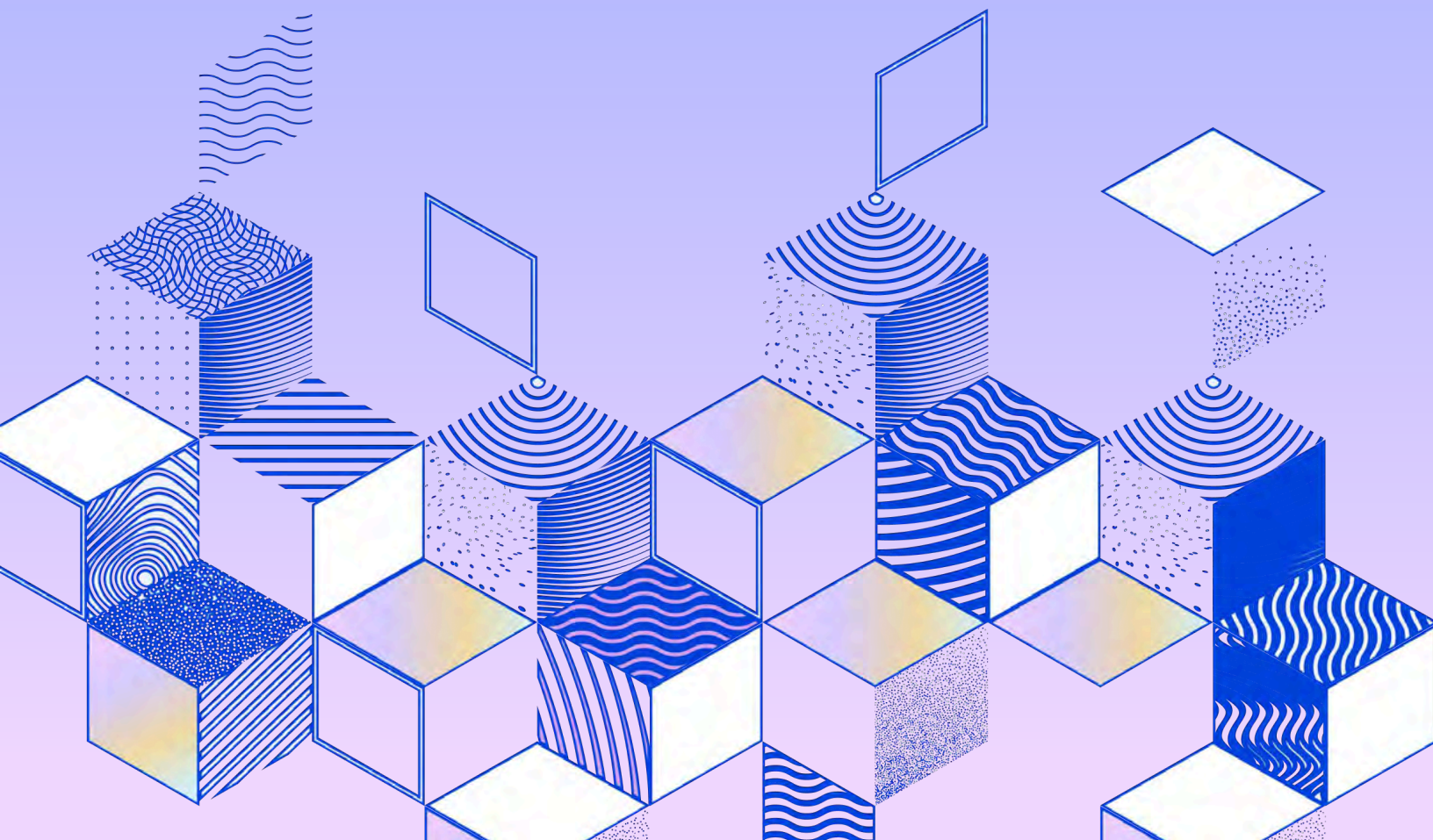
CANADIAN
ANTI-MONOPOLY PROJECT

PARTING CLOUDS

# CREATING A COMPETITIVE MARKETPLACE FOR COMPUTE



# Contents

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## About CAMP

CAMP is a think tank dedicated to addressing the issue of monopoly in Canada. We produce research, policy, and commentary in support of a more free, fair and democratic economy.

## Acknowledgements


CAMP would like to thank those from academia, industry, and civil society who offered their time and expertise to refine the scope and content of this paper. Our work would not be possible without such strong collaborators, and we are truly grateful for their generosity.

# 1. Executive Summary

**85%**

Canadian public cloud market share held by Amazon, Microsoft & Alphabet

**$18.5B**

Value of Canadian cloud computing market in 2025

**66%**

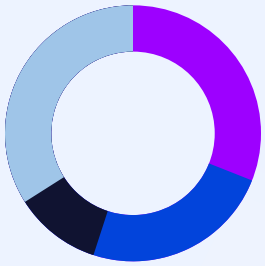
Global cloud market controlled by the top 3 hyperscalers

**$156M+**

Canadian federal government spend on cloud services in 2022–23

Cloud computing is increasingly a core infrastructure in the modern economy. Public cloud environments[1] provide clients with access to a nearly infinite shared pool of compute resources on demand. In 2025, the Canadian market for cloud computing services was estimated to be worth roughly $18.5 billion, with the federal government alone spending over $156 million on cloud services in 2022–23.[2] This infrastructure is controlled by a remarkably small number of firms. Globally, three hyperscalers — Amazon (31%), Microsoft (24%), and Alphabet (11%) — hold 66% of public cloud market share. In Canada, concentration is starker still: the same three firms control 85% of the market.[2]

### Global Cloud Market Share



| | |
|---|---|
| Amazon | 31% |
| Microsoft | 24% |
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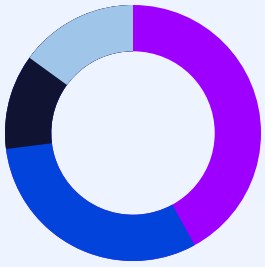
| Other | 34% |

### Canadian Cloud Market Share



| | |
|---|---|
| Amazon | 42% |
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| Google | 12% |
| Other | 15% |

This degree of concentration produces the harms familiar to competition policy: vendor lock-in through proprietary technologies and high switching costs, price distortion through opaque and complex billing, extension of market power through bundling, tying, and self-preferencing, and the foreclosure of competition in adjacent markets through strategic acquisitions and investment. The result is a market where customers – in both the public and private sector – lack choice and agency while providers face insufficient competitive pressure to offer fair terms.

These long-standing competition concerns have taken on new urgency. The past year has exposed how concentration in digital infrastructure creates not only market failures but strategic vulnerabilities. Rising tensions in U.S.–Canada relations, the intermingling of Big Tech interests with U.S. government power, and the demonstrated willingness to use technology access as geopolitical leverage have forced Canada and others to confront an uncomfortable reality: dependence on a handful of U.S. hyperscalers is a sovereign risk as well as a competition problem. What was once a question of market efficiency is now also a question of national resilience.

This paper argues that the traditional tools of competition alone are unlikely to alter this situation. Instead, the most effective response to both the competition and sovereignty dimensions of this problem is to promote the commoditization of cloud infrastructure via a public procurement strategy supported by targeted competition enforcement and international engagement. By making cloud computing a fungible resource where interoperability standards allow workloads to move between providers with minimal friction, Canada can restore competitive pressure to the market, reduce the leverage that concentration gives to any single provider, and create the conditions in which genuine alternatives can emerge. The metric for success is not who owns the infrastructure, but whether customers can credibly switch between both international and domestic providers. A market in which workloads move freely is a market in which lock-in loses its power, and in which dependency concerns can be more easily mitigated. This interest is shared by many national governments, as well as by corporate boardrooms around the world.

Achieving this requires coordinated action across three domains:

## Procurement and international cooperation

Procurement and international cooperation must drive commoditization from the demand side. The Government of Canada is already a significant cloud customer; it should use that purchasing power to only procure cloud infrastructure – from both domestic and international providers – that adopt de facto or dominant standards wherever they exist. The government should not wait for (or trying to legislate) de jure standards that are unlikely to be adopted. Internationally, Canada should seek to encourage other middle powers and nonaligned nations, multilateral organizations and private sector actors to also align around said de facto standards, because no single country or organization has the market power to force standardization alone, but a collective does.

## Proactive regulation

Proactive regulation must reshape the market structure itself from the supply side. This includes eliminating egress fees, prohibiting self-preferencing, and imposing pricing transparency. The objective is to treat cloud computing as the utility-like infrastructure it has become — subject to neutrality rules and standardization requirements that make providers effectively fungible.

## Competition enforcement

The Competition Bureau should immediately conduct a market study on Canada's cloud computing market, looking at the prevalence of anticompetitive practises such as bundling, tying, predatory cloud credits, and discriminatory licensing. Competition enforcement should then target these practices that sustain lock-in in Canadian cloud markets. Merger and acquisition review must be strengthened, especially for acquihires that extract Canadian intellectual property and talent.

Growing calls for massive investment in domestic cloud alternatives are understandable but risk being counterproductive. Without corresponding competition policy and regulation, directing public funds to Canada's domestic telecommunications oligopolies without clear conditionalities for interoperability based on de facto standards would merely transfer market control to these firms — a maplewashed dependency that replicates the structural problems of the current market with inferior performance. Domestic monopolies are still monopolies.

# 2. Introduction

Cloud computing is the infrastructure on which modern economies run. In Canada, three American firms — Amazon, Microsoft, and Alphabet — control 85% of the public cloud market.[2] The federal government alone spent over $156 million on cloud services in 2022–23, the majority of it flowing to Microsoft and Amazon. For businesses of all sizes, from startups building their first product to the country's largest enterprises, the cloud is the default option. It is the foundation on which most software is built, data is stored, and services are delivered. Dependency on the hyperscalers – companies that can provide deep pools of compute and storage, that is redundant and with low latency anywhere on the planet – is even greater if your business is global. Companies whose entire value proposition depends on independence from Big Tech, like Signal, the encrypted messaging service, acknowledge that there is, practically speaking, no alternative.

PUBLIC CLOUD MARKET · CANADA

## Three American firms control 85% of Canada's public cloud market.[2]

The federal government alone spent over **$156 million** on cloud services in 2022–23, the majority of it flowing to **Microsoft** and **Amazon.**

This degree of concentration is a competition problem. A market in which three firms hold 85% share, in which customers face prohibitive switching costs, in which proprietary technologies and opaque pricing foreclose meaningful choice, is a market that is failing. The harms are familiar to competition policy: vendor lock-in through proprietary services and data formats, price distortion through complex and non-comparable billing, extension of market power through bundling and tying, and the foreclosure of competition in adjacent markets, including the rapidly forming market for artificial intelligence services, through strategic acquisitions and investment. These are not new problems. But they have been allowed to compound, in part because Canada lacks the proactive regulatory tools that peer jurisdictions are now deploying.

The past year has made the cost of this market failure visible in a new way. Rising tensions in U.S.-Canada relations, the intermingling of Big Tech interests with U.S. government power, and the demonstrated willingness to use technology access as geopolitical leverage have forced a recognition that dependence on a handful of American hyperscalers is not merely an economic inefficiency — it is a strategic vulnerability. The Trump administration has brought repeated tariff threats against Canada, references to absorbing Canada as the 51st state, and a sustained campaign against allied governments' efforts to regulate Big Tech.[3]

Canada has already felt this pressure directly: the Digital Services Tax was abandoned under threat of disrupting trade talks.[4] Choices around architecture have incurred technical and organizational debt that are now posing problems of national agency and systemic resilience. What was once a question of market efficiency is now also a question of national resilience.

But the sovereignty concern, however urgent, is a consequence of the market failure — not a separate problem requiring a separate solution. A country whose government and enterprises are locked into a small number of providers lacks the ability to exercise meaningful choice; this is true whether the threat is coercion by a foreign government or simply rent extraction by an uncontested monopolist. And the instinct to respond by building domestic alternatives, while understandable, risks replicating the structural problem with different owners.

Domestic monopolies are still monopolies. The question is not who owns the infrastructure, but whether customers can move their workloads.

This paper argues that the most effective response to both the competition and sovereignty dimensions of this problem will be multifaceted but tied to a common strategy: the commoditization of cloud infrastructure. By making cloud computing a fungible resource where interoperability standards allow workloads to move between providers with minimal friction, Canada can restore some competitive pressure to the market, reduce the leverage that concentration gives any single provider, and create the conditions in which genuine alternatives, either private or public can emerge. The metric for success should not be national in origin. It is whether customers can credibly switch providers. A market in which workloads move freely is a market in which lock-in loses its power, and in which sovereignty concerns can be meaningfully mitigated.

**A country whose government and enterprises are locked into a small number of providers lacks the ability to exercise meaningful choice; this is true whether the threat is coercion by a foreign government or simply rent extraction by an uncontested monopolist.**

# 3. Concentrated Clouds and Monopolized Markets

## 3.1 How the Hyperscalers Came to Dominate

For the purposes of this analysis, computing infrastructure refers to the physical installations, data centres, that house and run the hardware that enable remote computing and storage of information. Cloud computing is a family of software architectures that enable remote computing while offering speed and scalability. Examination of computing infrastructure and cloud computing must be holistic and examine the role of cloud computing technologies and providers in the wider technological ecosystem, which includes not only the physical and network infrastructure, but platforms, services and software that make up the technology stacks of organizations. The business composition of the dominant players in cloud computing makes this clear; their holdings and products extend throughout the technology stack, from microchips to commercial software, from data centres to email services. This vertical integration makes it possible for them to leverage their dominance into different and emerging markets, like the rapidly evolving market for artificial intelligence (AI) services.

### Types of Clouds

#### Public Clouds

Organizations deploy their IT infrastructure on a third-party cloud where resources are drawn from a shared pool as needed to allow for efficient scaling

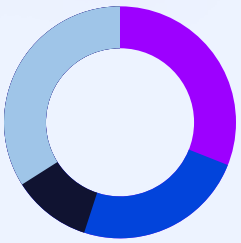
#### Private Clouds

Organizations pay for a static share of computing resources (storage, processing power, etc.) and their own dedicated network, run either on premises or remotely

#### Hybrid Clouds

Organizations deploy their resources on an interconnected set of public and private clouds

### Global Cloud Market Share



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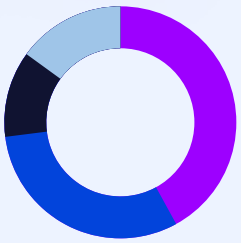
### Canadian Cloud Market Share



| | |
|---|---|
| Amazon | 42% |
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| Other | 15% |

Cloud computing markets are highly concentrated with three firms, "hyperscalers" representing 66% of global market share in terms of 2024 revenues: Amazon (31%), Microsoft (24%) and Alphabet (11%).[5] Data from Canada suggests an even starker concentration in the public cloud market, with the top three hyperscalers making up 85% of the market in terms of revenue: Amazon AWS with 42%, Microsoft Azure with 31% and Google with 12%.[6] For the federal government, based on Shared Services estimated cloud services expenditures between 2019–2020 and 2022–2023, of a total of $310.4 million spent, 66% of that went to Microsoft, 16% to Amazon, 14% to Salesforce and 4% to other providers.[7]

## Federal Government Cloud Services

2019–2020, 2022–2023


**The term "hyperscaler" is not simply a synonym for "large." It describes a specific technical and business capability: the ability to provision computing resources globally, elastically, and on demand.**

A Toronto startup using a hyperscaler can serve a handful of early users today and scale to millions of customers across dozens of countries tomorrow, without investing in infrastructure, negotiating data centre contracts, or managing capacity in each market. The compute is available instantly, billed by the second, and distributed across a global network of data centres designed for redundancy and low latency. This is a genuinely transformative capability. It has lowered the barriers to launching businesses, accelerated the pace of software development, and enabled organizations of all sizes to operate at a scale previously available only to the largest enterprises.

Hyperscalers achieved their dominant position in part because they solve a real problem extraordinarily well. The global reach, elastic scaling, and rich ecosystem of platform services they provide represent decades of engineering investment and operational expertise that no other class of provider currently replicates at scale. This must be acknowledged, because it shapes both the analysis of competitive harm and the design of policy responses. The competition problem is not that hyperscalers are large or that they provide valuable services. It is that the market is structured in ways that allow them to convert that value into lock-in, foreclose alternatives, and extract rents from customers who cannot practically switch. The policy challenge is to recognize the benefits of global-scale cloud computing while mitigating the market failures that concentration has produced.

# 3.2 Failure in the Cloud Market

The market position of hyperscalers is deeply entrenched. It is difficult for large organizations, like the Government of Canada, to avoid working with hyperscalers. Smaller providers on their own are incapable of meeting the storage and scaling needs of large corporate and government clients. This is particularly true if one requires global reach. Smaller providers can also struggle to meet security and redundancy requirements for sensitive installations. Even technology companies whose value proposition is based on operating independently of Big Tech, such as the popular secure messaging app Signal, must rely on them for services, with Signal Foundation president Meredith Whittaker stating frankly: "there isn't really another choice: the entire stack, practically speaking, is owned by 3–4 players".[8]

**Computing infrastructure is only one layer of the technology stacks that comprise the full suite of functionalities and services offered by hyperscalers. Cloud offerings fall into three related but distinct categories:**

Visible to End User

### Software as a Service (SaaS)

Applications running on cloud servers accepting inputs from user devices, like productivity suites

### Platform as a Service (PaaS)

Provides developers with tools, libraries, and services like operating systems and databases

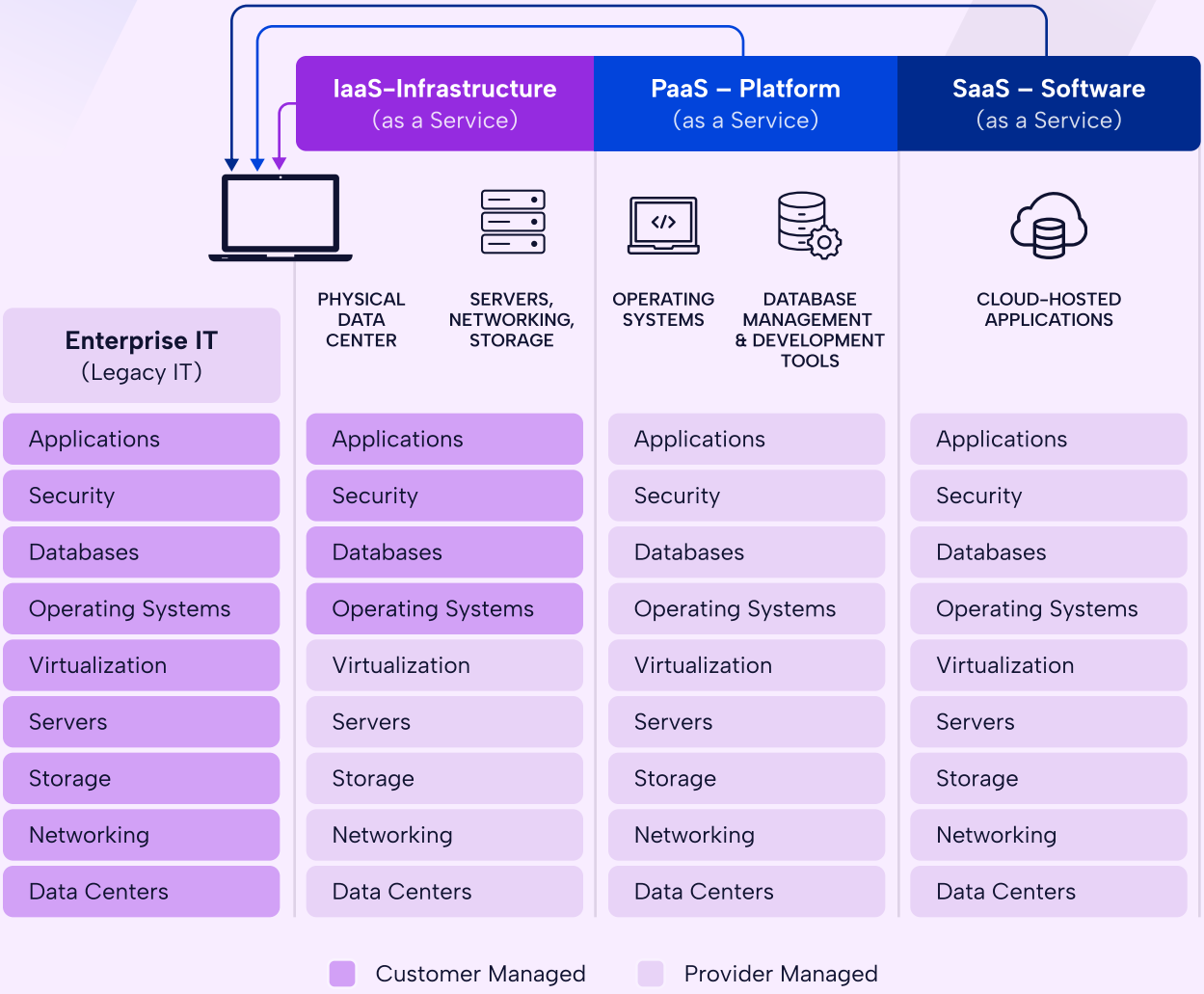
Invisible to End User

### Infrastructure as a Service (IaaS)

Focused on providing the physical computing resources for clients, like server space, networks

The power of hyperscalers is intimately connected to their cultivated vertical integration, and their ability to offer full stack services to clients, an arrangement that has already drawn the attention of competition regulators around the world. Conglomerate effects arise when firms can leverage their presence in one market to benefit their businesses in another. Hyperscaler portfolios have numerous such synergies.

## Cloud Computing Services




They operate other businesses that function as anchor tenants for their cloud computing, and offer "complement goods," where demand for one product can be used to increase demand for their cloud computing.[9] This vertical integration fuels consolidation in the technology market because it allows hyperscalers to avoid competitive market pressures, charging higher prices when possible, and using predatory pricing strategies when profitable.

The consequential harms of consolidation in cloud computing are not isolated to the markets for cloud computing infrastructure and platform services. Rather, vertical integration facilitates, and incentivizes the projection of market power into adjacent markets, and the range of services offered is an important part of how customers select between providers.[10] Generally speaking, customers must deploy a full technology stack, with different products and technologies selected at infrastructure, platform and software levels. So even if dominance and concentration are mainly defining features of the IaaS level of cloud computing, that dominance manifests acutely in PaaS and SaaS markets. What is more, vertical integration creates a reinforcing feedback loop, where dominance built at the infrastructure level can extend, support, and enforce dominant positions at the PaaS and SaaS levels. As a result, analysis of harm arising from concentration in cloud computing at the infrastructure (IaaS) level necessarily includes examination of harms at markets at higher layers to which IaaS is an input. Indeed, the harmful effects of concentration in computing infrastructure are acutely felt throughout the technology stack.

# 3.3 What Cloud Concentration Costs

**Concentration in the cloud computing market produces several categories of harm. Some are familiar to competition policy:**

Vendor lock-in | Price distortion | Bundling and tying | Self-preferencing

Others go further. Hyperscalers' control over infrastructure gives them gatekeeping power over adjacent markets; competitors in PaaS and SaaS may depend on the very firms they compete against for access to infrastructure. That control has enabled hyperscalers to use investment and acquisitions to capture innovation and foreclose competition across the technology stack. The reliance of commerce and public services on a small number of providers has made critical systems brittle, with outages causing major economic losses. And the fact that most cloud infrastructure is US-based means these firms can be leveraged — and can themselves leverage — in trade negotiations and regulatory disputes, compounding the difficulty of diversifying markets or regulating the sectors in which hyperscalers operate.

## 3.3.1 Vendor Lock-in, Competitor Lock-out

Lock-in is a primary driver for abuse of dominance in cloud computing, and is both an enabler and result of many anticompetitive behaviours in the market. Lock-in and switching costs can prevent businesses from making optimal technical and costing decisions. While cloud computing has been industry standard for nearly two decades, no official standards and few de jure standards exist across the players. The result is that services are not substitutable between platforms at any level of the stack. At the infrastructure level, each hyperscaler built proprietary interfaces for storage, compute and networking. A lack of interoperability standards pervades the entire cloud computing stack. The hyperscalers themselves have not adopted each other's interfaces at any level, from storage and compute through to platform services. Nevertheless, a multi-billion dollar enterprise market for solutions shows an unrealized demand for commoditization. Third-party tools, such as Terraform for infrastructure provisioning and Kubernetes for container orchestration, provide abstraction layers that can ease migration, but these workarounds paper over the absence of native interoperability, and are a giant tax in terms of complexity and expertise that are born by users.

Azure Blob Storage, Microsoft's storage service,is not compatible with AWS's S3, Amazon's equivalent service. Google Cloud Storage uses different APIs that are a variant of AWS's S3. This fundamental incompatibility is true for VM configurations, networking models, and command-line tools. All differ, sometimes subtly, sometimes significantly, across providers. At the platform and software levels, the incompatibilities compound further, as business-critical applications become deeply entangled with provider-specific services. The cost of changing providers — the "switching costs" — are typically high enough to be untenable. Today a "multi-cloud" strategy does not mean the ability to move between cloud providers, rather it is about threatening providers over potential future work, and conceding that current workloads are effectively locked-in. Hyperscaler lock-in, seen in this sense, presents a barrier to efficiency and innovation in large corporations, constraining their choices about how their data and processes are organized and accessed.[11]

## 3.3.2 Opaque Pricing and Asymmetric Contracts

At the infrastructure level, prices for basic compute and storage have generally declined over time, reflecting efficiency gains and the scale advantages of hyperscalers. But this headline trend obscures the competitive dynamics. Because infrastructure services are not interoperable across providers, price competition at the IaaS level is limited to attracting new customers rather than retaining existing ones through competitive pricing. Hyperscalers do this by offering free trials, product tiers and "cloud credits".[12] These are tactics that can build lock-in, and relies on hyperscalers' size to carry losses that would be untenable for smaller competitors and offer aggressively subsidized prices to new entrants.[13]

**Cloud credits can be tied to contractual barriers like exclusivity clauses and purchasing requirements, and while they stimulate early stage growth for innovative new firms, they also create technical debt as companies build their businesses entirely within the provider ecosystem. The same is true for free trials, as after a trial is up, a business might be too dependent on a provider's exclusive technology to make switching providers a feasible choice.**

Once a customer has adopted a provider's infrastructure, the financial logic of using that provider's proprietary platform services — databases, machine learning tools, object storage, load balancing, identities and permissions management — becomes difficult to resist. Within their own technical ecosystems, hyperscalers manage their own markets for services.[14] Each additional platform service deepens the dependency, raising switching costs and further insulating the provider from competitive pressure.

Contract terms can also be used to foster dependency. Infrastructure contracts are often long term, negotiated, and can contain clauses for minimum billing. In terms of billing usage, pricing in the cloud computing market can be opaque and complex. Vocabulary varies across providers, with pricing subject to sudden changes, and a slew of variables that affect billing that make predictable costing difficult.[15] The greater the technical dependency and switching cost for clients, the less leverage they can muster in negotiation.

## 3.3.3 Digital Tollbooths: Gatekeeping in Adjacent Markets

Computing capacity is infrastructure. For any business developing or using digital products, access to cloud resources is a prerequisite to reaching the market. Even Netflix and Target, brands that compete directly with Amazon, must pay for AWS, creating dependency on a company that competes with them at the SaaS layer.[16] Businesses built on a cloud-based platform service may be entirely dependent on a particular IaaS provider, working exclusively within their ecosystem. These independent vendors remain beholden to the technical and business decisions of hyperscalers.

This gatekeeping arrangement is already shaping the market for artificial intelligence. AI Infrastructure is underdeveloped in Canada's, and Canadian firms of all sizes rent these resources from hyperscalers.[17] Control over computational infrastructure, as well as control over data resources necessary for training models, and control over foundational models themselves, gives hyperscalers immense gatekeeping power, essentially acting as unavoidable tollbooths for those seeking to enter the market.

**The enormous opportunity costs of developing foundational models and acquiring infrastructure mean that most AI competition is occurring downstream at the application layer, where models are optimized for specific functions and workflows, sometimes called "wrappers".[18]**

This makes sense; general purpose models need to be carefully tuned and engineered for effective deployment in any organizational context. Outputs must be reliable and time saving, rather than simply shifting bottlenecks to different parts of work processes. This downstream development is where innovation and business value are most realizable, but it has also made it a target for the already dominant hyperscalers.

## 3.3.4 The Capture of Innovation

While traditionally, accounts of harms arising from monopolized markets focus on stagnancy in innovation (because entrenched monopolies have little pressure to innovate), the situation is somewhat different when it comes to the vertically integrated firms that control the cloud computing market.

Hyperscalers are uniquely positioned to influence the development path of technology, and do so in ways that extend their dominance, foreclose the emergence of competitors, and bend global investment for technology development. Hyperscalers operate businesses across the technology stack, giving them a high degree of market knowledge and business intelligence. They control resources and infrastructure necessary to launch new products and businesses, including training data, foundational models, and computing infrastructure. They possess vast amounts of investment capital, have used to consolidate their power across the technology stack through a mix of investment, mergers and acquisitions, as well as so called “acquihires”. Hyperscalers are optimally positioned to capture emerging value in the technology markets, ensuring that the most innovative and potentially profitable technologies succumb to their gravitational pull.

For example, mergers and acquisitions are an important part of hyperscaler strategy.[19] Hyperscalers often acquire small startups without an established market presence, and avoid regulatory scrutiny from regulators focused on horizontal, rather than vertical mergers.[20] Acquisitions not only skirt antitrust and competition checks, but research also suggests they have an overall chilling effect on technology development and innovation more largely, measured through decreased patenting activity by acquired firms and their acquirors.[21] In other cases, larger firms can instead court and poach top talent from nascent competitors, hollowing out a firm's intellectual assets without the need for a merger, a practice known as “acquihiring”.[22]

Hyperscalers have engaged in decades of strategic investments in startups and innovation hubs. In terms of acquisitions, investment and support, one estimate puts nearly 6000 companies in Google’s orbit.[23] Over time, this dependence manifests as a form of “soft vertical integration” which avoids antitrust scrutiny. These investments entrench hyperscaler (and US big tech) power globally through a cultivated dependence that makes innovation technically, infrastructurally, and financially dependent on dominant firms who provide infrastructure, data and proprietary technologies.[24]

**75%**

of global AI compute power is now controlled by five firms

**31%**

of global AI compute controlled by Google alone

**27%**

estimated stake Microsoft holds in OpenAI

This value capture potential is currently visible in the market for artificial intelligence services. Hyperscalers Amazon, Google and Microsoft were very well situated to extend their dominance into the AI market, by leveraging their computing infrastructure, data stores, control over foundation models and complementary goods to further consolidate their position in AI services.[25] As much as 75% of global AI compute power is now controlled by five firms, Amazon, Google, Microsoft as well as Meta and Oracle, with Google alone controlling 31% of global AI compute.[26]

Even competitors to hyperscalers are major beneficiaries of their investment. Google and Amazon have competed to provide patronage to Anthropic, with billions of dollars of investment and agreements to provide computing resources including data centres and specialized chips.[27] Microsoft has made significant investments and contributions to OpenAI, with commitments to be their exclusive providers for computing infrastructure, profit sharing and technology access, equating to an estimated 27% stake in the company.[28]

The ability of hyperscalers to capture innovation is a function of their size, and of the market structure they have built. Startups and emerging firms depend on hyperscaler infrastructure from their earliest stages, often drawn in by cloud credits and free tiers that create technical debt before a product reaches market. In a commoditized infrastructure market, where interoperability standards allowed workloads to move between providers with minimal friction, this dependency would be substantially reduced. Startups would have genuine choice among infrastructure providers, reducing the leverage that hyperscalers gain through early-stage investment. The lock-in that currently channels innovation toward incumbent ecosystems would weaken, and the competitive dynamics of technology development would shift in favour of the firms creating value rather than the firms controlling the infrastructure on which value creation depends. Addressing concentration at the infrastructure level is not only a cloud computing issue but a precondition for healthy competition across the broader technology sector.

Finally, the urgency of addressing cloud market concentration is sharpened by the speed at which AI services markets are forming on top of cloud infrastructure. If the infrastructure layer remains proprietary and non-interoperable, the competitive structure of AI services will inherit and amplify the concentration already present in cloud computing. Conversely, if cloud infrastructure is commoditized before AI market structures fully harden, the downstream markets for AI services have a materially better chance of developing competitively. The window for intervention is not indefinite. Every month that cloud lock-in deepens is a month in which the competitive structure of AI markets becomes more difficult to contest.

## 3.3.5 Systemic Risks: When the cloud goes down

Hyperscalers now function essentially as critical infrastructure for a substantial portion of the global economy, and for public services across the world. When control over key layers of infrastructure is limited to a few actors, these systems can be more vulnerable to disruption, intentional or unintentional. This was the case in October 2025, when an Amazon Web Services outage brought down technology services across the globe. The outage occurred, in part, because many applications running globally depended on a single server cluster, AWS server us-east-1, to function. When this server was no longer available, systems went down in over 60 countries. Estimates of economic losses went into the hundreds of billions. Services like Netflix, Zoom, Fortnite and others were down, and, concerningly, banking systems like Venmo and trading platforms also experienced disruptions.[29] Similar outages affecting Google and Microsoft clouds were reported in 2025, a wake up call for enterprises and institutions who depend on the hyperscalers.[30]

**60+**

countries affected by the AWS us-east-1 outage

**100B+**

estimated economic losses from the outage

**1**

single server cluster caused the global disruption

**3**

major cloud outages — AWS, Google, Microsoft — reported in 2025

# 3.3.6 Coercion: Concentration as Geopolitical Leverage

Market concentration in cloud computing not only produces the classic competition harms like higher prices, less innovation, constrained customer choice, it also creates geopolitical leverage. When a small number of providers control infrastructure on which governments, enterprises, and critical services depend, that dependency becomes a potential instrument of political and economic pressure. Concentrated control over cloud infrastructure has been identified as posing high and even critical risks to Canada's digital sovereignty, effecting the ability for Canada to protect sensitive data and enforce laws, to guarantee reliability and security for public services, to effectively control its public technology assets, and for private sector businesses to effective bargain with suppliers and resist economic coercion.[31]

This is not a theoretical risk. American tech companies have already demonstrated a willingness to use access as leverage: Google threatened to withdraw search from Canada and Australia during disputes over news media regulation; Meta followed through and removed news from its platforms in Canada entirely. In 2025, Microsoft disabled the accounts of International Criminal Court officials in response to U.S. government sanctions, a move that alarmed governments across Europe and Canada.[32] In relation to cloud computing, the most extreme scenario is the use or threat of a "kill switch" — a discontinuation of computing services for businesses, government, or the public.

While hyperscalers themselves have strong commercial incentives against such actions, the concentration of infrastructure in a small number of U.S.-based firms means the option exists, and the threat alone can function as leverage in trade negotiations and regulatory disputes.

Critically, the coercion risk is a function of dependency, and dependency is a function of the market structure analysed throughout this section: proprietary lock-in, high switching costs, and the absence of fungible alternatives. Replicating the existing market with arms-length or domestic providers may mitigate the political risk — but it does not lessen the dependency and lock in risks that is equally problematic. It is also unlikely to be feasible given the upfront capital required to create domestic alternatives that have a global reach. Dependency problems, like the competition problems it compounds, is best addressed by changing the structure of the market itself: reducing lock-in, increasing interoperability, and ensuring that customers retain the practical ability to switch providers.

Google threatened to withdraw search from Canada and Australia during disputes over news media regulation.

Meta followed through and removed news from its platforms in Canada entirely.

In 2025, Microsoft disabled the accounts of International Criminal Court officials in response to U.S. government sanctions.

# 3.4 Why Concentration Persists

Concentration in the cloud computing market is the result of structural features of the technology and hardware involved. The staggering costs of entry and scaling digital infrastructure bears this out, as does the value proposition of hyperscalers, whose scale and reach compounds their dominance. But there are additional compounding causes, such as unstandardised technologies, infrastructure providers' ability to offer and leverage complementary goods, and huge costs and inertia to switch providers or migrate systems once operations have moved to the cloud.

## 3.4.1 Structural Causes of Concentration

A key cause of concentration are the enormous barriers to entry in the public cloud market: data centres are resource intensive, requiring land, water, electricity and network connectivity as well as highly specialized hardware that is now some of the most in demand product on the planet, with intensive spending on computing infrastructure driving up global prices for GPUs, RAM, storage media, and potentially CPUs as well.[33] Larger data centres also offer economies of scale to hyperscalers, whose yearly investment in expanding global capacity was regularly in the tens of billions before AI stimulation of data centre investments.[34] New entrants and smaller players in the cloud computing market are likely to focus on colocation or private cloud provision, where the needs of clients are modest, but perhaps scalable over time. Smaller providers with bespoke solutions may be viable for some smaller and medium-sized enterprises, but the chance for even the most successful of these firms to be genuine competitors with hyperscalers is essentially nonexistent.

## 3.4.2 Conduct Leading to Concentration

Switching costs, effectively barriers to switching providers or migrating business, are some of the most significant competition issues in the market.[35] These costs can be technical and financial, but the overall result is the depression of competitive pressures in the market by disincentivizing cloud users from switching and creating vendor lock-in.

Technical switching costs are significant. Cloud computing adoption for organizations means entrusting business-critical data and processes with a third-party provider, and can create functional interdependencies over time, where business development occurs in ways that are tied to underlying software, platforms and infrastructures as may be offered by cloud providers. P/SaaS solutions vary in terms of functionality, security, and privacy, and thus become hard to substitute. This means organizations migrating providers must consider retraining personnel, rewriting or refactoring key parts of their codebase, reconfiguring integrations, and preparing for the migration itself.[36]

Incompatibility and a lack of substitutability is not a technological inevitability, it is a result of business decisions by hyperscalers operating as infrastructure providers with interests in downstream markets. Study of competition in digital markets finds examples of open-source enclosure and copying, where cloud providers either purchased competitors or forked open-source technologies and removed support for multi-cloud functions or the ability to function on other providers' infrastructure.[37]

## Interoperability

Interoperability in cloud computing refers to the ability to deploy and use data, applications, and software in different cloud environments

## Data portability

Data portability means the ability to move data and workflows between providers

Even if such decisions are made, they are burdensome to execute. Central to this difficulty is the lack of two key features in cloud workflows: interoperability and portability. Proprietary data formats make it harder for users to export their data and integrate it with a new system or workflow. A lack of standards at platform and software levels also contributes.[38]

Switching barriers can also be financial. Hyperscalers often benefit from power asymmetries in their relationships with clients, which they can exploit to create financial impediments to switching.[39] Egress fees are a particularly egregious example, which are fees charged when clients move their data out of a provider network, for data transfer, streaming, migration. These fees are most onerous on smaller customers, and prevent the adoption of more resilient architectures like multi-cloud setups, instead encouraging reliance on single providers.[40] Competition authorities in the EU and the UK have concluded that egress fees limit competitive behaviour in cloud computing, acting as a substantial barrier to switching providers, hurting smaller customers most.[41]

Other forms of anticompetitive conduct, such as self-preferencing and bundling and tying, are available tactics for hyperscalers because of their dominance in multiple markets, but they also drive further consolidation. Hyperscalers have been observed to use bundling to stifle competition for their software products, as well as to drive adoption for their AI products.[42] As infrastructure providers, hyperscaler self-preferencing can have major effects on competitive pressures at the platform and software levels as well. Each hyperscaler controls a marketplace for tools and software that can be deployed in a client's environment, providing them with opportunities to manipulate search results, and present their own products more directly to users.[43] Structural features and conduct have contributed to a consolidated cloud computing market where dominant players are entrenched and well positioned to leverage their dominance into other markets, and to prevent clients from acting in their best interests.

### These features include:

- High barriers to entry and expansion prevent new entrants, economies of scale benefit the dominant players
- High financial switching costs and opaque pricing disincentivize switching providers and make price comparison difficult
- Control of key marketplaces provides visibility of competitor offerings and opportunities for self-preferencing, bundling and tying
- Low levels of standardization and interoperability within the cloud computing ecosystem raise technical and organizational switching costs
- Vertical integration and conflicts across technology stack incentive anticompetitive conduct and drive further consolidation through mergers and acquisitions

The structural tendency towards consolidation combined with anticompetitive conduct create a powerful feedback loop where dominance leads to even greater dominance. To change the state of competition in the market for cloud computing, the ability of already concentrated firms to engage in these practices must be addressed.

# 4. From Concentration to Commoditization

## Procurement and international cooperation

Use federal purchasing power to require interoperability and portability in every cloud contract, ratify dominant de facto standards (starting with S3) rather than inventing de jure ones, and coordinate parallel adoption with allied governments.

## Proactive regulation

Treat hyperscalers as utility-like infrastructure: ban egress fees and self-preferencing, require pricing transparency, and designate a regulator with the technical capacity to enforce.

## Competition enforcement

Pursue the specific mechanisms that sustain lock-in (bundling, tying, egress fees, cloud credits, discriminatory licensing), tighten merger review for acquihires of Canadian IP and talent, and act in parallel with peer authorities.

**The preceding analysis identifies characteristics of the cloud computing market that require a competition policy response:**

Vendor lock-in constrains customer choice

Opaque pricing distorts competition

Vertical integration enables the extension of market power into adjacent markets

High barriers to entry prevent the emergence of alternatives.

The most direct remedy for the vertical integration that drives anticompetitive conduct would be structural separation: breaking off the cloud computing business units of Amazon, Microsoft, and Alphabet from their other products. Separation would remove the incentive to leverage dominance across markets that fuels bundling, tying, and self-preferencing. But structural separation of globally operating conglomerates likely exceeds Canada's jurisdictional reach without coordinated international action. This paper therefore focuses on commoditization, a strategy that targets the capability for lock-in rather than the incentive, and that is actionable for Canada, on its own, today. Where structural separation asks 'can we break up the firms?', commoditization asks 'can we make their customers free to leave?' Both are worth pursuing; the second is within the Canadian government's power.

Commoditization means making cloud computing function as a basic, substitutable resource, like telecommunications or electricity, where providers compete on price, performance, and service quality rather than on the depth of their customers' lock-in. This means promoting portability of data and workloads, transparent and comparable pricing, and the elimination of practices — egress fees, bundling, discriminatory licensing — that artificially raise switching costs. In a commoditized market, sovereignty concerns are substantially mitigated: a government that can credibly move its workloads to another provider has real bargaining power, regardless of where the servers sit. It could also induce a new public or private supplier into the market, at a cost, if considerations like data sovereignty were imperative.

## Achieving competition through commoditization relies on three mutually reinforcing interventions:

- Public sector procurement as a market shaping tool
- Regulation that lays the groundwork for transition
- Competition enforcement that maintains fair markets and guards against further consolidation

Procurement creates the demand-side pressure that makes regulation enforceable and tells regulators which standards to ratify. Regulation provides the structural guardrails that prevent procurement gains from being unwound after contracts are signed. Enforcement targets the specific abuses that procurement and regulation can deter but not always remedy. Each are necessary to address, and change the underlying dynamics that drive consolidation and lock-in in cloud computing.

It is important to note that this strategy has limits. Commoditization at the infrastructure level — making storage and basic compute interoperable and portable — does not automatically replicate the full hyperscaler value proposition. The ability to scale a workload from a hundred users to ten million users overnight, distributed across data centres on six continents, with built-in redundancy and millisecond latency — this is a capability that depends on global physical infrastructure and operational expertise that cannot be conjured through interoperability standards alone. A Canadian or European provider offering S3-compatible storage (S3 is AWS's storage offering that has been broadly replicated and is possibly the closest thing to a defacto standard) does not thereby become a substitute for the global elastic scale that hyperscalers provide.

In the short term, governments' selecting de facto as de jure standards may well produce more advantage for hyperscalers. Portability will make price even more important in competition, and hyperscalers will be best positioned to take advantage of their economies of scale to offer the lowest prices. Adopting technical standards that are already favoured by the market will provide immediate advantages to hyperscalers already using those technologies, as in the case with Amazon's use of S3 buckets. These advantages are incidental; hyperscalers are already dominant in the market, and their resources and scale means they will be positioned to take advantage of any shifts in the market, as they have done with AI.

Commoditization creates the conditions under which the scale gap can narrow over time. The strategy is sequential. S3 is the starting point: it is already a de facto standard for storage, and aligning public procurement around it lowers switching costs and reintroduces competitive pressure at the IaaS layer. The next move is to repeat the exercise up the stack, identifying de facto winners at the platform-as-a-service layer (databases, identity, queuing, container orchestration) and swinging public buying power toward them, so that domestic and international providers are induced to offer common, interchangeable services. As each layer commoditizes, smaller providers can compete for portions of a customer's workload without replicating the entire hyperscaler stack. A domestic provider might handle storage and less latency-sensitive compute while a hyperscaler provides global distribution, a division of labour currently impractical because switching any part of the stack requires switching all of it. Multi cloud architectures, widely discussed but rarely achieved in practice, become genuinely feasible. Bespoke offerings — private cloud, sovereign options, decentralized architectures — find a market premium. The dynamic already exists in storage, where multiple S3-compatible alternatives compete; the question is whether public procurement can extend it, layer by layer, up through PaaS.

Unsettling hyperscaler dominance is a long-term play. The most substantive checks on their power are years away and require sustained commitments to procurement, enforcement, regulation, and international cooperation. The benefits, however, compound. As alternative providers grow their capacity and geographic footprint, the concentration of global-scale capability in three firms may begin to ease. If smaller providers across the globe adopt common standards at the infrastructure and platform layers, different models for distributing compute become viable. The most ambitious is federation: with a common back end, cloud providers can partner to pool resources and serve clients with geographic reach approaching that of hyperscalers.

**Federation has been tried before. Europe's Gaia-X is the cautionary example, a consensus-driven framework for European cloud interoperability that has largely stalled without procurement leverage to drive adoption. But federations that emerge in response to market demand and existing de facto standards may find an easier path.[44]**

The beauty of this proposed approach is that the Canadian Government can act alone. The impact may be more limited, but it should reshape the cloud market, at least for public services. The benefits of commoditization compound and become more significant if commoditization is coordinated action across competition enforcement, regulation, and procurement in multiple jurisdictions at once. The following sections set out specific interventions in each of these domains, informed by emerging practice in the EU, UK, Australia, and Brazil, and shaped by the particular constraints and opportunities of the Canadian context.

# 4.1 Government's Role: Market Shaping, Procurement and International Collaboration

Recommendations

**1.**

Update federal cloud procurement standards (Treasury Board/Shared Services Canada) to require interoperability and portability certifications as mandatory vendor criteria, making fungibility and interoperability with the most common technologies — not brand or national origin — central to vendor selection.

**2.**

Design any domestic cloud investment programs (grants, industrial policy, public utility proposals) with explicit conditions requiring adherence to the same interoperability and portability standards imposed on hyperscalers — and sunset or claw back funding if these standards are not met — to avoid entrenching new domestic monopolies.

**3.**

Begin coordinating with like minded governments to communicate intent and recognition of de facto standards, while directing public service entities with technology procurement mandates to do the same with their peers.

## 4.1.1 Creating Standards from the Bottom Up

A critical question for any interoperability strategy is whether to build on existing de facto standards or to create new ones. History suggests that de facto standards — those that emerge from widespread adoption and are then formalized — almost always succeed where de jure standards, imposed from above, frequently fail. Europe's Gaia-X initiative illustrates the risk: launched to create a sovereign European cloud through industry-led standards, it has largely stalled — in part because it tried to define new specifications by consensus rather than ratifying the de facto standards that already had market traction, and lacked the procurement leverage to drive adoption.

Leveraging public sector procurement is both a more available and more effective way to shape the market. Such procurement should focus on acknowledging and anointing de facto standards, rather than attempting to create de jure standards. The model for this is how the European Union addressed standards around device cables. It did not pursue its own standard, it recognized that the USB-C standard was dominant and simply forbid alternatives to exist, destroying a long tail of alternatives that impeded interoperability and enabled vendors to extract rents for custom cable types. This is much more effective than trying to define standards or mandate interoperability from the top down.

### USB-C

EU model — recognized a dominant standard and banned alternatives

### Gaia-X

failed de jure standard — consensus-driven, no procurement leverage

At the infrastructure level, de facto interoperability is further advanced than is commonly recognized. Amazon's S3 storage protocol, for instance, has been adopted by dozens of smaller providers precisely because compatibility with a dominant interface is a market advantage.[45] Mandating that any cloud provider seeking government contracts offer S3-compatible storage — certified by a national standards body — would leverage an existing standard rather than betting on an untested one. This need not be retrospective: providers would not need to abandon their proprietary offerings, only provide an interoperable option. This is the kind of intervention that can be coordinated internationally with minimal friction, because the standard already exists and adoption is already widespread.

At the platform level, where de facto standards are less mature, governments can create standards from the demand side by building open-source platform services that function independently of any single infrastructure provider. The UK's GOV.UK Pay, Notify, and Forms services, India's Digit platform, and Brazil's gov.br components are examples of this approach: shared digital services, developed as open source, that can be hosted by multiple providers and switched between them with minimal friction. With investment and coordination, these kinds of components could become de facto platform standards embedded in procurement requirements — commoditizing the platform layer without waiting for top-down standardization. This is where the emerging field of digital public infrastructure intersects directly with competition policy for cloud markets: the same open, interoperable components that improve government service delivery also reduce dependency on any single provider's proprietary stack.

# 4.1.2 Demand-Side Market Shaping: Procurement as a Competition Tool

The Government of Canada is already a significant cloud customer. It should use that position as a market-shaping tool, not merely to secure good terms for government, but to drive the interoperability and fungibility that would benefit the entire market. Procurement is the most direct mechanism available to Canada for building de facto standards, because it brings buying power that regulation alone cannot provide.[46]

The most ambitious attempt to use procurement this way was the U.S. Department of Defense's Joint Enterprise Defense Infrastructure (JEDI) contract — a $10 billion procurement for cloud capacity. JEDI's architects recognized that vendor lock-in was a competition problem with real costs: with a $950 billion budget, the Pentagon was paying a measurable premium for the inability to switch providers or create competitive pressure. JEDI was designed to force interoperability through two mechanisms. First, it permitted joint bids from multiple vendors, but only if their offerings were interoperable. Second, even with a single winner, the winning platform would have become a de facto standard within the military — a standard that would likely have spread to government wide and eventually private-sector adoption.

The hyperscalers attacked JEDI as anti-competitive — a revealing objection, given that creating a de facto standard would have increased competition by converting proprietary infrastructure into a common baseline. This is precisely why some providers fought it so aggressively, spending heavily on lawsuits and lobbying to kill the contract. To this day, many of their lobbyists insist government entities must pursue "multi-cloud strategies," language that sounds pro-competitive but provides no mechanism for the interoperability that would make multi-cloud actually workable.

JEDI ultimately failed because it could not maintain government alignment across a change in administration — not because the approach was wrong. It remains the clearest demonstration that procurement can function as a competition policy instrument, forcing interoperability through buying power rather than waiting for top down standardization. The lesson for Canada is that procurement requirements, like interoperability certifications as mandatory vendor criteria, portability testing as a condition of contract renewal, and fungibility as the basis for vendor selection, can reshape market structure from the demand side.

The Government of Canada's existing digital sovereignty framework already points in this direction, as does its Open First strategy, which specifically pushes the need to leverage interoperability in cloud computing, and the dangers of lock-in. For the bulk of its data, GC aims to build systemic resilience, open standards, and interoperability into its procurement contracts.[47] By requiring interoperability as a procurement condition, government helps ensure these capacities are developed as de facto standards — or, even better, certified by a national standards body working to harmonize infrastructure with Canada's partners and allies. Federal and provincial bureaucracies are sophisticated organizations with complex enterprise-level demands. They are well positioned to act as standard-setters not only for public sector procurement but for private sector adoption as well.

# 4.1.3 A Coalition of Buyers: Middle Powers and Nonaligned Nations

Canada can act alone, but does not need to. Countries across Europe, in Australia, Brazil, India, and South Africa face the same concentrated market and the same structural dependency. The private sector, too, chafes against their dependencies on hyperscalers, who house the data and workflows that make up businesses. A buyer's coalition of middle powers and nonaligned states aimed at aligning procurement standards and interoperability requirements would create the demand-side pressure that no single country can generate. Individually, none of these countries can reshape the global cloud market. Collectively, they represent a force that hyperscalers cannot ignore. And if governments point the way, business will come along.

As Canada looks to deepen its cooperation and trade relationships with other states, alignment on interoperability and procurement provides a compelling mutual interest. As the fruits of commoditization are realized at scale, they will bring with them additional benefits for countries that join the push, including both increased capacity in their public sectors and greater accessibility across international digital markets. Firms wishing to scale or enter new international markets will have less need to rely on hyperscalers, as local markets and infrastructures are preconfigured to interoperability.

# 4.1.4 Why Supply-Side Alternatives Alone Won't Work

The political urgency around cloud dependence has generated proposals focused on the supply side: industrial policy to build domestic capacity, "sovereign cloud" offerings from hyperscalers, and publicly owned cloud utilities. These proposals respond to real concerns. But from a competition policy perspective, none of them addresses the underlying market failure — and some risk making it worse. Concerns about digital sovereignty — whether framed in terms of jurisdictional control over data, operational resilience of systems, or the bargaining power of cloud customers relative to providers — are ultimately concerns about the consequences of market concentration.[48]

The most widely noted of these is the "Eurostack", which aims to develop domestic capacity and firms across a whole technology stack, stimulating European supply chains for metals, chips, computing infrastructure, networks, devices, software, data and AI models. Originally advanced by a coalition of industry and academic groups, the idea of advancing digital sovereignty by focusing on domestic providers across a broader technology stack has found some purchase with the European Commission.[49]

The core of the Eurostack proposal is about driving the creation of a single, interoperable and open technology ecosystem through investments in, and procurements from domestic firms in hardware, networks, cloud computing, platforms, services, AI models and software. Sovereignty thus construed is fundamentally linked to competition through interoperability, which provides a pathway to market access while enhancing competitive pressures by minimizing structural factors that reduce choice for users.[50]

Some European countries have begun moving away from US provided infrastructure and software, instead pursuing investments in open-source software and domestic providers.[51] But across the bloc, realizing the goals of Eurostack has proven complicated. The dominance of hyperscalers remains intractable, where Europe lacks domestic competitors capable of providing the same services and scale.[52] Industrial policy approaches, like Eurostack, are still bound by markets.

There is a further reason why purely domestic alternatives cannot substitute for hyperscalers, and it goes beyond market size and investment capacity. Canadian businesses — particularly startups and firms competing in global markets — need cloud infrastructure that scales elastically and operates globally. A company building a digital product for international customers needs to serve users in Asia, Europe, and the Americas with low latency and high reliability. This requires a global network of data centres, content delivery infrastructure, and the operational capacity to manage all of it. No Canadian provider, and very few providers anywhere in the world, can offer this today. Even Europe, with a market many times the size of Canada's and a concerted industrial policy effort through Eurostack, has not produced a hyperscaler-scale alternative.

The same competition logic applies to hyperscaler "sovereign cloud" offerings. These products respond to customer anxiety about U.S. government access to data under the CLOUD Act. But they do not reduce lock-in: the customer remains within the provider's proprietary ecosystem, subject to the same switching costs, pricing dynamics, and competitive constraints. A sovereign cloud that deepens dependency on a single provider's stack is not a competition remedy; it is a rebranding exercise.[53]

This is not an argument for accepting the status quo. It is an argument for being clear about what the policy intervention can realistically achieve. A "build Canadian" approach that directs startups toward domestic infrastructure providers may satisfy sovereignty concerns on paper, but it does so at the cost of competitive disadvantage: Canadian firms forced onto domestic-only infrastructure would be slower, less scalable, and more expensive to operate than competitors using hyperscaler platforms. A policy that makes Canadian businesses less competitive in global markets is not serving the national interest, even if it reduces dependency on foreign providers.

The commoditization approach avoids this trap. Rather than asking Canadian businesses to choose between global capability and national agency, it seeks to ensure that global capability is available on fair, interoperable, and non-exploitative terms. If infrastructure is commoditized, a Canadian startup can use a hyperscaler for global distribution while retaining the practical ability to move workloads if terms become unfavourable, if geopolitical circumstances change, or if a domestic or allied provider develops sufficient capability to compete. The customer is not forced into an inferior alternative; they are given the ability to leave a superior one. This is the fundamental difference between a sovereignty strategy based on ownership and one based on agency. Ownership asks: "Can we build our own?" Agency asks: "Can we leave if we need to?" For a country of Canada's size and position, the second question is the more honest and more achievable one.

Finally, Canada is a small market with few players capable of building and scaling public cloud capacities. Likely domestic entrants are Canada's incumbent telecommunications providers, although other Canadian firms are also attempting their own offerings, focussing on maximizing control over their technology stacks.[54] But without corresponding requirements for interoperability and portability, directing public funds to these firms would transfer market control from foreign monopolists to domestic oligopolists — a maplewashed dependency that replicates the structural problems of the current market. Domestic monopolies are still monopolies. If interoperability requirements are not developed and enforced, the fundamental competition problems, like lock-in, switching costs, and rent extraction will persist regardless of who owns the data centres.

## 4.1.5 CUSMA as Barrier and Opportunity

**One major limiting factor to Canada's ability to effectively regulate computing infrastructure are its commitments to international trade agreements, especially the Canadian United States Mexico Agreement (CUSMA).[55]**

Of particular importance are provisions in CUSMA that define terms for international "digital trade". CUSMA significantly constrains Canada's ability to address conduct in digital markets, and potentially constrains some of the interventions into the cloud computing market as well. CUSMA protects big tech's commercial interests while shielding them from accountability, liability, and transparency.[56]

CUSMA makes it more difficult to hold platforms accountable, by preventing governments from requesting source code or algorithms except in the cases of "specific" enforcement actions or judicial proceedings.[57] This makes it harder to craft laws that allow regulators to review the behaviour of algorithms, including cloud marketplaces or applications, to check them for bias or compliance with standards. CUSMA's language around the non-discriminatory treatment of digital products creates also potential trade recourse for any policies that might favour domestic suppliers.

CUSMA prohibits requiring data localization, which makes it more difficult to use public sector procurement as a vehicle for fostering domestic alternatives to US tech firms.[58] CUSMA contains blanket prohibitions on regulating the cross-border flow of data for commercial interest. This prioritizes commercial at the detriment of protecting data about Canadians. Even if Canada were to strengthen its privacy laws under allowances for legitimate public policy interests, privately held data could still be moved south of the border, where it is no longer protected.[59] Without data localization requirements and transfer restrictions, promises from hyperscalers to place datacentres in Canada and offer "sovereign clouds" should be considered mere sales tactics, still subject to the surveillance powers granted by the laws like the US CLOUD Act.[60]

Addressing the constraints of digital trade provisions should be a top priority in Canada's 2026 renegotiations of CUSMA.[61] Maximizing Canada's legislative agency in regards to digital markets, like cloud computing, is an essential part of Canada's economic diversification with the US, and a requisite for participation in building alternatives.

# 4.2 Proactive Regulation: Treating the Cloud as a Utility-Like Infrastructure in Support of a Competitive Cloud Market

## Recommendations

**1.**

Eliminate nonessential egress fees for switching and multi-cloud, make egress and ingress fees symmetrical and aligned to cost.

**2.**

Adopt proactive regulatory designators to impose tailored conduct requirements on dominant cloud providers, including bans on self-preferencing, bundling, and discriminatory pricing, treating cloud computing as utility-like infrastructure subject to neutrality rules.

**3.**

Designate a dedicated industry regulator with the capacity to monitor and enforce compliance, and review business practices and platforms.

Antitrust and pro-competitive action are necessary, but insufficient conditions for lessening dependence and building agency. Alone, enforcement risks being reduced to piecemeal intervention, as only specific firms are ordered to address specific behaviors, and only after years of litigation. Owing to this, setting guardrails with proactive regulations are now becoming the methods of choice to ameliorate structural problems in the cloud computing market and provide a basis for more effective enforcement.

States are increasingly recognizing the unique role played by the largest firms in digital markets and imposing obligations and responsibilities on their behaviour. Such proactive approaches allow policies to isolate specific systems and firms as requiring tailored and effective regulatory monitoring and intervention, encouraging alignment between system behaviour and democratic interest. In the European Union, and the United Kingdom, these responsibilities extend and complement their existing competition regimes. Brazil has proposed similar legislation through its Digital Fair Competition Act, which would expand the capacities and authorities of its competition regulator in designated areas like cloud computing.[62]

The European Digital Markets Act allows for the designation of "gatekeepers," systems whose operations play a mediating function between other businesses and their end users. The UK's Competition and Markets Authority (CMA) can designate a firm as having "strategic market status" (SMS), similarly reflecting their market power and entrenchment.[63] These designations forbid activities that can constitute an abuse of dominance, and give authorities powers to correct behaviour and mandate reporting.[64] These interventions target behaviours by the largest firms, and are not blanket regulatory requirements that inflict onerous "red tape" onto small providers.

At the time of writing, neither gatekeeper status nor SMS has been applied to cloud computing activities, although this may well change in 2026. In 2025, the European Commission announced it would be investigating whether the DMA gatekeeper status should be applied to AWS and Microsoft Azure in the cloud computing sector. If successful, it would create a basis whereby anticompetitive practices of bundling, self preferencing and others that contribute to lock-in could result in fines and other remedies, complementing the enforcement power of local competition authorities.[65]

The UK CMA is now deciding whether to designate Microsoft's product offerings, from cloud infrastructure to office software having SMS, and to investigate whether licensing tactics have limited competition in cloud markets.[66] Following their 2025 investigation of the cloud market, the CMA obtained concessions on interoperability and egress fees from AWS and Microsoft, and will monitor impacts.[67] As part of their own inquiry into digital markets, including cloud computing, Australia's Competition & Consumer Commission also recommended legislation creating a regulatory designator to support proactive and tailored enforcement of digital platforms.[68]

The obvious starting point in the cloud space is to adopt the S3 storage API endpoints as a standard as, effectively, most cloud provisioners have. It would be a mistake to mandate that all private actors must then also buy S3 buckets, but make it clear that governments will only buy them. Many private sector companies are as eager for data portability as the government and may also align around any such standard for their own procurement. Any governance for such standard could emerge much later – but it would be effectively moot. In the meantime, however, regulation may become necessary to ensure that if the government lowers its own technical switching costs by increasing interoperability, that similar gains can be realized in the private sector. While the cloud infrastructure market may respond organically, it may become necessary for regulation to set a floor through service standards. So, while private sector entities would not be required to buy certain technologies, hyperscalers may be required to offer them if requested by clients.

Canada should be selective in how it emulates the approaches taken by other regulators such as the EU's European Data Act, which aims to lower switching costs by creating regulatory mandates for interoperability and portability in cloud computing. Canada should build on European efforts to reduce or eliminate egress fees by 2027 by proposing that egress and ingress fees should be symmetrical. Any such fees should reflect the cost basis of the activity, not be a lever to prevent clients from moving to a competitor. Canada should avoid provisions in the Data Act that aim for "functional equivalence" between data processing services, to secure the continuity of business processes when switching providers as these can be gamed.[69]

Cloud services should be subject to utility-like neutrality rules that remove the ability to deny access to competitors or nonpreferred vendors, and make the cloud computing  market more transparent and navigable for customers. As it stands, pricing and costs are complex, leading to lock-in, and act as a vehicle for leverage. To restore agency and bargaining power on the demand side, regulation should require hyperscalers to post their pricing and discount formulas publicly, and explicitly prohibit self-preferencing and other discriminatory pricing practices.

Taken together, these changes shift the cloud computing market from one where hyperscalers maintain their market shares using dependence and inertia, to one where cloud computing serves as an underlying infrastructure to a broader technology ecosystem that, ideally, comes to support more competitive entrants at all levels. Key to realizing this change is beginning to understand hyperscalers as akin to utility providers, who are obliged to fairly and transparently serve their clients as a fungible provider.

These rules would require effective enforcement, preferably through a dedicated and empowered agency with the capacity to review the business practices and adherence technical standards. While the Competition Bureau is well-suited to executing the antitrust plank of a response to cloud dominance and has demonstrated a sophisticated understanding of data portability and interoperability, it was not designed with the function of industry regulator in mind.[70] Any kind of proactive regulation would require the designation of an industry regulator, akin to the Canadian Radio-television and Telecommunications Commission (CRTC), tasked with upholding these standards on this critical sector.

# 4.3 Competition Enforcement: Targeting the Mechanisms of Lock-in

## Recommendations

**1.**

Begin a market study on Canada's cloud market and open competition enforcement proceedings targeting the specific anticompetitive mechanisms — bundling, tying, egress fees, cloud credits, discriminatory licensing — that drive lock-in in the Canadian cloud market.

**2.**

Strengthen merger review guidelines to treat acquihires of Canadian companies (especially where patents or R&D talent are involved) as presumptively harmful to domestic innovation capacity.

**3.**

Establish active intelligence-sharing and coordination protocols with competition authorities in the EU, UK, Brazil, India, Australia, and US States so Canada can run parallel enforcement actions on established fact records rather than building cases from scratch.

There is also great value to be had in building off the efforts of other regulators, who operate within similar legal frameworks, to bring parallel actions for anticompetitive practices. The 2010s and 2020s have shown that there are material benefits to overlapping efforts, much to the consternation of Big Tech legal departments.

These rules would require effective enforcement, preferably through a dedicated and empowered agency with the capacity to review the business practices and adherence technical standards. While the Competition Bureau is well-suited to executing the antitrust plank of a response to cloud dominance and has demonstrated a sophisticated understanding of data portability and interoperability, it was not designed with the function of industry regulator in mind.[71] Any kind of proactive regulation would require the designation of an industry regulator, akin to the Canadian Radio-television and Telecommunications Commission (CRTC), tasked with upholding these standards on this critical sector.

Antitrust and pro-competition intervention are tools for correcting and protecting fair markets and a necessary element of any strategy for reducing market domination and consolidation of power. Interventions must tackle the motivating factors for anticompetitive behaviour, namely competitive interests across technology markets, that incentivize bundling and tying, pricing discrimination, licensing abuses, and contribute to lock-in by building customer dependencies.

First and foremost, greater scrutiny should be given to the anticompetitive behaviour hyperscalers engage in and how their dominance effects the downstream domestic markets. The Competition Bureau should conduct a market study to examine the effects of practices like bundling and tied selling, contracts, licensing terms and pricing practices, like egress fees and cloud credits on competition in the market. Stricter reviews on mergers and acquihires should also be pursued, especially when Canadian companies and their patents are to be acquired by foreign firms.[72]

Taking another lesson from the domain of antitrust and competition law enforcement, the value of distributed but parallel efforts is clear. While digital giants operate globally and the potential for cross-border remedies exists, countries must solve problems within their own borders if they want to protect the interest of their citizens.

# 5. Conclusion

The cloud computing market is broken in ways that competition policy and procurement strategy can fix. A small number of firms have used proprietary lock-in, high switching costs, and vertical integration to entrench their dominance, foreclose alternatives, and extract rents from customers who cannot meaningfully switch providers. These are market failures with real costs — to Canadian businesses, to government efficiency, and to innovation in the broader technology sector.

The geopolitical developments of the past year have added a strategic dimension to these costs. Concentration in digital infrastructure creates leverage that can be wielded in trade negotiations, regulatory disputes, and political pressure campaigns. But the strategic vulnerability is a *consequence* of the market failure, not a separate problem requiring a separate solution. Address the market structure and the strategic risk diminishes with it.

The most effective path forward is commoditization: making cloud infrastructure a fungible resource where providers compete on merit rather than lock-in. This requires competition enforcement to remove anticompetitive barriers, regulation to mandate interoperability and portability, and procurement that drives de facto standardization from the demand side. These are tools that Canada has used before — in telecommunications, in railways, in electricity — to ensure that essential infrastructure serves the public interest.

Canada's problems and interests are shared by states and organizations the world over, and international effort around the commoditization of cloud services would only increase the effectiveness of such approaches. Collaboration can occur across all three interventions, by adopting similar procurement standards, by building similar regulatory regimes, and by coordinating intelligence and action around competition enforcement. Such coordination not only lessens international public sector commercial dependence on hyperscalers, but sets the stage for a more diversified, competitive, and global technology market open.

The alternative — massive investment in domestic cloud infrastructure without addressing the underlying market structure — risks substituting one form of dependency for another. Domestic monopolies are still monopolies. The question is not just who owns the stack, but how ownership enables other forms of control, and whether customers can move their data and businesses.

A market in which workloads move freely is a market in which competition works. And a market in which competition works is one in which sovereignty can be enforced, rather than negotiated.

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