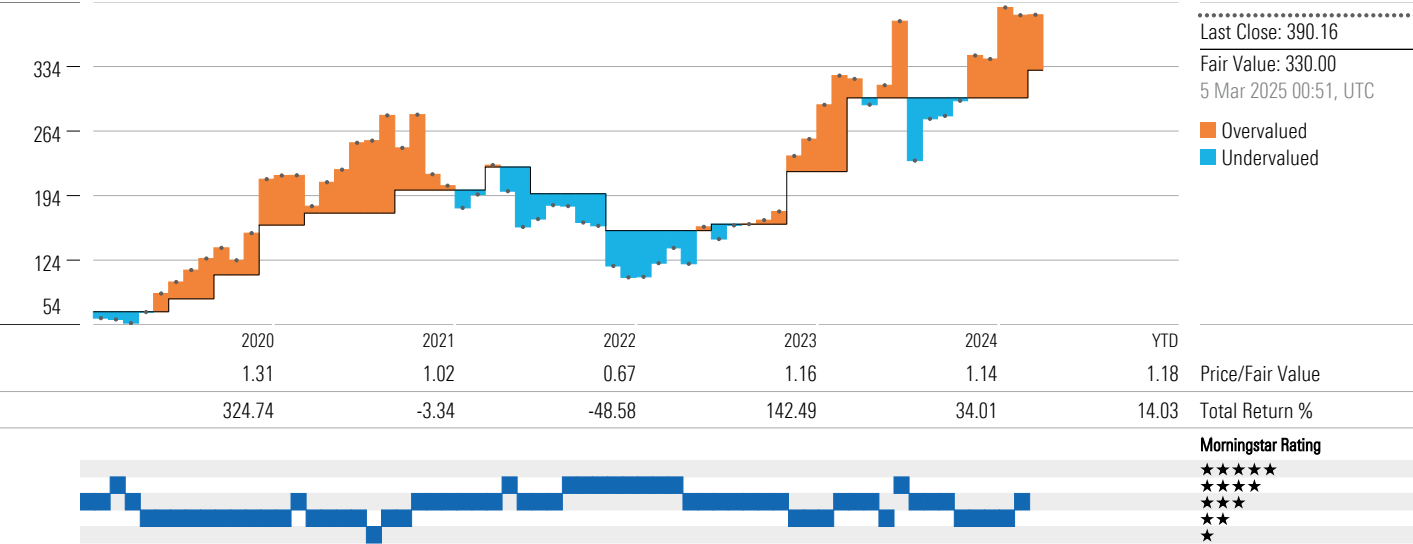


CrowdStrike Holdings Inc Class A CRWD ★★★ 5 Mar 2025 22:57, UTC

Last Price	Fair Value Estimate	Price/FVE	Market Cap	Economic Moat™	Equity Style Box	Uncertainty	Capital Allocation	ESG Risk Rating Assessment¹
390.16 USD 4 Mar 2025	330.00 USD 5 Mar 2025 00:51, UTC	1.18	90.01 USD Bil 5 Mar 2025	Narrow	Large Growth	High	Exemplary	5 Mar 2025 06:00, UTC

Price vs. Fair Value



Total Return % as of 04 Mar 2025. Last Close as of 04 Mar 2025. Fair Value as of 5 Mar 2025 00:51, UTC.

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The primary analyst covering this company does not own its stock.

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

CrowdStrike Earnings: Solid End to Year Despite the July Outage-Related Headwinds

Analyst Note Malik Ahmed Khan, CFA, Equity Analyst, 5 Mar 2025

CrowdStrike reported solid fourth-quarter earnings that included sales growing 25% to \$1.06 billion and adjusted operating margins clocking in at 20.5%, down 470 basis points year over year, mostly due to increased operating costs following the July 19 outage.

Why it matters: While the near-term headwinds caused by the outage continue to pressure top-line growth and profitability, CrowdStrike's product portfolio remains highly competitive and continues to gain customer traction in a security space set for vendor consolidation.

► We remain impressed by CrowdStrike's strategy of enticing customers to spend more on its platform by offering discounts since the outage. By doing so, the firm has turned a moment of potential competitive weakness into an opportunity to gain wallet share among its clients.

► While we expect some incident-inspired weakness in top-line growth due to the customer discount program (Flex) and more customer scrutiny on CrowdStrike product purchases, we reiterate our belief that these headwinds are transitory and should subside starting in fiscal 2027.

The bottom line: We raise our fair value estimate for narrow-moat CrowdStrike to \$330 from \$300 after incorporating results and guidance for fiscal 2026 that was slightly ahead of our prior sales forecast. With a 9% decline after hours, we view shares as fairly valued.

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Sector	Industry
Technology	Software - Infrastructure

Business Description

CrowdStrike is a cloud-based cybersecurity company specializing in next-generation security verticals such as endpoint, cloud workload, identity, and security operations. CrowdStrike's primary offering is its Falcon platform that offers a proverbial single pane of glass for an enterprise to detect and respond to security threats attacking its IT infrastructure. The Texas-based firm was founded in 2011 and went public in 2019.

As CrowdStrike has rushed to deal with the fallout of the July 19 outage, the firm's operating expenses, especially on the research and sales front, have ticked up, negatively affecting its profitability. We think margin headwinds will die down as fiscal 2026 progresses.

► In the longer term, with the firm benefitting from the substantial operating leverage inherent in the software business model, we expect CrowdStrike to scale its profitability, as we forecast adjusted margins to expand to 32% over the next five years, up from 21% in fiscal 2025.

Business Strategy & Outlook Malik Ahmed Khan, CFA, Equity Analyst, 4 Mar 2025

We view CrowdStrike as a leader in endpoint security, a prominent part of the cybersecurity stack that protects an enterprise's endpoints from nefarious activity. As enterprises undergo digital transformations and cloud migrations, we foresee endpoint security further gaining wallet share of an enterprise's security spend. Within this growing market, CrowdStrike has emerged as a leader and we think the stickiness of its platform, Falcon, is clear in the firm's impressive gross and net retention metrics.

Beyond endpoint, CrowdStrike has been enhancing its security portfolio by adding cloud security, identity security, and security operations offerings to its Falcon platform. These newer initiatives have garnered strong customer traction, allowing CrowdStrike to embed itself further into its customer's security ecosystems.

In an evolving landscape that continues to increase in threat complexity and intensity, 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 cybersecurity vendors such as CrowdStrike that provide multiple security products across different security verticals. By providing a broad range of cybersecurity solutions under the same platform, CrowdStrike can also alleviate its clients' toolset management burden.

We are encouraged by CrowdStrike's ability to attract customers and expand its customer base. After onboarding a customer, we typically see a consistent movement along the upselling schedule with customers adopting more CrowdStrike security solutions. We see this "land-and-expand" strategy employed by CrowdStrike as potent since, by moving customers along the upselling schedule, the firm is able to entrench itself further within a client's IT ecosystem and increasing its switching costs over time.

Bulls Say Malik Ahmed Khan, CFA, Equity Analyst, 5 Mar 2025

- CrowdStrike has strong secular tailwinds given that the endpoint, cloud, identity, and security operations markets are projected to grow rapidly
- CrowdStrike has market leadership in endpoint security and has high enterprise penetration within the space.

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Competitors

	CrowdStrike Holdings Inc Class A CRWD	Microsoft Corp MSFT	Fortinet Inc FTNT	Palo Alto Networks Inc PANW
Economic Moat	Narrow	Wide	Wide	Wide
Currency	USD	USD	USD	USD
Fair Value	330.00 5 Mar 2025 00:51, UTC	490.00 31 Jul 2024 06:07, UTC	108.00 7 Feb 2025 04:07, UTC	210.00 14 Feb 2025 02:55, UTC
1-Star Price	511.50	661.50	167.40	325.50
5-Star Price	198.00	343.00	64.80	126.00
Assessment	Fairly Valued 5 Mar 2025	Undervalued 5 Mar 2025	Fairly Valued 5 Mar 2025	Fairly Valued 5 Mar 2025
Morningstar Rating	★★★ 5 Mar 2025 22:57, UTC	★★★★ 5 Mar 2025 22:37, UTC	★★★ 5 Mar 2025 22:48, UTC	★★★ 5 Mar 2025 22:54, UTC
Analyst	Malik Ahmed Khan, Equity Analyst	Dan Romanoff, Senior Equity Analyst	Malik Ahmed Khan, Equity Analyst	Malik Ahmed Khan, Equity Analyst
Capital Allocation	Exemplary	Exemplary	Standard	Exemplary
Price/Fair Value	1.18	0.82	0.99	0.88
Price/Sales	24.15	11.09	13.80	15.25
Price/Book	29.30	9.55	54.67	19.10
Price/Earning	99.28	31.01	49.72	103.88
Dividend Yield	0.00%	0.81%	0.00%	0.00%
Market Cap	90.01 Bil	2,981.18 Bil	82.13 Bil	122.01 Bil
52-Week Range	200.81 — 455.59	381.00 — 468.35	54.57 — 114.82	132.50 — 208.39
Investment Style	Large Growth	Large Blend	Large Growth	Large Growth

- 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, 5 Mar 2025

- Large public cloud vendors often offer their own cybersecurity solutions, which could hamper CrowdStrike's growth opportunities.
- CrowdStrike faces competition from vendors like Palo Alto that have increasingly made investments in the endpoint security space.
- There always remains a risk that CrowdStrike may miss out on the next big technology, thereby allowing its competitors to catch up.

Economic Moat Malik Ahmed Khan, CFA, Equity Analyst, 4 Mar 2025

We believe CrowdStrike merits a narrow-moat rating owing to strong customer switching costs

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associated with Falcon, its endpoint security platform. We view endpoint security as a vital component of any modern enterprise's IT security infrastructure and, according to our estimates, is set to be around a fifth of the overall cybersecurity spending by 2025. Within the endpoint security space, CrowdStrike has emerged as a clear market leader. Additionally, we believe that the value of CrowdStrike's platform can be gleaned from the firm's impressive net retention metrics and strong customer growth. We also believe that CrowdStrike, like other endpoint security vendors, stands to benefit from secular tailwinds as enterprises continue to spend lavishly on endpoint security. With increased adoption of endpoint security platforms, as enterprises switch away from legacy antiviruses, and a sticky platform ensuring that the firm can land and expand its customers, we believe CrowdStrike is more than likely to generate excess returns over the next 10 years.

The primary market in which CrowdStrike competes is endpoint detection and response, or EDR. EDR's primary focus is on monitoring an enterprise's endpoints for nefarious cyberactivity. The evolution of EDR has also been aided by the structural change in how enterprises define their security perimeters. Historically, there has been a "neat" picture of an enterprise's security infrastructure; think of a house with endpoint protection available at every entry point. However, this way of managing security is rapidly becoming obsolete. As more companies undergo digital transformations, the updated form of protection focuses on securing an enterprise from various attack vectors that did not previously exist, such as "Internet of Things" instances and cloud workloads). Moreover, the complexity of the threat landscape is also on the rise, leading to EDR vendors such as CrowdStrike adding value to their customers' business.

CrowdStrike's primary product is its Falcon platform. The cloud-based solution consists of more than 20 modules with services ranging from threat intelligence, hunting, mitigation, and response. The attack surface that Falcon covers also extends beyond endpoints with the firm's platform covering cloud workloads and posture management among other modules. With pricing determined on a per-agent basis, Falcon allows clients to quickly scale up demand as their business grows, allowing CrowdStrike to maintain solid upselling velocity. Other than securing an enterprise's infrastructure, we believe Falcon can also improve labor productivity. By hunting, tracking, and attacking cyberthreats, CrowdStrike's platform can enable IT security teams to free themselves of taxing threat detection and focus more on bigger-picture IT security issues.

In our view, the firm's entrenchment in its clients' IT security ecosystems creates high switching costs. We believe enterprises exhibit loss aversion when it comes to IT security, as there is an operational risk when switching EDR vendors, including loss of analytics during the changeover, project execution, and operational disruption. The more critical the function and the more touchpoints across an organization a vendor has, the higher the switching costs. We believe that any security-related data loss, disruption, or lapse is a material cost associated with switching vendors. We also do not think that enterprises nickel

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and dime their way to picking an EDR vendor—typically companies will select a vendor based on performance rather than price, provided that it has features most relevant to them.

Customers that adopt security solutions do so to take uncertainty off the table – switching vendors often brings uncertainty back into play. CrowdStrike’s gross retention has remained well above 95%, implying a customer lifetime of more than 20 years. At the same time, by upselling its customers into buying more Falcon modules and agent expansion, CrowdStrike has a net retention rate of around 115%. We expect increased customer stickiness as the firm continues to expand its client base and set of solutions.

Along with high switching costs, we believe a network effect reinforces CrowdStrike’s economic moat. Cybersecurity, in its essence, is a data problem, and attacks are now too overwhelming to be handled manually. In turn, vendors have developed 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 fed to them. This need for good-quality data is where we see entrenched EDR vendors, such as CrowdStrike, having an edge. For some context, CrowdStrike’s AI-powered platform interacts with trillions of signals a day, giving it large swathes of data to improve its own offerings and enhance its value proposition to new customers.

By collecting and analyzing this rich data coming into its platforms, a cybersecurity vendor such as CrowdStrike can uncover threats and new threat signatures that can then be used to update its entire client base’s security posture. This network effect is at CrowdStrike’s core, with even the firm’s name being a nod to its ability to collate massive amounts of endpoint security data to thwart nefarious activity occurring across its client base. As more data comes in, the Falcon platform becomes better at detecting and mitigating cyberthreats. As a result, more customers onboard CrowdStrike due to its superior capabilities—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 CrowdStrike as it may entail losing access to CrowdStrike’s crowd-based threat-hunting capabilities.

Fair Value and Profit Drivers Malik Ahmed Khan, CFA, Equity Analyst, 5 Mar 2025

Our fair value estimate for CrowdStrike is \$330 per share, implying a fiscal 2026 enterprise value to sales multiple of 16 times.

We forecast CrowdStrike’s revenue growing at a 22% compound annual growth rate over the next five years. We expect the firm to continually expand its client base while maintaining strong upselling performance with existing clients. In our view, endpoint security is a key area of enterprise security spend and we expect it to remain important for clients in the coming years. CrowdStrike’s “land-and-expand” model has shown great success with the firm able to consistently expand sales from existing customers by selling them additional modules or protecting more endpoints per customer. We expect

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this upselling velocity to persist as the ever-changing threat landscape provides strong momentum for CrowdStrike's sales.

CrowdStrike's gross margins have hovered in the low-70s range over the last few years. 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 are modeling GAAP gross margins to expand to the mid-80s range over our 10-year explicit forecast.

CrowdStrike 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. After hitting GAAP profitability in 2024, we expect the firm to materially expand its margin profile as it seeks to balance growth with profitability. We continue to expect CrowdStrike's cash flow generation profile to remain strong with the firm's free cash flow to equity margins remaining stellar throughout our explicit forecast.

Risk and Uncertainty Malik Ahmed Khan, CFA, Equity Analyst, 4 Mar 2025

We assign CrowdStrike a high uncertainty rating due to the firm competing in the ever-shifting cybersecurity space.

While CrowdStrike has positioned itself well to benefit from secular tailwinds such as a shift to zero-trust security and digital transformations, the cybersecurity space is known for its rapid pace of development. With this in mind, large incumbents such as CrowdStrike that have performed exceptionally well in particular verticals stand to be disrupted by upstarts that could offer better performance in key modules. To stay ahead of the pack, CrowdStrike has invested a great deal of capital in building out its Falcon platform. However, a changing demand landscape coupled with newer products that impact CrowdStrike's competitive positioning are a risk for the firm.

Much like other software firms, CrowdStrike invests heavily in its sales and research departments. Due to the high spending in these verticals, the firm is yet to post consistent GAAP profitability. While we firmly believe in CrowdStrike's long-term opportunity, we think that to bask in the light at the end of the tunnel, CrowdStrike will have to execute well in the coming years.

Regarding environmental, social, and governance, or ESG, risks, we do not foresee any material ESG issues, or MEIs. However, notable potential risks include attracting and retaining talent, which could demand high remuneration amid a talent shortage in cybersecurity. Also, CrowdStrike'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, 5 Mar 2025

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

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exceptional investments, and appropriate shareholder distributions.

CEO, president, and board member George Kurtz co-founded CrowdStrike in 2011 with Dmitri Alperovitch and Gregg Marston; the latter two are no longer with the company. Before starting CrowdStrike, Kurtz was the worldwide CTO, general manager, and EVP of enterprise at McAfee, and Alperovitch was the VP of threat research at McAfee.

We think CrowdStrike's balance sheet is in solid 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 in the event of an economic downturn.

CrowdStrike's investment strategy has been stellar over the last few years. The firm's investments in its Falcon platform have enabled it to build out a comprehensive security platform that consists of more than 20 modules spanning endpoint, cloud, identity, and security operations. By investing in its products and sales teams that sell them to customers, CrowdStrike has been able to gain steady enterprise penetration while consistently upselling existing clients. Overall, we think CrowdStrike's investments will allow the firm to reap rewards in the coming years as key end-markets such as endpoint security remain top-of-mind for enterprise customers.

Since CrowdStrike 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

CrowdStrike Earnings: Falcon Continues to Soar Despite Near-Term July Incident-Related Headwinds Malik Ahmed Khan, CFA, Equity Analyst, 27 Nov 2024

CrowdStrike reported a solid third quarter, with sales growing 29% year over year to \$1.010 billion. However, the firm's profitability came under some pressure as the firm deals with the July 19 outage, with its adjusted margins declining 310 basis points sequentially to 19.3%. Why it matters: Despite the near-term headwinds caused by the July 19 IT outage, CrowdStrike's growth engine continues to hum along. While we model some incident-inspired weakness in the firm's upselling motion in the near term, we remain optimistic about the firm's long-term growth opportunity. CrowdStrike's annual recurring revenue was \$4.018 billion, up 27% year over year. While management called out some weakness due to the July 19 incident, the robust ARR growth adds credence to our view that the outage's impact would be incremental, not transformational. To retain customers after July 19, CrowdStrike has leveraged its Flex program, which offers customers better pricing if they purchase multiple modules. We like this strategy because it allows the firm to entrench itself into its customers' infrastructure,

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increasing its switching costs. The bottom line: After we model in CrowdStrike's strong quarter and updated guidance, which were in line with our expectations, we maintain our \$300 fair value estimate for the narrow-moat firm and currently view shares as marginally overvalued. While the firm's profitability was affected by increased costs stemming from the July 19 incident, we project margins to recover in the coming quarters. In the longer term, we believe the firm has room to expand, with substantial operating leverage built into its software business model. Following a strong third quarter, management raised its fiscal 2025 sales outlook to \$3.927 billion, up from the \$3.896 billion guided to last quarter, both at the midpoint of guidance. We expect the firm to beat this target, and are modeling fiscal 2025 sales at \$3.939 billion.

CrowdStrike Earnings: Despite Near-Term Headwinds, We Believe Falcon Is Poised for Long-Term Success Malik Ahmed Khan, CFA, Equity Analyst, 29 Aug 2024

We are maintaining our \$300 fair value estimate for narrow-moat CrowdStrike after the firm reported strong second-quarter results that were offset by the firm lowering its sales and profitability outlook for the second half of fiscal 2025. Despite an impactful outage of CrowdStrike's Falcon Platform in July, we believe the firm is poised to move forward successfully. Since the CrowdStrike IT outage on July 19, investors have feared that CrowdStrike's growth engine would slow considerably as customers would pull their dollars from its platform and spend more on CrowdStrike substitutes, including SentinelOne and Palo Alto. While the firm has lowered its sales and profitability guidance for the remainder of fiscal 2025 and pointed to near-term headwinds caused by the IT outage, we think that the impact of the IT outage on CrowdStrike's business will dissipate over time as the firm is able to assert itself once again as a high-quality security vendor with an impressive array of security solutions to offer its customers. From a valuation standpoint, after trading close to \$400 less than two months ago, CrowdStrike's stock has cratered since the IT outage, dropping more than 30% from its pre-outage high. While we viewed CrowdStrike's shares as overvalued before the IT outage-inspired chaos, we are not as pessimistic about the impact of the IT outage on CrowdStrike's business as the market, and we now view shares as marginally undervalued but still trading in the 3-star territory. CrowdStrike's second-quarter sales clocked in at \$964 million, up 32% year over year and ahead of the high end of management's prior guidance. The firm's annual recurring revenue, which is a better top-line measure for software companies, expanded 32% year over year to \$3.86 billion. It is important to note that these numbers were driven mainly by the firm's fundamental strength before the IT outage, as only 13 days post-outage are reflected in CrowdStrike's second-quarter results.

CrowdStrike: We Don't Share Market's Views of What Is Still a High-Quality Firm Malik Ahmed Khan, CFA, Equity Analyst, 23 Jul 2024

Investor confidence in CrowdStrike has plummeted following the global IT outage caused by a faulty content update. The firm's shares are down more than 20% since the incident in the early hours of July

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
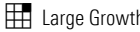

19. After doing a more extensive review, following our initial reaction Friday morning, we are maintaining our \$300 fair value estimate and narrow economic moat. We continue to view CrowdStrike as a high-quality security vendor with an exceptional track record of profitable growth, a record we see extending out in the future. While we viewed CrowdStrike's shares as overvalued before the content-update chaos, we are not as pessimistic as the market about the impact of the IT outage on the firm's business. We now view shares as marginally undervalued, but still trading in 3-star territory. CrowdStrike's robust platform, strong relationships with end customers and value-added resellers, and its expansive platform that stands to benefit from vendor consolidation within security, all underscore our confidence in the firm's long-term potential. While we maintain our confidence in the firm's long-term opportunity, we think there will be short-term costs for the firm to pay. We believe CrowdStrike's management and sales teams will have to work extensively in assuaging customer concerns. We foresee CrowdStrike needing to offer discounts and credits to existing customers for them to stay. While this creates near-term headwinds, our base case doesn't include a doomsday scenario with substantial customer churn and materially lower medium- to long-term top-line expansion.

CrowdStrike: Content Update Chaos May Represent a Time for Long-Term Investors to Buy Malik Ahmed Khan, CFA, Equity Analyst, 19 Jul 2024

Narrow-moat CrowdStrike said a faulty update was the reason behind the massive technology outage that affected millions of users in the early hours of July 19. Customers using CrowdStrike's security platform were locked out of their Windows devices. While details are still emerging, CrowdStrike's initial response emphasized that this incident was not a security breach and that the faulty update has been rectified. We find some credence in this response, considering that within hours of the outage, companies with operations affected by CrowdStrike's update have been able to gradually resume their services. Investors appear to have been spooked by recent high-profile security incidents and sold CrowdStrike's shares in premarket trading, with the stock dropping more than 10%. We think this market reaction is overly punitive, especially considering that the update doesn't represent a breach of CrowdStrike's security apparatus. While the shares still trade in 3-star territory after the premarket drop, we think the current pullback represents a good buying opportunity for long-term investors looking for high-quality security/software exposure. While we don't have a full postmortem on the faulty update that led to this morning's chaos, we suspect that CrowdStrike's central cloud, which pushes updates across its entire customer base simultaneously, played a key role. While this feature enables CrowdStrike to continuously update its customers' security apparatus, it also enabled a substandard update to be pushed onto the company's entire customer base, essentially halting operations at major airports and media networks, among others.

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

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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.

CrowdStrike Earnings: Macro Headwinds Fail to Throw Firm Off Balance as Strong Execution Continues Malik Ahmed Khan, CFA, Equity Analyst, 5 Jun 2024

We are maintaining our \$300 fair value estimate for narrow-moat CrowdStrike after the firm kicked off fiscal 2025 with strong financial results slightly ahead of our above-consensus expectations. While security companies that have reported in recent weeks have been a mixed bunch, with certain vendors calling out a tough macroenvironment and elongated sales cycles, we are impressed by CrowdStrike's ability to execute well despite the macro challenges. From a valuation perspective, we view CrowdStrike's shares as fairly valued and trading in the 3-star range. While we continue to view CrowdStrike as a high-quality security vendor with an impressive track record, we'd point investors seeking cybersecurity exposure toward Palo Alto and Fortinet, two wide-moat security vendors currently trading in the 4-star range. We believe that as customers navigate this macroenvironment, the value of vendor consolidation in security is hard to ignore, both from a security and cost-savings perspective. On this point, we believe CrowdStrike, much like its large security peers, stands to materially benefit as customers continue to simplify their security outlay and consolidate their spending on a smaller number of security vendors. We believe that this consolidation, along with providing explicit top-line tailwinds, will also enable CrowdStrike to entrench itself in its customers' security infrastructure further, reducing the risk of customer churn and increasing customer lifetime value. CrowdStrike's first-quarter sales clocked in at \$921 million, up 33% year over year and ahead of our \$910 million estimate. Annual

CrowdStrike Holdings Inc Class A

CRWD

★★★

5 Mar 2025 22:57, UTC

Last Price	Fair Value Estimate	Price/FVE	Market Cap	Economic Moat™	Equity Style Box	Uncertainty	Capital Allocation	ESG Risk Rating Assessment¹
390.16 USD 4 Mar 2025	330.00 USD 5 Mar 2025 00:51, UTC	1.18	90.01 USD Bil 5 Mar 2025	 Narrow	 Large Growth	High	Exemplary	 5 Mar 2025 06:00, UTC

recurring revenue, which we view as a better measure for software firms, increased 33% year over year to \$3.65 billion. Net new ARR, a measure of new ARR CrowdStrike added in the quarter, was \$212 million, underscoring CrowdStrike’s ability to materially expand its business despite the tough macro conditions. ■■■

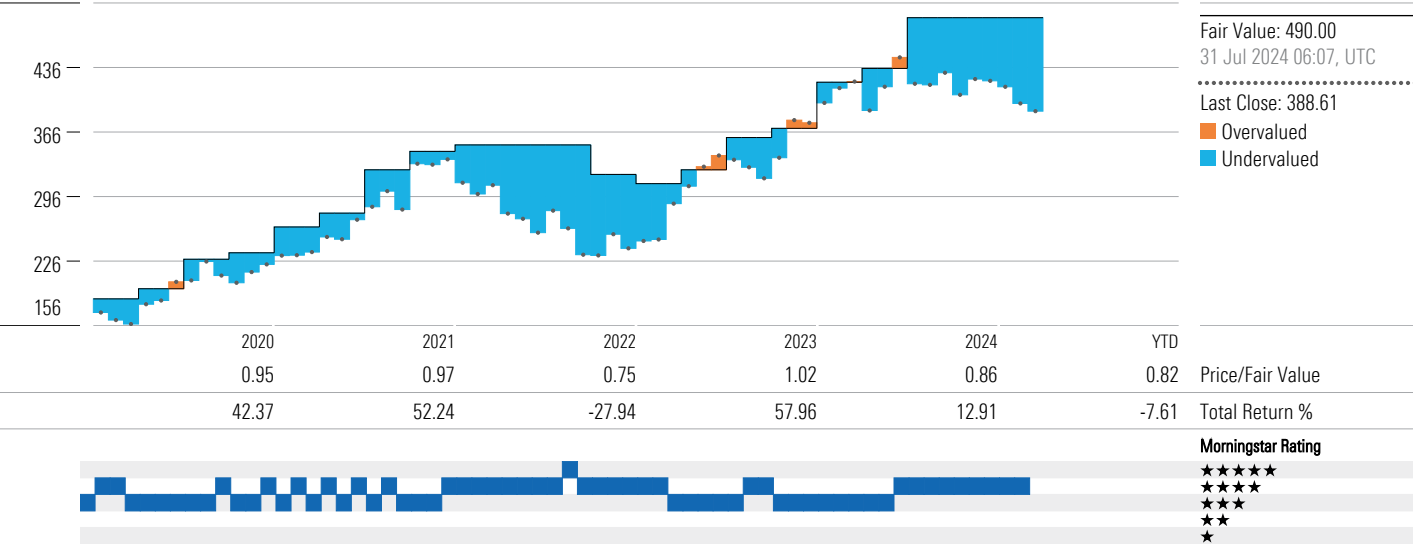
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CrowdStrike Holdings Inc Class A CRWD ★★★ 5 Mar 2025 22:57, UTC

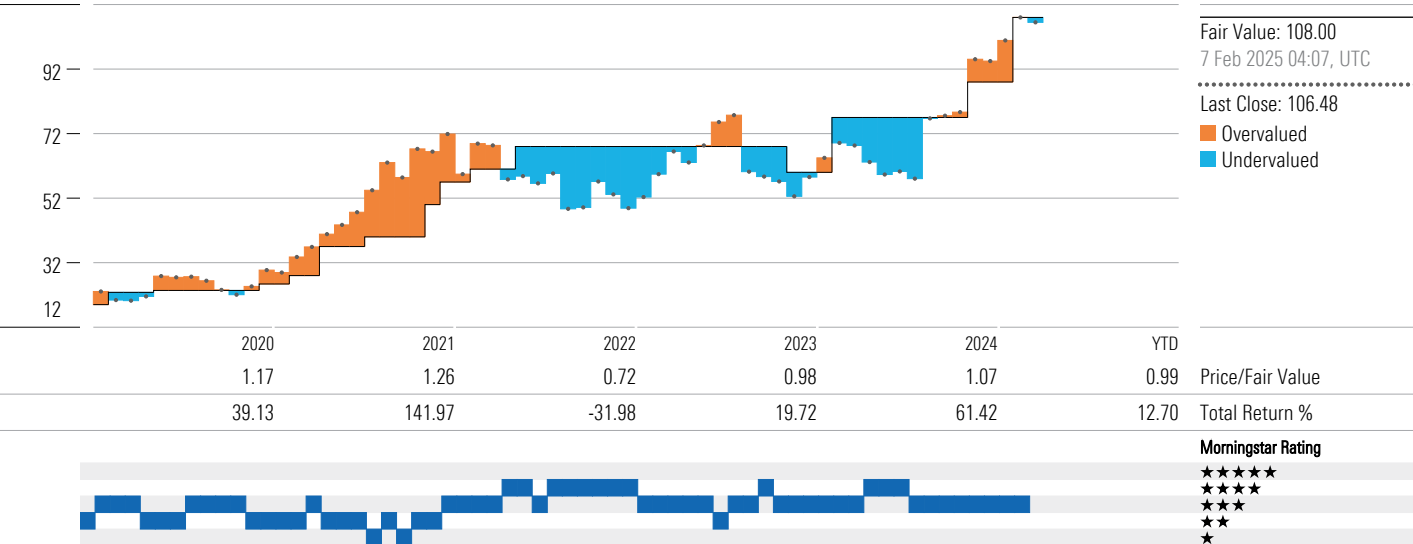
Competitors Price vs. Fair Value

Microsoft Corp MSFT



Total Return % as of 04 Mar 2025. Last Close as of 04 Mar 2025. Fair Value as of 31 Jul 2024 06:07, UTC.

Fortinet Inc FTNT



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

CrowdStrike Holdings Inc Class A

CRWD

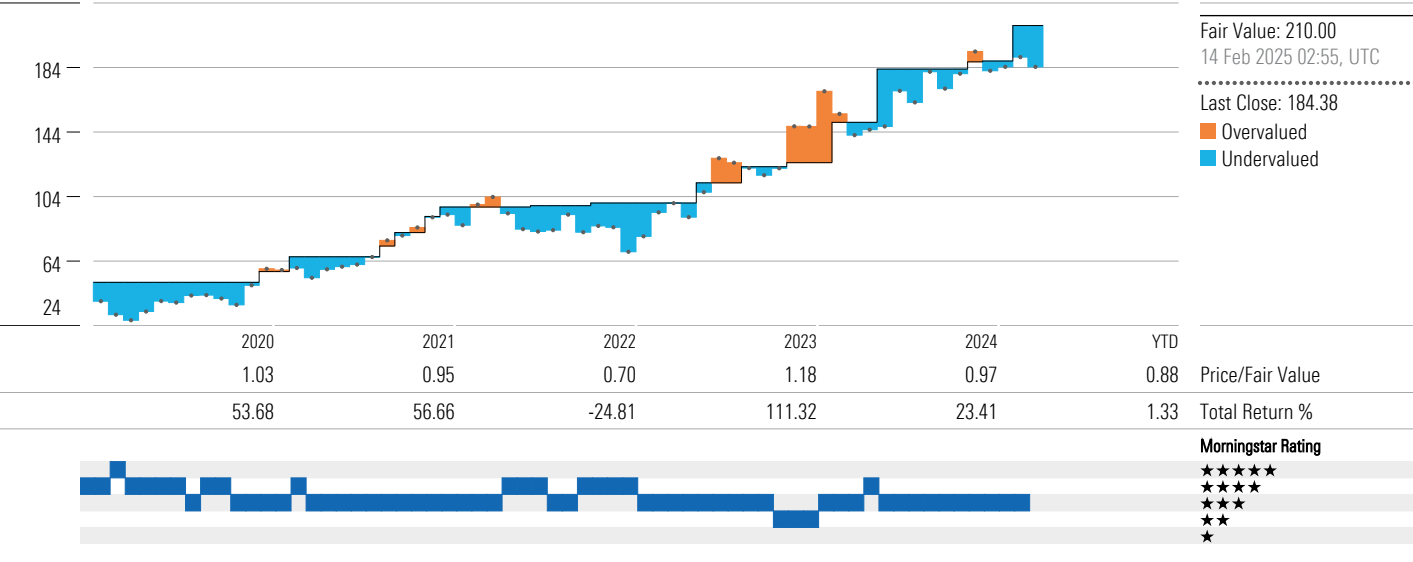
★★★★

5 Mar 2025 22:57, UTC

Competitors Price vs. Fair Value

Palo Alto Networks Inc

PANW



Total Return % as of 04 Mar 2025. Last Close as of 04 Mar 2025. Fair Value as of 14 Feb 2025 02:55, UTC.

CrowdStrike Holdings Inc Class A CRWD ★★★ 5 Mar 2025 22:57, UTC

Last Price	Fair Value Estimate	Price/FVE	Market Cap	Economic Moat™	Equity Style Box	Uncertainty	Capital Allocation	ESG Risk Rating Assessment¹
390.16 USD 4 Mar 2025	330.00 USD 5 Mar 2025 00:51, UTC	1.18	90.01 USD Bil 5 Mar 2025	Narrow	Large Growth	High	Exemplary	5 Mar 2025 06:00, UTC

Morningstar Historical Summary

Financials as of 31 Oct 2024

Fiscal Year, ends 31 Jan	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	YTD	TTM
Revenue (USD K)	—	—	52,745	118,752	249,824	481,413	874,438	1,451,594	2,241,236	3,055,555	2,895,086	3,740,421
Revenue Growth %	—	—	—	125	110	92.7	81.6	66.0	54.4	36.3	31.0	31.4
EBITDA (USD K)	—	—	-87,617	-125,174	-122,884	-115,827	-46,152	-65,982	-40,754	293,827	277,160	394,501
EBITDA Margin %	—	—	-166	-105	-49.2	-24.1	-5.3	-4.6	-1.8	9.6	9.6	10.5
Operating Income (USD K)	—	—	-90,556	-131,440	-136,864	-146,065	-92,529	-142,548	-190,112	-1,995	-35,129	-5,458
Operating Margin %	—	—	-171	-110	-54.8	-30.3	-10.6	-9.8	-8.5	-0.1	-1.2	-0.2
Net Income (USD K)	—	—	-91,340	-135,490	-140,077	-141,779	-92,629	-234,802	-183,245	89,327	73,011	126,710
Net Margin %	—	—	-205	-119	-56.1	-29.5	-10.6	-16.2	-8.2	2.9	2.5	3.4
Diluted Shares Outstanding (K)	—	—	171,202	171,202	171,202	148,062	217,756	227,142	233,139	243,635	250,747	250,048
Diluted Earnings Per Share (USD)	—	—	-0.63	-0.83	-0.82	-0.96	-0.43	-1.03	-0.79	0.37	0.29	0.51
Dividends Per Share (USD)	—	—	—	—	—	—	—	—	—	—	—	—

Valuation as of 28 Feb 2025

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Recent Qtr	TTM
Price/Sales	—	—	—	—	25.0	59.5	35.8	12.0	21.6	22.9	22.9	26.0
Price/Earnings	—	—	—	—	-72.5	-526.3	-217.4	-138.9	-5,000.0	666.7	666.7	769.2
Price/Cash Flow	—	—	—	—	208.3	147.1	87.0	29.5	56.2	61.7	61.7	70.4
Dividend Yield %	—	—	—	—	—	—	—	—	—	—	—	—
Price/Book	—	—	—	—	14.3	57.5	49.5	18.8	30.2	27.5	27.5	31.3
EV/EBITDA	0.0	0.0	0.0	0.0	0.0	-0.3	-0.9	-0.3	-1.4	0.3	0.0	0.0

Operating Performance / Profitability as of 31 Oct 2024

Fiscal Year, ends 31 Jan	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	YTD	TTM
ROA %	—	—	—	-64.9	-43.0	-15.4	-4.5	-7.4	-4.2	1.5	—	1.9
ROE %	—	—	—	—	—	-111	-11.5	-24.8	-14.7	4.7	—	5.0
ROIC %	—	—	—	—	—	-111	-7.9	-12.6	-10.1	-0.1	—	0.0
Asset Turnover	—	—	—	0.5	0.8	0.5	0.4	0.5	0.5	0.5	—	0.5

Financial Leverage

Fiscal Year, ends 31 Jan	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Recent Qtr	TTM
Debt/Capital %	—	—	—	—	—	—	46.9	42.7	34.5	25.3	20.3	—
Equity/Assets %	—	—	—	—	—	52.8	31.9	28.3	29.1	34.7	39.3	—
Total Debt/EBITDA	—	—	—	—	—	0.0	-16.9	-11.7	-19.2	2.7	2.9	—
EBITDA/Interest Expense	Infinite	Infinite	-142.5	-76.0	-287.1	-262.1	-29.6	-2.6	-1.6	11.4	14.1	15.1

Morningstar Analyst Historical/Forecast Summary as of 04 Mar 2025

Financials						Forward Valuation				
Fiscal Year, ends 31 Jan 2025	2024	2025	Estimates 2026	2027	2028	2024	2025	Estimates 2026	2027	2028
Revenue (USD Mil)	3,056	3,954	4,793	5,901	7,218	Price/Sales	7.7	17.0	18.8	15.3
Revenue Growth %	36.3	29.4	21.2	23.1	22.3	Price/Earnings	94.4	98.3	87.8	63.4
EBITDA (USD Mil)	294	295	286	643	1,160	Price/Cash Flow	—	—	—	—
EBITDA Margin %	9.6	7.5	6.0	10.9	16.1	Dividend Yield %	—	—	—	—
Operating Income (USD Mil)	-2	-120	-173	159	640	Price/Book	30.9	29.7	28.1	25.8
Operating Margin %	-0.1	-3.1	-3.6	2.7	8.9	EV/EBITDA	74.5	219.5	302.4	134.4
Net Income (USD Mil)	754	990	1,027	1,423	1,815					
Net Margin %	24.7	25.1	21.4	24.1	25.2					
Diluted Shares Outstanding (Mil)	244	245	247	247	247					
Diluted Earnings Per Share(USD)	3.10	4.05	4.16	5.76	7.35					
Dividends Per Share(USD)	0.00	0.00	0.00	0.00	0.00					

CrowdStrike Holdings Inc Class A **CRWD** ★★★ 5 Mar 2025 22:57, UTC

Last Price	Fair Value Estimate	Price/FVE	Market Cap	Economic Moat™	Equity Style Box	Uncertainty	Capital Allocation	ESG Risk Rating Assessment¹
390.16 USD 4 Mar 2025	330.00 USD 5 Mar 2025 00:51, UTC	1.18	90.01 USD Bil 5 Mar 2025	Narrow	Large Growth	High	Exemplary	5 Mar 2025 06:00, UTC

ESG Risk Rating Breakdown

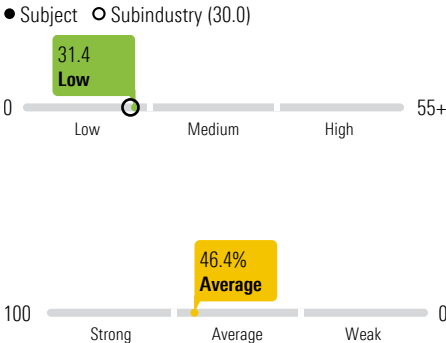
Exposure

Company Exposure¹	31.4
– Manageable Risk	29.3
Unmanageable Risk²	2.0

Management

Manageable Risk	29.3
– Managed Risk³	13.6
Management Gap⁴	15.7

Overall Unmanaged Risk 17.8



- ▶ 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 46.4% 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 Assessment⁵



ESG Risk Rating is of Feb 05, 2025. Highest Controversy Level is as of Feb 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 05 Feb 2025

Company Name	Exposure	Management	ESG Risk Rating
CrowdStrike Holdings Inc	31.4 Low 0 —●— 55+	46.4 Average 100 —●— 0	17.8 Low 0 —●— 40+
Microsoft Corp	33.6 Low 0 —●— 55+	64.3 Strong 100 —●— 0	13.5 Low 0 —●— 40+
Fortinet Inc	33.4 Low 0 —●— 55+	56.2 Strong 100 —●— 0	16.0 Low 0 —●— 40+
Palo Alto Networks Inc	31.0 Low 0 —●— 55+	62.3 Strong 100 —●— 0	12.9 Low 0 —●— 40+
SentinelOne Inc	36.2 Medium 0 —●— 55+	43.6 Average 100 —●— 0	21.5 Medium 0 —●— 40+

Appendix

Historical Morningstar Rating

CrowdStrike Holdings Inc Class A CRWD 5 Mar 2025 22:57, 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
★★	★★	★★	★★	★★	★★	★★	★★	★★★★	★★★★★	★★★★	★★★★

Microsoft Corp MSFT 5 Mar 2025 22:37, 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
★★★	★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★

Fortinet Inc FTNT 5 Mar 2025 22:48, 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
★★	★★★★	★★★★	★★★★	★★★★	★★	★★	★★	★★★★	★★★★	★★★★	★★

Palo Alto Networks Inc PANW 5 Mar 2025 22:54, 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 ★★★★

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, in-depth 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 short-term market-price movements), but we believe these negatives are mitigated by deep analysis and our long-term 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 re-

turns 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 (EBIT) and the net new investment (NNI) to de-

rive 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 EBIT 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	★★★★★ Rating	★ Rating
Uncertainty Ratings		
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.

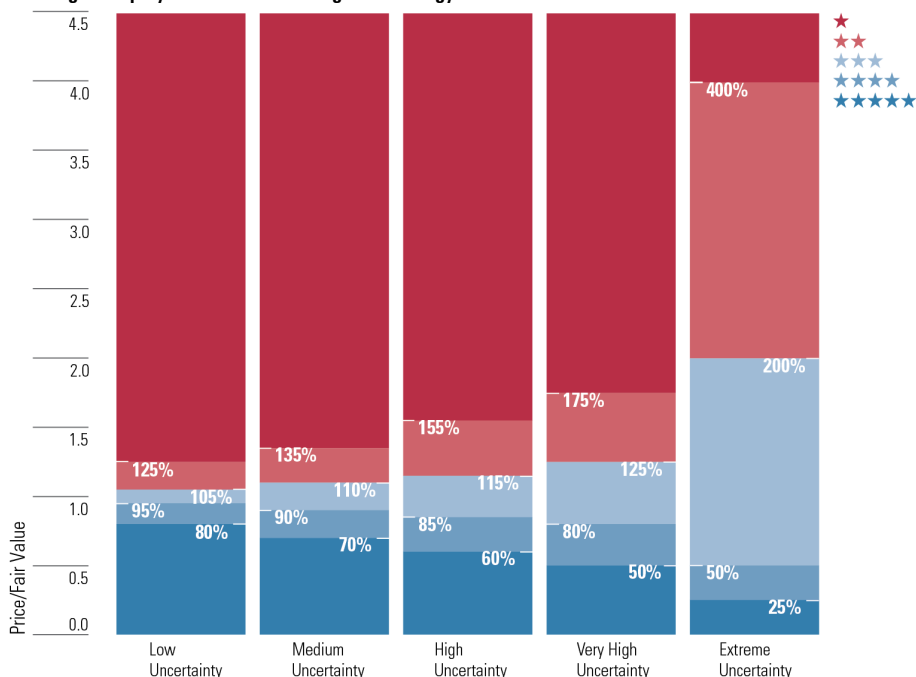
4. Market Price

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 ad-

justed 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-

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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 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/

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