

China Technology Sector

New Infrastructure opportunities in supply chain

To support economic growth amid COVID-19 outbreak, China government announced to accelerate new infrastructure investment, which will focus on seven areas including 5G, data center, ultra-high voltage, NEV charging facilities, AI, intercity high-speed rail/ urban rail transit and industrial internet. We believe this signals more policy support ahead, especially after National People's Congress meetings in Mar/Apr, which will be major positive catalysts to 5G and data center supply chain in our view. Overall, we believe equipment vendors (ZTE, Comba), PCB players, (SSC, SY Tech), and optical component suppliers (Innolight, Accelink) are well positioned to benefit from 5G/ datacenter large-scale deployment in FY20-22E.

- **New infra investment focus on innovation and new use cases.** We believe China is seeking more targeted investments in projects that facilitate innovation and improve weak areas in social development. We expect a new wave of investments into 5G network and datacenter, which are two key fundamental infrastructure to support emerging applications in industrial internet, AI, autonomous driving and Smart City.
- **China 5G BTS build on track despite COVID-19; Expect 600-700k 5G BTS in FY20E.** Both MIIT and Chinese telecoms recently announced to maintain its 5G development goals in FY20E, aiming to build at least 550k 5G BTS in FY20E (vs 150k in FY19). Recent CM and CU/CT 5G BTS tenders also suggested that 5G CAPEX will be backend-loaded in 2H20E, and we expect potential upside to its conservative target as 5G SA BTS supply chain and power consumption issues will be gradually resolved in 2H20E. Overall, we expect 600k-700k 5G BTS add in FY20E.
- **Multi-year IDC growth driven by 5G new applications, AI adoption and cloud migration.** We believe 5G data traffic/new applications, enterprise cloud migration and AI adoption will continue to boost data centre demand for data processing and storage. In next few years, we believe data centre expansion and infrastructure upgrade will offer significant upside to data centre supply chain.
- **Positive to equipment and optical component supply chain.** Major 5G network beneficiaries include ZTE (763 HK) for 5G network equipment, China Tower (788 HK) for accelerated 5G BTS build, Comba (2342 HK) for small cells and SSC (002916 CH)/SY Tech (600183 CH) for 5G BTS PCB upgrade. Major IDC beneficiaries include Innolight (300308 CH) for optical modules, Inspur Electronic (977 CH) for database server, and Sinnet (300383 CH)/ GDS (GSD US) for IDC centres.

Valuation Table

Name	Ticker	Rating	Mkt Cap (USD mn)	Price (LC)	P/E (x)		P/B (x)	ROE
					FY20E	FY21E	FY20E	FY20E
ZTE	763 HK	NR	31,255	30.10	21.3	17.3	3.0	15.4
China Tower	788 HK	NR	41,209	1.82	37.2	28.7	1.5	5.1
Innolight	300308 CH	NR	6,092	59.75	41.5	36.0	5.4	15.6
Accelink	002281 CH	NR	3,334	34.44	44.6	35.8	5.3	13.5
Shennan Circuit	002916 CH	NR	12,148	250.39	50.6	39.9	13.3	26.4
Shengyi Tech	600183 CH	NR	10,664	32.77	40.0	33.0	8.3	22.8

Source: Bloomberg, CMBIS

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5G supply chain poised to benefit from policy support

We believe China 5G network is set to accelerate deployment in 2020E, as both MIIT and Chinese telecoms announced to maintain its 5G development goals in FY20E, implying that 600k-700k 5G BTS will be added in FY20E (vs 150k in FY19). According to CAICT, total investment in China 5G network construction is estimated to reach RMB1.2tn by 2025, while investment in the upstream and downstream of 5G supply chain will exceed RMB3.5tn in next five years. China 5G industry is expected to directly create 3mn jobs by 2025, with aggregate data consumption brought by 5G commercialization surpassing RMB8.3tn.

5G deployment on track despite COVID-19; Expect 600-700k 5G BTS in FY20E.

Following MIIT's conference regarding "accelerating 5G development" on 22 Feb, China Mobile announced 2nd phase of 230k 5G BTS tender for 28 provinces on 6 Mar, in-line with 250k 5G BTS adds target in FY20E. CM also announced tender of new 5G SA core network equipment for 31 provinces on 5 Mar with a procurement budget of RMB4.85bn. As for CT/CU under network sharing scheme, they announced qualification review of centralized procurement for 5G SA BTS on 10 Mar, and plan to jointly build 250k 5G BTS by 3Q20E. Overall, we expect 5G BTS add to reach 600-700k in 2020E (vs 150k in 2019).

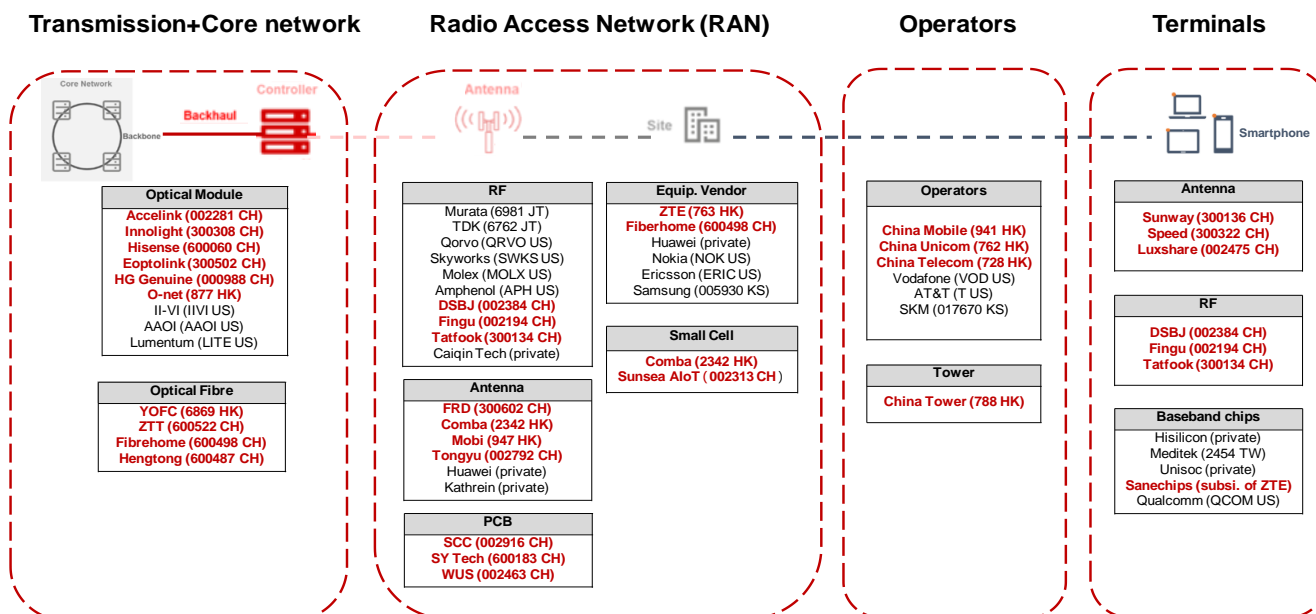
5G SA supply chain and power consumption remain key bottlenecks in near term.

As 5G SA standard is not finalised yet, we believe Chinese operators remain concerned about immature 5G SA network supply chain and high operating cost due 5G BTS power consumption (3-4x higher vs 4G BTS). Therefore, we believe Chinese operators' 5G BTS guidance remain conservative in the near term, and 5G SA network deployment will gradually ramp up in 2H20E.

Positive to equipment, tower and PCB, e.g. ZTE, China Tower, SCC and SY Tech.

Based on CM's tender model in March, share allocation of equipment vendors is changed to 55%/30%/15% from 40%/30%/20%/10% previously, implying that Huawei and ZTE will benefit as the largest two vendors. Major 5G network beneficiaries include ZTE (763 HK) for 5G equipment, China Tower (788 HK) for faster 5G BTS build, Comba (2342 HK) for small cells and SSC (002916 CH)/SY Tech (600183 CH) for 5G BTS PCB upgrade.

Figure 1: 5G supply chain



Source: Company, CMBIS

IDC infra demand driven by 5G, AI and cloud migration

We expect China IDC market will continue to grow at rapid pace driven by strong data demand from 5G applications, AI adoption and cloud computing in next five years. According to CAICT, China's IDC market will grow 24% FY20-22E CAGR and reach US\$35bn in FY22E. On the back of China's recent new infrastructure initiatives as well as continued innovations in both hardware and software, we believe data center will be the key IT infrastructure to support China's digital transformation goals.

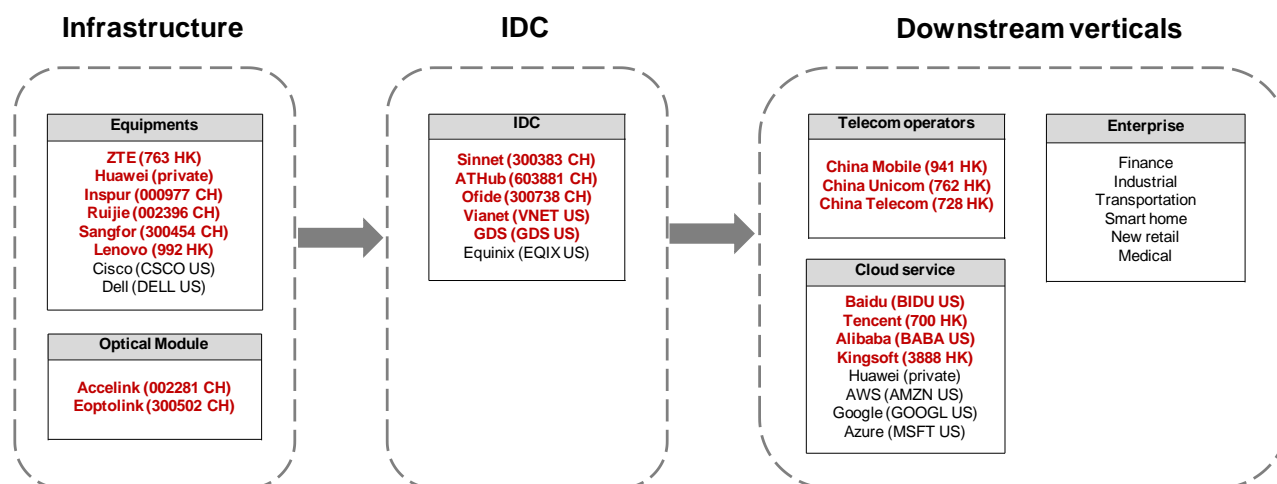
Driver #1: 5G new applications to drive data consumption. Similar to 4G use cases, we believe many 5G new applications will boost data traffic and cloud consumption, such as AR/VR, cloud gaming, and autonomous driving. We expect these new workloads will drive strong demand for data centers infrastructure in next few years.

Driver #2: AI adoption to boost data growth. In next decade, we think AI will be integrated into various industries to enable new opportunities and enhance operation efficiency. In addition, we believe new AI applications will accelerate upgrade of data centre infrastructure in order to support faster processing and more data storage for training and interference algorithm models.

Driver #3: Cloud migration to drive IDC demand. Chinese government and enterprises start to accelerate digitalising and migrating to cloud computing with new software solutions, such as finance applications, HR mgmt. and CRM systems. Since data centres are the foundation for cloud service, we expect data center spending to grow at same pace with cloud market growth in China.

Domestic clients and import substitution to benefit local players. We believe import substitution on major equipment and components progressed well, albeit domestic players still seemed hard to rival global peers on high-speed products in near term. In view of trade dispute uncertainty and domestic players' aggressive R&D investment, we believe local players, like Innolight and Accelink, will gradually catch up with global leaders, benefiting from share gains and support from domestic clients in the long run.

Figure 2: IDC supply chain



Source: Company, CMBIS

Peers comparison

Company	Ticker	Market Cap (US\$ mn)	Price (LC)	P/E (x)		P/B (x)		ROE (%)	
				FY20E	FY21E	FY20E	FY21E	FY20E	FY21E
Operators & Tower									
China Mobile	941 HK	146,058	55.45	9.7	9.5	0.9	0.8	9.5	9.3
China Unicom	762 HK	20,626	5.24	9.9	8.5	0.4	0.4	4.7	5.3
China Telecom	728 HK	26,653	2.56	8.7	8.4	0.5	0.5	6.1	6.1
China Tower	788 HK	41,209	1.82	37.2	28.7	1.5	1.5	4.0	5.1
		Average		16.4	13.8	0.8	0.8	6.1	6.4
Equip. vendors									
ZTE	763 HK	31,255	30.10	21.3	17.3	3.0	2.6	15.4	16.5
Fiberhome	600498 CH	6,922	41.35	42.2	34.1	4.1	3.7	10.0	11.2
		Average		31.7	25.7	3.5	3.2	12.7	13.8
PCB									
Shennan Circuit	002916 CH	12,148	250.39	50.6	39.9	13.3	10.4	27.4	26.4
Shengyi Tech	600183 CH	10,664	32.77	40.0	33.0	8.3	7.1	21.4	22.8
WUS Printed	002463 CH	6,941	28.15	31.3	25.2	7.6	6.0	24.1	23.7
		Average		40.6	32.7	9.7	7.8	24.3	24.3
Antenna									
Tongyu Comm.	002792 CH	1,647	34.10	36.5	23.8	4.8	4.0	12.4	16.4
Shenzhen FRD	300602 CH	2,441	55.75	35.5	25.3	8.2	6.2	17.4	17.5
Mobi	947 HK	114	1.08	-	-	-	-	-	-
Comba	2342 HK	993	3.09	20.3	14.6	1.9	1.7	7.0	10.1
DSBJ	002384 CH	6,410	27.91	25.2	20.3	4.0	3.7	16.9	17.5
Suzhou Shijia	002796 CH	1,073	44.60	29.5	21.1	4.3	3.7	14.9	17.3
		Average		29.4	21.0	4.6	3.9	13.7	15.8
RF									
DSBJ	002384 CH	6,410	27.91	25.2	20.3	4.0	3.7	16.9	17.5
Wuhan Fingu	002194 CH	2,470	30.60	76.5	51.9	9.1	8.1	12.0	16.0
Shenzhen Tatfook	300134 CH	2,237	20.39	42.5	30.9	-	-	-	-
		Average		48.1	34.4	6.6	5.9	14.5	16.8
Optical module									
Innolight	300308 CH	6,092	59.75	41.5	36.0	5.4	4.8	13.7	15.6
Accelink	002281 CH	3,334	34.44	44.6	35.8	5.3	4.7	12.6	13.5
Eoptolink	300502 CH	2,198	65.02	53.7	38.8	10.1	8.5	19.5	21.7
O-Net	877 HK	445	4.17	11.9	9.9	1.2	1.2	10.2	11.1
		Average		37.9	30.1	5.5	4.8	14.0	15.5
Optical fiber									
YOFC	6869 HK	3,207	16.74	13.3	11.1	1.2	1.1	8.7	10.1
Zhongtian Tech	600522 CH	4,791	10.93	13.8	-	1.4	-	0.1	-
Hengtong Optic	600487 CH	5,881	21.61	19.9	16.4	2.6	2.3	12.7	13.3
		Average		15.7	13.8	1.7	1.7	7.2	11.7
IDC									
Inspur	000977 CH	8,058	43.72	42.9	32.1	5.4	4.7	11.6	13.2
Ruijie networks	002396 CH	3,717	44.58	30.5	24.5	5.1	4.3	17.3	18.0
Sinnet	300383 CH	6,163	27.95	38.4	29.7	4.5	3.9	11.4	13.0
ATHub	603881 CH	1,563	51.90	63.2	37.7	8.6	7.1	12.2	18.3
Ofide	300738 CH	1,105	65.80	51.4	36.8	9.4	7.5	18.3	20.6
Sangfor	300454 CH	10,310	176.35	76.0	56.1	14.2	11.5	19.0	20.7
BONC	300166 CH	2,494	16.51	22.5	18.0	2.7	2.4	12.0	13.4
Vianet	VNET US	1,678	14.95	-	-	3.8	3.6	-	0.3
GDS	GDS US	8,722	57.36	-	-	9.1	8.6	-	2.7
		Average		46.4	33.6	7.0	6.0	14.5	13.4
Industrial IoT									
Foxconn Industrial	601138 CH	45,701	16.10	15.5	13.6	3.0	2.5	20.0	19.0

Source: Bloomberg, CMBIS

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