

April 2010

# Emerging Sector

## Despite Shaky Economy, Data Center Sector Continues to Grow in Tri-State Region

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**Though the money to build is not always there, the need for more data centers isn't going away. And throughout New York and New Jersey many facilities are still being built even given the current economic conditions.**

### **Buffalo Roost:**

Internet giant rethinking the Data Center **Page 71**

BY DIANE GREER

**As the demand** for information technology has exploded, so, too, has the need for data centers housing servers, storage devices and networking gear. And though the financial crisis and ensuing credit crunch severely constrained data center construction with many projects put on hold or canceled, the sector is still seeing plenty of activity and is expected to surge as the recovery gains strength.

Despite the slowdown, 2 million-sq.-ft. of data center development is underway in New Jersey, says Michael Pembroke, senior vice president at Hackensack, New Jersey-based Russo Development, a developer with 1.8 million-sq.-ft. of leased data center space in northern New Jersey. "The market is weak but there is still a lot of activity."

"There is a lot of demand in the market that is not being met because of the credit crunch and current economic conditions," explains Terence Deneny, vice president at New York based-Structure Tone. "Probably

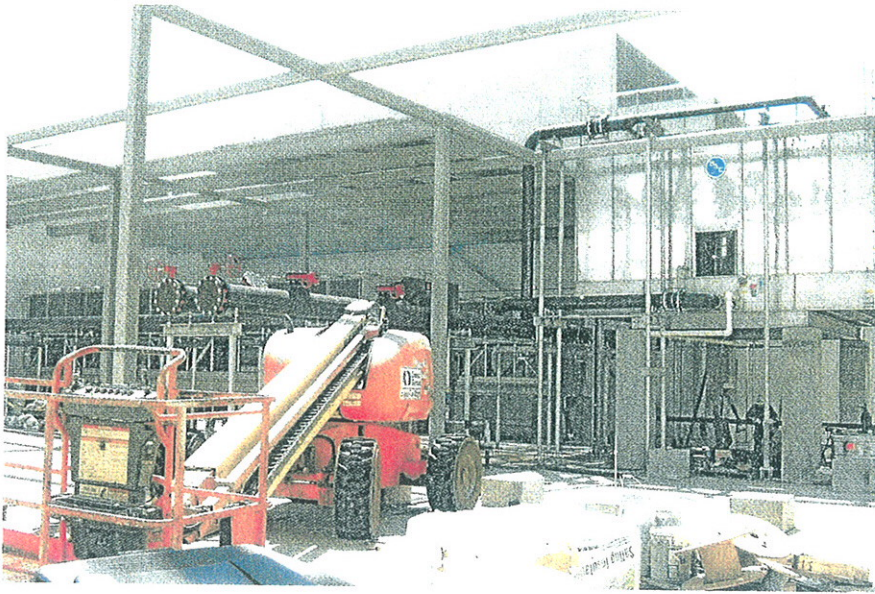
at the end of 2010 to the beginning of 2011 you are going to see a release of the pent-up demand."

"The inability to get financing to build new data centers hit the sector hard," says Jason Schafer, senior analyst, Tier1 Research. "Data centers are insanely expensive to build. The average cost of a premier data center is running about \$1,100 per square foot."

The falloff in construction has pushed data center utilization rates near 90 percent. "We do not see the supply and demand parity being reached until sometime in 2012 to 2013," Schafer says.

In Mahwah, N.J., Russo is developing a 400,000-sq.-ft. data center for the NYSE Euronext. The NYSE enlisted Structure Tone to manage construction of the interior build out, slated for completion in the second half of 2010.

Russo is also working on a 284,342-sq.-ft center in Clifton, N.J. on the site of an Automatic Data Processing Inc. facility demolished in 2008. The site has all the >>



Work underway on an HVAC system for a recently completed data center project. (Photo courtesy of Gilbane Building)

elements critical to a data center, Pembroke explains. It is close to Manhattan and features redundant sources of power, excellent water capacity, good fiber optic connectivity and sewer capacity.

Cervalis, a colocation provider housing multiple companies' data center operations in its facilities, signed a triple-net-lease with Russo in April on a 150,000-sq.-ft. facility in Passaic County, N.J. The site is near Manhattan and located next to a PSE&G substation which will supply 16 MW of redundant power at 13kv, eliminating the need to build a costly onsite substation. Build out of the interior is underway.

Digital Realty Trust, a leased space developer, recently completed a 127,800-sq.-ft. data center shell in Franklin Township, N.J. Colocation provider DuPont Fabros is building a 360,000-sq.-ft. facility in Piscataway, N.J. In upstate New York, Structure Tone will complete 115,000-sq.-ft. data center for Yahoo in June.

**Data Center Energy Efficiency** Data centers consume tremendous amounts of power, with energy costs per square foot 10 to 30 times higher than an office building. At the current growth rate, power require-

ments for data centers could double in five years.

"The amount of power and electricity that goes into these data centers is becoming the single biggest operating cost," Deneny says.

To reduce power consumption and costs, data centers are focusing on energy efficient design and construction techniques.

"Hot aisle and cold aisle containment processes have been evolving over the last 7-years," says Dennis Cronin, principal at Providence, RI-based Gilbane Building. The basic concept is to better control hot and cold air flows to increase the efficiency of the data center cooling system.

Typically server racks are lined up in alternating rows with cold air intakes on equipment fronts facing each other along a "cold aisle." Hot air is exhausted out the back to the "hot aisle".

With hot aisle containment the idea is to capture and evacuate the hot air away from the equipment. Various fan and duct configurations are used to move the hot air into a return air plenum, Cronin explains.

Cold aisle containment methods, which are actually more efficient, seek to enclose the cold aisle with plastic strips akin to

freezer curtains, doors and/or roofing systems over the racks to ensure the cold air is delivered to the equipment intakes. Meanwhile the enclosures prevent the hot air from circulating back to the cold aisle, instead routing it back to the air handlers.

In-rack cooling systems employ cooling coils mounted on the rear doors or tops of enclosed equipment cabinets. Hot air exhausted by the equipment is pushed through the cooling coils and the resulting cool air re-circulated within the cabinet. Air flow paths are shorter, since you are not moving air to CRAC (computer room air conditioning) units, resulting in less energy usage, Cronin says.

Syracuse University's new \$12.4 million, 12,000-sq.-ft. data center is feeding cooled water pumped through pipes beneath the raised floor to heat exchanger-equipped cooling doors on the server racks. "The water to air heat exchanger removes heat from the racks more efficiently," says James Herr, president, VIP Structures, Inc., Syracuse, N.Y. "It is like a miniature refrigerator."

Free cooling increases energy efficiency by using the ambient environment to reduce or eliminate mechanical cooling. Yahoo will cool its Buffalo data center using 100 percent outside air. Operable louvers on the data center's sidewalls and equipment fans draw in outside air to cool the servers. Hot air exhausted by the equipment is vented out of top of the building through louvered roof cupolas.

"Estimates are that in cooler climates, air-side economizers can reduce electrical bills by as much as 33 percent," says David Bonifac, managing principal, New York-based WB Engineering.

A tri-generation system producing electricity, heating and cooling at Syracuse's data center will consume 50 percent less energy than a comparable data center, Herr explains. The system employs 12 natural gas-fired microturbines generating AC and DC power, avoiding conversion losses. Waste heat from the turbines is used by two

