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China Software & IT Services

Positive cloud outlook despite Russia-Ukraine crisis

Russia-Ukraine crisis may lengthen server delivery schedule as Ukraine produces >70% of global Neon, a necessary chemical for chip production. Meanwhile, AliCloud reported a mere +20% YoY growth in CY4Q21. We believe China IaaS + PaaS market remains strong (9M21 +48% YoY to US$15.3bn, according to IDC) but AliCloud share loss to Huawei/ China Telecom will become more obvious. We remain positive on 2022E China cloud outlook. **BUY GDS (GDS US) and Innolight (300308 CH).**

- **Russia-Ukraine crisis could deepen data enter chip shortage, resulting in lengthened server delivery schedule.** Three Ukrainian companies produce >70% of global Neon gas supply. Neon is a gaseous chemical element being used during chip-making process. Key global semiconductor companies (ASML/ Intel/ Micron /SK Hynix) do not expect any direct impact as they have built up inventory. This is not the first time facing Neon shortage globally (last one was in 2015-2016, triggered by Russian invasion into Ukraine's Crimean region in 2014) and that Neon price went up 10x during that period. If chip shortage deepens, we believe cloud expansion plan could experience delay as server delivery cycle lengthens, affecting move-in schedule and hence utilization rate for IDC.
- **Huawei/ China Telecom continue to gain share from AliCloud.** AliCloud CY4Q21 revenue merely grew at +20% YoY to RMB19.5bn due to 1) losing Bytedance overseas cloud order, 2) tightened regulations applied to online entertainment/ education sector and 3) losing SOEs/ gov't hybrid cloud orders to Huawei/ China Telecom, in our view. According to IDC data, China IaaS + PaaS market size was at US$5.70bn in 3Q21 (+48% YoY). AliCloud share loss (-3.5 ppts YoY to 38.2%) to Huawei (+1.5 ppts YoY to 10.7%) and China Telecom (+1.2 ppts YoY to 9.0%) became more obvious.
- **Cloud providers operate hyperscale data centers in western regions before the "Eastern Data, Western Compute" plan was released.** On 17 Feb, NDRC released "Eastern Data, Western Compute" plan that aims to solve the computing power/ energy usage imbalance between data centers in the eastern and western regions. Alibaba/ Tencent/ Huawei already operate hyperscale data centers in Inner Mongolio, Zhangbei, Guizhou, before the documents were released. Network bandwidth and data transmission cost remain the bottlenecks for the location shift. In a longer term, land/ power scarcity will provide grounds for data centers in tier-one cities to hike price.
- **Remain positive on cloud supply chain outlook.** We expect 2022E China cloud market to recover: China IaaS+PaaS +30-40% YoY/ cloud capex +15-20% YoY. Among cloud supply chain, we like **IDC:** GDS (GDS US, BUY) - benefits from cloud capex rebound and **Optical transceiver:** Innolight (300308 CH, BUY) - benefits from 200G/400G optical modules deployment.

Valuation Table

Company	Ticker	Rating	Price (LC)	TP (LC)	EV/sales FY21E	P/E FY21E	ROE FY21E	Sales CAGR FY20-23E
GDS	GDS US	BUY	43.11	61.06	9.6	N/A	N/A	28%
GDS	9698 HK	BUY	41.15	59.13	9.5	N/A	N/A	28%
Innolight	300308 CH	BUY	37.01	45.60	4.1	30.1	10%	18%
Chinasoft	354 HK	BUY	6.96	11.26	1.1	21.2	12%	24%
Kingsoft Cloud	KC US	BUY	6.59	16.74	1.4	N/A	N/A	35%

Source: Bloomberg, CMBIS estimates

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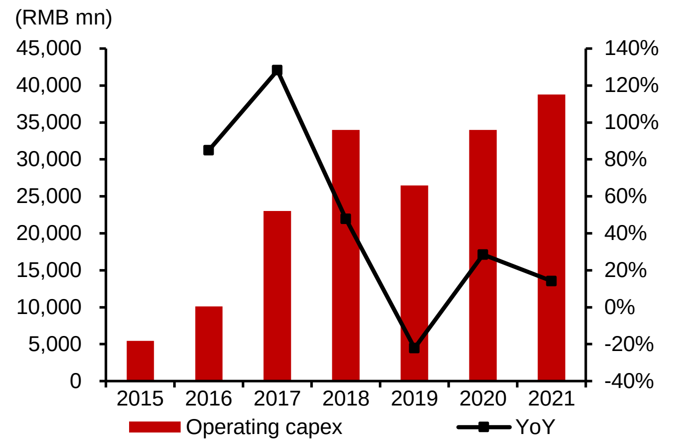
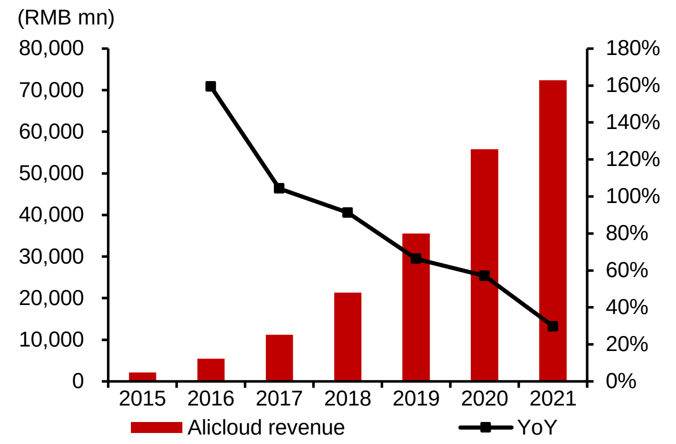
Focus Charts

Figure 1: Alibaba operating capex (yearly)



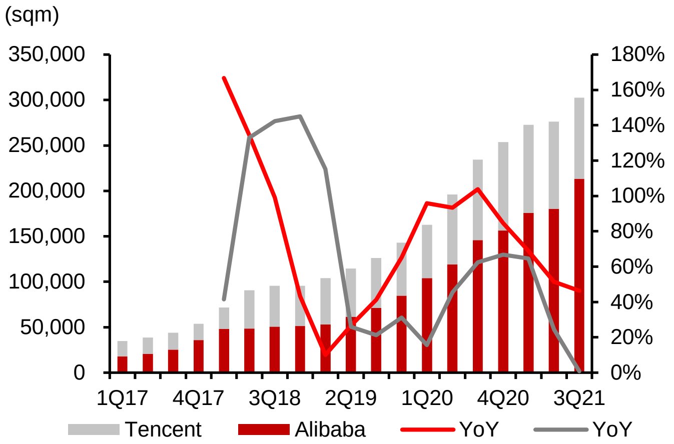
Source: Company data, CMBIS *Calendar year*

Figure 2: AliCloud revenue (yearly)



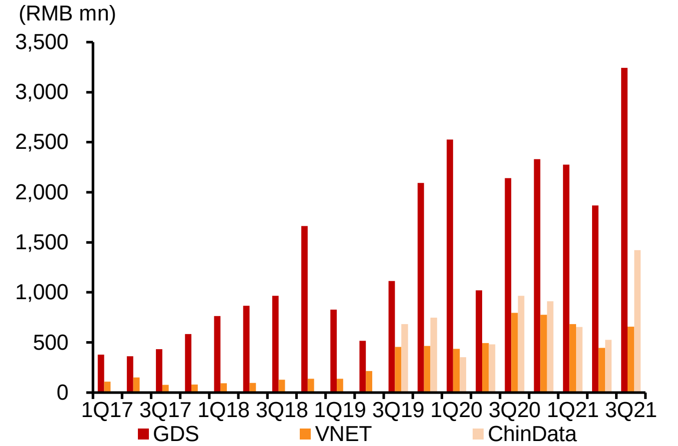
Source: Company data, CMBIS *Calendar year*

Figure 3: GDS total committed area (Ali vs. Tencent)



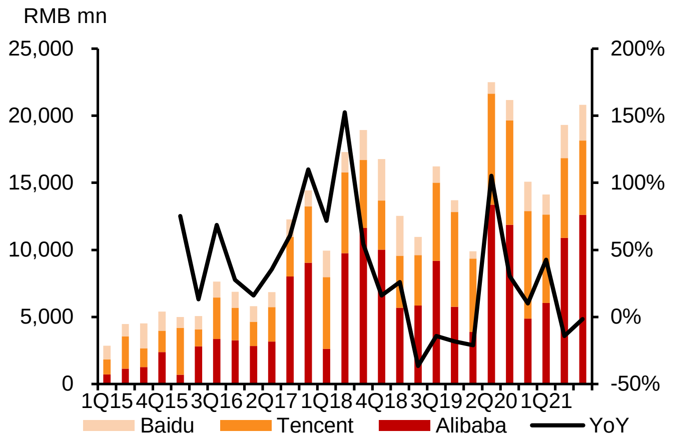
Source: Company data, CMBIS

Figure 4: Third party IDC capex



Source: Company data, CMBIS

Figure 5: BAT capex (quarterly)



Source: Company data, CMBIS

Figure 6: China public cloud market share

China IaaS + PaaS	3Q20	2Q21	3Q21	YoY	QoQ
Market size (US$bn)	3.85	4.91	5.70	48%	16%
Market share					
Alibaba	41.7%	36.0%	38.2%	-3.5%	2.2%
Tencent	10.5%	11.0%	10.9%	0.4%	-0.1%
Huawei	9.2%	10.9%	10.7%	1.5%	-0.2%
China Telecom	7.8%	8.8%	9.0%	1.2%	0.2%
AWS	6.7%	7.8%	7.2%	0.5%	-0.6%
Others	24.0%	25.5%	23.9%	-0.1%	-1.6%

Source: IDC, CMBIS

Russia-Ukraine crisis could deepen data enter chip shortage

Neon is being used during chip-making process and that Ukrainian companies manufacture >70% of Neon globally. According to OMDIA, Ukrainian companies Iceblick, Ingas and Cryoin manufacture >70% of the world's neon gas supply. Neon is a gaseous chemical element being used during semiconductor lithography process. The last time semiconductor industry experienced Neon shortage was in 2015-2016 (triggered by Russian invasion of Ukraine's Crimean region in 2014) and Neon gas prices increased 10x.

Supply chain does not expect production disruption but chip price could go up further. Several semiconductor companies have already responded to the potential impacts brought by the Russia-Ukraine crisis. All of these companies do not anticipate any direct risk at current stage as both gas suppliers and semiconductor companies have built up raw material inventory.

Chip shortage may lengthen server delivery schedule and hence affecting utilization for IDC. If chip shortage deepens, we believe the cloud expansion plan could experience delays as server delivery cycle lengthens. This will affect move-in schedule and hence utilization rate for IDC.

Figure 7: Semiconductor supply chain is not seeing significant impact from Russia-Ukraine crisis

Company	Products	Responses
ASML	EUV equipment	• <20% of the Neon gas is sourced from Ukraine • Examining alternative sources
Intel	CPU	• Does not anticipate any impact
Micron	Memory chip	• Has diversified sourcing of all noble gases • Additionally, there is appropriate inventories of noble gases • Working closely with long-term suppliers to ensure uninterrupted supply
SK Hynix	Memory chip	• Has secured a lot of chip materials
GlobalFoundries	Foundry	• Does not anticipate a direct risk • Has flexibility to seek sources outside Russia or Ukraine

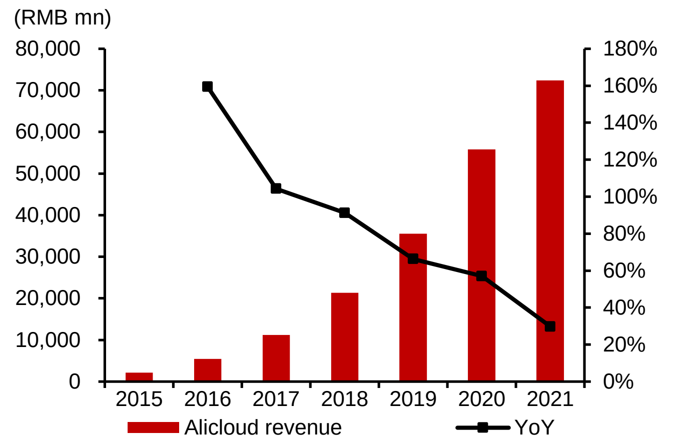
Source: Reuters, CMBIS

AliCloud growth slowed to +20% YoY in CY4Q21

AliCloud CY21 revenue growth slowdown. AliCloud reported a weak FY3Q22 (CY4Q21) results with revenue growth of mere +20% YoY to RMB19,539mn. Revenue from non-internet industries accounted for 52% of AliCloud's FY3Q22 revenue. If we look at CY21, cloud revenue growth has slowed down to +30% YoY (vs. +57% YoY in CY20). Apart from losing Bytedance overseas cloud business, we believe tightened regulations applied to online entertainment/ education sector and losing SOEs/ government's hybrid cloud orders to Huawei/ China Telecom also accounted for the slowdown..

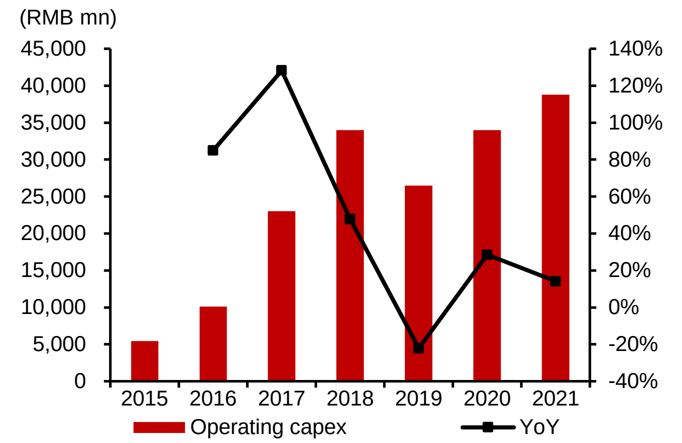
Steady growth of cloud capex at +15-20% YoY in CY22E. Alibaba CY2021 operating capex merely increased at +14% YoY (vs. +41% YoY in CY2020). We expect China cloud capex to rebound at +15-20% YoY in CY2022, considering a server replacement cycle of 3-5 years (last peak was at 2018 due to short video market boomed) and internet companies underspent in 2021 due to regulatory headwinds.

Figure 8: Alicloud revenue (yearly)



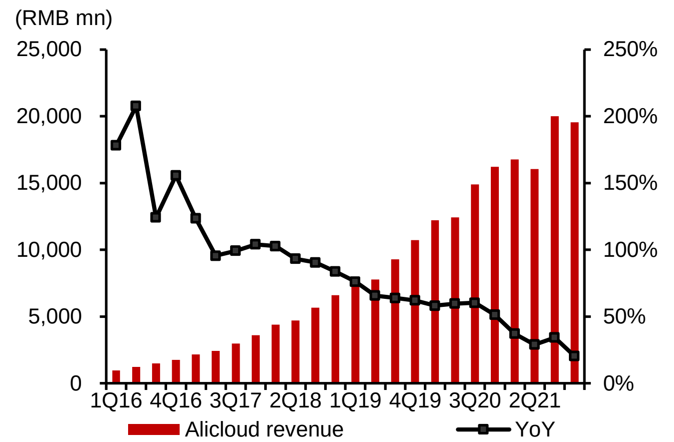
Source: Company data, CMBIS **Calendar year*

Figure 9: Alibaba operating capex (yearly)



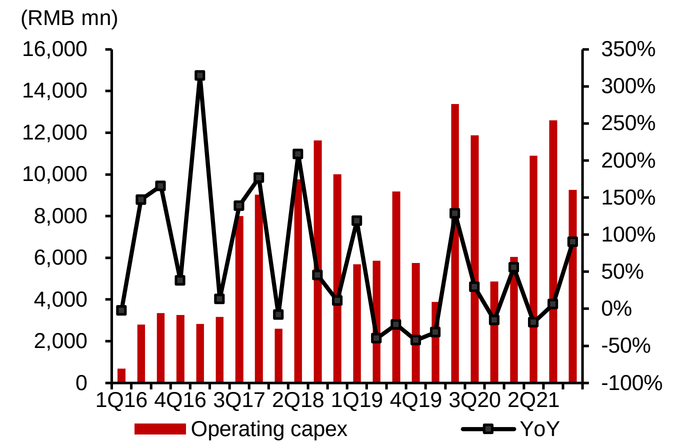
Source: Company data, CMBIS **Calendar year*

Figure 10: Alicloud revenue (quarterly)



Source: Company data, CMBIS **Calendar year*

Figure 11: Alibaba operating capex (quarterly)



Source: Company data, CMBIS **Calendar year*

IaaS/ PaaS: Huawei/ China Telecom continued to gain share in 3Q21, according to IDC

China cloud market growing fast despite internet sector regulatory headwinds (IaaS + PaaS was up +48% YoY in 9M21 to US$15.3bn). China IaaS + PaaS market size was at US$5.70bn in 3Q21, up 48% YoY, according to IDC. We believe China IaaS/ PaaS market in 2022E will still be growing at 30-40% YoY and Huawei/ China Telecom will continue to gain share from cloud service providers with internet background. In China IaaS + PaaS 3Q21 data released by IDC earlier this month, we observed that such trend is becoming more obvious.

Enterprise digitalization is driving cloud demand. With no new internet applications (unlike the time in 2018 when short video boomed), enterprise digitalization is the driving force behind IaaS/ PaaS demand in 2022E. Given their close relationship with government/ SOEs, Huawei and China Telecom have the edge in providing hybrid cloud solutions to these customers.

Huawei/ China Telecom market share gain to continue. In 3Q21, AliCloud China IaaS + PaaS share was at 38.2%. Although share loss continued (-3.5 pct pts YoY), it narrowed on a sequential basis (+2.2 pct pts QoQ). Tencent Cloud maintained its no.2 position and a market share of 10.9%. Meanwhile, Huawei and China Telecom continued to gain market share. Huawei share increased by +1.5 pct pts YoY to 10.7% while China Telecom market share also rose by +1.2 pct pts YoY to 9.0%.

Figure 12: China IaaS + PaaS market share

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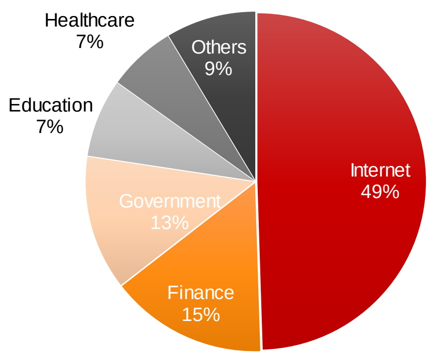
Others	24.0%	25.5%	23.9%	-0.1%	-1.6%

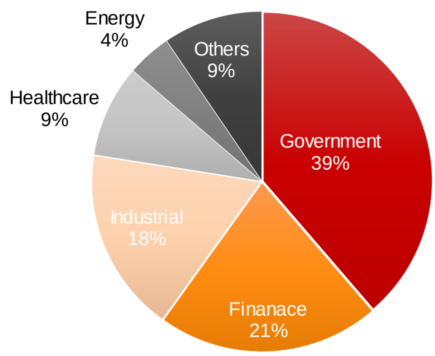
Source: IDC, CMBIS

Figure 13: 2020 China pure public cloud market structure



Source: iResearch, CMBIS

Figure 14: 2020 China non-public cloud (Hybrid + Private) market structure



Source: iResearch, CMBIS

IDC: Data centers in tier-one cities to become scarce

Eastern Data, Western Compute is not new. On 17 Feb, the NDRC released documents that marked the beginning of the "Eastern Data, Western Compute" (东数西算) project implementation. According to the documents, there will be 10 national data center clusters to be built in Beijing-Tianjin-Hebei, Yangtze River Delta, Guangdong-Hong Kong-Macao Greater Bay Area, Chengdu-Chongqing, Inner Mongolia, Guizhou, Gansu, and Ningxia. Specific targets, such as >65% utilization rate/ use of green energy level, will be applied to these data centers. The "Eastern Data, Western Compute" project aims to solve the computing power imbalance as well as land and energy shortage issues between data centers located in the eastern and western regions.

Cloud service providers expand according to their business needs. "Eastern Data, Western Compute" project is not something new. The NDRC has released such project plan《全国一体化大数据中心协同创新体系算力枢纽实施方案》in May 2021. In the documents released on 17 Feb, the NDRC did not lay out more specific targets such as implementation timeline or scale. We believe cloud service providers will still expand according to their own business needs and IDC providers will adopt a follow-their-customer strategy. Alibaba/ Tencent/ Huawei have already built hyperscale data centers in Inner Mongolia, Zhangbei, Guizhou and other tier-2/ 3 regions.

Network bandwidth/ high data transmission cost are the bottlenecks. Data centers in western regions face bottlenecks such as network bandwidth/ high data transmission cost. Latency-sensitive applications will still rely on computing power provided in data centers located in tier-1 cities. We believe land/ power quota will be more difficult to get in tier-one cities and that the increasing scarcity will provide grounds for data centers in tier-one cities to hike rental price in the medium/ long term.

Figure 15: Major hyperscale data centers in China

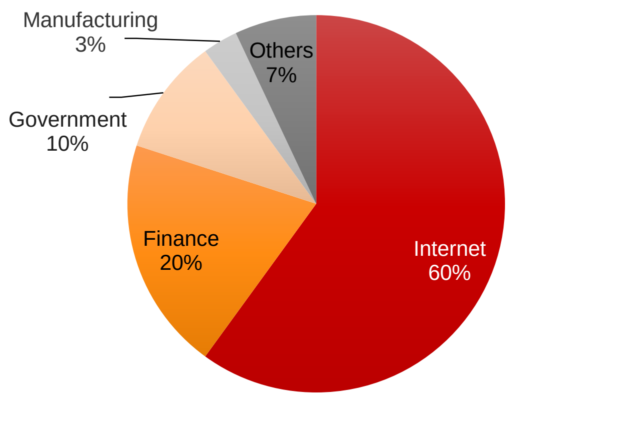
Company	Hyperscale data center locations		Designed server capacity ('000)	Status
	Province	City		
Alibaba	Zhejiang	Hangzhou	250	In operation
	Jiangsu	Nantong	300	In operation
	Hebei	Zhangbei	300	In operation
	Inner Mongolia	Werchabu	300	In operation
	Guangdong	Heyuan	300	In operation
Tencent	Tianjin	Tianjin	200	In operation
	Shanghai	Qingpu	100	In operation
	Guangdong	Shanwei	200	Under construction
		Qingyuan	300	Under construction
	Chongqing	Chongqing	300	Phase I in operation
	Guizhou	Guian	300	Phase I in operation
	Hebei	Zhangjiakou	1000	Under construction
	Jiangsu	Jiangning	300	Under construction
Huawei	Guizhou	Guian	1000	Phase I in operation
	Inner Mongolia	Werchabu	500	Phase I in operation

Source: Company data, CMBIS

IDC will accelerate M&A in tier-one cities. On 22 Feb, GDS announced to issue US$620mn of 0.25% convertible bond (“CB”) due 2029 (conversion price US$50 per ADS, 20% premium to past 20-day avg.). The CB will be sold to Sequoia China Infrastructure Fund I, ST Telemedia Global Data Centers (STT GDC, existing shareholder with 31.8% holding) and an Asian Sovereign Wealth Fund. In conjunction, GDS and Sequoia Capital China have entered into a Strategic Cooperation Agreement.

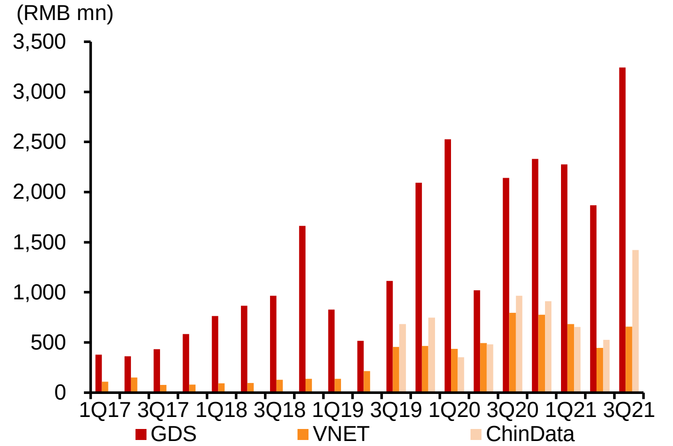
To GDS fundamentals, we view these positive as in 1) the new capital can help GDS strengthen its financial position to carry out its M&A strategy around tier-one cites as land/ energy quota supply is becoming scarce and 2) the strategic tie-up with Sequoia can help GDS build franchise with Sequoia China’s portfolio companies – many internet/ tech companies that need data center.

Figure 16: IDC downstream customer mix (2019)



Source: iResearch, CMBIS

Figure 17: IDC capex



Source: Company data, CMBIS

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