

**S&P Global**  
Ratings

U.S. Technology Sector:  
**Another Attempt At  
A Cyclical Rebound**

David Tsui, CFA, CPA

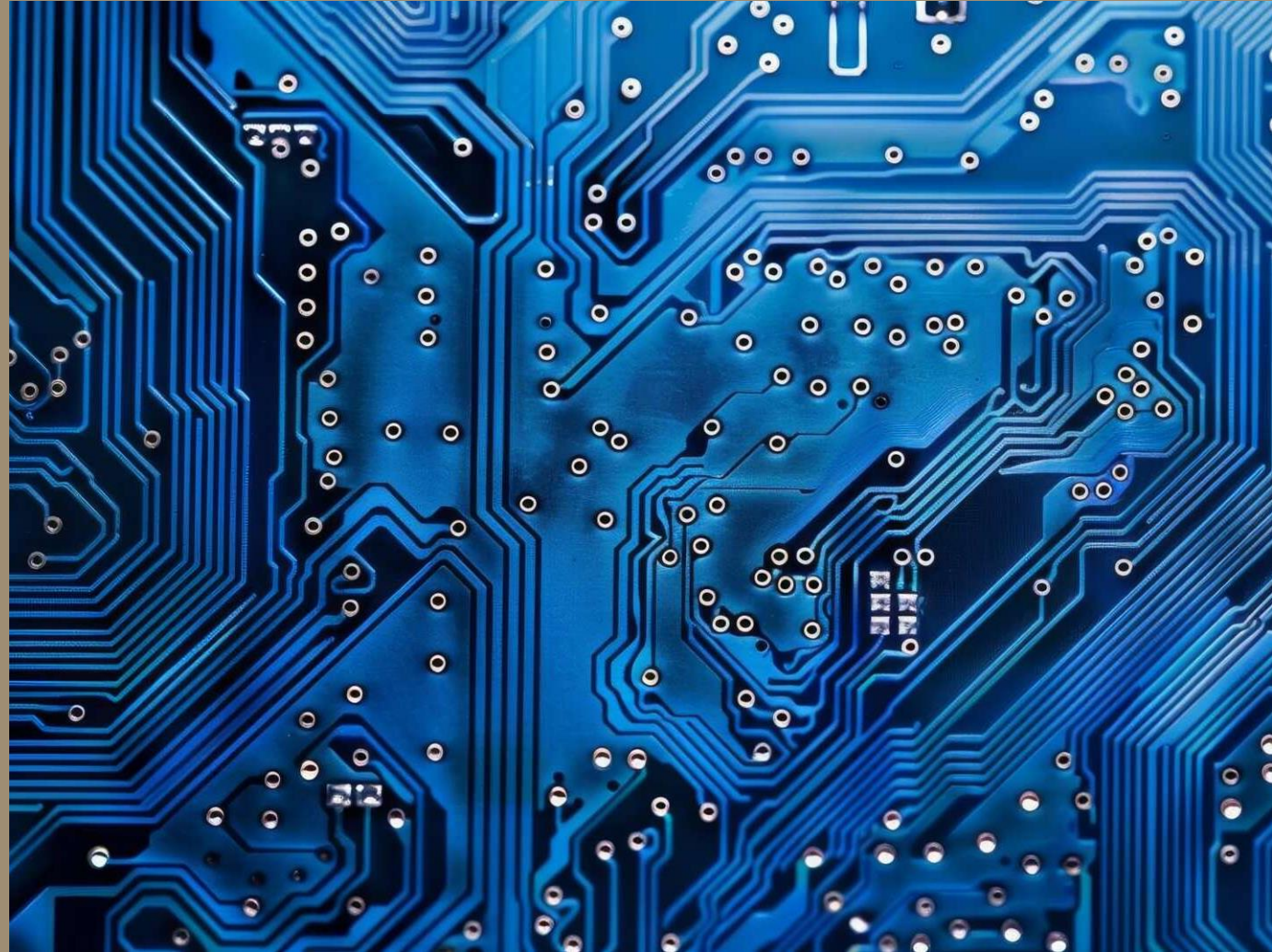
Andrew Chang

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Tuan Duong

January 2025



# Top Tech Industry Themes for 2025

IT spending growth to accelerate, with U.S. trade policy changes a wildcard

## Key assumptions



Overall IT spending continues to show resilience, above global GDP growth. Strength is overwhelming in AI and cloud, but non-AI spending is recovering.



Double-digit percent growth in sight for the semiconductor market in 2025, due in large part to continued massive spending on AI-related infrastructure including GPUs and high bandwidth memory.

## Key risks or opportunities



Incremental trade restrictions may prove more disruptive than prior rounds.



AI spending presents opportunities for data infrastructure providers but also poses risks. Yet to be seen whether software companies will benefit or be disrupted.



Interest rate path will be key to credit inflection for many highly leveraged tech issuers. Some are distracted by cost-cutting measures rather than focused on growth.

	2021	2022	2023	2024e	2025e
<b>Global IT spending</b>	13.7%	6.1%	3.9%	8.3%	9.0%
<b>Revenues</b>					
IT services	13%	6%	6%	7%	8%
Software	15%	9%	12%	9%	10%
Semiconductors	26%	3%	(10%)	19%	12%
Network equipment	2%	5%	7%	(11%)	7%
Mobile telecom equipment	12%	5%	(3%)	(10%)	3%
External storage	6%	7%	(2%)	2%	4%
<b>Shipments</b>					
PC	15%	(16%)	(13%)	1%	3%
Smartphone	4%	(11%)	(4%)	6%	2%
Server	6%	5%	(7%)	7%	4%
Printer	(3%)	(3%)	(3%)	(5%)	(3%)

# Buckle Up: Significant Policy Uncertainty Ahead

**U.S.**

- The Federal Reserve to reduce the federal funds rate more gradually to 3.1% by 4Q26.
- Lack of clarity around how much of the President-elect’s campaign promises will materialize.
- New policy proposals could result in higher inflation in the near term and lower growth in the medium to long term.

**Eurozone**

- Inflation lower in 2024 because of a drop in energy prices and prices stabilizing over the near term.
- Stable macroeconomic forecasts to end as new leaders take decisions on tariffs, defense, and general spending.
- ECB to cut rates to 2.5% by 2Q25 due to persistently weak confidence and better visibility on the disinflation trajectory.

**China**

- China’s economy will be hit by U.S. trade tariffs on its exports, despite the stimulus.
- Lower interest rates and inflation should ease their drag on spending power.
- Central banks will remain cautious and take their time to bring policy rates down.

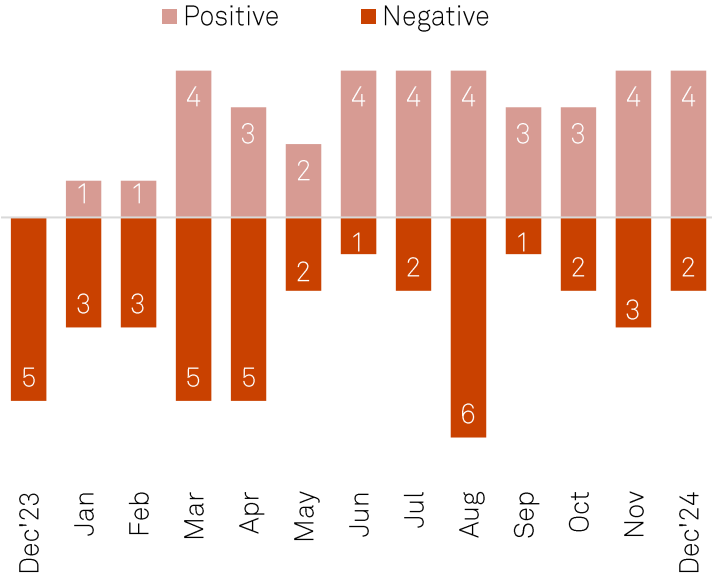
**Real GDP growth forecasts (%)**

	2022	2023	2024e	2025e	2026e
World	3.6	3.3	3.3	3.2	3.3
U.S.	1.9	2.9	2.7	2.0	2.0
Eurozone	3.5	0.5	0.8	1.2	1.3
China	3.0	5.2	4.8	4.1	3.8

Source: S&P Global Ratings

# U.S. Tech Issuers Ratings Trends

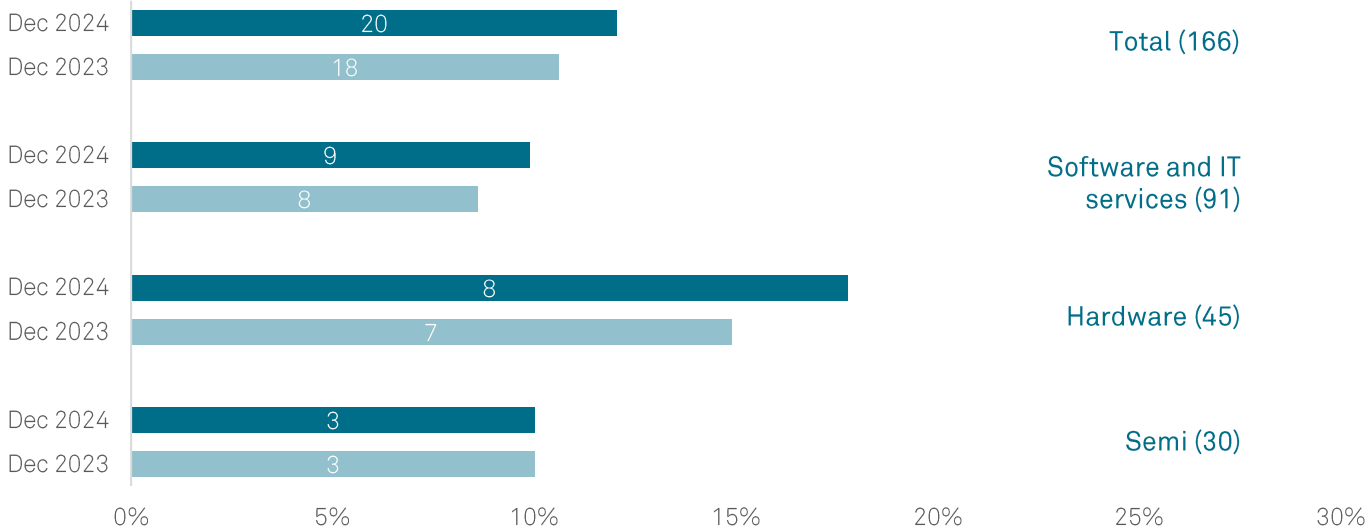
## Positive vs. negative rating actions



Recent positive rating actions are mostly from issuers rated in the 'BB' category or higher. Still hold view of negative rating actions bias on 'B' or lower issuers as interest rates remain elevated and a weakening macroeconomic environment take hold.

## Negative outlook bias year over year

Subsector and category (total issuer count)



### By sector

Many PE-owned software issuers still hindered by high interest rates.

- Hardware companies hurt by cash flow volatility and limited revenue visibility.
- Semi companies continue to recover from a global inventory glut, but the rebound has narrowly benefitted firms in the AI supply chain.

Source: S&P Global Ratings | Negative outlook bias indicates percentage of total issuers with rating on negative outlook or CreditWatch Negative.

# U.S. Tech Rating Activities In 2024

Hardware			
Date	Issue Name	Current Rating	Previous Rating
01/11/24	Hewlett Packard Enterprise Co.	BBB/Negative/A-2	BBB/Stable/A-2
01/12/24	Juniper Networks Inc.	BBB/Negative/--	BBB/Stable/--
02/16/24	Corning Inc.	BBB+/Negative/A-2	BBB+/Stable/A-2
03/04/24	Xerox Holdings Corporation	BB/Negative/--	BB/Stable/--
03/05/24	Motorola Solutions Inc.	BBB/Stable/A-2	BBB-/Stable/A-3
03/19/24	Viavi Solutions Inc.	BB/WatchNeg/--	BB/Stable/--
04/05/24	Casa Systems Inc.	D/--/--	CCC+/Stable/--
04/23/24	Snap One Holdings Corp.	B/WatchPos/--	B/Stable/--
04/24/24	VeriFone Systems Inc.	B-/Negative/--	B-/Stable/--
05/22/24	East West Manufacturing LLC	B-/Stable/--	B-/Negative/--
06/18/24	Ingram Micro Inc.	BB-/Positive/--	BB-/Stable/--
07/02/24	Corsair Gaming Inc.	BB-/Stable/--	BB-/Negative/--
07/15/24	Viavi Solutions Inc.	BB/Stable/--	BB/Watch Neg/--
08/16/24	NCR Voyix Corporation	B+/Positive/--	B+/Stable/--
08/16/24	Xerox Holdings Corporation	BB-/Negative/--	BB/Negative/--
09/05/24	Creation Technologies Inc	B-/Stable/--	B-/Negative/--
10/21/24	Ingram Micro Inc.	BB-/WatchPos/--	BB-/Positive/--
10/23/24	Seagate Technology Holdings plc	BB/Positive/--	BB/Stable/--
10/24/24	VeriFone Systems Inc.	CCC+/Negative/--	B-/Negative/--
11/06/24	Emerald Technologies (U.S.) Acqui	CCC+/Negative/--	B-/Negative/--
11/13/24	Ingram Micro Inc.	BB/Stable/--	BB-/Watch Pos/
11/18/24	Xerox Holdings Corporation	B+/Negative/--	BB-/Negative/--
12/10/24	Diebold Nixdorf Inc.	B/Positive/--	B/Stable/--
12/23/24	CommScope Holding Co. Inc.	CCC/WatchPos/--	CCC/Negative/--

Software and Services			
Date	Issue name	Current Rating	Previous Rating
01/12/24	GoTo Group Inc.	CCC+/Negative/--	B-/Negative/--
01/22/24	UKG Inc.	B-/Stable/--	B-/Negative/--
02/14/24	GoTo Group Inc.	SD/--/--	CCC+/Negative/--
03/05/24	Uber Technologies Inc.	BB+/Positive/--	BB-/Positive/--
03/15/24	Cadence Design Systems Inc.	BBB+/Positive/--	BBB+/Stable/--
03/19/24	Elastic N.V.	BB-/Stable/--	B+/Stable/--
03/26/24	Sandvine L.P.	CCC/Negative/--	B-/Stable/--
03/29/24	Atlas Midco Inc.	D/--/--	CCC+/Stable/--
04/10/24	Atlas Midco Inc.	CCC+/Negative/--	D/--/--
04/10/24	Polaris Parent LLC	B-/Negative/--	B-/Stable/--
05/08/24	Cornerstone OnDemand Inc.	B-/Stable/--	B-/Negative/--
05/17/24	Project Leopard Holdings Inc.	B-/Negative/--	B-/Stable/--

Software and Services (cont'd)			
Date	Issue name	Current Rating	Previous Rating
05/23/24	Astra Acquisition Corp.	SD/--/--	CCC/Negative/--
06/11/24	PowerSchool Holdings Inc.	B/WatchNeg/--	B/Stable/--
06/12/24	Astra Acquisition Corp.	CCC/WatchNeg/--	SD/--/--
06/25/24	Banff Parent Inc.	B/Stable/--	B-/Positive/--
06/28/24	CCC Intelligent Solutions Inc.	BB-/Stable/--	B+/Stable/--
07/18/24	Quest Software US Holdings Inc.	CCC+/Negative/--	CCC+/Stable/--
07/23/24	Magenta Buyer LLC	CCC/Negative/--	CCC+/Stable/--
07/30/24	MicroStrategy Inc.	B-/Stable/--	CCC+/Stable/--
08/12/24	ServiceNow Inc.	A/Stable/--	A-/Stable/--
08/16/24	Uber Technologies Inc.	BBB-/Positive/--	BB+/Positive/--
08/16/24	Veracode Parent L.P.	B-/Negative/--	B-/Stable/--
08/19/24	Redstone Buyer LLC	CCC+/Stable/--	B-/Negative/--
08/26/24	Magenta Buyer LLC	SD/--	CCC/Negative/--
09/05/24	Magenta Buyer LLC	CCC+/Negative/--	SD/--/--
10/31/24	Ivanti Software Inc.	B-/Negative/--	B-/Stable/--
11/07/24	Veritas Holdings Ltd.	CC/Negative/--	CCC+/Negative/--
11/22/24	Tenable Holdings Inc.	BB-/Positive/--	BB-/Stable/--
12/11/24	Twilio Inc.	BB+/Stable/--	BB/Stable/--
12/18/24	Veritas Holdings Ltd.	SD/--/--	CC/Negative/--
12/23/24	Veritas Holdings Ltd.	CCC/WatchPos/--	SD/--/--

Semiconductor			
Date	Issue name	Current Rating	Previous Rating
02/09/24	Intel Corp.	A-/Negative/A-2	A/Negative/A-1
02/21/24	Advanced Micro Devices Inc.	A-/Positive/A-2	A-/Stable/A-2
03/20/24	MaxLinear Inc.	BB-/Negative/--	BB-/Stable/--
04/01/24	Lumentum Holdings Inc.	B/Negative/--	B+/Negative/--
04/09/24	Synaptics Incorporated	BB-/Negative/--	BB-/Stable/--
04/30/24	NVIDIA Corp.	AA-/Stable/A-1+	A+/Stable/A-1+
07/23/24	Allegro MicroSystems Inc.	BB-/Stable/--	B+/Stable/--
08/02/24	Intel Corp.	A-/WatchNeg/A-2	A-/Negative/A-2
08/05/24	Analog Devices Inc.	A-/Positive/A-2	A-/Stable/A-2
08/16/24	Intel Corp.	BBB+/Negative/A-2	A-/WatchNeg/A-2
09/09/24	Amkor Technology Inc.	BB/Positive/--	BB/Stable/--
09/13/24	MaxLinear Inc.	B/Negative/--	BB-/Negative/--
10/22/24	Marvell Technology Inc.	BBB-/Positive/--	BBB-/Stable/--
11/13/24	ON Semiconductor Corp.	BB+/Positive/--	BB+/Stable/--
11/15/24	Synaptics Incorporated	BB-/Stable/--	BB-/Negative/--
12/10/24	Intel Corp.	BBB/Stable/A-2	BBB+/Negative/A-2

Positive  
Negative

As of Dec. 31, 2024

# Rating Activities On Select U.S. Tech Issuers

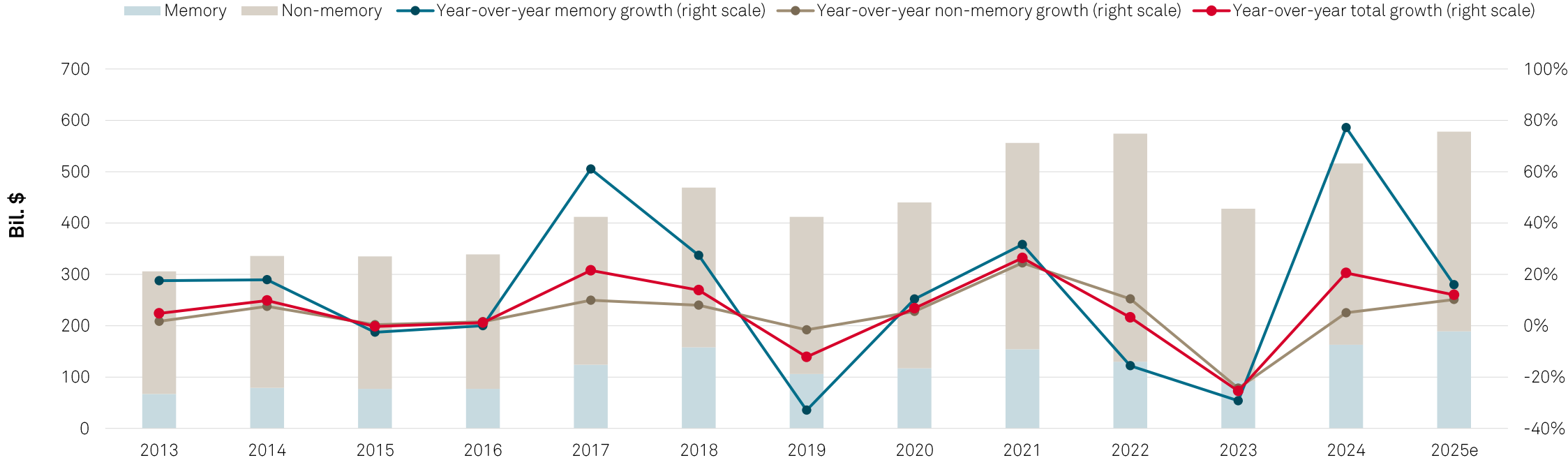
■ Upgrade  
■ Downgrade

	2017	2018	2019	2020	2021	2022	2023	2024
<b>Subsector</b>								
<b>Hardware</b>								
Juniper Networks Inc.	BBB	BBB	BBB	BBB	BBB	BBB	BBB	BBB
HP Inc.	BBB	BBB	BBB	BBB	BBB	BBB	BBB	BBB
Hewlett Packard Enterprise Co.	BBB	BBB	BBB	BBB	BBB	BBB	BBB	BBB
Dell Technologies Inc.	BB+	BB+	BB+	BB+	BBB	BBB	BBB	BBB
Western Digital Corp.	BB+	BB+	BB+	BB+	BB+	BB	BB	BB
Pitney Bowes Inc.	BBB-	BB+	BB+	BB+	BB	BB	B+	B+
NCR Voyix Corporation	BB+	BB+	BB	BB-	BB-	B+	B+	B+
Xerox Holdings Corporation	BBB-	BB+	BB+	BB	BB	BB	BB	B+
<b>Semiconductor</b>								
NVIDIA Corp.	BBB+	BBB+	A-	A-	A-	A	A+	AA-
Qualcomm Incorporated	A	A-	A-	A-	A	A	A	A
Applied Materials Inc.	A-	A-	A-	A-	A	A	A	A
Analog Devices Inc.	BBB	BBB	BBB	BBB	A-	A-	A-	A-
Lam Research Corp.	BBB+	BBB+	BBB+	A-	A-	A-	A-	A-
Advanced Micro Devices Inc.	B-	B+	BB-	BB+	BBB-	A-	A-	A-
KLA Corp.	BBB	BBB	BBB	BBB+	BBB+	A-	A-	A-
NXP Semiconductors N.V.	BBB-	BBB-	BBB-	BBB	BBB	BBB	BBB+	BBB+
Intel Corp.	A+	A+	A+	A+	A+	A+	A	BBB
<b>Services</b>								
IBM Corp.	A+	A	A	A	A-	A-	A-	A-
Uber Technologies, Inc.	N/R	N/R	B-	B-	B	B	BB-	BBB-
<b>Software</b>								
Salesforce.com Inc.	N/R	A-	A	A	A+	A+	A+	A+
Adobe Inc.	A	A	A	A	A+	A+	A+	A+
ServiceNow, Inc.	N/R	N/R	N/R	BBB+	A-	A-	A-	A
Oracle Corp.	AA-	AA-	A+	A	BBB+	BBB	BBB	BBB

As of Dec, 31, 2024.

# Another Year Of Strength In AI and Memory To Power Semiconductor Growth

Semiconductor industry revenue by segment



- Semi revenue growth near 12% forecast for 2025, largely driven by continued adoption of AI compute (GPU, HBM, AI accelerators) and a rebound in non-AI related demand. Excluding memory and NVIDIA, semi revenue to grow in the mid-single-digit percent area.
- Geopolitics remains top of mind going into 2025, specifically: export bans and entity list expansion, Taiwan/China conflict, and industrial policy.

Source: S&P Global Ratings

# Trump Election Victory Ushers Policy Changes And Geopolitical Risks



## Trade and tariffs

- The President has wide latitude to levy tariffs. Protectionist trade policies could sap demand and result in higher inflation.
- Export restrictions on advanced semi in place. Broadening scope and tighter enforcement would hurt chip and equipment suppliers.



## Geopolitics

- U.S. believes certain Chinese tech firms pose national security risks.
- M&A transactions that require China's regulatory approval will continue to be heavily scrutinized.
- U.S. order prohibits new PE, VC, JV investment in Chinese companies working in advanced semi and quantum computers starting 2024.



## Taxes

- President-elect Trump's tax policies are viewed as more business-friendly and supportive of growth investments, M&A, and higher shareholder returns.

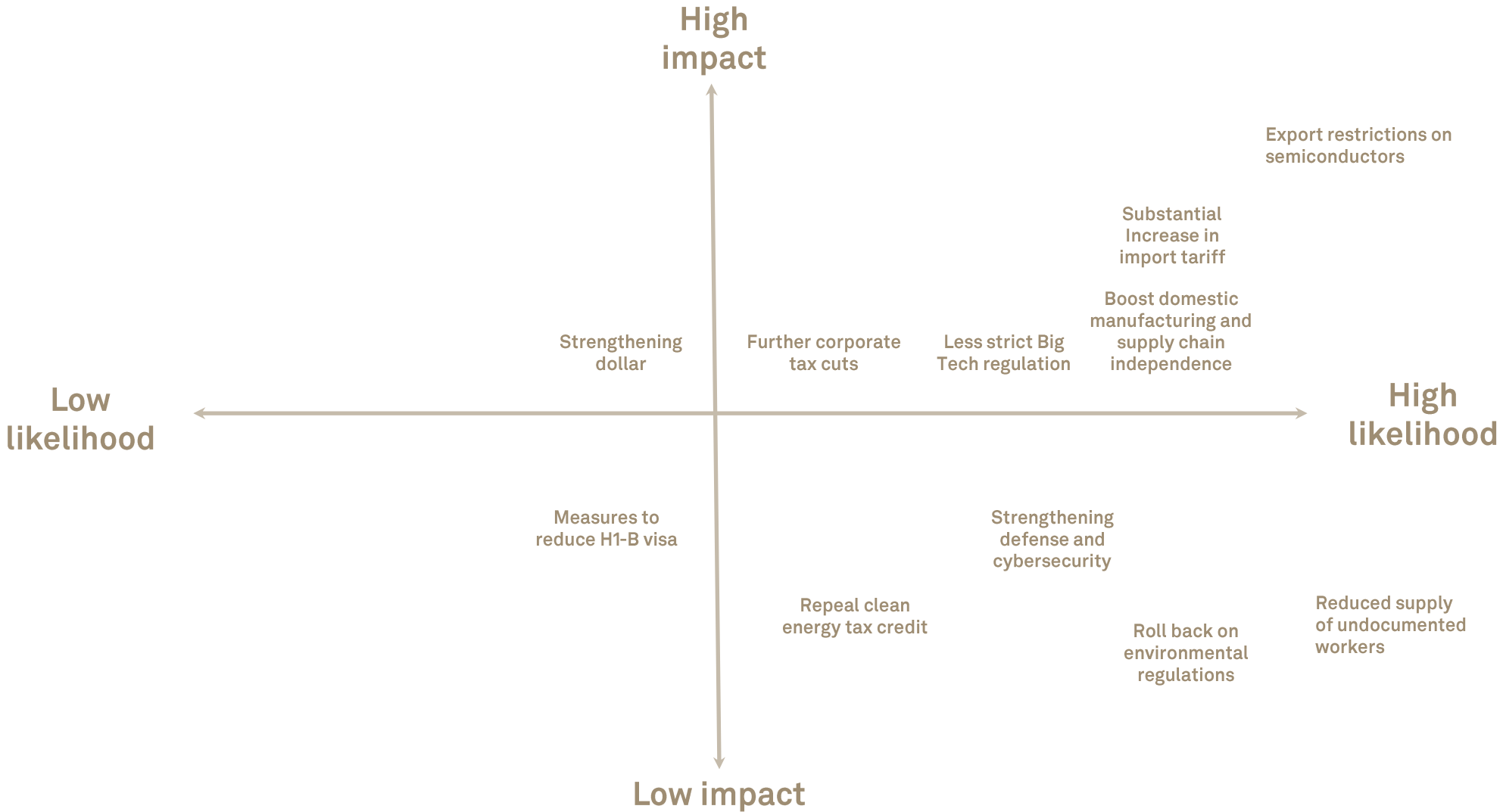


## Big Tech regulation

- U.S. regulatory scrutiny discourages large-scale M&A but could become more deal-friendly under a Trump administration.
- Big Tech has been resourceful in remediating regulatory concerns; likely to result in tweaks to business models rather than break-ups.



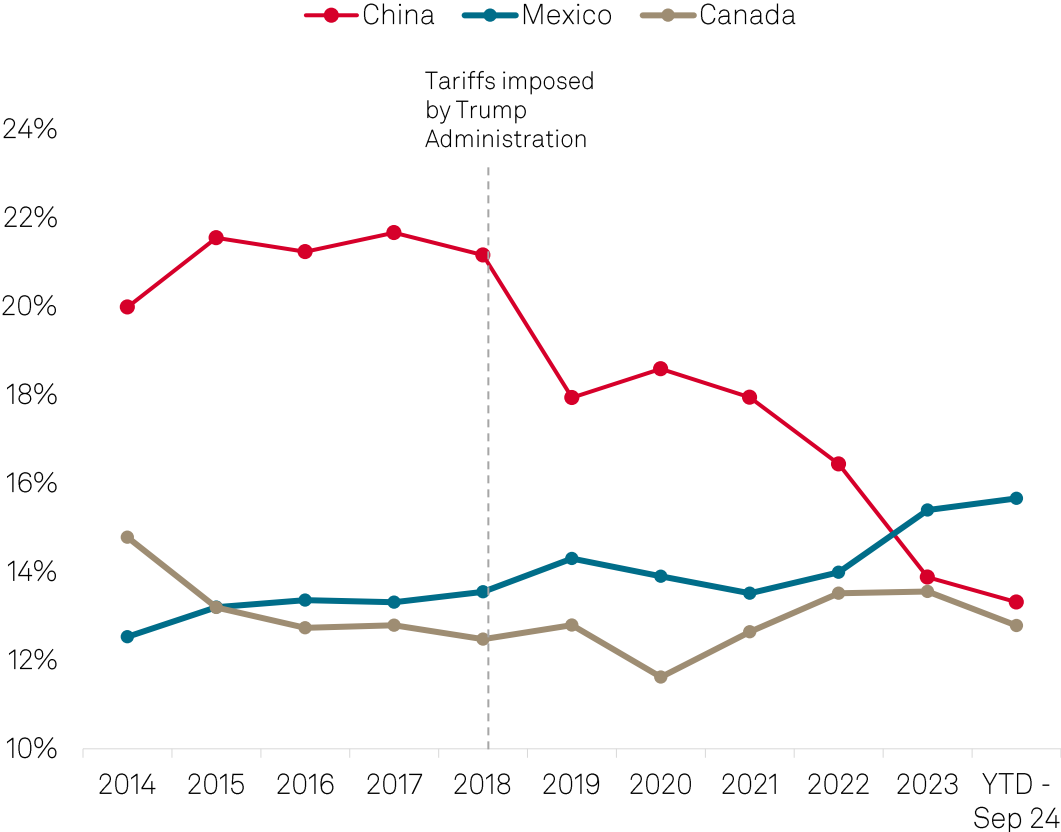
# Potential Policy Changes--Impact On Tech Under Trump's Second Term



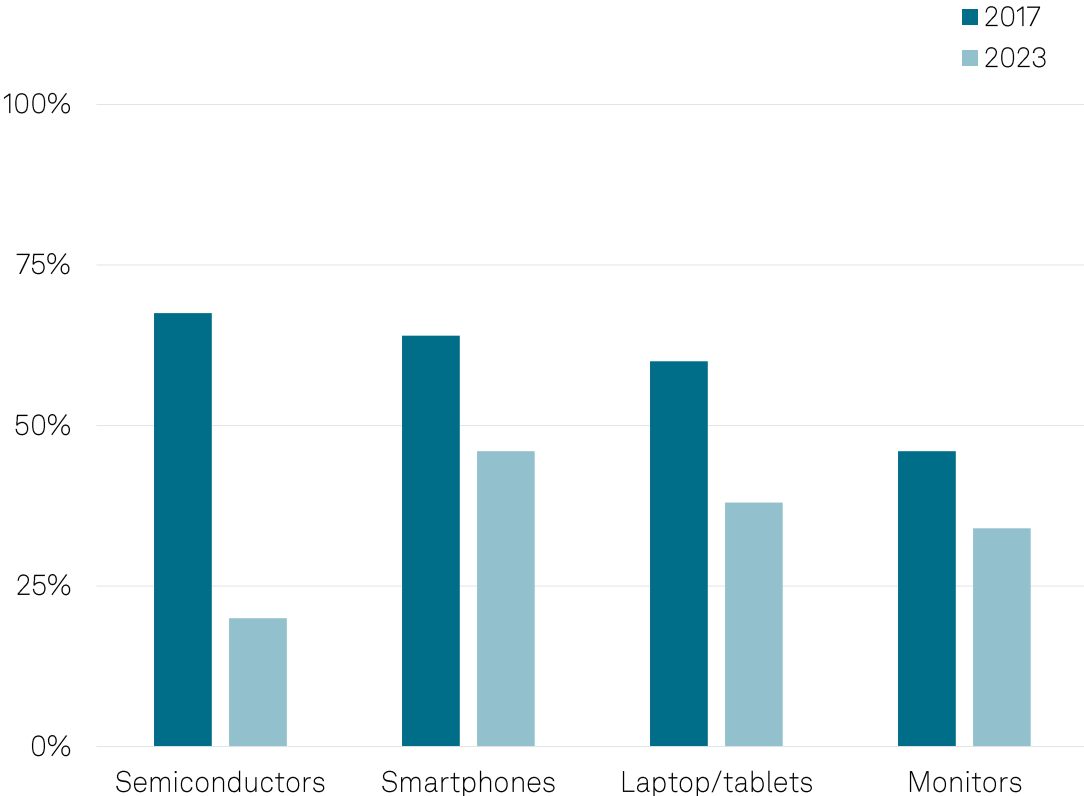
e—The likelihood shown above is an illustrative approximation. There is significant uncertainty on actual outcomes for any policy initiative adopted by the Trump administration.

# China's Share Of U.S. Trade De-risked But Still Meaningful To U.S. Tech

Share of U.S. imports by major countries

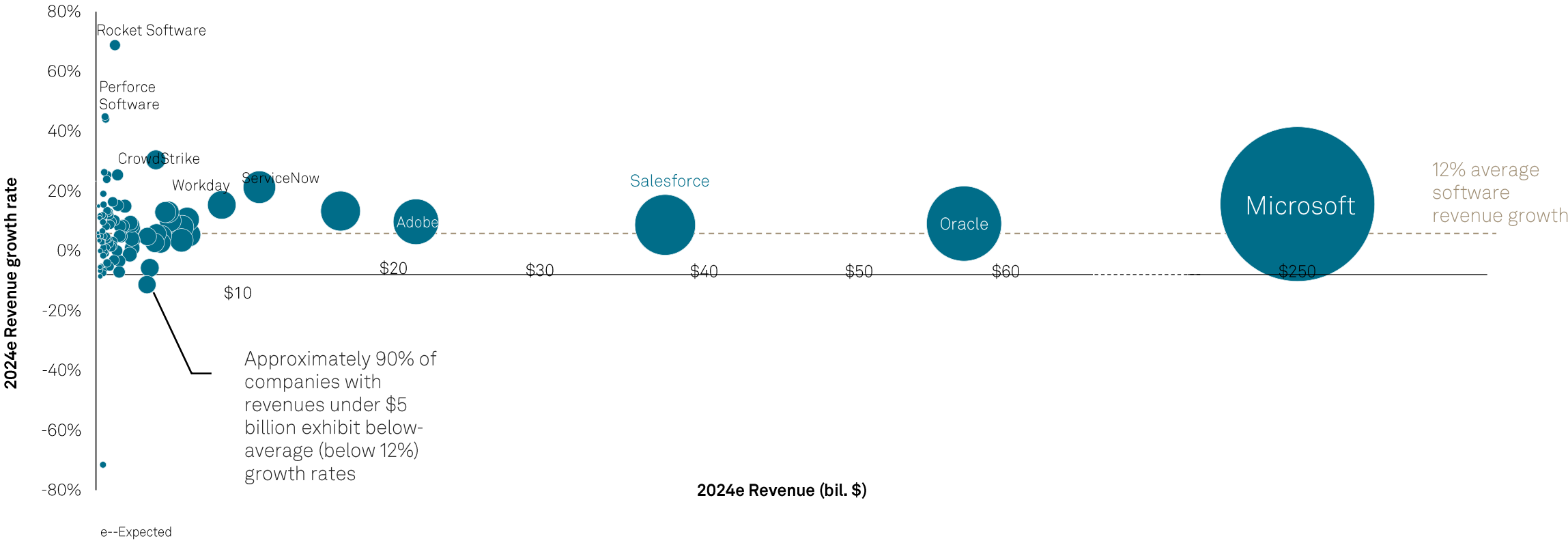


China's share of U.S. imports by category



Source: Census Bureau

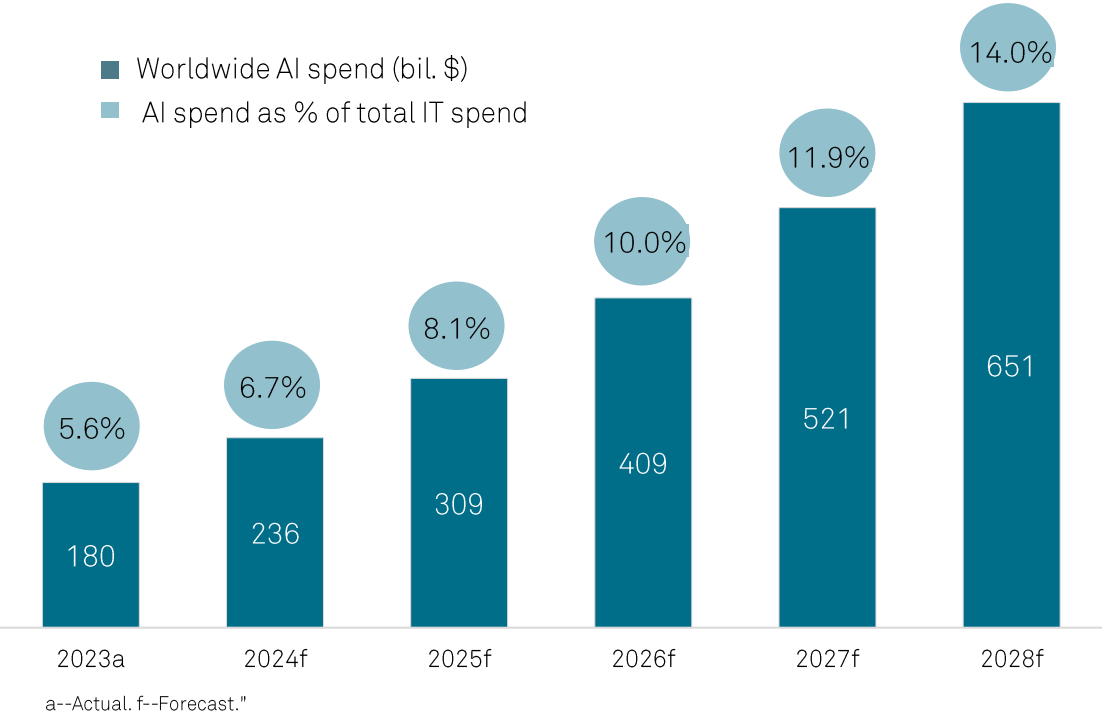
# Large Software Companies Drive Healthy Software Growth



- Software sector revenue growth is typically multiples of global GDP growth due to its strategy of providing productivity gains and lowering customers' operational costs.
- Largest software vendors are typically platform providers that allow for strong growth year after year.
- Too early to tell whether AI adoption will lead to value accrual to model and inference infrastructure providers instead of software vendors.

# Despite Significant Spend To Date, Still Early Innings In AI Investment Cycle

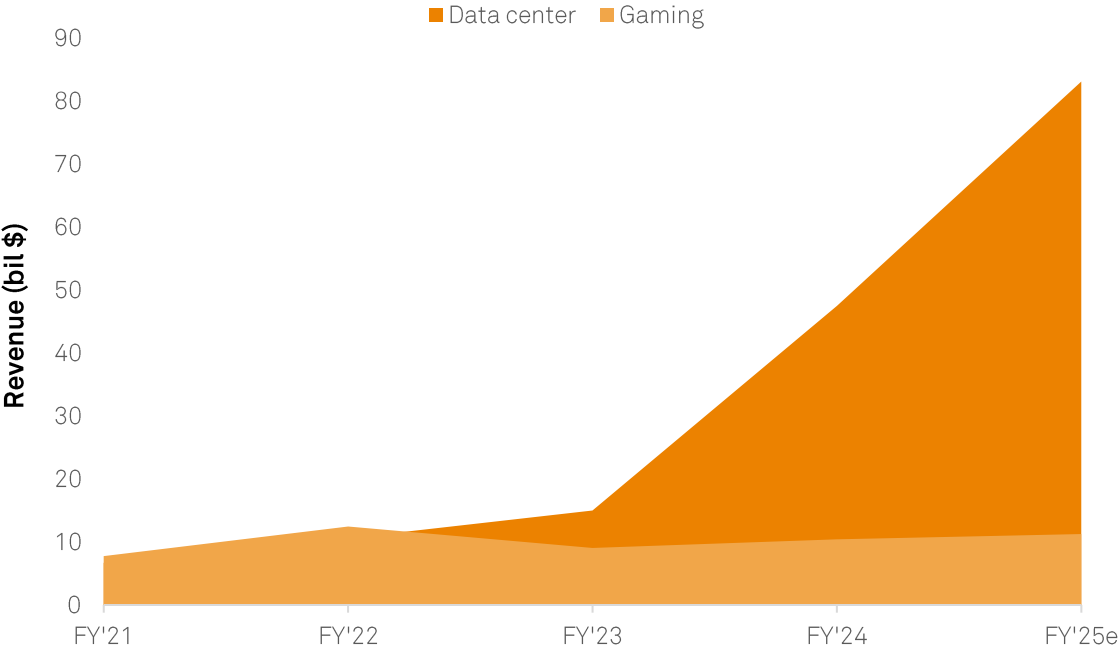
## Worldwide AI spend



- AI spending expected to expand to \$650 billion by 2028 from \$180 billion in 2023, growing at high-20% CAGR.
- AI is expected to account for about 14% of total global IT spending by 2028, and IT spending as a % of global GDP will increase meaningfully over the next decade.

Source: S&P Global Ratings "AI Will Gradually Reshape U.S. Tech Companies' Credit Quality" Apr 8, 2024

## NVIDIA AI chips propelling data center revenue growth



- Nvidia's data center growth has been strong recently thanks to robust GPU demand.
- We expect NVIDIA's total revenues to grow in the mid-teens percent area in fiscal 2026 (ending January 2026).
- Long-term risks include lumpy spending patterns by hyperscalers and competition from rivals and customers in-sourcing.

# Inventory Digestion And Normalization Slowed By Pockets Of Slower Demand

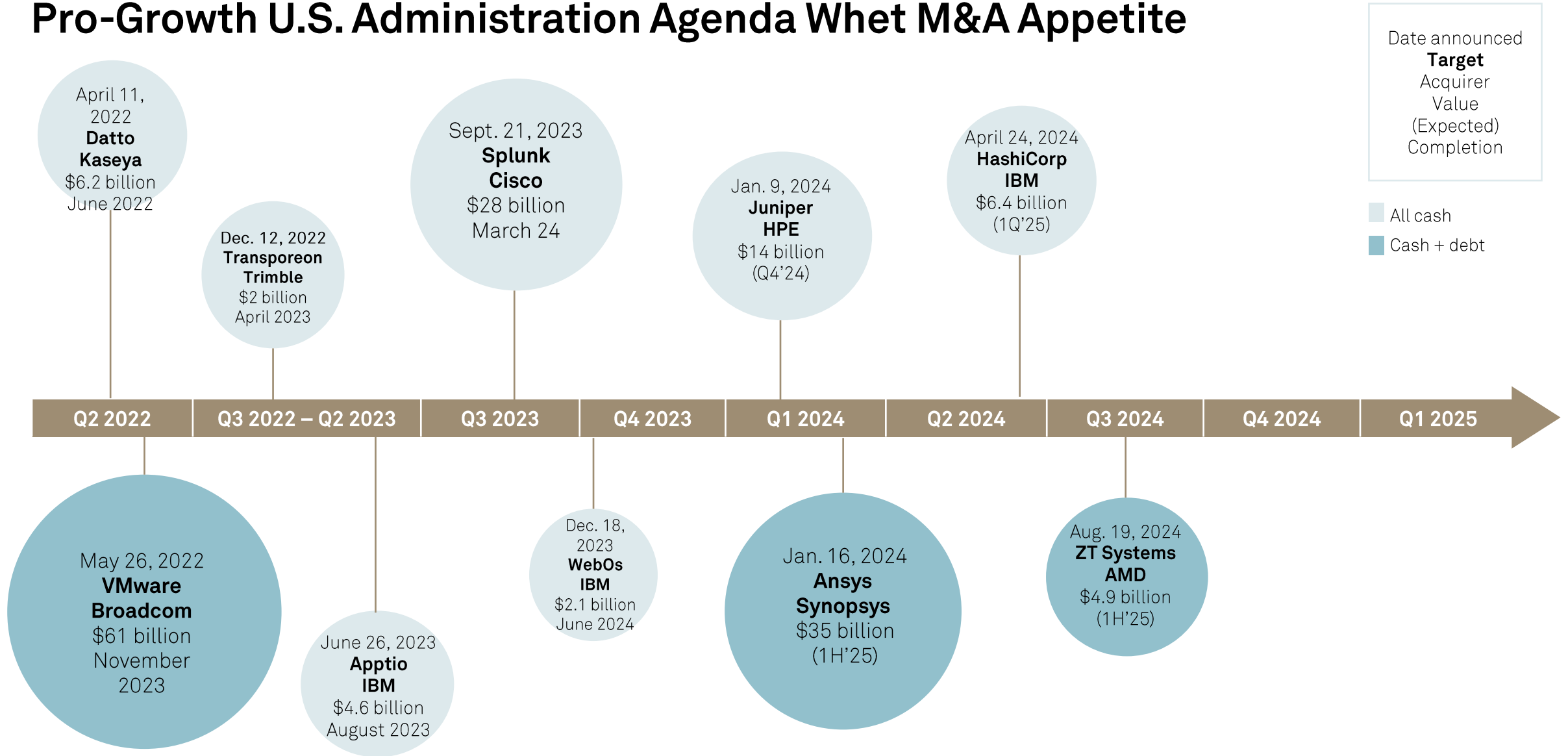
High inventory		Normal inventory				Low inventory	
Memory	Industrial	Networking	Data center	Enterprise	Auto	Mobile	PC
Micron Technology Inc	Analog Devices Inc	Lumentum Holdings Inc			ON Semiconductor Corp	Skyworks Solutions Inc	
Samsung Electronics Co Ltd	Texas Instruments Inc	CommScope Holding Company Inc					
SK hynix Inc	ON Semiconductor Corp	Ciena Corp	Seagate Technology Holdings plc				
		Coherent Corp	Western Digital Corp		Texas Instruments Inc	Broadcom Inc	Intel Corp
SanDisk Corp.	NXP Semiconductors NV	Cisco Systems Inc	Advanced Micro Devices Inc	Dell Technologies Inc	NXP Semiconductors NV	Apple Inc	Advanced Micro Devices Inc
		Juniper Networks Inc	Intel Corp	Hewlett Packard Enterprise Co	TE Connectivity Ltd.	Qualcomm Incorporated	HP Inc
		Hewlett Packard Enterprise Co	Broadcom Inc		Analog Devices Inc	Qorvo Inc	Dell Technologies Inc
		Broadcom Inc	Marvell Technology Inc				
		Marvell Technology Inc	Nvidia Corp				

High inventory (company)

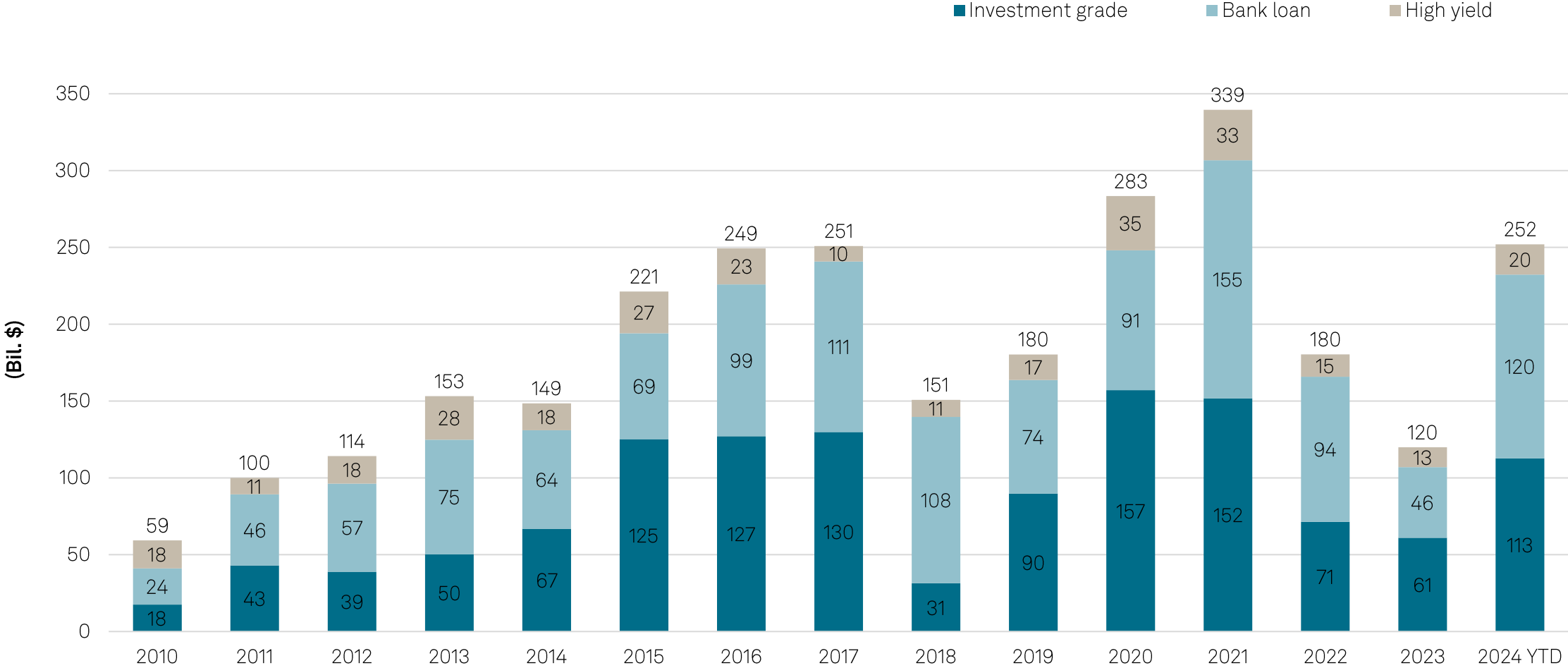
Normal

Low

# Pro-Growth U.S. Administration Agenda Whet M&A Appetite



# Growth Optimism and Fewer Regulatory Restrictions Positive For Debt Issuance



Source: LCD | As of Dec 26, 2024

# Higher Credit Risks From Hardware Vendors

● Lower
 ● Medium
 ● Higher

	Current rating/outlook	Industry disruption	Business volatility	Shareholder returns	M&A/event risk
Dell Technologies	BBB/Stable	<span style="color: green;">●</span>	<span style="color: yellow;">●</span>	<span style="color: yellow;">●</span>	<span style="color: green;">●</span>
HP	BBB/Stable	<span style="color: yellow;">●</span>	<span style="color: yellow;">●</span>	<span style="color: yellow;">●</span>	<span style="color: green;">●</span>
Hewlett Packard Enterprise	BBB/Neg	<span style="color: yellow;">●</span>	<span style="color: green;">●</span>	<span style="color: green;">●</span>	<span style="color: red;">●</span>
Seagate	BB/Stable	<span style="color: green;">●</span>	<span style="color: red;">●</span>	<span style="color: green;">●</span>	<span style="color: green;">●</span>
Western Digital	BB/CW Neg	<span style="color: yellow;">●</span>	<span style="color: red;">●</span>	<span style="color: green;">●</span>	<span style="color: red;">●</span>
Xerox	B+/Neg	<span style="color: red;">●</span>	<span style="color: yellow;">●</span>	<span style="color: yellow;">●</span>	<span style="color: yellow;">●</span>
CommScope	CCC/CW Pos	<span style="color: yellow;">●</span>	<span style="color: red;">●</span>	<span style="color: green;">●</span>	<span style="color: red;">●</span>

As of Dec 31, 2024



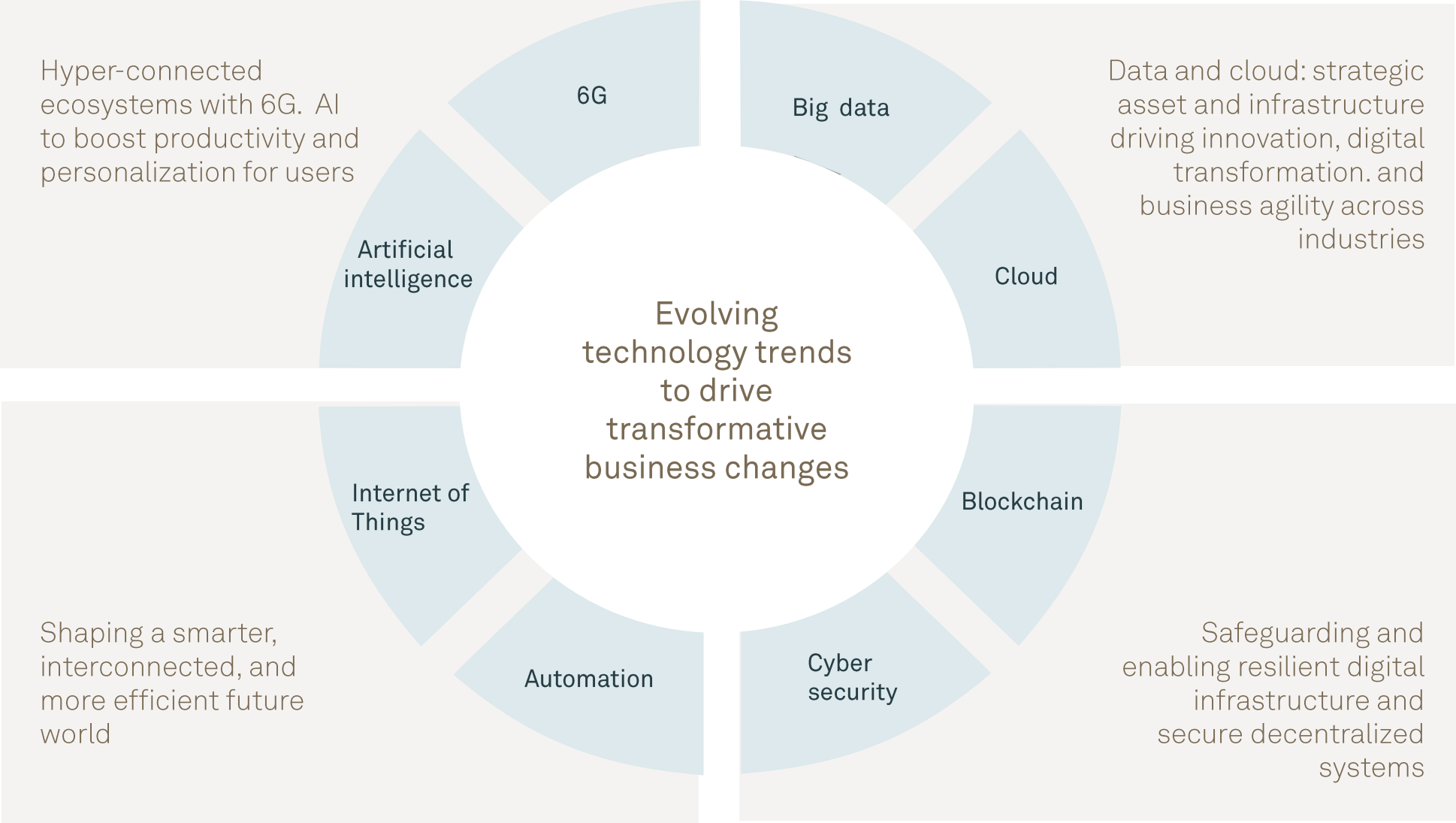
# Key Rating Triggers For Select U.S. Tech Issuers



Company name	Rating/ outlook	Likely reason for positive rating action	Likely reason for negative rating action	Ratings headroom
intel	BBB/Stable	Successful process node technology roadmap execution and share gains that lead to sustained profitability enhancement, DCF to debt above 15% and leverage below 2.5x.	If competitive position continues to deteriorate, or there is no progress in its foundry strategy and growth, or profitability underperforms such that DCF to debt is sustained below 10% or leverage sustains above 2.5x.	
IBM	A-/Stable	Sustainable revenue growth and leverage above 2x, while able to pursue its shareholder return and acquisition objectives.	Unable to reduce leverage under 2.5x by the end of 2025.	
Oracle	BBB/Stable	Moderates financial policy and achieves its acquisition and shareholder return objectives while sustaining leverage in the low-3x area.	Debt to EBITDA stays above the mid-3x area.	
Hewlett Packard	BBB/Neg	Maintain leverage below 2x on a sustained basis through industry cycles, acquisitions, and shareholder returns.	Debt to EBITDA remains above 2x.	
Micron	BBB-/Stable	Operating margin improves, less-volatile cash flow generation, maintains or expands market share, and/or leverage below 0.5x through industry cycles and acquisitions.	Significant profitability and cash flow weakness resulting in leverage exceeding the mid-1x area or liquidity under 30% of revenues.	
Western Digital	BB/CW Neg	N/A	One notch downgrade if leverage sustains below 4x or FOCF to debt below 10% post-spin off. Multiple notch downgrade if leverage sustains above 5x and FOCF to debt in the mid-single-digit percent area.	

As of Dec 31, 2024

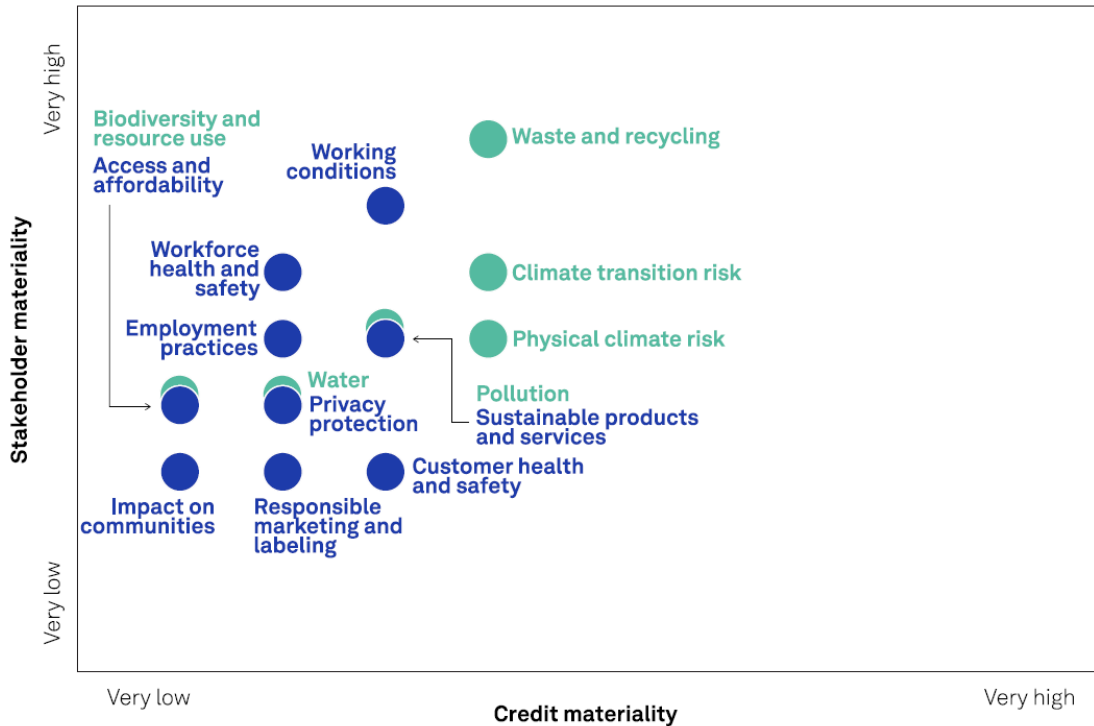
# Emerging Trends And Enablers



# Key ESG Materiality Factors

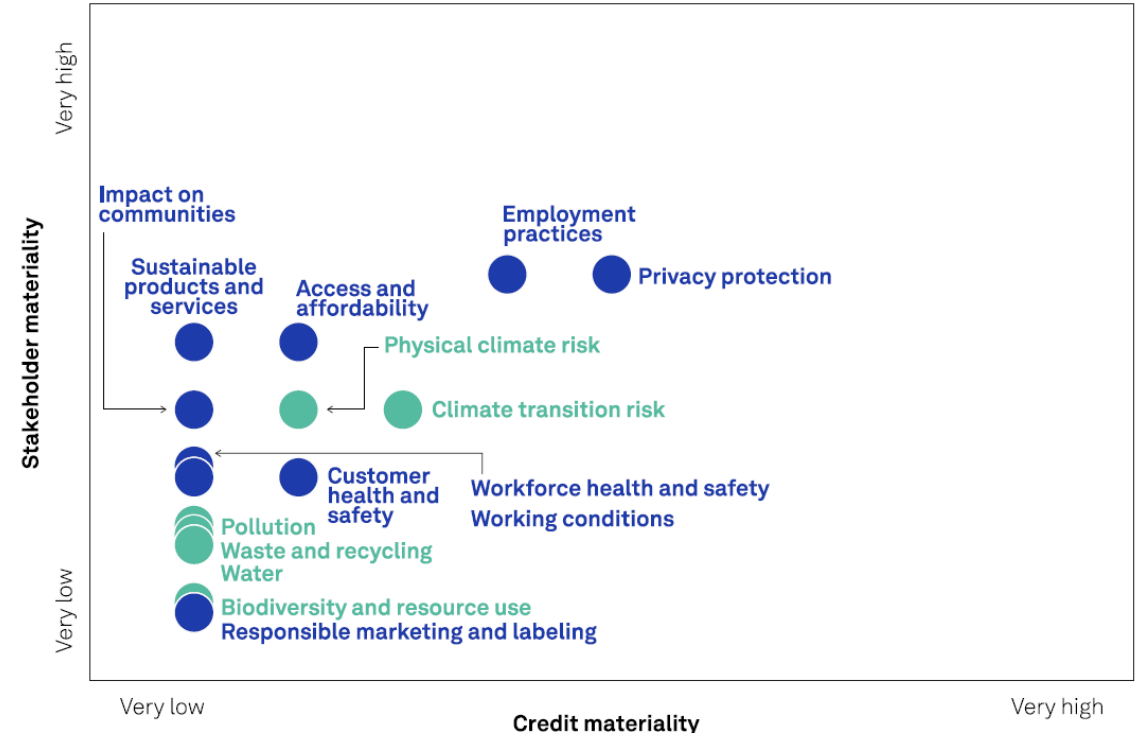
## Hardware and semiconductor

● Environmental ● Social



## Software

● Environmental ● Social



- Hardware and semi companies are primarily exposed to reuse and recycling as part of a circular supply chain, energy and water use in manufacturing, physical risk of assets to climate change, and conditions for manufacturing workers.
- Software and services companies often collect sensitive information exposing themselves to privacy protection risk. Increasing frequency and sophistication of cyberattacks will likely exacerbate this risk over time. AI is an emerging driver of social risk, including misinformation and bias embedded in AI models, and could increase regulatory risk.

Source: S&P Global | "General Criteria: Environmental, Social, And Governance Principles In Credit Ratings" Oct. 10, 2021

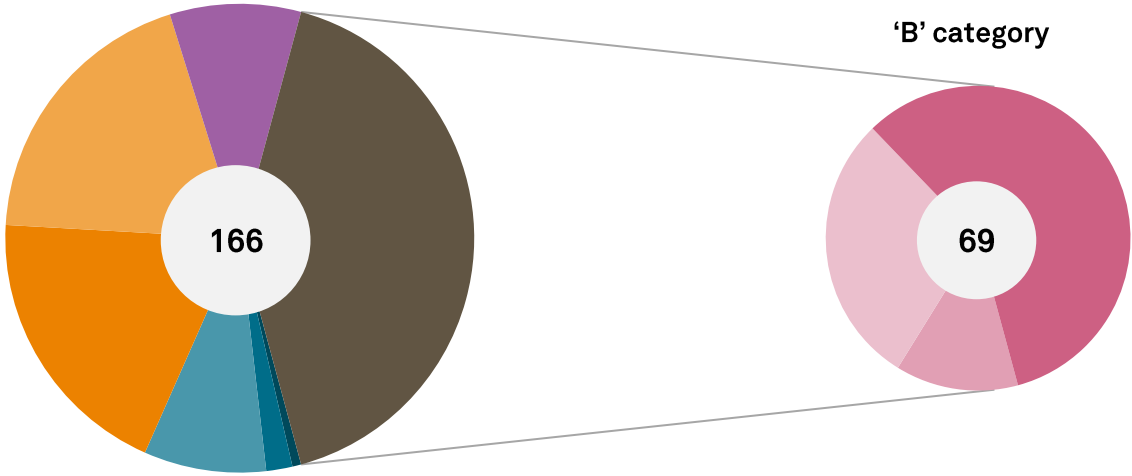
# Appendix

- U.S. Tech Ratings Overview
- Subsector Breakdown
- Peer Matrix: Hardware
- Peer Matrix: Semiconductor
- Peer Matrix: Software & Services
- U.S. Technology Ratings Team
- U.S. Technology Publications
- U.S. Technology Coverage List by Analyst

# U.S. Tech Ratings Overview

Rating distribution by category

■ AAA ■ AA ■ A ■ BBB ■ BB ■ CCC ■ B+ ■ B ■ B-

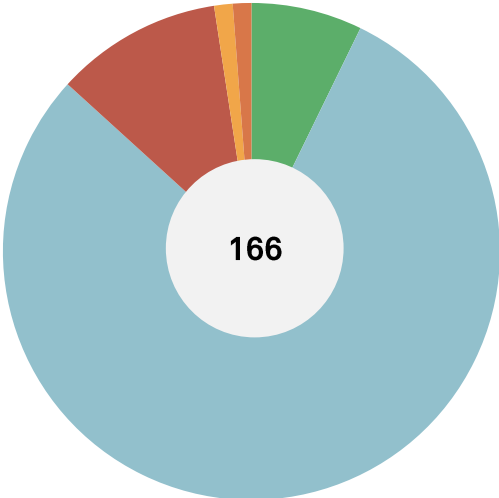


AAA	1	0.6%
AA	3	1.8%
A	14	8.4%
BBB	32	19.3%
BB	33	19.9%
B	71	42.8%
CCC	12	7.2%

B+	9	13.0%
B	20	29.0%
B-	40	58.0%

Outlook distribution

■ Positive ■ Stable ■ Negative ■ CW Positive ■ CW Negative



Positive	12	7.2%
Stable	132	79.5%
Negative	18	10.9%
CW Positive	2	1.2%
CW Negative	3	1.2%

CW--CreditWatch

As of Dec 31, 2024

# Subsector Breakdown (166)

## Software (87)

Application-specific software	39
IT infrastructure/IT management/security Software	33
Enterprise software	15

## Hardware (45)

Specialty hardware	15
Enterprise hardware/networking equipment	12
Components	6
Distributor	4
Electronic manufacturing services	8

## Semiconductors (30)

Analog/FPGA/discrete	16
Semi cap equipment/semi manufacturing	8
Logic/microprocessors	4
Memory	2

## Services (4)

IT services	2
Internet-based services	2

# Hardware

Business Risk Profile	---- Financial Risk Profile ----					
	Minimal (1)	Modest (2)	Intermediate (3)	Significant (4)	Aggressive (5)	Highly Leveraged (6)
Strong (2)	Apple (AA+), Cisco (AA-)					
Satisfactory (3)	NetApp (BBB+)	TE Connectivity (A-), Amphenol (BBB+), Dell (BBB), HP Inc. (BBB), Keysight (BBB)	Molex (A-), Corning (BBB+/Neg), Motorola (BBB), Arrow (BBB-), Flex (BBB-), Jabil (BBB-), TD SYNEX (BBB-)		Ingram Micro Inc. (BB)	
Fair (4)	HPE (BBB/Neg), Juniper (BBB/Neg)	Ciena Corp. (BB+), Sanmina (BB+)	Avnet (BBB-), Crane Holdings, (BB+), Zebra (BB+), TTM Technologies (BB)	Seagate (BB/Pos), Belden (BB), Western Digital (BB/CWNeg)	NCR Voyix (B+/Pos), NCR Atleos (B+), Pitney Bowes (B+)	
Weak (5)				Viavi Solutions (BB)	Xerox (B+/Neg), Diebold (B/Pos), Elo Touch (B)	Creation Technologies (B-), East West Manufacturing (B-), Infinite Holdco (B-), Natel (CCC+), Emerald Technologies (CCC+/Neg), Electronics for Imaging (CCC+/Neg), VeriFone (CCC+/Neg), CommScope (CCC/CWPoa), Casa Systems (D)
Vulnerable (6)						Avaya (CCC+), Eastman Kodak (CCC+), Riverbed (CCC+)

As of Dec 31, 2024

# Semiconductors

Business Risk Profile	---- Financial Risk Profile ----					
	Minimal (1)	Modest (2)	Intermediate (3)	Significant (4)	Aggressive (5)	Highly Leveraged (6)
<b>Excellent (1)</b>						
<b>Strong (2)</b>	NVIDIA (AA-), Texas Instruments (A+), Qualcomm (A)		Broadcom (BBB)			
<b>Satisfactory (3)</b>	Applied Materials (A) AMD (A-) Lam Research (A-)	Analog Devices (A-/Pos) KLA (A-) NXP Semiconductor (BBB+)	Intel (BBB)			
<b>Fair (4)</b>	Qorvo (BBB-), Skyworks Solutions (BBB-)	Marvell Technology (BBB-/Pos), Micron (BBB-), ON Semiconductor (BB+/Pos)	Vishay (BB+), Amkor (BB/Pos), Sandisk (BB)	Entegris (BB), MKS Instruments (BB)	Coherent (BB-/Neg)	
<b>Weak (5)</b>			Lattice (BB), Adeia (BB-), Cohu (BB-), Allegro MicroSystems (BB-)	Ultra Clean Holdings (B+)	Synaptics (BB-)	Altar MidCo (B), Lumentum (B/Neg), MaxLinear (B/Neg)
<b>Vulnerable (6)</b>						

As of Dec 31, 2024



# Software & Services

Business Risk Profile	---- Financial Risk Profile ----					
	Minimal (1)	Modest (2)	Intermediate (3)	Significant (4)	Aggressive (5)	Highly Leveraged (6)
Excellent (1)	Microsoft (AAA)					
Strong (2)	Adobe (A+), Salesforce.com (A+), ServiceNow (A)		IBM (A-)	Oracle (BBB)		
Satisfactory (3)	Intuit (A-), Cadence Design Systems (BBB+/Pos), Autodesk (BBB+), Akamai(BBB+), Fortinet (BBB+), Atlassian (BBB), Verisign (BBB), Workday (BBB)		Trimble (BBB-)	SS&C (BB)		Cloud Software Group Holdings, Inc(B)
Fair (4)	Uber (BBB-/Pos), CrowdStrike (BB+)	Infor (BBB), Twilio (BB+)	PTC (BB+)	CCC Intelligent (BB-), Gen Digital (BB), RingCentral (BB), ZoomInfo (BB)	Informatica (BB-), SolarWinds (B+)	See next slide
Weak (5)				Tenable (BB-/Pos)	Elastic N.V. (BB-), Consensus Cloud (B+), EverCommerce (B+), N-able (B+)	See next slide
Vulnerable (6)						SkillSoft (B-), Atlas Midco (CCC+/Neg), Astra Acquisition (CCC/CWNeg),

As of Dec 31, 2024

# Software & Services (Cont.)

## Fair/highly leveraged

Banff Parent Inc. (B)  
 Clover Holdings 2 LLC (B)  
 Genesys Cloud Services Holdings II LLC (B)  
 Project Alpha Intermediate Holding (B)  
 Rocket Software Inc. (B)  
 VS Holding I Inc. (B)  
 Applied Systems Inc. (B-)  
 Cornerstone (B-)  
 DCert Buyer Inc. (B-)  
 DS Admiral Bidco LLC (B-)  
 Epicor Holdings Corp. (B-)  
 McAfee Corp. (B-)  
 Proofpoint Inc. (B-)  
 Renaissance Holding Corp. (B-)  
 Ellucian Holdings Inc. (B-)  
 UKG Inc. (B-)  
 Ivanti Software Inc. (B-/Neg)  
 Polaris Parent LLC (B-/Neg)  
 Veritas Holdings Ltd. (CCC/CWPos)

## Weak/highly leveraged

BEP Intermediate Holdco LLC (B)  
 E2open LLC (B)  
 Imagine Learning LLC (B)  
 ION Corporate Solutions (B)  
 iSolved Inc. (B)  
 LI Group Holdings Inc. (B)  
 Modena Buyer LLC (B)  
 Quartz AcquireCo LLC (B)  
 Zodiac Purchaser LLC (B)  
 Alteryx Inc. (B-)  
 Aspen Jersey Topco Ltd.(B-)  
 Barracuda Networks Inc. (B-)  
 Cloudera Inc. (B-)  
 Delta Topco Inc. (B-)  
 Eclipse Midco Inc. (B-)  
 Flexera Software (B-)  
 Icon Parent I Inc. (B-)  
 Imprivata Inc. (B-)  
 Globetrotter Intermediate LLC (B-)  
 HS Midco Inc. (B-)  
 Idera Inc. (B-)  
 Motus Group LLC (B-)

Perforce Intermediate Holdings LLC (B-)  
 Planview Parent Inc. (B-)  
 Red Intermediate Co. LLC (B-)  
 Smokey TopCo Ltd. (B-)  
 SonicWall Holdings Ltd. (B-)  
 Starfish Holdco LLC (B-)  
 Upland Software Inc. (B-)  
 WatchGuard Technologies Inc. (B-)  
 Xplor T1 LLC (B-)  
 Foundational Education Group Inc. (B-/Neg)  
 Project Leopard Holdings Inc. (B-/Neg)  
 Veracode Parent L.P. (B-/Neg)  
 Cardinal Parent Inc. (CCC+)  
 Intermedia Holdings Inc. (CCC+)  
 Redstone Buyer LLC (CCC+)  
 Magenta Buyer LLC (CCC+/Neg)  
 Quest Software US Holdings Inc. (CCC+/Neg)

As of Dec 31, 2024

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# U.S. Technology Publications

- [Solid IT Demand Bodes Well For Tech Credits In 2025](#), Jan. 8, 2025
- [U.S. Tech Earnings: AI In The Driver's Seat – All Gas, No Brakes](#), Nov. 5, 2024
- [Long-Term U.S. Tech Ratings Will Be Tested By Geopolitical And Trade Uncertainties](#), Sept. 4, 2024
- [The Shifting Of China Tech Supply Chains: The Hard Part Starts](#), Sept. 2, 2024
- [More Cautious Than Optimistic: Lower-Rated U.S. Tech Issuers Continue To Face Ratings Pressure](#), Aug. 15, 2024
- [Midyear 2024 IT Forecast Update: Robust Cloud Spending Offsets Still-Cautious Enterprise Budgets](#), July 17, 2024
- [U.S. Tech M&A, Investments, And Shareholder Returns Compete For Healthy Cash Generation In 2024](#), May 17, 2024
- [AI Will Gradually Reshape U.S. Tech Companies' Credit Quality](#), April 8, 2024
- [CHIPS Act Funding To Intel Sparks Revival For U.S. Semiconductor Manufacturing](#), March 27, 2024
- [Gen AI Is Writing A New Credit Story For Tech Giants](#), Nov. 13, 2023
- [More Risks Ahead For Global Technology Companies As U.S. Restrictions Tighten](#), Nov. 8, 2023
- [China's Chip 'Moonshot'--The Response To Restrictions](#), Nov. 2, 2023
- [Global Tech's Shift From China: The Effects By Firm](#), May 3, 2023
- [Global Tech's Moves From China Will Be Costly...And Unavoidable](#), April 20, 2023
- [Technology And Geopolitics: What If The Semiconductor Industry Bifurcates?](#), Nov. 13, 2022
- [U.S. Chips On A New Block With Expanded China Restrictions](#), Oct. 19, 2022
- [ESG Materiality Map: Technology Hardware and Semiconductors](#), Oct. 19, 2022
- [ESG Materiality Map – Technology Software and Services](#), Oct. 19, 2022
- [Cutting China From Supply Chains--Easy To Say, Hard To Do](#), June 1, 2022

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Gen Digital Inc.  
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NCR Voyix Corporation  
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Sanmina Corp.  
Texas Instruments Inc.  
Trimble Inc.  
Uber Technologies, Inc.  
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N-able, LLC  
Perforce Intermediate Holdings, LLC  
Smokey TopCo Ltd.  
Synaptics Incorporated  
Twilio, Inc.  
Ultra Clean Holdings, Inc.  
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VS Holding I Inc.

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CrowdStrike Holdings, Inc.  
Delta Topco, Inc.  
DS Admiral Bidco, LLC  
Electronics for Imaging, Inc.  
Intuit Inc.  
Juniper Networks Inc.  
Magenta Buyer LLC  
MaxLinear, Inc.  
McAfee Corp.  
Proofpoint, Inc.  
Renaissance Holding Corp  
SkillSoft Corp  
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Marvell Technology, Inc.  
Molex Electronic Technologies LLC  
ON Semiconductor Corp.  
Pitney Bowes Inc.  
Polaris Parent, LLC  
RingCentral, Inc.  
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Jabil Inc.  
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TTM Technologies Inc.  
UKG Inc.

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 Infinite Holdco LLC  
 Informatica Inc.  
 Ingram Micro Inc.  
 Project Alpha Intermediate Holding, Inc.  
 Project Leopard Holdings, Inc.  
 PTC Inc.  
 Riverbed Holdings Inc.  
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 Motus Group, LLC  
 Quartz AcquireCo LLC  
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 Icon Parent I Inc.  
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 Crane NXT, Co.  
 Diebold Nixdorf Inc.  
 EverCommerce, Inc.  
 Genesys Cloud Services Holdings II, LLC  
 Idera, Inc.  
 Lattice Semiconductor Corp.  
 Viavi Solutions Inc.  
 Xplor T1, LLC  
 Zodiac Purchaser, LLC  
 ZoomInfo Technologies Inc.

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Apple Bidco, LLC  
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Ascensus Group Holdings, Inc.  
Asplundh Tree Expert, LLC  
Atlas CC Holding LLC  
Atlas Ontario LP  
Automatic Data Processing Inc.  
BCPE Empire Holdings, Inc.  
Black Knight, Inc.  
Brink's Company (The)  
Broadridge Financial Solutions Inc.  
Brown Bidco Ltd  
CDK Global II LLC  
CDW Corp.

Cintas Corp.  
Concentrix Corporation  
CoreLogic Inc.  
DXC Technology Company  
Equifax Inc.  
Fidelity National Information Services Inc.  
Fiserv Inc.  
Foundever Group SA  
Global Payments Inc  
Go Daddy Operating Company LLC  
I-Logic Technologies Bidco Limited  
Iron Mountain Inc.  
Jacobs Engineering Group Inc.  
Kyndryl Holdings Inc.  
LHS Borrower LLC  
MSCI Inc.

Newfold Digital Holdings Group, Inc.  
Project Boost Purchaser LLC  
Rackspace Technology Global, Inc.  
RealPage, Inc.  
Spin Holdco Inc.  
Staples Inc.  
Tempo Acquisition LLC  
TransUnion  
Verisk Analytics, Inc.  
WeWork Companies LLC  
WMB Holdings Inc.



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