BofA SECURITIES

Wireline & Wireless Telecom Services

4Q Preview & delta analysis – Wireless ascendant

Earnings Preview

17 January 2024

Equity
United States
Telecommunications

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Results and guidance should showcase fundamental health

We expect the wireless carriers to offer up a constructive outlook for 2024 at 4Q results. Wireless carriers will likely guide to rising prices, expanding margins, moderating capex, expanding free cash flow, accelerated deleveraging, and rising dividend security. We believe the incumbent wireless companies are well positioned to outperform cable in 2024 with improving financials and having shown the market that cable's wireless inroads have not come at their expense. While exogenous factors are impossible to predict, we view it as unlikely we'll experience the equivalent to last year's Amazon mobile service rumors or exaggerated reporting about legacy lead-sheathed cable risks. For more information see our US telecom Year Ahead report.

We beg to differ…

Key 4Q deltas (see Exhibit 2) between ourselves and the Street based on Visible Alpha data include 1) Verizon consensus total adj. EBITDA is modestly too high as we expect seasonal device subsidy costs and marketing expenses to weigh on the quarter, 2) the Street is light on AT&T post-paid phone net adds as the team is successfully executing on its 5G strategy and leveraging broadband initiatives to drive net adds, and 3) Street LUMN adj. EBITDA is high as the company's ongoing credit dynamics are pressuring revenue trends and the team continues consolidating the legacy CenturyLink and new Quantum Fiber brands leading to higher churn. On page 6, we adjust our comm. infra estimates to reflect mgmt. comments and updated interest rate assumptions.

Key stocks: T, LUMN, and CCI

AT&T needs to deliver on '23 FCF growth expectations and lay out how key moving parts (lower capex, lower DTV contributions) will net out to '24 FCF growth. The company has shared that it has taken steps smooth out FCF generation across the quarters to avoid a repeat of 1Q23 when company and Street FCF expectations differed by $1.0bn (out of $16bn) and generated an outsized negative. **LUMN** investors will want an update on the status of the transaction to extend 2027 debt maturities and access $1.2bn in new loans at a cost of $200mn in fees and interest rates of 11%. The current deadline is January 31, 2024, but we understand if all parties agree it can be extended. Once closed, investors will want to understand what the next steps are to address bondholders excluded from the original transaction and how much more value may be diverted from equity holders to debt holders. **CCI** once more found itself attracting the attention of activist investor Elliott in late 2023. CCI has subsequently announced 1) a comprehensive review of its fiber business, 2) two new Board of Director appointments, and 3) a cooperation agreement with Elliott. We believe there is a chance for CCI to adjust or withdraw its previously announced 2024 guidance given management turnover and fiber business strategic review. Maintain ratings on covered companies.

Quick links: Comp sheet (Exhibit 7), Wireless matrix (Exhibit 8), Capex sheet (Exhibit 9)

Exhibit 1: 4Q23 Earnings Call Details
Earnings call details for 4Q23

		Earnings	Earnings Report Information		
	Report	Release	Conf Call	Dial-in	Access
Ticker	Date	Time	Time	Number	Code
CCI	1/25	AMC	10:30AM ET	833-816-1115	
T	1/24	BMO	8:30AM ET	Webcast Only	
VZ	1/23	BMO	8:30AM ET	Webcast Only	
TMUS	1/25	AMC	4:30PM ET	888-222-5992	88238
EQIX	2/14	AMC	5:30PM ET	1-517-308-9482	EQIX
DLR	2/15	AMC	5:00PM ET	888-317-6003	455927
AMT	TBD	TBD	TBD	TBD	TBD
LUMN	TBD	TBD	TBD	TBD	TBD
UNIT	TBD	TBD	TBD	TBD	TBD
CCOI	TBD	TBD	TBD	TBD	TBD

Source: Company reports; Bloomberg
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DTV = DirecTv

APRA = Average revenue per account

FWA = fixed wireless access

TSA = transaction support agreement

Refer to important disclosures on page 16 to 19. Analyst Certification on page 15. Price Objective Basis/Risk on page 11.
12646650

Timestamp: 17 January 2024 05:00AM EST

BofA vs. the Street

We discuss here results expectations within our coverage for the key metrics and/or financials about which we believe investors are most concerned for the quarter and highlight where our estimates differ most vs. the Street. This delta analysis leverages our access to the Visible Alpha database which aggregates Street models in a very granular fashion offering us access to consensus data at a deeper level than previously possible.

In our sector tables below we focus on 6 data points.

1. BofA estimates
2. Visible Alpha (VA) consensus estimates
3. BofA vs. VA spread
4. Visible Alpha high estimate
5. Visible Alpha low estimate
6. Confidence range/interval – We define this metric as (High-Low)/(Consensus) for financial metrics and (High-Low)/(End subscriber consensus estimate) for operating metrics. A tighter range suggests greater Street confidence.

Our largest estimate deltas vs. the Street

1. **Verizon – We are conservative on total adj. EBITDA vs the Street** – We forecast slightly higher total post-paid phone net adds and Consumer ARPA growth will benefit Consumer wireless service revenue in 4Q. In aggregate, however, we expect higher device subsidy costs and marketing expenses in the seasonally competitive quarter to represent a headwind to total adj. EBITDA. Verizon is focused on accelerating post-paid phone gross additions as it works to capture market share and grow its subscriber base. We believe the team is delivering on its latest phone plan initiatives, however, the early costs for customer acquisition, marketing, and promotions, are outweighing the benefits at this point. We expect VZ total adj. EBITDA for 4Q of $11.6bn vs the Street at $11.7bn and on the low end of estimates ranging from $11.59bn to $12.1bn.

2. **AT&T – Street is light on post-paid phone net adds** – AT&T is successfully executing its strategy to capture net adds through growth vectors including 5G and fiber. Lately, T has initiated a FWA home internet service to further reach out to consumers in more remote areas. The team continues to value consumer retention and acquisition through its tailored promotional offerings. T is also leveraging its broadband initiatives to offer bundled mobile + home internet services to attract consumers. We expect to see more of this initiative play out in 2024. We forecast sequential growth in post-paid phone net adds to +511k (vs +426k in 3Q) vs the Street at +489k.

3. **Lumen – Street total revenue too high** – Due to messy credit dynamics further pressuring revenue trends and ongoing consolidation of legacy CenturyLink with the Quantum Fiber brand, we forecast total revenue on the lower end of the Street at $3.43bn.

Exhibit 2: Q4 Biggest deltas vs the Street

We highlight our key metrics across VZ, T, and LUMN that have the biggest variances vs the Street

		BofA	Consensus	Vs. Consensus	High	Low	Confidence
LUMN	Total revenue	3,431	3,461	(29)	3,499	3,426	2.1%
AT&T	AT&T postpaid phone net adds	511	489	22	562	377	37.8%
VZ	VZ total Adj. EBITDA	11,626	11,772	(146)	12,059	11,594	4.0%

Source: Visible Alpha; BofA Global Research

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4Q expectations

Wireless

We believe the most important wireless metrics each quarter boil down to service revenue, profitability (EBITDA), and post-paid phone net adds. Total revenue is lumpy due to equipment sales and timing, total post-paid net adds can be influenced by less profitable devices like tablets and watches (although highly profitable fixed wireless access is beginning to become a factor too), and prepaid subs have been less of a focus for the past few years as the post-paid market has grown at the expense of prepaid.

All eyes this earnings season will be on 2024 guidance. 4Q is largely de-risked across our coverage group as we look to the year ahead. Results will illustrate which carriers were able to leverage this holiday season and the launch of the new iPhone 15 the best. Looking ahead, mgmt. comments on pricing power and consumer demand will be significant as we move beyond peak inflation. We largely expect the following growth vectors to drive the 2024 conversation: 1) post-paid phone net adds, 2) free cash flow generation, 3) broadband initiatives (including momentum in fixed wireless access and fiber), and 4) the crossover of cable's entry into wireless and wireless' dominance in broadband.

We summarize our 4Q expectations for the companies here.

- For AT&T, we expect strong wireless subscriber growth coming off the holiday season and promotional period as the company continues to place an emphasis on retention and using 'rational' handset promotions to attract new customers. We expect flat sequential wireless post-paid ARPU of $50.09 due to prior phone plan price hikes offset by the promotional period. Coupled with subscriber growth, we expect service revenue growth of 3.5% y/y to $16bn, in-line with consensus. Our wireless EBITDA estimate of $8.4bn is also in-line with consensus at the mid-point of $8.1bn - $8.6bn. We share our thoughts and expectations for the AT&T story in our preview.

- For TMUS, the focus is service revenue to free cash flow conversion. With merger synergy realization and lower capex in 2023E, TMUS is on track to end the year with substantial FCF acceleration. Heading into 4Q earnings, we made minor adjustments to our estimates. We expect sequential improvement in postpaid phone net adds to 878k net adds, fairly in-line with the Street, despite seasonally higher churn and the generally competitive season. We forecast wireless service revenue of $16.1bn in-line with consensus and core adjusted EBITDA growth of 10.5% y/y, also fairly in-line consensus.

- We updated our Verizon model to refine estimates heading into 4Q results. Recent pricing actions should generate a +$100mn full quarter benefit in 4Q resulting in 4% y/y growth in postpaid Consumer ARPA. We expect Consumer wireless service revenue of $19bn in-line with the Street. We forecast +124k (vs. consensus of +104k) Consumer post-paid phone net additions and +136k business phone net additions (vs. consensus of +134k). We believe Verizon will benefit from a strong holiday season due to its differentiated promotional offers and revamped phone plan structure that is resonating with consumers.

Exhibit 3: Our key metric estimates vs the Street for the big 3 carriers...
We highlight our key metrics across the 3 wireless players vs the Street

	BofA	Consensus	Vs. consensus	High	Low	Confidence
Wireless service revenue ($mns)						
AT&T	15,976	16,050	(74)	16,372	15,922	2.8%
T-Mobile	16,062	16,057	5	16,744	15,472	7.9%
Verizon	19,436	19,459	(23)	19,638	19,275	1.9%

Exhibit 3: Our key metric estimates vs the Street for the big 3 carriers...
We highlight our key metrics across the 3 wireless players vs the Street

	BofA	Consensus	Vs. consensus	High	Low	Confidence
Wireless EBITDA ($mns)						
AT&T	8,404	8,408	(4)	8,590	8,174	5.0%
T-Mobile (core adjusted)	7,271	7,243	28	7,337	7,144	2.7%
Post-paid phone net adds (000s)						
AT&T	511	489	22	562	377	37.8%
T-Mobile	879	877	2	909	850	6.8%
Verizon (Consumer + Business)	260	238	22	295	200	40.1%
Post-paid phone subscribers (000s)						
AT&T	70,715	70,757	(42)	70,757	70,757	0.0%
T-Mobile	74,914	74,982	(68)	74,982	74,982	0.0%
Verizon	92,381	92,581	(200)	94,226	92,426	1.9%

Source: Visible Alpha; BofA Global Research

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LUMN

Lumen's equity story remains dependent on the credit story as debt structure complexity intensifies. Lumen recently entered into an agreement with certain bondholders (the TSA agreement), while excluding others, to address covenant default claims and extend some of the maturities within its debt stack. The team was offered additional $1.2bn of debt liquidity as part of the deal if certain conditions are met. The first step in the process is extending the maturity of revolving credit facilities. This has become more challenging than expected due to conflict among different cohorts of the debt structure. The team has until January 31, 2023, to extend its revolving credit facilities, although future extensions cannot be ruled out. All the noise on the debt story has continued to disrupt Lumen's revenue funnel as potential customers grow wary of partnering with the company.

We have updated our model heading into earnings to refine our estimates. We have lowered our adj. EBITDA estimate to $1.05bn, in-line with the Street, on higher marketing expenses as the team incurs ongoing costs to rebrand from legacy CenturyLink to Quantum Fiber. We now forecast $171mn of FCF in 4Q driven by lower bottom-line growth, elevated capex, and high cash interest expense. We note there should be a $56mn cash tax benefit to FCF as the company realizes a partial benefit of its $200mn NOL cash tax refund. On broadband, we expect -58k total broadband net adds, including +20k fiber net additions, vs the Street at -45k. We remain conservative on broadband net additions as the team works to re-brand from its legacy CenturyLink brand to Quantum Fiber.

Communications Infrastructure - Data centers

We continue to favor Data Centers over Towers as a disjointed supply/demand dynamic, including power and land availability constraints, in key markets has led to strong pricing power for operators (see our 2024 Communications Infrastructure Year-Ahead report). All indications point to pricing power remaining strong into 1Q24+ for data centers as 1) the underlying supply/demand imbalance remains, and 2) the emergence and acceleration of generative AI development/adoption is creating a new demand vector.

Both DLR and EQIX will share their 2024 outlooks with their 4Q23 prints. We believe EQIX's 2024 outlook will begin in line with its long-term guidance range of 7-10% AFFO/sh growth and 8-10% revenue growth. DLR's 2024 guidance will be slightly more complicated. The ongoing joint-venture funding program, which we expect to continue in 2024, along with other funding vehicles (e.g. asset dispositions and equity issuance) and interest rates could contribute to 2024 Core FFO/sh headwinds relative to historical growth. Outside of 2024 guidance, we are looking for the following.

- We expect **EQIX** to discuss its 1) the AI associated demand pipeline, 2) its plans for xScale expansion globally, and 3) insights on small and medium enterprise demand and pricing power.

- For **DLR**, we are looking for 1) further color on the recent Blackstone joint-venture (see report) and line-of-sight to further development JV's, 2) an update on releasing spread trends, and 3) capital allocation priorities in 2024+ (asset dispositions vs. JV's vs. equity issuance).

Exhibit 4: BofA 4Q23 Estimates vs. Consensus

Below are our estimates for key data center metrics vs. consensus

Data Centers	BofA	Consensus	vs. Consensus	High	Low	Confidence
Revenue ($mns)						
Digital Realty	1,399	1,397	2	1,440	1,375	5%
Equinix	2,123	2,112	10	2,129	2,095	2%
EBITDA ($mns)						
Digital Realty	658	662	(4)	674	651	3%
Equinix	926	921	5	931	905	3%
FFO/sh ($)						
Digital Realty*	1.63	1.63	(0.00)	1.66	1.59	4%
Equinix	5.33	5.35	(0.02)	5.64	4.90	13%
AFFO/sh ($)						
Digital Realty	1.56	1.50	0.07	1.64	1.41	14%
Equinix	7.19	7.24	(0.05)	7.38	7.10	4%

Source: BofA Global Research and Visible Alpha *Core FFO/sh for DLR

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Communications Infrastructure - Towers

Tower stocks rebounded in late 2023 as consensus expectations for a 'higher for longer' interest rate environment changed when the Federal Reserve's posture appeared to soften at the December FOMC meeting. While fundamentally Tower stocks will experience slower domestic growth in 2024, investor focus remains on AMT and SBAC's 2024 guidance expected with 4Q23 prints.

We believe international growth and data center exposure for AMT will prove robust and help drive 2024/25 AFFO/sh growth. CCI released its 2024 guidance with 3Q23 earnings but we believe there is potential for CCI to amend or withdraw it given Elliott's recent activism, management changes, and an ongoing business review. During the quarter, we are looking for the following from each tower company.

- For **AMT**, we are looking for 1) further commentary regarding the recent India business sale (see our takeaway report here), 2) international churn cadence, particularly in Africa and Latin America, 3) capital allocation priorities once below 5x leverage (buybacks vs. M&A), and 4) longer-term CoreSite expectations given robust demand.

- For **CCI**, we are looking for 1) updates regarding the Board of Director's strategic review of the fiber business, 2) the outlook for small cell backlog replenishment, 3) potential strategic changes given management adjustments, and 4) the timing for permanent CEO and CFO hires.

- For **SBAC**, we are looking for 1) line-of-sight to domestic carrier acceleration, 2) capital allocation priorities given leverage remains below its long-term guidance, and 3) churn cadence from Oi in Brazil and Sprint in the US.

Exhibit 5: BofA 4Q23 Estimates vs. Consensus

Below are our estimates for key data center metrics vs. consensus

Towers	BofA	Cons.	vs. Cons.	High	Low	Confidence
Domestic Tower Property Revenue ($mns)						
American Tower	1,292	1,296	-4	1,305	1,292	1%
Crown Castle	1,082	1,078	4	1,092	1,065	3%
SBA Communications	466	468	-2	476	462	3%
Property Revenue ($mns)						
American Tower	2,713	2,713	0	2,742	2,674	3%
Crown Castle	1,593	1,584	9	1,594	1,569	2%
SBA Communications	634	640	-5	651	634	3%

Exhibit 5: BofA 4Q23 Estimates vs. Consensus

Below are our estimates for key data center metrics vs. consensus

Towers	BofA	Cons.	vs. Cons.	High	Low	Confidence
Adj. EBITDA ($mns)						
American Tower	1,733	1,739	-6	1,781	1,709	4%
Crown Castle	1,071	1,062	9	1,079	996	8%
SBA Communications	481	481	0	489	478	2%
AFFO/sh ($)						
American Tower	2.36	2.35	0.01	2.40	2.31	4%
Crown Castle	1.79	1.80	(0.01)	1.86	1.67	11%
SBA Communications	3.33	3.32	0.01	3.40	3.24	5%

Source: BofA Global Research and Visible Alpha

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Estimate changes

We have adjusted our Communications Infrastructure estimates and models to reflect updated FX and interest rate assumptions and recent management commentary.

Exhibit 6: Communications Infrastructure estimate changes

We slightly adjust our 2023/2024 estimates

	2023			2024				
Revenue	**New Estimates**	**Old Estimates**	**% change**	**New Estimates**	**Old Estimates**	**% change**	**Cons. 2024**	**% difference**
AMT	11,097	11,097	0.0%	11,011	11,011	0.0%	11,308	-2.6%
CCI	6,986	6,984	0.0%	6,665	6,665	0.0%	6,613	0.8%
CCOI	939	928	1.1%	1,101	1,051	4.8%	1,106	-0.4%
DLR	5,507	5,507	0.0%	5,658	5,676	-0.3%	5,755	-1.7%
EQIX	8,201	8,201	0.0%	8,978	8,978	0.0%	8,888	1.0%
SBAC	2,712	2,714	-0.1%	2,757	2,786	-1.0%	2,750	0.3%
Adj. EBITDA								
AMT	7,059	7,059	0.0%	7,109	7,109	0.0%	7,220	-1.5%
CCI	4,410	4,404	0.1%	4,171	4,171	0.0%	4,178	-0.2%
CCOI	370	361	2.6%	393	370	6.3%	409	-3.9%
DLR	2,708	2,708	0.0%	2,817	2,824	-0.3%	2,845	-1.0%
EQIX	3,708	3,708	0.0%	4,108	4,108	0.0%	4,083	0.6%
SBAC	1,894	1,891	0.1%	1,962	1,975	-0.6%	1,949	0.7%
AFFO/sh								
AMT	10.37	10.37	0.0%	10.85	10.85	-0.1%	10.90	-0.5%
CCI	7.52	7.51	0.2%	6.98	6.98	-0.1%	6.95	0.3%
DLR*	6.59	6.59	0.0%	6.79	6.82	-0.4%	6.84	-0.7%
EQIX	32.01	31.95	0.2%	34.64	34.65	0.0%	34.56	0.2%
SBAC	13.04	13.02	0.1%	13.36	13.48	-0.9%	13.51	-1.1%

Source: BofA Global Research estimates *Core FFO/sh for DLR

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Key 4Q stocks

AT&T

(T, Buy, Price Objective: $20)

- **T is a key stock heading into 4Q because...** AT&T is a key stock heading into 4Q results and the 2024 guide. Since simplifying its business T has consistently delivered strong wireless and consumer broadband operating results. It grew subscribers, margins, and free cash flow while investing heavily in the network for future growth. AT&T's valuation failed to match its improved operational performance, in our view, primarily due to market sentiment concerning wireless postpaid phone net add growth sustainability, wireless competition from cable, Amazon's rumored entry into wireless, and sensational reporting on legacy lead-sheathed cable health risks. In 2024, we expect moderating capex and expanding free cash flow to bolster AT&T's operating performance and make it much more difficult for temporary sentiment swings to materially derail improved valuation.

- **In general, our view is...** We believe AT&T is listening to the market and making investor friendly changes to better highlight its growing underlying free cash flow.

These important lessons stem from the 2022 free cash flow guidance revision and the 1Q23 free cash flow profile which was in-line with company expectations but negatively surprised investors and cast doubt on full year guidance that was difficult to overcome. We expect 2024 FCF guidance will be ~$17.5bn and may include 1Q FCF guidance that will show a more even distribution across the year.

- **Valuation.** As investors now look to 2024 and beyond, we believe positive operating performance gains should help reverse the valuation impact of the Amazon and lead cable stories. AT&T trades at discount to its peers despite solid execution and a better growth trajectory. On 2024E metrics, AT&T is trading at 6.8x P/E, 6.8x EV/EBITDA, and has a FCF yield of 14% with a 6.7% dividend yield. We expect AT&T's valuation to catch up to its operating performance in 2024.

LUMN

(LUMN, Underperform, Price Objective: $1)

- **LUMN is a key stock heading into 4Q because**… it is attempting to meet the extended deadline of Jan 31, 2024, to finalize its Transaction Support Agreement (TSA) with a select group of debt holders. LUMN will report 4Q23 results and provide its 2024 financial outlook in early February. The company remains in the midst of a multi-year transformation to address declining revenue, high leverage and a large debt maturity tower in 2027 (~$9.5bn). The large '27 debt tower is a key driver behind the company's urgency to return to sustainable growth in the near-term. LUMN is targeting positive growth beginning in 2025E.

- **In general, our view is…** Leading into 4Q results will be a key time for LUMN as it works to finalize its Transaction Support Agreement (TSA) with a select group of creditors. The pending TSA deal will offer LUMN $1.2bn of additional financing and extend the maturities of maturing debt from 2027 to 2029+ in return for higher coupon and up-front payments. We understand the company has room within the TSA to later work with bond holders who are not included in the current TSA. We expect more information on this one way or the other at results.

- During the 3Q earning call and during 4Q at conference appearances, LUMN made it clear that uncertainty surrounding the company's ability to close the TSA, extend debt maturities, and secure additional financing hurt its ability to win new business. Existing and potential customers are concerned about partnering with a company facing potential financial hardship (or maybe using LUMN's difficulties to better their own negotiating positions). This uncertainty has now extended into 2024 and the period leading up to earnings will be critical for the company to address this issue.

- **Valuation.** We maintain our Underperform rating and $1 Price Objective. LUMN is attempting to push out its large 2027 debt maturity tower to give its transformation effort maximum time. While this is a reasonable approach, LUMN's precarious financial position and unproven business transformation plan mean it must accept materially higher interest cost and exorbitant fees for additional capital (16.7% in addition to 11% interest). Fundamentally, LUMN has too much debt due too soon and a transformation plan with too uncertain an outcome. We believe the risk of a negative outcome or bankruptcy far outweigh a successful business transformation, inflection to growth, and attractive debt refinancing.

CCI

(CCI, Neutral, Price Objective: $120)

- **CCI is a key stock heading into 4Q because**… In early December 2023, CCI found itself once more the subject of activist investor Elliott's attention. The investor disclosed having amassed a $2bn stake in the company. Elliott's thesis is that, taken in the aggregate, past investments in the fiber and small cells business have been value destructive and the whole strategy needs to be reassessed immediately. CEO

Jay Brown subsequently announced his surprise retirement scheduled for January 16, 2024 after being at CCI for ~25 years. Note that CFO Dan Schlanger previously announced he was leaving the company in March 2024. Since Elliott's involvement, CCI has announced 1) a comprehensive review of its fiber business, 2) two new Board of Director appointments, and 3) a cooperation agreement with Elliott. CCI released its 2024 guidance with 3Q23 earnings but we believe there is potential for CCI to amend or withdraw it given Elliott's recent activism, management changes, and an ongoing business review

- **In general, our view is...** We believe the ongoing review of the fiber business and CEO/CFO search represent an overhang for CCI shares at least until it shares an update at 4Q23 earnings. We also believe its fiber business will face new leasing challenges in 2024 and forecast the business will grow only modestly (~2%) vs. guidance of 3.5%. If CCI can ramp up new fiber leasing in 2H23 we believe there is upside to our estimates. We expect CCI's small cell business to grow double digits for the next couple years though on the margin it does not move numbers (~10% of revenues). On the Tower side, we anticipate domestic new leasing of $106mn, which yields 4% organic growth in 2024 (vs. 5.1% in 2023).

- **Valuation.** Our $120 Price Objective is based on a 17x weighted 2024E AFFO/sh multiple. We apply a 19.5x multiple to CCI's macro tower business (60% weighting given business exposure). We apply a 18x multiple to CCI's small cell business (10% weighting) and a 12.5x multiple to CCI's fiber business (30% weighting), a discount to the macro tower business based on higher business risks and capital intensity.

Comparative valuation table

Exhibit 7: US Telecom & Communications Infrastructure comparative valuation sheet

Latest comp sheet for our coverage universe

Company	Ticker	Last Close Price	Price Obj.	Rating	QRQ	Market Cap.	'22 Firm Value	FV/EBITDA		'22-'24 EBITDA CAGR	FCF Yield		2023 Fwd. Div. Yield	PE		'23 Net Debt/ EBITDA
								2023E	2024E		2023E	2024E		2023E	2024E	
Wireless																
AT&T	T	$16.48	$20.00	Buy	B-1-7	116,613	297,975	7.0x	6.8x	2.6%	14.1%	15.1%	6.7%	6.8x	6.7x	3.1x
Verizon	VZ	$38.56	$41.00	Neutral	B-2-7	159,711	350,466	7.5x	7.4x	0.5%	11.3%	11.5%	6.8%	8.1x	8.3x	3.2x
T-Mobile US (Adjusted)	TMUS	$162.54	$175.00	Buy	B-1-9	201,415	308,691	9.4x	8.6x	9.0%	6.7%	8.3%	0.0%	22.2x	15.3x	3.6x
Wireless Average						159,246	319,044	8.0x	7.6x	4.0%	10.7%	11.7%	4.5%	12.4x	10.1x	3.3x
Data Centers																
Digital Realty	DLR	$137.08	$150.00	Buy	B-1-7	39,938	59,015	21.8x	20.8x	8.0%	4.5%	1.6%	3.6%	nm	nm	6.1x
Equinix	EQIX	$815.02	$870.00	Buy	B-1-7	68,633	79,963	24.6x	22.3x	11.5%	0.9%	0.6%	1.7%	nm	nm	3.7x
Data Center Average						54,285	69,489	23.2x	21.6x	9.8%	2.7%	1.1%	2.7%	nm	nm	4.9x
Wireline																
Lumen Technologies	LUMN	$1.59	$1.00	Underperform	C-3-9	1,700	21,021	4.6x	4.8x	(21.7%)	(62.8%)	5.4%	0.0%	(0.2x)	(9.8x)	4.2x
Cogent	CCOI	$73.55	$85.00	Buy	B-1-7	3,428	4,625	14.7x	13.7x	22.5%	4.4%	2.5%	0.1%	nm	nm	3.8x
Dycom Industries	DY	$113.41	$125.00	Buy	B-1-9	3,336	4,153	8.1x	7.6x	22.1%	4.0%	3.6%	nm	15.2x	15.9x	1.9x
Uniti Group	UNIT	$5.71	$3.50	Underperform	C-3-8	1,621	6,760	8.1x	8.1x	1.9%	(0.9%)	0.6%	10.5%	nm	nm	6.3x
Wireline Average						2,521	9,140	8.9x	8.5x	6.2%	(13.8%)	3.0%	3.5%	nm	nm	4.1x
US Telecom Wireless & Wireline						80,884	164,092	8.4x	8.1x	5.1%	(1.5%)	7.3%	4.0%	12.4x	10.1x	3.7x
Towers																
American Tower	AMT	$209.43	$240.00	Buy	B-1-7	92,260	112,211	19.1x	18.5x	5.1%	3.2%	3.1%	3.1%	nm	nm	5.2x
Crown Castle	CCI	$112.71	$120.00	Neutral	B-2-7	48,920	70,258	16.9x	17.7x	3.7%	3.9%	4.1%	5.6%	nm	nm	5.4x
SBA Comm.	SBAC	$239.90	$260.00	Neutral	B-2-7	26,182	38,480	20.6x	19.6x	5.3%	3.5%	3.4%	1.5%	nm	nm	6.5x
Tower Average						55,787	73,649	18.9x	18.6x	4.7%	3.5%	3.6%	3.4%	nm	nm	5.7x
US Telecom						67,960	117,831	8.4x	8.1x	5.1%	(1.5%)	7.3%	4.0%	nm	nm	3.7x
US Telecom Comm Infrastructure (Data Centers, Fiber, Towers)						37,531	50,760	17.0x	16.2x	6.9%	(2.5%)	2.5%	3.2%	nm	nm	4.9x

**Excluding effects of TMUS/Sprint Wireline acquisition*

Source: Bloomberg; BofA Global Research; Prices as of 1/12/2023

BofA GLOBAL RESEARCH

U.S. wireless matrix subscriber model

Exhibit 8: US wireless matrix

Our key metric forecasts across our wireless coverage universe.

Postpaid Phone ARPU	1Q23	2Q23	3Q23	4Q23E	1Q24E	2Q24E	3Q24E	4Q24E
AT&T	55.05	55.63	55.99	56.05	56.21	56.38	56.55	56.72
T-Mobile	48.63	48.84	48.98	48.73	48.83	48.93	49.02	48.82
Verizon (ARPA/ARPU starting 4Q19)	nm	nm	nm	nm	nm	nm	nm	nm
Postpaid Phone net adds	1Q23	2Q23	3Q23	4Q23E	1Q24E	2Q24E	3Q24E	4Q24E
AT&T	424	326	468	511	321	270	411	452
T-Mobile	538	760	782	879	456	691	771	795
Verizon	(127)	8	100	260	(86)	49	148	314
Comcast	355	316	294	294	294	294	294	294
Charter	686	648	594	594	594	594	594	594
Altice	8	16	24	-	-	-	-	-
Postpaid net adds	1Q23	2Q23	3Q23	4Q23E	1Q24E	2Q24E	3Q24E	4Q24E
AT&T	542	464	564	987	364	292	323	985
T-Mobile	1,293	1,561	1,158	1,681	1,219	1,499	1,150	1,603
Verizon	633	612	581	1,584	869	812	536	1,710
Prepaid net adds	1Q23	2Q23	3Q23	4Q23E	1Q24E	2Q24E	3Q24E	4Q24E
AT&T	40	167	56	(47)	(25)	121	(13)	(71)
T-Mobile	26	124	88	(42)	(32)	71	28	(88)
Verizon	(351)	(304)	(207)	(113)	(165)	18	(212)	(189)
Service revenue	1Q23	2Q23	3Q23	4Q23E	1Q24E	2Q24E	3Q24E	4Q24E
AT&T	15,483	15,745	15,903	15,976	16,125	16,252	16,358	16,427
T-Mobile	15,546	15,738	15,837	16,062	16,332	16,485	16,573	16,708
Verizon	18,889	19,113	19,330	19,436	19,483	19,825	19,964	20,048
Wireless revenue	1Q23	2Q23	3Q23	4Q23E	1Q24E	2Q24E	3Q24E	4Q24E
AT&T	20,582	20,315	20,692	22,116	21,254	20,839	21,133	22,620
T-Mobile	19,632	19,196	19,380	19,753	20,036	19,557	19,556	20,198
Verizon	24,649	24,390	25,143	26,324	24,876	24,781	25,714	26,802
Wireless EBITDA	1Q23	2Q23	3Q23	4Q23E	1Q24E	2Q24E	3Q24E	4Q24E
AT&T	8,369	8,736	8,897	8,404	8,642	8,961	9,087	8,595
T-Mobile	7,199	7,405	7,600	7,310	7,814	8,106	7,867	7,856
Verizon	na	na	na	na	na	na	na	na

Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 9: US Telecom & Communications Infrastructure capex sheet

Our 2024E capex forecasts across our coverage universe.

	2022	2023E	2024E	1Q 2023	2Q 2023	3Q 2023	4Q 2023E	1Q 2024E	2Q 2024E	3Q 2024E	4Q 2024E
AT&T (excl. wireless)	10,731	8,528	9,274	2,013	1,908	2,261	2,347	2,182	2,085	2,427	2,580
% of revenue	*28%*	*22%*	*25%*	46%	45%	49%	49%	47%	46%	50%	51%
Lumen Technologies	3,016	3,073	2,589	640	796	843	794	652	647	645	644
% of revenue	*17%*	*21%*	*20%*	*17%*	*22%*	*23%*	*23%*	*20%*	*20%*	*20%*	*20%*
Cogent Communications	79	98	106	23	24	25	25	37	37	38	38
% of revenue	*6%*	*7%*	*8%*	*15%*	*16%*	*16%*	*16%*	*14%*	*15%*	*15%*	*15%*
Verizon (excl. wireless)	5,291	4,953	4,870	1,239	1,231	1,229	1,254	1,224	1,207	1,204	1,235
% of revenue	*15%*	*15%*	*15%*	*15%*	*15%*	*15%*	*15%*	*15%*	*15%*	*15%*	*15%*
Total Wireline	**19,117**	**16,652**	**16,839**	**3,915**	**3,959**	**4,358**	**4,420**	**4,096**	**3,976**	**4,314**	**4,498**
p/p growth	*11%*	*(13%)*	*1%*	*(4%)*	*1%*	*10%*	*1%*	*(7%)*	*(3%)*	*8%*	*4%*

	2022	2023E	2024E	1Q 2023	2Q 2023	3Q 2023	4Q 2023E	1Q 2024E	2Q 2024E	3Q 2024E	4Q 2024E
Wireless Service Providers											
AT&T	9,075	9,467	9,774	2,013	1,908	2,261	2,347	2,182	2,085	2,427	2,580
% of service revenue	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Verizon Wireless	15,555	15,784	12,691	3,952	3,998	4,044	3,793	3,119	3,174	3,196	3,213
% of service revenue	21%	21%	16%	*21%*	*21%*	*21%*	*20%*	*16%*	*16%*	*16%*	*16%*
T-Mobile US	13,970	9,747	9,148	3,381	3,572	3,634	3,383	3,001	2,789	2,424	1,533
% of service revenue	23%	15%	14%	19%	18%	15%	10%	14%	14%	14%	13%
Total Wireless	**38,600**	**34,998**	**31,614**	**9,345**	**9,479**	**9,939**	**9,523**	**8,303**	**8,047**	**8,046**	**7,326**
p/p growth	*14%*	*(9%)*	*(10%)*	*6%*	*1%*	*5%*	*(4%)*	*(13%)*	*(3%)*	*(0%)*	*(9%)*
Telecom Infrastructure											
American Tower	1,903	1,694	1,574	474	417	409	393	383	374	506	312
% of revenue	*20%*	*18%*	*17%*	*17%*	*15%*	*15%*	*14%*	*14%*	*13%*	*18%*	*12%*
Crown Castle	1,310	1,428	1,604	341	379	347	361	395	396	402	410
% of revenue	*19%*	*20%*	*24%*	*21%*	*22%*	*22%*	*23%*	*25%*	*25%*	*25%*	*25%*
Digital Realty	2,492	3,003	2,615	688	580	1,045	691	654	652	654	654
% of revenue	*53%*	*55%*	*47%*	*51%*	*42%*	*75%*	*49%*	*47%*	*46%*	*46%*	*46%*
Equinix	2,007	2,720	3,180	530	638	618	935	804	938	747	691
% of revenue	*28%*	*33%*	*35%*	*27%*	*32%*	*30%*	*44%*	*37%*	*42%*	*33%*	*30%*
SBA Communications	217	228	217	49	63	61	54	44	57	60	55
% of revenue	*8%*	*8%*	*8%*	*7%*	*9%*	*9%*	*8%*	*6%*	*8%*	*9%*	*8%*
Infrastructure Total	**7,929**	**9,073**	**9,189**	**2,082**	**2,078**	**2,480**	**2,434**	**2,280**	**2,417**	**2,370**	**2,122**
p/p growth	*(2%)*	*14%*	*1%*	*(25%)*	*(0%)*	*19%*	*(2%)*	*(6%)*	*6%*	*(2%)*	*(10%)*
U.S. Telecom Total	**65,646**	**60,723**	**57,641**	**15,342**	**15,516**	**16,776**	**16,376**	**14,678**	**14,440**	**14,730**	**13,945**
p/p growth	*11%*	*(7%)*	*(5%)*	*(2%)*	*1%*	*8%*	*(2%)*	*(10%)*	*(2%)*	*2%*	*(5%)*

Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 10: Stock Mentioned
Stock prices and ratings mentioned in this report

BofA Ticker	Bloomberg ticker	Company name	Price	Rating
AMT	AMT US	American Tower	US$ 208.05	B-1-7
T	T US	AT&T	US$ 16.44	B-1-7
CCOI	CCOI US	Cogent	US$ 74.54	B-1-7
CCI	CCI US	Crown Castle Inc	US$ 110.83	B-2-7
DLR	DLR US	Digital Realty Trust	US$ 138.68	B-1-7
DY	DY US	Dycom	US$ 113.43	B-1-9
EQIX	EQIX US	Equinix	US$ 819.12	B-1-7
LUMN	LUMN US	Lumen Technologies	US$ 1.55	C-3-9
SBAC	SBAC US	SBA Comm. Corp.	US$ 238.01	B-2-7
TMUS	TMUS US	T-Mobile US	US$ 163.08	B-1-9
UNIT	UNIT US	Uniti Group	US$ 5.79	C-3-8
VZ	VZ US	Verizon Comm	US$ 39.29	B-2-7

Source: BofA Global Research

BofA GLOBAL RESEARCH

Price objective basis & risk

American Tower Corp. (AMT)
Our PO of $240 is based on a 22x '24E AFFO multiple, a premium to the broader REIT sector (approx. 18.5x 2024E AFFO multiple) and tower peers. We believe AMT should trade at a higher multiple than the broader REIT sector as well as Tower peer group for its 1) peer leading AFFO/sh growth, 2) international exposure, 3) relatively small remaining Sprint churn impact, and 4) relative shielding from domestic carrier moderation due to its holistic MLA contract structure.
Risks: With contract-based pricing and margins a function of fixed tower economics, the biggest moving part to the tower story is future lease demand. Weaker-than-expected wireless subscriber growth could engender concern regarding the rate of future tower lease growth and negatively affect the stock. Delayed network upgrades among national carriers or slower market launches from new carriers could have a negative effect on the growth trajectory of wireless towers. With more than half its towers located outside the US, AMT is exposed to foreign currency fluctuations that could affect results and be negative for shares. Lastly, AMT's floating rate exposure (approx. 15%) will be a headwind to earnings in this higher interest rate environment.

AT&T Inc. (T)
Our $20 price objective is based on a P/E multiple of 9.0x our FY24 EPS estimate. The multiple is a slight premium to the historical average. We think this is warranted based on AT&T's focused investing in its core wireless and wireline connectivity businesses to drive subscriber growth.

Downside risks to our price objective are lower-than-projected growth, greater wireless competition, and litigation risk.

Cogent (CCOI)
Our $85 price objective is based on an EV/EBITDA multiple of 14x 2024E inclusive of the TMUS/Sprint wireline acquisition (closed 5/1/23). This multiple is in line with historic comparables, which we believe is appropriate based on projected growth.

Downside risks to our PO are continued sluggish return-to-office causing below-normal legacy business growth, a longer-than-expected realization period and/or higher-than-forecasted costs for integration of the new Sprint Wireline business, greater-than-expected competition as CCOI enters new business markets, and challenges training and retaining a productive sales force.

Crown Castle Inc (CCI)
Our $120 PO is based on a weighted approx. 17x 2024E AFFO multiple. We apply a 19.5x multiple to CCI's macro tower business (60% weighting given business exposure). We apply a 18x multiple to CCI's small cell business (10% weighting) and a 12.5x multiple to CCI's fiber business (30% weighting), a discount to the macro tower business based on higher business risks and capital intensity. We view the CCI story as a 'show me story' as we see the recent 2023E reduction in Tower leasing, increased interest rates, absence of 1x 2023 Sprint payments, elevated Sprint churn, and fiber business headwinds challenging AFFO/sh growth during the next couple years. We view CCI's small cell exposure and double digit revenue expectations positively, but note on the margin it will not drive revenue at scale (10% revenue exposure).

Upside risks to our PO are better line-of-sight to fiber new leasing and lower than historical churn, elevated domestic tower activity, increased small cell adoption leading to outsized growth, and faster than expected interest rate cuts.

Downside risks to our PO are further domestic tower activity pull back, lower than expected Services revenue, decline in small cell adoption and use, continued headwinds in fiber new leasing and increased churn, and further interest rate increases.

Digital Realty Trust Inc (DLR)
Our PO of $150 is based on a target 2024E core FFO multiple of approx. 22x. This multiple is a premium to the broader REIT sector but at a discount to its closest data center peer. We believe DLR should trade a premium to other REITs due to it being exposed to global pricing power and secular digital transformation tailwinds. Yet, we believe DLR deserves a slight discount to EQIX due to its external funding model and lower forecasted core FFO/share growth.

Downside risks to our price objective are increased competition, customer consolidation or bankruptcies. As a real estate company, Digital Realty remains exposed to excessive new supply in its markets, rising construction and capital costs, real estate values, and rising interest rates.

Dycom Industries, Inc. (DY)
Our $125 Price Objective is based on a FY25E EV/EBITDA multiple of approx. 8.5x. An 8.5x EV/EBITDA multiple is slightly above DY's average consensus EV/EBITDA (t+1) multiple of approx. 8x since January 2021. It is also a discount to its largest competitor implied consensus multiple of approx. 9x (current multiple of approx. 8.0x). Since 2021, DY has traded at an approx. 2.0x average discount on an EV/EBITDA(t+1) basis. Going forward, we believe DY should trade at a discount to its peer given exposure to oil and gas sector opportunities, which DY does not possess to the same extent.

Downside risks are: 1) an abrupt slowdown in carrier capex throughout the US, 2) fixed wireless access taking a strong share vs. traditional wireline, 3) adverse weather impacting days in the field, 4) macro events impacting customer financial health, and 5) delays in government funding.

Equinix, Inc. (EQIX)
Our $870 price objective is based on a target multiple of approximately 25x 2024E AFFO/share. Our target multiple is a premium to the broader average REIT multiple of 18.5x as we believe EQIX's superior AFFO/sh growth, pricing power tailwinds, and competitive moat still merit a similar relative valuation premium to other REITs.

The risks to our price objective are 1) a prolonged downturn in Enterprise IT spending, 2) meaningful exposure to the financial industry, and 3) fluctuating FX rates.

Lumen Technologies Inc. (LUMN)
We believe LUMN should be trading at a discount to its peers. Our price objective is $1.00/share based on a 4.7x 2024E EV/EBITDA multiple. We view 4.7x as appropriate given Lumen has high capital intensity, few growth opportunities, and declining cash flow.

Downside risks to our PO are increased competition from wireless, cable, and enterprise service providers and LVLT deal integration. Upside risks are faster-than-expected revenue, EBITDA, and free cash flow growth.

SBA Communications Corporation (SBAC)
Our $260 price objective is based on a approx. 19.5x 2024E AFFO/share multiple, a discount to its closest tower peer. We expect slower domestic growth, elevated Sprint churn, and increased interest rates will inhibit AFFO/share growth versus peers in 2024+ and believe that SBAC should trade at a lower multiple than its closest tower peer.

Upside risks to our PO are increased domestic deployments, particularly from T-Mobile and DISH, in 2H24, faster-than-expected interest rate cuts, and outsized growth in SBAC's international profile.

Downside risks to our PO are further domestic tower activity pullback, lower-than-expected Services revenue, increased international churn, regulatory pressures from international laws, and further interest rate increases.

T-Mobile US (TMUS)

Our PO of $175 applies a 10x EV/EBITDA multiple to our '23 EBITDA estimate, a premium to other wireless companies. Our 10x multiple is a discount to Charter due to integration risk and less FCF generation and capital returns but a premium to AT&T/Verizon due to faster growth.

Downside risks to our price objective are greater-than-expected competition, Sprint/T-Mobile integration issues, and potential threat of new competition from DISH.

Uniti Group Inc (UNIT)

Our $3.50 price objective is based on a 7.0x EV/EBITDA multiple on our 2024 estimates. 7.0x is a fair target in our view given the recent trading of its closest wireline peers which average 8.0x. Uniti's REIT structure implies a tax-free cash flow stream in perpetuity, however, tough industry valuations and dramatic shifts in trends in wireline enterprise sector has challenged UNIT's market dynamics and financial outlook. UNIT has a higher cost of capital and high leverage compared to peers which limits its ability to access funding and may make M&A less attractive.

Upside risks to our price objective are 1) an attractive dividend yield, 2) stable liquidity profile through 2027, and 3) a value-unlocking M&A event with a third party. Downside risks are a dividend cut and a more contentious relationship with anchor tenant Windstream given new management there.

Verizon Communications Inc. (VZ)

Our $41 price objective is based on a target multiple of 9.0x. The target multiple is at a discount to the historical average multiple of 11.4x over the last decade and the more recent average of 10.4x over the past 5-years. The discounted multiple is justified as VZ must adjust its value proposition to account for the improved network quality and coverage of its competitors.

Downside risks to our price objective are rising competitive pressure in wireless and corresponding margin pressure, higher inflation-related costs, litigation risk, and negative economic impacts on the Business segment.

Upside risks are faster-than-expected traction with VZ's new price plan, expense reduction, emergence of 5G killer-apps, and a re-rating of risk in the market.

Analyst Certification

We, David W. Barden, CFA and Alexander Waters, hereby certify that the views each of us has expressed in this research report accurately reflect each of our respective personal views about the subject securities and issuers. We also certify that no part of our respective compensation was, is, or will be, directly or indirectly, related to the specific recommendations or view expressed in this research report.

North America - Telecom Services Coverage Cluster

Investment rating	Company	BofA Ticker	Bloomberg symbol	Analyst
BUY				
	American Tower Corp.	AMT	AMT US	David W. Barden, CFA
	AT&T Inc.	T	T US	David W. Barden, CFA
	Cogent	CCOI	CCOI US	David W. Barden, CFA
	Digital Realty Trust Inc	DLR	DLR US	David W. Barden, CFA
	Dycom Industries, Inc.	DY	DY US	Alexander Waters
	Equinix, Inc.	EQIX	EQIX US	David W. Barden, CFA
	Quebecor Inc.	YQBRB	QBR/B CN	Matthew Griffiths, CFA
	Rogers Communications	RCI	RCI US	David W. Barden, CFA
	Rogers Communications	YRCIB	RCI/B CN	David W. Barden, CFA
	TELUS Corporation	YT	T CN	David W. Barden, CFA
	TELUS Corporation	TU	TU US	David W. Barden, CFA
	T-Mobile US	TMUS	TMUS US	David W. Barden, CFA
NEUTRAL				
	BCE Inc.	YBCE	BCE CN	David W. Barden, CFA
	BCE Inc.	BCE	BCE US	David W. Barden, CFA
	Crown Castle Inc	CCI	CCI US	David W. Barden, CFA
	SBA Communications Corporation	SBAC	SBAC US	David W. Barden, CFA
	Verizon Communications Inc.	VZ	VZ US	David W. Barden, CFA
UNDERPERFORM				
	Cogeco Communications Inc.	YCCA	CCA CN	Matthew Griffiths, CFA
	Lumen Technologies Inc.	LUMN	LUMN US	David W. Barden, CFA
	Uniti Group Inc	UNIT	UNIT US	David W. Barden, CFA

Disclosures

Important Disclosures

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

Coverage Universe	Count	Percent	Inv. Banking Relationships [R1]	Count	Percent
Buy	57	51.82%	Buy	43	75.44%
Hold	27	24.55%	Hold	17	62.96%
Sell	26	23.64%	Sell	12	46.15%

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

Coverage Universe	Count	Percent	Inv. Banking Relationships [R1]	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%

[R1] 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[R2]
Buy	≥ 10%	≤ 70%
Neutral	≥ 0%	≤ 30%
Underperform	N/A	≥ 20%

[R2]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.

INCOME RATINGS, indicators of potential cash dividends, are: 7 - same/higher (dividend considered to be secure), 8 - same/lower (dividend not considered to be secure) and 9 - pays no cash dividend. *Coverage Cluster* is comprised of stocks covered by a single analyst or two or more analysts sharing a common industry, sector, region or other classification(s). A stock's coverage cluster is included in the most recent BofA Global Research report referencing the stock.

Price Charts for the securities referenced in this research report are available on the Price Charts website, or call 1-800-MERRILL to have them mailed.
BofAS or one of its affiliates acts as a market maker for the equity securities recommended in the report: American Tower, AT&T, Cogent, Crown Castle Inc, Digital Realty Trust, Dycom, Equinix, Lumen Technologies, SBA Comm. Corp., T-Mobile US, Uniti Group, Verizon Comm.
BofAS or an affiliate was a manager of a public offering of securities of this issuer within the last 12 months: American Tower, AT&T, Crown Castle Inc, Verizon Comm.
The issuer is or was, within the last 12 months, an investment banking client of BofAS and/or one or more of its affiliates: American Tower, AT&T, Crown Castle Inc, Digital Realty Trust, Dycom Inds, Equinix, Lumen Technologies, T-Mobile US, Uniti Group, Verizon Comm.
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