

Cloud Shift — 2023 Through 2027

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Initiatives: [Technology Market Essentials](#)

Cloud market growth continues to outpace all other IT markets. Technology and service providers must focus their strategies on capturing the increasing spending on cloud as organizations leverage cloud to support their digital transformation initiatives.

Additional Perspectives

- [Invest Implications: Cloud Shift — 2023 Through 2027](#)
(30 October 2023)

Overview

Key Findings

- The shift in IT spending from traditional, noncloud systems to public cloud services continues despite global economic uncertainties, maturing cloud markets, shifting IT purchasing patterns and continuing — although much slower — growth in traditional, noncloud IT market segments.
- Cloud growth continues unabated as organizations embrace cloud to drive IT efficiency and transformation to digital operating models. The cloud shift rate has grown due to increased public cloud adoption during the COVID-19 pandemic.
- IT spending on public cloud services is forecast to exceed \$1 trillion through 2027, comprising approximately 18% of total IT spending and 58% of the total addressable market for cloud services.

Recommendations

To capture cloud market opportunities, technology and service providers must focus on the following market essentials:

- Target cloud shift opportunities within serviceable cloud market subsegments and watch for variations by country and region. Make cloud and cloud-related product and service investments in markets where cloud shift is occurring, but exercise caution in markets that are being displaced by cloud.
- Seek cloud shift opportunities based on specific workloads and operating scenarios. Hybrid, multicloud, distributed cloud, edge computing, industry cloud, cloud sovereignty and application-specific scenarios significantly impact adoption trends within specific customer accounts.
- Invest in cloud growth opportunities by focusing on cloud shift events such as application migration to cloud, application modernization, adoption of digital technologies as well as cloud services to support industry-specific solutions.

Analysis

Gartner's cloud shift research measures enterprise IT spending on public cloud services within the total addressable market for cloud. Cloud shift calculations compare rates of spending in specific market categories and show the level of spending directed to cloud. The percentage of spending directed toward cloud increases as IT spending "shifts" from noncloud IT systems to cloud.

IT spending data is derived from existing Gartner forecasts (see the Evidence section for a list of Gartner forecasts used in this analysis.)

The total addressable market for cloud is the sum of IT spending on cloud plus IT spending in market categories that could reasonably be replaced by cloud.

Gartner's cloud shift research compares similar markets, including applications, workloads, infrastructure systems and outcomes. The market categories included in Gartner's cloud shift analysis include the following market segments:

- Business process services
- Application software
- Infrastructure software
- System infrastructure

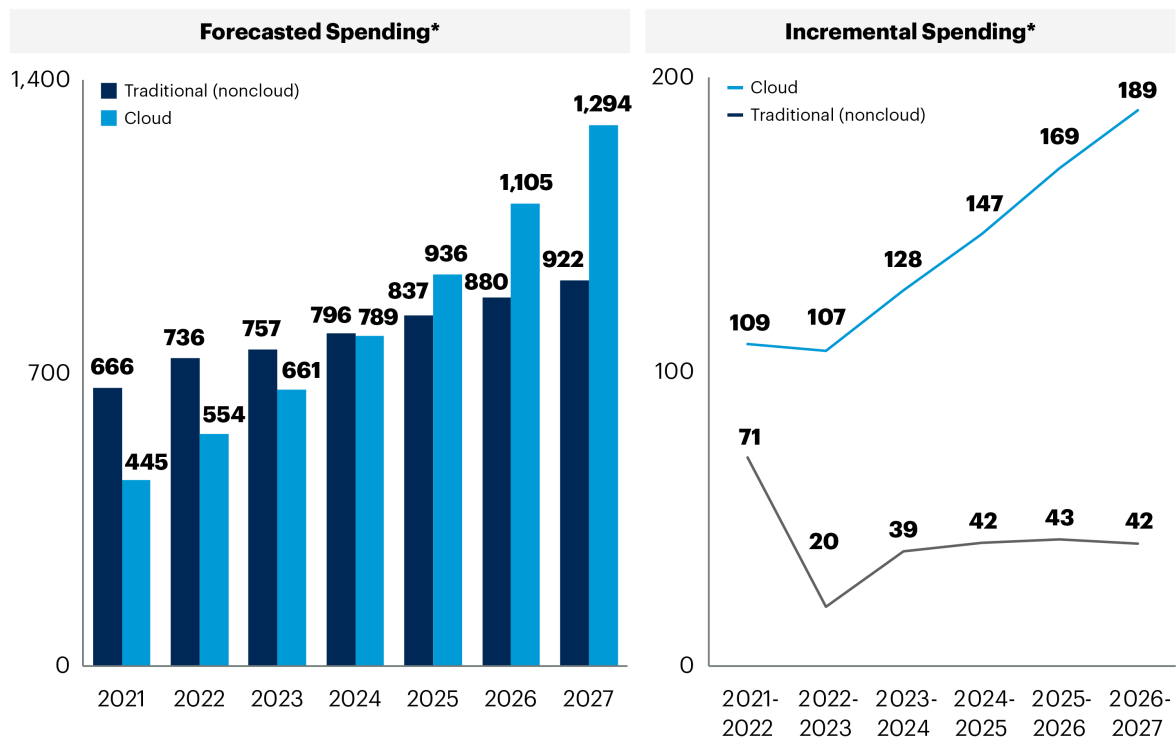
As an illustration, cloud shift in application software measures the shift in IT spending from traditional, noncloud applications to cloud-delivered applications. Cloud shift research compares IT spending on cloud applications (SaaS) with application software that is licensed, packaged and deployed as traditional, noncloud software.

For a detailed overview of Gartner's cloud shift methodology, see [Note 3](#).

Figure 1 shows the respective cloud and traditional (noncloud) spending rates. The growth of cloud and noncloud spending – the incremental increase in spending each year – is also shown. The growth in new spending on public cloud services significantly outpaces new spending in traditional, noncloud markets, resulting in cloud shift.

Figure 1: Size of Cloud Shift, Worldwide, 2021-2027

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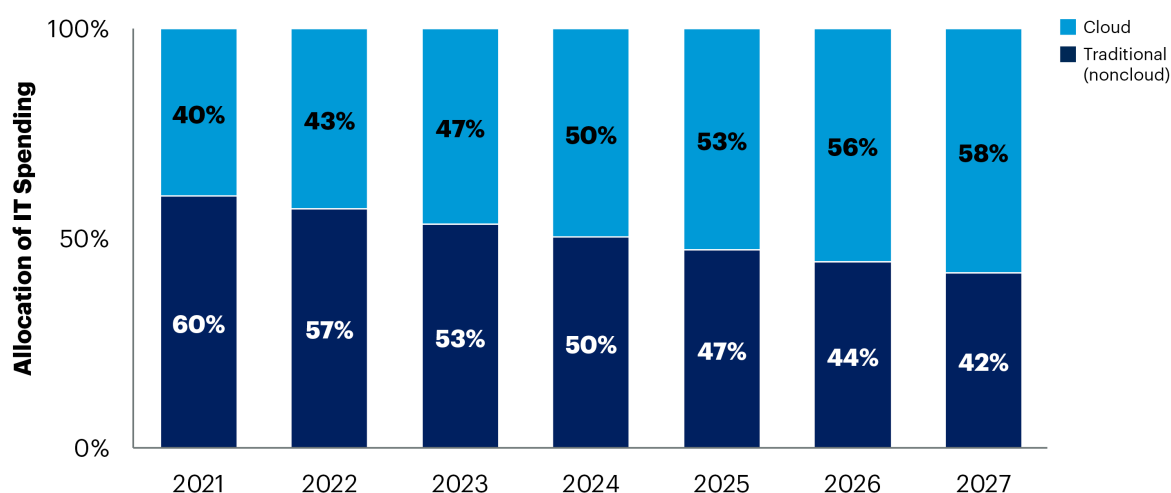
* Billions of dollars in constant currency
Source: Gartner Market Forecasts, 2Q23
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The growth rates of the designated cloud shift categories indicate cloud shift will continue across all categories through 2027. Based on our forecasts, we expect IT spending on cloud to grow at a five-year compound annual growth rate (CAGR) of 18.5% (in constant currency), compared to growth of 4.6% for noncloud spending (within the specific spending categories used for the cloud shift research). As long as IT spending rates are higher for cloud than noncloud, cloud shift will continue. When cloud and noncloud spending growth rates are the same, the markets will stabilize, and cloud shift will cease.

Figure 2 shows the overall ratio of spending on cloud versus noncloud. Note that in 2023, IT spending on cloud is forecast to account for 47% of the total addressable cloud market for cloud. The year 2024 will be pivotal; we predict IT spending on cloud services will equal the market for IT spending on noncloud equivalents. Through 2027, we expect cloud spending will account for 58% of the total addressable market.

Figure 2: Cloud Shift Percentages, 2021-2027

Cloud Shift Percentages, 2021-2027



Source: Gartner Market Forecasts, 2Q23
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Gartner

The Shift in IT Spending From Traditional, Noncloud Systems to Public Cloud Continues

Current industry narratives indicate cloud spending is slowing and the era of wide-scale cloud adoption is coming to a close. However, market data *does not* support this position. While the annual growth rates in spending on public cloud are declining (mostly because cloud markets are growing larger and larger), cloud spending continues at rates that outpace virtually all other IT market segments.

Several questions are often asked about cloud market growth potential, including:

- How big is the potential market for cloud services?
- How much of the total addressable market will shift to cloud?
- How long will the high rates of growth in cloud spending persist?
- When will IT spending on cloud grow at rates consistent with IT spending overall?

These questions are addressed by cloud shift analysis.

Total Addressable Market for Cloud

Markets are always in a state of change, either growing or declining. Therefore, the total addressable market for cloud must include the growth rate of cloud and noncloud markets that could be replaced by cloud.

Cloud shift research uses Gartner forecasts to compare these markets and provides an aggregate view of the related cloud and noncloud markets. This information is provided in related markets and aggregated in four market categories. Table 1 represents the total addressable market for the cloud shift categories.

Table 1: Total Addressable Market for Cloud (Millions of Dollars, Constant Currency)

Cloud Shift Category	2021	2022	2023	2024	2025	2026	2027
Business Process Services	183,247	201,974	216,928	234,843	253,827	274,560	297,681
Application Software	269,199	308,086	348,407	392,154	442,948	500,702	566,586
Infrastructure Software	186,809	222,077	257,539	295,579	340,035	391,058	449,237
System Infrastructure	471,545	558,659	595,170	662,102	736,306	818,767	902,010

Source: Gartner (October 2023)

IT Spending Trends Show a Shift to Cloud

The percentage of IT spending that will shift to cloud depends on the markets and the usage scenarios. Some markets, such as application software, are highly conducive to using cloud, and we expect them to eventually shift primarily to cloud. In other markets, including system infrastructure, spending on traditional, on-premises systems may persist. Customer use cases and the requirements of associated applications and processes will dictate the percentage of spending that will be directed to cloud. Overall, cloud shift (across segments) continues at a rate of approximately 3% in annual spending from noncloud to cloud.

Using Gartner forecast data, Table 2 illustrates the overall percentage of each market category expected to shift to cloud from 2021 through 2027. We predict cloud shift will continue beyond the current five-year horizon (2023-2027) included in this estimate.

Table 2: Percentage of IT Spending Directed to Cloud

Category	2021	2022	2023	2024	2025	2026	2027
Business Process Services	47%	49%	51%	53%	55%	57%	59%
Application Software	54%	58%	61%	64%	66%	68%	70%
Infrastructure Software	51%	55%	59%	62%	65%	68%	71%
System Infrastructure	25%	28%	31%	35%	38%	42%	45%

Source: Gartner (October 2023)

Key Market Trends Impact Cloud Growth

Several important cloud market trends continue to drive growth in cloud. Some of these trends also drive growth in noncloud systems, but overall, these trends favor cloud growth and will be key factors in driving cloud shift through 2027.

Modernization

Organizations that have experienced the benefits of cloud for specific applications or scenarios are leveraging cloud benefits to modernize their technologies, IT operational processes and business operations. Modernization requires flexible, dynamic, on-demand and agile environments that allow organizations to quickly respond to emerging threats or new opportunities.

Most organizations turn to cloud as the foundation of their modernization or digitalization strategy. Cloud is a top technology investment area identified by CIOs and technology executives, along with cybersecurity, data analytics and business intelligence.

Modernization also drives investments in other digital technologies, such as artificial intelligence, which are almost always associated with cloud and will result in additional cloud investments. Modernization results in increased use of digital technologies and consequently, increased adoption and use of cloud.

Generative AI

Generative AI is primarily in the hype stage of market adoption; however, it is likely to move quickly to widespread adoption and usage. Through 2027, we expect to see increasing investment in generative AI, much of which will be monetized in cloud infrastructure, data and application services. Generative AI requires massive amounts of computing power and data to produce the models used for generative AI solutions and to support ongoing inferencing. Cloud is the technology best suited to deliver the compute, storage and AI modeling environment at the cost required to support generative AI requirements.

Cloud won't be the only beneficiary of generative AI growth, but it will be the primary beneficiary.

Industry Clouds

As organizations evolve their use of cloud to support modernization initiatives, industry-specific cloud capabilities become increasingly important to support the business requirements of modernization. Adoption and planned adoption of industry cloud platforms are already significant throughout most industries (see [Presentation: Industry Cloud Platform Adoption by Vertical Industry](#)). Industry cloud platforms are delivered by leading cloud and industry-focused providers, and they represent a key growth driver for cloud.

Sustainability

Sustainability has become a key influencing factor in technology-related decisions. Environmental sustainability is now identified as a top 10 CEO business priority (see [2023 CEO Survey: Grow Through Digitally Enabled Sustainability](#)). As organizations pursue sustainability outcomes, they turn to digital technologies and digital business operating models to improve efficiency and reduce their unneeded or unintended use of resources.

Cloud computing has been identified as the top technology making a major contribution to sustainability goals (see [Sustainability Survey: Key Findings and Recommendations](#)). Cloud is particularly effective at reducing resource consumption because of its hyperscale, shared usage model. Additionally, the commercial model associated with cloud computing — pay for what you use — creates further incentives to reduce resource consumption, which lowers costs, energy consumption and greenhouse gas emissions.

The rise in sustainability as a top priority for business leaders will drive increased investment in cloud solutions.

Cloud Shift Continues Unabated

Gartner has published a forecast for IT spending on public cloud services since 2012. In 2016, we published the first iteration of cloud shift research using Gartner forecast statistics for IT spending on cloud and noncloud systems. Through the various market changes, including the surge in cloud spending brought about by the pandemic and the subsequent slowdown in IT spending, cloud shift has steadily increased.

Quantitatively, we note that Gartner regularly revisits, evaluates and updates its market definitions and segmentation to align with the changing market realities and complement the way Gartner clients understand and consume market data. This process may result in definitional and methodological changes and how we track and segment the markets. The changes in market sizing definitions and segmentation will impact individual segments in a forecast (see [Market Definitions and Methodology: Public Cloud Services](#)).

As a result cloud shift calculations, even for a given forecast year, should not be compared between different iterations of cloud shift published research. We advise readers to review cloud shift data only in the latest published research.

Evidence

The cloud shift information included here is derived from Gartner's 2Q23 forecast updates:

- [Market Definitions and Methodology: Public Cloud Services](#)
- [Forecast: Public Cloud Services, Worldwide, 2021-2027, 2Q23 Update](#)
- [Forecast: IT Services, Worldwide, 2021-2027, 2Q23 Update](#)
- [Forecast: Enterprise Application Software, Worldwide, 2021-2027, 2Q23 Update](#)
- [Forecast: Enterprise Infrastructure Software, Worldwide, 2021-2027, 2Q23 Update](#)
- [Gartner Market Databook, 2Q23 Update](#)

Note 1: Forecast Revenue by Cloud Shift Category

Table 3 (traditional, noncloud) and Table 4 (cloud) show the estimated revenue for four categories in the cloud shift research. Data is provided for traditional (noncloud) and cloud, respectively. See [Note 3](#) for more information on how Gartner determines the ratio of cloud to noncloud spending.

Table 3: Forecast: IT Spending on Traditional (Noncloud) (Millions of Dollars, Constant Currency), 2021-2027

(Enlarged table in Appendix)

Traditional (noncloud)	2021	2022	2023	2024	2025	2026	2027
Business Process Services	98,006	102,755	105,904	109,845	113,862	117,913	122,183
Application Software	122,940	129,822	135,562	141,729	150,233	159,683	170,586
Infrastructure Software	91,957	99,937	105,770	111,537	118,215	124,982	131,916
System Infrastructure	352,781	403,936	409,336	432,394	454,915	477,643	497,057
Total	665,685	736,450	756,572	795,505	837,266	880,220	921,742

Source: Gartner (October 2023)

Table 4: Forecast: IT Spending on Cloud (Millions of Dollars, Constant Currency), 2021-2027

(Enlarged table in Appendix)

Cloud	2021	2022	2023	2024	2025	2026	2027
Business Process Services	85,241	99,218	111,024	124,999	139,965	156,647	175,498
Application Software	146,259	178,264	212,845	250,425	292,715	341,019	395,999
Infrastructure Software	94,852	122,140	151,769	184,042	222,779	266,076	317,322
System Infrastructure	118,764	154,723	185,833	229,708	281,391	341,124	404,953
Total	445,116	554,345	661,472	789,174	935,851	1,104,866	1,293,772

Source: Gartner (October 2023)

Note 2: About Cloud Shift

Gartner research on the rate of IT spending shift from noncloud systems to cloud services — cloud shift — was first published in 2016, and has been updated periodically since. Cloud shift refers to a method of assessing and comparing enterprise IT spending patterns, particularly related to cloud computing. Cloud shift measures the rate of IT spending that is moving from traditional, noncloud IT investments to public cloud alternatives. To the extent possible, direct comparisons in spending categories are provided for specific market segments.

Gartner's global IT spending forecasts include five major forecast segments, some of which are directly related to cloud shift, and others that are indirectly related to cloud shift. For example, the data center systems category includes IT spending on servers, storage equipment and networking equipment. These systems are directly related to cloud shift because there are cloud alternatives for spending on each of these systems. In contrast, communications services are definitely impacted by cloud shift, but spending doesn't shift from one category to another.

Table 5 shows the mapping of Gartner forecast categories to cloud shift categories.

Table 5: Cloud Shift Market Segment Mapping, Inclusions and Exclusions

(Enlarged table in Appendix)

Forecast Segment	Noncloud Forecast Subsegments	Cloud Forecast Subsegments	Cloud Shift Inclusion/Exclusion
Public Cloud Services		Business Process as a Service Software as a Service Platform as a Service Infrastructure as a Service	Included
Public Cloud Services		Desktop as a Service	Excluded
Data Center Systems	Servers External Controller-Based Storage Enterprise Network Equipment		Included
Software	Application Software Infrastructure Software		Included
Software	Vertical-Specific Software		Excluded
IT Services	Business Process Services Data Center Services		Included
IT Services	Consulting and Implementation Services Application Managed Services Hardware Support Enterprise Network Managed Services Managed Workplace Services Service Desk Managed Services		Excluded
Devices	Mobile Phones Desktop Laptops and Tablets Printers		Excluded
Communications Services	Unified Communications Fixed Data Fixed Voice Mobile Network Services		Excluded

Source: Gartner (October 2023)

Note 3: Cloud Shift Methodology

Gartner estimates the rate of cloud shift based on comparisons of published Gartner market forecasts. By comparing specific categories of IT spending with predicted spending on public cloud services we are able to show the shift in spending from traditional noncloud systems to cloud. The high rates of growth in cloud spending compared to lower growth rates in noncloud spending produces the cloud shift effect.

Several major aspects are considered in determining cloud shift:

1. Qualitative and quantitative evidence supporting growth trends in cloud. This information is outlined in various Gartner publications, including Gartner Hype Cycle reports, Impact Radar reports, inquiry statistics and primary research studies.
2. The use of Gartner [Quantified Market Insight](#) as the foundation for sizing over the forecast period (through 2027). We use Gartner's market segmentation exhibited in published Gartner forecasts covering a broad cross-section of enterprise IT markets – hardware, software and services. In each forecast segment, we determine the rate of IT spending directed toward public cloud and/or traditional, noncloud markets. Updated mapping of segments into cloud shift categories improves the ability to reflect market trends.
3. A method for calculating the extent of the overall shift to cloud, based on the defined set of cloud shift categories described in point 1 above.

Points 2 and 3 are largely quantitative in nature, while the first point includes a mix of differing measures. Other points of comparison include Gartner [IT Key Metrics Data](#).

Comparing the results of different previously published views of cloud shift is not recommended as Gartner's cloud market segmentation is updated periodically. However, the overall rate of cloud shift continues due primarily to the higher annual growth rate in cloud services spending, compared to noncloud spending.

Cloud Versus Noncloud Spending Categories

Gartner's research on cloud shift provides a broad, high-level view of the ongoing market impact of cloud computing over multiple years. It is intended as a macrolevel view of related trends.

The following approach is used to determine which portions of traditional (noncloud) forecasts are included in the estimated size of cloud shift:

1. All cloud shift estimates are developed using standard published Gartner forecasting data. No alternative forecasting models or assumptions are involved.
2. This version of cloud shift uses constant U.S. dollars throughout all cloud shift categories, which provides a more reliable view of IT spending rates and, therefore, a more accurate view of cloud shift.

3. Only enterprise-related forecasts are included. For example, consumer-related forecasts are specifically excluded. The set of included Gartner forecasts for cloud shift is shown in Table 2.
4. For each forecast segment, a determination has been made by Gartner as to whether the revenue of a given segment should be attributed to cloud or traditional (noncloud) from a cloud shift perspective. In other words, revenue in a given segment is not split between cloud and noncloud.
5. Many traditional (noncloud) forecasts are composed predominantly of on-premises revenue. However, certain subsegments may be specific to cloud — for example, in the software and services markets.

In future cloud shift research, Gartner will adjust the mappings of forecast segments as and when necessary.

Cloud shift should generally be used only for comparison in the context of a specific research document or analysis. In other words, inclusions and exclusions will vary over time; they are unavoidable due to market changes and the alignment of cloud shift methodologies with standard Gartner forecasts.

Recommended by the Authors

Some documents may not be available as part of your current Gartner subscription.

[The Future of Cloud Computing in 2027: From Technology to Business Innovation](#)

[Forecast Analysis: IT Spending, Worldwide](#)

[Forecast Analysis: Cloud Infrastructure and Platform Services, Worldwide](#)

[IT Key Metrics Data 2023: Overview](#)

[Cloud Buyers Need Bundled Services, Not Siloed Features](#)

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IT Services	Consulting and Implementation Services Application Managed Services Hardware Support Enterprise Network Managed Services Managed Workplace Services		Excluded

	Service Desk Managed Services	
Devices	Mobile Phones Desktop Laptops and Tablets Printers	Excluded
Communications Services	Unified Communications Fixed Data Fixed Voice Mobile Network Services	Excluded

Source: Gartner (October 2023)