

## Software - China

## 2024 Year Ahead: Focus on quality stocks with structural growth

Industry Overview

## Cautiously optimistic on 2024 outlook

Software stocks under our coverage outperformed in 1Q23, with 30%+ return on average, but then de-rated for the rest of 2023 on weaker-than-expected downstream demand recovery (i.e., gov't and property). We are cautiously optimistic on the 2024 software outlook and expect 15% YoY growth in software spending in 2024E vs. 17% YoY in 2023E. Software names under our coverage are expected to post 20% YoY revenue growth on average in 2024 (vs. 12% in 2023E) after our 6% revenue estimate cut on average. We are selectively positive on stocks in ERP (enterprise resource planning), Huawei supply chain, and cybersecurity, but cautious on property/gov't-related software. Risks: Further de-rating on consensus cuts and weaker macroeconomic environment.

## Resilient downstream software spending trend

China software spending is largely concentrated in several sectors, namely (1) manufacturing & natural resources; (2) banking & investment services; (3) communications, media & services; and (4) government, which collectively accounted for 75% of total software spending in 2022, according to Gartner. We expect software spending from industrial enterprises to improve in 2024E, underpinned by gradual earnings improvement throughout 2023. We see potential stronger software spending from SOEs than POEs. However, we expect soft software spending from the government, at least in 1H24E. We think the easing measures over the last couple of months could partly help on the government's budget, while a clear turnaround needs to wait for more fiscal stimulus.

## Investment themes in 2024

1. AI application and monetization for more software companies.
2. Huawei business recovery (HarmonyOS / smartphone).
3. Software import substitution and enterprise digitalization trend on policy tailwind.
4. Data element development has received strong gov't support. Though still in initial stage, data security providers could benefit more in the longer term, in our view.

## Kingsoft Cloud – Neutral, new PO of US\$3.8/HK\$2.0

With the US curbs on AI chip export to China, we see increasing uncertainty of GPU availability for Kingsoft Cloud's AI business; as such, we cut our FY24-25E revenue by 6-8%. Rolling over the valuation, we adjust our PO to HK\$2.0 / US\$3.8 (from HK\$3.2/US\$6.1), based on 0.9x 12-month forward P/S (previously 1.5x), which is set at 50% discount (vs. previous 25%, due to slower revenue CAGR in FY23-25E) of market-cap-weighted average of China's independent cloud service providers listed in the A-share market.

09 January 2024

Equity  
China  
Software

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SoE: state-owned enterprises

PoE: private-owned enterprises

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**Refer to important disclosures on page 7 to 11. Analyst Certification on page 5. Price Objective Basis/Risk on page 5.**

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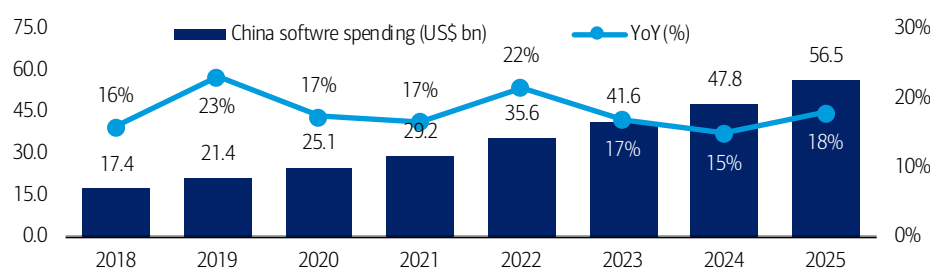
## 2024: Resilient growth with policy support

Total software spending in China has maintained rapid growth over the past few years, with 20% CAGR in 2018-22 to US\$35.6bn, and we expect China software spending to increase 17% YoY in 2023. Looking forward, we expect the growth will still be solid in the final two years of the 14th Fifth-Year Plan, with 15% YoY growth in 2024E, following by acceleration to 18% YoY in 2025E to US\$56.5bn, representing a CAGR of 16% in 2023-25E. We believe the growth in 2024 will be well supported by (1) stabilized GDP growth (according to BofA China economists' forecast); (2) continuing enterprises digitalization trend with gov't support; and (3) AI development.

BofA China economists recently revised up their 2023E GDP China GDP growth forecast to 5.3% (from 5.1%) and kept 2024/25 growth estimates at 4.8%/4.6%. The stable GDP growth has laid the foundation for China software sector growth as China software sector's quarterly revenue growth was highly correlated with China's GDP growth over the past 15 years, with 75% correlation, based on our estimates. Besides, the strategy set during the annual Central Economic Work Conference (CEWC) in Dec 2023 has underscored a strong commitment to technological innovation, which includes promoting new-type industrialization, fostering the growth of digital economy, expediting the development of AI, etc. We believe such policy support could further boost China software sector growth.

### Exhibit 1: China software spending forecast

We expect total software spending to post 16% CAGR in 2023-25E



Source: IDC, BofA Global Research estimates

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### Exhibit 2: Summary of key macro data and forecasts

We expect GDP growth at 4.8%/4.6% in 2024/25, supported by further policy-easing measures

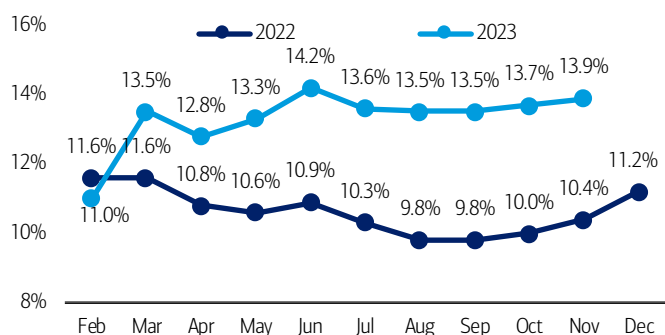
		2020	2021	2022	2023F	2024F	2025F
<b>GDP by expenditure</b>							
Real GDP Growth	% yoy	2.2	8.4	3.0	5.3	4.8	4.6
Final Consumption Expenditure	% yoy	-0.3	9.0	1.8	7.1	5.4	4.8
Gross Capital Formation	% yoy	4.2	3.9	3.5	4.7	4.3	4.2
Contribution to GDP Growth							
Net Exports	pp	0.6	1.9	0.5	-0.1	0.0	0.2
<b>Major activity indicators</b>							
Industrial Production	% yoy	2.8	9.6	3.6	4.6	4.6	4.2
Fixed Asset Investment	% yoy	2.9	4.9	5.1	3.4	5.0	4.8
Retail Sales	% yoy	-3.9	12.5	-0.2	7.6	6.5	6.3
Exports of Goods	% yoy	3.6	29.6	7.4	-5.5	2.8	5.3
Imports of Goods	% yoy	-0.6	30.0	1.1	-5.6	4.2	4.0
Trade Balance	US\$ bn	524	670	848	803	789	864
Current Account	% GDP	1.7	2.0	2.2	1.5	1.2	1.4
<b>Key price and policy indicators</b>							
CPI	% yoy	2.5	0.9	2.0	0.4	1.4	1.6
PPI	% yoy	-1.8	8.1	4.2	-2.9	1.2	1.4
1y Loan Prime Rate	%, year-end	3.85	3.80	3.65	3.45	3.45	3.35
USD/CNY	year-end	6.53	6.36	6.90	7.50	6.90	6.70

Source: BofA Global Research estimates, CEIC, Bloomberg

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### Exhibit 3: China software sector revenue growth (accumulative from beginning of the year)

China software sector revenue increased 13.9% YoY in 11M23

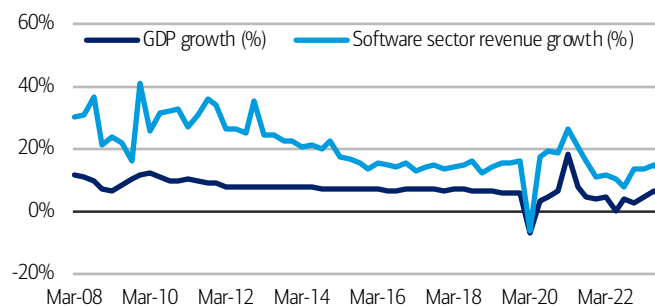


Source: MIIT, BofA Global Research

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### Exhibit 4: Quarterly GDP and China software sector revenue growth

The correlation between China software sector revenue growth and GDP growth is high at 75% over the past 15 years



Source: National Bureau of Statistics of China, BofA Global Research

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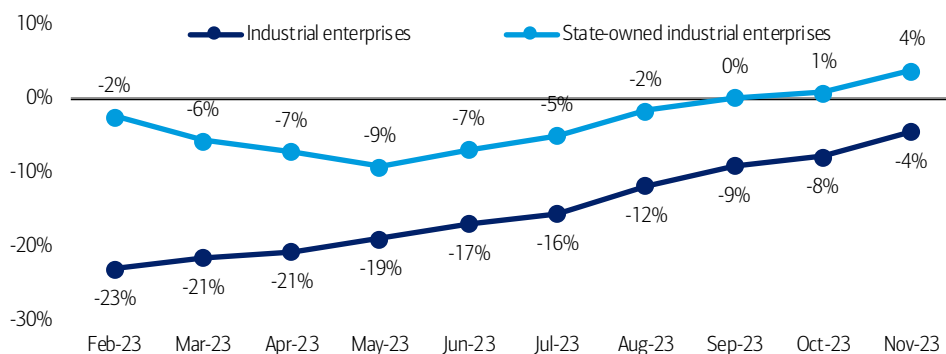
## Assessing downstream software spending wallet

China software spending is largely concentrated in several sectors, namely (1) manufacturing & natural resources; (2) banking & investment services; (3) communications, media & services; and (4) government, which collectively accounted for 75% of total software spending in 2022, according to Gartner.

**Manufacturing/Industrial:** We expect software spending from industrial enterprises to improve in 2024E, underpinned by gradual earnings improvement throughout 2023. We see potential stronger software spending from SOEs than POEs.

### Exhibit 5: Accumulative net profit growth of industrial enterprises in China

Earnings have been gradually improving for China industrial enterprises in 2023



Source: National Bureau of Statistics, BofA Global Research

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**Government:** We expect soft software spending from the government, at least in 1H24E. We think the easing measures over the last couple of months could partly help on the government's budget, while a clear turnaround needs to wait for more fiscal stimulus.

## Kingsoft Cloud (KC US/3896 HK) – Neutral, new PO of US\$3.8/HK\$2.0

### Mild topline growth; AI business likely to take time to bear fruit

With the US curbs on AI chip export to China, we see increasing uncertainty of GPU availability for Kingsoft Cloud's AI business, which could affect the revenue recovery of its public cloud segment amid ongoing scale-down of CDN (content delivery network) business. As such, we cut our FY24-25E revenue by 6-8%. We expect Kingsoft Cloud to post 3% and 15% revenue growth in FY24 and FY25, respectively.

#### Exhibit 6: Kingsoft Cloud: Estimates revisions

We cut our FY24-25E revenue forecast by 6-8%

(RMB mn)	FY23E			FY24E			FY25E		
	New	Old	Diff (%)	New	Old	Diff (%)	New	Old	Diff (%)
Revenue	6,979	6,984	-0.1	7,176	7,622	-5.9	8,248	8,945	-7.8
Non-GAAP Net profit (loss)	(1,376)	(1,377)	0.1	(1,144)	(1,132)	-1.1	(956)	(904)	-5.7

Source: BofA Global Research estimates

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Rolling over the valuation, we adjust our PO to HK\$2.0 / US\$3.8 (from HK\$3.2/US\$6.1), based on 0.9x 12-month forward P/S (previously 1.5x), which is set at 50% discount (vs. previous 25%, due to slower revenue CAGR in FY23-25E) of market-cap-weighted average of China's independent cloud service providers listed in A-share market after 50% A/H-share discount. The 50% A/H-share discount is set at the average share-price discount for all companies dual-listed in both A-share and H-share market.

We reiterate our Neutral on Kingsoft Cloud (1) mild top-line growth (9% CAGR) in FY23-25E but with a focus on improving profitability; and (2) uncertainty of AI revenue contribution in near term due to the tight supply of AI chips.

#### Exhibit 7: Kingsoft Cloud - income statement forecasts

We expect Kingsoft Cloud's revenue to decline 15% YoY in FY23 and grow 3%/15% YoY in FY24/25E

(RMB mn)	2021	YoY %	2022	YoY %	2023E	YoY %	2024E	YoY %	2025E	YoY %
Public cloud	6,159	19.2%	5,360	-13.0%	4,341	-19.0%	4,446	2.4%	5,136	15.5%
Enterprise cloud	2,898	111.1%	2,817	-2.8%	2,637	-6.4%	2,729	3.5%	3,112	14.0%
Others	4	-89.7%	3	-26.6%	2	-41.0%	0	-74.8%	0	0.0%
<b>Total revenue</b>	<b>9,061</b>	<b>37.8%</b>	<b>8,180</b>	<b>-9.7%</b>	<b>6,979</b>	<b>-14.7%</b>	<b>7,176</b>	<b>2.8%</b>	<b>8,248</b>	<b>14.9%</b>
Cost of revenue	(8,709)	40.0%	(7,751)	-11.0%	(6,174)	-20.3%	(6,180)	0.1%	(6,977)	12.9%
<b>Gross profit</b>	<b>351</b>	<b>-1.6%</b>	<b>430</b>	<b>22.3%</b>	<b>806</b>	<b>87.5%</b>	<b>996</b>	<b>23.6%</b>	<b>1,272</b>	<b>27.7%</b>
Gross margin (%)	3.9%	-1.6ppt	5.3%	1.4ppt	11.5%	6.3ppt	13.9%	2.3ppt	15.4%	1.5ppt
Selling and marketing expenses	(518)	26.6%	(560)	8.1%	(446)	-20.3%	(475)	6.5%	(519)	9.3%
% of revenue	5.7%	-0.5ppt	6.8%	1.1ppt	6.4%	-0.5ppt	6.6%	0.2ppt	6.3%	-0.3ppt
General and administrative expenses	(602)	58.4%	(1,150)	91.1%	(1,697)	47.6%	(966)	-43.1%	(1,042)	7.8%
% of revenue	6.6%	0.9ppt	14.1%	7.4ppt	24.3%	10.3ppt	13.5%	-10.9ppt	12.6%	-0.8ppt
Research and development expenses	(1,044)	34.7%	(971)	-7.0%	(796)	-18.0%	(767)	-3.7%	(764)	-0.3%
% of revenue	11.5%	-0.3ppt	11.9%	0.4ppt	11.4%	-0.5ppt	10.7%	-0.7ppt	9.3%	-1.4ppt
<b>Operating profit / (loss)</b>	<b>(1,812)</b>	<b>50.1%</b>	<b>(2,251)</b>	<b>24.2%</b>	<b>(2,134)</b>	<b>-5.2%</b>	<b>(1,212)</b>	<b>-43.2%</b>	<b>(1,054)</b>	<b>-13.1%</b>
Operating margin (%)	-20.0%	-1.6ppt	-27.5%	-7.5ppt	-30.6%	-3.1ppt	-16.9%	13.7ppt	-12.8%	4.1ppt
<b>Non-GAAP net profit / (loss)</b>	<b>(1,195)</b>	<b>45.6%</b>	<b>(1,994)</b>	<b>66.8%</b>	<b>(1,376)</b>	<b>-31.0%</b>	<b>(1,144)</b>	<b>-16.9%</b>	<b>(956)</b>	<b>-16.4%</b>
Net margin (%)	-13.2%	-0.7ppt	-24.4%	-11.2ppt	-19.7%	4.7ppt	-15.9%	3.8ppt	-11.6%	4.3ppt

Source: Company, BofA Global Research estimates

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## Price objective basis & risk

### Kingsoft Cloud (KCLHF / KC, HK\$1.66 / US\$3.18, C-2-9)

We derive our PO of HK\$3.2/US\$6.1, based on 1.5x 12mths forward P/S, which is set at 25% discount (due to slower revenue CAGR in FY22-25E) of market-cap weighted average of China's independent cloud service providers listed in A-share market after 50% A/H-share discount. The 50% A/H-share discount is set at the average share price discount for all companies dual-listed in both A-share and H-share market. We derive our PO on revenue multiple, because (1) Kingsoft Cloud is still loss making in near-term, and (2) we believe P/S multiple can better reflect its growth outlook, which investors care more about.

Upside risks: (1) stronger-than-expected revenue contribution from AI/LLM cloud business, 2) substantial demand increase from Kingsoft and Xiaomi ecosystem, and (3) significant demand recovery from the internet sector.

Downside risks: (1) pricing pressure from intensified competition, (2) high customer concentration, and (3) export restrictions of AI chips to China.

## Analyst Certification

I, Daley Li, CFA, 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.

## APR - Internet, Media and Software Coverage Cluster

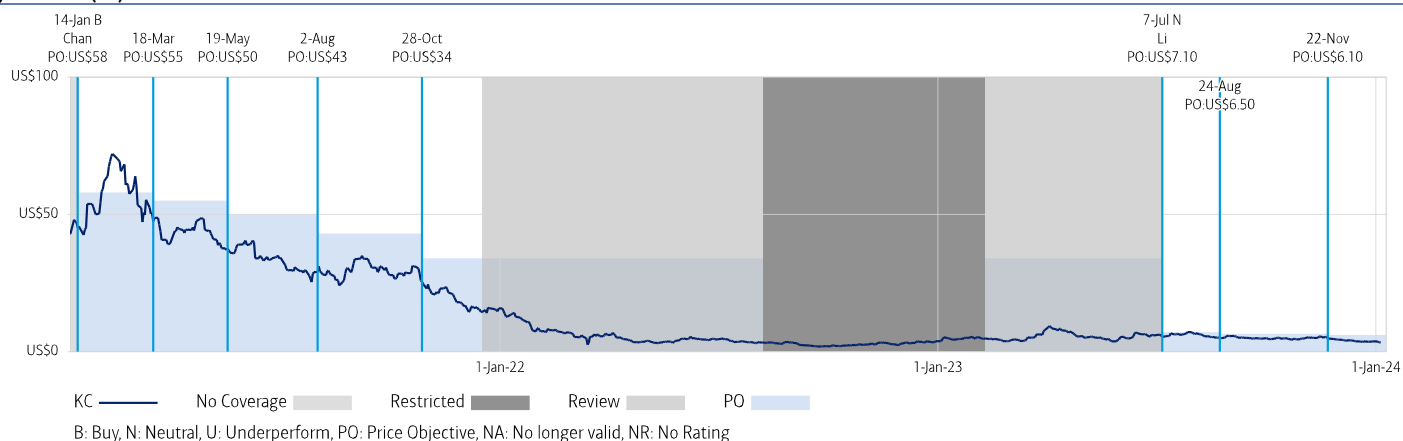
Investment rating	Company	BofA Ticker	Bloomberg symbol	Analyst
<b>BUY</b>	Agora	API	API US	Daley Li, CFA
	AiHuiShou	RERE	RERE US	Joyce Ju
	Alibaba Group	BABA	BABA US	Joyce Ju
	Alibaba Group	BABAF	9988 HK	Joyce Ju
	Alibaba Health	ALBHF	241 HK	Miranda Zhuang, CFA
	Baidu.com	BIDU	BIDU US	Miranda Zhuang, CFA
	Baidu.com	BAIDF	9888 HK	Miranda Zhuang, CFA
	Bilibili	BILI	BILI US	Lei Zhang
	Bilibili	BLBLF	9626 HK	Lei Zhang
	CAR Group	CRSLF	CARAU	Sriharsh Singh
	Chinasoft International	CFTLF	354 HK	Daley Li, CFA
	Cloud Music	XWJF	9899 HK	Lei Zhang
	Com2uS Corp	XOYAF	078340 KS	Jeehoon Jeong, CFA
	Dada Nexus	DADA	DADA US	Lei Zhang
	DBAPPSecurity	XDBAF	688023 CH	Daley Li, CFA
	Delhivery	XDVLf	DELHIVER IN	Sachin Salgaonkar
	Dingdong	DDL	DDL US	Joyce Ju
	East Money	XEQTF	300059 CH	Michael Li
	Grab Holdings	GRAB	GRAB US	Sachin Salgaonkar
	Hello Group	MOMO	MOMO US	Lei Zhang
	Hundsun Technologies	XYTGF	600570 CH	Daley Li, CFA
	HYBE	XBGOF	352820 KS	Susie Lee
	iQIYI	IQ	IQ US	Lei Zhang
	JD Health	JDHIF	6618 HK	Miranda Zhuang, CFA
	JD.com	JD	JD US	Joyce Ju
	JD.com	JDCMF	9618 HK	Joyce Ju
	JYP Entertainment	ALNNF	035900 KS	Susie Lee
	Kingdee International Software	KGDEF	268 HK	Daley Li, CFA
	Kingsoft Corporation	KSFTF	3888 HK	Daley Li, CFA
	Kuaishou	KUASF	1024 HK	Lei Zhang
	Makemytrip Limited	MMYT	MMYT US	Sachin Salgaonkar
	Meituan	MPNGF	3690 HK	Lei Zhang
	Naver Corporation	NHNCF	035420 KS	Susie Lee
	NetEase	NETTF	9999 HK	Lei Zhang
	NetEase, Inc	NTES	NTES US	Lei Zhang
	Nine Entertainment Company	NNMTF	NEC AU	Alice Lei, CFA
	Paytm	XUXBF	PAYTM IN	Sachin Salgaonkar
	Pinduoduo Inc.	PDD	PDD US	Joyce Ju
	Plan B Media PCL	XMKTF	PLANB TB	Thititthep Nophaket
	PT Bukalapak.com	BKLPF	BUKA IJ	Sachin Salgaonkar
	PVR-Inox Ltd	PVRLF	PVRINOX IN	Sachin Salgaonkar
	REA Group	RPGRF	REA AU	Sriharsh Singh
	Tencent Holdings	TCTZF	700 HK	Miranda Zhuang, CFA
	Tencent Music	TME	TME US	Lei Zhang
	Tencent Music	XWFWF	1698 HK	Lei Zhang
	Tongcheng Travel	TNGCF	780 HK	Janet Yang
	Trip.com Group	TCOM	TCOM US	Joyce Ju
	Trip.com Group	TRPCF	9961 HK	Joyce Ju
	TUHU Car	XTCRF	9690 HK	Miranda Zhuang, CFA
	Venustech	XVCGF	002439 CH	Daley Li, CFA
	Vipshop Holdings	VIPS	VIPS US	Joyce Ju
	Weibo Corporation	WB	WB US	Miranda Zhuang, CFA
	Weibo Corporation	WEIBF	9898 HK	Miranda Zhuang, CFA
	Xero Limited	XROLF	XRO AU	Sriharsh Singh
	YG Entertainment	XYEIF	122870 KS	Susie Lee
	Yonyou Network	XYNIF	600588 CH	Daley Li, CFA
	YY	YY	YY US	Lei Zhang
	Zee Entertainment Enterprises	XZETF	Z IN	Sachin Salgaonkar
	Zomato Limited	XMWRF	ZOMATO IN	Sachin Salgaonkar
<b>NEUTRAL</b>	AfreecaTV	WNTHF	067160 KS	Susie Lee
	Autohome	ATHM	ATHM US	Miranda Zhuang, CFA
	Autohome	XXYZF	2518 HK	Miranda Zhuang, CFA

## APR - Internet, Media and Software Coverage Cluster

Investment rating	Company	BofA Ticker	Bloomberg symbol	Analyst
	Baozun	BZUN	BZUN US	Joyce Ju
	Coupang	CPNG	CPNG US	Susie Lee
	Glodon Company	XGCOF	002410 CH	Daley Li, CFA
	GoTo Group	GTOFF	GOTO JJ	Sachin Salgaonkar
	Huya	HUYA	HUYA US	Lei Zhang
	Kakao Corp.	DAUCF	035720 KS	Susie Lee
	KE Holdings	BEKE	BEKE US	Miranda Zhuang, CFA
	KE Holdings	XSQRF	2423 HK	Miranda Zhuang, CFA
	Kingsoft Cloud	KC	KC US	Daley Li, CFA
	Kingsoft Cloud	KCLHF	3896 HK	Daley Li, CFA
	Krafton	XKINF	259960 KS	Susie Lee
	NCSOFT	NCSCF	036570 KS	Susie Lee
	Nykaa	XQQGF	NYKAA IN	Sachin Salgaonkar
	PB Fintech	XPFXF	POLICYBZ IN	Sachin Salgaonkar
	PropertyGuru	PGRU	PGRU US	Sachin Salgaonkar
	Sea Limited	SE	SE US	Sachin Salgaonkar
	Seek Limited	SKLTF	SEK AU	Sriharsh Singh
	Seven West Media	WANHF	SWM AU	Alice Lei, CFA
	The ONE Enterprise	XUFCF	ONEE TB	Thititthep Nophaket
	VGI Public Company Limited	XZQHF	VGI TB	Thititthep Nophaket
	Weimob	WEMXF	2013 HK	Daley Li, CFA
	WiseTech Global Limited	WTC HF	WTC AU	Ware Kuo
	XD Inc.	XDNCF	2400 HK	Lei Zhang
<b>UNDERPERFORM</b>				
	Altium Limited	ALMFF	ALU AU	Ware Kuo
	Appen Ltd	APPEF	APX AU	Ware Kuo
	BEC World	XBJHF	BEC TB	Thititthep Nophaket
	CJ ENM	CJHOF	035760 KS	Susie Lee
	Douyu	DOYU	DOYU US	Lei Zhang
	Indiamart Intermesh Limited	XEITF	INMART IN	Sachin Salgaonkar
	Info Edge	IFOEF	INFOE IN	Sachin Salgaonkar
	Kakao Games	XKKGf	293490 KS	Susie Lee
	Kingsoft Office	XBKOF	688111 CH	Daley Li, CFA
	Ming Yuan Cloud	XWTAF	909 HK	Daley Li, CFA
	NavInfo	XWLHF	002405 CH	Daley Li, CFA
	Netmarble	XLGHF	251270 KS	Susie Lee
	Pearl Abyss Corp	XEPAF	263750 KS	Susie Lee
	Ping An Healthcare and Technology	PANHF	1833 HK	Miranda Zhuang, CFA
	Qi An Xin	XQTDF	688561 CH	Daley Li, CFA
	Technology One Limited	THNOF	TNE AU	Ware Kuo
	ThunderSoft	XSTSf	300496 CH	Daley Li, CFA
	Zip Co Limited	ZIZTF	ZIP AU	Ware Kuo

## Disclosures

## Important Disclosures

**Kingsoft Cloud (KC) Price Chart**

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.

**Kingsoft Cloud (KCLHF) Price Chart**

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.



**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 <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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