White Paper

IDC Microsoft Cloud Dividend: Assumptions, Definitions, and Methodology

Sponsored by: Microsoft

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IDC OPINION

- Over the next four years, Microsoft, its ecosystem,[1] and its cloud-using customers will, together, add more than 13.3 million jobs to the global economy, including jobs directly in their organizations and jobs generated indirectly in other organizations because of increased spending.
- The particular jobs to be created will reflect the current occupational mix by country. The jobs created will be broad ranging in cloud-using companies, but they will also include new jobs driven by digital transformation (e.g., jobs in robotics and artificial intelligence, digital marketing, digital-assisted security, and IoT specialists in the trades).
- Over the next four years, Microsoft, its ecosystem, and its cloud-using customers will generate more than $5.4 trillion in cumulative new revenue above the 2023 level.
- Driving these economic benefits is the growth of cloud computing. From the beginning of 2023 to the end of 2027, worldwide spending on public cloud software will grow nearly 20% a year from $789 billion to $1,328 billion. Meanwhile, spending on noncloud software will decline.
- Because organizations that spend on cloud computing also spend on ancillary products and services, the ecosystem in support of Microsoft cloud implementations is bigger than Microsoft's cloud business, although the ratio of ecosystem revenues to Microsoft's cloud revenues varies by region.
- Inflation, staffing challenges, and recession continue to influence enterprise IT plans, according to IDC's *Future Enterprise Resiliency and Spending Survey, Wave 3*.
- Rising costs are top of mind, according to IDC's 1Q23 *Cloud Pulse Survey.* How to economize around cloud is a key priority for organizations in 2023. Companies face rising costs across all elements of cloud, and while cloud budgets remain strong, they don't stretch as far as they once did.
- Levels of preparedness for macroeconomic shocks increasingly vary by region. Companies in Western Europe feel least prepared to deal with existing and new threats to their business. North American organizations are better prepared for, but more influenced by, global events, which they will have less control over. Many companies are building dual business operating

[1] Microsoft's cloud ecosystem is a constellation of product and service providers that add additional software, services, consulting, hardware, networking, training, support, integration, and management services on top of what customers get from Microsoft. It also includes those intermediaries that bridge the gap from vendor to customer.

scenarios designed to see the organization through different macroeconomic outcomes while shifting the focus to ROI and cost. These impacts extend into cloud strategy.

- Security, infrastructure, and IT operations spending plans are expected to remain the most immune to economic disruption, according to IDC's *Future Enterprise Resiliency and Spending Survey, Wave 3.*
- IDC believes that despite increasing costs, demand for IT infrastructure will not slow down in the long term as digital transformation and modernization of IT are prioritized to increase or maintain the competitiveness and efficiency of business operations.
- IDC expects that enterprise adoption of subscription services for cloud will continue to grow faster than traditional capex-based digital infrastructure spending from 2023 to 2027.

This research documents how additional cloud capability in a datacenter region has a significant business impact beyond the construction of a building.

The Cloud Dividend

At the center of cloud computing are the datacenters that house the server farms, storage systems, databases, applications, and integration tools that deliver services to customers. Economies of scale – not just in technology but also in talent – offer benefits not available to individual information technology (IT) organizations.

In this way, cloud computing enables organizations to adapt more quickly to changing business, competitive, or market conditions.

Microsoft, now the number 1 provider of cloud software according to IDC's Software Tracker, has been aggressively investing in these datacenters and, along the way, growing twice as fast as the overall market for cloud computing for the past four years. (See the Cloud Revenue Helps Drive Microsoft Growth sidebar.)

Cloud Revenue Helps Drive Microsoft Growth

While Microsoft is a big company, with revenue over $211 billion in FY23, IDC forecasts indicate that Microsoft's cloud revenue is growing two to three times faster than its overall revenue. Microsoft's Intelligent Cloud revenue now surpasses those of Office and Windows. And, based on IDC forecasts, Microsoft's cloud revenue is growing at twice the rate of the cloud software market's revenue.

While Microsoft's Intelligent Cloud includes multiple products, its flagship is Azure, which includes a collection of cloud services from application development to data analytics, artificial intelligence (AI), security, and ecommerce. One component, Azure Hybrid, allows Microsoft customers to bring their Windows and SQL Server licenses to the Azure cloud. Another component, the ruggedized Azure Stack, provides cloud capabilities in harsh conditions, such as disaster response.

When Microsoft does install a new regional datacenter – a set of datacenters connected via a dedicated regional network – it typically brings Azure first at launch, followed by Microsoft 365, Microsoft Dynamics 365, and other services, within the first year.

And, as we see in the sections that follow, the availability of locally sourced cloud computing drives economic opportunity well beyond the physical structures themselves, driving local revenue many times that of Microsoft, jobs to manage and service that revenue, and substantial environmental and sustainability benefits.

THE MICROSOFT CLOUD DIVIDEND MEASURED

Using our experience in developing the connection between information technology, cloud computing, and the economy, IDC has developed a view of what we are calling the Microsoft cloud dividend.

That dividend comes through the impact of Microsoft's cloud computing in three areas: the economy, the community, and the environment. For each of these areas, there are specific measures that define the set of contributions to a region – the "dividends," if you will.

The sections that follow describe the measures used to define these dividends, the sources and methods involved in quantifying them, and the definition of the outputs.

THE ECONOMIC DIVIDEND

For over a decade, IDC has been quantifying the economic impact of cloud computing across many geographies under a premise that has been borne out over time that cloud computing frees up IT resources to allow more IT innovation, which, in turn, supports business innovation that drives new business revenue for cloud-using organizations. Call this an economic dividend for customers using cloud computing.

(Today, IT and business innovation are typically referred to as digital transformation. Of course, there is a lot more to digital transformation than just the use of cloud computing, but it is hard to imagine any digital transformation taking place *without* cloud computing.)

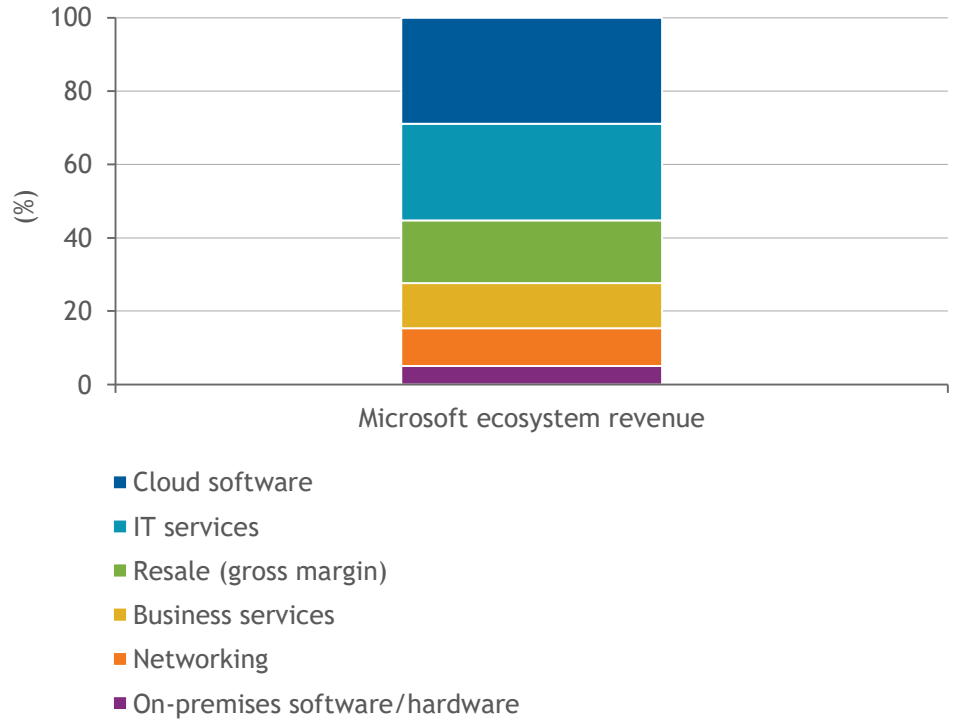
That customer investment in cloud computing drives revenue for suppliers such as Microsoft. Call this an economic dividend for Microsoft.

But Microsoft doesn't supply everything customers need in their cloud implementations. They typically also need a surrounding constellation of products and services that add additional software, services, consulting, hardware, networking, training, support, integration, management services, and distribution on top of what they get from Microsoft. Call this an economic dividend for the Microsoft ecosystem.

Figure 1 shows an example of how the Microsoft ecosystem's additional products and services supplement Microsoft's cloud revenue.

FIGURE 1

Microsoft Cloud Partner Ecosystem Revenue: Contribution of Various Segments



Note: Relative size is for illustrative purposes. Ecosystem includes both formal partners and providers or vendors that offer related but unaffiliated products and services.

Source: IDC, 2023

In terms of magnitude, the ecosystem earns from $6.84 to $7.47 for every $1.00 of Microsoft cloud revenue.[2]

The benefit to partners for supplementing Microsoft cloud services goes beyond just a chance at new revenue. For example:

- Microsoft's better-than-market growth of cloud software, financial stability, and large market share bespeak a healthy long-term future for partners.
- Since its inception, Microsoft has delivered products and services heavily through partners and, as a result, has a robust partner development and support organization.
- By working on the cloud side of Microsoft, partners can get in on the long-term trend of digital transformation.

[2] Note that this ratio is the ratio of ecosystem revenue-to-Microsoft cloud software revenue. IDC has also generated an analysis of ecosystem revenue to *all* of Microsoft's software revenue, which includes the value of all the hardware that run on Microsoft operating systems. Adding in hardware partner revenue, on top of a relatively small share of product cost, drives that revenue-to-revenue ratio closer to $10 (see *Digital Partner Transformation 2.0 — The Journey to Disruption,* IDC #US46704720, July 2020).

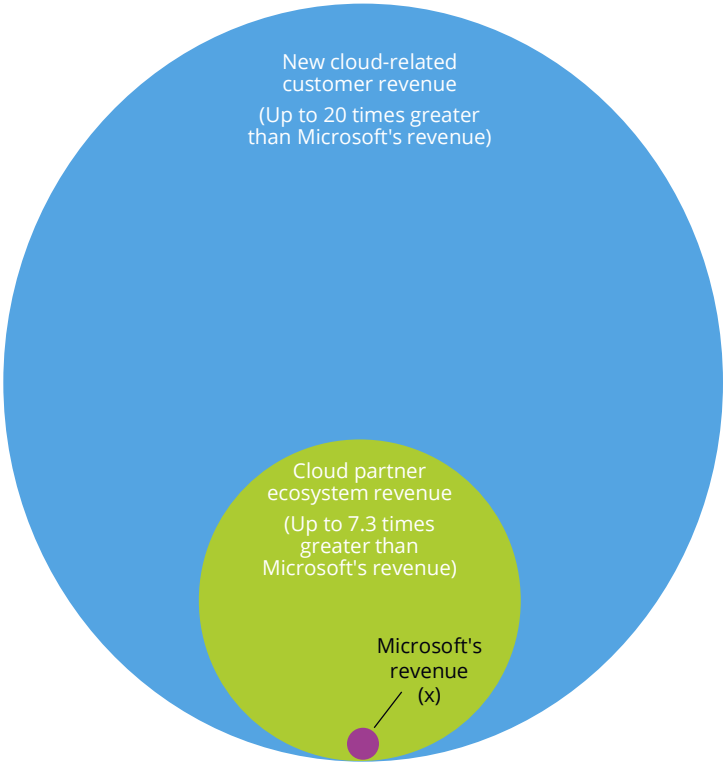
So, for a local economy, we have three revenue dividends: the customer dividend from using cloud computing, the Microsoft revenue dividend, and the ecosystem dividend.

Figure 2 shows these revenue dividends and their relative magnitude. The smallest circle is Microsoft cloud revenue, followed by ecosystem revenue, and then the revenue generated within customer organizations because of the use of cloud computing from Microsoft and its ecosystem.

These dividends represent the accumulated benefit of cloud adoption. The specific "datacenter dividend" – that portion of the new revenue that can be attributed to the specific launch of a new datacenter region – can also be estimated. A new datacenter region will both support customers in their digital transformation efforts and bring the benefits of data residency, security, and reduced latency.[3]

FIGURE 2

Relative Size of New Revenue Generated by Cloud Computing for Microsoft, Its Ecosystem, and Its Customers



Note: Relative size is for illustrative purposes. The scale is approximate.

Source: IDC, 2023

[3] While Figure 2 shows a sizable multiple of customer revenues gained for money spent on Microsoft software and ecosystem products, other internal costs, such as IT staff, facilities, and organizational change, are not counted. Still, the rapid growth of spending on cloud computing bespeaks high returns on investments.

Measures of the Economic Dividend

While IDC believes that deployments of new datacenter regions to support the Microsoft Cloud will impact a range of economic benefits, we have focused our estimates on the following specific measures:

- **New revenue:** The use of the cloud frees up IT resources to support business innovation that creates new revenue for customers. It also obviously generates revenue for Microsoft partners.
- **Ecosystem-to-Microsoft revenue ratio:** The ecosystem grows faster than Microsoft as cloud implementations become more complex.
- **GDP impact:** By comparing new revenue with overall country-level revenue, we can estimate a percentage impact on GDP.
- **Datacenter dividend:** While most of the benefits of the cloud in a region will come simply from the use of cloud versus on-premises software and storage, IDC believes that there will be additional benefits from locally sourced cloud services from new Microsoft datacenters. IDC forecasts that a new datacenter region in a country will accelerate the consumption of Microsoft (and ecosystem) services for a period after launch and, in fact, grow the overall market for cloud services.
- **Ecosystem local spending:** Microsoft and its partners spend locally for materials, facilities, services, power, product components, banking, and other indirect support for operations. (They also pay for labor, which is captured in ecosystem job forecasts.)

See the Appendix for specific definitions of each output.

This category of benefits relies on a range of sources:

- IDC's ICT Spending Guide, March 2023
- IDC's Public Cloud Spending Guide, January 2023
- IDC's Public Cloud Services Tracker, May 2023
- IDC's Worldwide Black Book: Live Edition, May 2023
- IDC's Worldwide Quarterly Personal Computing Device Tracker, May 2023
- IDC's Worldwide Quarterly Enterprise Infrastructure Tracker, April 2023
- IDC's Economic Impact of IT Model estimates of the complexity of the economy (IT intensity)
- Economist Intelligence Unit (EIU), GDP and labor force forecasts, and income per worker
- U.S. Bureau of Economic Analysis (BEA) statistics on GDP and Gross Output
- Microsoft financials
- IDC estimates of IT vendor expenses by category, based on a review of annual reports
- Personal, social, VAT, and corporate tax rates by country (The Heritage Foundation, World Bank, and Trading Economics)

THE COMMUNITY DIVIDEND

The economic impact of cloud capacity in a region is not just about revenue. It's also about both the jobs generated by that revenue and how that revenue is put to work.

These employment estimates reflect the changing demand for employees based on the work required to transition to and operate cloud-focused IT organizations. Many of those IT-related jobs require specialized training or certifications. There are also jobs created in customer organizations to create and support new products and services and to handle increased customer demand.

The jobs created in the vendor and partner ecosystem are usually called "direct jobs." The new revenues generated by cloud business/activity and the new wages spent by new workers beget additional jobs in the general economy. These are referred to as "indirect" jobs.

If employees with the necessary skills are available within a region or country, those positions can be captured by the local economy and increase local employment. Without locally available resources with appropriate skills, those same positions may be temporarily or permanently sourced from other countries where appropriate candidates reside.

There are also community or social benefits from the revenue generated in customer organizations using cloud computing since a portion of it funnels into funding for nonprofit organizations. Increased funding for nonprofits can mean more textbooks for schools, more meals for the hungry, more social service visits, more support for alternative energy, and so on.

Measures of Community Dividend

IDC believes that additional Microsoft cloud capacity in a region will have a range of benefits for communities. We have focused our estimates on the following:

- **New jobs:** New revenue will drive demand for labor, primarily concentrated in IT employment in both the channel and customers but also in support, sales, and creative sectors.
- **New skilled IT jobs (as a subset of all new jobs):** New revenue will drive demand for labor, and new IT spending will drive demand for IT professional jobs. Some of those professionals will be highly skilled – requiring specialized training beyond common secondary or tertiary education.
- **New funding for nonprofits:** Some share of enterprises getting new revenue from using the cloud will be nonprofits.

See the Appendix for specific definitions of each output.

This category of benefits relies on a range of sources:

- IDC estimates of outsourced versus local labor and revenue per head research (IDC's Economic Impact of IT Model, May 2023)
- Economist Intelligence Unit labor force forecast by country
- U.S. BEA statistics for nonprofits
- IDC's IT and cloud spending forecasts by industry

THE ENVIRONMENTAL DIVIDEND

It may be little known to laypersons, but computer datacenters can be major consumers of power – to run the servers and cool equipment, not to mention keep the lights on. IDC research indicates that, in some cases, the total cost of power required to operate and cool the hardware over its lifetime can cost as much as the purchase price of the hardware itself.

In this digital age, those power demands add up.

Ah, but cloud computing offers an excellent opportunity to change the equation. More than excellent.

In 2018, Microsoft commissioned a study[4] to compare the energy consumption and greenhouse gas (GHG) emissions of four applications in the Microsoft cloud with their on-premises equivalents. The study considered the full life cycle for the computing scenarios from manufacturing to end of life.

The four applications chosen to study were Microsoft Azure Compute, Microsoft Azure Storage, Microsoft Exchange Online, and Microsoft SharePoint Online. Together, they account for about half of the energy consumed in Microsoft datacenters.

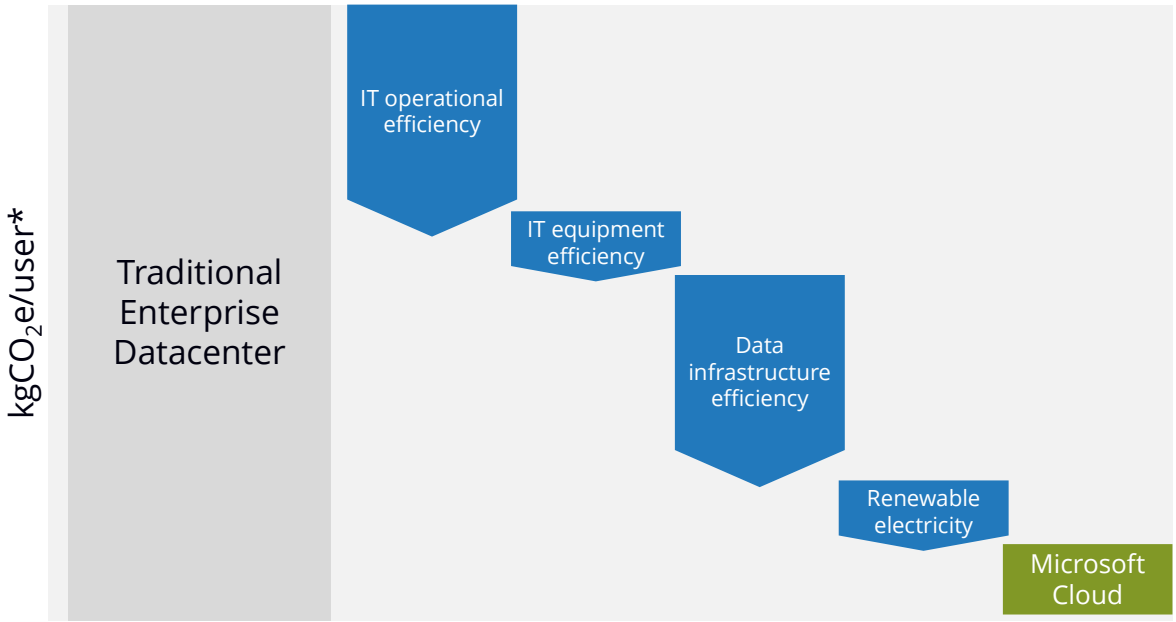
The study found that the Microsoft cloud is from 22% to 93% more energy efficient when compared with enterprise-sized datacenters. Accounting for renewable energy, Microsoft estimated the Microsoft cloud is from 72% to 98% more carbon efficient.

These savings are attributable to four key features of the Microsoft cloud: IT operational efficiency, IT equipment efficiency, data infrastructure efficiency, and the use of renewable electricity (see Figure 3).

[4] *The Carbon Benefits of Cloud Computing: A Study on the Microsoft Cloud,* Microsoft in partnership with WSP, 2018

FIGURE 3

The Four Features of the Microsoft Cloud That Reduce Environmental Impact



* $kgCO_2e$/user = kilograms of carbon dioxide equivalent per user

Note: Relative size is for illustrative purposes. Scale is approximate.

Source: The Carbon Benefits of Cloud Computing: A Study on the Microsoft Cloud, Microsoft in partnership with WSP, 2018

Given this steep reduction in CO_2 emissions and the fact that datacenters account for a significant share of total electricity usage (a major contributor to CO_2 emissions), the environmental impact of migrating to cloud computing is significant. [5]

Measures of the Environmental Dividend

While IDC believes that additional Microsoft cloud capacity in a region will have a range of benefits for the environment, such as reducing CO_2 emissions, conserving clean water, and supporting other sustainability goals, we have focused on only one measure related to overall sustainability:

- **New funding for sustainability efforts:** Some share of new revenue from using the cloud will be devoted to sustainability.

See the Appendix for specific definitions of this output.

This category of benefits relies on a range of sources:

- IDC's Worldwide IT Spending Guide, March 2023
- U.S. Bureau of Economics GDP and Gross Output by sector
- Third-party statistics on nonprofits' size and employment by country

[5] *Worldwide CO_2 Emissions Savings from Cloud Computing Forecast, 2021–2024: A First-of-Its-Kind Projection* (IDC #US47426420, February 2021)

CONCLUSION

IDC has charted some of the benefits of cloud computing, in general, and the benefits of cloud computing on Microsoft platforms supported by a legion of partners.

Other Benefits

The benefits of the cloud extend well beyond the scope of a single research paper to quantify. Microsoft expects that recently announced datacenter regions will impact in a range of ways. For example:

- Microsoft is on its journey to zero waste with a target date of 2030. The company is investing in its Microsoft Circular Centers. Such centers sit adjacent to a Microsoft datacenter and process decommissioned cloud servers and hardware to optimize, reuse, or repurpose. Microsoft has existing Circular Centers in Washington, Virginia, Ireland, the Netherlands, and Singapore to further optimize its supply chain and reduce waste, with more Circular Centers planned.
- Microsoft's newest generation of datacenters in North and South America have a design PUE of 1.12. The company's San Jose, California, datacenters will be cooled with an indirect evaporative cooling system using reclaimed water all year and zero fresh water.
- One of Microsoft's global sustainability commitments is to use 100% renewable energy by 2025. The company's New Zealand datacenter will be powered by 100% carbon-free energy from day 1.
- In Finland, waste heat from two new Microsoft datacenters will contribute to the district heating system serving more than 250,000 people. The Microsoft datacenter in Sweden uses rainwater and outside air to cool servers, while using the heat they produce to keep work areas warm for employees. In addition, Microsoft is piloting hydrogen fuel cells to displace diesel generators as backup systems.
- In November 2022, Microsoft launched its first Datacenter Academy (DCA) in Asia. Located in Singapore and created in partnership with the Institute of Technical Education (ITE), the DCA is a five-year commitment to empowering 300 ITE students to build applied datacenter skills.
- In August 2022, Microsoft launched its new datacenter region in Qatar, making it the first hyperscale cloud provider to deliver enterprise-grade services in the country.
- Microsoft, in partnership with the Ministry of Communications and Information Technology (MCIT), started the National Skilling Program, with the goal of upskilling more than 50,000 people in Qatar by providing digital skills acquisition programs.
- Microsoft launched the Digital Center of Excellence in partnership with top universities, including MIT xPRO, the European Institute of Business Administration (INSEAD), and HEC Paris, to help bridge the skills gap in the IT community and accelerate digital transformation.

The benefits may start on the platform of a single vendor, but they end in the multidirectional journey of digital transformation. Applications and services running on the cloud provoke changes in IT practices and procedures, business processes and workflow, and even business leadership and culture.

From the inside, digital transformation can appear like the Brownian motion of molecules as they heat up. But from the outside, over time, it means growth for the economy, employment for the populace, and benefits for the planet.

APPENDIX

Methodology

Since 2002, IDC has maintained an internal tool called the IDC Economic Impact of IT Model (EIM), which takes inputs from IDC's market research on IT spending, exchange rates, and vendor market share, along with public inputs such as GDP, tax rates, and overall labor force from other sources. The output of the EIM is IT company and employee counts by geographic region.

In 2012, IDC added inputs for spending on cloud computing, percentage of IT resources available for innovation (the rest used on legacy system support and upgrades), and business revenue as a multiple of GDP per country.

Using research-driven algorithms that compare total IT spending with spending on cloud computing and IT budgets with business revenue, the degree to which IT innovation drives business innovation, and estimates of business benefits from accelerated development schedules, faster project completion, and shorter time to market for new products, the IDC model generates job head counts and business revenue in the general economy because of the use of cloud computing to free up IT resources.

In short, increased IT innovation leads to increased business innovation that leads to increased revenue, which creates new jobs. Outputs from the EIM have been published in various IDC research projects and are a critical input to the European Union's Digital Agenda for Europe.

The Microsoft cloud dividend is an extension of the IDC Economic Impact of IT Model. It estimates Microsoft's current and future contributions to the general economy generated by cloud computing. It also estimates the size of the ecosystem supporting Microsoft using IDC's market research on the ratio of spending on professional services to cloud subscriptions; the ratio of sales of hardware, software, and networking to spending on public and private cloud computing; and the ratio of spending on application development tools to applications developed.

Note that the ecosystem may include companies that are not formal business partners of Microsoft but that nevertheless sell products or services associated with Microsoft implementations.

Economic Impact

Table 1 details economic impact measures and methods of calculation.

General Methodology

IDC has been tracking and forecasting the market for IT cloud services for more than a decade. Over time these have been segregated into infrastructure as a service (IaaS), platform as a service (PaaS), and software as a service (SaaS). Definitions have changed over time, but IDC's market tracking and forecasting are well-known and relied upon by the IT industry.

In 2011, IDC began forecasting the economic impact of cloud computing in terms of job creation and revenue generation as part of an ongoing series of Microsoft Economic Impact Studies.

Economic Benefits from IT Cloud Services

The hypothesis espoused in IDC's Economic Impact of IT Model developed for Microsoft is that since most IT spending is tied up in legacy system maintenance or routine infrastructure upgrades, cloud computing can free up IT budget dollars for more innovative pursuits. These, in turn, can lead to increased business revenue, lower operating costs, and faster enterprise cycle times.

For the EIM studies, IDC takes conservative estimates of the degree to which cloud services can increase IT innovation and then uses standard revenue-to-IT spending ratios to estimate potential business revenue generated by using IT cloud services.

The degree to which cloud computing can drive innovation is affected by several factors:

- **The level of penetration of cloud computing in the overall software market.** The earlier in the adoption curve a company adopts new technology, the more the leverage. Later on, competitive advantage dissipates.
- **The level of legacy IT in a country or region (how open is the IT infrastructure to innovation?).**
- **The penetration of IT in general as a percentage of GDP (which affects revenue-to-IT spending ratios).**

More specifically, inputs include:

- **Estimates of the percentage of IT spending tied up in legacy system maintenance or routine upgrades.** The EIM model uses estimates of IT sophistication based on ratios of spending on software and services to spending on hardware to estimate the percentage of legacy spending by country. They range from a high of 80%+ to a low of <50%. These figures change over time.
- **Spending on IT cloud services as a percentage of IT spending, based on IDC forecasts of IT spending and spending on cloud services.**
- **GDP and revenue per country based on data from the Economist's EIU Data Services.** Revenue, often equated with gross output, is generally 1.5–2.5 times GDP.

These increased business revenues are then equated with job creation using standard revenue-per-employee ratios based on the U.S. Bureau of Economic Analysis (BEA) and EIU data on salaries and income per worker.

For nearly a decade, IDC has been publishing studies using this methodology on the economic benefits of cloud computing. For example, IDC's cloud benefit studies have been woven into the European Union's IT Observatory's ongoing research.

Validation of the hypothesis has taken place at various times through IDC custom research on the business value of cloud implementations, studies of the impact of workload on enterprise revenue and expenses, and the adoption rate of cloud computing itself.

The Forecast Range

Because IDC has been tracking cloud computing for so long, it is possible to forecast not only the economic impact going forward but also the historical impact. While the same IDC and third-party tracking data are used, the latter has the advantage of potential validation.

In this case, IDC has produced both economic impact forecasts around the launch of new datacenters and estimates of the impacts of datacenters installed before 2023.

Economic Impact: Inputs and Approach

Tying the economic benefits of cloud computing to the use of cloud service from a single vendor (here, Microsoft), and its ecosystem partners (which may supply add-on cloud services of their own in a customer implementation), basically relies on that vendor's share of the overall cloud market in a country/region.

The two key inputs here are:

- **Microsoft cloud revenues.** These are taken from IDC's Cloud Services Tracker, which estimates Microsoft's cloud services revenues from the three categories of cloud services from 2018 to 2022. For the years 2023–2027, IDC forecasts Microsoft's revenue at the market growth rate for the region/country.

  Note: Microsoft's fiscal year financial earnings are not used as reported in this study. Microsoft financials for Intelligent Cloud include categories that IDC does include in its cloud software vendor revenue; hence IDC's Microsoft Cloud revenue in this study and financial reports will not match. The revenues are not tied to any specific delineated Microsoft products.

  Similarly, Wall Street estimates of Microsoft's forward-looking revenues are not granular enough to be used for forward-looking Microsoft cloud revenue forecasts.

- **Microsoft ecosystem cloud revenues.** These are culled from the IDC Partner Ecosystem model that derives ecosystem revenue for a variety of products/services that the ecosystem adds to Microsoft cloud implementations. The majority of these are IT or business services, networking, and some on-premises software and hardware. But some are cloud products. This share of revenue is applied to the total revenue benefit for customers using cloud services to derive the revenue benefit for users of Microsoft cloud.

The addition of a datacenter region in a country will help remove roadblocks to cloud adoption by reducing data latency, creating data residency, and so forth and positively affect the rate of net-new revenue enabled by cloud use within a country. IDC expects to increase Microsoft and ecosystem revenue somewhat. The four-year incremental difference in net-new revenue, attributed to a new datacenter region within a country, can range from 10% to 40% depending on:

- The current rate of cloud adoption
- The launch year for the new datacenter within the four years
- The presence or absence of an existing datacenter region within the specific country

Based on these factors, we estimated that both cloud adoption and therefore the vendor and ecosystem revenue would accelerate by a small but meaningful rate.

Economic Impact: Definitions

For the purpose of this analysis, we refer to the revenue described previously as "direct and indirect" revenue. That revenue is created from the provision and use of cloud computing.

- **The Ecosystem Cloud Aggregate Impact: Vendor and Partner Revenues:** The revenues generated by a vendor and its partners are identified as the "direct impact" in a standard economic impact model.
- **The End-User Cloud Impact: Customer Revenues:** The use of cloud computing among end users generates another stream of revenue that is identified as the "indirect impact" in a standard economic impact model.

Economists also refer to induced revenue as a secondary effect created as a result of spending by new workforce. This study does not include induced revenue in its calculations. However, including induced revenue (using the U.S. input/output tables) would likely increase these forecasts by about 60%.

TABLE 1

Economic Impact Measures: Calculations

Category/Measure	Method of Calculation
New revenue, Microsoft and ecosystem	The difference in Microsoft and ecosystem revenue from each successive year after 2023 to 2027 revenue
Ecosystem-to-Microsoft revenue ratio	The ratio of ecosystem revenue each year to Microsoft cloud revenue for that year
New revenue, Microsoft customers	The difference in customer revenue generated by the use of cloud computing from each successive year after 2023 to 2027 revenue
New revenue (ecosystem and customers combined)	The difference from 2023 and each subsequent year of all cloud-generated revenue among customers, Microsoft, and its ecosystem
GDP impact	The annual percentage of all revenue calculated for Microsoft, its ecosystem, and its cloud-using customers as a percentage of all revenue generated in a region or country
Datacenter dividend	The portion of revenue attributed to the new datacenter region divided by the "new revenue (ecosystem and customers combined)"
Ecosystem local spending	IDC estimates of Microsoft and cloud partner ecosystem expenses, both local and imported, based on data in annual reports (excludes labor)

Source: IDC, 2023

Community Impact

The methodology and inputs detailed previously in the economic impact section also apply and are leveraged in the community impact portions of this study. To estimate changes in employment, IDC analyzes and estimates:

- How IT operations will grow and change as a result of cloud adoption, increasing demand for some IT positions
- How sales, implementation, support, and other ecosystem roles will need to expand to accommodate expected changes in the use of cloud
- How positions outside of IT will expand within cloud-using clients to accommodate expected increases in revenue derived from cloud-enabled services and products
- The extent new employment income and other spending will generate additional employment to support those new employees

These estimates represent the employment opportunity for workers with appropriate skills. Some of these positions are likely to be only available to workers within a country or specific region. Some positions might be filled by local nationals but also could be filled by expatriates brought into the country to fill specific roles. And finally, some of these opportunities can be filled by employees located either locally or in another region because physical presence is not required for the role. The extent to which appropriate skills are available is critical to the local economy capitalizing on the employment opportunity.

Table 2 lists the calculations used to estimate job demand.

TABLE 2

Community Impact Measures: Calculation

Category/Measure	Method of Calculation
New jobs	The sum of jobs generated by Microsoft, its ecosystem, and its cloud-using customers above the employment level of 2023
New skilled IT jobs	The sum of skilled IT jobs generated by Microsoft, its ecosystem, and its cloud-using customers above the employment level of 2023
New funding for nonprofits	The share of new revenue for cloud customers that go to nonprofits based on IDC data and third-party statistics

Source: IDC, 2023

Environmental Impact

Table 3 details environmental impact measures and methods of calculation.

TABLE 3

Environmental Impact Measures: Calculation

Category/Measure	Method of Calculation
New funding for sustainability	The share of nonprofit funding devoted to the UN sustainability goals based on surveys and third-party statistics on nonprofit expenses

Source: IDC, 2023

Definitions

Table 4 details definitions and sample value statements of economic impact measures.

TABLE 4

Economic Impact Measures: Definitions and Sample Value Statements

Category/Measure	Definition	Underlying Premise	Illustrative Data Point	Sample Value Statement
New revenue, Microsoft and ecosystem	The sum of the difference from 2023 and each subsequent year of all Microsoft Cloud and Microsoft ecosystem revenues	Microsoft and its partners will grow at least at the same rate as the market for IaaS, PaaS, and SaaS.	More than 20%	Over the next four years, revenue for Microsoft cloud and its ecosystem of partners will grow more than 20% a year and generate nearly $2.1 trillion in aggregate above the 2023 revenue level. That revenue will in turn generate local investment, tax revenue for the government, and highly leveraged returns for customers.

TABLE 4

Economic Impact Measures: Definitions and Sample Value Statements

Category/Measure	Definition	Underlying Premise	Illustrative Data Point	Sample Value Statement
Ecosystem-to-Microsoft revenue ratio	Annual ratio	The ecosystem grows faster than Microsoft as cloud implementations become more complex.	$7.47	By 2027, for every $1.00 Microsoft makes, its cloud ecosystem partners will make $7.47.
New revenue, Microsoft customers	The sum of the difference from 2023 and each subsequent year of all cloud-generated revenue among customers of Microsoft and its ecosystem	The use of cloud frees up IT resources to support business innovation that creates new revenue.	Nearly $3.3 trillion	Over the next four years, customer use of Microsoft cloud will improve IT operations and generate nearly $3.3 trillion in new revenue above the 2023 level. This will drive investment and increased spending in local economies, the creation of jobs, reduction in atmospheric carbon, and investment in sustainability.
New revenue (Microsoft, ecosystem and customers combined)	The sum of the difference from 2023 and each subsequent year of all cloud-generated revenue among customers, Microsoft, and the Microsoft ecosystem	The use of cloud frees up IT resources to support business innovation that creates new revenue. It also obviously generates revenue for vendors.	More than $5.4 trillion	Over the next four years, Microsoft, its ecosystem, and its cloud-using customers will together generate more than $5.4 trillion in new revenue above the 2023 level. This will drive investment in local economies, the creation of jobs, reduction in atmospheric carbon, and investment in sustainability.

TABLE 4

Economic Impact Measures: Definitions and Sample Value Statements

Category/Measure	Definition	Underlying Premise	Illustrative Data Point	Sample Value Statement
GDP impact	The percentage of annual GDP represented by combined Microsoft, ecosystem, and cloud-using customer revenue	Revenue can be equated to GDP using gross output-to-GDP ratio.	2.5%	All told, revenue from Microsoft, its ecosystem, and its cloud-using customers will go from contributing 1.7% of worldwide GDP in 2023 to 2.5 % in 2027, an annual increase of 12%.
Datacenter dividend	The share of the new revenue from Microsoft, its ecosystem, and its cloud-using customers that can be attributed to the new datacenter region	The new datacenter will remove or reduce some of the barriers to adoption, including concerns over data latency or data residency.	5–15% (country-level estimates only)	We estimate the new datacenter region will eliminate some of the barriers to cloud adoption within the region and account for approximately 5–15% of the new revenue total through 2026.
Ecosystem local spending	The annual in-country spending by Microsoft and its ecosystem for nonlabor services (e.g., rent, advertising)	Vendors spend locally for labor, COGS, SG&A, and operations. Labor investment is captured in ecosystem job forecasts.	More than $1.1 trillion	Microsoft and its ecosystem, to support their growing local business and employment, will spend more than $1.1 trillion worldwide for services and products in local economies above the 2023 level.

Note: Data points are for example only and may or may not reflect the value of the current estimates.

Source: IDC, 2023

Table 5 details definitions and sample value statements of community impact measures.

TABLE 5

Community Impact Measures: Definitions and Sample Value Statements

Category/Measure	Definition	Underlying Premise	Illustrative Data Point	Sample Value Statement
New jobs	The difference in cloud-generated jobs in Microsoft, its ecosystem, and its cloud-using customers from the end of 2023 to the end of 2027	New revenue will drive demand for labor, primarily concentrated in IT employment in both the channel and customers, but also in support, sales, and creative sectors.	More than 13.3 million	Over the next four years, Microsoft, its ecosystem, and its cloud-using customers will, together, add more than 13.3 million jobs to the (worldwide, local) economy, including jobs directly in their own organizations and jobs generated indirectly in other organizations.
New skilled IT jobs	The number of new Microsoft and ecosystem jobs and IT professionals in client companies that can be considered "skilled"	New revenue will drive demand for labor, and new IT spending will drive demand for IT professional jobs. Some of those professionals will be highly skilled — requiring specialized training beyond common secondary or tertiary education.	3 million	What's more, Microsoft, its ecosystem, and IT departments in customer companies will add 3 million new IT skilled jobs into the economy over four years.
New funding for nonprofits	The subset of new revenue for cloud-using customers that accrue to nonprofits	Some share of new revenue from using cloud will flow to nonprofits.	More than $476 billion	More than $476 billion of the new revenue created for Microsoft customers by the use of cloud will go to nonprofits and will be available to support fundraising, manage volunteers, add staff, and support client services.

Note: Data points are for example only and may or may not reflect the value of the current estimates.

Source: IDC, 2023

Table 6 details definitions and sample value statements of environmental impact measures.

TABLE 6

Environmental Impact Measures: Definitions and Sample Value Statements

Category/Measure	Definition	Underlying Premise	Illustrative Data Point	Sample Value Statement
New funding for sustainability efforts	The subset of nonprofit funding available for services, research, and support of UN sustainability goals	Some share of new revenue from using cloud will be devoted to sustainability.	$270 billion	The economic benefits created by Microsoft, its ecosystem, and its cloud-using customers will extend to the nonprofit sector, which, in turn, can be expected to use $270 billion in new funding above the 2023 level over the next four years in pursuit of sustainability, from fighting climate change and poverty to improving health and economic freedom.

Note: Data points are for example only and may or may not reflect the value of the current estimates.

Source: IDC, 2023

Addendum — Industry Segmentation

Table 7 details total revenue and jobs by industry.

TABLE 7

Total Revenue and Jobs by Industry

Vertical Industry	New Revenue ($B)	New Jobs (000)
Finance	898.3	1,726
Manufacturing and resources	960.1	2,215
Retail/wholesale	630.1	1,492
Communications and media	570.8	1,386
Government	293.2	824.3
Healthcare	200.7	604.8
Education	78.8	327.3
Utilities	381.8	1,272
Services	1,405	3,476
Total	5,419	13,323

Source: IDC, 2023

Definitions

IDC identifies a vertical industry as a set of all economic entities that carry out similar economic activities and/or offer goods and/or services designed to meet the specific needs of a group of customers or constituents. Because IDC's vertical research is rooted in deep economic and firmographic data, our taxonomy classification process parallels that of economic classification systems, whereby we arrange organizations into groupings based on similar processes, products, services, and other behaviors and characteristics, in a way that allows us to leverage macroeconomic and context data published by official sources.

Table 8 details industry definitions.

TABLE 8

Industry Definitions

Vertical Industry	Definition
Finance (includes banking, insurance, and securities and investment services)	**Banking:** All credit institutions that accept deposits from individuals or entities and use these funds for any of various forms of financial and/or monetary intermediation, as well as credit institutions that back or execute loans without having received deposits **Insurance:** All organizations primarily in the business of offering non-compulsory insurance of any kind **Securities and investment Services:** The variety of institutions that facilitate and execute capital transfers such as security and commodity exchanges, security brokerage and fund management activities, mortgage brokers, and auxiliary activities to financial services
Manufacturing and resources (includes discrete manufacturing and process manufacturing)	**Discrete manufacturing:** Manufacturing in which products are produced through the assembly of distinct and/or individual parts (e.g., automotive, aerospace and defense, high tech, and other discrete manufacturing organizations) **Process manufacturing:** Manufacturing in which the basic product is created primarily through one or more continuous activities, such as milling, curing, weaving, smelting, and/or refining (Chemicals, metals, pulp and paper, food and beverage, and other process manufacturing organizations are included in this industry.) **Construction:** The contracting and building as well as restoration and repair of commercial, public, and residential structures **Resources:** Businesses primarily involved in agriculture production, farming, hunting, forestry, and fishing or in mining, fuel extraction, and other extractive industries
Retail/wholesale	**Retail:** Enterprises involved in the sale or resale of goods, sometimes with related services **Wholesale:** Organizations primarily involved in the sale of goods to enterprises or organizations, whether for resale (e.g., by retail companies or other wholesale organizations), for value-add by manufacturing entities, or for internal consumption
Communications and media (consists of media and telecommunications)	**Media:** Entities engaged in creating cultural content, associating themselves with it, and/or disseminating it through various means, including broadcasting, publishing, and visual projection **Telecommunications:** Services providing point-to-point contact and the transmission of sound, images, video, data, or other information by telephone or telegraph
Government (federal/central government, state government, and local government)	**Federal/central government:** All public administration organizations focused on defense, justice, and other civilian government activities at the central or federal level **State and local government:** All public administration organizations focused on defense, justice, and other civilian government activities at the state, regional, and local levels
Healthcare	Healthcare providers inclusive of hospitals, clinics, physician offices, medical laboratories, and private health insurance
Education	Institutions dedicated to academic and/or technical/vocational instruction, apart from certain training environments that are classified as social services

TABLE 8

Industry Definitions

Vertical Industry	Definition
Utilities	Organizations created to generate and/or disseminate broad social necessities such as electric, gas, combination (electric and gas), and water
Services (consists of professional and personal services, together with transportation)	**Professional services:** Business-to-business services such as legal, management, consulting services, accounting, recruiting, advertising, architecture, engineering, and research **Personal and consumer services:** Creative arts and entertainment activities, libraries, and sports activities **Transportation:** Land, water, and air transport; warehousing and support activities; and postal and courier activities as well as travel agencies

Source: IDC, 2023

Methodology

For this analysis, we modelled a combination of IDC's Worldwide Software Tracker and Public Cloud Services Spending Guide. These data sets track and forecast the spending on public cloud services per industry vertical. They also include labor statistics by country and industry from a variety of microeconomic and statistical data from several governmental sources and databases such as the Bureau of Labor Statistics in the United States.

Further, the data from various internal and external sources were triangulated and applied to IDC's proprietary econometric model to estimate and predict the cumulative revenue and new jobs Microsoft and its partners in the ecosystem and customers would generate by the end of the forecast period in 2027.

Table 9 details industry segmentation calculation.

TABLE 9

Industry Segmentation: Calculation

Category/Measure	Method of Calculation
New revenue (industry)	The sum of revenues from 2023 and each subsequent year of all cloud-generated revenue among customers, Microsoft, and its ecosystem in each industry vertical
New jobs (industry)	The sum of jobs generated by Microsoft, its ecosystem, and its cloud-using customers in each industry above the employment level of 2023

Source: IDC, 2023

About IDC

International Data Corporation (IDC) is the premier global provider of market intelligence, advisory services, and events for the information technology, telecommunications and consumer technology markets. IDC helps IT professionals, business executives, and the investment community make fact-based decisions on technology purchases and business strategy. More than 1,100 IDC analysts provide global, regional, and local expertise on technology and industry opportunities and trends in over 110 countries worldwide. For 50 years, IDC has provided strategic insights to help our clients achieve their key business objectives. IDC is a subsidiary of IDG, the world's leading technology media, research, and events company.

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