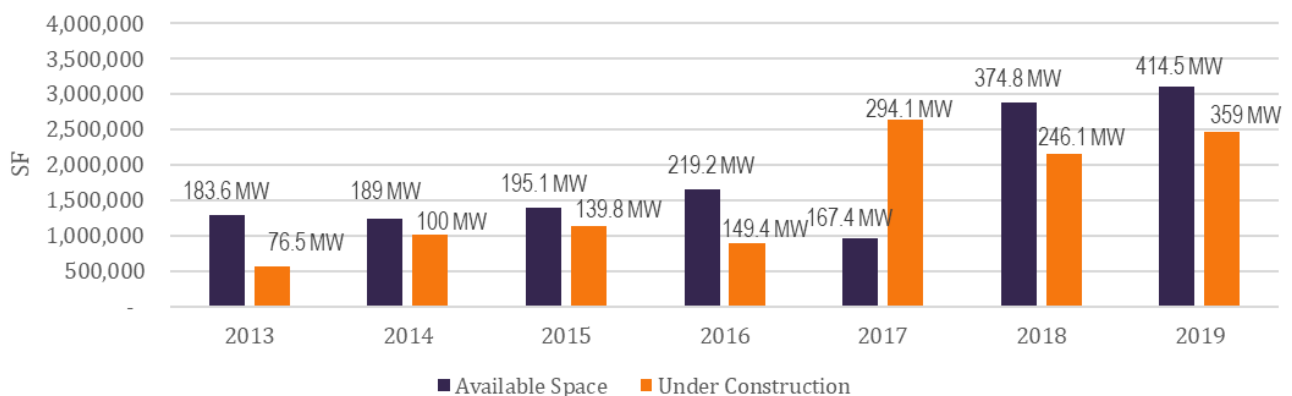


Overview of Issues Impacting Data Centers During 2019

- Overall leasing activity, although significantly lower than in 2018, was consistent with 2017.
- The slowdown in leasing can be directly attributed to the hyperscale tenants that Microsoft leads.
- Northern Virginia felt the strongest impact given the huge increase in the year-over-year speculative inventory.
- Renewals increased massively in 2019. Digital Realty(DLR) reported 1.7 mm square feet of renewals for the first nine months of 2019, which was 10% higher than in 2017 and 2018 combined. The acquisition of DuPont Fabros in 2017 accentuated the combined companies' lease expirations.
- Renewals will continue during 2020, especially in Q1.
- Publicly traded companies reported that, on average, retention rates exceeded 81%.
- The overall slowdown in hyperscale leasing activity was partially offset by a rebound in enterprise activity.
- Publicly traded companies reported an overall drop in rental rates for multi-tenant data centers (MTDCs) in 2019 through the third quarter.
- Digital lead strong leasing activity in the Northwest.
- Smaller colocation customers are paying significantly higher rental rates, particularly for renewals.
- New Jersey achieved a large increase of more than 10 MW in leasing by financial firms.
- Ridesharing companies and others created shadow inventory, particularly in the Bay Area.
- More companies were looking at risk diversification by leasing outside of Northern Virginia. Is Atlanta the beneficiary?
- Activity in Chicago has been focused on smaller enterprise users and renewals. Microsoft purchased 42 acres in January 2020 and Cyxtera master leased 130,000 square feet of property that Stack owns.
- An uptick in leasing in Toronto and Montreal by US hyperscales has decreased the supply of MTDCs in Canada.
- Several hyperscale companies acquired large parcels of land in the US to develop data centers.
- The repatriation of on-premise data centers by companies leaving the cloud; myth or reality?
- A slowdown occurred overall in investment sales activities in 2019 despite an uptick in buyers.
- Investment activity increased in secondary markets.
- The sale/leaseback of corporate data centers will increase in 2020 as several portfolios were taken off the table in 2019.
- In addition to smaller edge data centers, a surge in regional data centers driven by companies seeking stronger links to their customers is necessary.
- The retiring IT workforce will be replaced with younger decision makers who will spur changes that differ from those at traditional enterprise data centers.

Historical Data Center Inventory



This graph depicts turn-key space that is currently built-out in Multi-Tenant Data Centers (MTDC). This does not contemplate total SF/MW of properties.



North American Data Centers

DATA CENTER REAL ESTATE REVIEW: 2019

North American Data Centers completed more than 2 MM square feet of data center sales during 2019

2019 Highlighted Land Sales

Buyer	Location	\$/Acre	Total Acres
Microsoft	Elk Grove Village, IL	\$1.45 MM	36 *
Switch	Las Vegas, NV	\$777,000	36
Microsoft	Goodyear, AZ	\$250,000	36
Digital Realty	Ashburn, VA	\$2.14 MM	13
Coresite	Santa Clara, CA	\$6.9 MM	3.8
Lightstone	Santa Clara, CA	\$5.89 MM	1.8

* January 2020

Investment Activity 2019

Buyer	Seller	Size SF	Market	Sales Price	Comments	
Landmark Infrastructure	Element Critical	1/19	150,480	Wood Dale, IL (Chicago)	\$13.5 MM	Sungard
GI Partners	NTT Data	1/19	180,000	Quincy, WA	\$50 MM	NNN / Sale Leaseback
GI Partners	NTT Data	1/19	1,082,673	Plano, TX	\$60 MM	NNN / Sale Leaseback 70% Office
Databank (Legacy)	PNC Bank	1/19	115,000	North Lafayette Twsp., PA	\$26.4 MM	PNC 6.5% cap rate
CIM	1547	1/19	232,000	Orangeburg, NY	\$86.6 MM	Partially occupied MTDC
Northington Huntington Beach Investors, LLC	FLP Huntington Beach, LLC	1/19	114,000	Various	\$82.975 MM	3 NNN Frontier Communications
Silver Peak & Legacy	PNC Bank	2/19	387,000	Cleveland, OH	\$51.7 MM	PNC leaseback
Landmark Dividend	Goldcoast Data	2/19	62,966	Fort Lauderdale, FL	\$25.45 MM	Flexential
Alinda Capital	QTS	2/19	118,000	Ashburn/Manassas, VA	\$240 MM	JV 6.75% Cap Rate
35711 Properties I, LLC	DXC Technology	3/19	75,233	Rancho Cordova, CA	\$7.12 MM	
AGC Equity	Ensono, Inc.	3/19	215,000	Kings Mountain, NC	\$70 MM	
T5 Charlotte, LLC	T5 / Iron Point	4/19	146,000	Kings Mountain, NC	\$86 MM	Recapitalization
Lincoln Rackhouse	ByteGrid	5/19	73,297	Aurora, IL	\$20.5 MM	Former CNA Insurance
Lincoln Rackhouse	ByteGrid	5/19	214,006	Silver Spring, MD	\$34 MM	Former Citi data center
Lincoln Rackhouse	ByteGrid	5/19	50,000	Lynnwood, WA (Seattle)	\$5.5 MM	
Woodbery Group	JM Family	5/19	87,972	Alpharetta, GA	\$10.75 MM	Datascan 3 Yr. Leaseback
Blackstone	COPT	6/19	1,200,000	Manassas, VA	\$265 MM	(7) NNN Powered Base Shells
Landmark Infrastructure		6/19	66,666	Charlotte, NC	\$18.4 MM	100% leased to Flexential through 05/24
Menlo Equities	Lincoln Rackhouse	7/19	208,340	Marlborough, MA	\$33.3 MM	Tierpoint/Lighttower
CBRE Global Investors	Lincoln Rackhouse	8/19	191,000	Chandler, AZ	\$72.75 MM	INAP 100% NNN Sold in June 2018 for \$39.7 MM
Macquarie	Netrality	9/19	3,107,360	Various		6 Carrier Hotels
Mapletree Investments	Digital Realty	9/19	1,376,000	Various	\$557 MM	JV 10 PBB 6.6% Cap Rate
Mapletree Investments	Digital Realty	9/19	703,847	Ashburn, VA	\$1.013 MM	JV 3 Virginia MTDC 6% Cap Rate
Digital Realty	Interxion	10/19	Company	Various	\$8.5 BN	21-21.5 X EBITDA
SBA Communications	New Continuum	10/19	80,000	West Chicago, IL	\$13.8 MM	Colocation Facility
Stack Infrastructure	Nationwide Insurance	10/19	120,000	New Albany, OH	\$9.7 MM	Tier III - Nationwide Leaseback
Blackstone	Clarion Partners	10/19	228,110	Emeryville, CA	\$126 MM	Multi-tenant DC, Telco and Office
Blackstone	COPT	12/19	297,160	Ashburn/Manassas, VA	\$80 MM	(2) NNN Powered Base Shells

Capitalization rates and EBITDA multiples are provided from sources deemed reliable.



North American Data Centers

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North American Data Centers

DATA CENTER REAL ESTATE REVIEW: 2019

Big Red Wines We Really Enjoyed During 2019

Terra Valentine Spring Mountain Cabernet Sauvignon 2014(N+1)	Bella Union Napa Valley Cabernet Sauvignon 2016(2N)
Celani Ardore Coombsville Napa Cabernet Sauvignon 2016(2N)	Grand Napa Vineyards Rutherford Cabernet Sauvignon 2014(N)
Leviathan California Red Wine 2016(N)	Stewart Cellars, Slingshot, Cabernet Sauvignon 2016(N)
J. Lohr Pure Paso Cabernet Sauvignon Blend 2017(N)	Au Sommet Atlas Peak Cabernet Sauvignon 2015(2N+1)

Largest Wholesale Turn-Key Leases During 2019

Tenant	Market	Provider	MW
Cyxtera (Renewal)	Multiple Markets	DLR	300,000 SF
FaceBook (Renewal)	Multiple Markets	DLR	80 MW
Twitter (Renewal)	Sacramento, CA	NTT	27 MW
Twitter	Hillsboro, OR	DLR	12 MW
Twitter	Atlanta, GA	QTS	12 MW
Microsoft	Santa Clara, CA	COR	10 MW
Microsoft	Toronto, Canada	Urbacon	10 MW
Cyxtera	Elk Grove Village, IL	Stack	130,000 SF
Bloomberg	Piscataway, NJ	DLR	90,000 SF
Dropbox	Portland, OR	Flexential	9 MW
ByteDance	Ashburn, VA	DLR	9 MW
Alibaba	Northern VA	DLR	7.5 MW
Linkedin	Dallas, TX	DLR	6 MW
AWS	Northern VA	IRM	6 MW
Nvidia	Santa Clara, CA	Vantage	6 MW
FedEx	Atlanta, GA	Switch	6 MW
Cloud Provider	Las Vegas, NV	Switch	5 MW
Alibaba	Northern VA	CONE	4.5 MW
USAA	San Antonio, TX	CONE	4.5 MW
Microsoft	Santa Clara, CA	Stack	4.2 MW
Government Contractor	Fort Worth, TX	QTS	4.1 MW
Linkedin	Northern VA	Stack	4 MW
Facebook	Dallas, TX	QTS	4 MW
Uber	Phoenix, AZ	Aligned	4 MW
Dropbox	Northern VA	Vantage	3 MW
T-Mobile	Plano, TX	Stack	3 MW
FedEx	Las Vegas, NV	Switch	2.5 MW
Bloomberg	Piscataway, NJ	DLR	2 MW
Linkedin	Northern VA	Vantage	2 MW
Express Scripts	New Jersey	DLR	2 MW
Toyota	Dallas, TX	CONE	2 MW
Workday	Hillsboro, OR	QTS	2 MW
World Bank	Ashburn, VA	QTS	2 MW
Uber	Ashburn, VA	QTS	2 MW
Oracle	Toronto, Canada	DLR	2 MW

For the largest wholesale transactions, the numbers set forth represent what is believed to be the total commitment of the lease agreement. Under construction refers to white space being built. These numbers do not contemplate expansions. Information is from sources deemed reliable.

