

Digital Infrastructure

INDUSTRY UPDATE | Q3 2023



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Digital Infrastructure Industry Update — Q3 2023

Dear Clients and Friends,

Houlihan Lokey is pleased to present its Digital Infrastructure Industry Update for Q3 2023. We have included topical news stories, transaction announcements, public markets valuation data, and industry insights to help keep you abreast of this dynamic and constantly evolving industry.

Houlihan Lokey now has more than 40 financial professionals between the U.S. and Europe covering the digital infrastructure sector.

This update also includes the latest from Houlihan Lokey's Capital Markets team, one of the largest and most active non-balance-sheet placement agents on Wall Street. The Capital Markets Group brings real-time knowledge of and insight into what is achievable in today's volatile markets based on recent and in-process financing transactions.

We hope you find this quarterly update to be informative and that it serves as a valuable resource to you. If there is additional content you would find useful for future updates, please don't hesitate to call or email us with your suggestions.

Regards,

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Industry Subsectors Covered

**Broadband and
Connectivity
Providers**



Data Centers



**Wireless
Infrastructure**



**Wireless and
Spectrum**



**Connectivity
Software**



**Digital
Infrastructure
Services**



Accomplishments: Q3 2023 in Review

Houlihan Lokey continued its position as a leading investment banking advisor to digital infrastructure and connectivity companies, having recently advised SwyftFiber on its equity investment from Macquarie, GCM Grosvenor on the sale of its portfolio company Horizon Telecom to Shentel, Newbridge Wireless on its investment from Terramont Infrastructure Partners, ECI on its acquisition of Commify, Proximity on its sale to nLighten, and Palisade Infrastructure on its pending acquisition of selected assets from Consolidated Communications.

The Digital Infrastructure team has earned a reputation for providing superior service and achieving outstanding results in M&A advisory, capital raising, restructuring, and financial and valuation advisory. A trusted advisor, the group combines extensive market capabilities with in-depth industry knowledge to help clients maximize shareholder value.

The Digital Infrastructure team is part of Houlihan Lokey's Global Technology Group, with ~200 bankers dedicated to delivering superior results and outstanding service in the Technology sector.

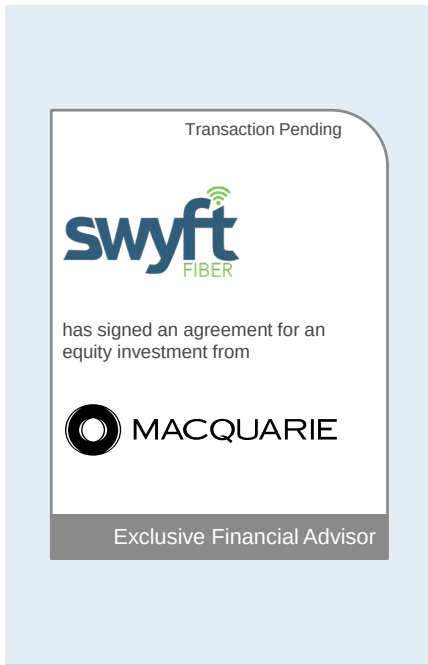
Featured Recent Transactions

Transaction Pending  has signed an agreement for an equity investment from  Exclusive Financial Advisor	 has received an equity investment from  Exclusive Financial Advisor	Transaction Pending  a portfolio company of  has agreed to be acquired by  Financial Advisor	Transaction Pending  has agreed to acquire  from  Buyside & Financing Advisor	 has been acquired by  a portfolio company of  Sellside Advisor	Transaction Pending  has agreed to purchase select assets from  Exclusive Buyside Advisor
Transaction Pending  has agreed to the sale of its telecom tower portfolio to  Sellside Advisor	 has been acquired by  a portfolio company of  Exclusive Financial Advisor	 has sold wireless spectrum to  Sellside Advisor	 has received a growth equity investment from  Lead Financial Advisor and Placement Agent	 has been acquired by  Sellside Advisor*	 has acquired  Buyside Advisor*
 has received a minority investment from  Sellside Advisor*	 a portfolio company of  Senior Secured Credit Facility Growth Financing \$100,000,000 Exclusive Placement Agent	 has acquired  Buyside Advisor	 has sold a portfolio of towers to  Sellside Advisor	 a portfolio company of  has been acquired by  Sellside Advisor	 has sold its wireline business to  Sellside Advisor

*Selected transactions were executed by Houlihan Lokey professionals while at other firms acquired by Houlihan Lokey or by professionals from a Houlihan Lokey joint venture company.

Case Study: SwyftFiber

Digital Infrastructure



Client Profile

- SwyftFiber (Swyft) is a leading high-speed internet provider to customers in Louisiana, Arkansas, and Mississippi. It was founded in 2020 by a team of highly experienced fiber broadband operators.
 - The founding members have previously started and scaled more than 10 companies, with the most recent being Hunt Telecom, which was sold to Uniti Fiber in 2017.
 - This group of seasoned local entrepreneurs realized the significant digital divide in their communities and looked for a way to help bridge that gap.
 - Swyft was founded to bring high-speed broadband services to residents and businesses that are currently unserved and underserved by other internet providers.
- The company was the largest RDOF winner in the state of Louisiana and was one of the leading recipients nationwide. Swyft plans to continue the deployment of its fiber network to build several hundred thousand passings over the next few years.

Our Role

- Houlihan Lokey served as the exclusive financial advisor for Swyft, assisting the company in arranging and structuring the equity investment. Houlihan Lokey ran a comprehensive marketing process soliciting interest from a range of equity capital providers, primarily focused on infrastructure funds.

Transaction Snapshot

- Swyft received a sizable equity investment and plans to use the investment to support the company's subsidized builds and expand its network into adjacent areas.
- Swyft plans to leverage additional potential subsidy programs to continue its network expansion within Louisiana, Arkansas, and Mississippi, and bring high-speed broadband services to the numerous homes and businesses currently unserved or underserved today.
- The success of the transaction highlights Houlihan Lokey's ability to bring its industry expertise and Capital Markets Group together to provide tailored solutions to its clients.

Capital Markets Conditions in Q3 2023

Interest rates remain high across the yield curve with SOFR at 5.3% and 10-year treasury at 4.9%. There's a mood of uncertainty surrounding the economy's ability to withstand high rates and the impact of monetary policy on inflation. Public credit markets have been open all year, with issuance volumes strongest in investment-grade corporates and ABS. Within leveraged finance, both HY bonds and syndicated loans are up 40%–50% year-over-year but remain well below 2021 activity levels. The sentiment is much better in private credit variants of the above-mentioned public asset classes. Allocation to private credit has led to record amounts of dry powder. Private credit investors are hustling to put money to work, despite the recognition that we're at the top of a credit cycle.

Digital Infrastructure

Fiber

- In 2023, FTTH networks with mature customer penetration successfully transitioned from using leveraged finance markets to issuing investment-grade ABS, permitting a larger quantum of debt at lower credit spreads. The breakthrough enabling this transition was the recognition of FTTH's cash flow stability by Fitch and KBRA late last year. In the third quarter, Frontier printed a \$1.5 billion inaugural 5-year ABS at 9.9x cash flow and an 8.79% average cost of debt. Metronet issued a \$677 million 5-year 4(a)(2) private placement to insurance companies, its third transaction.
- Greenfield FTTH networks continue to borrow from private credit markets using nontraditional underwriting metrics comparing the loan balance to cost or other measurements of value.

Data Centers

- The AI craze has led to a massive increase in inquiries related to construction financing for contracted hyperscale data centers in 2023. In the third quarter, traditional project finance lenders, such as Japanese banks and their smaller European followers, began to show signs of getting full on this type of loan. Going forward, Houlihan Lokey expects infra debt funds and other institutional investors to play a larger role in greenfield data center financing.
- In a further evolution of data center finance, a syndicate of private credit investors closed a \$2.3 billion loan secured by CoreWeave's high-performance computers. There's significant interest in financing this type of hardware with the right end customer.
- Public and private ABS markets absorbed nearly \$2 billion of issuance in the third quarter, bringing the year-to-date total to \$5 billion. Markets are open to retail colocation data centers at a slightly higher cost than wholesale providers.

Wireless Infrastructure

- In the third quarter, credit markets were quieter for Tower and DAS owners, but Houlihan Lokey's investor dialogue indicates that the scarcity has created a backlog in demand for wireless infrastructure.

Houlihan Lokey in the Capital Markets

Houlihan Lokey’s Capital Markets team is the largest of its kind on Wall Street, with more than 90 professionals raising approximately \$25B and advising on an additional \$12B across 250+ transactions in the past two years. A dedicated group of individuals within the team are experienced in financing all aspects of the digital infrastructure sector. Please contact Gregg Newman at GNewman@HL.com or Mario Manna at Mario.Manna@HL.com to discuss this in more detail.

Unrated or Below Investment-Grade Capital

For issuers with growth stories or higher cash flow volatility, Houlihan Lokey generally focuses on private credit investors, particularly infra debt funds. Term loans are the most common execution format for this group. Private credit investors offer quicker execution and more flexibility than syndicated leveraged finance markets. Term loans can be tranching into different classes of seniority: first-out/second-out and opco/holdco structures. As leverage and risk increase, PIK features and equity upside (including warrants and conversion options) can be added to the structure. Private capital solutions can also include structured equity in the form of convertible or redeemable minority and common equity investments. In this market, infrastructure funds are aggressively competing with the syndicated markets to provide attractive senior secured capital and are able to provide junior capital in an equity-like form to support growth and/or recapitalization initiatives.

Investment-Grade Capital

For issuers with sufficient cash flow stability or contracted revenue, Houlihan Lokey can structure a transaction to achieve investment-grade credit ratings. Houlihan Lokey accomplishes this using project finance or securitization techniques to isolate cash flows in a nonrecourse SPV. This enables Houlihan Lokey to privately place the transaction with insurance companies at a significantly lower cost than other sources of capital and more quickly than public ABS. Investment grade solutions typically provide longer-dated liabilities and lower principal amortization requirements than term loans. Similar to term loans, securitizations can be divided into senior and junior tranches to optimize the capital structure. If done privately, this type of financing is available to greenfield assets with the appropriate contracts.

Recent Houlihan Lokey Digital Infrastructure Capital Markets Transactions

Project 1 Residential FTTH Provider Growth Capital In Market Exclusive Placement Agent	Project 2 Residential FTTH Provider Growth Capital In Market Exclusive Placement Agent	Transaction Pending swyft FIBER has signed an agreement for an equity investment from MACQUARIE Exclusive Financial Advisor	QScale has received a growth equity investment from Aligned Adaptive Data Centers Lead Financial Advisor and Placement Agent	SURFInternet. a portfolio company of BainCapital POST ROAD Senior Secured Credit Facility Growth Financing \$100,000,000 Exclusive Placement Agent	LOGIX FIBER NETWORKS a portfolio company of Astra CAPITAL MANAGEMENT 2nd Lien Term Loan Refinancing Exclusive Placement Agent
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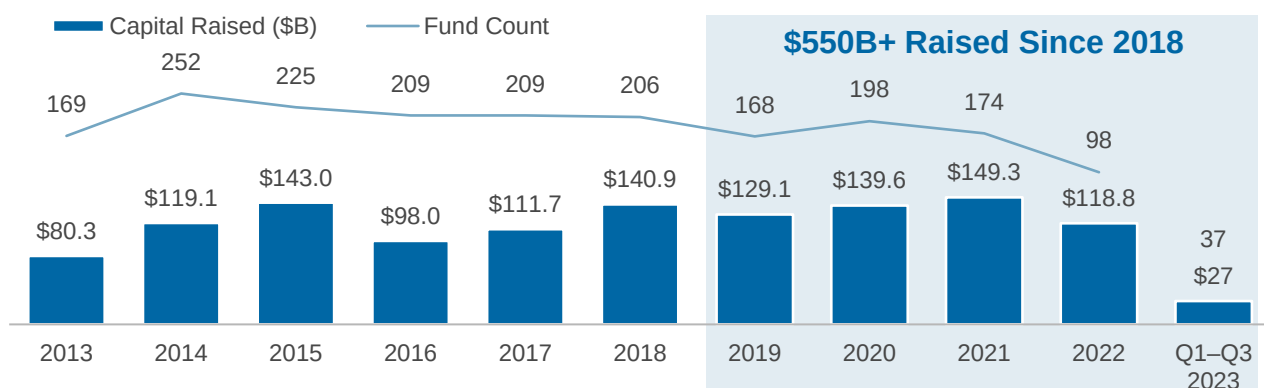
Please let us know if you'd like to speak with our Capital Markets team about the current financing environment and opportunities in this market.

Infrastructure Fundraising

Digital Infrastructure

Overview of Historic Infrastructure Investor Fundraising⁽¹⁾

Q3 of 2023 saw a marked improvement in infrastructure fundraising, although off a low bar. Nearly \$20 billion was raised in the quarter compared to a meager ~\$4 billion raised in both Q1 and Q2. Interestingly, infrastructure debt vehicles were ~\$9 billion of capital raised, in large part due to the final close of the \$7.1 billion Blackstone Green Private Credit Fund III. Year-to-date, three debt funds are in the 10 largest infrastructure funds raised and together account for \$10 billion+/38% of all infrastructure capital raised year-to-date. Importantly, the horizon for infrastructure fundraising looks brighter. Currently, there is nearly \$420 billion of funds in the market, with the top 10 largest funds accounting for \$150 billion+ in targeted capital, of which \$80 billion has already been raised in a first close. Houlihan Lokey expects to see some significant final closes later this year and in early 2024.



Recent Notable Fundraises Covering Infrastructure Sectors in Q3 2023

				
Blackstone Green Private Credit Fund III	Infrantry GGI Senior Infra Debt Fund II	Flaveo IV Green Energy (Luxcara Fund V)	CVI Clean Energy Fun II	Cube Infrastructure Fund III
Fund Size: \$7.1B	Fund Size: \$1.8B	Fund Size: \$1.5B	Fund Size: \$1.5B	Fund Size: \$1.5B
Vintage: 2023	Vintage: 2023	Vintage: 2023	Vintage: 2023	Vintage: 2023

Many of the largest infra funds have raised or are raising dedicated infrastructure credit funds.



Several prominent TMT PE investors have raised or are raising infra funds.



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Key Industry Trends by Sector

United States Broadband

Fiber Build-Outs

- The market continues to underwrite growth plans and lenders are finding new and creative ways to provide sources of capital to fund build-outs.
 - Houlihan Lokey advised SwyftFiber on its equity investment from Macquarie Asset Management to supplement its substantial subsidy winnings from RDOF and state subsidies along with providing additional capital for the upcoming BEAD process.
 - Altafiber announced that it has raised \$600 million in new funding to support the continued construction of the company's fiber networks throughout incumbent and expansion markets in Ohio, Kentucky, Indiana, and Hawaii.
 - Funds managed by Northleaf Capital Partners intend to invest up to \$300 million in Tillman FiberCo to help expand its FTTH network.
 - Lumos Fiber successfully signed a \$1.1 billion sustainability-linked infrastructure financing to fund its ambitious fiber rollout plans and refinance existing indebtedness.

Upcoming BEAD Grant Allocation

- The \$42.5 billion program is almost underway, with states releasing their initial proposals for implementation and hearing public comments.
 - States are required to submit, in two volumes, initial proposals for administering their portion of the \$42.5 billion allocated under the NTIA's Broadband Equity, Access, and Deployment program—both of which are due on December 27.
 - As part of their proposals to the NTIA, states are required to outline a process for accepting challenges to the Federal Communications Commission's map of broadband coverage.
 - Louisiana became the first state to obtain NTIA approval of the broadband plan—with volume one of its proposal approved, the state can begin administering its challenge process, which it plans to finish in 90 days.

European Broadband

U.K. Fiber Altnet Consolidation

- Consolidation of U.K. altnets will remain the industry's most discussed topic for the foreseeable future, with the main questions revolving around when and how it will unfold, which was reaffirmed during the Connected Britain FTTP conference held in London in September.
- The challenge remains the current macroeconomic and interest rate environments, with the increasing cost of funding often pushing altnets to choose between expensive debt or relying on existing equity providers to further fund their platforms.
- Investors remain supportive of the subsector; however, there has been a clear shift to focusing on established scale, proof points of delivering customer penetration, and a near-term pathway to profitability. These factors will be a key driver of consolidation, as they will help platforms deliver scale quicker, realize synergies, and attract further funding.
- A common view echoed at the Connected Britain conference was that the landscape of 60+ altnets could consolidate into a handful over the coming couple of years.

European Progress

- While the majority of European countries are more mature in terms of fiber rollouts, with a greater proportion of homes being passed (Italy at 56%, France at 77%, and Spain at 87% versus the U.K. at 42%), countries like Germany still have a lot of FTTP "whitespace." A key focus revolves around construction and rollout of networks, albeit consolidation is likely to be a consideration given how widely fragmented the altnet market is in Germany.
 - DIF Capital Partners announced that its German portfolio company, Ruhrfibre, received further debt funding from a consortium of banks to support further network build-out.
 - Infracapital's German asset, Infracapital, will reportedly look to explore equity financing options in the near future to facilitate further build-out plans.

Key Industry Trends by Sector (cont.)

U.S. Data Centers and MSPs

AI Demand Is Driving Significant Growth

Increase in Absorption

- Q3 2023 saw the continued ascent of the data center industry in the U.S., as the top five data center markets saw increases in absorption by more than 650 MW compared to Q3 2022. Additionally, it was found that the three cloud giants accounted for more than 60% of the worldwide market.

Increase in Pricing

- As data center pricing in the U.S. saw a 15% YoY increase, the industry trends, including that of absorption, are being attributed to the increasing pressure of AI requirements and the growth of traditional cloud computing needs in North America.

Growth in Secondary and Tertiary Markets

- Despite the major data center markets still accounting for most of the uptick in the industry, the increase in demand has caused hyperscale users to move beyond the current footprint into secondary and tertiary data center markets, evidenced by new developments in markets such as Boydton, Virginia, and Umatilla, Oregon.

Adoption of GPU-Based Infrastructure

- The surge in AI demand is pushing public cloud platforms to host GPU-based infrastructure on their clouds within existing locations.
- The new wave of GPU-oriented providers like CoreWeave are focused on GPUs exclusively and building dedicated facilities. CoreWeave has signed multiple leases throughout the U.S. for tens of MWs of capacity.
- Webscale providers are moving into the game and have mixed in GPU and CPU infrastructure in the same data halls and facilities.
- Next up are the CDN and edge computing platforms like Cloudflare, Akamai, and Fastly. Cloudflare has released a GPU-based cloud infrastructure service and standing-up GPU nodes in seven locations.

EU Data Centers and MSPs

Recent EU Data Center Trends

- Data center take-up and demand continue to deliver strong growth in take-up and demand with the proliferation of AI seen in the U.S. now occurring in Europe. 2023 is expected to be a record year in relation to data center take-up with several new large-scale data center developments announced.
- Tier 1 markets, including Frankfurt, London, Amsterdam, Paris, and Dublin, continue to deliver strong growth with demand outstripping supply due to supply chain delays, constraints in land and power, and regulatory factors. These issues are resulting in an increase in the number of large-scale pre-lets. CyrusOne announced its seventh Frankfurt facility of 80 MW with delivery expected in Q2 2026.
- As a result, build activity remains strong in secondary markets with DRT, Virtus, and GTR all announcing significant data center developments in Rome, Berlin, and Barcelona, respectively. In addition, new data center operators are receiving significant backing to build and operate data centers across Europe, including Form8tion and Apto.

Continued Extensive Activity in Europe

- Q3 saw increased M&A activity across large-scale data center operators, HPC, regional edge colocation, and real estate.
- Large-scale data center operators: Vantage Data Centers EMEA received a €1.5 billion minority investment from AustralianSuper to support its future expansion plans, KevlinX commenced the construction of its 80 MW data center in Brussels following Macquarie Capital's acquisition, and DTCP acquired a majority stake in its existing German data center platform Maincubes.
- In the regional edge colocation sector, Houlihan Lokey advised Proximity Data Centers on its acquisition by nLighten, the European data center platform backed by I Squared; Etix Everywhere acquired five French data centers from Databank and NorthC expanded its Swiss data center footprint with the acquisition of a Zurich data center from Kyndryl; atNorth acquired Gompute, an HPC data center operator in Finland; CapitaLand Ascendas REIT acquired Digital Realty's Watford data center; and Principal acquired a logistics facility in Amsterdam that will be repurposed into a 40 MW data center in partnership with SwitchDC as well as two telco-occupied data centers in Dublin.

Key Industry Trends by Sector (cont.)

U.S. Wireless Infrastructure

M&A and Capital-Raising Activity

- In August, Midco, a midwestern service provider, sold its tower portfolio to K2 Towers, marking its exit from the tower business. This move enables Midco to focus on its core broadband services, reduce debt, and maintain tower access for its government-funded FWA commitments.
- Houlihan Lokey advised on the carve-out and sale of GO's Malta island-wide telecom tower portfolio to BMIT Technologies. The transaction also consisted of a built-to-suit program, in which the newly created TowerCo will deliver a pre-agreed number of new sites each year to support GO's 5G rollout program in Malta.

Recent Developments

- Q3 results demonstrate the resiliency of the tower business model as Crown Castle reported continued growth across all key metrics. American Tower and SBA also reported strong YoY revenue growth with SBA boasting an organic revenue growth of 8.6% in the U.S. Overall, expectations of the outlook for the rest of 2023 and into 2024 remain positive.
- In August, multiple wireless cell sites serving areas in Maui, Hawaii, were out of service due to wildfires. Major wireless operators, including T-Mobile, Verizon, and AT&T, deployed temporary network assets such as mobile cell sites and satellite terminals to restore coverage and connectivity in affected areas, alongside utilizing backhaul workarounds involving microwave and satellite connectivity to maintain service.
- American Tower's (AMT) CFO, Rod Smith, expressed confidence in finalizing the sale of a majority stake in the company's tower infrastructure in India with potential buyers like I Squared Capital, citing progress in the late stages of the process.
- Alongside its Q3 earnings, AMT also announced that current CEO Tom Bartlett plans to retire in February of 2024. The company's board of directors has chosen Steve Vondran to succeed Bartlett as president and CEO.

EU Wireless Infrastructure

Recent EU Wireless Infrastructure Trends

- Mobile network operators (MNOs) continue to grapple with the need for substantial funding in order to deliver the rollout of their 5G networks, all while seeking to maintain their profit margins.
- Disposing (in part or in full) of telecom towers remains an attractive strategic approach to help unlock capital at an accretive multiple for the MNOs who have yet to do so in Europe.
- Vantage Towers, a leading independent European TowerCo, noted recently that it continues to see significant opportunities ahead, driven by Europe's digital transformation and increasing data demands
- Cellnex, on the other hand, continues to focus on delivering an investment-grade status, having put its own expansion plans on hold. On its Q2 earnings call, Cellnex's CFO discussed the group's ongoing pursuit of cost efficiencies, highlighting how lease renegotiations and land aggregations are key objectives for the company.

M&A Activity

- Phoenix Tower International (PTI) completed the acquisition of 2,353 sites from Cellnex. This transaction further expands PTI's presence in dense urban areas across France.
- Additionally, PTI added 1,226 sites and 752 sites, with SFR and Bouygues Telecom as anchor tenants, reinforcing PTI's commitment to supporting reliable connectivity in densely populated regions of France.
- Cellnex also announced the sale of a 49% stake in its Nordics business (Sweden and Denmark) to Stonepeak for €730 million. The transaction included 4,557 sites and a commitment to build an additional 2,500 sites over the coming years. The stake sale supports Cellnex's ongoing strategy to reduce debt and obtain an investment-grade status.

Key Industry Trends by Sector (cont.)

U.S. DI Services

U.S. M&A Activity

- Q3 2023 digital infrastructure services M&A deal volume continued the slow pace seen over the past seven quarters.
- The most notable Q3 2023 deals include Tower Arch Capital's acquisition of TD&I Cable Maintenance, UST's acquisition of MobileComm, and Dycom's acquisition of Bigham Cable Construction, Inc.
- A number of additional companies tested the deal environment earlier this year but have not announced transactions, indicating increased buyer selectivity in the current market environment.

U.S. Trends and Challenges

- After the sudden slowdown in wireless work in the first half of 2023, most services businesses are cautiously optimistic about 2H 2023 and 2024 as their backlogs have begun to fill up again—mostly driven by AT&T and Verizon.
- Ericsson and Crown Castle's July 2023 announcements regarding exiting/reducing field services divisions signal uncertainty but will reduce competition.
- Ericsson informed employees, "With the downturn in market demand, we can no longer justify the cost this unique capability represents."
- Crown Castle's goal was to "reduce costs and better align the company's operational needs in the face of reduced tower activity by its MNO tenants."
- Wireline work has remained steadier in 2023, and the recent allocation of \$42.45 billion of BEAD grants provides a clear path to continued spend.

EU DI Services

EU M&A Activity

- Major M&A activity has revolved around Germany, more specifically around Fixed Network service providers, including transactions such as the following:
 - Maeander Capital, with the support of Kartesia, expanded its shareholding in fiber network construction specialist Soli Infratechnik.
 - TBD, Technische Bau Dienstleistungen, a provider of technical construction services specialized in critical infrastructure, was acquired by Deutsche Beteiligungs.
 - Fiber Experts Deutschland GmbH, a provider of tailor-made turnkey solutions in the area of fiber optics, was acquired by Elecnet GmbH.

EU Trends and Challenges

- The outlook for digital infrastructure services remains positive as sector tailwinds look to drive continued demand and growth.
 - Wireless infrastructure service providers continue to benefit from the construction of tens of thousands of built-to-suit sites across Europe as well as the continued push for rolling out 5G equipment.
 - Fixed network service providers are also benefiting from the significant capital invested to roll out fiber networks across Europe, with large markets such as the U.K. and Germany still only having passed a bit more than half of their total premises for the former and less than half of their total premises for the latter.

Key Industry Trends by Sector (cont.)

Wireless and Spectrum

UScellular: Strategic Review

- UScellular's parent company, TDS, is considering "strategic alternatives."
 - The company has faced challenges in retaining its wireless customer base amid fierce competition from major tier 1 operators and emerging competitors, like cable mobile virtual network operators.
- Tier 1 operators could be among the potential buyers.
 - UScellular's value is not solely tied to its subscriber count and is enhanced by spectrum assets, 5G deployment, tower revenue, and the ongoing expansion of its fixed wireless access business.
- One of UScellular's significant assets is its spectrum holdings, which includes mid-band spectrum in the 3.45 GHz band and C-band spectrum licenses.
 - The company also owns numerous towers and has been increasing tower revenue by attracting more tenants.

Elevated Level of M&A Activity

- On September 12, T-Mobile announced its 600 MHz spectrum purchase from Comcast.
 - Proceeds from the transaction will range between \$1.2 billion–\$3.3 billion.
 - Spectrum will cover major cities, including New York, Orlando, and Kansas City, with a total population of ~39 million.
- On August 8, 2023, DISH and EchoStar announced an all-stock merger worth ~\$3.6 billion.
 - The proposed transaction, rejoining the companies that split in 2008, will combine DISH's fledgling 5G wireless business and satellite TV service with EchoStar's satellite communications business.
 - The transaction should increase DISH's borrowing capacity, which has nearly maxed out given the billions of dollars the company has spent on spectrum.

Connectivity Software

It Pays to Be Capitalized

- Disruptions in the carrier market have translated to longer sales cycles, slower revenue growth, and delayed transaction timelines for carrier-focused software players.
- As a result, diversification initiatives and go-to-market strategies have been at the top of the dockets in recent board meetings—for BSS players, there is increasing focus on segments like broadband; for network observability and analytics players, there is increasing focus on the enterprise segment.
- Separately, massive layoffs within carriers and OEMs have translated to an increased focus on generative AI and MLOps, with many vertically focused software vendors seeking to form partnerships with horizontal AI/ML software vendors.
- PE-backed companies have generally weathered macro challenges better than others and have pursued opportunistic M&A. In some cases, PE and VC backers have doubled down and extended anticipated hold periods by a few years.
- Conversely, bootstrapped businesses are having to buckle down in order to weather the storm. Few are fortunate enough to have the scale to pursue opportunistic M&A.

Transaction Volumes Testing Bottom

- Deal volumes slowed to a near stop, with just over a dozen deals being printed; notably:
 - **Bow River Capital** invested in **Vitruvi**.
 - **Rev.io** acquired **Tigerpaw**.
 - **Airalo** raised \$60 million.
 - **Nile** raised \$175 million.
 - **Working Group Two** agreed to be acquired by **Cisco**—one of 10 announced or closed this year by Cisco (Houlihan Lokey advised Armorblox, a provider of GenAI for cybersecurity, on its sale to Cisco).
 - **FloLIVE** raised \$47 million.

If You Want to Learn More

- Visit our library of connectivity software sector pieces [here](#).

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U.S.—Significant News Stories

Subject: Infra Funds Continued Interest in Towers

Berkshire Partners Announces Majority Growth Investment in TowerNorth

Business Wire

Date: October 5, 2023

“Berkshire Partners today announced it has made a majority growth investment in TowerNorth, a fast-growing independent developer, owner, and operator of critical wireless infrastructure assets in the United States and Europe. ‘TowerNorth has seen tremendous growth since inception, and we continue to see significant opportunities ahead as the build-out of 5G and successor networks continues,’ said Stern, Chief Executive Officer of TowerNorth. ‘We are thrilled to partner with Berkshire Partners’ Digital Infrastructure team, which has experience scaling digital infrastructure companies, and we look forward to leveraging their tower experience and operational capabilities as we continue to develop complex site solutions and large-scale build-to-suit tower programs for our carrier partners.’ ‘We are backing an exceptional senior leadership team at TowerNorth and are thrilled to invest in a company instrumental in developing the advanced wireless infrastructure that is vital to today’s digital economy,’ said John Kelly, Managing Director at Berkshire Partners. ‘In addition to bringing the capital required to support TowerNorth in executing on its contracted tower pipeline, we look forward to helping Bert and his team scale the business to ensure continued best-in-class tower availability and development.’”

Subject: Net Neutrality

State Broadband Officers Outline BEAD Implementation Efforts

CNET

Date: September 27, 2023

“The U.S. Federal Communications Commission is taking steps to restore net neutrality rules that would regulate broadband providers like Verizon, AT&T, and Comcast. On Tuesday, FCC Chairwoman Jessica Rosenworcel said the rules are needed to ensure that internet access is fast, open, and fair. The pandemic ‘made crystal clear that broadband is no longer just nice to have. It’s need to have. For everyone, everywhere,’ Rosenworcel said during a press conference. ‘It is essential infrastructure for modern life. No one without it has a fair shot at 21st-century success.’ The proposed rules are similar to ones adopted by the commission in 2015 and would re-establish the FCC’s authority to regulate broadband under Title II of the Communications Act of 1934—essentially treating broadband like a public utility next to water or power. Rosenworcel said the proposed rules would prevent broadband providers from ‘engaging in blocking, throttling, and paid prioritization,’ adding that there would also be a general rule that prohibits providers from unreasonably restricting consumers from ‘going where they want and doing what they want on the internet.’ The FCC released a fact sheet on the proposed rules on Tuesday and said the full text would be released Thursday. The FCC plans to vote in October on whether to advance the draft rules by soliciting comments and feedback, a process that can take several months.”

Subject: FCC’s Spectrum Auction Authority

Rosenworcel Seeks Fully Funded Rip and Replace and Restored Auction Authority

Inside Towers

Date: September 25, 2023

“The agency lost its spectrum authority for the first time ever on March 9, *Inside Towers* reported. As the Commission plans for the industry’s future spectrum needs, ‘one thing that absolutely needs to happen is the restoration of the FCC’s spectrum auction authority,’ Rosenworcel testified. ‘If this is not corrected, it could have a tremendous impact,’ said Rosenworcel. ‘Over the past three decades, the FCC has held 100 spectrum auctions and, in the process, raised more than \$233 billion for the United States Treasury. Restoring this authority will provide the United States with the strongest foundation to compete in a global economy, counter our adversaries’ technology ambitions, and safeguard our national security.’ She reminded lawmakers the global wireless community is convening for the World Radiocommunication Conference at the end of the year, where the future of spectrum policy is set. ‘Restoring the FCC’s auction authority is the first step in doing that, and it is my hope we can do it soon,’ she added. If approved as is, the FCC’s budget would increase 5.3%, or more than \$20 million, over the current year’s amount. The agency hopes to raise its staffing level to about 1,600 this year and maintain that level next year, according to its budget request.”

U.S.—Significant News Stories (cont.)

Subject: Advancements in Connectivity APIs

Ericsson Executes on Strategy to Build Platform Business With Strategic Partnership to Provide Access to Network APIs

Ericsson

Date: September 20, 2023

“Ericsson and Deutsche Telekom (DT) are launching a commercial partnership to offer communication and network APIs to developers and enterprises. Building a global platform to expose advanced 5G capabilities—such as Quality-on-Demand, speed, latency, and location—through easy-to-consume network APIs is a key component of Ericsson's enterprise strategy. This will allow developers and enterprises to integrate network features into their applications, which will accelerate enterprise digitalization and create new ways for operators to monetize their network investments. Telecom consultancy and research firm STL Partners predicts that the revenue opportunity created by mobile network APIs will grow to more than \$20 billion by 2028, which is directly addressable by Ericsson's platform business. In addition, Ericsson estimates vastly higher revenue opportunities for operators to be realized through new use cases based on network APIs. This will fuel investments in mobile infrastructure to meet a growing demand for advanced network capabilities. Börje Ekholm, President and CEO of Ericsson, comments: ‘Wireless networks have been key in digitalizing consumers. With the capabilities of 5G, enterprises can now leverage mobility as well to transform their businesses. Through network APIs, developers and enterprises get easy access to the advanced capabilities of the network to develop entirely new use cases.’”

Subject: Google Fiber

Google Fiber Expands Efforts for Faster Internet—Exec in Charge Explains New GFiber Lab

WRAL TechWire

Date: September 20, 2023

“Google Fiber was founded on the idea that everyone should have access to Gigabit internet and that it should be priced accordingly. In 2010, this was a pretty audacious idea, and GFiber played a leading role in making that idea mainstream. But when we slowed down our expansion, our pace of product innovation slowed down too. In the past three years, we've made tremendous strides, upgrading our products, services, and network. We've focused on not just keeping up but going beyond—being one of the first to offer 2 Gig, to roll out Wi-Fi 6 and whole home Wi-Fi 6E, to bring 5 Gig and 8 Gig to whole cities at affordable rates, and to offer 20 Gig in a home setting. And we don't intend to stop any time soon. While the past few years were productive, we've been asking some fundamental questions about where the internet industry needs to go next: What if we are just scratching the surface? Is 100G really fast enough for what the future demands? Are we positioned to deliver a world of connectivity powered by cloud applications, AI, and even someday quantum computing services? Have we developed advanced network services that can deliver the best content experience for customers today? And what if we invest in infrastructure and services that can lead to groundbreaking evolution for education and commercial applications that can fuel the U.S. economy and provide economic opportunities for all?”

Subject: Data Center Developers Move to Unexpected Cities

How a Small City in Iowa Became an Epicenter for Advancing AI

Microsoft

Date: September 8, 2023

“For the past few years, Microsoft has been powering the future of AI from a cluster of data centers located amid sprawling farmlands and rural roads in Iowa. Iowa is home to an Azure supercomputer Microsoft built for artificial intelligence research company OpenAI to train breakthrough AI models capable of assisting with an increasing range of tasks, from analyzing documents to writing and debugging computer code and helping plan vacations. That work has made a small city in America's heartland an unlikely epicenter for the AI revolution that has captivated the world since ChatGPT, OpenAI's conversational AI system, was released in November 2022. ‘These supercomputing systems are really the lifeblood of our research,’ said OpenAI's Katie Mayer, who manages the company's partnership with Microsoft. ‘To do the work that we're doing at this scale and to develop really novel AI capabilities, you need these systems. They've really accelerated the rate of progress that we are all benefiting from now.’ The Iowa supercomputer is among the largest and most powerful in the world, according to Microsoft. The company plans to continue investing in data centers in the U.S. to benefit its customers and further America's leadership in AI innovation, said Noelle Walsh, Microsoft's Corporate Vice President for Cloud Operations and Innovation.

U.S.—Significant News Stories (cont.)

Subject: Potential New Spectrum Buyer

Engineering Firm Aims to Spend Billions on 5G Spectrum

Light Reading

Date: August 29, 2023

"In a new court filing, engineering giant Burns & McDonnell offered a glimpse into the company's plan to purchase billions of dollars worth of spectrum in order to develop open, 5G networks for utilities, regional carriers, and internet providers. Burns & McDonnell said it 'plans to unlock consumer choice by making spectrum available to those in need, such as regional carriers and internet providers (particularly in underserved and unserved areas), in addition to working with partners to modernize our aging [utility] infrastructure and enable private networks for utilities so they can offer enhanced services to their customers.' The Kansas City, Missouri-based company said it has already assembled an 'American-led financing team' to pursue the funding it will need to purchase the low band 800MHz spectrum that is at the core of its plan. 'Burns & McDonnell, those it has engaged with for financing, and potential utility and industry partners (BMCD Group) is a potential and credible purchaser of the 800MHz spectrum licenses at issue and has been planning to purchase the spectrum at auction,' the company added. Burns & McDonnell made its disclosures as part of a deepening battle between T-Mobile and Dish Network over the former's 800MHz spectrum licenses. Under a complex agreement inked in 2019 among Dish, T-Mobile, and the U.S. Department of Justice—a deal that paved the way for T-Mobile to acquire Sprint—T-Mobile is required to divest a nationwide 13.5MHz chunk of spectrum in the 800MHz band."

Subject: Labor Changes in the Wireless Industry

T-Mobile U.S. Cuts 5,000 Jobs

SDxCentral

Date: August 24, 2023

"T-Mobile U.S. is slashing 5,000 jobs on the heels of the telecommunication company's management touting the carrier's outsized success. In an email to T-Mobile U.S. employees, which was also included in a Securities and Exchange Commission (SEC) filing on the job cuts, CEO Mike Sievert explained the approximately 5,000 employees being let go represent around 7% of the carrier's total employee base at the telecom operator. Sievert wrote that those people losing their jobs would be notified over the next five weeks and come 'primarily in corporate and back-office, and some technology roles. Impacted roles are primarily duplicative to other roles or may be aligned to systems or processes that are changing, or may not fit with our current company priorities,' Sievert further explained. 'Some areas of the business will be implementing more centralized models where they can improve efficiency and effectiveness and save costs.'"

Subject: UScellular Sale

TDS Explores 'Strategic Alternatives' for UScellular

Fierce Wireless

Date: August 4, 2023

"Telephone & Data Systems (TDS), the parent company of UScellular, is exploring 'strategic alternatives' for the wireless operator, which has struggled to retain customers amid competition, signaling a potential sale. While potential buyers could include tier 1 operators, experts believe UScellular's scattered U.S. footprint may lead to a network shutdown with subscribers migrating to the buyer's network, with the real value being its spectrum holdings."

"UScellular is also focusing on deploying 5G across its mid-band spectrum, expanding its tower revenue, and growing its fixed wireless access (FWA) business, with FWA subscribers exceeding 100,000 and plans to offer FWA over mid-band 5G spectrum later this year."

U.S.—Significant News Stories (cont.)

Subject: Major Funding in the Data Center Space

CoreWeave Raises \$2.3 Billion in Debt Collateralized by Nvidia Chips

Reuters

Date: August 3, 2023

“Specialized cloud provider CoreWeave has raised \$2.3 billion in a debt facility led by Magnetar Capital and Blackstone (BX.N) and collateralized by Nvidia chips, with the funds to be used to expand to meet rising AI workload. Other lenders in the facility include Coatue and DigitalBridge (DBRG.N), as well as BlackRock, PIMCO, and Carlyle (CG.O). The unusual use of Nvidia H100, the sought-after chip that powers AI computing as collateral, highlights the value of such hardware in the capital-intensive AI arms race. The outsized loan also marks the growing market in private asset-based financing, as private equity firms turn to lower-risk lending secured by hard assets and take on more corporate debt when banks slow down. ‘We negotiated with them to find a schedule for how much collateral to go into it, what the depreciation schedule was going to be versus the payoff schedule,’ said Michael Intrator, chief executive at CoreWeave. ‘For us to go out and to borrow money against the asset base is a very cost-effective way to access the debt markets.’ Nvidia-backed CoreWeave has seen a boost from the generative AI boom thanks to its purpose-built cloud infrastructure at scale. It has partnerships with AI startups and cloud providers, which it also competes with, to build clusters to power AI workload.”

Subject: Labor Cuts in the Services Sector

Ericsson Retreats From Field Services, Lays Off 750

Light Reading

Date: July 31, 2023

“5G equipment supplier Ericsson said it would cut 750 employees from its North American business as it shuts its field services operation. The move is part of a much wider retrenchment among 5G vendors as big network operators in the US dramatically slow their spending on their networks. ‘Beginning October 1, 2023, all Ericsson U.S. field services will be performed by our Authorized Service Providers to align with our global service delivery model. Since the inception of our field service delivery business in 2015, we have consistently worked with trusted and authorized external providers. This strategic change will provide added flexibility, reduce costs, and simplify our operations, allowing us to operate more efficiently and better serve the changing needs of our customers. This change is limited to field-based delivery service by Ericsson employees,’ Ericsson wrote in a statement.”

Subject: Public Telcos Look to Mitigate Struggles

Verizon, Crown Castle, Cisco Confirm Layoffs

Light Reading

Date: July 25, 2023

Verizon, Crown Castle, and Cisco are among the companies in the U.S. telecom industry in the midst of cutting jobs. The news isn’t surprising: The sector is experiencing a spending slowdown, exacerbated by rising interest rates and increasing competition. Further, similar situations are playing out in other parts of the wider technology market. Regardless, the situation appears to be affecting thousands of jobs. ‘Crown Castle...initiated a restructuring plan as part of the company’s efforts to reduce costs to better align the company’s operational needs with lower tower activity,’ the company wrote in an SEC filing Monday. ‘The plan includes reducing the Company’s total employee headcount by approximately 15%.’ The move doesn’t come as a total surprise. Last week, Crown Castle—one of the nation’s biggest cell tower companies—said it would cut \$90 million in expected services revenues from its full-year 2023 financial forecast.”

EU—Significant News Stories

Subject: U.K. Fiber Consolidation

Voneus Consolidates Broadway Partners and Tiger's SWS Broadband and Cadence

Megabuyte

Date: September 25, 2023

"In some reasonably significant U.K. rural broadband consolidation, Macquarie Capital and Israel Infrastructure Fund-backed Voneus is merging with Tiger Infrastructure-backed SWS Broadband and Cadence (formerly AIM-listed Rural Broadband Solutions, acquired as part of a £75 million funding package from Tiger in October 2022) as well as buying distressed Broadway Partners (which had spent £29 million passing 10,000 premises when Downing pulled the plug on its £145 million support), all on undisclosed terms. The combined group will have up to £250 million in new capital (debt and equity) and a 350,000 premises target. Voneus is clearly the consolidating party."

Subject: Data Center Consolidation

DTCP Takes Majority Stake in German Operator Maincubes

DatacenterDynamics

Date: September 19, 2023

"Digital Transformation Capital Partners (DTCP) has become the majority owner of German data center firm Maincubes. Funds advised by the investment management firm this week announced additional investment in the data center company, acquiring an additional stake from co-shareholder Art-Invest Real Estate. Maincubes currently operates the FRA01 data center in Frankfurt and another in Amsterdam in the Netherlands. Earlier this year Maincubes secured more than €1 billion (\$1.07 billion) in debt financing to fund its expansion plans. The company says it has a portfolio with more than 100 MW of capacity in operation or development as well as more in the pipeline."

Subject: U.K. Fiber

Fern Names Cuckoo and AllPoints Fibre as Retail and Wholesale Brands for Its FTTP Operations

Cuckoo.co

Date: September 14, 2023

"Fern Trading Ltd. has today launched the new branding of its FTTP (fibre-to-the-premises) group, comprising national wholesale network—AllPoints Fibre and national ISP (internet service provider)—Cuckoo broadband, in a move that will accelerate full fibre delivery over the next five years. Together, AllPoints Fibre and Cuckoo have a combined mission of becoming the U.K.'s most recommended way to connect. The news follows Fern's consolidation of its FTTP businesses in February this year. Cuckoo, an already established award-winning national ISP within the Fern family, will migrate the customer bases of Giganet, Jurassic Fibre, and Swish Fibre over the coming months, while the businesses combine expert regional operations and national partnerships to power their new national wholesale network under the AllPoints Fibre brand."

Subject: Data Center Consolidation

AustralianSuper Invests €1.5 Billion in Vantage Data Centers EMEA

DatacenterDynamics

Date: September 11, 2023

"Australian pension fund AustralianSuper has invested in Vantage Data Centers' EMEA operations. The company this week announced that it is investing €1.5 billion (\$1.6 billion) to acquire a 'significant minority stake' in Vantage Data Centers Europe, Middle East, and Africa (Vantage EMEA), a DigitalBridge-sponsored company. The pension fund said it would be a "key shareholder" in Vantage EMEA alongside DigitalBridge and support the data center firm's expansion and development ambitions in the region. Sureel Choksi, President and CEO of Vantage Data Centers, said: 'As data center demand continues to rapidly accelerate across EMEA, this investment will fuel Vantage's ability to accelerate the growth of our environmentally friendly, large-scale data center footprint across the region and further deepen our relationships with customers as we enable them to grow and scale their businesses with reliable, efficient, and sustainable data centers.'"

Subject: U.K. Fiber Market Progress

Faster Full-Fibre Broadband Now Available to Over Half of U.K. Homes

Ofcom

Date: September 7, 2023

"Availability of gigabit-capable broadband continues to improve at a rapid pace, with nearly 22.4 million U.K. homes (75%) now able to access them. This is up from 21.9 million (73%) and has been driven by the continued rollout of full-fibre broadband. Over half of U.K. homes (52%), equating to 15.4 million households, now have access to full-fibre services. This has been driven mainly by the larger fiber operators but also supported by a number of smaller providers across the U.K. serving individual communities and regions."

EU—Significant News Stories (cont.)

Subject: Investment in European Data Centers

Digital Realty to Build Data Center in Rome, Italy

DatacenterDynamics

Date: September 7, 2023

“Digital Realty is to expand into Italy and has acquired land in the capital city, Rome. The company this week announced its expansion into the Italian market following the acquisition and pre-development planning of land in Rome. The 22-hectare site will house ROM1, a tier IV-quality data center. Specifications and precise location weren't shared. The company said construction is expected to begin in Q4 2023. Jan-Pieter Anten, Group Managing Director EMEA, Digital Realty, said: ‘Developing our first data center in Rome is an important part of our integrated strategy across the Mediterranean and strengthens our leadership position in the region. It represents a significant expansion of Platform DIGITAL, Digital Realty's global data center platform, further supporting our customers as they rapidly deploy their critical infrastructure at the heart of a growing connected data community.’”

Subject: U.K. Fiber Consolidation

Nexfibre and Virgin Media O2 Buys Fibre Operator Upp

Megabuyte

Date: September 6, 2023

“VMO2 and its parents/InfraVia's FTTP JV nexfibre has emerged as the buyer of East of England FTTP player Upp, whose sale was driven by it being founded by oligarch-backed LetterOne. VMO2 will initially acquire—on undisclosed all-cash terms—and integrate the network/offer VMO2 services, then pass on ownership to nexfibre within the next year. According to the release, the Upp business currently comprises a somewhat measly 4,000 retail and business customers on 175,000 premises passed; for context, VMO2 last quarter built 176,000 premises on behalf of nexfibre's 5 million premises rollout, taking VMO2's footprint to 16.4 million premises, and customers to 5.67 million. Off the back of the acquired Upp network, VMO2/nexfibre plans to invest £350 million to reach 500,000 premises in the region by 2026.”

Subject: U.K. CPaaS Provider Switches Investor

ECI Partners Acquires Commify From Hg in EUR 300 Million Deal

Mergermarket

Date: September 5, 2023

“ECI Partners, the leading growth-focused mid-market private equity firm, today announces its investment in Commify, the U.K.-headquartered European leader in business messaging solutions to Local Enterprises. The deal, valued at €300 million, provides a full realization for Hg that has backed Commify's transformation since 2016. Commify's integrated solutions enable more than 45,000 customers to communicate with their customers and staff, sending over 5 billion messages per year, covering a range of business-critical use cases from appointment confirmations to emergency alerts, via a range of channels, including SMS, WhatsApp, RCS, email, and voice. The business is a long-established leader in the European Local Enterprise segment, complemented by fast-growing operations in the US and Australia. Commify has completed 16 complementary acquisitions in the past decade, and the investment from ECI will support further acquisitions across both existing and new countries, as well as accelerate future platform and product development.”

Subject: Data Center Market Trends

Data Center Providers to Target European Hubs in Land and Power Grab

S&P Global Market Intelligence

Date: August 31, 2023

“Frankfurt, London, Amsterdam, and Paris are seeing continued demand for data center capacity from service providers and enterprises tapping in the cloud, as well as hyperscalers. At the same time, these large European markets are facing land and power constraints along with regulatory frameworks that make it increasingly difficult to build. In Frankfurt, providers struggle to secure power for future builds and are subject to industry regulation that has lengthened the building permit process for new builds from months to years. The German public also has a negative perception of data centers, seeing them as ‘energy hogs’ and unsustainable. In London, there is a shortage of suitable land with power in the most highly connected locations, leading to strong competition for sites.”

EU—Significant News Stories (cont.)

Subject: U.K. Fiber Market Progress

CityFibre Passes Three Million U.K. Premises With Full-Fibre Network

ComputerWeekly.com

Date: August 30, 2023

“CityFibre has revealed it has now passed three million premises in the U.K., adding almost a million homes to this tally over the course of the past 12 months. The provider is the U.K.’s largest independent full-fibre platform and has a target of connecting up to eight million premises in 285 U.K. cities, towns, and villages, reaching a third of the country, by the end of 2025. CityFibre began the construction of its access network in 2018, commencing mobilization in its first 12 towns and cities, and has since achieved primary build complete status in multiple locations, including Milton Keynes, Stirling, Peterborough, and Coventry.”

Subject: U.K. Telecoms Market Dynamics

U.K. Telecoms Groups Under Fire for Adding Inflation ‘Premium’ to Bills

Financial Times

Date: August 28, 2023

“At BT’s general meeting, chief executive Philip Jansen told investors in Britain’s largest telecoms operator that its users were getting ‘terrific value for money’ on mobile and broadband deals. ‘Customers are definitely getting more for less, and prices here in the U.K. are among the lowest in Europe,’ he said. Jansen’s comments reflected efforts by his industry to capitalize on growing demand for its services. Telecoms companies say yearly bill increases are not only comparatively cheap but also help fund much-needed investment. But as millions of billpayers contend with rises of up to 17.3% this year, the biggest in Europe, on the back of record-high price growth, that argument is coming under greater scrutiny from consumer groups and regulators. [...] The report also found that the telecoms industry was investing up to £2.5 billion a year in mobile networks, and about £3.8 billion into fixed broadband. It estimated that combined capital expenditure accounted for nearly 70% of total investment made by some of the largest industry players. [...] Enders Analysis forecasts that U.K. mobile operators’ revenue growth will slow from 7.5% in the three months to June 2023 to 6% over the full year and 3% in 2024, with some customers set to re-sign at lower prices.”

Subject: Cross-Border Acquisition

Proximus Expands CPaaS Portfolio With Route Mobile Acquisition

UC Today

Date: July 18, 2023

“Proximus signed a definitive agreement for a majority stake worth 58% in CPaaS specialist Route Mobile. In turn, several of Route Mobile’s founding shareholders acquire a minority stake in Proximus Opal, (subsidiary and holding company of Telesign). The transaction empowers Proximus Group to become one of the largest CPaaS players globally with a significantly expanded customer outreach. Route Mobile’s footprint in the Indian subcontinent, Latin America, Africa, and Asia-Pacific harmonizes with Telesign’s presence in Europe and North America. This enables Proximus Group to establish a global customer coverage of more than 200 countries and territories while ensuring exposure to high-growth markets.”

Subject: Management Change in Germany

NFON Presents New Management Team

Bloomberg

Date: July 17, 2023

“Leading European provider of integrated cloud business communications is realigning its management level and expanding the C-level to include new areas of responsibility. The personnel realignment is aimed at continuously and sustainably developing NFON AG profitably with a view to the future. ‘In order to be able to fully exploit the potential in the future and to live up to the role as an innovative pioneer of integrated cloud business communications in the European market, operational excellence is the essential basis,’ said Patrik Heider, CEO of NFON AG. Two additional key positions are being created as part of these measures in order to offer customers a first-class and innovative product portfolio: Effective immediately, Markus Krammer is responsible for product development as Chief Product Officer and Gernot Hofstetter is responsible for the newly created Commercial department as Chief Commercial Officer. ‘Full speed ahead: with the expanded and new management team, we can now meet the needs of our customers more efficiently with a corrected structure and better meet our high standards for customer centricity. With a clear focus, quick decisions, and a new process landscape, we will achieve sustainable profitability thanks to this defined operational excellence!’”

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Selected Q3 2023 Transactions

Announced Date	Target	Investor/ Acquirer	Description
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United States

Broadband

Sep-23	903 Broadband of Texas	360 Communications	Oklahoma-based 360 Communications and 903 Broadband of Texas have merged to create U.S. based 360 Broadband.
Sep-23	ATC Broadband (Select Assets)	Vyve Broadband	Vyve Broadband, a leading provider of high-speed internet and communication solutions, has acquired the commercial arm of ATC Broadband located in the Vidalia, Georgia, area.
Sep-23	Fastmetrics	PAXIO	PAXIO, a Bay Area dedicated fiber provider headquartered in Emeryville, and Fastmetrics, a business ISP and managed services provider (MSP) headquartered in San Francisco, have merged, making Fastmetrics a subsidiary of PAXIO.
Aug-23	Altafiber	Macquarie/Ares	Altafiber announced that it has raised \$600 million in new funding to support the continued construction of the company's fiber networks throughout incumbent and expansion markets in Ohio, Kentucky, Indiana, and Hawaii. These new funds will allow the company to expand and upgrade its current footprint.
Aug-23	Hometown Cable	NKTELco	NKTELco, a leading communications provider in Ohio, announced a deal to purchase Hometown Cable. Existing Hometown Cable customers in Coldwater, St. Henry, Montezuma, and surrounding rural areas are now part of NKTELco. The companies operate adjacent to one another which will make for a seamless transition.
Aug-23	Tillman FiberCo	Northleaf Capital	Funds managed by Northleaf Capital Partners intend to invest up to \$300 million in U.S. fiber network company Tillman FiberCo. The unnamed Northleaf funds have made an initial investment of \$200 million as Tillman expands its fiber-to-the-home network in underserved neighborhoods across the U.S.
Aug-23	AccessPlus	RingSquared	RingSquared, a nationwide business voice and data solutions provider, has acquired the telecom business AccessPlus Communications, based out of Chicopee, Massachusetts.
Aug-23	Consolidated Communications (Select Assets)	Palisade Infrastructure	Palisade Infrastructure and Consolidated Communications, Inc., have entered into an agreement whereby Palisade, on behalf of its managed funds, will acquire Consolidated's assets in Washington state. The transaction will expand Palisade Infrastructure's fiber investments in Washington.
Jul-23	One Ring Networks	EarthLink	EarthLink, a leading internet service provider, announced its acquisition of One Ring Networks Inc., one of the largest fixed wireless providers of voice and data services in the country.
Jul-23	MiSignal	Surf Broadband	Surf Internet, a leading fiber-optic high-speed internet service provider in the Great Lakes region, announced that it has acquired the fiber-optic network assets of Howell-based MiSignal.
Jul-23	Rural Comm	GigFire	GigFire, a pioneering company specializing in hybrid broadband network infrastructure, utilizing Fiber to Premises and 60 GHz technology, has announced the acquisition of Rural Comm, located in Farina, Illinois.

Data Centers

Aug-23	CyberlinkASP [Staple Street Capital]	Seaport Capital	Seaport Capital (Seaport), a New York-based private equity firm, has acquired CyberlinkASP (Cyberlink) from Staple Street Capital ("Staple Street Capital" or "SSC"), a leading middle-market private equity firm. Cyberlink is an MSP offering fully outsourced IT management services to SMB and enterprise customers.
Aug-23	Aligned Data Centers [Macquarie]	Mubadala	Mubadala Investment Company (Mubadala), the Abu Dhabi sovereign investor, invested in Aligned Data Centers (Aligned), a leading pan-Americas data center company headquartered in the U.S. With this investment, Mubadala will become a minority partner alongside majority partners managed by Macquarie Asset Management.
Jul-23	Three Hyperscale Data Centers in Northern Virginia	Digital Realty and TPG	Digital Realty (NYSE:DLR), the largest global provider of cloud- and carrier-neutral data center, colocation, and interconnection solutions, and TPG Real Estate, the real estate investment platform of alternative asset management firm TPG, established a joint venture in which TPG will acquire a majority stake in three stabilized hyperscale data centers in Northern Virginia (the "Portfolio").
Jul-23	Hyperscale Data Centers—Elk Grove, Illinois	Digital Realty and GI Partners	GI Partners, a leading private alternatives investment firm, has announced the acquisition of a 65% interest in the ownership of two hyperscale data centers in Elk Grove Village, Illinois, in partnership with Digital Realty Trust (NYSE:DLR). GI Partners is making the investment on behalf of its Essential Tech and Science Fund (GI Partners ETS Fund LP, the "ETS Fund"), the firm's open-ended core-plus fund. The properties are more than 90% occupied, primarily by investment-grade customers, and provide significant connectivity both to the Midwest region and nationally.
Jul-23	IT Freedom	Thrive	Thrive, a premier provider of cybersecurity, cloud, and digital transformation managed services, announced the acquisition of IT Freedom, a technology MSP based in Austin, Texas.
Jul-23	Umbrella Managed Systems	IT Solutions Consulting	IT Solutions Consulting, LLC, a leading provider of managed IT, managed security, and application development services in the Mid-Atlantic region, announced the acquisition of Umbrella Managed Systems. Based in Kansas City, Missouri, Umbrella is an award-winning MSP renowned for its IT support, cybersecurity and cloud solutions, and healthcare sector expertise.
Jul-23	EdgePresence	Ubiquity	Ubiquity, a digital infrastructure investor, announced the acquisition of EdgePresence, a pioneer in the build-to-suit edge data center industry, delivering turnkey, localized and scalable network compute solutions for carriers and data hyperscalers.

Selected Q3 2023 Transactions (cont.)

Announced Date	Target	Investor/ Acquirer	Description
United States			
Wireless Infrastructure			
Aug-23	Midco Tower Portfolio	K2 Towers	Midco, a Midwestern broadband service provider, has successfully sold its tower portfolio to K2 Towers, marking its exit from the tower business while focusing on its core broadband services.
Wireless and Spectrum			
Sep-23	Comcast	T-Mobile	T-Mobile has agreed to acquire a to-be-determined portion of Comcast's 600MHz spectrum holdings. In a Securities Exchange Commission filing, T-Mobile disclosed the transaction was valued between \$1.2 billion and \$3.3 billion, depending on how much spectrum T-Mobile acquires.
Aug-23	EchoStar	Dish Network	DISH Network Corp. and EchoStar Corp. announced they have entered into a definitive agreement for DISH Network to combine with EchoStar Corp. in an all-stock merger at a fixed exchange ratio.
Telecom Services			
Sep-23	TD&I Cable Maintenance	Tower Arch Capital	Tower Arch Capital completed the recapitalization of TD&I Cable Maintenance. TD&I Cable Maintenance is a specialty infrastructure services provider primarily focused on the installation and maintenance of underground and aerial telecom and cable networks.
Aug-23	MobileComm	UST	UST has acquired MobileComm, a global telecom engineering firm. MobileComm is engaged in deploying and modernizing wireless networks, boosting performance standards, setting up private cellular networks, and executing Open RAN solutions.
Aug-23	Bingham Cable Construction	Dycom	Dycom Industries has acquired Bingham Cable Construction, Inc. Bingham provides telecommunications construction services in the southeastern United States and generated approximately \$140 million of revenue over the past 12 months. The acquisition strengthens Dycom's customer base and geographic scope and expands its ability to further address growth opportunities in rural broadband deployments.
Connectivity Software			
Oct-23	gaiia	Y Combinator, Oxio, and Kima Ventures	gaiia, an emerging force in connectivity operating systems (OS), marks a significant milestone with the successful closure of a \$13 million seed funding round. Notable investors include YCombinator, Kima Ventures, and oxio alumni.
Sep-23	floLIVE	Greenfield Partners and 83 North	floLIVE, creator of the world's first and largest hyperlocal global cellular network and a leading provider of global connectivity, network, and connectivity management platforms for IoT, announced that it has raised \$47 million in a Series C round of funding. The round was co-led by Greenfield Partners.
Sep-23	Depotnet	Everfield	Everfield has acquired Depotnet, a leading work order management software provider specializing in the telecoms, utilities, and infrastructure sectors. The acquisition enables Depotnet to invest in innovation and accelerate its growth, with the full support and resources of Everfield.
Aug-23	CodiLime	Waterland Private Equity	Waterland Private Equity has invested in CodiLime, a technology company providing software development and network engineering services for the telecommunications and network sector.
Aug-23	Working Group Two	Cisco	Cisco acquired Working Group Two, a Norway-based software vendor that spun out of Telenor in 2017 to build a fully cloud-native, global, and programmable mobile core platform that can be consumed as a service by mobile operators.
Aug-23	Webbing	Wireless Logic	Wireless Logic, the leading global IoT connectivity provider has acquired Webbing, a global mobile virtual network operator (MVNO) providing connectivity for enterprise mobility and IoT applications.
Aug-23	Nile	March Capital and Sanabil Investments	Nile, the leader in next-generation enterprise networks, announced a \$175 million Series C investment round co-led by March Capital and Sanabil Investments.
Jul-23	Airalo	e& capital	Airalo, the pioneering eSIM marketplace revolutionizing global connectivity, announced the successful completion of its Series B financing round, raising an impressive \$60 million led by e& capital.
Jul-23	Tigerpaw	Rev.io	Rev.io, a leading provider of automated billing and customer management solutions to telecommunications businesses, wireless and mobility providers, and managed service providers, acquired Tigerpaw, a software company offering end-to-end professional services and business automation software to technology providers.
Jul-23	Vitruvi Software	Bow River Capital	Vitruvi Software, a leading provider of cutting-edge utility construction software solutions, proudly announces its acquisition by the Software Growth Equity Team of Bow River Capital, a Denver-based alternative asset manager.

Selected Q3 2023 Transactions (cont.)

Announced Date	Target	Investor/ Acquirer	Description
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International

Broadband

Sep-23	Broadway Partners	Voneus [Macquarie]	Broadway Partners, a fixed wireless and FTTP ISP network builder across rural parts of Scotland and Wales, announced it has been acquired out of insolvency by Voneus, Macquarie Capital, and Israel Infrastructure Fund-backed U.K. FTTP platform. Broadway had appointed administration advisors in June 2023, having spent £29 million on passing 11,000 homes with 7,500 RFS, and with 1,000 FTTP customers and c.1,000 FWA customers.
Sep-23	Rural Broadband Solutions	Voneus [Macquarie]	Macquarie Capital and Israel Infrastructure Fund-backed U.K. FTTP platform Voneus is merging with Tiger Infrastructure-backed SWS Broadband and Cadence Networks (Rural Broadband Solutions). The combined group, including newly acquired Broadway Partners, will be funded with up to £250 million in new capital from the three shareholders and bank lenders, and target serving more than 350,000 premises across the U.K.
Sep-23	Next Connex	Wifinity [LDC]	LDC-backed provider of broadband connectivity to campus environments Wifinity announced the acquisition of wholesale connectivity provider and existing partner of 10 years, Next Connex. Next Connex provides a range of access, internet transit, and cloud connectivity options, with particular expertise in WAN, SD-WAN, colocation services, and infrastructure-as-a-service.
Sep-23	ASK4	GI Partners	ASK4, a leading provider of critical in-building internet connectivity to the multi-tenant real estate sector in Europe, announced that GI Partners, a leading investor in critical data infrastructure businesses, has signed a definite agreement to acquire the company from Bowmark Capital. ASK4 will be GI Partners' first data infrastructure investment in Europe.
Sep-23	UPP	nexfibre [VMO2 & InfraVia]	VMO2 and InfraVia's FTTP JV nexfibre have announced the acquisition of East of England FTTP player Upp, whose sale was a forced U.K. government process due to ownership by LetterOne (previously backed by sanctioned Russians). VMO2 will initially acquire and integrate the network, then pass ownership to nexfibre within the next year.
Sep-23	MS3	Asterion	Asterion-backed and Hull and East Yorkshire-focused FTTP player MS3 announced through their accounts to December 2022 a new (unspecified) funding commitment from Asterion covering the next 12 months, boosting efforts to reach EBITDA breakeven in early 2025.
Aug-23	Speed Fibre	Cordiant	Specialist digital infrastructure investor Cordiant Digital Infrastructure Ltd. announced that it has entered into an agreement to acquire Speed Fibre DAC (Speed Fibre), Ireland's leading open access fibre infrastructure provider from the Irish Infrastructure Fund for a total enterprise value of €190.5 million.
Jul-23	G.Network	USS	G.Network, London-focused ISP and broadband network builder, has secured a further investment of up to £150 million from Universities Superannuation Scheme (USS), which will be focused on helping drive both revenue growth and the build-out of its central London network.
Jul-23	Ruhrfibre [DIF]	Debt provided by a Consortium of banks, including ING, Kommunalkredit Austria, and SEB	DIF Capital Partners announced that its portfolio company Ruhrfibre has secured senior debt financing in support of the build-out of a large-scale fibre network in Essen (Germany), targeting around 150,000 premises. The financing package comprises senior loans totaling €120 million that are provided by a consortium of senior lenders comprising ING, Kommunalkredit Austria, and SEB.
Jul-23	nexfibre	U.K. Infrastructure Bank	The U.K. Infrastructure Bank announced a £250 million debt investment in nexfibre, the fiber network operating as a JV between Liberty Global and Telefonica, and InfraVia Capital Partners. VMO2 will become the anchor wholesale client of nexfibre, which will build the FTTP infrastructure.

Digital Infra Services

Aug-23	Soli Infratechnik	Maeander Capital and Kartesia	Maeander Capital announced that it has expanded its shareholding in German fibre network construction specialist Soli Infratechnik with the support of Kartesia, alongside the existing shareholder and management to jointly pursue the future growth ambitions of the company.
Aug-23	TBD Technische Bau Dienstleistungen	Deutsche Beteiligungs	TBD Technische Bau Dienstleistungen, a provider of technical construction services specializing in critical infrastructure, has announced that via a management buyout, a fund advised by DBAG will acquire the majority stake from the founders to secure the company's succession.
Aug-23	AMG Energía y Telecomunicaciones, SL	Connect44 AG	AMG Energía y Telecomunicaciones, SL, a Spanish provider of telecommunication engineering services such as mobile radio construction management and telecom network solutions, has been acquired by Connect44 AG, one of Europe's largest E2E telco solutions providers, enabling them to provide full end-to-end network planning, build, and management solutions across Europe.
Jul-23	Sagemcom Group SAS	Alpinvest Partners	Alpinvest Partners BV, through a continuation fund, acquired more than 25% of Sagemcom Communication SAS, the French telecommunication company engaged in providing broadband services, convergence, and energy solutions, from Charterhouse Capital Partners LLP. The consideration was €700 million with the transaction, providing an exit strategy for Charterhouse Capital.
Jul-23	Elecnet GmbH	Fiber Experts Deutschland GmbH	Fiber Experts Deutschland GmbH, which offers tailor-made turnkey solutions in the area of fiber optics to telecommunications companies, cities, municipalities, and investors throughout Germany, has acquired the entirety of the share capital of Eschborn-based Elecnet GmbH, which specializes in the implementation of broadband networks.

Telecoms

Sep-23	Telefonica	Saudi Telecom	Saudi Telecom, a telecommunications services provider based in Saudi Arabia, has acquired a 9.9% stake in Telefonica S.A., a telecommunications group headquartered in Spain. This stake represents c.570 million shares in Telefonica S.A., with the transaction valued at €2.1 billion based on an implied offer price of c.€3.7 per share.
Aug-23	PPF Group NV	Emirates Telecommunications Group	Emirates Telecommunications, the UAE-based telecommunication company offering mobile, fixed-line, voice, and data services is to acquire 50% of the PPF Telecom assets in Bulgaria, Hungary, Serbia, and Slovakia from PPF Group NV, the Czechia-based single-family office for the Kellner family. The consideration was €2.5 billion (\$2.745 billion), which consists of €2.15 billion paid in cash and €350 million paid in earn-out.

Selected Q3 2023 Transactions (cont.)

Announced Date	Target	Investor/ Acquirer	Description
International			
Wireless Infrastructure			
Sep-23	Cellnex	Stonepeak	Stonepeak and Cellnex have reached an agreement for Stonepeak to acquire a 49% interest in Cellnex Sweden and Cellnex Denmark (Cellnex Nordics) for EUR 730 million. Cellnex Nordics provides mobile network operators with colocation services for their wireless networking equipment through a network totaling 4,557 sites across Sweden and Denmark today.
Sep-23	SFR	Phoenix Tower	Phoenix Tower International has successfully closed a transaction involving 752 sites hosting Bouygues Telecom. This expansion signifies PTI's efforts to enhance its presence in France.
Sep-23	Bouygues	Phoenix Tower	Phoenix Tower International has completed the acquisition of 1,226 sites hosting SFR, strategically located in densely populated urban areas across France.
Aug-23	GO PLC	BMIT Technologies	GO PLC, a leading mobile network operator in Malta and Cyprus, has agreed to the sale of its telecom tower portfolio to BMIT Technologies. The transaction involves the sale of approximately 300 sites and a contracted build-to-suit program. Completion of the deal remains subject to various conditions precedent.

Data Centers

Sep-23	KevlinX	Macquarie	Macquarie has invested in a Belgian data center developer KevlinX. According to the companies, the joint venture will "initially" be active in the design, engineering, construction, and operation of a data center in Brussels, Belgium.
Sep-23	Vantage Data Centers U.K.	AustralianSuper	AustralianSuper Pty Ltd., the Australia-based superannuation fund is to invest €1.5 billion (\$1.6 billion) in acquiring a minority stake of Vantage Data Centers Europe, Middle East, and Africa business, which is under the management of Vantage Data Centers U.K. Ltd., a data center operating company headquartered in the United Kingdom.
Sep-23	Proximity DC	nLighten	nLighten Deutschland GmbH, the Germany-based operator of a network of data centers, and a portfolio company of I Squared Capital Advisors (U.K.) LLP, has acquired Proximity Data Centers Ltd., the local software services provider of edge data centers and colocation solutions.
Aug-23	Gridcore AB	atNorth	atNorth Holding AB, the Iceland-based data center operator, has acquired Gridcore AB, the Sweden-based software services provider of high-performance computing and data center services. The terms of the deal were undisclosed. atNorth Holding AB is a portfolio company of Partners Group Holding AG.
Aug-23	VIRTUS Data Centres	DBS Bank	VIRTUS Data Centres has closed on a £1.17 billion debt financing package which will be used to refinance the company's 11 data centers in Greater London, U.K., and provide funds for building two new greenfield data centers.
Aug-23	Gompute	atNorth [Partners Group]	atNorth, the leading Nordic colocation high-performance computing and artificial intelligence service provider, continues its expansion in the Nordics with the acquisition of Gompute, a leading provider of high-performance computing (HPC) and data center services.
Aug-23	Digital Realty	CapitaLand Ascendas REIT	CapitaLand Ascendas REIT Management Ltd., the manager of CapitaLand Ascendas REIT, this week announced the completion of the acquisition of a colocation data center from an 'unrelated global data center operator' for £125.1 million (\$159 million). The company said the property is situated in Watford, just north of London.
Jul-23	Servers.com	CloudOne Digital	CloudOne Digital acquires Servers.com, a provider of bare metal services. Terms of the deal weren't shared, but TechCrunch said the deal was valued at around \$200 million.
Jul-23	Kyndryl Holdings	NorthC Group	NorthC Group has acquired a new data center outside Zurich, Switzerland, in a sale/partial-leaseback deal. The data center currently has an IT capacity of 1.8 MW, with further expansion possibilities in the future.
Jul-23	zColo	Etx Everywhere	Etx Everywhere, the France-based company operating a network of edge data centers in regional locations, providing colocation services to its customers has signed a definitive agreement to acquire zColo, the local company holding five data centers from DataBank, the United States-based software services provider of data center and IT solutions.
Jul-23	Paperspace, Co.	Digital Ocean Holdings Inc.	DigitalOcean, the cloud for small and medium-sized businesses and startups, has acquired Paperspace, a leading provider of cloud infrastructure as a service for highly scalable applications leveraging graphics processing units (GPUs). The acquisition and integration of Paperspace's advanced technology will extend DigitalOcean's offerings.
Jul-23	Databank Ltd. (five French data centers)	Etx Everywhere S.A.	DataBank, a leading provider of enterprise-class edge colocation, interconnection, and managed services, completed the sale of its five data centers in France (operating as "zColo France SAS") to Etx Everywhere, a major edge data center player in Europe and Asia.

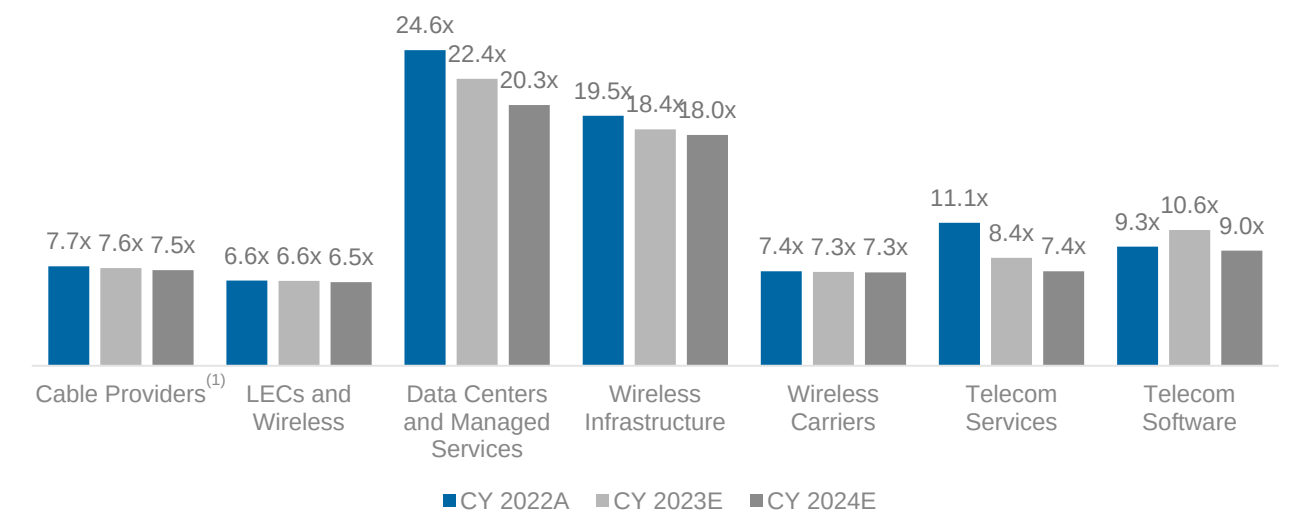
Communication Service Providers

Sep-23	Commify	ECI Partners	European leader in business messaging solutions for local enterprises, Commify is changing ownership from Hg to ECI Partners. Commify's integrated messaging solutions facilitate more than 5 billion messages per year via SMS, WhatsApp, RCS, email, and voice. Under ECI's ownership, the company will continue to grow both organically and via acquisitions in its key target markets across Europe, the U.S., and Australia.
Aug-23	Satisnet	Gamma Communications	Gamma, the leading UCaaS provider is set to acquire Satisnet, a provider of cybersecurity services and solutions to businesses across the U.K. and Europe. The acquisition marks Gamma's move into the security space and will enable the company to offer its customers a full suite of cybersecurity solutions, including assessments and vulnerability discovery options, as well as risk mitigation and the deployment of cyberattack defense.
Jul-23	Route Mobile	Proximus	Belgian government-owned telecommunications operator, Proximus Group to acquire 58% of Route Mobile, a leading India-based enterprise CPaaS player. This transaction forms one of the largest CPaaS players by messaging volume and unveils significant synergies driven by the geographical complementarity and cross-selling opportunities across the companies' omnichannel customer engagement and identity verification offerings.

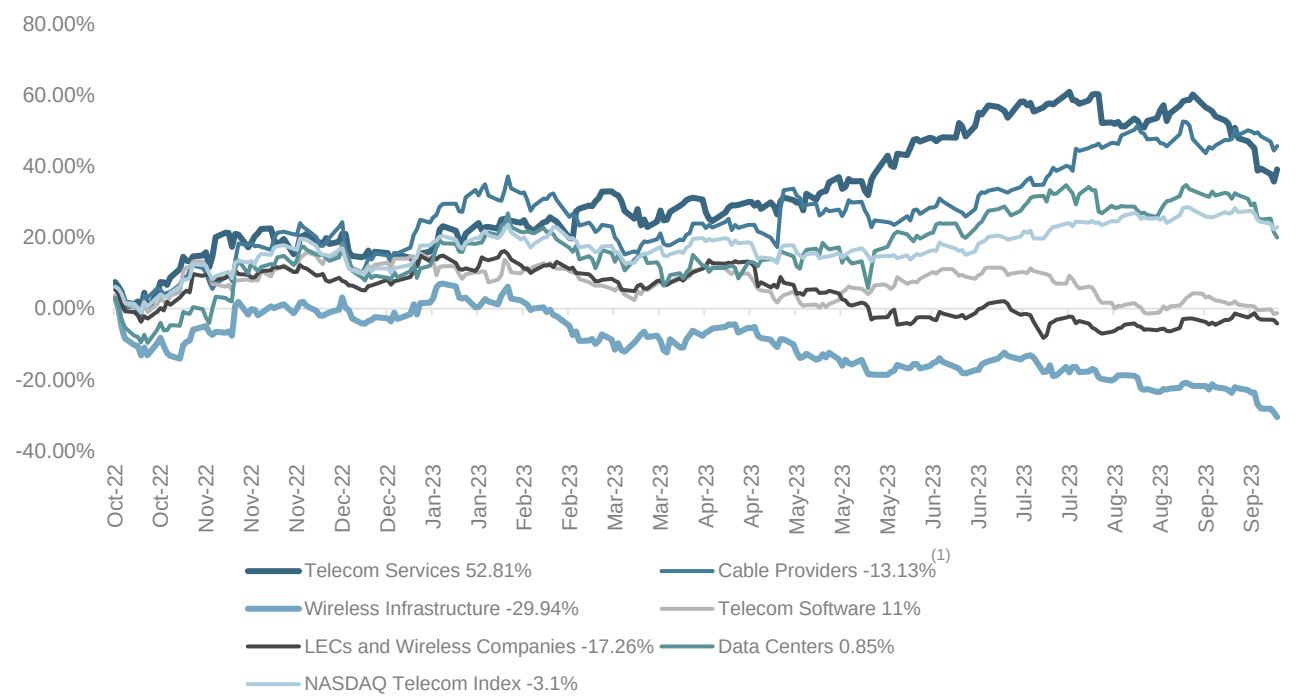
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United States Public Markets Overview

Median EV/EBITDA



12-Month Indexed Stock Price Performance



Source: S&P Capital IQ.
Notes: Calendar year consensus estimates used unless otherwise noted. Components of each sector are detailed on the following pages. All data as of September 29, 2023.
(1) Includes Cogent.
Estimates based on source material.

United States Public Comparables

Cable Providers, Incumbent LECs, Data Centers and Managed Services, and Wireless Infrastructure

Cable Providers

Company	Stock Price	% of 52-Week High	Equity Value (\$M)	Enterprise Value (\$M)	LTM Lev	EV/Revenue			EV/EBITDA			
						CY 2022A	CY 2023E	CY 2024E	CY 2022A	CY 2023E	CY 2024E	
Comcast	\$44.34	93%	\$182,908	\$279,229	2.8x	2.3x	2.3x	2.3x	7.6x	7.5x	7.2x	
Charter Communications	439.82	96%	65,828	167,180	4.6x	3.1x	3.1x	3.0x	7.7x	7.6x	7.3x	
Altice	3.27	46%	1,487	26,656	7.1x	2.7x	2.9x	2.9x	6.8x	7.5x	7.4x	
Cable One	615.64	68%	3,461	7,050	4.2x	4.1x	4.2x	4.2x	7.8x	7.6x	7.5x	
Cogent	61.90	83%	2,935	4,651	11.0x	7.8x	4.9x	4.0x	19.9x	14.7x	12.7x	
Shentel	20.61	88%	1,036	1,189	2.2x	4.5x	4.2x	4.0x	16.4x	13.9x	12.7x	
					Mean	5.3x	4.1x	3.6x	3.4x	11.0x	9.8x	9.1x
					Median	4.4x	3.6x	3.6x	3.5x	7.7x	7.6x	7.5x

Incumbent LECs

Company	Stock Price	% of 52-Week High	Equity Value (\$M)	Enterprise Value (\$M)	LTM Lev	EV/Revenue			EV/EBITDA		
						CY 2022A	CY 2023E	CY 2024E	CY 2022A	CY 2023E	CY 2024E
Verizon	\$32.41	76%	\$136,253	\$314,944	3.8x	2.3x	2.4x	2.3x	6.6x	6.6x	6.5x
AT&T	15.02	66%	107,384	282,617	3.9x	2.3x	2.3x	2.3x	6.8x	6.5x	6.4x
T-Mobile	140.05	91%	164,763	274,664	4.2x	3.4x	3.5x	3.4x	10.0x	9.4x	8.7x
Lumen	1.42	18%	1,431	21,396	3.9x	1.2x	1.5x	1.5x	3.1x	4.5x	4.8x
Frontier	15.65	51%	3,846	12,453	4.1x	2.2x	2.2x	2.1x	6.0x	5.9x	5.6x
TDS	18.31	84%	2,065	8,664	5.0x	1.6x	1.7x	1.7x	7.3x	7.3x	7.1x
Consolidated Communications	3.42	62%	399	2,705	7.1x	2.3x	2.4x	2.4x	6.6x	8.7x	7.9x
					Mean	4.6x	2.2x	2.3x	6.6x	7.0x	6.7x
					Median	4.1x	2.3x	2.3x	6.6x	6.6x	6.5x

Data Centers and Managed Services

Company	Stock Price	% of 52-Week High	Equity Value (\$M)	Enterprise Value (\$M)	LTM Lev	EV/Revenue			EV/EBITDA			
						CY 2022A	CY 2023E	CY 2024E	CY 2022A	CY 2023E	CY 2024E	
Equinix	\$726.26	88%	\$67,952	\$82,813	6.5x	11.4x	10.1x	9.2x	24.6x	22.4x	20.2x	
Digital Realty Trust	121.02	91%	36,634	58,346	8.3x	12.5x	10.6x	10.0x	23.8x	21.8x	20.3x	
DigitalBridge Group	17.58	95%	2,859	11,781	9.2x	10.4x	8.5x	7.5x	37.6x	32.8x	17.0x	
					Mean	8.0x	11.4x	9.7x	8.9x	28.7x	25.7x	19.2x
					Median	8.3x	11.4x	10.1x	9.2x	24.6x	22.4x	20.2x

Wireless Infrastructure

Company	Stock Price	% of 52-Week High	Equity Value (\$M)	Enterprise Value (\$M)	LTM Lev	EV/Revenue			EV/EBITDA			
		Value (\$M)	Value (\$M)	Lev	CY 2022A	CY 2023E	CY 2024E	CY 2022A	CY 2023E	CY 2024E		
American Tower	\$164.45	70%	\$76,659	\$128,661	7.0x	12.0x	11.6x	11.3x	19.5x	18.4x	18.0x	
Crown Castle	92.03	60%	39,911	68,145	6.7x	9.8x	9.7x	9.9x	15.7x	15.5x	15.8x	
SBA	200.17	64%	21,695	36,442	8.6x	13.9x	13.4x	13.1x	20.6x	19.3x	18.6x	
					Mean	7.4x	11.9x	11.6x	11.5x	18.6x	17.7x	17.5x
					Median	7.0x	12.0x	11.6x	11.3x	19.5x	18.4x	18.0x

Source: S&P Capital IQ.

Notes: Stock price last updated on September 29, 2023.

NM in EV/EBITDA if multiple is greater than 40 or EBITDA is negative.

NA means information is not available or not applicable.

Estimates based on source material.

United States Public Comparables (cont.)

Wireless Carriers, Telecom Services, and Telecom Software

Wireless Carriers

Company	Stock Price	% of 52-Week High	Equity	Enterprise	LTM	EV/Revenue			EV/EBITDA		
			Value (\$M)	Value (\$M)	Lev	CY 2022A	CY 2023E	CY 2024E	CY 2022A	CY 2023E	CY 2024E
Verizon	\$32.41	76%	\$136,253	\$314,944	3.8x	2.3x	2.4x	2.3x	6.6x	6.6x	6.5x
AT&T	15.02	66%	107,384	282,617	3.9x	2.3x	2.3x	2.3x	6.8x	6.5x	6.4x
T-Mobile	140.05	91%	164,763	274,664	4.2x	3.4x	3.5x	3.4x	10.0x	9.4x	8.7x
UScellular	42.97	92%	3,664	7,635	5.7x	1.8x	1.9x	2.0x	8.0x	8.0x	8.0x
					Mean	4.4x	2.5x	2.5x	7.8x	7.6x	7.4x
					Median	4.0x	2.3x	2.3x	7.4x	7.3x	7.3x

Telecom Services

Company	Stock Price	% of 52-	Equity	Enterprise	LTM	EV/Revenue			EV/EBITDA			
		Week High	Value (\$M)	Value (\$M)	Lev	CY 2022A	CY 2023E	CY 2024E	CY 2022A	CY 2023E	CY 2024E	
Quanta Services	\$187.07	88%	\$27,162	\$31,325	3.0x	1.9x	1.6x	1.5x	18.7x	16.4x	14.6x	
MasTec	71.97	58%	5,577	9,144	4.6x	0.9x	0.7x	0.7x	11.8x	8.6x	7.4x	
Dycom Industries	89.00	73%	2,611	3,394	2.1x	0.9x	0.8x	0.8x	10.0x	7.3x	6.6x	
Primoris Services	32.73	90%	1,745	2,984	3.9x	0.7x	0.5x	0.5x	10.5x	8.2x	7.4x	
					Mean	3.4x	1.1x	0.9x	0.8x	12.8x	10.2x	9.0x
					Median	3.5x	0.9x	0.8x	0.7x	11.1x	8.4x	7.4x

Telecom Software

Company	Stock Price	% of 52-	Equity	Enterprise	LTM	EV/Revenue			EV/EBITDA			
		Week High	Value (\$M)	Value (\$M)	Lev	CY 2022A	CY 2023E	CY 2024E	CY 2022A	CY 2023E	CY 2024E	
Amdocs	\$84.49	85%	\$10,057	\$10,148	0.9x	2.2x	2.0x	1.9x	10.2x	9.5x	9.0x	
Calix	45.84	59%	3,040	2,789	0.2x	3.2x	2.7x	2.4x	25.2x	20.7x	16.4x	
CSG Systems	51.12	74%	1,555	1,888	2.7x	1.9x	1.7x	1.7x	8.3x	7.8x	7.4x	
Hansen Technologies	3.41	87%	692	702	1.2x	3.4x	3.4x	3.2x	10.6x	10.6x	10.1x	
Cerillion	16.23	88%	479	455	0.2x	11.1x	9.4x	8.3x	26.3x	22.4x	19.6x	
Enea AB	4.33	42%	92	116	NM	1.3x	1.3x	1.4x	4.4x	6.5x	5.1x	
Tecnotree	0.45	64%	142	138	0.3x	1.8x	1.7x	1.6x	7.4x	5.3x	4.4x	
IQ Geo	3.15	78%	194	188	1.2x	5.9x	3.7x	3.3x	NM	25.0x	16.1x	
Optiva	4.10	26%	25	100	11.5x	1.6x	2.0x	1.7x	7.4x	19.9x	7.9x	
Allot	2.18	46%	82	60	NM	0.5x	0.6x	0.6x	NA	NA	NA	
					Mean	2.3x	3.3x	2.9x	2.6x	12.5x	14.2x	10.7x
					Median	1.0x	2.0x	2.0x	1.8x	9.3x	10.6x	9.0x

Source: S&P Capital IQ.

Notes: Stock price last updated on September 29, 2023.

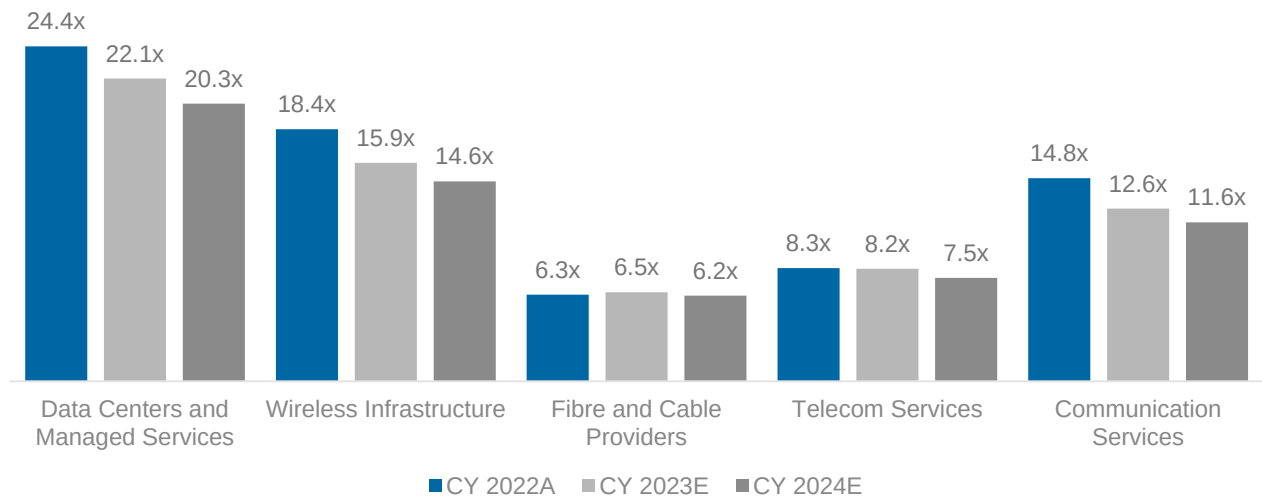
NM in EV/EBITDA if multiple is greater than 40 or EBITDA is negative.

NA means information is not available or not applicable.

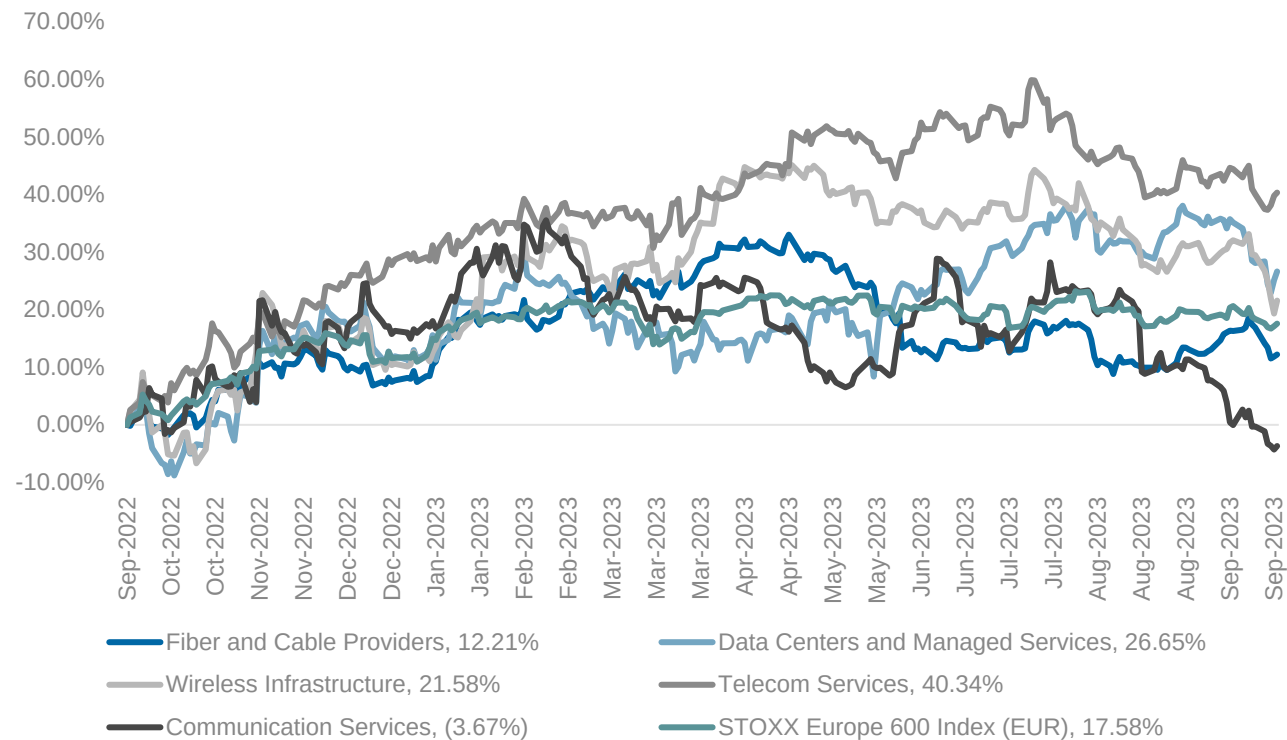
Estimates based on source material.

European Public Markets Overview

Median EV/EBITDA



12-Month Indexed Stock Price Performance



Source: S&P Capital IQ.
Notes: Calendar year consensus estimates used unless otherwise noted. Components of each sector are detailed on the following pages. All data as of September 29, 2023.
Estimates based on source material.

European Public Comparables

Fiber and Cable Providers, Data Centers and Managed Services, and Wireless Infrastructure

Fiber and Cable Providers

Company	Stock Price	% of 52-Week High	Equity Value (€M)	Enterprise Value (€M)	LTM Lev	EV/Revenue			EV/EBITDA		
						CY 2022A	CY 2023E	CY 2024E	CY 2022A	CY 2023E	CY 2024E
BT	€1.35	72%	€13,118	€36,159	3.7x	1.5x	1.5x	1.5x	4.1x	3.9x	3.8x
Elisa	€43.89	78%	€7,039	€8,503	2.2x	4.0x	3.8x	3.7x	11.6x	11.1x	10.8x
Deutsche Telekom	€19.87	86%	€98,798	€276,793	4.2x	2.4x	2.5x	2.4x	6.1x	6.2x	5.9x
KPN	€3.12	92%	€12,165	€18,579	3.2x	3.5x	3.4x	3.4x	7.5x	7.4x	7.2x
Swisscom	€562.24	88%	€29,125	€37,856	2.2x	3.4x	3.3x	3.3x	8.6x	8.0x	8.0x
Telecom Italia	€0.30	90%	€6,300	€37,772	6.4x	2.4x	2.3x	2.3x	6.6x	6.4x	6.1x
Telefonica	€3.87	93%	€22,028	€67,808	5.2x	1.7x	1.7x	1.6x	5.3x	5.2x	5.1x
Telenor	€10.76	90%	€14,901	€23,664	3.7x	2.3x	3.3x	3.2x	5.3x	7.6x	7.4x
Telia	€1.96	68%	€7,694	€17,559	4.5x	2.2x	2.1x	2.1x	6.5x	6.6x	6.4x
Vodafone	€0.89	71%	€23,982	€75,519	5.8x	1.7x	1.7x	1.7x	5.0x	5.6x	5.7x
Mean					4.1x	2.5x	2.6x	2.5x	6.7x	6.8x	6.6x
Median					4.0x	2.4x	2.4x	2.4x	6.3x	6.5x	6.2x

Data Centers and Managed Services

Company	Stock Price	% of 52-Week High	Equity Value (€M)	Enterprise Value (€M)	LTM Lev	EV/Revenue			EV/EBITDA		
						CY 2022A	CY 2023E	CY 2024E	CY 2022A	CY 2023E	CY 2024E
Equinix	€686.17	88%	€64,201	€78,242	6.6x	11.5x	10.1x	9.2x	24.8x	22.4x	20.2x
Digital Realty Trust	€114.34	91%	€34,612	€55,126	8.3x	12.6x	10.6x	10.0x	24.0x	21.8x	20.3x
Cytera	€0.04	1%	€7	€2,173	11.9x	3.1x	2.9x	2.7x	9.8x	NA	NA
Mean					7.4x	12.1x	10.3x	9.6x	24.4x	22.1x	20.3x
Median					7.4x	12.1x	10.3x	9.6x	24.4x	22.1x	20.3x

Wireless Infrastructure

Company	Stock Price	% of 52-Week High	Equity Value (€M)	Enterprise Value (€M)	LTM Lev	EV/Revenue			EV/EBITDA		
						CY 2022A	CY 2023E	CY 2024E	CY 2022A	CY 2023E	CY 2024E
INWIT	€11.27	89%	€10,759	€15,099	6.9x	17.6x	15.6x	14.1x	19.4x	17.0x	15.3x
Cellnex	€32.97	84%	€23,256	€44,789	9.5x	12.8x	10.9x	10.4x	17.4x	14.8x	13.8x
Mean					8.2x	15.2x	13.3x	12.2x	18.4x	15.9x	14.6x
Median					8.2x	15.2x	13.3x	12.2x	18.4x	15.9x	14.6x

Source: S&P Capital IQ.

Notes: Stock price last updated on September 29, 2023.

NM in EV/EBITDA if multiple is greater than 40 or EBITDA is negative.

NA means information is not available or not applicable.

Estimates based on source material.

European Public Comparables (cont.)

Telecom Services and Telecom Software

Telecom Services

Company	Stock Price	% of 52-Week High	Equity Value (€M)	Enterprise Value (€M)	LTM Lev	EV/Revenue			EV/EBITDA		
						CY 2022A	CY 2023E	CY 2024E	CY 2022A	CY 2023E	CY 2024E
Eltel	€0.59	48%	€93	€244	NM	0.3x	0.3x	0.3x	7.5x	10.6x	5.2x
Renew Holding	€8.22	92%	€651	€649	0.2x	0.7x	0.6x	0.6x	8.3x	7.7x	7.5x
SPIE SA	€27.52	92%	€4,529	€6,272	3.9x	0.8x	0.7x	0.7x	9.1x	8.2x	7.8x
					Mean	2.1x	0.6x	0.5x	8.3x	8.9x	6.8x
					Median	2.1x	0.7x	0.6x	8.3x	8.2x	7.5x

Telecom Software

Company	Stock Price	% of 52-Week High	Equity Value (€M)	Enterprise Value (€M)	LTM Lev	EV/Revenue			EV/EBITDA		
						CY 2022A	CY 2023E	CY 2024E	CY 2022A	CY 2023E	CY 2024E
CM.com	€9.51	64%	€277	€332	NM	1.1x	1.1x	1.0x	NM	NM	22.5x
Link Mobility	€1.14	85%	€337	€626	7.1x	1.3x	1.1x	NA	10.5x	10.9x	NA
LiveChat	€31.45	92%	€810	€781	0.0x	12.6x	10.7x	9.6x	20.2x	17.5x	15.2x
Sinch	€1.67	36%	€1,404	€2,223	4.0x	0.9x	0.9x	0.8x	8.3x	7.0x	6.3x
Vercom	€13.28	83%	€294	€313	2.2x	5.5x	4.4x	3.6x	28.6x	17.6x	13.5x
Eckoh	€0.45	85%	€129	€124	0.1x	3.0x	2.6x	2.4x	12.8x	10.9x	9.9x
LeadDesk	€6.84	57%	€37	€43	6.6x	1.5x	1.5x	1.4x	13.4x	11.9x	9.5x
Netcall	€0.99	74%	€159	€136	0.1x	3.6x	3.2x	NA	16.7x	14.6x	NA
Nice	€159.80	77%	€10,110	€9,314	1.4x	4.6x	4.2x	3.8x	13.5x	12.5x	11.5x
Gamma	€12.59	87%	€1,226	€1,097	0.1x	2.0x	1.8x	1.7x	9.2x	8.3x	7.7x
Nfon	€6.62	79%	€110	€104	NM	1.3x	1.3x	1.1x	NM	15.6x	12.4x
Pexip	€1.61	74%	€163	€124	NM	1.4x	1.4x	1.4x	NM	11.8x	7.4x
					Mean	2.4x	3.2x	2.8x	14.8x	12.6x	11.6x
					Median	1.4x	1.8x	1.6x	13.4x	11.9x	10.7x

Source: S&P Capital IQ.

Notes: Stock price last updated on September 29, 2023.

NM in EV/EBITDA if multiple is greater than 40 or EBITDA is negative.

NA means information is not available or not applicable.

Estimates based on source material.

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Sector-Specific Expertise Across the Tech Coverage Universe

Our global industry coverage model brings sector-specific knowledge, experience, and relationships to every client we work with.



How Houlihan Lokey Can Help

Our firm is ideally equipped to help our clients navigate uncertain times. We respond quickly to challenging situations and are constantly helping clients to analyze, structure, negotiate, and execute the best possible solutions from both a strategic and a financial perspective.

What We Offer

1  Corporate Finance	Mergers and Acquisitions Capital Markets Private Funds Advisory Board Advisory Services	We are widely recognized as a leading M&A advisor to the mid-cap and have long-standing relationships with capital providers, including commercial banks and other senior credit providers, insurance funds, asset managers, and mezzanine fund investors. Few other investment banks maintain the breadth of relationships and capital markets intelligence that we do.
2  Financial Restructuring	Company Advisory Special Situations Distressed M&A Liability Management Creditor Advisory	We have the largest restructuring practice of any global investment bank. Since 1988, we have advised on more than 1,500 restructuring transactions (with aggregate debt claims in excess of \$3.0 trillion). We served as an advisor in 12 of the largest 15 bankruptcies from 2000 to 2022.
3  Financial and Valuation Advisory	Portfolio Valuation and Fund Advisory Transaction Opinions Corporate Valuation Advisory Services Transaction Advisory Services Real Estate Valuation and Advisory Dispute Resolution Consulting	Over more than five decades, we have established ourselves as one of the largest financial and valuation advisory firms. Our transaction expertise and leadership in the field of valuation help inspire confidence in the financial executives, boards of directors, special committees, investors, and business owners we serve.

Why We're Different



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Senior-Level Commitment and Dedication



Deep, Industry-Specific Expertise



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Creativity, Imagination, Tenacity, and Positivity

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Houlihan Lokey is the trusted advisor to more top decision-makers than any other independent global investment bank.



2,686
EMPLOYEES⁽¹⁾

36
LOCATIONS⁽¹⁾

\$7B+
MARKET CAP⁽¹⁾

\$1.8B
ANNUAL
REVENUE⁽²⁾

~25%
EMPLOYEE
OWNED

NO
DEBT

Corporate Finance

- No. 1 Global M&A Advisor Under \$1 Billion
- Leading Capital Markets Advisor Raising Approx. \$25 Billion Over the Past Two Years

2022 M&A Advisory Rankings Global Transactions Under \$1 Billion

Advisor	Deals
1 Houlihan Lokey	381
2 Rothschild	369
3 JP Morgan	217

Source: Refinitiv. Excludes accounting firms and brokers.

Financial Restructuring

- No. 1 Global Restructuring Advisor
- \$3.0 Trillion of Aggregate Transaction Value Completed

2022 Global Distressed Debt & Bankruptcy Restructuring Rankings

Advisor	Deals
1 Houlihan Lokey	58
2 PJT Partners	30
3 Lazard	29

Source: Refinitiv.

Financial and Valuation Advisory

- No. 1 Global M&A Fairness Opinion Advisor Over the Past 25 Years
- 1,000+ Annual Valuation Engagements

1998 to 2022 Global M&A Fairness Advisory Rankings

Advisor	Deals
1 Houlihan Lokey	1,232
2 JP Morgan	1,030
3 Duff & Phelps, A Kroll Business	938

Source: Refinitiv. Announced or completed transactions.

Financial Sponsors Coverage

- No. 1 Global Advisor to Private Equity Firms
- 1,000+ Sponsors Covered Globally

2022 Most Active Global Investment Banks to Private Equity

Advisor	Deals
1 Houlihan Lokey	242
2 Lincoln International	192
3 Deloitte	190

Source: PitchBook

Houlihan Lokey X  **Oakley Advisory**

Houlihan Lokey has acquired Oakley Advisory, an independent advisory firm that provides a range of services to clients across the digital infrastructure, communications services, and cloud landscape.

With the addition of Oakley Advisory, Houlihan Lokey covers the full spectrum of digital infrastructure and connectivity in the U.S. and Europe.

- Broadband and Connectivity
- Towers and Shared Infrastructure
- Data Centers and Managed Services
- Wireless and Spectrum
- Telecom Services
- Telecom Software

(1) As of October 31, 2023.

(2) LTM ended September 30, 2023.

Houlihan Lokey Is the Trusted Advisor to More Top Decision-Makers Than Any Other Independent Global Investment Bank

2022 M&A Advisory Rankings All Global Technology Transactions

Advisor	Deals
1 Houlihan Lokey	116
2 Goldman Sachs	106
3 Morgan Stanley	79
4 Rothschild	76
5 JP Morgan	75

Source: Refinitiv. Excludes accounting firms and brokers.

2022 M&A Advisory Rankings Global Transactions Under \$1 Billion

Advisor	Deals
1 Houlihan Lokey	381
2 Rothschild	369
3 JP Morgan	217
4 Lazard	206
5 Goldman Sachs	203

Source: Refinitiv. Excludes accounting firms and brokers.

No. 1

Global M&A Advisor
Under \$1 Billion

No. 1

Global Restructuring Advisor

No. 1

Global M&A Fairness Opinion
Advisor Over the Past 25 Years*

Leading

Capital Markets Advisor

1,500+

Transactions Completed Valued at
More Than \$3.0 Trillion Collectively

1,000+

Annual Valuation Engagements

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Atlanta
Baltimore
Boston
Chicago
Dallas
Houston
Los Angeles

Miami
Minneapolis
New York
San Francisco
São Paulo
Washington, D.C.

Europe and Middle East

Amsterdam
Antwerp
Dubai
Frankfurt
London
Madrid
Manchester

Milan
Munich
Paris
Stockholm
Tel Aviv
Zurich

Asia-Pacific

Beijing
Fukuoka
Gurugram
Hong Kong SAR
Mumbai

Nagoya
Shanghai
Singapore
Sydney
Tokyo

Local Technology team

No. 1
TECH M&A
ADVISOR*

14
LOCATIONS
WORLDWIDE

200+
TECHNOLOGY
BANKERS

30+
MANAGING
DIRECTORS

116
TECHNOLOGY
DEALS IN CY22

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