

Vertex, Inc.

# Turning a corner on balanced growth and margin, Upgrading to Neutral

Rating Change: NEUTRAL | PO: 40.00 USD | Price: 33.58 USD

## Investments in partner channel are yielding results

We upgrade Vertex to Neutral from Underperform. Our concern last spring was that the company's investments were not yielding meaningful incremental growth. Since then, Vertex has made real progress on growth initiatives, such as tighter integrations/go to market with key ERP (enterprise resource planning) partners. Vertex has also been building partnerships with system integrators such as Accenture, RSM, and BDO. It was apparent in Q4 results that these initiatives are yielding results. Subscription growth of 19% in Q4 was up from 14% in Q3 and net revenue retention (NRR) of 113% was up nicely from 110%.

## Better positioned to benefit from cloud migration cycle

These tighter partnerships place Vertex in a better position to benefit from an ERP cloud migration cycle that is gaining momentum. ERP cloud migration is a natural trigger for sales tax expansion deals. We believe that Vertex will see better pull through and attach to these projects as a result. This cycle provides line of sight for solid, sustained mid/high teens subs growth. Also, the company has invested in a better customer support function, which has been a catalyst for expansion deals and better positions Vertex for sustained expansion.

## Room for margin expansion w/leverage on investments

In Q4, EBITDA margin of 20.7% well exceeded the outlook by 90bps and represented the single largest improvement (+360 basis points y/y) in several years. Investments in the partner channel and customer support are largely complete. Coupled with potential for sustained mid/high teens growth, we see a path for a multi-year margin expansion cycle.

## Valuation still holds us back

We upgrade the shares to Neutral from Underperform and raise our PO to \$40 from \$25 on improving visibility toward the rule of 40 benchmark (sum of growth and margin). Valuation holds us back from a Buy rating (7.4x C25 sales versus the small cap software peer group (trading at 4.5x)). Also, Vertex is largely addressing the large enterprise segment of the sales tax category, where there is less greenfield opportunity / adoption. We believe that this limits the runway for growth longer term. Our new PO of \$40 represents 8.7x C25e sales, or 0.6x adjusted for 14% growth, a premium to the small cap growup (4.5x or 0.4x 11% growth) for durability of growth.

Estimates (Dec) (US\$)	2022A	2023A	2024E	2025E	2026E
EPS	0.39	0.56	0.54	0.64	0.76
GAAP EPS	(0.22)	(0.24)	0.09	0.37	0.67
EPS Change (YoY)	0%	43.6%	-3.6%	18.5%	18.8%
Consensus EPS (Bloomberg)			0.50	0.69	NA
DPS	0	0	0	0	0
Valuation (Dec)					
P/E	86.1x	60.0x	62.2x	52.5x	44.2x
GAAP P/E	NM	NM	373.1x	90.8x	50.1x
EV / EBITDA*	24.5x	19.1x	14.5x	11.8x	9.6x
Free Cash Flow Yield*	0.9%	1.2%	2.9%	3.3%	4.3%

\* For full definitions of *IQmethod*<sup>SM</sup> measures, see page 12.

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Timestamp: 01 March 2024 06:00AM EST

01 March 2024

### Equity

#### Key Changes

(US\$)	Previous	Current
Inv. Opinion	C-3-9	C-2-9
Inv. Rating	UNDERPERFORM	NEUTRAL
Price Obj.	23.00	40.00
2024E Rev (m)	631.7	655.2
2025E Rev (m)	710.1	746.9
2026E Rev (m)	NA	851.5
2025E EPS	0.63	0.64
2026E EPS	NA	0.76

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### Stock Data

Price	33.58 USD
Price Objective	40.00 USD
Date Established	1-Mar-2024
Investment Opinion	C-2-9
52-Week Range	14.72 USD - 30.00 USD
Mrkt Val (mn) / Shares Out (mn)	2,046 USD / 60.9
Free Float	87.6%
Average Daily Value (mn)	10.85 USD
BofA Ticker / Exchange	VERX / NAS
Bloomberg / Reuters	VERX US / VERX.OQ
ROE (2024E)	28.3%
Net Dbt to Eqty (Dec-2023A)	-10.3%
ESGMeter <sup>TM</sup>	Medium

ESGMeter is not indicative of a company's future stock price performance and is not an investment recommendation or rating. ESGMeter is independent of BofA Global Research's equity investment rating, volatility risk rating, income rating, and price objective for that company. For full details, refer to "BofA ESGMeter Methodology".

ARR = Annual Recurring Revenue

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# iQprofile<sup>SM</sup> Vertex, Inc.

## iQmethod<sup>SM</sup> – Bus Performance\*

(US\$ Millions)	2022A	2023A	2024E	2025E	2026E
Return on Capital Employed	19.3%	16.2%	15.6%	18.1%	20.8%
Return on Equity	27.0%	37.3%	28.3%	25.9%	25.4%
Operating Margin	13.5%	15.0%	17.0%	18.5%	20.0%
Free Cash Flow	18	25	59	67	87

## iQmethod<sup>SM</sup> – Quality of Earnings\*

(US\$ Millions)	2022A	2023A	2024E	2025E	2026E
Cash Realization Ratio	1.2x	0.8x	1.3x	1.2x	1.2x
Asset Replacement Ratio	1.0x	0.7x	0.8x	0.9x	1.1x
Tax Rate	NM	39.6%	73.1%	42.7%	32.9%
Net Debt-to-Equity Ratio	-16.3%	-10.3%	-32.4%	-35.0%	-37.6%
Interest Cover	NA	NA	NA	NA	NA

## Income Statement Data (Dec)

(US\$ Millions)	2022A	2023A	2024E	2025E	2026E
Sales	492	572	655	747	851
% Change	15.5%	16.4%	14.5%	14.0%	14.0%
Gross Profit	347	407	461	525	598
% Change	15.3%	17.4%	13.1%	13.9%	14.0%
EBITDA	79	101	133	164	202
% Change	0.9%	28.1%	31.8%	23.5%	23.0%
Net Interest & Other Income	(2)	(4)	1	1	1
<b>Net Income (Adjusted)</b>	<b>62</b>	<b>90</b>	<b>90</b>	<b>111</b>	<b>137</b>
<b>% Change</b>	<b>0.3%</b>	<b>45.2%</b>	<b>-0.5%</b>	<b>23.8%</b>	<b>23.3%</b>

## Free Cash Flow Data (Dec)

(US\$ Millions)	2022A	2023A	2024E	2025E	2026E
Net Income from Cont Operations (GAAP)	(12)	(13)	8	37	69
Depreciation & Amortization	61	72	72	69	68
Change in Working Capital	2	(20)	1	(9)	(11)
Deferred Taxation Charge	NA	NA	NA	NA	NA
Other Adjustments, Net	26	35	34	34	34
Capital Expenditure	(59)	(49)	(56)	(64)	(73)
<b>Free Cash Flow</b>	<b>18</b>	<b>25</b>	<b>59</b>	<b>67</b>	<b>87</b>
<b>% Change</b>	<b>-68.7%</b>	<b>36.9%</b>	<b>135.3%</b>	<b>13.9%</b>	<b>30.2%</b>
Share / Issue Repurchase	54	7	0	0	0
Cost of Dividends Paid	(1)	0	0	0	0
Change in Debt	(13)	2	0	1	1

## Balance Sheet Data (Dec)

(US\$ Millions)	2022A	2023A	2024E	2025E	2026E
Cash & Equivalents	107	89	127	170	230
Trade Receivables	103	142	152	174	198
Other Current Assets	32	36	41	46	53
Property, Plant & Equipment	116	101	117	140	173
Other Non-Current Assets	362	393	427	467	512
<b>Total Assets</b>	<b>719</b>	<b>760</b>	<b>863</b>	<b>997</b>	<b>1,165</b>
Short-Term Debt	2	3	3	3	4
Other Current Liabilities	401	438	473	511	553
Long-Term Debt	67	61	0	0	0
Other Non-Current Liabilities	19	6	6	7	7
<b>Total Liabilities</b>	<b>489</b>	<b>507</b>	<b>482</b>	<b>521</b>	<b>565</b>
<b>Total Equity</b>	<b>230</b>	<b>253</b>	<b>382</b>	<b>476</b>	<b>601</b>
<b>Total Equity &amp; Liabilities</b>	<b>719</b>	<b>760</b>	<b>863</b>	<b>997</b>	<b>1,165</b>

\* For full definitions of iQmethod<sup>SM</sup> measures, see page 12.

## Company Sector

Server & Enterprise Software

## Company Description

Vertex, headquartered in King of Prussia, Pennsylvania, is an on premise and cloud provider of tax compliance software (use tax, sales tax, value added tax) to large enterprises.

Vertex's solutions enable real time calculation of use tax at the point of sale and tax return filing. Vertex's system uses a robust database of transaction types, rates, rules, and borders across 19,000 jurisdictions in more than 130 countries.

## Investment Rationale

We believe that Vertex is positioned to continue capturing share of the \$3.6bn tax automation market, with key advantages such as 1) a comprehensive tax database spanning 19,000 jurisdictions, 2) deep integrations w/ key ERP/software providers, 3) ability to deploy via cloud or on prem, and 4) a large installed base of 4,000 customers. Our Neutral rating is valuation based. With the stock trading at a premium to the small cap SaaS group, we see the company improving growth and margins in the NT.

## Stock Data

Average Daily Volume 322,961

## Quarterly Earnings Estimates

	2023	2024
Q1	0.08A	0.13E
Q2	0.08A	0.12E
Q3	0.10A	0.13E
Q4	0.10A	0.16E

## Q4 earnings recap

Vertex reported solid Q4 results, with healthy top-line and margin upside. Total revenue of \$154.9mn (+18.1% y/y) exceeded our \$146mn estimate, driven by new customer wins and partner ecosystem strength. Subscription revenue of \$130.7mn (+17.9% y/y) exceeded our \$123mn estimate. Services revenues of \$24.2mn (+19.7% y/y) exceeded our \$22.9mn. ARR of \$512.5mn grew +18.9% y/y, keeping pace with a healthy Q3. NRR of 113% improved from 111% in Q3. Direct customer count increased to 4,310 from 4,303 in Q3. Gross revenue retention of 95% is within the historical range of 94-96%.

Cloud revenue was \$60.6mn (+29.9% y/y). Operating margin of 18.2% nicely exceeded our 16.5% forecast on sales and marketing and R&D leverage on recent partnership investments. Management provided a 1Q24 rev guidance for \$154mn at the midpoint (+16.2% y/y) and adjusted EBITDA margin guide of 19.5%, versus our \$148.2mn and 20.5%, respectively. The company raised the outlook for FY24 adjusted EBITDA to \$130-\$135 million, translating to EBITDA margin of 20.2% versus our prior 21.3%

### Exhibit 1: Variance

Total revenue exceeded our estimate by 6.1%

\$000s	4Q23A		
	BofA Estimate	Actual	Variance
Total revenue	145,954.7	154,914.0	6.1%
y/y change %	11.3%	18.1%	683bps
ARR	507,996	512,500	0.9%
y/y change %	17.8%	18.9%	104bps
Ending customer count	4,321.2	4,310.4	(0.3%)
y/y change %	0.7%	0.5%	(25bps)
Total Billings	172,665.1	180,819.0	4.7%
y/y change %	10.3%	15.5%	521bps
PF Operating income	24,100.8	28,239.0	17.2%
PF operating margin	16.5%	18.2%	172bps
Adjusted EBITDA	28,596.6	32,039.0	12.0%
Adjusted EBITDA margin	19.6%	20.7%	109bps
PF EPS	\$0.11	\$0.10	(2.0%)
Cash From Operations	61,124.0	47,636.0	(28.3%)
OCF margin	41.9%	30.7%	(1113bps)
Free cash flow	47,826.8	28,843.0	(65.8%)
FCF margin	32.8%	18.6%	(1415bps)

Source: BofA Global Research estimates, company report

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**Exhibit 2: Estimate revisions**

We forecast total revenue of \$655.2mn in FY24

	1Q24E			FY24E			FY25E			FY26E		
\$000s	New Estimate	Old Estimate	Change %	New Estimate	Old Estimate	Change %	New Estimate	Old Estimate	Change %	New Estimate	Old Estimate	Change %
Total revenue	154,231.8	148,246.4	4.0%	655,198.8	631,678.5	3.7%	746,926.7	710,066.6	5.2%	851,496.4	N/A	N/A
y/y change %	16.2%	11.7%	5bps	14.5%	12.1%	2bps	14.0%	12.4%	2bps	14.0%	N/A	N/A
Guidance	152,000-156,000			650,000-660,000								
ARR	497,264	484,292	2.7%	560,523	555,597	0.9%	613,045	607,658	0.9%	670,490	N/A	N/A
y/y change %	9.4%	9.4%	0bps	9.4%	9.4%	0bps	9.4%	9.4%	0bps	9.4%	N/A	N/A
Ending customer count	4,317.6	4,339.3	(0.5%)	4,338.0	4,391.9	(1.2%)	4,362.9	4,457.1	(2.1%)	4,385.8	N/A	N/A
y/y change %	0.9%	1.4%	(1bps)	0.6%	1.6%	(1bps)	0.6%	1.5%	(1bps)	0.5%	N/A	N/A
Total Billings	158,405.5	152,431.5	3.9%	669,443.9	646,809.7	3.5%	761,864.9	725,977.8	4.9%	867,161.6	N/A	N/A
y/y change %	15.9%	11.5%	4bps	14.2%	11.9%	2bps	13.8%	12.2%	2bps	13.8%	N/A	N/A
PF Operating income	25,721.2	25,967.0	(0.9%)	111,352.9	112,928.1	(1.4%)	137,974.0	136,288.6	1.2%	170,278.3	N/A	N/A
PF operating margin	16.7%	17.5%	(1bps)	17.0%	17.9%	(1bps)	18.5%	19.2%	(1bps)	20.0%	N/A	N/A
Adjusted EBITDA	30,023.4	30,349.5	(1.1%)	132,771.6	134,714.1	(1.4%)	164,009.5	173,852.1	(5.7%)	201,801.0	N/A	N/A
Adjusted EBITDA margin	19.5%	20.5%	(1bps)	20.3%	21.3%	(1bps)	22.0%	24.5%	(3bps)	23.7%	N/A	N/A
Guidance	29,000-31,000			130,000-135,000								
PF EPS	\$0.13	\$0.13	(0.0%)	\$0.54	\$0.54	(0.5%)	\$0.64	\$0.63	2.1%	\$0.76	N/A	N/A
Cash From Operations	46,776.9	23,895.6	48.9%	115,377.7	116,804.7	(1.2%)	131,472.8	151,007.2	(14.9%)	160,733.0	N/A	N/A
OCF margin	30.3%	16.1%	14bps	17.6%	18.5%	(1bps)	17.6%	21.3%	(4bps)	18.9%	N/A	N/A
Free cash flow	28,391.3	7,952.8	72.0%	37,272.9	46,466.0	(24.7%)	42,433.3	71,940.6	(69.5%)	59,227.9	N/A	N/A
FCF margin	18.4%	5.4%	13bps	5.7%	7.4%	(2bps)	5.7%	10.1%	(4bps)	7.0%	N/A	N/A

Source: BofA Global Research estimates, company report

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**Exhibit 3: Income statement**

We forecast FY24 revenue of \$655.2mn

\$ Thousands	YEAR	Mar	Jun	Sep	Dec	YEAR	Mar	Jun	Sep	Dec	YEAR	YEAR
	FY23A	1Q24E	2Q24E	3Q24E	4Q24E	FY24E	1Q25E	2Q25E	3Q25E	4Q25E	FY25E	FY26E
Software subscriptions	<b>480,830</b>	129,886	135,511	138,265	148,992	<b>552,655</b>	148,070	154,483	157,622	169,851	<b>630,027</b>	<b>718,230</b>
Services	<b>91,557</b>	24,345	24,482	26,591	27,125	<b>102,544</b>	27,754	27,910	30,314	30,923	<b>116,900</b>	<b>133,266</b>
<b>Total Revenue</b>	<b>572,387</b>	<b>154,232</b>	<b>159,993</b>	<b>164,856</b>	<b>176,118</b>	<b>655,199</b>	<b>175,824</b>	<b>182,393</b>	<b>187,936</b>	<b>200,774</b>	<b>746,927</b>	<b>851,496</b>
Software subscriptions y/y	15.7%	17.0%	15.0%	14.0%	14.0%	14.9%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%
Services y/y	20.2%	12.0%	12.0%	12.0%	12.0%	12.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%
<b>Total revenue y/y</b>	<b>16.4%</b>	<b>16.2%</b>	<b>14.5%</b>	<b>13.7%</b>	<b>13.7%</b>	<b>14.5%</b>	<b>14.0%</b>	<b>14.0%</b>	<b>14.0%</b>	<b>14.0%</b>	<b>14.0%</b>	<b>14.0%</b>
Software subscriptions	106,038	30,169	31,476	32,115	34,607	128,367	34,393	35,882	36,611	39,452	146,339	166,826
Services	59,042	15,129	17,021	17,208	16,770	66,127	17,774	18,985	19,708	19,179	75,646	86,237
<b>Cost of revenue</b>	<b>165,080</b>	<b>45,298</b>	<b>48,496</b>	<b>49,323</b>	<b>51,377</b>	<b>194,494</b>	<b>52,167</b>	<b>54,867</b>	<b>56,319</b>	<b>58,631</b>	<b>221,985</b>	<b>253,063</b>
<b>Adjusted Gross Profit</b>	<b>407,307</b>	<b>108,934</b>	<b>111,497</b>	<b>115,533</b>	<b>124,741</b>	<b>460,705</b>	<b>123,657</b>	<b>127,525</b>	<b>131,617</b>	<b>142,143</b>	<b>524,942</b>	<b>598,434</b>
<b>Operating Expenses</b>												
Research and development	52,218	11,669	12,835	14,179	14,620	53,303	14,885	15,361	15,788	16,065	62,099	69,090
Sales and marketing	129,216	34,948	36,392	37,709	39,956	149,005	40,193	40,210	42,049	44,144	166,596	187,746
General and administrative	124,724	32,249	33,292	31,889	32,205	129,635	34,127	35,217	35,414	35,911	140,668	151,250
Depreciation	15,202	4,346	4,441	4,299	4,321	17,408	4,427	4,516	4,337	4,324	17,605	20,069
Impairment of asset + Other (income) expense, net	300	-	-	-	-	-	-	-	-	-	-	-
<b>Total Operating Expenses</b>	<b>321,660</b>	<b>83,212</b>	<b>86,960</b>	<b>88,076</b>	<b>91,103</b>	<b>349,352</b>	<b>93,631</b>	<b>95,305</b>	<b>97,588</b>	<b>100,444</b>	<b>386,968</b>	<b>428,155</b>
<b>Income (Loss) from Operations</b>	<b>85,647</b>	<b>25,721</b>	<b>24,537</b>	<b>27,457</b>	<b>33,638</b>	<b>111,353</b>	<b>30,026</b>	<b>32,221</b>	<b>34,029</b>	<b>41,699</b>	<b>137,974</b>	<b>170,278</b>
<b>EBITDA</b>	<b>100,758</b>	<b>30,023</b>	<b>29,473</b>	<b>32,928</b>	<b>40,348</b>	<b>132,772</b>	<b>35,526</b>	<b>38,328</b>	<b>40,649</b>	<b>49,507</b>	<b>164,010</b>	<b>201,801</b>
Other Income (Expenses), net	4,164	(150)	(150)	(150)	(150)	(600)	(150)	(150)	(150)	(150)	(600)	(555)
<b>Pretax income (loss)</b>	<b>81,483</b>	<b>25,871</b>	<b>24,687</b>	<b>27,607</b>	<b>33,788</b>	<b>111,953</b>	<b>30,176</b>	<b>32,371</b>	<b>34,179</b>	<b>41,849</b>	<b>138,574</b>	<b>170,833</b>
Income tax provision	(8,581)	5,157	4,920	5,503	6,735	22,314	6,015	6,452	6,812	8,341	27,620	34,050
<b>Net income (pro forma)</b>	<b>90,064</b>	<b>20,715</b>	<b>19,766</b>	<b>22,104</b>	<b>27,054</b>	<b>89,639</b>	<b>24,161</b>	<b>25,919</b>	<b>27,366</b>	<b>33,508</b>	<b>110,954</b>	<b>136,783</b>
<b>EPS (pro forma)</b>	<b>\$0.56</b>	<b>\$0.13</b>	<b>\$0.12</b>	<b>\$0.13</b>	<b>\$0.16</b>	<b>\$0.54</b>	<b>\$0.14</b>	<b>\$0.15</b>	<b>\$0.16</b>	<b>\$0.19</b>	<b>\$0.64</b>	<b>\$0.76</b>
<b>EPS (GAAP)</b>	<b>(\$0.24)</b>	<b>\$0.00</b>	<b>(\$0.01)</b>	<b>\$0.02</b>	<b>\$0.07</b>	<b>\$0.09</b>	<b>\$0.06</b>	<b>\$0.08</b>	<b>\$0.09</b>	<b>\$0.15</b>	<b>\$0.37</b>	<b>\$0.67</b>
Shares outstanding (diluted)	161,390	163,993	165,633	167,289	168,962	166,469	170,651	172,358	174,082	175,822	173,228	180,262

Source: BofA Global Research estimates, company report

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**Exhibit 4: Income Statement analysis**

We forecast EBITDA margin of 20.3% in FY24

\$ Thousands	YEAR	Mar	Jun	Sep	Dec	YEAR	Mar	Jun	Sep	Dec	YEAR	YEAR
	FY23A	1Q24E	2Q24E	3Q24E	4Q24E	FY24E	1Q25E	2Q25E	3Q25E	4Q25E	FY25E	FY26E
<b>Margin Analysis (Non-GAAP)</b>												
Subscription gross margin	77.9%	76.8%	76.8%	76.8%	76.8%	76.8%	76.8%	76.8%	76.8%	76.8%	76.8%	76.8%
Services gross margin	35.5%	37.9%	30.5%	35.3%	38.2%	35.5%	36.0%	32.0%	35.0%	38.0%	35.3%	35.3%
<b>Gross Margin</b>	<b>71.2%</b>	<b>70.6%</b>	<b>69.7%</b>	<b>70.1%</b>	<b>70.8%</b>	<b>70.3%</b>	<b>70.3%</b>	<b>69.9%</b>	<b>70.0%</b>	<b>70.8%</b>	<b>70.3%</b>	<b>70.3%</b>
<b>Operating Expenses</b>												
Research & Development	9.1%	7.6%	8.0%	8.6%	8.3%	8.1%	8.5%	8.4%	8.4%	8.0%	8.3%	8.1%
Sales & Marketing	22.6%	22.7%	22.7%	22.9%	22.7%	22.7%	22.9%	22.0%	22.4%	22.0%	22.3%	22.0%
General & Administrative	21.8%	20.9%	20.8%	19.3%	18.3%	19.8%	19.4%	19.3%	18.8%	17.9%	18.8%	17.8%
Depreciation	2.7%	2.8%	2.8%	2.6%	2.5%	2.7%	2.5%	2.5%	2.3%	2.2%	2.4%	2.4%
Incr. Revenue/S&M	0.63x					0.56x					0.55x	0.56x
<b>Operating Margin</b>	<b>15.0%</b>	<b>16.7%</b>	<b>15.3%</b>	<b>16.7%</b>	<b>19.1%</b>	<b>17.0%</b>	<b>17.1%</b>	<b>17.7%</b>	<b>18.1%</b>	<b>20.8%</b>	<b>18.5%</b>	<b>20.0%</b>
<b>EBITDA margin</b>	<b>17.6%</b>	<b>19.5%</b>	<b>18.4%</b>	<b>20.0%</b>	<b>22.9%</b>	<b>20.3%</b>	<b>20.2%</b>	<b>21.0%</b>	<b>21.6%</b>	<b>24.7%</b>	<b>22.0%</b>	<b>23.7%</b>
Pretax margin	14.2%	16.8%	15.4%	16.7%	19.2%	17.1%	17.2%	17.7%	18.2%	20.8%	18.6%	20.1%
Pro forma tax rate	-10.5%	19.9%	19.9%	19.9%	19.9%	19.9%	19.9%	19.9%	19.9%	19.9%	19.9%	19.9%
Net Margin	15.7%	13.4%	12.4%	13.4%	15.4%	13.7%	13.7%	14.2%	14.6%	16.7%	14.9%	16.1%
<b>Growth Rates</b>												
<b>Quarter-to-Quarter</b>												
Subscription		-0.6%	4.3%	2.0%	7.8%		-0.6%	4.3%	2.0%	7.8%		
Services		0.5%	0.6%	8.6%	2.0%		2.3%	0.6%	8.6%	2.0%		
Total Revenue		-0.4%	3.7%	3.0%	6.8%		-0.2%	3.7%	3.0%	6.8%		
Gross profit		-0.6%	2.4%	3.6%	8.0%		-0.9%	3.1%	3.2%	8.0%		
Operating Income		-8.9%	-4.6%	11.9%	22.5%		-10.7%	7.3%	5.6%	22.5%		
Net Income		21.7%	-4.6%	11.8%	22.4%		-10.7%	7.3%	5.6%	22.4%		
<b>EPS - Pro Forma</b>												
<b>Year-over-Year</b>												
Subscription	<b>15.7%</b>	17.0%	15.0%	14.0%	14.0%	<b>14.9%</b>	14.0%	14.0%	14.0%	14.0%	<b>14.0%</b>	<b>14.0%</b>
Services	<b>20.2%</b>	12.0%	12.0%	12.0%	12.0%	<b>12.0%</b>	14.0%	14.0%	14.0%	14.0%	<b>14.0%</b>	<b>14.0%</b>
Total Revenue	<b>16.4%</b>	16.2%	14.5%	13.7%	13.7%	<b>14.5%</b>	14.0%	14.0%	14.0%	14.0%	<b>14.0%</b>	<b>14.0%</b>
COGS	<b>14.1%</b>	20.9%	19.4%	18.4%	13.3%	<b>17.8%</b>	15.2%	13.1%	14.2%	14.1%	<b>14.1%</b>	<b>14.0%</b>
Gross profit	<b>17.4%</b>	14.3%	12.5%	11.8%	13.8%	<b>13.1%</b>	13.5%	14.4%	13.9%	14.0%	<b>13.9%</b>	<b>14.0%</b>
Operating Income	<b>29.3%</b>	56.3%	35.5%	20.2%	19.1%	<b>30.0%</b>	16.7%	31.3%	23.9%	24.0%	<b>23.9%</b>	<b>23.4%</b>
Net Income	<b>45.2%</b>	65.4%	45.7%	33.4%	59.0%	<b>-0.5%</b>	16.6%	31.1%	23.8%	23.9%	<b>23.8%</b>	<b>23.3%</b>

Source: BofA Global Research estimates, company report

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**Exhibit 5: Balance Sheet**

We forecast cash and equivalents of \$126.6mn in FY24

\$ Thousands	YEAR	Mar	Jun	Sep	Dec	YEAR	Mar	Jun	Sep	Dec	YEAR	YEAR
	FY23A	1Q24E	2Q24E	3Q24E	4Q24E	FY24E	1Q25E	2Q25E	3Q25E	4Q25E	FY25E	FY26E
<b>Current Assets</b>												
Cash and Cash Equivalents	<b>68,175</b>	126,337	104,824	134,692	126,622	<b>126,622</b>	161,064	141,851	178,499	169,609	<b>169,609</b>	<b>229,746</b>
Restricted cash (funds held for customers)	<b>20,976</b>	-	-	-	-	-	-	-	-	-	-	-
Accounts and other receivables, net	<b>141,752</b>	134,811	139,851	138,415	152,348	<b>152,348</b>	153,685	159,430	157,793	173,677	<b>173,677</b>	<b>197,992</b>
Advances to stockholders	-	-	-	-	-	-	-	-	-	-	-	-
Prepaid Expenses and Other	<b>35,718</b>	39,571	38,055	31,786	40,607	<b>40,607</b>	45,111	43,383	36,236	46,292	<b>46,292</b>	<b>52,773</b>
<b>Total Current Assets</b>	<b>266,621</b>	<b>300,719</b>	<b>282,730</b>	<b>304,894</b>	<b>319,577</b>	<b>319,577</b>	<b>359,860</b>	<b>344,664</b>	<b>372,529</b>	<b>389,578</b>	<b>389,578</b>	<b>480,510</b>
Property and Equipment, net	<b>100,734</b>	104,008	107,777	111,965	116,630	<b>116,630</b>	121,762	127,459	133,633	140,420	<b>140,420</b>	<b>173,210</b>
Capitalized software	<b>38,771</b>	43,857	49,134	54,572	60,384	<b>60,384</b>	66,186	72,205	78,408	85,037	<b>85,037</b>	<b>113,156</b>
Goodwill	<b>260,238</b>	260,238	260,238	260,238	260,238	<b>260,238</b>	260,238	260,238	260,238	260,238	<b>260,238</b>	<b>260,238</b>
Deferred commissions	<b>21,237</b>	18,497	19,156	19,431	24,144	<b>24,144</b>	21,087	21,838	22,152	27,524	<b>27,524</b>	<b>31,377</b>
Other Assets	<b>72,326</b>	72,759	87,092	81,013	82,225	<b>82,225</b>	82,945	99,285	92,355	93,737	<b>93,737</b>	<b>106,860</b>
<b>Total assets</b>	<b>759,927</b>	<b>800,078</b>	<b>806,128</b>	<b>832,113</b>	<b>863,198</b>	<b>863,198</b>	<b>912,077</b>	<b>925,690</b>	<b>959,315</b>	<b>996,534</b>	<b>996,534</b>	<b>1,165,352</b>
<b>Current Liabilities</b>												
Current portion of LT debt	<b>2,500</b>	2,905	2,863	2,842	2,842	<b>2,842</b>	3,311	3,264	3,240	3,240	<b>3,240</b>	<b>3,694</b>
Accounts Payable	<b>23,596</b>	20,239	25,207	27,712	26,826	<b>26,826</b>	23,072	28,736	31,592	30,581	<b>30,581</b>	<b>34,863</b>
Accrued Expenses	<b>44,735</b>	64,941	64,127	56,398	50,858	<b>50,858</b>	74,032	73,105	64,293	57,978	<b>57,978</b>	<b>66,095</b>
Distributions payable	-	-	-	-	-	-	-	-	-	-	-	-
Customer funds obligations	<b>17,731</b>	26,849	30,458	33,098	20,158	<b>20,158</b>	30,608	34,722	37,732	22,980	<b>22,980</b>	<b>26,197</b>
Accrued compensation (variable, deferred)	<b>46,382</b>	29,672	31,334	46,136	52,730	<b>52,730</b>	33,826	35,721	52,595	60,113	<b>60,113</b>	<b>68,528</b>
Deferred Revenue, current portion	<b>290,143</b>	289,436	287,433	277,671	304,263	<b>304,263</b>	303,521	301,420	291,183	319,069	<b>319,069</b>	<b>334,597</b>
Deferred rent and other	<b>15,692</b>	24,956	25,601	25,149	17,840	<b>17,840</b>	28,450	29,185	28,670	20,337	<b>20,337</b>	<b>23,185</b>
<b>Total Current Liabilities</b>	<b>440,779</b>	<b>458,996</b>	<b>467,023</b>	<b>469,005</b>	<b>475,517</b>	<b>475,517</b>	<b>496,820</b>	<b>506,154</b>	<b>509,305</b>	<b>514,299</b>	<b>514,299</b>	<b>557,159</b>
<b>Long-Term Liabilities</b>												
Deferred compensation	-	-	-	-	-	-	-	-	-	-	-	-
Deferred Revenue, LT portion	<b>2,577</b>	7,458	3,103	2,129	2,702	<b>2,702</b>	7,821	3,254	2,232	2,834	<b>2,834</b>	<b>2,972</b>
LT debt	<b>60,626</b>	-	-	-	-	-	-	-	-	-	-	-
Deferred other liabilities	<b>2,964</b>	7,938	1,933	2,787	3,370	<b>3,370</b>	9,049	2,204	3,177	3,841	<b>3,841</b>	<b>4,379</b>
<b>Total Liabilities</b>	<b>506,946</b>	<b>474,392</b>	<b>472,060</b>	<b>473,921</b>	<b>481,589</b>	<b>481,589</b>	<b>513,690</b>	<b>511,612</b>	<b>514,715</b>	<b>520,974</b>	<b>520,974</b>	<b>564,510</b>
Options for redeemable shares	-	-	-	-	-	-	-	-	-	-	-	-
<b>Stockholders' Equity (Deficit)</b>												
Class B voting common stock	<b>154</b>	154	154	154	154	<b>154</b>	154	154	154	154	<b>154</b>	<b>154</b>



**Exhibit 5: Balance Sheet**

We forecast cash and equivalents of \$126.6mn in FY24

Additional Paid-in Capital	<b>275,155</b>	275,155	275,155	275,155	275,155	<b>275,155</b>	275,155	275,155	275,155	275,155	<b>275,155</b>	<b>275,155</b>
Accumulated deficit	<b>(586)</b>	72,119	80,502	104,625	128,042	<b>128,042</b>	144,820	160,511	191,033	221,993	<b>221,993</b>	<b>347,275</b>
Accumulated Other Comprehensive Income (Loss)	<b>(21,742)</b>	(21,742)	(21,742)	(21,742)	(21,742)	<b>(21,742)</b>	(21,742)	(21,742)	(21,742)	(21,742)	<b>(21,742)</b>	<b>(21,742)</b>
Treasury stock	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Stockholders' Equity (Deficit)</b>	<b>252,981</b>	<b>325,686</b>	<b>334,069</b>	<b>358,192</b>	<b>381,609</b>	<b>381,609</b>	<b>398,387</b>	<b>414,078</b>	<b>444,600</b>	<b>475,560</b>	<b>475,560</b>	<b>600,842</b>
<b>Total liabilities and stockholders' equity</b>	<b>759,927</b>	<b>800,078</b>	<b>806,128</b>	<b>832,113</b>	<b>863,198</b>	<b>863,198</b>	<b>912,077</b>	<b>925,690</b>	<b>959,315</b>	<b>996,534</b>	<b>996,534</b>	<b>1,165,352</b>

Source: BofA Global Research estimates, company report

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**Exhibit 6: Cash flow statement**

We forecast operating cash flow of \$115.4mn in FY24

\$ Thousands	YEAR	Mar	Jun	Sep	Dec	YEAR	Mar	Jun	Sep	Dec	YEAR	YEAR
	FY23A	1Q24E	2Q24E	3Q24E	4Q24E	FY24E	1Q25E	2Q25E	3Q25E	4Q25E	FY25E	FY26E
<b>GAAP Net income (loss)</b>	<b>(13,093)</b>	<b>360</b>	<b>(588)</b>	<b>1,750</b>	<b>6,699</b>	<b>8,222</b>	<b>5,706</b>	<b>7,464</b>	<b>8,912</b>	<b>15,053</b>	<b>37,135</b>	<b>69,422</b>
Depreciation and amortization	<b>71,891</b>	16,966	17,599	18,134	19,373	<b>72,072</b>	16,264	16,871	17,384	18,572	<b>69,091</b>	<b>68,120</b>
Impairment of asset	-	-	-	-	-	-	-	-	-	-	-	-
Provision for subscription cancellations and non-renewals	<b>2,083</b>	600	600	600	600	<b>2,399</b>	600	600	600	600	<b>2,399</b>	<b>2,399</b>
Amortization of deferred financing costs	<b>266</b>	207	207	207	207	<b>828</b>	207	207	207	207	<b>828</b>	<b>828</b>
Stock based compensation	<b>33,919</b>	7,691	7,691	7,691	7,691	<b>30,764</b>	7,691	7,691	7,691	7,691	<b>30,764</b>	<b>30,764</b>
Other	<b>(1,082)</b>	-	-	-	-	-	-	-	-	-	-	-
<b>Changes in assets and liabilities:</b>												
Accounts receivable	<b>(45,222)</b>	6,941	(5,040)	1,436	(13,933)	<b>(10,596)</b>	(1,336)	(5,746)	1,637	(15,883)	<b>(21,329)</b>	<b>(24,315)</b>
Advances to stockholders	-	-	-	-	-	-	-	-	-	-	-	-
Prepays and other current assets	<b>(6,354)</b>	(3,881)	(12,859)	12,327	(10,032)	<b>(14,446)</b>	(4,755)	(14,659)	14,052	(11,437)	<b>(16,799)</b>	<b>(19,150)</b>
Deferred commissions	<b>(5,774)</b>	2,740	(659)	(275)	(4,713)	<b>(2,907)</b>	3,057	(751)	(313)	(5,372)	<b>(3,380)</b>	<b>(3,853)</b>
Accounts payable and accrued expenses	<b>15,078</b>	16,848	4,154	(5,224)	(6,426)	<b>9,353</b>	19,421	4,736	(5,955)	(7,326)	<b>10,876</b>	<b>12,398</b>
Accrued compensation	<b>7,516</b>	(16,710)	1,663	14,802	6,594	<b>6,348</b>	(18,905)	1,896	16,874	7,517	<b>7,382</b>	<b>8,416</b>
Deferred revenue	<b>18,172</b>	4,174	(6,358)	(10,736)	27,166	<b>14,245</b>	4,377	(6,667)	(11,259)	28,488	<b>14,938</b>	<b>15,665</b>
Other	<b>(3,068)</b>	10,842	(5,400)	380	(6,726)	<b>(904)</b>	12,958	(6,156)	434	(7,668)	<b>(432)</b>	<b>39</b>
<b>Net cash provided by (used in) operating activities</b>	<b>74,332</b>	<b>46,777</b>	<b>1,010</b>	<b>41,092</b>	<b>26,500</b>	<b>115,378</b>	<b>45,285</b>	<b>5,484</b>	<b>50,263</b>	<b>30,441</b>	<b>131,473</b>	<b>160,733</b>
<b>CASH FLOWS FROM INVESTING ACTIVITIES</b>												
Acquisition	-	-	-	-	-	-	-	-	-	-	-	-
Property and equipment additions	<b>(49,261)</b>	(13,274)	(13,769)	(14,188)	(15,157)	<b>(56,388)</b>	(15,132)	(15,697)	(16,174)	(17,279)	<b>(64,282)</b>	<b>(73,282)</b>
Capitalized software additions	<b>(18,972)</b>	(5,112)	(5,303)	(5,464)	(5,837)	<b>(21,717)</b>	(5,828)	(6,045)	(6,229)	(6,655)	<b>(24,757)</b>	<b>(28,223)</b>
Purchase of Investment Securities	-	-	-	-	-	-	-	-	-	-	-	-
<b>Net cash provided by (used in) investing activities</b>	<b>(66,171)</b>	<b>(18,386)</b>	<b>(19,072)</b>	<b>(19,652)</b>	<b>(20,995)</b>	<b>(78,105)</b>	<b>(20,960)</b>	<b>(21,743)</b>	<b>(22,403)</b>	<b>(23,934)</b>	<b>(89,039)</b>	<b>(101,505)</b>
<b>CASH FLOWS FROM FINANCING ACTIVITIES</b>												
<b>Net cash provided (used in) financing activities</b>	<b>(26,482)</b>	<b>8,795</b>	<b>(3,450)</b>	<b>8,429</b>	<b>(13,575)</b>	<b>199</b>	<b>10,118</b>	<b>(2,955)</b>	<b>8,788</b>	<b>(15,397)</b>	<b>554</b>	<b>909</b>
<b>Effect of exchange rates on cash, cash equivalents, and restricted cash</b>	<b>724</b>	-	-	-	-	-	-	-	-	-	-	-
<b>Net change in cash and cash equivalents</b>	<b>(17,597)</b>	<b>37,187</b>	<b>(21,513)</b>	<b>29,868</b>	<b>(8,070)</b>	<b>37,472</b>	<b>34,443</b>	<b>(19,213)</b>	<b>36,648</b>	<b>(8,890)</b>	<b>42,987</b>	<b>60,137</b>
<b>Cash and cash equivalents at beginning of period</b>	<b>106,748</b>	<b>89,151</b>	<b>126,337</b>	<b>104,824</b>	<b>134,692</b>	<b>89,151</b>	<b>126,622</b>	<b>161,064</b>	<b>141,851</b>	<b>178,499</b>	<b>126,622</b>	<b>169,609</b>
<b>Cash and cash equivalents at end of period</b>	<b>89,151</b>	<b>126,337</b>	<b>104,824</b>	<b>134,692</b>	<b>126,622</b>	<b>126,622</b>	<b>161,064</b>	<b>141,851</b>	<b>178,499</b>	<b>169,609</b>	<b>169,609</b>	<b>229,746</b>

Source: BofA Global Research estimates, company report

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## Price objective basis & risk

### Vertex, Inc. (VERX)

Our PO of \$40 is based on an EV/sales multiple of 8.7x our C25 revenue estimate, representing a growth adjusted multiple of 0.6x, a slight premium to small cap software peer group at 0.4x EV/sales/growth, given our expectations for mid teens percentage subscription revenue growth over the longer term and limited margin expansion in the near-term.

Upside risks are 1) targets an underpenetrated market in the enterprise segment, 2) integrations with large ERP and back-office software providers, and 3) low churn given its target customers.

Downside risks are 1) growth is largely dependent on the rate of expansion and adoption in the large enterprise segment and adoption of Vertex's tax automation suite could be seen as a lower priority project which could result in slowing rate of expansion and growth, 2) near term margin pressure from lacking cloud datacenter scale, with cloud gross margin of 66% in FY19, low relative to other SaaS business at this scale (mid 80s) - an inability to drive meaningful scale in the cloud business could weigh on margin over the near and long term, and 3) fairly intense competitive environment from Big 4 accounting firms with outsourced tax services - an inability to maintain key product advantages (such as depth of integration with key large enterprise ERP vendors and broad global tax content database) could present the risk of slowing share gains or share losses which could curb growth.

## Analyst Certification

I, Brad Sills, 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 - Enterprise Software Coverage Cluster

Investment rating	Company	BofA Ticker	Bloomberg symbol	Analyst
<b>BUY</b>				
	8x8	EGHT	EGHT US	Michael J. Funk
	Adobe	ADBE	ADBE US	Brad Sills
	Alarm.com	ALRM	ALRM US	Michael J. Funk
	Amplitude, Inc.	AMPL	AMPL US	Koji Ikeda, CFA
	Asana	ASAN	ASAN US	Michael J. Funk
	BILL	BILL	BILL US	Brad Sills
	CCC Intelligent Solutions	CCCS	CCCS US	Michael J. Funk
	Dynatrace	DT	DT US	Koji Ikeda, CFA
	Elastic NV	ESTC	ESTC US	Koji Ikeda, CFA
	GitLab Inc.	GTLB	GTLB US	Koji Ikeda, CFA
	Global-e Online Ltd.	GLBE	GLBE US	Koji Ikeda, CFA
	HubSpot	HUBS	HUBS US	Brad Sills
	Informatica Inc.	INFA	INFA US	Koji Ikeda, CFA
	Intapp Inc.	INTA	INTA US	Koji Ikeda, CFA
	Intuit	INTU	INTU US	Brad Sills
	JFrog Ltd	FROG	FROG US	Koji Ikeda, CFA
	MeridianLink, Inc.	MLNK	MLNK US	Koji Ikeda, CFA
	Microsoft Corporation	MSFT	MSFT US	Brad Sills
	Monday.com	MNDY	MNDY US	Michael J. Funk
	MongoDB Inc	MDB	MDB US	Brad Sills
	nCino, Inc.	NCNO	NCNO US	Adam Bergere
	NICE Ltd.	NICE	NICE US	Michael J. Funk

**US - Enterprise Software Coverage Cluster**

Investment rating	Company	BofA Ticker	Bloomberg symbol	Analyst
	NICE Ltd.	NCSYF	NICE IT	Michael J. Funk
	PagerDuty	PD	PD US	Koji Ikeda, CFA
	PowerSchool Holdings, Inc.	PWSC	PWSC US	Koji Ikeda, CFA
	RingCentral	RNG	RNG US	Michael J. Funk
	Salesforce.com	CRM	CRM US	Brad Sills
	ServiceNow	NOW	NOW US	Brad Sills
	UiPath	PATH	PATH US	Brad Sills
	Unity	U	U US	Michael J. Funk
	Weave	WEAV	WEAV US	Michael J. Funk
	Workday Inc.	WDAY	WDAY US	Brad Sills
	Zeta Global	ZETA	ZETA US	Koji Ikeda, CFA
	ZoomInfo	ZI	ZI US	Koji Ikeda, CFA

**NEUTRAL**

	Autodesk	ADSK	ADSK US	Michael J. Funk
	Bentley Systems	BSY	BSY US	Michael J. Funk
	BigCommerce Holdings, Inc.	BIGC	BIGC US	Koji Ikeda, CFA
	Coveo	YCVO	CVO CN	Koji Ikeda, CFA
	Datadog Inc	DDOG	DDOG US	Koji Ikeda, CFA
	DocuSign	DOCU	DOCU US	Brad Sills
	Freshworks, Inc.	FRSH	FRSH US	Adam Bergere
	HashiCorp	HCP	HCP US	Brad Sills
	Jamf	JAMF	JAMF US	Koji Ikeda, CFA
	Lightspeed Commerce Inc.	LSPD	LSPD US	Koji Ikeda, CFA
	Lightspeed Commerce Inc.	YLSPD	LSPD CN	Koji Ikeda, CFA
	Oracle Corporation	ORCL	ORCL US	Brad Sills
	Paycom	PAYC	PAYC US	Adam Bergere
	Paylocity	PCTY	PCTY US	Adam Bergere
	Shopify, Inc.	SHOP	SHOP US	Brad Sills
	Snowflake	SNOW	SNOW US	Brad Sills
	Veeva Systems, Inc.	VEEV	VEEV US	Brad Sills
	Vertex, Inc.	VERX	VERX US	Brad Sills
	Zoom Video Communications	ZM	ZM US	Michael J. Funk

**UNDERPERFORM**

	AvidXchange, Inc.	AVDX	AVDX US	Brad Sills
	Blackbaud, Inc.	BLKB	BLKB US	Koji Ikeda, CFA
	BlackLine, Inc.	BL	BL US	Koji Ikeda, CFA
	C3.ai	AI	AI US	Brad Sills
	Confluent	CFLT	CFLT US	Brad Sills
	CS Disco, Inc.	LAW	LAW US	Koji Ikeda, CFA
	Dropbox	DBX	DBX US	Michael J. Funk
	Enfusion, Inc.	ENFN	ENFN US	Koji Ikeda, CFA
	Five9	FIVN	FIVN US	Michael J. Funk
	Guidewire Software, Inc.	GWRE	GWRE US	Michael J. Funk
	Smartsheet	SMAR	SMAR US	Michael J. Funk
	Twilio	TWLO	TWLO US	Michael J. Funk

**RSTR**

	Splunk	SPLK	SPLK US	Brad Sills
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## iQmethod<sup>SM</sup> 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 &amp; 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

EV / EBITDA

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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 31 Dec 2023)**

Coverage Universe	Count	Percent	Inv. Banking Relationships <sup>R1</sup>	Count	Percent
Buy	215	53.09%	Buy	111	51.63%
Hold	97	23.95%	Hold	45	46.39%
Sell	93	22.96%	Sell	24	25.81%

**Equity Investment Rating Distribution: Global Group (as of 31 Dec 2023)**

Coverage Universe	Count	Percent	Inv. Banking Relationships <sup>R1</sup>	Count	Percent
Buy	1895	53.62%	Buy	1083	57.15%
Hold	832	23.54%	Hold	454	54.57%
Sell	807	22.84%	Sell	383	47.46%

<sup>R1</sup> 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.

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

<sup>R2</sup> 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.

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