and analyzing this rich data coming into its platforms, a platform vendor such as Palo Alto can uncover threats and new threat signatures that can then be used to update its entire client base's security posture. As more data comes in, Palo Alto's platforms become better at detecting and mitigating cyber threats. As a result, more customers join Palo Alto's platforms due to superior products—which, in turn, leads to more data, and the flywheel spins faster. We see this network effect as reinforcing switching costs as well—with customers hesitant to leave Palo Alto as it'd entail losing the latest threat updates essential to maintaining a secure IT infrastructure.

All in all, as we look at Palo Alto's business as a whole, we see an entrenched platform vendor with sticky products, impressive enterprise penetration, and a long runway for growth. We believe that Palo Alto has built a powerful economic moat around its business, consisting of high customer switching costs bolstered by a powerful network effect. With that in mind, we believe that Palo Alto will continue to generate excess returns over the long term.

Fair Value and Profit Drivers Malik Ahmed Khan, CFA, Equity Analyst, 14 Feb 2025

Our fair value estimate for Palo Alto is $210 per share, implying a 2025 enterprise value/sales multiple of 15 times.

We forecast Palo Alto's revenue growing at a 17% compound annual growth rate over the next five years. As we look at the future, we believe that Palo Alto has strong secular tailwinds behind its back. Across the firm's three verticals, we see massive greenfield opportunities for it to take advantage of and grow its business. Additionally, we think Palo Alto's "land-and-expand" model will continue to bear fruit. The firm has shown great success in upselling its existing customers by either offering additional modules within a platform or additional platforms. Going forward, we project continued up/cross-selling activity for the firm.

Palo Alto's gross margins have hovered in the low-70s range since its IPO. However, as the company grows and software becomes a larger part of its top line, we expect margin expansion on the gross margin front. We see this phenomenon across our coverage as software firms can distribute their costs over an increasing revenue base, driving the cost of sales down as a fraction of sales. As a result, we

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are modeling GAAP gross margins to expand to the low-80s range over our 10-year explicit forecast.

Palo Alto has spent heavily on research and sales in the past. However, as the company scales, we expect these line items to decrease as a percentage of sales. With 2023 marking the return to GAAP profitability, we model Palo Alto to materially expand its GAAP operating margins over our 10-year explicit forecast as the firm seeks to balance profitability with growth.

When modeling Palo Alto's growth and profitability, we also looked at a hypothetical bear base in which the firm's platformization strategy doesn't garner as much customer interest as we model in our base case. In this scenario, our five-year top-line growth rate drops to 16% and we model significantly less margin expansion over our 10-year forecast as some of the attractive platformization unit economics don't pan out. With these conservative estimates baked into our model, we arrive at a bear-case fair value estimate of $159.

Risk and Uncertainty Malik Ahmed Khan, CFA, Equity Analyst, 20 Aug 2024

We assign Palo Alto Networks a High Morningstar Uncertainty Rating due to the firm competing in the ever-shifting cybersecurity segment.

While we commend Palo Alto's efforts to insulate itself from obsolescence by investing in emerging technologies and security infrastructures, the cybersecurity segment is known for its rapid pace of development. With this in mind, large cybersecurity vendors such as Palo Alto stand to be disrupted by smaller upstarts that could outperform Palo Alto in key modules across its three verticals. To stay ahead, Palo Alto has to constantly invest in technologies that the firm predicts will be needed by its clients. However, an inaccurate assessment of future customer demand could lead Palo Alto to either overpay in an acquisition or overspend to develop the same technology in-house.

Much like other software firms, Palo Alto invests heavily in its sales and research departments. Due to the high spending in these verticals, the firm is yet to achieve consistent GAAP profitability, with 2023 marking the first time in over a decade that the firm hit GAAP profitability. While we firmly believe in Palo Alto's long-term opportunities, including its ability to maintain GAAP profitability over the long term, we think that to bask in the light at the end of the tunnel, Palo Alto will have to execute well in the coming years.

Regarding environmental, social, and governance risks, we do not foresee any material ESG issues. However, notable potential risks include attracting and retaining talent, which could demand high remuneration amid a talent shortage in cybersecurity. Also, Palo Alto's solutions are tasked with protecting customers from cyberattacks, making data privacy and security a key concern.

Capital Allocation Malik Ahmed Khan, CFA, Equity Analyst, 20 Aug 2024

We assign Palo Alto an Exemplary Capital Allocation Rating based on its sound balance sheet,

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exceptional investments, and appropriate shareholder distributions.

CTO Nir Zuk helped create Palo Alto Networks in 2005; his background includes Check Point Software Technologies and NetScreen Technologies. Nikesh Arora became CEO in 2018 after roles of president and COO of SoftBank Group and a few leadership positions at Google.

We think Palo Alto's balance sheet is in good shape with a strong cash and liquid investments reserve and positive cash flow margins, we are not overly concerned by the firm's use of debt. Further, we think that the stickiness of the firm's product portfolio reduces downside risk during periods of macroeconomic uncertainty.

Palo Alto's investment strategy has been stellar over the last few years. The firm's investments in cloud security and security operations have allowed it to build out two platforms, Prisma and Cortex. Both platforms are showing great strength as the firm is able to onboard new customers while upselling existing ones. At the same time, the firm has invested a great deal in its own capabilities and has organically developed key modules across its three platforms. Overall, we believe these investments have enabled Palo Alto to successfully expand its horizons beyond its core network security market.

Since Palo Alto has been aggressively expanding its business, the company does not pay its shareholders a dividend and has no plans on starting one soon. We see this strategy as appropriate given the firm's potential growth prospects across network security, cloud security, and security operations.

Analyst Notes Archive

Palo Alto Earnings: Vendor Consolidation Continues to Benefit Sales Growth; Fair Value Up 12%

Malik Ahmed Khan, CFA,Equity Analyst,14 Feb 2025

Palo Alto reported strong second-quarter results, with sales growing 14% year over year to $2.26 billion and adjusted operating margin contracting 20 basis points year over year to 28.4%. Annual recurring revenue from the firm's next-generation security portfolio grew 37% to $4.78 billion.Why it matters: In every quarter since Palo Alto embarked on its platformization strategy a year ago, we have seen evidence of it resonating with customers eager to consolidate security spending on a smaller group of vendors. With each platformization loosely defined as a customer spending more than $1 million on one of Palo Alto's security platforms, the firm completed 75 this quarter, up from 70 last quarter and 45 a year ago. Palo Alto's success in driving platformizations also benefited its continued dominance in the enterprise security market. The number of accounts spending more than $5 million and $10 million per year grew 25% and 52% year over year to 74 and 32, respectively. The bottom line: We are raising our fair value estimate for wide-moat Palo Alto to $210 from $188 as we factor in the firm's strong quarter and raise our medium-term estimates for spending on the firm's hardware appliances. With shares trading slightly down after hours, we view them as fairly valued. Palo Alto's forward-looking remaining

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performance obligations metric also showed continued strength, growing 20% year over year. We see this as a testament to the robust underlying demand for Palo Alto's security solutions. We see plenty of room for further scale-driven margin expansion as Palo Alto continues to up-/cross-sell large organizations. We model the firm's adjusted margins growing to the high-30% range over the next five years, up from the 29% we forecast in 2025. Coming up: Palo Alto's updated 2025 guidance calls for sales and adjusted margin of $9.17 billion and 28.25%. We don't forecast the firm having any trouble hitting these targets.

Palo Alto Earnings: Strong Demand for Security Platforms Continues to Spearhead Firm's Results
Malik Ahmed Khan, CFA,Equity Analyst,21 Nov 2024

Palo Alto reported solid first-quarter financial results, with the firm's sales growing 14% year over year to $2.14 billion and its adjusted margins expanding 60 basis points year over year to 28.8%. The firm's next-generation security portfolio's annual recurring revenue grew 40% to $4.52 billion.Why it matters: With the quarterly results, we saw plenty of evidence that Palo Alto's platformization strategy continues to resonate with customers looking to reduce security vendor sprawl. The firm's annual recurring revenue from platformized customers grew an impressive 48% year over year, making 53% of overall ARR. With each platformization loosely defined as a customer spending more than $1 million on one of Palo Alto's security platforms, the firm has completed around 1,100 platforms so far, with 70 of them coming in the first quarter. As Palo Alto continues to expand its share of its clients' spending, the firm's number of $1 million and $5 million accounts has trended up, with these accounts growing 13% and 30% year over year, respectively. We see this as a positive omen as larger accounts tend to be more sticky. The bottom line: We raise our fair value estimate for wide-moat Palo Alto to $375 from $366 as we factor in the firm's strong quarter and updated guidance for fiscal 2025. We continue to view the firm as well-placed to benefit from vendor consolidation in cybersecurity. Despite a strong quarterly report, shares fell modestly after hours. We believe the firm's updated guidance likely missed investors' overly optimistic expectations. We continue to view Palo Alto's shares as fairly valued. Palo Alto continued to demonstrate operating leverage in its business. As the firm's platformization strategy continues to work and Palo Alto's average customer spending goes up, we expect the increased scale to drive further margin improvements in the medium to long term.Coming up: The firm announced a two-for-one stock split set to be executed in mid-December.

Palo Alto Earnings: Vendor Consolidation Continues to Drive Palo Alto’s Top Line Malik Ahmed Khan, CFA,Equity Analyst,20 Aug 2024

We are maintaining our $366 fair value estimate for wide-moat Palo Alto Networks after the firm closed out its fourth quarter with a strong set of quarterly results and robust guidance for upcoming fiscal 2025, largely in line with our prior estimates. Much like the last couple of quarters, we were encouraged by Palo Alto’s progress in its platformization strategy as it seeks to consolidate more of its customers’

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spending on its cybersecurity platforms. We believe this strategy, which dovetails with an increased customer appetite to reduce security vendor sprawl, will serve Palo Alto well in the long term despite creating near-term volatility in specific metrics such as billings. With Palo Alto shares marching up more than 10% since its last quarterly report, we view the firm's shares as fairly priced and trading in the 3-star range.Palo Alto's fourth-quarter top line clocked in at $2.19 billion, up 12% year over year and marginally ahead of our $2.17 billion estimate. The firm's next-generation annual recurring revenue continued to spearhead its overall top line, expanding 43% year over year to $4.22 billion.The firm's strong NGS ARR, which includes revenue from its more nascent security offerings, is further evidence of how Palo Alto has reinvented its overall business, successfully diversifying its top line away from hardware firewalls. While we don't forecast Palo Alto's NGS ARR to grow to $15 billion by fiscal 2030 (as the company has guided to), we forecast considerable strength in its NGS business in the coming years as the firm's new security offerings continue to garner customer interest.Palo Alto's platformization strategy is seeing strong momentum. With each platformization loosely defined as a customer spending more than $1 million in ARR on one of Palo Alto's security platforms, the firm did 90 platformizations this quarter, up 38% sequentially.

Alphabet Acquisition: We See the Potential Wiz Acquisition as a Good Sign for the Security Space

Malik Ahmed Khan, CFA,Equity Analyst,15 Jul 2024

Multiple news outlets have reported that Alphabet, the parent company of Google, is nearing a deal to acquire Wiz, a cloud security startup, for roughly $23 billion. Not only would this deal value Wiz around $11 billion higher than its most recent valuation in May 2024, but it also would be Alphabet's largest-ever acquisition, more than four times the size of the acquisition of Mandiant in 2022, which was the firm's last major cybersecurity acquisition. With increased vendor consolidation on the horizon, we view Alphabet's potential entry into security as a positive sign for the overall industry.While money freely flowed in the private markets in the past, wallets were snapped shut in 2022 as macro conditions worsened. This tough macro backdrop, coupled with an increased customer interest in adopting multi-module solutions from larger security vendors, has put significant pressure on smaller cybersecurity vendors that are struggling to raise capital during a time when revenue growth rates are decelerating. While Wiz has bucked this trend, materially expanding both its valuation and topline over the last couple of years, we expect Alphabet's potential acquisition of the firm as further dialing up the pressure on Wiz's smaller cloud security peers.As a result, much like Cisco's acquisition of Splunk catalyzed further consolidation in security operations, we believe there could be an uptick in deal activity within cloud security if Alphabet's planned acquisition of Wiz goes through. With plenty of smaller cloud security players lacking a clear path to an initial public offering, we see potential for strategic buyers (such as large technology companies) or large security vendors being able to acquire these firms for a solid price, further consolidating the cloud security space.

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Palo Alto Networks Inc PANW ★★★ 20 May 2025 21:40, UTC

Last Price	Fair Value Estimate	Price/FVE	Market Cap	Economic Moat™	Equity Style Box	Uncertainty	Capital Allocation	ESG Risk Rating Assessment[1]
194.48 USD 20 May 2025	210.00 USD 14 Feb 2025 02:55, UTC	0.93	128.77 USD Bil 20 May 2025	Wide	Large Growth	High	Exemplary	7 May 2025 05:00, UTC

Palo Alto Earnings: We See Early Signs of Success as Palo Alto Expands Its Platform Reach Malik Ahmed Khan, CFA,Equity Analyst,21 May 2024

We raise our fair value estimate for wide-moat Palo Alto Networks to $366 per share from $300. While strong quarterly results, with better-than-expected profitability, drove some of the fair value increase, the majority of our fair value uptick is due to our increased confidence in Palo Alto's platformization strategy, which is showing early signs of success. We disagree with investors' overemphasis on the firm's billings, which remain affected by its decision to offer bundling discounts to existing customers. Instead, we'd point investors to longer-term secular tailwinds, which, in our opinion, will help Palo Alto regain its status as the first $100 billion pure-play cybersecurity business.As we think of drivers for Palo Alto's top line, chief among them is vendor consolidation, as customers seek to reduce their security toolkit sprawl and condense their spending on a narrower list of security vendors. We are already seeing vendor consolidation play out as more large customers start to use more than one Palo Alto platform, cutting their spending on multiple-point solution vendors simultaneously with a roughly 10% lower annualized security outlay, according to industry researcher IDC.After dropping more than 25% after the firm's last quarterly earnings report, Palo Alto's shares regained most of their losses over the last three months. After this quarter's earnings report, however, shares are down almost 10%. We believe this drop is due to Palo Alto's soft fiscal 2024 billings guidance. As mentioned earlier, we think investors should avoid the tunnel vision on billings and focus on the long-term value Palo Alto stands to accrue as it consolidates security spending across network, cloud, and security operations. The firm's shares currently trade in 4-star territory and the pullback offers a good entry point for long-term investors seeking high-quality security exposure.

Palo Alto Earnings: Despite the Near-Term Murkiness, We Think the Future Is Bright Malik Ahmed Khan, CFA,Equity Analyst,21 Feb 2024

We are raising our fair value estimate for wide-moat Palo Alto Networks to $300 from $250. Spearheading this fair value increase is a revised outlook on the firm's long-term growth prospects, as we expect vendor consolidation and artificial intelligence to drive greater demand for Palo Alto's solutions. Despite our updated long-term expectations, we'd be remiss not to point out that the near-term picture for Palo Alto is far from rosy. The firm reduced its billings guidance for fiscal 2024 for the second quarter in a row, spooking investors and leading to Palo Alto shares dropping more than 20% afterhours. While we are modeling a reduced top-line growth profile over the next couple of years, as the drop in billings flows through to sales, our updated long-term growth projections more than offset the impact of reduced near-term sales on our fair value estimate.Since Palo Alto's last quarterly earnings report in November, the firm's share price has seen a dramatic runup, climbing more than 50% before the after-hours drop today. The sharp after-hours drop adds weight to our view that some investor expectations baked into Palo Alto's valuation were quite exuberant and misplaced. Relative to

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our updated fair value estimate, we now view Palo Alto as fairly valued and trading in the 3-star range.Palo Alto's top line for the second quarter came in at $1.98 billion, up 19% year over year and almost exactly in line with our prior expectations. As has been the trend in recent quarters, the firm's next-generation security portfolio posted robust growth, expanding 50% year over year to $3.49 billion. We continue to view Palo Alto's investments in its NGS offering via organic and inorganic means as pertinent and sound. Over the long term, these investments will widen Palo Alto's economic moat and allow the firm to drive profitable top-line growth.

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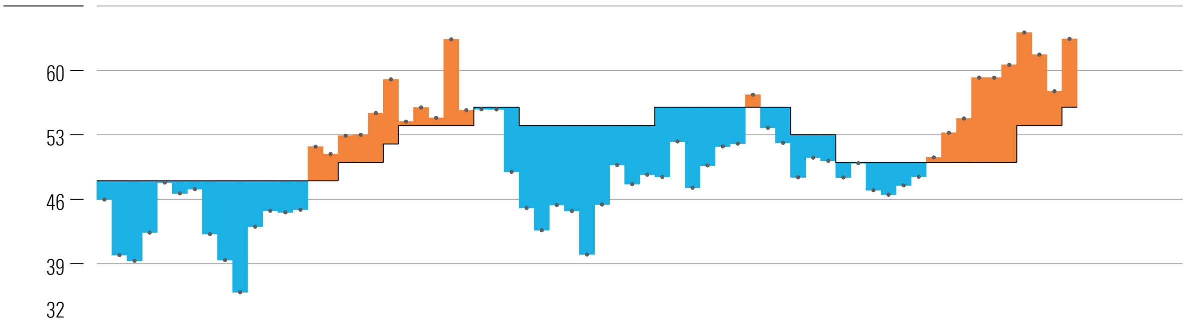
Palo Alto Networks Inc PANW ★★★ 20 May 2025 21:40, UTC

Competitors Price vs. Fair Value

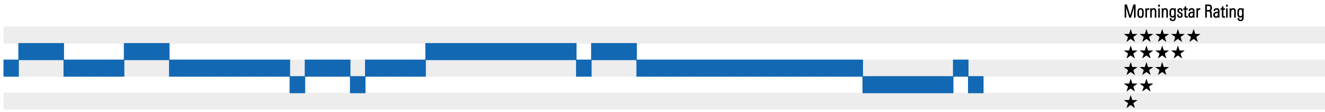
Cisco Systems Inc CSCO



Last Close: 63.42
Fair Value: 56.00
15 May 2025 01:12, UTC
Overvalued
Undervalued

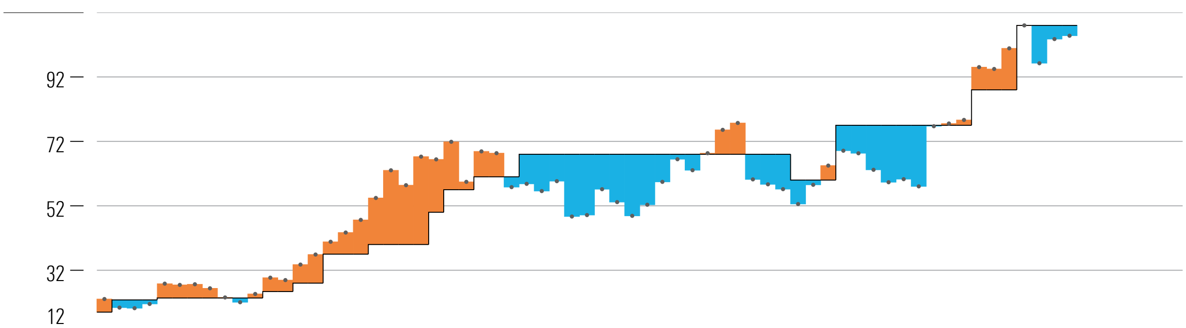
2020	2021	2022	2023	2024	YTD	
0.93	1.17	0.88	0.95	1.18	1.13	Price/Fair Value
-3.71	44.89	-22.44	9.30	20.33	8.50	Total Return %

Morningstar Rating



Total Return % as of 20 May 2025. Last Close as of 20 May 2025. Fair Value as of 15 May 2025 01:12, UTC.

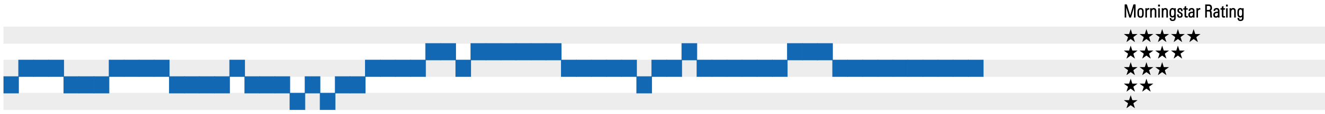
Fortinet Inc FTNT



Fair Value: 108.00
7 Feb 2025 04:07, UTC
Last Close: 104.79
Overvalued
Undervalued

2020	2021	2022	2023	2024	YTD	
1.17	1.26	0.72	0.98	1.07	0.97	Price/Fair Value
39.13	141.97	-31.98	19.72	61.42	10.91	Total Return %

Morningstar Rating



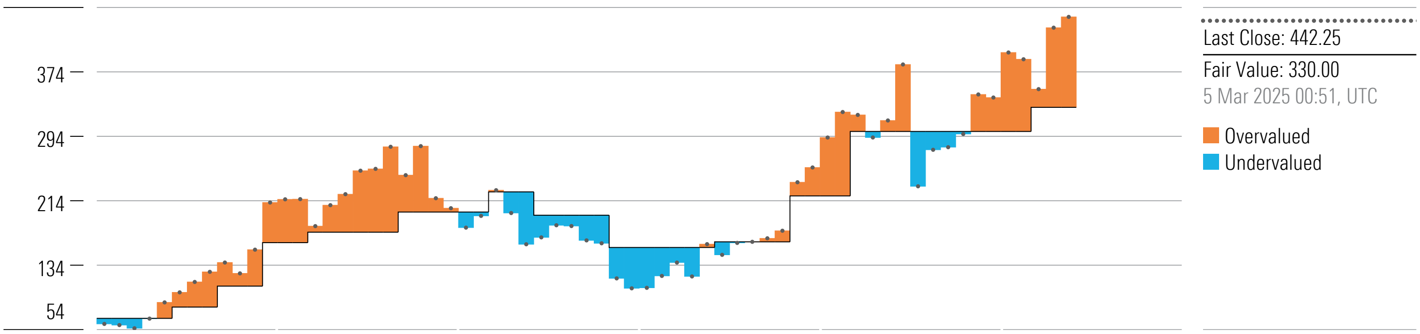
Total Return % as of 20 May 2025. Last Close as of 20 May 2025. Fair Value as of 7 Feb 2025 04:07, UTC.

Morningstar Equity Analyst Report | Report as of 21 May 2025 01:45, UTC | Reporting Currency: USD | Trading Currency: USD | Exchange: NASDAQ - ALL MARKETS

Palo Alto Networks Inc PANW ★★★ 20 May 2025 21:40, UTC

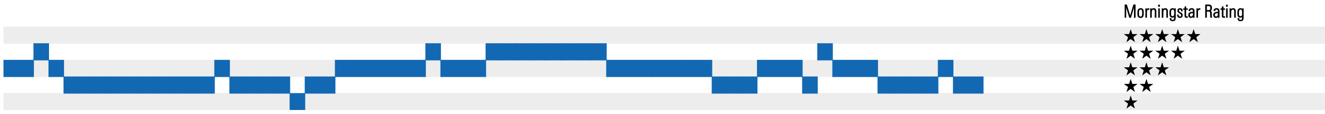
Competitors Price vs. Fair Value

CrowdStrike Holdings Inc Class A CRWD



2020	2021	2022	2023	2024	YTD	
1.31	1.02	0.67	1.16	1.14	1.34	Price/Fair Value
324.74	-3.34	-48.58	142.49	34.01	29.25	Total Return %

Morningstar Rating



Total Return % as of 20 May 2025. Last Close as of 20 May 2025. Fair Value as of 5 Mar 2025 00:51, UTC.

Morningstar Equity Analyst Report | Report as of 21 May 2025 01:45, UTC | Reporting Currency: USD | Trading Currency: USD | Exchange: NASDAQ - ALL MARKETS Page 15 of 24

Palo Alto Networks Inc PANW ★★★ 20 May 2025 21:40, UTC

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Morningstar Valuation Model Summary

Financials as of 20 May 2025	Actual			Forecast				
Fiscal Year, ends 31 Jul	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
Revenue (USD Mil)	5,502	6,893	8,028	9,182	10,899	12,797	15,062	17,743
Operating Income (USD Mil)	-189	387	684	1,023	1,686	2,423	3,426	5,008
EBITDA (USD Mil)	103	876	1,280	1,697	2,272	3,058	4,106	5,741
Adjusted EBITDA (USD Mil)	103	876	1,280	1,697	2,272	3,058	4,106	5,741
Net Income (USD Mil)	-267	440	2,578	1,191	1,632	2,221	3,024	4,289
Adjusted Net Income (USD Mil)	803	1,440	1,948	2,302	2,795	3,447	4,280	5,517
Free Cash Flow To The Firm (USD Mil)	3,606	-2,478	631	754	2,112	2,756	3,662	5,048
Weighted Average Diluted Shares Outstanding (Mil)	591	685	708	708	707	707	707	707
Earnings Per Share (Diluted) (USD)	-0.45	0.64	3.64	1.68	2.31	3.14	4.28	6.07
Adjusted Earnings Per Share (Diluted) (USD)	1.36	2.10	2.75	3.25	3.95	4.87	6.05	7.80
Dividends Per Share (USD)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Margins & Returns as of 20 May 2025		Actual			Forecast					
	3 Year Avg	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**5 Year Avg**
Operating Margin %	5.9	-3.4	5.6	8.5	11.1	15.5	18.9	22.8	28.2	22.1
EBITDA Margin %	—	1.9	12.7	15.9	18.5	20.8	23.9	27.3	32.4	—
Adjusted EBITDA Margin %	—	1.9	12.7	15.9	18.5	20.8	23.9	27.3	32.4	24.6
Net Margin %	11.2	-4.9	6.4	32.1	13.0	15.0	17.4	20.1	24.2	17.9
Adjusted Net Margin %	19.9	14.6	20.9	24.3	25.1	25.7	26.9	28.4	31.1	27.4
Free Cash Flow To The Firm Margin %	12.5	65.6	-35.9	7.9	8.2	19.4	21.5	24.3	28.4	20.4

Growth & Ratios as of 20 May 2025		Actual			Forecast					
	3 Year CAGR	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**5 Year CAGR**
Revenue Growth %	23.5	29.3	25.3	16.5	14.4	18.7	17.4	17.7	17.8	17.2
Operating Income Growth %	—	-37.9	-305.1	76.6	49.6	64.9	43.7	41.4	46.2	48.9
EBITDA Growth %	149.7	-348.9	751.9	46.2	32.6	33.9	34.6	34.3	39.8	35.0
Adjusted EBITDA Growth %	-414.1	-348.9	751.9	46.2	32.6	33.9	34.6	34.3	39.8	35.0
Earnings Per Share Growth %	—	-47.6	-242.2	466.8	-53.8	37.0	36.2	36.1	41.9	10.8
Adjusted Earnings Per Share Growth %	—	27.9	55.0	30.8	18.2	21.5	23.4	24.2	28.9	10.8

Valuation as of 20 May 2025	Actual			Forecast				
	2022	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
Price/Earning	122.3	119.0	118.1	59.8	49.2	39.9	32.1	24.9
Price/Sales	9.0	11.2	13.2	14.0	11.8	10.1	8.5	7.3
Price/Book	462.1	98.0	44.5	21.8	17.4	13.7	10.5	8.0
Price/Cash Flow	—	—	—	—	—	—	—	—
EV/EBITDA	484.5	88.0	81.4	74.5	55.7	41.3	30.8	22.0
EV/EBIT	-263.8	198.9	152.4	123.6	75.0	52.2	36.9	25.2
Dividend Yield %	—	—	—	—	—	—	—	—
Dividend Payout %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Free Cash Flow Yield %	—	—	—	—	—	—	—	—

Operating Performance / Profitability as of 20 May 2025	Actual			Forecast				
Fiscal Year, ends 31 Jul	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
ROA %	-2.2	3.0	12.9	5.4	6.3	7.2	8.1	9.5
ROE %	-127.1	25.2	49.9	18.9	20.7	22.1	23.2	24.8
ROIC %	19.8	23.8	16.6	15.2	17.2	19.3	22.1	25.7

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Palo Alto Networks Inc PANW ★★★ 20 May 2025 21:40, UTC

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Financial Leverage (Reporting Currency)	Actual			Forecast				
Fiscal Year, ends 31 Jul	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
Debt/Capital %	7.4	2.9	1.3	0.0	0.0	0.0	0.0	0.0
Assets/Equity	58.4	8.3	3.9	3.5	3.3	3.1	2.9	2.6
Net Debt/EBITDA	3.1	-0.1	-1.0	-3.6	-4.1	-4.3	-4.4	-4.3
Total Debt/EBITDA	38.5	2.6	1.1	0.0	0.0	0.0	0.0	0.0
EBITDA/ Net Interest Expense	3.8	32.2	154.2	484.8	—	—	—	—

Forecast Revisions as of 20 May 2025	2025		2026		2027	
Prior data as of 13 Feb 2025	**Current**	**Prior**	**Current**	**Prior**	**Current**	**Prior**
Fair Value Estimate Change (Trading Currency)	210.00	210.42	—	—	—	—
Revenue (USD Mil)	9,182	9,209	10,899	10,945	12,797	12,864
Operating Income (USD Mil)	1,023	1,079	1,686	1,764	2,423	2,525
EBITDA (USD Mil)	1,697	1,740	2,272	2,336	3,058	3,147
Net Income (USD Mil)	2,302	2,327	2,795	2,852	3,447	3,524
Earnings Per Share (Diluted) (USD)	1.68	1.71	2.31	2.38	3.14	3.24
Adjusted Earnings Per Share (Diluted) (USD)	3.25	3.29	3.95	4.03	4.87	4.98
Dividends Per Share (USD)	0.00	0.00	0.00	0.00	0.00	0.00

Key Valuation Drivers as of 20 May 2025	
Cost of Equity %	9.0
Pre-Tax Cost of Debt %	5.8
Weighted Average Cost of Capital %	9.0
Long-Run Tax Rate %	20.0
Stage II EBI Growth Rate %	12.0
Stage II Investment Rate %	30.0
Perpetuity Year	20

Additional estimates and scenarios available for download at https://pitchbook.com/.

Discounted Cash Flow Valuation as of 20 May 2025	**USD Mil**
Present Value Stage I	31,579
Present Value Stage II	35,017
Present Value Stage III	70,591
Total Firm Value	**137,187**
Cash and Equivalents	2,579
Debt	964
Other Adjustments	0
Equity Value	**138,802**
Projected Diluted Shares	708
Fair Value per Share (USD)	**210.00**

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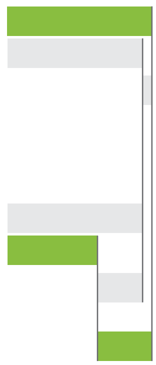
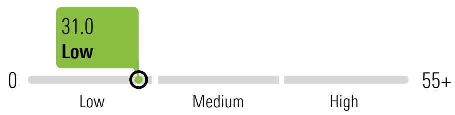
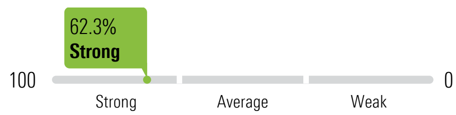
ESG Risk Rating Breakdown

Exposure	
Company Exposure[1]	31.0
– Manageable Risk	29.0
Unmanageable Risk[2]	**2.0**
Management	
Manageable Risk	29.0
– Managed Risk[3]	18.1
Management Gap[4]	**10.9**
Overall Unmanaged Risk	**12.9**







- Exposure represents a company's vulnerability to ESG risks driven by their business model
- Exposure is assessed at the Subindustry level and then specified at the company level
- Scoring ranges from 0-55+ with categories of low, medium, and high-risk exposure

- Management measures a company's ability to manage ESG risks through its commitments and actions
- Management assesses a company's efficiency on ESG programs, practices, and policies
- Management score ranges from 0-100% showing how much manageable risk a company is managing

ESG Risk Rating

ESG Risk Ratings measure the degree to which a company's value is impacted by environmental, social, and governance risks, by evaluating the company's ability to manage the ESG risks it faces.

1. A company's Exposure to material ESG issues 2. Unmanageable Risk refers to risks that are inherent to a particular business model that cannot be managed by programs or initiatives 3. Managed Risk = Manageable Risk multiplied by a Management score of 62.3% 4. Management Gap assesses risks that are not managed, but are considered manageable 5. ESG Risk Rating Assessment = Overall Unmanaged Risk = Management Gap plus Unmanageable Risk

ESG Risk Rating Assessment[5]

ESG Risk Rating is of May 07, 2025. Highest Controversy Level is as of May 08, 2025. Sustainalytics Subindustry: Enterprise and Infrastructure Software. Sustainalytics provides Morningstar with company ESG ratings and metrics on a monthly basis and as such, the ratings in Morningstar may not necessarily reflect current Sustainalytics' scores for the company. For the most up to date rating and more information, please visit: sustainalytics.com/esg-ratings/.

Peer Analysis 07 May 2025

Peers are selected from the company's Sustainalytics-defined Subindustry and are displayed based on the closest market cap values

Company Name	Exposure			Management			ESG Risk Rating		
Palo Alto Networks Inc	31.0 | Low	0	55+	62.3 | Strong	100	0	12.9 | Low	0	40+
Cisco Systems Inc	32.0 | Low	0	55+	63.3 | Strong	100	0	13.1 | Low	0	40+
Fortinet Inc	33.4 | Low	0	55+	56.2 | Strong	100	0	16.0 | Low	0	40+
Varonis Systems Inc	37.7 | Medium	0	55+	33.0 | Average	100	0	26.2 | Medium	0	40+
CrowdStrike Holdings Inc	31.9 | Low	0	55+	44.6 | Average	100	0	18.6 | Low	0	40+

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Appendix
Historical Morningstar Rating

Palo Alto Networks Inc PANW 20 May 2025 21:40, UTC

Dec 2025 —	Nov 2025 —	Oct 2025 —	Sep 2025 —	Aug 2025 —	Jul 2025 —	Jun 2025 —	May 2025 ★★★	Apr 2025 ★★★	Mar 2025 ★★★★	Feb 2025 ★★★	Jan 2025 ★★★
Dec 2024 ★★★	Nov 2024 ★★★	Oct 2024 ★★★	Sep 2024 ★★★	Aug 2024 ★★★	Jul 2024 ★★★	Jun 2024 ★★★	May 2024 ★★★★	Apr 2024 ★★★	Mar 2024 ★★★	Feb 2024 ★★★	Jan 2024 ★★
Dec 2023 ★★	Nov 2023 ★★	Oct 2023 ★★★	Sep 2023 ★★★	Aug 2023 ★★★	Jul 2023 ★★★	Jun 2023 ★★★	May 2023 ★★★	Apr 2023 ★★★	Mar 2023 ★★★	Feb 2023 ★★★	Jan 2023 ★★★★
Dec 2022 ★★★★	Nov 2022 ★★★★	Oct 2022 ★★★★	Sep 2022 ★★★	Aug 2022 ★★★	Jul 2022 ★★★★	Jun 2022 ★★★★	May 2022 ★★★★	Apr 2022 ★★★	Mar 2022 ★★★	Feb 2022 ★★★	Jan 2022 ★★★
Dec 2021 ★★★	Nov 2021 ★★★	Oct 2021 ★★★	Sep 2021 ★★★	Aug 2021 ★★★	Jul 2021 ★★★	Jun 2021 ★★★	May 2021 ★★★	Apr 2021 ★★★	Mar 2021 ★★★★	Feb 2021 ★★★	Jan 2021 ★★★
Dec 2020 ★★★	Nov 2020 ★★★	Oct 2020 ★★★★	Sep 2020 ★★★★	Aug 2020 ★★★	Jul 2020 ★★★★	Jun 2020 ★★★★	May 2020 ★★★★	Apr 2020 ★★★★	Mar 2020 ★★★★★	Feb 2020 ★★★★	Jan 2020 ★★★★

Cisco Systems Inc CSCO 20 May 2025 21:28, UTC

Dec 2025 —	Nov 2025 —	Oct 2025 —	Sep 2025 —	Aug 2025 —	Jul 2025 —	Jun 2025 —	May 2025 ★★	Apr 2025 ★★★	Mar 2025 ★★	Feb 2025 ★★	Jan 2025 ★★
Dec 2024 ★★	Nov 2024 ★★	Oct 2024 ★★	Sep 2024 ★★★	Aug 2024 ★★★	Jul 2024 ★★★	Jun 2024 ★★★	May 2024 ★★★	Apr 2024 ★★★	Mar 2024 ★★★	Feb 2024 ★★★	Jan 2024 ★★★
Dec 2023 ★★★	Nov 2023 ★★★	Oct 2023 ★★★	Sep 2023 ★★★	Aug 2023 ★★★	Jul 2023 ★★★	Jun 2023 ★★★★	May 2023 ★★★★	Apr 2023 ★★★★	Mar 2023 ★★★	Feb 2023 ★★★★	Jan 2023 ★★★★
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Research Methodology for Valuing Companies

Overview

At the heart of our valuation system is a detailed projection of a company's future cash flows, resulting from our analysts' research. Analysts create custom industry and company assumptions to feed income statement, balance sheet, and capital investment assumptions into our globally standardized, proprietary discounted cash flow, or DCF, modeling templates. We use scenario analysis, indepth competitive advantage analysis, and a variety of other analytical tools to augment this process. Moreover, we think analyzing valuation through discounted cash flows presents a better lens for viewing cyclical companies, high-growth firms, businesses with finite lives (e.g., mines), or companies expected to generate negative earnings over the next few years. That said, we don't dismiss multiples altogether but rather use them as supporting cross-checks for our DCF-based fair value estimates. We also acknowledge that DCF models offer their own challenges (including a potential proliferation of estimated inputs and the possibility that the method may miss shortterm market-price movements), but we believe these negatives are mitigated by deep analysis and our longterm approach.

Morningstar's equity research group ("we," "our") believes that a company's intrinsic worth results from the future cash flows it can generate. The Morningstar Rating for stocks identifies stocks trading at a discount or premium to their intrinsic worth—or fair value estimate, in Morningstar terminology. Five-star stocks sell for the biggest risk adjusted discount to their fair values, whereas 1-star stocks trade at premiums to their intrinsic worth.

Four key components drive the Morningstar rating: (1) our assessment of the firm's economic moat, (2) our estimate of the stock's fair value, (3) our uncertainty around that fair value estimate and (4) the current market price. This process ultimately culminates in our singlepoint star rating.

1. Economic Moat

The concept of an economic moat plays a vital role not only in our qualitative assessment of a firm's long-term investment potential, but also in the actual calculation of our fair value estimates. An economic moat is a structural feature that allows a firm to sustain excess profits over a long period of time. We define economic profits as returns on invested capital (or ROIC) over and above our estimate of a firm's cost of capital, or weighted average cost of capital (or WACC). Without a moat, profits are more susceptible to competition. We have identified five sources of economic moats: intangible assets, switching costs, network effect, cost advantage, and efficient scale.

Companies with a narrow moat are those we believe are more likely than not to achieve normalized excess returns for at least the next 10 years. Wide-moat companies are those in which we have very high confidence that excess returns will remain for 10 years, with excess returns more likely than not to remain for at least 20 years. The longer a firm generates economic profits, the higher its intrinsic value. We believe low-quality, no-moat companies will see their normalized returns gravitate toward the firm's cost of capital more quickly than companies with moats.

When considering a company's moat, we also assess whether there is a substantial threat of value destruction, stemming from risks related to ESG, industry disruption, financial health, or other idiosyncratic issues. In this context, a risk is considered potentially value destructive if its occurrence would eliminate a firm's economic profit on a cumulative or midcycle basis. If we deem the probability of occurrence sufficiently high, we would not characterize the company as possessing an economic moat.

2. Estimated Fair Value

Combining our analysts' financial forecasts with the firm's economic moat helps us assess how long returns on invested capital are likely to exceed the firm's cost of capital. Returns of firms with a wide economic moat rating are assumed to fade to the perpetuity period over a longer period of time than the returns of narrow-moat firms, and both will fade slower than no-moat firms, increasing our estimate of their intrinsic value.

Our model is divided into three distinct stages:

Stage I: Explicit Forecast

In this stage, which can last five to 10 years, analysts make full financial statement forecasts, including items such as revenue, profit margins, tax rates, changes in workingcapital accounts, and capital spending. Based on these projections, we calculate earnings before interest, after taxes (EBI) and the net new investment (NNI) to derive our annual free cash flow forecast.

Stage II: Fade

The second stage of our model is the period it will take the company's return on new invested capital—the return on capital of the next dollar invested ("RONIC")—to decline (or rise) to its cost of capital. During the Stage II period, we use a formula to approximate cash flows in lieu of explicitly modeling the income statement, balance sheet, and cash flow statement as we do in Stage I. The length of the second stage depends on the strength of the company's economic moat. We forecast this period to last anywhere from one year (for companies with no economic moat) to 10–15 years or more (for wide-moat companies). During this period, cash flows are forecast using four assumptions: an average growth rate for EBI over the period, a normalized investment rate, average return on new invested capital (RONIC), and the number of years until perpetuity, when excess returns cease. The investment rate and return on new invested capital decline until a perpetuity value is calculated. In the case of firms that do not earn their cost of capital, we assume marginal ROICs rise to the firm's cost of capital (usually attributable to less reinvestment), and we may truncate the second stage.

Stage III: Perpetuity

Once a company's marginal ROIC hits its cost of capital, we calculate a continuing value, using a standard perpetuity formula. At perpetuity, we assume that any growth or decline or investment in the business neither creates nor destroys value and that any new investment provides a return in line with estimated WACC.

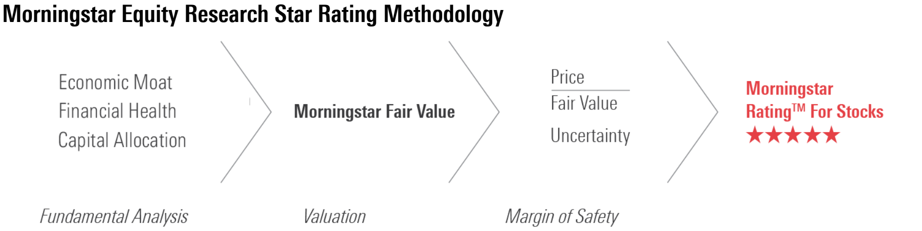
Because a dollar earned today is worth more than a dollar earned tomorrow, we discount our projections of cash flows in stages I, II, and III to arrive at a total present value of expected future cash flows. Because we are modeling free cash flow to the firm—representing cash available to provide a return to all capital providers—we discount future cash flows using the WACC, which is a weighted average of the costs of equity, debt, and preferred stock (and any other funding sources), using expected future proportionate long-term, market-value weights.

3. Uncertainty Around That Fair Value Estimate

Morningstar's Uncertainty Rating is designed to capture the range of potential outcomes for a company's intrinsic value. This rating is used to assign the margin of safety required before investing, which in turn explicitly drives our stock star rating system. The Uncertainty Rating is aimed at identifying the confidence we should have in assigning a fair value estimate for a given stock.

Our Uncertainty Rating is meant to take into account anything that can increase the potential dispersion of future outcomes for the intrinsic value of a company, and any-

Morningstar Equity Research Star Rating Methodology



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thing that can affect our ability to accurately predict these outcomes. The rating begins with a suggested rating produced by a quantitative process based on the trailing 12-month standard deviation of daily stock returns. An analyst overlay is then applied, with analysts using the suggested rating, historical rating data, and their own knowledge of the company to inform them as they make the final Uncertainty Rating decision. Ultimately, the rating decision rests with the analyst. Analysts take into account many characteristics when making their final decision, including cyclical factors, operational and financial factors such as leverage, company-specific events, ESG risks, and anything else that might increase the potential dispersion of future outcomes and our ability to estimate those outcomes.

Our recommended margin of safety—the discount to fair value demanded before we'd recommend buying or selling the stock—widens as our uncertainty of the estimated value of the equity increases. The more uncertain we are about the potential dispersion of outcomes, the greater the discount we require relative to our estimate of the value of the firm before we would recommend the purchase of the shares. In addition, the Uncertainty Rating provides guidance in portfolio construction based on risk tolerance.

Our Uncertainty Ratings are: Low, Medium, High, Very High, and Extreme.

	Margin of Safety	
Qualitative Analysis Uncertainty Ratings	★★★★★Rating	★Rating
Low	20% Discount	25% Premium
Medium	30% Discount	35% Premium
High	40% Discount	55% Premium
Very High	50% Discount	75% Premium
Extreme	75% Discount	300% Premium

Our uncertainty rating is based on the interquartile range, or the middle 50% of potential outcomes, covering the 25th percentile–75th percentile. This means that when a stock hits 5 stars, we expect there is a 75% chance that the intrinsic value of that stock lies above the current market price. Similarly, when a stock hits 1 star, we expect there is a 75% chance that the intrinsic value of that stock lies below the current market price.

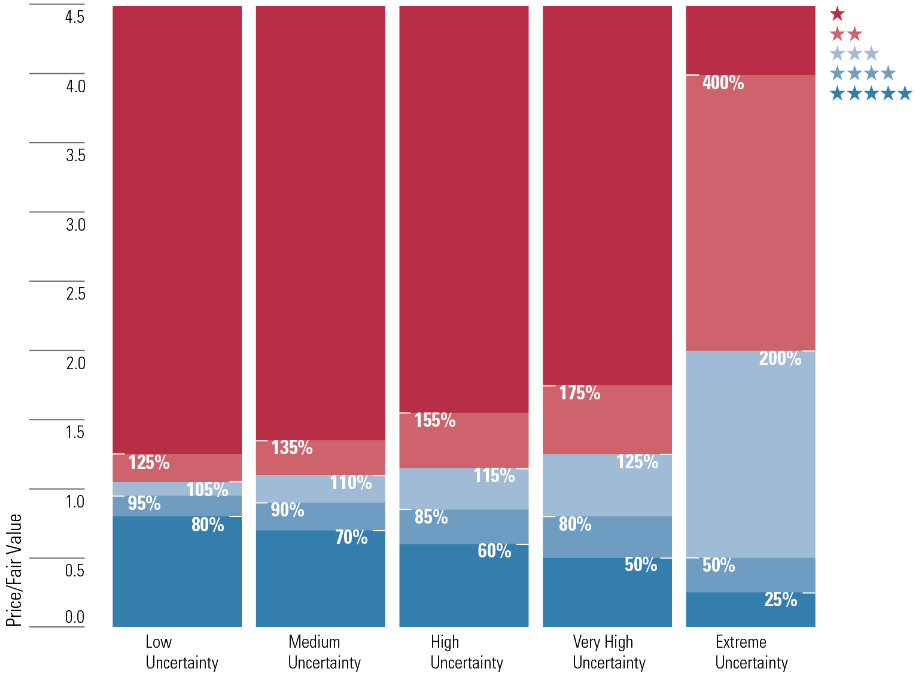
4. Market Price

The market prices used in this analysis and noted in the report come from exchange on which the stock is listed which we believe is a reliable source.

For more details about our methodology, please go to https://shareholders.morningstar.com

Morningstar Star Rating for Stocks

Morningstar Equity Research Star Rating Methodology



Once we determine the fair value estimate of a stock, we compare it with the stock's current market price on a daily basis, and the star rating is automatically re-calculated at the market close on every day the market on which the stock is listed is open. Our analysts keep close tabs on the companies they follow, and, based on thorough and ongoing analysis, raise or lower their fair value estimates as warranted.

Please note, there is no predefined distribution of stars. That is, the percentage of stocks that earn 5 stars can fluctuate daily, so the star ratings, in the aggregate, can serve as a gauge of the broader market's valuation. When there are many 5-star stocks, the stock market as a whole is more undervalued, in our opinion, than when very few companies garner our highest rating.

We expect that if our base-case assumptions are true the market price will converge on our fair value estimate over time generally within three years (although it is impossible to predict the exact time frame in which market prices may adjust).

Our star ratings are guideposts to a broad audience and individuals must consider their own specific investment goals, risk tolerance, tax situation, time horizon, income needs, and complete investment portfolio, among other factors.

The Morningstar Star Ratings for stocks are defined below:

★★★★★ We believe appreciation beyond a fair risk adjusted return is highly likely over a multiyear time frame. Scenario analysis developed by our analysts indicates that the current market price represents an excessively pessimistic outlook, limiting downside risk and maximizing upside potential.

★★★★ We believe appreciation beyond a fair risk-adjusted return is likely.

★★★ Indicates our belief that investors are likely to receive a fair risk-adjusted return (approximately cost of equity).

★★ We believe investors are likely to receive a less than fair risk-adjusted return.

★ Indicates a high probability of undesirable risk-adjusted returns from the current market price over a multiyear time frame, based on our analysis. Scenario analysis by our analysts indicates that the market is pricing in an excessively optimistic outlook, limiting upside potential and leaving the investor exposed to Capital loss.

Other Definitions

Last Price: Price of the stock as of the close of the market of the last trading day before date of the report.

Capital Allocation Rating: Our Capital Allocation (or Stewardship) Rating represents our assessment of the quality of management's capital allocation, with particular emphasis on the firm's balance sheet, investments, and shareholder distributions. Analysts consider compan-

Research Methodology for Valuing Companies

ies' investment strategy and valuation, balance sheet management, and dividend and share buyback policies. Corporate governance factors are only considered if they are likely to materially impact shareholder value, though either the balance sheet, investment, or shareholder distributions. Analysts assign one of three ratings: "Exemplary", "Standard", or "Poor". Analysts judge Capital Allocation from an equity holder's perspective. Ratings are determined on a forward looking and absolute basis. The Standard rating is most common as most managers will exhibit neither exceptionally strong nor poor capital allocation.

Capital Allocation (or Stewardship) analysis published prior to Dec. 9, 2020, was determined using a different process. Beyond investment strategy, financial leverage, and dividend and share buyback policies, analysts also considered execution, compensation, related party transactions, and accounting practices in the rating.

Capital Allocation Rating: Our Capital Allocation (or Stewardship) Rating represents our assessment of the quality of management's capital allocation, with particular emphasis on the firm's balance sheet, investments, and shareholder distributions. Analysts consider companies' investment strategy and valuation, balance sheet management, and dividend and share buyback policies. Corporate governance factors are only considered if they are likely to materially impact shareholder value, though either the balance sheet, investment, or shareholder distributions. Analysts assign one of three ratings: "Exemplary", "Standard", or "Poor". Analysts judge Capital Allocation from an equity holder's perspective. Ratings are determined on a forward looking and absolute basis. The Standard rating is most common as most managers will exhibit neither exceptionally strong nor poor capital allocation.

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Sustainalytics ESG Risk Rating Assessment: The ESG Risk Rating Assessment is provided by Sustainalytics; a Morningstar company.

Sustainalytics' ESG Risk Ratings measure the degree to which company's economic value at risk is driven by environment, social and governance (ESG) factors.

Sustainalytics analyzes over 1,300 data points to assess a company's exposure to and management of ESG risks. In other words, ESG Risk Ratings measures a company's unmanaged ESG Risks represented as a quantitative score. Unmanaged Risk is measured on an open-ended scale starting at zero (no risk) with lower scores representing less unmanaged risk and, for 95% of cases, the unmanaged ESG Risk score is below 50.

Based on their quantitative scores, companies are grouped into one of five Risk Categories (negligible, low, medium, high, severe). These risk categories are absolute, meaning that a 'high risk' assessment reflects a comparable degree of unmanaged ESG risk across all subindustries covered.

The ESG Risk Rating Assessment is a visual representation of Sustainalytics ESG Risk Categories on a 1 to 5 scale. Companies with Negligible Risk = 5 Globes, Low Risk = 4, Medium Risk = 3 Globes, High Risk = 2 Globes, Severe Risk = 1 Globe. For more information, please visit sustainalytics.com/esg-ratings/

Ratings should not be used as the sole basis in evaluating a company or security. Ratings involve unknown risks and uncertainties which may cause our expectations not to occur or to differ significantly from what was expected and should not be considered an offer or solicitation to buy or sell a security.

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