

International Business Machines Corp.

Red Hat: A deeper look into the portfolio and drivers of growth

Maintain Rating: BUY | PO: 315.00 USD | Price: 308.58 USD

Red Hat remains a key driver of long-term growth

IBM's hybrid cloud business is largely built around Red Hat, the open-source software leader that IBM acquired in 2019 for \$34 billion. Red Hat operates as an independent unit within IBM, focused on enterprise open-source solutions for hybrid cloud deployments. Since the acquisition, Red Hat's annual revenue has nearly doubled from about \$3.4 billion (FY2019) to over \$6.5 billion in 2024. Maintain Buy as mix shifts to higher margin software and IBM drives solid FCF growth.

Key drivers of growth for RedHat

Key drivers of Red Hat's growth include the demand for hybrid cloud infrastructure, the mission-critical role of Linux in enterprise IT, and Red Hat's unique position as a vendor-neutral open-source provider. Enterprises are embracing hybrid cloud to gain flexibility and avoid lock-in to a single cloud provider. Red Hat's flagship Linux and Kubernetes platforms allow apps to run reliably across on-premises and multiple clouds. OpenShift and Ansible continue to grow solidly over 20% contributing to Hybrid Cloud growth.

AI can be an incremental catalyst for Red Hat growth

IBM has started to incorporate AI into Red Hat products. "RHEL for AI" and "OpenShift AI" have emerged, bundling AI frameworks with the platform. Red Hat could gain additional usage as the infrastructure for AI/ML workloads need to run on-prem or across clouds (especially in industries with data governance concerns). If IBM's AI strategy (through its Watsonx and other AI tools) takes off, it will likely pull through more OpenShift and Linux sales. Red Hat's platforms are hardware-agnostic, so whether AI runs on NVIDIA GPUs in the cloud or on IBM Power systems, Red Hat can be the software layer managing it (as can competitor products like SUSE, or Ubuntu).

Software growth remains key for IBM

In 2025 IBM is likely to deliver ~9% growth in cc in Software and in 2026 Software will likely be the fastest growing segment for IBM with some organic acceleration (relative to ~5% organic growth in 2025) driven primarily by Red Hat and Transaction Processing.

Estimates (Dec) (US\$)	2023A	2024A	2025E	2026E	2027E
EPS	9.61	10.32	11.39	12.14	12.87
GAAP EPS	8.12	6.42	9.04	9.95	10.18
EPS Change (YoY)	5.3%	7.4%	10.4%	6.6%	6.0%
Consensus EPS (Bloomberg)			11.36	12.20	12.92
Consensus EPS (Visible Alpha)			9.12	10.38	11.12
DPS	6.63	6.67	6.71	6.75	6.79
Valuation (Dec)					
P/E	32.1x	29.9x	27.1x	25.4x	24.0x
GAAP P/E	38.0x	48.1x	34.1x	31.0x	30.3x
Dividend Yield	2.1%	2.2%	2.2%	2.2%	2.2%
EV / EBITDA*	22.7x	22.0x	18.3x	17.0x	15.8x
Free Cash Flow Yield*	4.2%	4.1%	5.5%	5.2%	5.7%

* For full definitions of *IQmethod*SM measures, see page 13.

01 December 2025

Equity

Wamsi Mohan
Research Analyst
BofAS
+1 646 855 3854
wamsi.mohan@bofa.com

Ruplu Bhattacharya
Research Analyst
BofAS
+1 646 855 0315
ruplu.bhattacharya@bofa.com

Aisling Grueninger
Research Analyst
BofAS
+1 646 855 4273
aisling.grueninger@bofa.com

Joseph Leeman
Research Analyst
BofAS
+1 646 855 1262
joseph.leeman@bofa.com

Stock Data

Price	308.58 USD
Price Objective	315.00 USD
Date Established	22-Oct-2025
Investment Opinion	B-1-7
52-Week Range	214.50 USD - 324.90 USD
Mkt Val (mn) / Shares Out	287,448 USD / 931.5 (mn)
Free Float	99.1%
Average Daily Value (mn)	1816.89 USD
BofA Ticker / Exchange	IBM / NYS
Bloomberg / Reuters	IBM US / IBM.N
ROE (2025E)	37.1%
Net Dbt to Eqty (Dec-2024A)	149.0%

See end of note for abbreviations used

BofA Securities does and seeks to do business with issuers covered in its research reports. As a result, investors should be aware that the firm may have a conflict of interest that could affect the objectivity of this report. Investors should consider this report as only a single factor in making their investment decision. Refer to important disclosures on page 14 to 16. Analyst Certification on page 12. Price Objective Basis/Risk on page 12.

12908257

Timestamp: 01 December 2025 09:30AM EST

iQprofileSM International Business Machines Corp.

iQmethodSM – Bus Performance*

(US\$ Millions)	2023A	2024A	2025E	2026E	2027E
Return on Capital Employed	9.1%	9.0%	10.3%	10.2%	9.7%
Return on Equity	39.7%	38.7%	37.1%	33.7%	25.6%
Operating Margin	17.9%	17.9%	21.1%	21.8%	22.4%
Free Cash Flow	12,121	11,761	15,670	15,068	16,425

iQmethodSM – Quality of Earnings*

(US\$ Millions)	2023A	2024A	2025E	2026E	2027E
Cash Realization Ratio	1.6x	1.4x	1.6x	1.4x	1.5x
Asset Replacement Ratio	0.4x	0.4x	0.3x	0.3x	0.3x
Tax Rate	14.0%	13.6%	15.7%	15.0%	15.0%
Net Debt-to-Equity Ratio	192.2%	149.0%	146.2%	94.9%	44.6%
Interest Cover	6.9x	6.6x	7.3x	7.1x	7.2x

Income Statement Data (Dec)

(US\$ Millions)	2023A	2024A	2025E	2026E	2027E
Sales	61,860	62,753	66,970	69,726	72,714
% Change	2.2%	1.4%	6.7%	4.1%	4.3%
Gross Profit	34,932	36,274	39,834	41,942	44,171
% Change	6.9%	3.8%	9.8%	5.3%	5.3%
EBITDA	15,450	15,928	19,201	20,688	22,161
% Change	4.8%	3.1%	20.6%	7.7%	7.1%
Net Interest & Other Income	(741)	(55)	(1,321)	(1,465)	(1,562)
Net Income (Adjusted)	8,861	9,671	10,804	11,653	12,501
% Change	6.4%	9.1%	11.7%	7.9%	7.3%

Free Cash Flow Data (Dec)

(US\$ Millions)	2023A	2024A	2025E	2026E	2027E
Net Income from Cont Operations (GAAP)	7,502	6,024	8,578	9,561	9,894
Depreciation & Amortization	4,396	4,667	5,061	5,501	5,891
Change in Working Capital	900	(1,669)	1,922	(123)	238
Deferred Taxation Charge	0	0	0	0	0
Other Adjustments, Net	1,133	4,424	1,737	1,850	2,216
Capital Expenditure	(1,810)	(1,685)	(1,628)	(1,722)	(1,814)
Free Cash Flow	12,121	11,761	15,670	15,068	16,425
% Change	43.2%	-3.0%	33.2%	-3.8%	9.0%
Share / Issue Repurchase	0	0	401	0	0
Cost of Dividends Paid	(6,040)	(6,147)	(6,255)	(6,378)	(6,493)
Change in Debt	4,497	(880)	4,683	0	0

Balance Sheet Data (Dec)

(US\$ Millions)	2023A	2024A	2025E	2026E	2027E
Cash & Equivalents	13,089	14,161	18,082	26,772	36,704
Trade Receivables	14,008	13,963	13,490	12,988	13,685
Other Current Assets	5,811	6,359	9,110	9,128	7,391
Property, Plant & Equipment	5,501	5,731	5,476	4,020	2,429
Other Non-Current Assets	96,830	96,961	108,041	109,329	107,384
Total Assets	135,239	137,175	154,200	162,236	167,592
Short-Term Debt	6,426	5,089	7,942	7,942	7,942
Other Current Liabilities	27,695	28,054	31,675	31,139	14,486
Long-Term Debt	50,121	49,884	55,174	55,174	55,174
Other Non-Current Liabilities	28,384	26,757	28,613	29,682	30,841
Total Liabilities	112,626	109,784	123,405	123,937	108,443
Total Equity	22,614	27,392	30,795	38,300	59,234
Total Equity & Liabilities	135,240	137,176	154,200	162,236	167,677

* For full definitions of iQmethodSM measures, see page 13.

Company Sector

IT Hardware

Company Description

International Business Machines (IBM) is a leading provider of enterprise solutions, offering a broad portfolio of IT hardware, business and IT services, and a full suite of software solutions. The company integrates its hardware products with its software and services offerings in order to provide high value solutions. IBM is comprised of four major segments: (1) Infrastructure, (2) Consulting, (3) Software, and (4) Financing.

Investment Rationale

We view IBM as a defensive investment given its high exposure to recurring sales, cost cutting levers, solid balance sheet, potential share gains, and relatively stable margins. We believe IBM will embark on further cost cutting, and enhance its services and software offerings through acquisitions. Longer term, we expect IBM to take share in IT spending with its Cloud and AI initiatives.

Stock Data

Average Daily Volume 5,845,631

Quarterly Earnings Estimates

	2024	2025
Q1	1.68A	1.60A
Q2	2.43A	2.80A
Q3	2.30A	2.65E
Q4	3.92A	4.33E

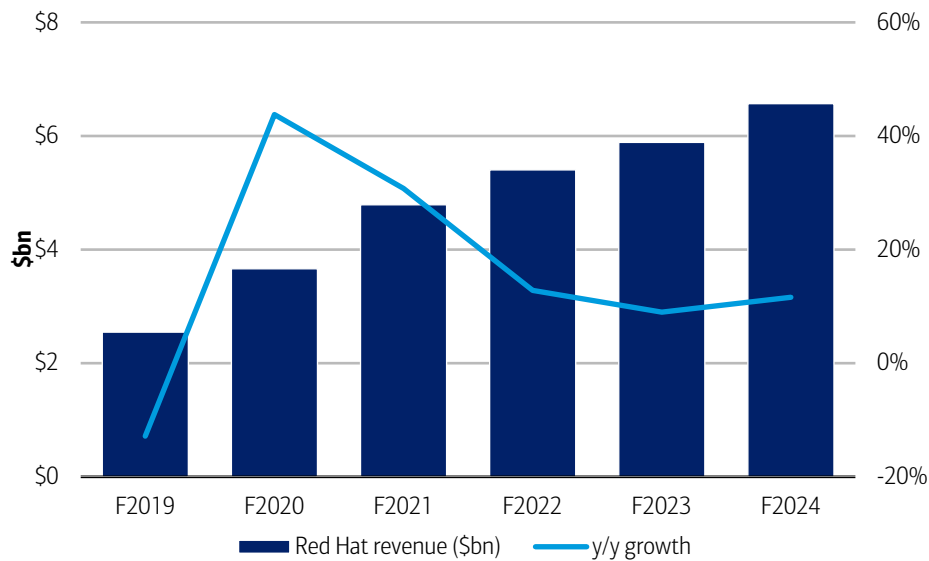


Red Hat's business today and key growth drivers

IBM's hybrid cloud business is largely built around Red Hat, the open-source software leader that IBM acquired in 2019 for \$34 billion. Red Hat operates as an independent unit within IBM, focused on enterprise open-source solutions for hybrid cloud deployments. Today, Red Hat forms the backbone of IBM's software segment and has been a primary engine of growth for the company. In fact, since the acquisition, Red Hat's annual revenue has nearly doubled from about \$3.4 billion (FY2019 on RHT basis pre-acq) to over \$6.5 billion in 2024. This corresponds to a robust mid-teens compound annual growth rate, outpacing IBM's overall growth. Red Hat's strong subscription-based revenue model, selling support and services for open-source software, provides IBM with a steady, recurring revenue stream that IBM's CFO likened to a high-value "annuity" for the business.

Figure 1: Red Hat revenue grew meaningfully over the past 5 years

Red Hat revenue and y/y growth



Source: Company reports, BofA Global Research estimates

Notes: RHT rev was \$3.4bn in pre-acquisition RHT FY. Figure shows estimated pro-forma.

BofA GLOBAL RESEARCH

Hybrid cloud refers to the combination of on-premises infrastructure with public cloud and private cloud resources. Red Hat's portfolio is specifically tailored to enable this hybrid cloud approach across multiple environments. A key growth driver today is the widespread enterprise adoption of containers and Kubernetes for cloud-native applications which is an area where Red Hat's solutions excel. IBM's CEO Arvind Krishna highlighted that Red Hat has helped transform IBM into a more software-centric company, with software now approaching 50% of IBM's revenue. Red Hat's consistent double-digit growth has been critical. In 3Q25, Red Hat's revenue grew 12% y/y in constant currency, significantly higher than IBM's overall growth rate of 7% y/y in cc (despite coming in a bit weaker than expected).

Key drivers of Red Hat's growth include the demand for hybrid cloud infrastructure, the mission-critical role of Linux in enterprise IT, and Red Hat's unique position as a vendor-neutral open-source provider. Enterprises are embracing hybrid cloud to gain flexibility and avoid lock-in to a single cloud provider. Red Hat's flagship Linux and Kubernetes platforms allow applications to run reliably across on-premises data centers and multiple clouds. This value proposition has led to broad adoption by large organizations worldwide. Notably, Red Hat Enterprise Linux (RHEL) is used by over 90% of Fortune 500 companies for their operations, underscoring its ubiquity in enterprise computing. Likewise, Red Hat's hybrid cloud platform OpenShift (a Kubernetes-based solution) is used by nearly 50% of Fortune 100 companies and about 30% of Global 500 companies.



Such deep penetration in top enterprises drives a large, stable customer base that contributes to Red Hat's subscription revenue growth.

Red Hat's integration into IBM has expanded its go-to-market reach even further. IBM's global salesforce and enterprise relationships have opened doors for Red Hat in many accounts. About 80% of Red Hat's sales are generated through channel partners and alliances, including global system integrators and cloud partners, which IBM actively leverages. IBM's own consulting arm also implements Red Hat solutions for clients, stimulating demand for Red Hat's software. Additionally, IBM has preserved Red Hat's independent stance with other clouds: Red Hat continues to partner with major cloud providers (AWS, Microsoft Azure, Google Cloud) to ensure its software runs smoothly on those platforms. For example, Red Hat OpenShift is offered as a managed service on AWS and Azure, allowing Red Hat to capture multi-cloud workloads. This neutrality has been key to Red Hat's appeal as a hybrid multi-cloud enabler, distinguishing IBM's strategy from public cloud vendors' proprietary approaches.

Red Hat's product portfolio and customer base

Red Hat's business spans a portfolio of enterprise IT products, all based on open-source technologies. The core offerings include the following:

Red Hat Enterprise Linux (RHEL)

A flagship commercial Linux operating system, providing a stable, secure platform for running critical applications on anything from servers and cloud VMs to mainframes and edge devices. RHEL is the foundation of Red Hat's business (contributing the largest share of revenue) and remains in high demand as organizations modernize from proprietary Unix and Windows to Linux. Even as containerization rises, RHEL growth continues in the high single- or double-digits annually, thanks to its role underpinning both traditional and cloud workloads. Virtually all industries including finance, government, healthcare, telecom, etc. rely on RHEL, and its installed base is massive (with tens of millions of instances globally). RHEL subscriptions are sold on an annual (or multi-year) basis, giving Red Hat a recurring revenue stream and strong customer retention due to the mission-critical nature of the OS support.

Red Hat OpenShift

This is Red Hat's enterprise Kubernetes container platform, which has become the centerpiece of its hybrid cloud strategy. OpenShift allows companies to deploy and manage containerized applications consistently across on-premises data centers and multiple public clouds. It includes Kubernetes orchestration along with developer and operations tools for security, monitoring, and automation. OpenShift has seen explosive growth as companies move to cloud-native architectures with annual sales growing from roughly \$100 million to over \$1.3-1.4 billion in about five years. In fact, OpenShift revenue has been roughly doubling annually in its early years and grew 25% year-over-year in 2024. Large customers in banking, airlines, automotive, and government use OpenShift to modernize legacy applications and build new services that can run in hybrid environments. The platform's popularity is evident from the diverse list of OpenShift customers and its significant share of the enterprise Kubernetes market. OpenShift's success is a key driver of Red Hat's overall growth, given the high demand for container platforms.

Red Hat Ansible Automation Platform

Ansible is a leading IT automation and DevOps tool acquired by Red Hat in 2015. It allows enterprises to automate the provisioning, configuration, and management of IT infrastructure and applications through simple playbooks. Under IBM, Ansible's adoption has surged as companies seek to streamline operations across hybrid cloud deployments. Red Hat packages Ansible as a platform for enterprise use (with support and extra features). Ansible's revenue has been growing at over 20% annually as well, reflecting the broad need for automation in managing complex hybrid environments. Ansible is used by a wide range of customers to automate cloud resource provisioning,



application deployments, security patching, network configurations, and more. Its agentless, easy-to-use nature has made it a de facto standard in many DevOps teams.

Figure 2: Ansible offers an agentless architecture with simple syntax and strong cloud integration, compared to competitors

Red Hat Ansible vs competitors

Feature	Ansible	Puppet	Chef	SaltStack
Architecture	Agentless (SSH/WinRM)	Agent-based	Agent-based	Agent-based (optional agentless)
Language	YAML (Playbooks)	DSL (Ruby-like)	Ruby	YAML + Python
Ease of Use	High (simple syntax)	Moderate	Low (requires Ruby knowledge)	Moderate
Primary Focus	Automation & orchestration	Configuration management	Configuration management	Event-driven automation
Cloud Integration	Strong (AWS, Azure, GCP)	Moderate	Moderate	Moderate
Scalability	High (agentless, modular)	High	High	Very High (real-time orchestration)
Community & Ecosystem	Large, active	Mature	Mature	Smaller than Ansible
Strengths	Simple, flexible, multi-domain	Declarative, strong compliance	Powerful for complex configs	Fast, scalable, event-driven
Challenges	Less declarative than Puppet	Steeper learning curve	Complex syntax, Ruby dependency	Smaller ecosystem

Source: Company reports, BofA Global Research

BofA GLOBAL RESEARCH

Red Hat Middleware and Other Software

Red Hat offers various middleware products, many of which came via the JBoss acquisition in 2006. This includes Red Hat JBoss Enterprise Application Platform (EAP) which is a Java EE application server (an open-source alternative to IBM's own WebSphere). It also includes integration middleware (Fuse, AMQ messaging), business process management, and other runtimes. These help enterprises run and integrate traditional applications. While these application development products are a smaller portion of Red Hat's business, they were historically high-growth (30%+ yearly pre-acquisition) and still contribute to Red Hat's hybrid cloud stack by enabling modernization of legacy apps. Red Hat also has storage and virtualization solutions (e.g. Red Hat Ceph Storage, Red Hat OpenStack Platform for private cloud) which cater to specialized use cases like telco network functions and edge computing. The overall trend is that Red Hat's newer offerings (OpenShift, Ansible, etc.) have been growing faster than the core OS and older middleware, gradually representing a larger share of the portfolio.

Red Hat's customer base is primarily large enterprises and organizations across virtually every sector. Prior to acquisition, Red Hat reported over 1,000 enterprise customers for OpenShift and 1,300+ for Ansible (as of 2019), and those numbers have grown substantially since. Its top customers often spend millions annually on subscriptions. Red Hat noted back in 2019 that the number of customers with over \$5 million in subscriptions was rising fast (33% growth that year). Key industries include financial services (banks and insurance, which use RHEL and OpenShift for secure, high-volume transaction systems), telecommunications (telcos using Red Hat for network cloud infrastructure), government and defense (for secure Linux and open-source adoption), healthcare, retail, manufacturing, and more. The Fortune 500 and Global 2000 are heavily penetrated by Red Hat, often as strategic technology partners. Many customers started with RHEL for server consolidation (for example, replacing Unix with Linux on both x86 servers and IBM mainframes) and have expanded into OpenShift and Ansible as they embrace cloud and DevOps.

One notable element of Red Hat's customer strategy is its commitment to open-source community innovation, which attracts customers who value flexibility and avoid vendor lock-in. However, Red Hat's success in commercializing open source also means it has to balance community vs. commercial interests. Nonetheless, Red Hat's reputation as the trusted enterprise open-source provider gives it a strong brand among CIOs and developers alike. This has translated into a large partner ecosystem: independent software vendors certify their applications on RHEL, hardware vendors optimize for Red Hat, and cloud providers offer Red Hat images, all of which increase the value for customers.

Red Hat before and after IBM: changes since the 2019 acquisition

Pre-acquisition (prior to mid-2019)

Red Hat was a fast-growing independent company, with a track record of over 60 consecutive quarters of revenue growth as a standalone entity. It pioneered the open-source subscription business model, turning community projects into enterprise-grade products. Growth was roughly 15-20% annually in its last years before IBM bought it. Red Hat's culture emphasized open-source values and partnerships across the industry: for instance, working closely with major cloud providers (even those competing with IBM) and supporting free community distributions like CentOS. By 2018, Red Hat had become the world's leading open-source software company and a major player in cloud infrastructure, prompting IBM to acquire it in a landmark deal (IBM's largest acquisition ever, and one of the biggest in tech history).

Post-acquisition (2019–present under IBM)

IBM pledged to keep Red Hat as an open, neutral unit to preserve its value. In many ways, IBM has allowed Red Hat to maintain its brand, culture, and independence in the market. Red Hat's headquarters remained in Raleigh, NC, and it continued to operate separately (with its own sales, support, and product development) while reporting into IBM's Software division. This autonomy has helped Red Hat continue growing without being fully absorbed into IBM's bureaucracy. Indeed, Red Hat's CEO at the time of acquisition, Jim Whitehurst, initially stayed on as President of IBM. (Whitehurst later departed IBM in 2021, which some saw as a loss of a key leader; however, Red Hat's leadership was then assumed by long-time Red Hatters. The current Red Hat CEO is Matt Hicks, with Red Hat's ethos still intact.)

Under IBM, Red Hat's growth trajectory has largely sustained its momentum. IBM's CEO noted that in the five years since the acquisition was announced, Red Hat doubled in size (to ~\$6.5 billion in 2024) while delivering approx. mid-teens percentage growth each year. Although Red Hat's growth has naturally slowed slightly in percentage terms as the business became larger (from ~20% annual growth at acquisition to around 12% in Q3 2025), it remains a standout performer in IBM's portfolio. This is well above IBM's total revenue growth, which has been low-single-digits. Red Hat has essentially become the "growth engine" offsetting declines or slow growth in IBM's legacy businesses. The acquisition also shifted investor perceptions of IBM. IBM's market capitalization roughly doubled from 2018 to 2023; a change largely attributed to optimism around its hybrid cloud strategy with Red Hat.

That said, there have been notable changes in Red Hat's strategy under IBM:

- **Stronger focus on IBM's integrated offerings:** IBM has built many of its cloud and software offerings around Red Hat technology. For instance, IBM's Cloud Paks (pre-integrated software solutions for specific domains) are containerized and run on OpenShift. IBM's software and consulting teams are incentivized to sell Red Hat subscriptions as part of broader deals. This has increased Red Hat's reach into IBM's traditional client base (e.g. large banks, insurers, government agencies that IBM has long served). However, it also means Red Hat's success is tightly coupled to IBM's overall hybrid cloud narrative. So far, this synergy has been positive. For example, IBM often cites large deals where a client chose IBM because of Red Hat's platform being part of the solution. Red Hat's channel has effectively expanded with IBM's global presence.
- **Continued multi-platform support:** To IBM's credit, Red Hat still supports all major environments including competing clouds and hardware. For example, Red Hat continues to partner with Amazon Web Services and Microsoft Azure on managed OpenShift offerings (ROSA and ARO services). This was a conscious decision by IBM to not lock Red Hat to IBM Cloud only. It recognizes that Red Hat's value lies in being ubiquitous. This approach has maintained trust among customers that IBM



will keep Red Hat vendor-neutral. IBM also kept Red Hat's pricing and licensing independent (no forced bundles with IBM software, for instance).

- Open-source community relations:** One area where there has been controversy is Red Hat's handling of RHEL source code and free derivatives post-acquisition. In late 2020, Red Hat discontinued the stable CentOS Linux (which was a free clone of RHEL) and shifted focus to CentOS Stream (a rolling-release upstream). Then in 2023, Red Hat restricted public access to RHEL source code to only paying customers, citing that clone vendors were reselling RHEL rebuilds in ways that undermined Red Hat's business. This move was seen by some in the open-source community as a reversal of Red Hat's earlier openness. It sparked debate, with downstream projects like AlmaLinux and Rocky Linux criticizing Red Hat for making it harder to create RHEL-compatible distros. In response, competitor SUSE even announced it would invest \$10 million to fork RHEL and maintain a truly open RHEL-compatible distribution. Red Hat defended its decision by stating that supporting freeloading clones was not sustainable and that they still contribute heavily to open source (upstream in Fedora/CentOS Stream). This saga suggests that under IBM's ownership, Red Hat has prioritized protecting its subscription revenue more firmly, even at the cost of some community goodwill. Pre-IBM, Red Hat had nurtured the free CentOS community for years; post-IBM, there is a perception that Red Hat is slightly more commercially driven in such decisions. So far, this has not visibly slowed Red Hat's enterprise sales, but it did provide an opening for competitors to position themselves as more open. It's a delicate balance Red Hat/IBM must manage reassuring the open-source community while monetizing the ecosystem.
- Leadership and cultural changes:** IBM initially placed Red Hat's CEO as IBM President (Jim Whitehurst) to propagate Red Hat's agile, open culture into IBM. His departure after two years was unexpected and led to questions about IBM's integration approach. Nonetheless, IBM has largely kept Red Hat's internal culture separate (Red Hat associates still often use the Red Hat brand, the iconic red fedora logo remains, etc.). There have been some IBM influences, for example, IBM's sales processes and global services engagements now incorporate Red Hat heavily. But IBM has been careful not to dilute Red Hat's technical identity or developer relations. Many Red Hat employees who joined before the acquisition remain with the company, indicating that IBM has allowed a degree of independence.

In terms of performance, Red Hat under IBM has delivered what was promised: it accelerated IBM's pivot to hybrid cloud. IBM's overall revenue had been declining for years before 2019; after acquiring Red Hat, IBM returned to modest growth, and Red Hat's contribution was significant in achieving that. In IBM's software segment results, Hybrid Platform & Solutions (the unit containing Red Hat) often posts the strongest growth. This underscores that IBM is now highly reliant on Red Hat to drive its future. The acquisition also influenced IBM's identity. IBM markets itself now as a hybrid cloud and AI company, with Red Hat mentioned in virtually every investor call as a strategic linchpin.

Outlook for Red Hat's products and long-term growth

Looking ahead, the outlook for Red Hat's business appears strong, driven by secular trends in cloud computing and digital transformation. Below we examine the prospects and drivers for Red Hat's major product areas and where future revenue growth could come from:

Linux (RHEL) Outlook

Enterprise Linux remains a growth market, albeit a mature one. While nearly all large organizations already use Linux, the expanding footprint of Linux in new domains will drive RHEL growth. This includes cloud deployments (many public cloud VMs run RHEL or its derivatives), edge computing (Linux powering edge devices and IoT infrastructure),



and continued Unix-to-Linux migrations in conservative industries. Red Hat is also tailoring RHEL to new use cases: for example, RHEL for Edge (lightweight immutable Linux for edge devices) and RHEL with real-time capabilities for telco and industrial use. Furthermore, as companies modernize applications, they often standardize on RHEL for consistency across hybrid cloud, boosting subscription counts. Red Hat's decision to tighten access to RHEL source code might push more customers who need stable enterprise Linux to simply subscribe rather than rely on unsupported rebuilds. Price adjustments and upselling of premium support (for security add-ons etc.) could contribute to revenue per customer growth. Overall, RHEL is expected to continue delivering steady growth in excess of the server market mid-single digit growth.

OpenShift and Cloud Platforms Outlook

The container platform segment is projected to be one of the fastest-growing areas in enterprise software. OpenShift, as a market leader, is well positioned to ride this wave. Many enterprises are still in early stages of container adoption. Future phases (like stateful applications, AI/ML workloads, 5G network functions) will drive further OpenShift usage. A particularly promising area is multi-cloud management: as organizations distribute workloads across AWS, Azure, Google, and on-prem, they will need a consistent platform and OpenShift aims to be that abstraction layer. Red Hat is continuously improving OpenShift with features like advanced security (thanks to StackRox integration), developer tooling, and managed cloud services options, making it attractive for a wider array of customers. The outlook for OpenShift is high growth, potentially maintaining double-digit or even ~20% growth for several more years as the Kubernetes wave continues. One long-term question is whether OpenShift can approach the scale of past middleware franchises (IBM's WebSphere or Oracle's WebLogic had huge installed bases). With over \$1-1.5 billion in annual revenue and growing, OpenShift is already significant, and IBM believes it can become a multi-billion-dollar franchise, especially as it expands into AI/ML deployments (IBM is packaging AI solutions on OpenShift) and edge (e.g., running OpenShift on smaller footprints for edge computing in Telco 5G deployments, industrial IoT, etc.). Competitively, OpenShift's main rival in pure-play enterprise Kubernetes is VMware Tanzu; however, VMware's transition under Broadcom's ownership has created uncertainty, which Red Hat could capitalize on. Cloud providers' native Kubernetes services (like EKS, AKS, GKE) are also alternatives, but those don't offer the same multi-cloud consistency that OpenShift does. Red Hat's neutral stance remains a selling point for companies seeking flexibility. The long-term growth for OpenShift will also depend on how well Red Hat can address developer experience (to fend off PaaS offerings) and manage hybrid complexity. So far, they've been investing heavily in those areas.

Automation (Ansible) Outlook

The need to automate IT operations across disparate environments will only increase. Ansible is a leader in this space and has the advantage of being agentless and widely adopted by administrators and DevOps teams. The outlook for Ansible is continued strong growth, likely outpacing overall IT spending growth. Trends like Infrastructure as Code, Network Automation, and Security Automation (SecOps) are driving new use cases for Ansible. Under IBM, Red Hat has integrated Ansible with IBM's AIOps and cloud management tools, potentially unlocking more enterprise use. Also, Red Hat is pushing Ansible Automation Platform subscriptions (including Ansible Tower for enterprise control), converting what was often used as a free tool into a monetized platform for large-scale automation. Given the explosion of cloud services and complexity, Ansible's user base could keep expanding. Another alternative is HashiCorp's Terraform (popular in infrastructure provisioning) which IBM acquired in 2025. It's conceivable that Ansible can sustain double-digit growth for the medium term as automation becomes ubiquitous in hybrid IT management.



Middleware and Emerging Tech Outlook

Red Hat's traditional middleware (application servers, integration brokers) face a more modest outlook, as these markets are mature or being disrupted by cloud services and microservices architectures. However, Red Hat has smartly repositioned many of these technologies for cloud-native use. For example, JBoss EAP can run in containers as part of OpenShift, and Red Hat's AMQ messaging can integrate on cloud. There will be a continued need to modernize legacy Java applications and Red Hat's runtimes (including newer frameworks like Quarkus for Java) will play a role in that, capturing migration projects from older proprietary middleware (like IBM's own WebSphere or Oracle's middleware) to open-source stacks. While growth here may be slower, it's still an important part of the ecosystem that ties into Red Hat's broader hybrid cloud story (because enterprises want a full stack from OS to app server on an open platform). Red Hat is also exploring emerging technologies: for instance, it's involved in the OpenStack community for private cloud (though OpenStack's growth has leveled off), and in edge computing (Red Hat has an "Advanced Cluster Management" and "Edge" solutions leveraging OpenShift). Another growth vector is developer tools and DevSecOps: Red Hat offers tools like OpenShift GitOps, Tekton pipelines, CodeReady Workspaces, etc., to enhance its platform, which could increase stickiness and incremental revenue.

Artificial Intelligence (AI) and New Workloads

IBM is keen on leveraging Red Hat for the AI era. The idea is that as companies build AI applications (e.g. deploying AI models, doing data analytics), they can use Red Hat's platforms to do so in a hybrid cloud manner. IBM has started to incorporate AI into Red Hat products, for example, discussions of "RHEL for AI" and "OpenShift AI" have emerged, bundling AI frameworks with the platform. The outlook here is that Red Hat could gain additional usage as the infrastructure for AI/ML workloads that need to run on-prem or across clouds (especially in industries with data governance concerns). If IBM's AI strategy (through its Watsonx and other AI tools) takes off, it will likely pull through more OpenShift and Linux sales, since those AI models need to be hosted somewhere. Red Hat's platforms are hardware-agnostic, so whether AI runs on NVIDIA GPUs in the cloud or on IBM Power systems, Red Hat can be the software layer managing it. While it's early to quantify, AI workloads represent a growth opportunity for Red Hat. IBM has already reported several billion dollars in AI project backlog, a portion of which involves software platforms. Red Hat's role will be enabling enterprises to run AI models securely on their hybrid cloud (for example, banks using OpenShift on IBM Cloud or on their own data centers for AI due to data privacy). This could drive incremental subscriptions of OpenShift and RHEL in the coming years.

Overall, Red Hat's long-term revenue growth is expected to remain solidly positive. IBM's own expectations are that the Red Hat-driven hybrid cloud unit will stay in the "mid-teens" percentage growth range. That implies Red Hat will continue to significantly outgrow the overall IT market. Factors supporting this are the ongoing enterprise shift to hybrid cloud (far from complete for many organizations), the increasing reliance on open-source software (which Red Hat leads in the enterprise context), and cross-selling opportunities within IBM's customer base (IBM can still introduce Red Hat solutions to some of its traditional clients who haven't fully adopted them yet).

There are risks too: competition is intensifying (for example, SUSE and others trying to capitalize on any dissatisfaction with Red Hat's policies, or hyperscalers offering easier cloud-native services that could reduce the need for a third-party platform). Also, economic conditions could affect enterprise spending on new software projects in the short term. But the fundamental drivers of need for flexibility, multi-cloud management, cost efficiency of open source, and vendor-neutral infrastructure play to Red Hat's strengths. As long as Red Hat continues to innovate and maintain customer trust, its growth prospects remain favorable.

IBM might also look to expand Red Hat's portfolio via acquisitions (just as Red Hat did with Ansible, CoreOS, etc.). Post-2019, IBM has indeed made a few tuck-in acquisitions

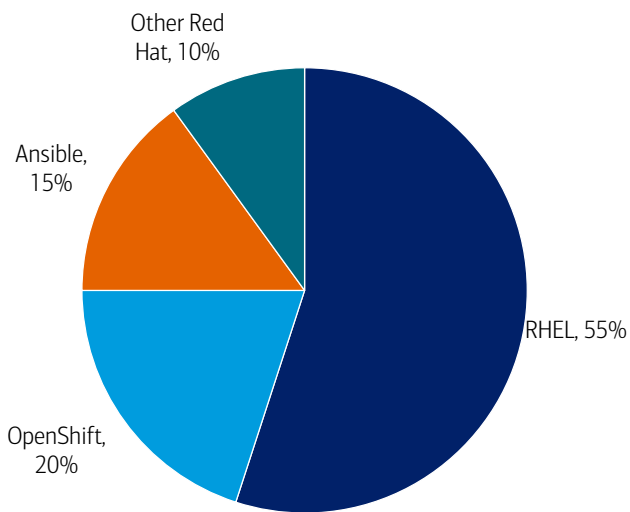


aligned with Red Hat, such as container security (StackRox) and multi-cloud management (Turbonomic integrates partly with Red Hat’s automation). Future areas could include DevSecOps tools, data management on Open Source, or more AI-related open-source tech to keep the Red Hat offering comprehensive. These could open new revenue streams or enhance growth of existing ones.

Financially, Red Hat’s high-margin software revenue (Red Hat operates at a healthy profit margin on subscriptions) will continue to bolster IBM’s profitability. As Red Hat scales, IBM benefits from significant operating leverage (the cost to support an extra subscription is low, so margins improve). This is another reason IBM is keen to drive Red Hat growth as it directly contributes to expanding IBM’s overall margins and cash flow. Indeed, IBM expects software (led by Red Hat) to be the primary driver of its profit and cash flow growth in coming years.

Figure 3: In 2023, Red Hat Enterprise Linux (RHEL) was the major contributor to revenue at 55%

F2023 revenue split of various Red Hat product lines

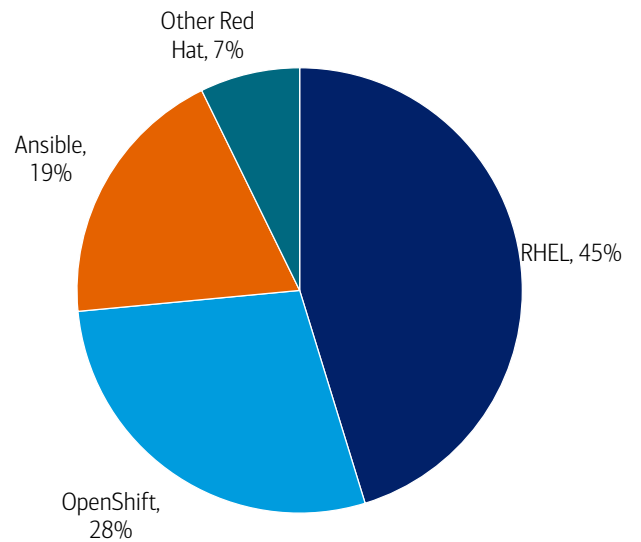


Source: Company reports, BofA Global Research

BofA GLOBAL RESEARCH

Figure 4: In 2028 OpenShift (28%) and Ansible (19%) will be meaningfully larger

F2028E revenue split of various Red Hat product lines



Source: Company reports, BofA Global Research

BofA GLOBAL RESEARCH



Abbreviations

AI: Artificial Intelligence

AKS: Azure Kubernetes Service

ARO: Azure Red Hat OpenShift

AWS: Amazon Web Services

EKS: Amazon Elastic Kubernetes Service

GKE: Google Kubernetes Engine

GPU: Graphics Processing Unit

ML: Machine Learning

OS: Operating System

PaaS: Platform as a Service

RHEL: Red Hat Enterprise Linux

ROSA: Red Hat OpenShift Service on AWS

VM: Virtual machine

Price objective basis & risk

International Business Machines Corp. (IBM)

Our PO of \$315 is based on 23x EV/FCF. Our target multiple for IBM exceeds the high end of the historical range 8-22x, with median 13x. We believe a multiple at the high end/exceeding the historical range is justified given the company's improving growth and FCF trajectory with Red Hat.

Downside risks to our price objective are (1) failure to execute on the company's growth roadmap, (2) inability to realize expected cost savings from restructuring, (3) technology/competitor risk in hardware, software, and services, (4) unforeseen currency impacts on revenue and profits, (5) acquisition integration, given IBM's acquisitive nature, and (6) increased concern of economic uncertainty and tightening corporate IT budgets.

Upside risks to our price objective are (1) faster reacceleration of topline, (2) faster improvement in margins, (3) better-than-expected accretion from M&A, and (4) delivery of upside to FCF.

Analyst Certification

I, Wamsi Mohan, hereby certify that the views expressed in this research report accurately reflect my personal views about the subject securities and issuers. I also certify that no part of my compensation was, is, or will be, directly or indirectly, related to the specific recommendations or view expressed in this research report.

US - IT Hardware and Technology Supply Chain Coverage Cluster

Investment rating	Company	BofA Ticker	Bloomberg symbol	Analyst
BUY				
	Amphenol	APH	APH US	Wamsi Mohan
	Apple Inc.	AAPL	AAPL US	Wamsi Mohan
	Corning Inc.	GLW	GLW US	Wamsi Mohan
	Dell Technologies Inc.	DELL	DELL US	Wamsi Mohan
	DigitalOcean	DOCN	DOCN US	Wamsi Mohan
	Flex Ltd.	FLEX	FLEX US	Ruplu Bhattacharya
	Hewlett-Packard Enterprise	HPE	HPE US	Wamsi Mohan
	Ingram Micro Holding Corporation	INGM	INGM US	Ruplu Bhattacharya
	International Business Machines Corp.	IBM	IBM US	Wamsi Mohan
	Jabil Inc.	JBL	JBL US	Ruplu Bhattacharya
	Nutanix Inc	NTNX	NTNX US	Wamsi Mohan
	Sandisk Corporation	SNDK	SNDK US	Wamsi Mohan
	Seagate Technology	STX	STX US	Wamsi Mohan
	TD Synnex Corp	SNX	SNX US	Ruplu Bhattacharya
	TE Connectivity Plc.	TEL	TEL US	Wamsi Mohan
	Western Digital Corporation	WDC	WDC US	Wamsi Mohan
NEUTRAL				
	CDW Corp	CDW	CDW US	Ruplu Bhattacharya
	Concentrix Corporation	CNXC	CNXC US	Ruplu Bhattacharya
	HP Inc.	HPQ	HPQ US	Wamsi Mohan
	NetApp Inc.	NTAP	NTAP US	Wamsi Mohan
	Pure Storage	PSTG	PSTG US	Wamsi Mohan
	Sanmina Corporation	SANM	SANM US	Ruplu Bhattacharya
	Sensata Technologies Holdings Plc	ST	ST US	Wamsi Mohan
UNDERPERFORM				
	Arrow Electronics Inc.	ARW	ARW US	Ruplu Bhattacharya
	Avnet Inc.	AVT	AVT US	Ruplu Bhattacharya
	Super Micro Computer Inc.	SMCI	SMCI US	Ruplu Bhattacharya
	Teradata Corporation	TDC	TDC US	Wamsi Mohan
	Vishay Intertechnology, Inc.	VSH	VSH US	Ruplu Bhattacharya



US - IT Hardware and Technology Supply Chain Coverage Cluster

Investment rating	Company	BofA Ticker	Bloomberg symbol	Analyst
-------------------	---------	-------------	------------------	---------

iQmethodSM Measures Definitions

Business Performance

Return On Capital Employed

Return On Equity

Operating Margin

Earnings Growth

Free Cash Flow

Numerator

NOPAT = (EBIT + Interest Income) × (1 – Tax Rate) + Goodwill Amortization

Net Income

Operating Profit

Expected 5 Year CAGR From Latest Actual

Cash Flow From Operations – Total Capex

Denominator

Total Assets – Current Liabilities + ST Debt + Accumulated Goodwill

Amortization

Shareholders' Equity

Sales

N/A

N/A

Quality of Earnings

Cash Realization Ratio

Asset Replacement Ratio

Tax Rate

Net Debt-To-Equity Ratio

Interest Cover

Numerator

Cash Flow From Operations

Capex

Tax Charge

Net Debt = Total Debt – Cash & Equivalents

EBIT

Denominator

Net Income

Depreciation

Pre-Tax Income

Total Equity

Interest Expense

Valuation Toolkit

Price / Earnings Ratio

Price / Book Value

Dividend Yield

Free Cash Flow Yield

Enterprise Value / Sales

Numerator

Current Share Price

Current Share Price

Annualised Declared Cash Dividend

Cash Flow From Operations – Total Capex

EV = Current Share Price × Current Shares + Minority Equity + Net Debt +

Other LT Liabilities

Enterprise Value

Denominator

Diluted Earnings Per Share (Basis As Specified)

Shareholders' Equity / Current Basic Shares

Current Share Price

Market Cap = Current Share Price × Current Basic Shares

Sales

Basic EBIT + Depreciation + Amortization

iQmethodSM is the set of BofA Global Research standard measures that serve to maintain global consistency under three broad headings: Business Performance, Quality of Earnings, and valuations. The key features of iQmethod are: A consistently structured, detailed, and transparent methodology. Guidelines to maximize the effectiveness of the comparative valuation process, and to identify some common pitfalls.

iQdatabase[®] is our real-time global research database that is sourced directly from our equity analysts' earnings models and includes forecasted as well as historical data for income statements, balance sheets, and cash flow statements for companies covered by BofA Global Research.

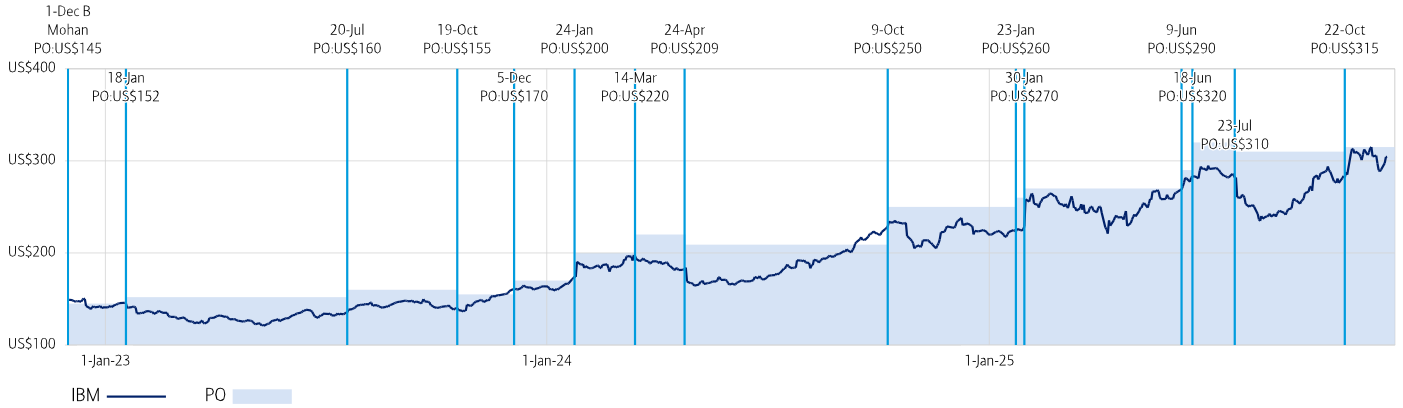
iQprofileSM, iQmethodSM are service marks of Bank of America Corporation. iQdatabase[®] is a registered service mark of Bank of America Corporation.



Disclosures

Important Disclosures

Int Business Machine (IBM) Price Chart



IBM — PO

B: Buy, N: Neutral, U: Underperform, PO: Price Objective, NA: No longer valid, NR: No Rating

The Investment Opinion System is contained at the end of the report under the heading "Fundamental Equity Opinion Key". Dark grey shading indicates the security is restricted with the opinion suspended. Medium grey shading indicates the security is under review with the opinion withdrawn. Light grey shading indicates the security is not covered. Chart is current as of a date no more than one trading day prior to the date of the report.

Equity Investment Rating Distribution: Technology Group (as of 30 Sep 2025)

Coverage Universe	Count	Percent	Inv. Banking Relationships ^{R1}	Count	Percent
Buy	195	51.72%	Buy	99	50.77%
Hold	103	27.32%	Hold	52	50.49%
Sell	79	20.95%	Sell	23	29.11%

Equity Investment Rating Distribution: Global Group (as of 30 Sep 2025)

Coverage Universe	Count	Percent	Inv. Banking Relationships ^{R1}	Count	Percent
Buy	1816	53.11%	Buy	1062	58.48%
Hold	825	24.13%	Hold	480	58.18%
Sell	778	22.76%	Sell	385	49.49%

^{R1} Issuers that were investment banking clients of BofA Securities or one of its affiliates within the past 12 months. For purposes of this Investment Rating Distribution, the coverage universe includes only stocks. A stock rated Neutral is included as a Hold, and a stock rated Underperform is included as a Sell.

FUNDAMENTAL EQUITY OPINION KEY: Opinions include a Volatility Risk Rating, an Investment Rating and an Income Rating. **VOLATILITY RISK RATINGS**, indicators of potential price fluctuation, are: A - Low, B - Medium and C - High. **INVESTMENT RATINGS** reflect the analyst's assessment of both a stock's absolute total return potential as well as its attractiveness for investment relative to other stocks within its Coverage Cluster (defined below). Our investment ratings are: 1 - Buy stocks are expected to have a total return of at least 10% and are the most attractive stocks in the coverage cluster; 2 - Neutral stocks are expected to remain flat or increase in value and are less attractive than Buy rated stocks and 3 - Underperform stocks are the least attractive stocks in a coverage cluster. An investment rating of 6 (No Rating) indicates that a stock is no longer trading on the basis of fundamentals. Analysts assign investment ratings considering, among other things, the 0-12 month total return expectation for a stock and the firm's guidelines for ratings dispersions (shown in the table below). The current price objective for a stock should be referenced to better understand the total return expectation at any given time. The price objective reflects the analyst's view of the potential price appreciation (depreciation).

Investment rating	Total return expectation (within 12-month period of date of initial rating)	Ratings dispersion guidelines for coverage cluster ^{R2}
Buy	≥ 10%	≤ 70%
Neutral	≥ 0%	≤ 30%
Underperform	N/A	≥ 20%

^{R2} Ratings dispersions may vary from time to time where BofA Global Research believes it better reflects the investment prospects of stocks in a Coverage Cluster.

INCOME RATINGS, indicators of potential cash dividends, are: 7 - same/higher (dividend considered to be secure), 8 - same/lower (dividend not considered to be secure) and 9 - pays no cash dividend. **Coverage Cluster** is comprised of stocks covered by a single analyst or two or more analysts sharing a common industry, sector, region or other classification(s). A stock's coverage cluster is included in the most recent BofA Global Research report referencing the stock.

Price Charts for the securities referenced in this research report are available on the [Price Charts website](#), or call 1-800-MERRILL to have them mailed.

BofAS or one of its affiliates acts as a market maker for the equity securities recommended in the report: Int Business Machine.

The issuer is or was, within the last 12 months, an investment banking client of BofAS and/or one or more of its affiliates: Int Business Machine.

BofAS or an affiliate has received compensation from the issuer for non-investment banking services or products within the past 12 months: Int Business Machine.

The issuer is or was, within the last 12 months, a non-securities business client of BofAS and/or one or more of its affiliates: Int Business Machine.

BofAS or an affiliate expects to receive or intends to seek compensation for investment banking services from this issuer or an affiliate of the issuer within the next three months: Int Business Machine.

BofAS together with its affiliates beneficially owns one percent or more of the common stock of this issuer. If this report was issued on or after the 9th day of the month, it reflects the ownership position on the last day of the previous month. Reports issued before the 9th day of a month reflect the ownership position at the end of the second month preceding the date of the report: Int Business Machine.



BofAS or one of its affiliates is willing to sell to, or buy from, clients the common equity of the issuer on a principal basis: Int Business Machine.

The issuer is or was, within the last 12 months, a securities business client (non-investment banking) of BofAS and/or one or more of its affiliates: Int Business Machine.

BofA Global Research personnel (including the analyst(s) responsible for this report) receive compensation based upon, among other factors, the overall profitability of Bank of America Corporation, including profits derived from investment banking. The analyst(s) responsible for this report may also receive compensation based upon, among other factors, the overall profitability of the Bank's sales and trading businesses relating to the class of securities or financial instruments for which such analyst is responsible.

Other Important Disclosures

From time to time research analysts conduct site visits of covered issuers. BofA Global Research policies prohibit research analysts from accepting payment or reimbursement for travel expenses from the issuer for such visits.

Prices are indicative and for information purposes only. Except as otherwise stated in the report, for any recommendation in relation to an equity security, the price referenced is the publicly traded price of the security as of close of business on the day prior to the date of the report or, if the report is published during intraday trading, the price referenced is indicative of the traded price as of the date and time of the report and in relation to a debt security (including equity preferred and CDS), prices are indicative as of the date and time of the report and are from various sources including BofA Securities trading desks.

The date and time of completion of the production of any recommendation in this report shall be the date and time of dissemination of this report as recorded in the report timestamp.

Recipients who are not institutional investors or market professionals should seek the advice of their independent financial advisor before considering information in this report in connection with any investment decision, or for a necessary explanation of its contents.

Officers of BofAS or one or more of its affiliates (other than research analysts) may have a financial interest in securities of the issuer(s) or in related investments.

Refer to [BofA Global Research policies relating to conflicts of interest](#).

"BofA Securities" includes BofA Securities, Inc. ("BofAS") and its affiliates. Investors should contact their BofA Securities representative or Merrill Global Wealth Management financial advisor if they have questions concerning this report or concerning the appropriateness of any investment idea described herein for such investor. "BofA Securities" is a global brand for BofA Global Research.

Information relating to Non-US affiliates of BofA Securities and Distribution of Affiliate Research Reports:

BofAS and/or Merrill Lynch, Pierce, Fenner & Smith Incorporated ("MLPF&S") may in the future distribute, information of the following non-US affiliates in the US (short name: legal name, regulator): Merrill Lynch (South Africa): Merrill Lynch South Africa (Pty) Ltd., regulated by the Financial Sector Conduct Authority; MLI (UK): Merrill Lynch International, regulated by the Financial Conduct Authority (FCA) and the Prudential Regulation Authority (PRA); BofASE (France): BofA Securities Europe SA is authorized by the Autorité de Contrôle Prudentiel et de Résolution (ACPR) and regulated by the ACPR and the Autorité des Marchés Financiers (AMF). BofA Securities Europe SA ("BofASE") with registered address at 51, rue La Boétie, 75008 Paris is registered under no 842 602 690 RCS Paris. In accordance with the provisions of French Code Monétaire et Financier (Monetary and Financial Code), BofASE is an établissement de crédit et d'investissement (credit and investment institution) that is authorised and supervised by the European Central Bank and the Autorité de Contrôle Prudentiel et de Résolution (ACPR) and regulated by the ACPR and the Autorité des Marchés Financiers. BofASE's share capital can be found at www.bofam.com/BofASEdisclaimer; BofA Europe (Milan): Bank of America Europe Designated Activity Company, Milan Branch, regulated by the Bank of Italy, the European Central Bank (ECB) and the Central Bank of Ireland (CBI); BofA Europe (Frankfurt): Bank of America Europe Designated Activity Company, Frankfurt Branch regulated by BaFin, the ECB and the CBI; BofA Europe (Zurich): Bank of America Europe Designated Activity Company, Zurich Branch, regulated by the Swiss Financial Market Supervisory Authority FINMA, the ECB and CBI; BofA Europe (Madrid): Bank of America Europe Designated Activity Company, Sucursal en España, regulated by the Bank of Spain, the ECB and the CBI; Merrill Lynch (Australia): Merrill Lynch Equities (Australia) Limited, regulated by the Australian Securities and Investments Commission; Merrill Lynch (Hong Kong): Merrill Lynch (Asia Pacific) Limited, regulated by the Hong Kong Securities and Futures Commission (HKSF); Merrill Lynch (Singapore): Merrill Lynch (Singapore) Pte Ltd, regulated by the Monetary Authority of Singapore (MAS); Merrill Lynch (Canada): Merrill Lynch Canada Inc, regulated by the Canadian Investment Regulatory Organization; Merrill Lynch (Mexico): Merrill Lynch Mexico, SA de CV, Casa de Bolsa, regulated by the Comisión Nacional Bancaria y de Valores; BofAS Japan: BofA Securities Japan Co., Ltd., regulated by the Financial Services Agency; Merrill Lynch (Seoul): Merrill Lynch International, LLC Seoul Branch, regulated by the Financial Supervisory Service; Merrill Lynch (Taiwan): Merrill Lynch Securities (Taiwan) Ltd., regulated by the Securities and Futures Bureau; BofAS India: BofA Securities India Limited, regulated by the Securities and Exchange Board of India (SEBI); Merrill Lynch (Israel): Merrill Lynch Israel Limited, regulated by Israel Securities Authority; Merrill Lynch (DIFC): Merrill Lynch International (DIFC Branch), regulated by the Dubai Financial Services Authority (DFSA); Merrill Lynch (Brazil): Merrill Lynch S.A. Corretora de Títulos e Valores Mobiliários, regulated by Comissão de Valores Mobiliários; Merrill Lynch KSA Company: Merrill Lynch Kingdom of Saudi Arabia Company, regulated by the Capital Market Authority. This information: has been approved for publication and is distributed in the United Kingdom (UK) to professional clients and eligible counterparties (as each is defined in the rules of the FCA and the PRA) by MLI (UK), which is authorized by the PRA and regulated by the FCA and the PRA - details about the extent of our regulation by the FCA and PRA are available from us on request; has been approved for publication and is distributed in the European Economic Area (EEA) by BofASE (France), which is authorized by the ACPR and regulated by the ACPR and the AMF; has been considered and distributed in Japan by BofAS Japan, a registered securities dealer under the Financial Instruments and Exchange Act in Japan, or its permitted affiliates; is issued and distributed in Hong Kong by Merrill Lynch (Hong Kong) which is regulated by HKSF; is issued and distributed in Taiwan by Merrill Lynch (Taiwan); is issued and distributed in India by BofAS India; and is issued and distributed in Singapore to institutional investors and/or accredited investors (each as defined under the Financial Advisers Regulations) by Merrill Lynch (Singapore) (Company Registration No 198602883D). Merrill Lynch (Singapore) is regulated by MAS. Merrill Lynch Equities (Australia) Limited (ABN 65 006 276 795), AFS License 235132 (MLEA) distributes this information in Australia only to 'Wholesale' clients as defined by s.761G of the Corporations Act 2001. With the exception of Bank of America N.A., Australia Branch, neither MLEA nor any of its affiliates involved in preparing this information is an Authorised Deposit-Taking Institution under the Banking Act 1959 nor regulated by the Australian Prudential Regulation Authority. No approval is required for publication or distribution of this information in Brazil and its local distribution is by Merrill Lynch (Brazil) in accordance with applicable regulations. Merrill Lynch (DIFC) is authorized and regulated by the DFSA. Information prepared and issued by Merrill Lynch (DIFC) is done so in accordance with the requirements of the DFSA conduct of business rules. BofA Europe (Frankfurt) distributes this information in Germany and is regulated by BaFin, the ECB and the CBI. BofA Securities entities, including BofA Europe and BofASE (France), may outsource/delegate the marketing and/or provision of certain research services or aspects of research services to other branches or members of the BofA Securities group. You may be contacted by a different BofA Securities entity acting for and on behalf of your service provider where permitted by applicable law. This does not change your service provider. Please refer to the [Electronic Communications Disclaimers](#) for further information.

This information has been prepared and issued by BofAS and/or one or more of its non-US affiliates. The author(s) of this information may not be licensed to carry on regulated activities in your jurisdiction and, if not licensed, do not hold themselves out as being able to do so. BofAS and/or MLPF&S is the distributor of this information in the US and accepts full responsibility for information distributed to BofAS and/or MLPF&S clients in the US by its non-US affiliates. Any US person receiving this information and wishing to effect any transaction in any security discussed herein should do so through BofAS and/or MLPF&S and not such foreign affiliates. Hong Kong recipients of this information should contact Merrill Lynch (Asia Pacific) Limited in respect of any matters relating to dealing in securities or provision of specific advice on securities or any other matters arising from, or in connection with, this information. Singapore recipients of this information should contact Merrill Lynch (Singapore) Pte Ltd in respect of any matters arising from, or in connection with, this information. For clients that are not accredited investors, expert investors or institutional investors Merrill Lynch (Singapore) Pte Ltd accepts full responsibility for the contents of this information distributed to such clients in Singapore.

General Investment Related Disclosures:

Taiwan Readers: Neither the information nor any opinion expressed herein constitutes an offer or a solicitation of an offer to transact in any securities or other financial instrument. No part of this report may be used or reproduced or quoted in any manner whatsoever in Taiwan by the press or any other person without the express written consent of BofA Securities.

This document provides general information only, and has been prepared for, and is intended for general distribution to, BofA Securities clients. Neither the information nor any opinion expressed constitutes an offer or an invitation to make an offer, to buy or sell any securities or other financial instrument or any derivative related to such securities or instruments (e.g., options, futures, warrants, and contracts for differences). This document is not intended to provide personal investment advice and it does not take into account the specific investment objectives, financial situation and the particular needs of, and is not directed to, any specific person(s). This document and its content do not constitute, and should not be considered to constitute, investment advice for purposes of ERISA, the US tax code, the Investment Advisers Act or otherwise. Investors should seek financial advice regarding the appropriateness of investing in financial instruments and implementing investment strategies discussed or recommended in this document and should understand that statements regarding future prospects may not be realized. Any decision to purchase or subscribe for securities in any offering must be based solely on existing public information on such security or the information in the prospectus or other offering document issued in connection with such offering, and not on this document.



Securities and other financial instruments referred to herein, or recommended, offered or sold by BofA Securities, are not insured by the Federal Deposit Insurance Corporation and are not deposits or other obligations of any insured depository institution (including, Bank of America, N.A.). Investments in general and, derivatives, in particular, involve numerous risks, including, among others, market risk, counterparty default risk and liquidity risk. No security, financial instrument or derivative is suitable for all investors. Digital assets are extremely speculative, volatile and are largely unregulated. In some cases, securities and other financial instruments may be difficult to value or sell and reliable information about the value or risks related to the security or financial instrument may be difficult to obtain. Investors should note that income from such securities and other financial instruments, if any, may fluctuate and that price or value of such securities and instruments may rise or fall and, in some cases, investors may lose their entire principal investment. Past performance is not necessarily a guide to future performance. Levels and basis for taxation may change.

This report may contain a short-term trading idea or recommendation, which highlights a specific near-term catalyst or event impacting the issuer or the market that is anticipated to have a short-term price impact on the equity securities of the issuer. Short-term trading ideas and recommendations are different from and do not affect a stock's fundamental equity rating, which reflects both a longer term total return expectation and attractiveness for investment relative to other stocks within its Coverage Cluster. Short-term trading ideas and recommendations may be more or less positive than a stock's fundamental equity rating.

BofA Securities is aware that the implementation of the ideas expressed in this report may depend upon an investor's ability to "short" securities or other financial instruments and that such action may be limited by regulations prohibiting or restricting "shortselling" in many jurisdictions. Investors are urged to seek advice regarding the applicability of such regulations prior to executing any short idea contained in this report.

Foreign currency rates of exchange may adversely affect the value, price or income of any security or financial instrument mentioned herein. Investors in such securities and instruments, including ADRs, effectively assume currency risk.

BofAS or one of its affiliates is a regular issuer of traded financial instruments linked to securities that may have been recommended in this report. BofAS or one of its affiliates may, at any time, hold a trading position (long or short) in the securities and financial instruments discussed in this report.

BofA Securities, through business units other than BofA Global Research, may have issued and may in the future issue trading ideas or recommendations that are inconsistent with, and reach different conclusions from, the information presented herein. Such ideas or recommendations may reflect different time frames, assumptions, views and analytical methods of the persons who prepared them, and BofA Securities is under no obligation to ensure that such other trading ideas or recommendations are brought to the attention of any recipient of this information. In the event that the recipient received this information pursuant to a contract between the recipient and BofAS for the provision of research services for a separate fee, and in connection therewith BofAS may be deemed to be acting as an investment adviser, such status relates, if at all, solely to the person with whom BofAS has contracted directly and does not extend beyond the delivery of this report (unless otherwise agreed specifically in writing by BofAS). If such recipient uses the services of BofAS in connection with the sale or purchase of a security referred to herein, BofAS may act as principal for its own account or as agent for another person. BofAS is and continues to act solely as a broker-dealer in connection with the execution of any transactions, including transactions in any securities referred to herein.

Copyright and General Information:

Copyright 2025 Bank of America Corporation. All rights reserved. iQdatabase® is a registered service mark of Bank of America Corporation. This information is prepared for the use of BofA Securities clients and may not be redistributed, retransmitted or disclosed, in whole or in part, or in any form or manner, without the express written consent of BofA Securities. This document and its content is provided solely for informational purposes and cannot be used for training or developing artificial intelligence (AI) models or as an input in any AI application (collectively, an AI tool). Any attempt to utilize this document or any of its content in connection with an AI tool without explicit written permission from BofA Global Research is strictly prohibited. BofA Global Research utilizes AI, including machine learning and other technologies, to enhance the services we provide to our clients. These technologies assist our analysts in various aspects of their work, including but not limited to data analysis, content extraction, content creation, data aggregation and summarization and identifying relevant information from diverse sources. All AI-driven processes are subject to review by BofA Global Research employees. BofA Global Research information is distributed simultaneously to internal and client websites and other portals by BofA Securities and is not publicly-available material. Any unauthorized use or disclosure is prohibited. Receipt and review of this information constitutes your agreement not to redistribute, retransmit, or disclose to others the contents, opinions, conclusion, or information contained herein (including any investment recommendations, estimates or price targets) without first obtaining express permission from an authorized officer of BofA Securities.

Materials prepared by BofA Global Research personnel are based on public information. Facts and views presented in this material have not been reviewed by, and may not reflect information known to, professionals in other business areas of BofA Securities, including investment banking personnel. BofA Securities has established information barriers between BofA Global Research and certain business groups. As a result, BofA Securities does not disclose certain client relationships with, or compensation received from, such issuers. To the extent this material discusses any legal proceeding or issues, it has not been prepared as nor is it intended to express any legal conclusion, opinion or advice. Investors should consult their own legal advisers as to issues of law relating to the subject matter of this material. BofA Global Research personnel's knowledge of legal proceedings in which any BofA Securities entity and/or its directors, officers and employees may be plaintiffs, defendants, co-defendants or co-plaintiffs with or involving issuers mentioned in this material is based on public information. Facts and views presented in this material that relate to any such proceedings have not been reviewed by, discussed with, and may not reflect information known to, professionals in other business areas of BofA Securities in connection with the legal proceedings or matters relevant to such proceedings.

This information has been prepared independently of any issuer of securities mentioned herein and not in connection with any proposed offering of securities or as agent of any issuer of any securities. None of BofAS or any of its affiliates or their research analysts has any authority whatsoever to make any representation or warranty on behalf of the issuer(s). BofA Global Research policy prohibits research personnel from disclosing a recommendation, investment rating, or investment thesis for review by an issuer prior to the publication of a research report containing such rating, recommendation or investment thesis.

Any information relating to sustainability in this material is limited as discussed herein and is not intended to provide a comprehensive view on any sustainability claim with respect to any issuer or security.

Any information relating to the tax status of financial instruments discussed herein is not intended to provide tax advice or to be used by anyone to provide tax advice. Investors are urged to seek tax advice based on their particular circumstances from an independent tax professional.

The information herein (other than disclosure information relating to BofA Securities and its affiliates) was obtained from various sources and we do not guarantee its accuracy. This information may contain links to third-party websites. BofA Securities is not responsible for the content of any third-party website or any linked content contained in a third-party website. Content contained on such third-party websites is not part of this information and is not incorporated by reference. The inclusion of a link does not imply any endorsement by or any affiliation with BofA Securities. Access to any third-party website is at your own risk, and you should always review the terms and privacy policies at third-party websites before submitting any personal information to them. BofA Securities is not responsible for such terms and privacy policies and expressly disclaims any liability for them.

All opinions, projections and estimates constitute the judgment of the author as of the date of publication and are subject to change without notice. Prices also are subject to change without notice. BofA Securities is under no obligation to update this information and BofA Securities ability to publish information on the subject issuer(s) in the future is subject to applicable quiet periods. You should therefore assume that BofA Securities will not update any fact, circumstance or opinion contained herein.

Subject to the quiet period applicable under laws of the various jurisdictions in which we distribute research reports and other legal and BofA Securities policy-related restrictions on the publication of research reports, fundamental equity reports are produced on a regular basis as necessary to keep the investment recommendation current.

Certain outstanding reports or investment opinions relating to securities, financial instruments and/or issuers may no longer be current. Always refer to the most recent research report relating to an issuer prior to making an investment decision.

In some cases, an issuer may be classified as Restricted or may be Under Review or Extended Review. In each case, investors should consider any investment opinion relating to such issuer (or its security and/or financial instruments) to be suspended or withdrawn and should not rely on the analyses and investment opinion(s) pertaining to such issuer (or its securities and/or financial instruments) nor should the analyses or opinion(s) be considered a solicitation of any kind. Sales persons and financial advisors affiliated with BofAS or any of its affiliates may not solicit purchases of securities or financial instruments that are Restricted or Under Review and may only solicit securities under Extended Review in accordance with firm policies.

Neither BofA Securities nor any officer or employee of BofA Securities accepts any liability whatsoever for any direct, indirect or consequential damages or losses arising from any use of this information.

