

Intelligent Investment

Investing in Data Centers

REPORT

CBRE RESEARCH
MAY 2024



Summary



- With Japanese interest rates expected to rise, data centers are likely to become increasingly attractive investments. In addition to the higher yields they offer compared to major asset types, data centers offer greater scope for revenue growth.
- Although there are numerous plans for the development of new data centers in Greater Tokyo and Greater Osaka, it is becoming increasingly difficult to secure both land for development and high-voltage power sources in these areas. For these reasons, new development plans are afoot in regional areas such as Hokkaido and Kyushu.
- The supply-demand balance for data centers in Greater Tokyo is tight. While new supply for the next three years is set to exceed that of the previous three, any loosening in the balance this may create will only be temporary. As strong demand means that operators should be able to pass on rising power and construction costs to end users, data center usage costs should continue to gradually increase.
- Being largely unaffected by economic fluctuations, data centers offer investors stable long-term cashflow. Challenges facing data centers include the length of time required before stable revenue is achieved; the high levels of capital expenditure required; the problem of risk control; and the difficulties inherent in securing a new tenant if the existing tenant were to leave the premise.
- There are three major approaches that can be adopted when investing in data centers: direct investment, joint investment, and M&A. Direct investment further splits into different types with different risk-return profile depending on the scope of investment. Joint investment and M&A have also become increasingly popular in recent years for the benefits they provide in terms of allowing investors and data center operators to take advantage of their partners' strengths, and for the speed at which they allow new parties to enter the sector.

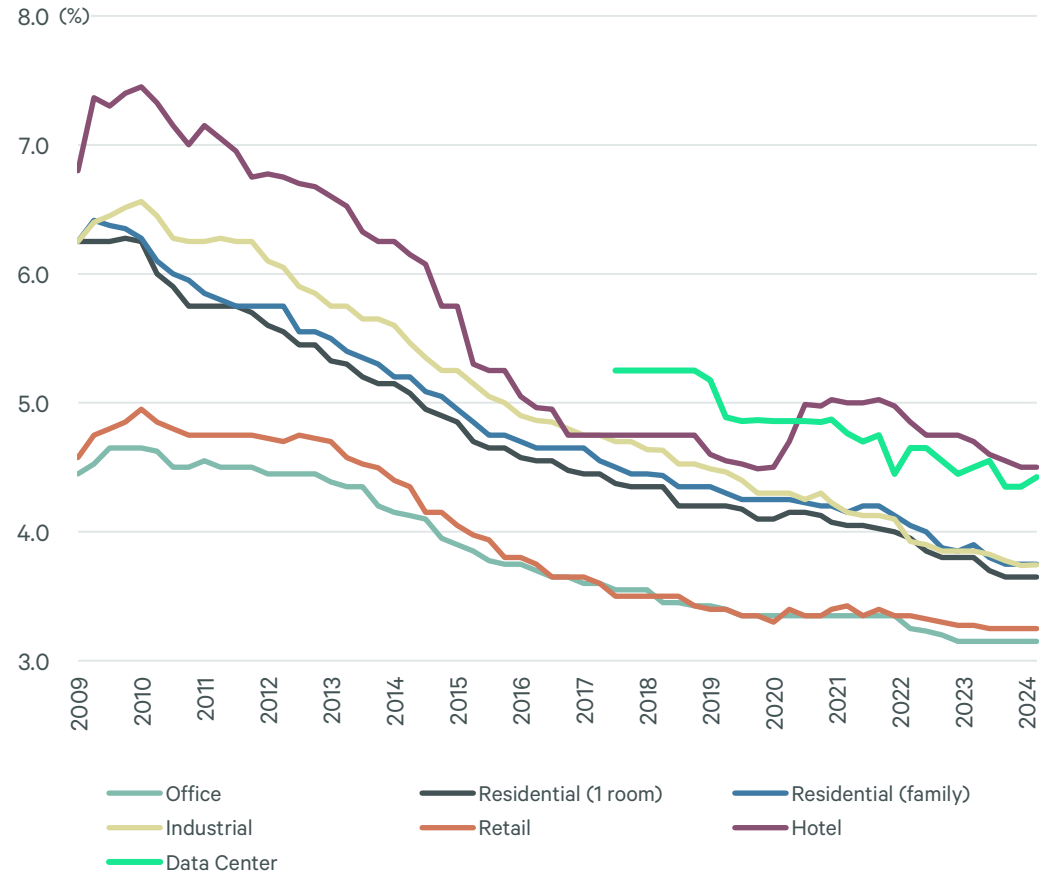
01

The increasing attraction of data centers
as investment targets

The Japan real estate market remained extremely upbeat in 2023. While total investment volume fell slightly from 2022, real estate prices remain high. CBRE’s quarterly cap rate surveys have shown that NOI yields*1 in Tokyo continue to fall for all prime asset types in recent years, with yields in Q1 2024 remaining unchanged q-o-q at historical low levels (apart from logistics which saw a moderate rise) (Figure 1). That said, as recent rise in interest rates have led to compression in yield spreads, investors are increasingly demanding higher profitability from the assets in which they invest.

Amid this environment, alternative asset types outside of the traditional major asset categories are likely to become increasingly attractive owing to the latent high returns and risk diversification advantages they offer. Data centers, in particular, offer higher expected NOI yield levels than all major asset types other than hotels (Figure 2). When investors were asked in the same survey to predict tenant demand by sector over the next three years, data centers were seen as more likely to experience increases in demand than any other alternative asset type, and only trailed the hotel sector among all asset types (Figure 3). Indeed, an increasing number of investors have been attracted by the growth potential offered by data center investment, with many implementing their investment plans. With some of the institutional investors and funds that acquired data centers several years ago now looking for exit strategies, the number of data center transactions will likely increase.

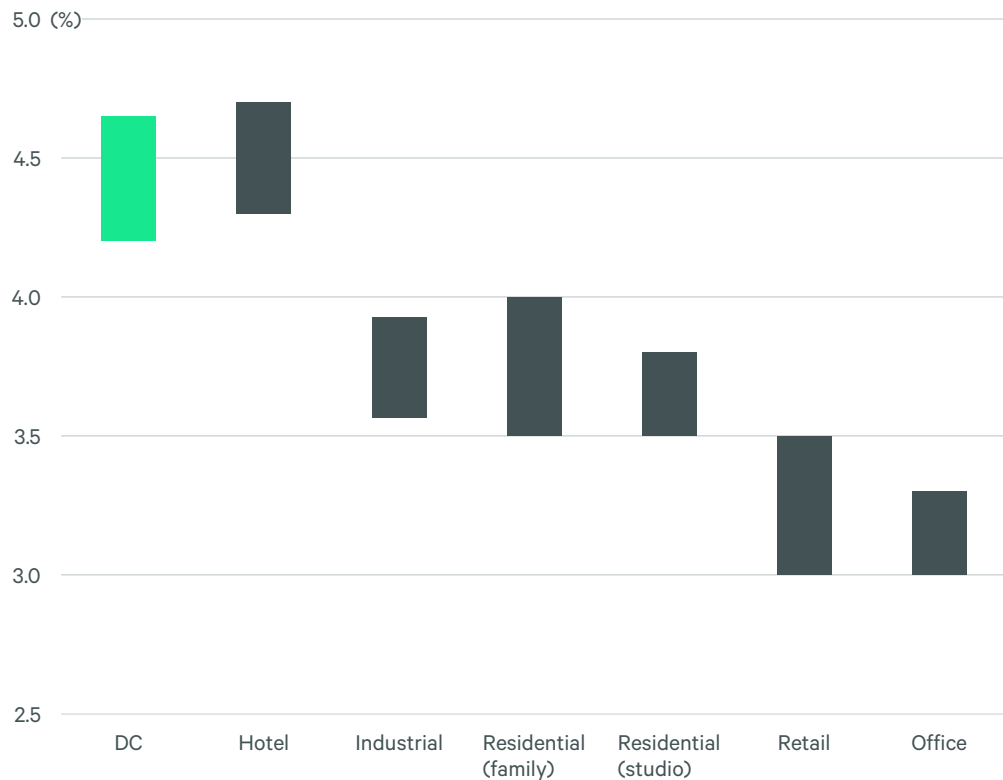
Figure 1: Expected NOI yields over time (averages by asset type)



*1 These figures are projections by survey respondents and do not correspond to actual transactional yields.

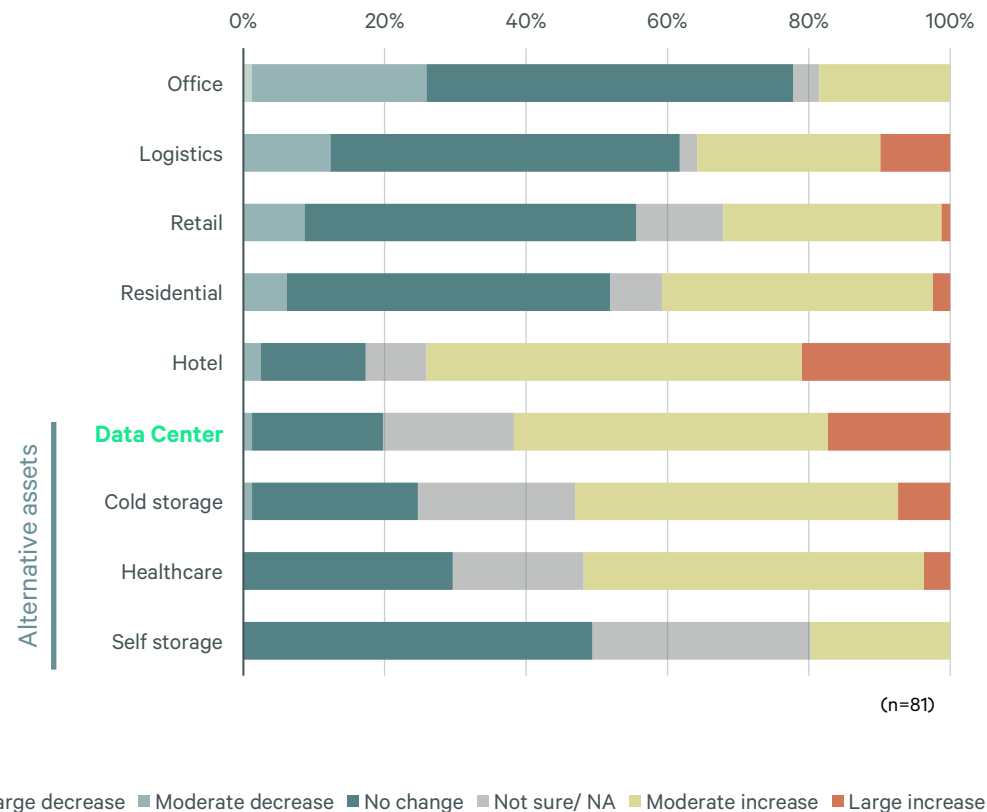
Source: CBRE Quarterly Survey March 2024

Figure 2: Expected NOI yield comparisons (by asset type)



Source: CBRE Quarterly Survey March 2024

Figure 3: Tenant demand projections for the next three years (single-answer, Japanese domestic investors only)



Source: CBRE Quarterly Survey March 2024

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Data center market overview

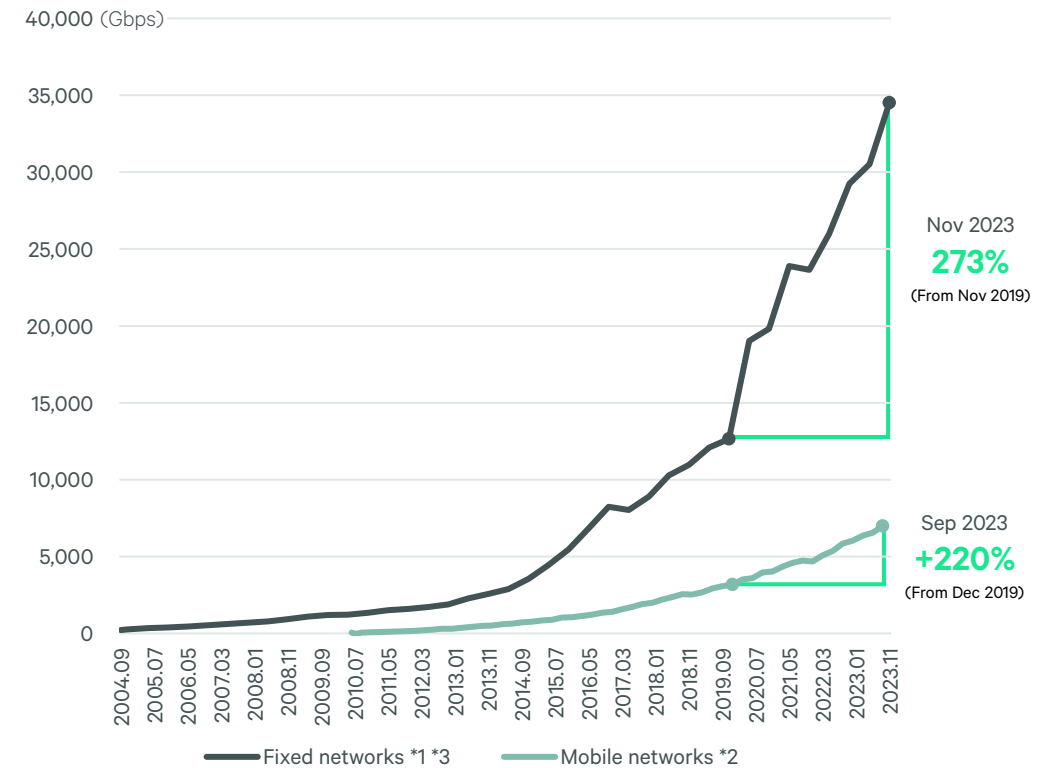
2.1. Domestic data volume set to spike

Demand for data centers in Japan continues to rise. Data traffic (downloads) on fixed communication networks in Japan grew by 2.7x between November 2019 and November 2023, while traffic on mobile communication networks grew by 2.2x between December 2019 and September 2023 (Figure 4). Factors responsible for this growth include the proliferation of cloud services, the implementation of digital transformation (DX) measures, and the increased consumption of digital content such as video streaming services. With the Internet of Things (IoT) also expanding beyond just the medical and industrial spheres and into home electronics, this trend is likely to gain further momentum. Additional computing resources, including high-spec servers and applications, are required to process and store this sudden rise in data volume. Demand is therefore rising for data centers as facilities capable of operating such resources and as key infrastructural pillars of a digital society.

Requirements for data centers are coming from a wide range of business sectors, led by cloud operators and other major tech companies, followed by content providers, telecommunications carriers, financial service providers, and various other non-tech-related companies (Figure 5). There is also a strong possibility that the development and provision of new technologies, including automatic driving, the metaverse, and generative AI, will lead to further growth in demand. Generative AI, in particular, handles vast quantities of data and will require servers with very high processing capacities. The promise of technological advances has even led to an estimate suggesting that domestic data traffic in 2040 will reach 348x the data traffic volume of 2020.*2

*2 A proposal for the establishment of a new communication infrastructure to support the data explosion - acceleration toward a data usage society through generative AI, mitsubishi research institute (september 2023): <https://www.Mri.Co.Jp/knowledge/insight/policy/20230928.Html> (reference date: april 24, 2024)

Figure 4: Domestic data traffic in Japan for fixed and mobile communication networks



Note: Services for individuals (FTTH, DSL, CATV, FWA) (Includes some B to B services)
 *1 Included some mobile communication network traffic with cellphone carriers until May 2011
 *2 Taken from "Current state of mobile communication network traffic (June 2020)," Ministry of Internal Affairs and Communications (calculations made in March, June, September and December)
 *3 Inconsistencies caused by the increase in cooperating ISPs from five to nine companies in May 2017, and the consequent changes in recorded and estimated data
 Source: Created by CBRE based on "Japanese internet traffic data" (November 2023), Ministry of Internal Affairs and Communications https://www.soumu.go.jp/joho_tsusin/eidsystem/market01_05_03.html



Figure 5: Major drivers of data center demand and their contributions to overall demand

Driver of demand	Trend	Contribution to overall demand
Cloud operators	Largest current driver of demand both in Japan and worldwide. With cloud usage expanding in a wide range of business sectors, demand is expected to continue to grow.	High
Major tech companies	The market for application development systems and software services using cloud service platforms is expected to continue to increase, with major tech companies leading the way.	High
Content providers	Demand is robust from streaming (OTT) services that provide visual and audio content directly via the internet, ensuring high-quality, low-latency streams.	Medium
System integrators	Demand is robust from both domestic and overseas system integrators for system construction and operation that works in tandem with cloud service usage.	Medium
Telecommunications carriers	Use of data centers by telecommunications carriers is expanding together with the proliferation of the internet, social media, and 5G, to respond to demand from content providers for low-latency solutions.	Medium
Financial services industry	System architecture transference from aged and obsolete self-operated data centers to cloud-based or external data centers is likely to become more commonplace.	Medium
Other companies	Use of data center services, including cloud-based services, is increasing as companies make IT investments in digital transformation-related areas such as operational efficiency and core system renewal.	Medium
Governmental agencies	Due to the confidential nature of the data they process, governmental agencies operate independently developed systems within data centers, meaning that demand from this sector is limited.	Low

Source: CBRE, April 2024

2.2. Data center development plans

With demand set to strengthen significantly in the coming years, a wide range of plans are afoot for developing new data centers, particularly in the major metropolitan centers of Greater Tokyo and Greater Osaka (Figure 6). While data centers used to average around 20,000 sq.m. of floor space, several larger developments far exceeding this figure are also in the pipeline. One of the factors underpinning this trend is the rise in demand for hyperscale data centers located in suburban areas and used by cloud operators.

Figure 6: Major recent data center developments in Japan (including development plans)

	Location	Company name	Facility name	Site area	Total floor area	Power supply (at opening)	Opening date
Greater Tokyo/ Greater Osaka	Chuo-ku, Tokyo	Digital Edge	TY07	-	-	4.8MW	2025
	Tokyo	AT TOKYO	AT TOKYO Central DC No.3	App. 8,000m ²	App. 32,000m ²	-	Jul-2024
	Tokyo	Equinix	TY15	-	-	-	Sep-2024
	Tokyo	SECOM Trust Systems	Secure DC Tokyo 4	-	8,709m ²	10MW	Jun-2025
	Tama City, Tokyo	GLP Japan	TKW1	-	App. 30,000m ²	31 (10) MW	Feb-2025
	Higashikurume City, Tokyo	ESR	ESR TK1	20,900m ²	-	20MW	Sep-2025
	Tokyo West	AirTrunk	TOK2	46,000m ²	-	110 (50) MW	-
	Inzai City, Chiba Prefecture	MC Digital Realty	NRT12	-	27,571m ²	34MW	Mar-2024
	Inzai City, Chiba Prefecture	Colt Data Centre Services	Inzai 4 Data Center	8,747m ²	-	20MW	2024
	Inzai City, Chiba Prefecture	ST Telemedia Global Data Centers	STT Tokyo 1	-	-	32MW	H1 2025
	Saitama City	Princeton Digital Group	TY1	33,047m ²	Over 60,000m ²	96 (48) MW	H2 2024
	Kita-ku, Osaka	OPTAGE	Sonezaki Data Center	2239,81m ²	-	-	Jan-2026
	Suminoe-ku, Osaka	ESR	ESR Cosmosquare OS1	8,146m ²	-	19.2MW	May-2024
	Soraku-gun, Kyoto	Stack Infrastructure	KIX01	53,000m ²	-	72MW	H1 2025
	Soraku-gun, Kyoto	NTT Group*	Keihanna Data Center (TBC)	-	-	30 (6) MW	H2 of FY 2025

* Built by NTT and NTT Global Data Centers, operated by NTT Communications

Source: Created by CBRE based on corporate press releases, website and media reports, April 2024

There are a number of difficulties facing data center development, specifically the limited land available in major metropolitan areas and securing the significant power supply required for data center operation. For these reasons, there are now an increasing number of development plans taking place in regional cities, where land is cheaper to acquire, and the power grid is not under as much pressure as in larger metropolitan areas (Figure 7). Regional development plans also offer an advantage in that they can avail of central or municipal government grant schemes implemented to encourage the regional dispersal of data centers. Recently, the procurement of renewable energy has become an urgent issue facing data center operators. Construction of data centers in geographical proximity to renewable energy power generation facilities can help reduce the costs involved in the necessary strengthening and extending of power cable networks. Among regional centers where renewable energy development is taking place, Hokkaido and Kyushu feature the stable soil foundations and infrastructure necessary for data center development. Such attributes are facilitating plans to develop major data centers in these areas.

Figure 7: Major recent data center developments in Japan (including development plans)

	Location	Company name	Facility name	Site area	Total floor area	Power supply (at opening)	Opening date
Regional cities	Ishikari City, Hokkaido	KYOCERA Communication Systems	Zero-Emission Data Center	App. 15,000 m ²	App. 5,300 m ² (at opening)	-	Autumn 2024
	Ishikari City, Hokkaido	BroadBand Tower	-	-	-	-	Apr-2026
	Tomakomai City, Hokkaido	SoftBank, IDC Frontier	-	700,000 m ²	-	300MW (50W)	FY 2026
	Tsukuba City, Ibaraki Prefecture	Goodman Japan	-	-	-	50MW	2026
	Wakayama City, Wakayama Prefecture	Asa GK (Google affiliate)	-	App. 370,000 m ²	-	-	-
	Matsue City, Shimane Prefecture	Internet Initiative Japan	Matsue Data Center Park (System Module Building)	-	-	-	May-2025
	Mihara City, Hiroshima Prefecture	Asa GK (Google affiliate)	-	275,000 m ²	-	-	-
	Kitakyushu City, Fukuoka Prefecture	Asia Pacific Land	-	62,822 m ²	-	120MW	-

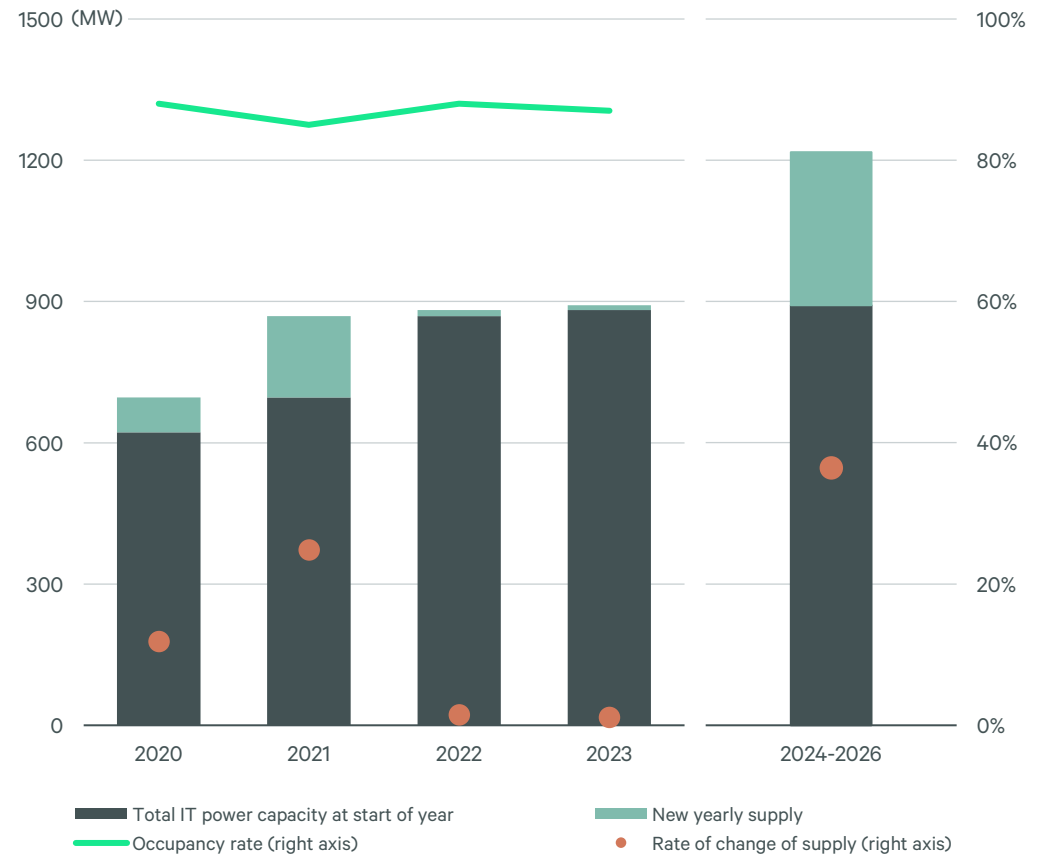
Source: Created by CBRE based on corporate press releases, website and media reports, April 2024

2.3. Tight supply-demand balance in Greater Tokyo

The supply-demand balance for data centers in Greater Tokyo is tight. As of the end of 2023, the total IT power capacity (essentially equivalent to the data center market scale) occupancy rate stood at approximately 87%. While this represents a 1 pp. drop from the 88% recorded at the end of 2022, it suggests that the average occupancy rate has remained largely unchanged. Generally, operators of data centers tend to stop soliciting new users once their occupancy rates exceed 90%. This is to ensure they maintain sufficient capacity to handle the expansion needs of their existing users. With the average occupancy rate having remained in the high 80% range since 2021, it can be said that the supply-demand balance has remained tight for some time (Figure 8).

With new data center supply for the three years from 2024 set to significantly outstrip the previous three years, the market is projected to expand by 40% during that period. While supply factors should slightly lower the average occupancy rate, CBRE sees demand as extremely unlikely to wane and forecasts any loosening of the supply-demand balance to be temporary.

Figure 8: Data center* supply-demand balance in Greater Tokyo and projected future supply



* Carrier-neutral data centers, excluding private data centers. Some values have been adjusted based on an analysis of past performance.

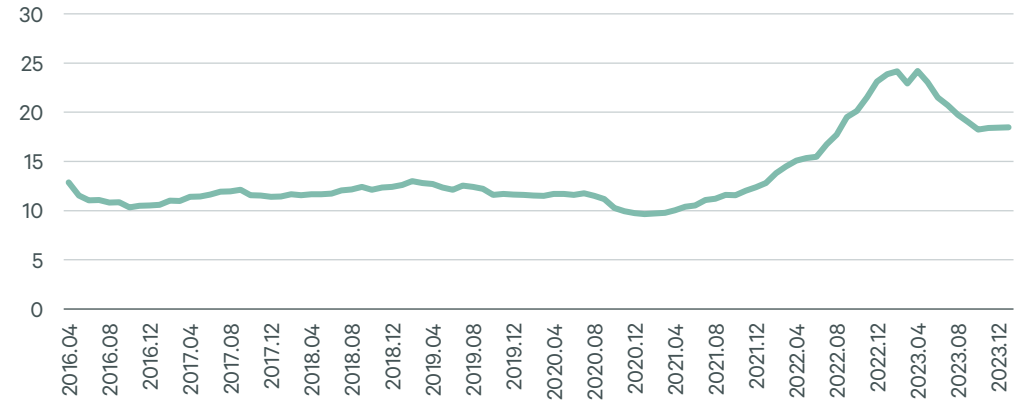
Source: CBRE, March 2024

2.4. Rack unit prices continue to rise

In addition to robust demand, rising construction, labor, and electricity costs have also pushed up data center usage prices over the past few years. Estimated usage costs per rack*³ (including electricity costs) have been rising, spiking by 18% in 2023 alone. Data centers require super-high voltage electricity, the cost of which went up in 2022, forcing data center operators to raise their customers' per rack unit prices (Figure 9). Although it took until 2023 for these increased power costs to be passed on to the users in the form of higher rack prices, data center operators' profit margins should now be improving.

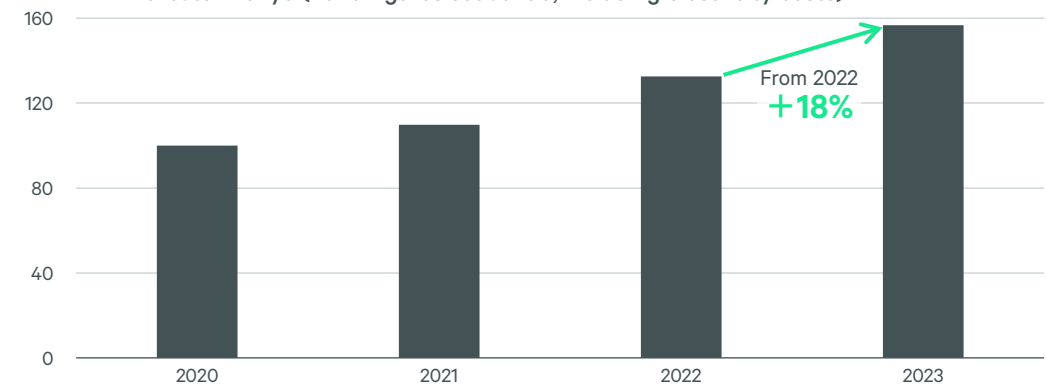
In addition to rising power costs, labor shortages in the construction industry because of the so-called "2024 problem" are likely to lead to rising construction costs. With demand currently so strong, increased construction costs should continue to be passed on to the user in the form of higher per rack costs. At the same time, robust supply equivalent to 40% of all current stock is set to come on stream within the next three years, while super-high voltage electricity prices have been slightly lower in 2023 than they were in 2022. While these factors should serve to slow the pace of the increase in rack prices, CBRE still predicts the current moderate rises to continue (Figure 10).

Figure 9: Nationwide average unit prices for super-high voltage electricity (JPY/kWh)



Source: Energy Information center <https://pps-net.org/>

Figure 10: Monthly data center estimated cost index (per rack)* over the past four years in Greater Tokyo (2020 figures set at 100, including electricity costs)



* Estimated cost refers to the monthly cost of operating a single 5 kVA rack and includes electricity usage costs.
Source: CBRE, March 2024

*3 Racks refer to standardised shelves upon which servers and other computer equipment are fixed for storage. The most widely used racks in the industry today are the 19 inch -wide racks developed by America's Electronic Industries Alliance.

03

Characteristics of data center operation

3.1. Three primary operational configurations

The major reasons for the high expected yields the data center sector commands are that it is a much harder market for new players to enter than those for traditional asset types. Low liquidity is also a factor. Several necessary criteria must be fulfilled before land is considered suitable for data center construction, including stable foundations and access to high-voltage power. Compared to more mainstream assets such as offices, data centers are a far more operational type of real estate that require specialist expertise to run. The extent of this operational and managerial skill exerts a significant impact on each facility's performance in terms of the services it provides and how attractive it is regarded by end users. Below are some of the key characteristics of data center operation.

Data centers can be roughly divided into three types according to their basic operational type: retail, wholesale, and hyperscale. The fundamental earnings structures differ significantly by type (Figure 11). Retail-type data centers involve leasing racks. While their customer base consists predominantly of small-to-medium-sized companies from a wide range of sectors, they also cater to cloud operators and content providers. The number of contracted users per facility is the highest for Retail-type among all three types, and with shorter lease periods, user turnover is relatively high. Revenue is based on space usage fees (by rack), electric power usage fees, and facility usage fees based on contracted power capacity. In some cases, a range of other optional services is offered, including connection services allowing users to connect to the cloud without going through the internet. As a result of this earnings structure, retail data centers are the most profitable (per unit of power capacity) of the three types.



Wholesale and hyperscale data centers cater to larger customers. Users of wholesale data centers are generally medium-to-large corporations that lease out entire data halls (server rooms) or separated units of them known as “cages”. Hyperscale data centers are aimed at even larger users, typically major cloud operators. Many customers lease an entire building, often one that has been developed under a Build-to-Suit (BTS) arrangement. Both types typically feature longer contract terms than retail data centers, with hyperscalers often contracted for over 20 years at a time. In terms of revenue, wholesalers make their money through facility usage fees included within space usage fees or contracted building rents. Hyperscalers typically sign contracts to lease entire buildings. As wholesale and hyperscale data centers generally only involve the leasing of space without the provision of any additional services, they are less profitable for owners on a per unit of power capacity basis than retail-types. On the other hand, number of tenants in a facility are fewer (often only one), and turnover is infrequent, allowing for stable long-term revenue.

Figure 11: Three major operational types of data centers

	Retail	Wholesale	Hyperscale
Users	General enterprise companies using data centers on short contracts with limited power consumption.	In-house usage by mid-to-large sized companies requiring comparatively large amounts of electric power.	Major cloud operators requiring extremely large amounts of electric power.
Contract units	Rack	Cage/Data hall	Data hall/Building
Contract periods (guideline)	3 to 5 years	5 to 10 years	Over 15 years
Contractual power capacity	Less than 250KW	Between 250KW and 5MW	Over 5MW
Key revenue areas	<ul style="list-style-type: none"> • Per rack usage fees • Electric power usage fees • Facility usage fees • Optional service fees (managed services, cross-connect, etc.) 	Facility usage fees included within space usage fees, or building rents	
Leasing	<ul style="list-style-type: none"> • Frequent tenant turnover; frequent leasing required • Tenants from a wide range of sectors 	<ul style="list-style-type: none"> • Infrequent tenant turnover; leasing only required sporadically 	<ul style="list-style-type: none"> • Almost no tenant turnover • Potential tenants limited

Source: CBRE, April 2024

3.2. Lengthy period from construction to stable operation

Compared to other asset types, data centers take a particularly long time from the start of construction before they can achieve stable operation and, therefore, stable revenue. The average time required for developing a data center is around five years, considerably longer than other asset types. This is primarily because data centers use more than 10x as much power as standard office buildings. Data centers require a super-high voltage power supply of at least 60,000 volts as standard. Laying the cables and putting in place other preparations for the provision of this power supply often takes at least five years.

Once this phase of construction is completed, many projects budget for around another five years before the facility can reach 80% of its full capacity, generally considered to constitute stable operation. This is because the leasing process takes more time than for other asset types. For many tenants, system transfer can take many years, while in cases in which system operation must be maintained even during the relocation process, dual investments must be made on both ends of the relocation.

While it can take 10 years or so from the start of construction before a data center achieves stable operation, leasing periods have been shortening for hyperscale data centers. This is because negotiations with major tenants are often conducted in parallel with the selection of development site selection, allowing tenants to be confirmed before completion.



3.3. Facilities account for a high percentage of construction costs

Data center construction costs can generally be broken down into two parts: roughly 30% for the building, and 70% for equipment and facilities.*⁴ Equipment and facility costs are high not only in comparison to major asset types like offices (where 30% of overall cost is generally spent on facilities), but also in comparison to other operational assets. Data centers are buildings that must allow the safe storage of computing systems to enable them to operate 24 hours a day, 365 days a year. To that end, they require specialized fire extinguishing systems that work even during a natural disaster or power failure, backup power and communications systems, multi-layered security systems, and air conditioning systems to cool the servers, all of which contribute to the significant facility costs.

Additional capital expenditure is required when these facilities need to be renewed. With many of the parts required for these facilities manufactured overseas, procurement can be a lengthy process. At the same time, the costs involved are subject to the fluctuations of the currency exchange market. For these reasons, facility renewals often require some leeway both in time and budget. As the electrical power and air conditioning elements need to be renewed every 15 years or so, data center investment is generally thought of in 15-year cycles.

*⁴ Building costs include security systems, lighting, and interior decor. Facilities include electrical machinery such as transformers, uninterruptible power systems (UPS), emergency generators, and air conditioning systems. However, they do not include the actual IT machinery within the racks and servers used by both data center operators and end users.



04

Data centers as investments

4.1. Advantages and disadvantages of data center investment

Figure 12 outlines the advantages and disadvantages of data center investment compared to other asset types. The major benefits are the long-term growth anticipated for the sector and the fact that, as key infrastructural pillars of a digital society, data centers are less prone to being affected by economic fluctuations. With long lease terms and high levels of tenant retention, they also offer stable long-term cashflow. Once a tenant begins using a particular data center, they often renew their lease to remain there. This is because initial investments in IT equipment such as servers are extremely expensive, and end users need systems to remain in operation without any downtime, rendering shutting down or relocating data centers extremely difficult.

The major disadvantages of data centers as investments are the time required for stable revenue to be achieved, the significant capital expenditure needed during facility renewal, and the difficulties of controlling risk for assets that rely heavily on tenants themselves for operational expertise. The most significant of these disadvantages is the difficulty of the leasing process during tenant turnover. Retail and wholesale data centers, developed for multi-tenant use, tend to be constructed to the most generic of specifications in terms of building design and facility composition. Unfortunately, this often results in the swift deterioration of the building and facilities within, making securing new tenants more difficult as the property ages. In contrast, hyperscale data centers constructed using the BTS model tend to feature higher specifications than retail data centers. This is because cloud operators, their major client base, often require specifications that are above standard market levels. On the other hand, they are less adaptable than retail or wholesale data centers, and with fewer major tenants, securing a new tenant can be extremely difficult. These issues all stem from the fact that a high level of specialist expertise is required to operate a data center. These are the issues that need to be overcome to increase the liquidity of data centers as investments. One solution is offered in the following section, in a range of investment approaches that can be selected to suit the specific needs of each situation.

Figure 12: Advantages and disadvantages of data center investment compared to other asset classes

Advantages	Disadvantages
Potential for mid-to-long-term growth in demand	Considerable time required before stable revenue is achieved
Demand largely unaffected by economic fluctuations	Difficulty of controlling risk
Stable long-term cashflow	Expensive capital expenditure required when renewing facilities
High tenant retention	Difficulty of replacing tenants

Source: CBRE, April 2024

4.2. Major approaches to data center investment

There are three major approaches to investing in data centers: direct investment, joint investment, and M&A. Each approach has its advantages and disadvantages, and each investor should select the appropriate approach to match their own investment stance.

(1) Direct investment

Of the three approaches, direct investment is the approach of directly owning data centers by acquiring existing properties or developing new ones. It is then further divided into three forms according to the scope of investment: “shell & core type,” “full-spec type,” and “operational type,” each with different risk/return profile. In addition to new developments and the acquisition of existing data centers, direct investment may occasionally involve converting existing buildings into data centers. In most cases, the buildings selected for conversion are factories or warehouses possessing many of the specifications necessary for a data center shell in place, such as high-voltage electricity cables, high ceilings, or high floor load capacity.

Shell & core type: This type of investment involves the acquisition of the land and building only. Usually adopting only a single or very limited number of cloud or data center operators as tenants, most cases involve signing long-term lease contracts of at least 15 years. Most build-to-suit designs are of this type. The equipment required to operate the data center is installed and maintained by the tenant, meaning that the investor does not assume any of the risk inherent in running the data center itself. Repair costs and other capital expenditures are restricted to those involving the building itself, while low tenant turnover ensures stable long-term revenue and clear profit projections. On the other hand, this type of investment makes it difficult to anticipate much revenue growth.



Full-spec type: This type of investment involves acquiring the equipment and facilities necessary for the operation of the data center, in addition to the land and building. However, maintenance and management of the facilities is usually handled by the tenant. Like the shell & core type, most full-spec type data centers are leased to a single tenant and are developed under a BTS scheme, with long-term lease contracts of at least 15 years. Capital expenditure by the investor on facilities or equipment is recouped in the form of raised rent or as a separate facility fee. Particularly in the case of long-term holding, investment plan needs to take into account of relatively large capex required for periodic equipment renewals.

Operational type: Insofar as it involves investment in equipment and facilities by the investor, this type is the same as the full-spec type. However, as the operational type involves leasing to multiple tenants, the investor is also responsible for the maintenance and management of the facilities. This is a challenging undertaking for most investors, as it requires expert knowledge of operating a data center. In most cases, a contract is signed between the investor and the tenant to provide data center services. When operated as a retail data center, with the wide range of services such properties entail, it tends to offer the highest return among the three types of direct investment. Meanwhile, the risks would include compensation in the event of loss sustained by end users as the result of operational failure, and the reduction in service fees required should actual service not meet the end users' standards as laid out in the Service-Level Agreement (SLA).

A final summary of the key features of the three different types of direct data center investment, and their risk/return analyses, is displayed in Figure 13.

Figure 13: The three primary methods for direct investment in data centers

	Shell & core	Full-spec	Operational
Tenants	Single (BTS) / Operator (data center operator)		Multi / End user
Contract periods	Over 15 years		Retail: Three to five years Wholesale: Five to 10 years
Key revenue areas	Rent	Rent, facility usage fees	Facility usage fees, service fees
Capital expenditure	Building shell	Building shell/facilities	Building shell/facilities
Operating expenditure	Building maintenance, minor repairs	Building maintenance, minor repairs	Building maintenance, facility operating and maintenance costs, minor repairs
Risk/return	Low/Low	Medium/Medium	High/High
Land/building shell	Paid for by owner	Paid for by owner	Paid for by owner
Facilities	Paid for by tenants	Paid for by owner	Paid for by owner
Operation and maintenance	Paid for by tenants	Paid for by tenants	Paid for by owner

Source: CBRE, April 2024

(2) Joint investment (establishment of a joint venture)

An effective way for general investors to acquire knowledge about data center operation while also expanding investment opportunities is the adoption of a joint investment approach with a data center operator. Having already been widely implemented overseas, an increasing number of cases have recently been identified in Japan, where joint ventures are established to run data centers (Figure 14). In addition to rising construction costs, the trend for larger data centers in recent years has significantly pushed up development costs. For data center operators, the obvious merit of a joint venture is that it provides them with financial aid not only for purchasing the land and building but also for the equipment and facilities, which comprise the bulk of the initial costs. A further incentive beyond the financial one is that their JV partner may have expert knowledge of the real estate market and/or electric power, which will aid them in their business. For these reasons, an increasing number of joint ventures have been seen in recent times, involving investment from data center operators on the one hand and developers, trading companies, or power companies on the other, allowing each party to take advantage of the strengths of the other. However, the challenge is in finding a suitable partner.

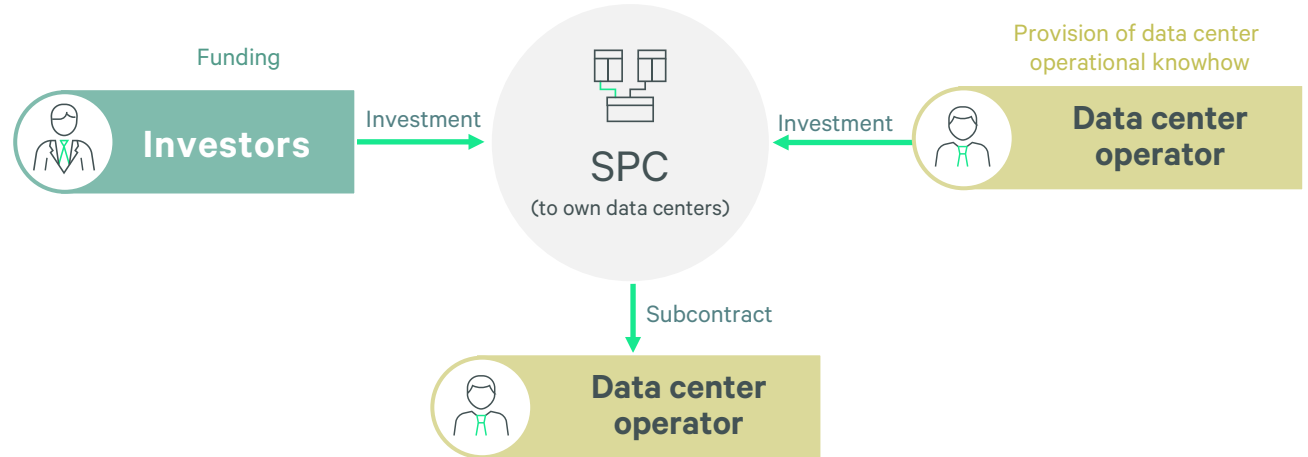
Figure 14: Recent examples of data center joint investment (in order of announcement)

Operator	Partner	Investment ratio	Announcement date
NTT Global Data Centers	TEPCO Power Grid	50 : 50	Dec. 2023
CyrusOne	Kansai Electric Power Company	50 : 50	May 2023
STACK Infrastructure	ESR	-	Dec. 2022
STACK Infrastructure	Oaktree Capital Management	-	Jan. 2022
Equinix	GIC	80 (GIC) : 20 (Equinix)	Apr. 2020
Digital Realty	Mitsubishi Corporation	50 : 50	Oct. 2017

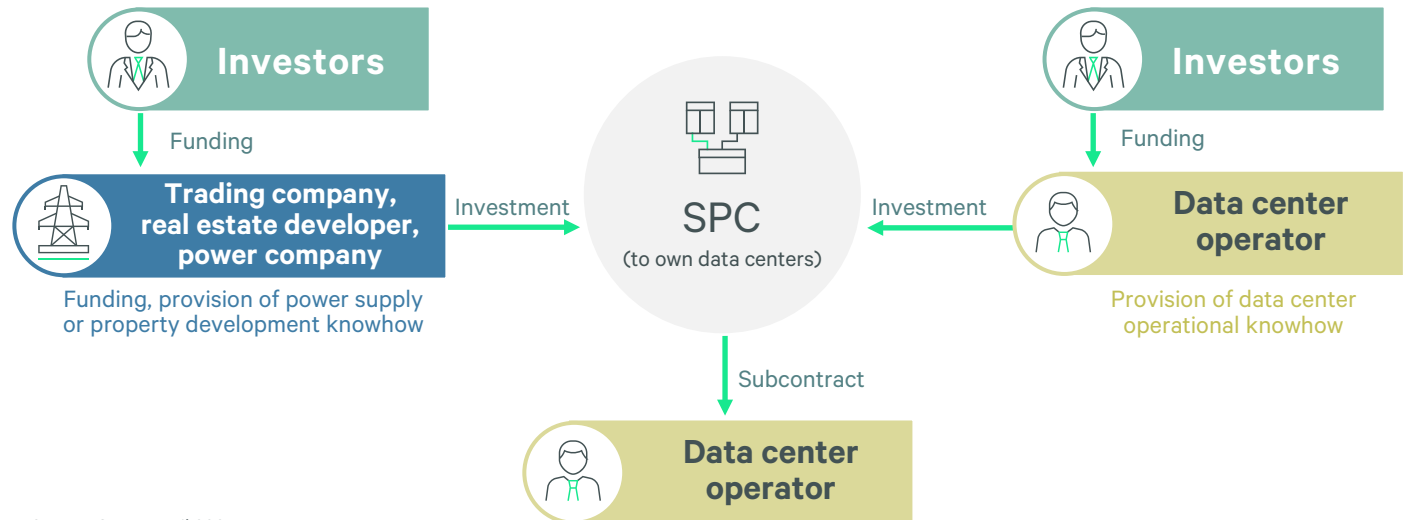
Source: Created by CBRE based on corporate press releases and media reports, April 2024

The basic scheme for joint investment projects involves establishing a Special Purpose Company (SPC) to own one or more data centers, with funding from both the investor and the data center operator. In such a case, the purview of the SPC reaches only as far as owning the data center, with the investing data center operator tasked with its management and operation. There are also several cases in which other investors become involved as sponsors by providing funding for the companies establishing the SPC (Figure 15).

Figure 15: Scheme diagram (joint investment) Joint Investment Scheme 1



Joint Investment Scheme 2



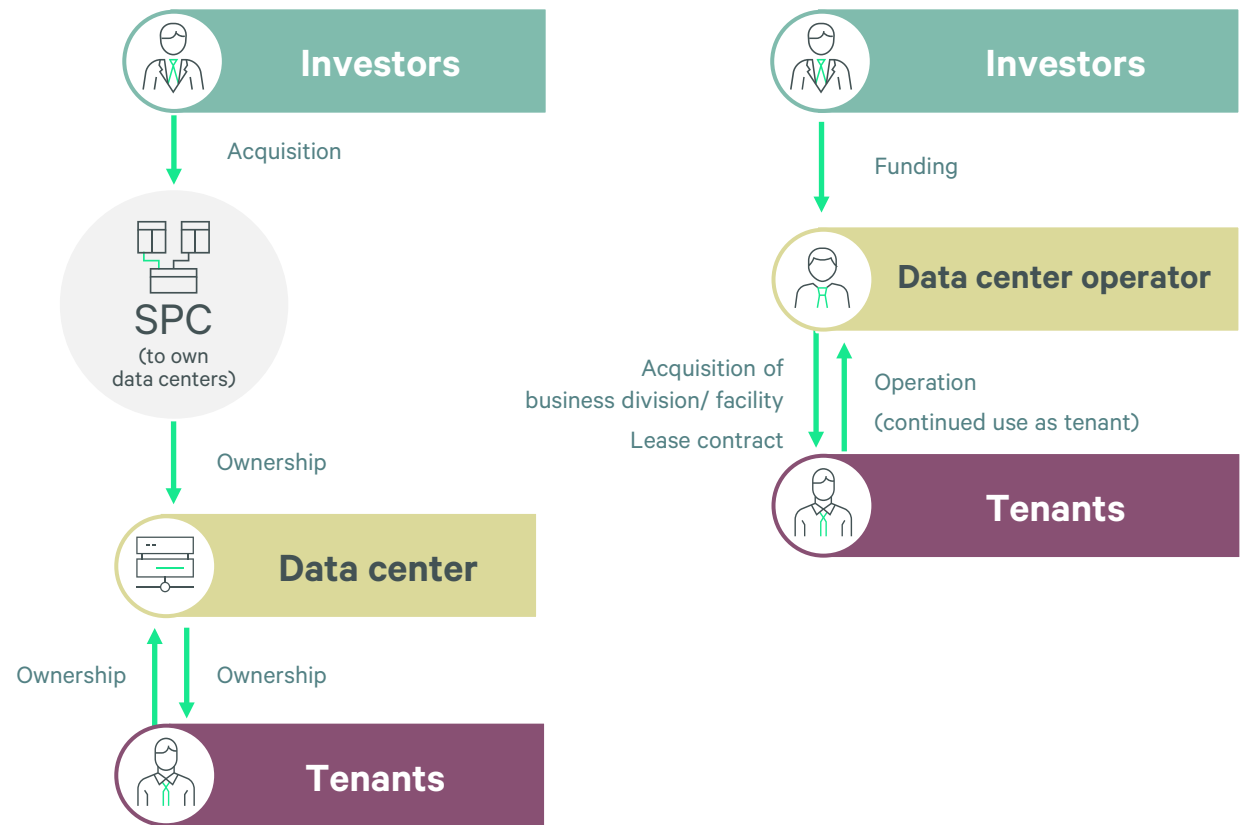
Source: CBRE, April 2024

(3) M&A

An M&A approach allows investors to acquire the necessary personnel and specialist knowledge to operate and manage a data center without the need to acquire land, secure a power supply, or fund construction. The acquisition of an operational data center allows the current operators to be kept on as tenants, meaning that this approach minimizes the time required to enter the sector while also maintaining profitability.

In addition to acquiring businesses or SPCs that own and operate data centers, other possible M&A schemes involve acquiring a data center and leasing it back to the current operator (Figure 16).

Figure 16: Scheme diagrams (M&A)



Source: CBRE, April 2024

4.3. Recent examples of data center investment

Investment in data centers in Japan has been gradually increasing (Figure 17). Some investments have involved companies for which the data center business is not their primary focus, selling their data centers thereby allowing them to focus on their core businesses. The coming years may see more such cases.

There were also several acquisitions by REITs. There are specialized data center REITs in U.S. and Singapore, but they have yet to be seen in Japan. The fact that the portion of equipment is high for data centers conflicts with the J-REIT restrictions which stipulate that at least 50% of asset value (70% for listed REITs) of their portfolio must be in real estate itself. For this reason, data centers are still only a portion of the portfolios of some of the J-REITs. However, investment by real estate investors, particularly institutional investors, in shell & core type data centers is on the rise. Among these are some data centers for which the owners may start to consider an exit. As shell & core type involve the acquisition of the land and building only, they would also be much easier for J-REITs to acquire. More J-REITs will probably look to have data centers within their portfolios in the future as a means of securing external growth. Should acquisitions by J-REITs increase in number, it would build up track record for the sector in terms of earnings and yields. Such a build-up of information would help investors make judgments regarding the viability of data center investment, thereby leading to further increase in transactions.

Figure 17: Major domestic data center transactions (in order of announcement)

Announcement date	Property name	Acquired by	Sold by	Total floor area (m ²)	Price (JPY millions)	Yield (%)
May 2023	-	Mapletree Industrial Trust	Suma SPC	-	52,000	-
Mar-2023	Gotenyama SH Building	TIS	Sekisui House Reit, Inc.	19,813	70,000	2.9
Jul-2022	IIF Osaka Nanko IT Solution Center	SPC (undisclosed)	Industrial & Infrastructure Fund Investment Corp.	18,429	2,700	5.6
Jan-2022	Fuchu Building (KDDI Fuchu Building)	Undisclosed	United Urban Investment Corp	14,166	3,650	5.6
Dec-2021	5 domestic data centers	Digital Edge Japan	ITOCHU Techno-Solutions	-	26,000	-
Apr-2021	IIF Zama IT Solution Center	Domestic operating company	Industrial & Infrastructure Fund Investment Corp.	10,932	13,000	5.7
Apr-2021	IIF Shinagawa IT Solution Center	Domestic operating company	Industrial & Infrastructure Fund Investment Corp.	10,479	(Total of 2 buildings)	(Total of 2 buildings)
Mar-2021	ComSpace II	Digital Edge Japan	ALTERIA Networks	-	-	-
Mar-2021	ComSpace I	Digital Edge Japan	ALTERIA Networks	-	-	-
Mar-2021	MFIP Inzai II	Mitsui Fudosan Logistics	Mitsui Fudosan	27,268	15,150	-
Nov-2020	Undisclosed	AXA Investment Managers – Real Assets	Undisclosed	-	22,000	-
Jan-2019	MFIP Inzai (additional acquisition of 80% quasi-co-ownership interest)	Mitsui Fudosan Logistics	Inzai SPC (Mitsui Fudosan)	40,478	10,040	-
Jan-2019	Sumitomo Corporation Senri Building	Hulic	Tigris SPC (Fortress Investment Group)	73,479	-	-

Source: Created by CBRE based on corporate press releases and media reports, April 2024

Report Contacts

CBRE Research Analysts

Yuji Iwama

Director

Office Team Leader / Data center

yuji.iwama@cbre.com

Hiroshi Okubo

Managing Director

Head of Research

hiroshi.okubo@cbre.com

Chinatsu Hani

Senior Director / Thought Leadership Leader

Investment Team Leader

chinatsu.hani@cbre.com

Contributors

Advisory & Transaction Services

Hirokazu Ono

Associate Director

Head of Data Center Solutions Japan

Hirokazu.ono@cbre.com

Takashi Kishida

Associate Director

Data Center Solutions Japan

Takashi.kishida@cbre.com