MANDALA

Unlocking the productivity dividend of digital government for New Zealand

OCTOBER 2025

Contents

MANDALA

Note: All dollar figures are New Zealand dollars unless indicated otherwise.

Executive summary

New Zealand has the opportunity to advance its global leadership in digital government through accelerated cloud adoption

New Zealand has been a global leader in digital government transformation, ranking among the top 10 nations in the UN E-Government Development Index - but other countries are now surging ahead by adopting cloud.

Accelerating public cloud adoption is a strategic opportunity to enhance service quality, foster innovation, and reassert New Zealand's leadership in digital government.

This report focuses on the benefits of accelerating public cloud adoption across the New Zealand Government.

Government could unlock $3.6 billion in fiscal savings by 2035

The New Zealand Government could save $1.1 billion by 2030, and $3.6 billion by 2035, if it accelerated its current timeline for public cloud adoption by just five years.

This represents an average annual saving of $360M over the decade, and a 14 per cent reduction in total IT costs compared to a 'business-as-usual' (BAU) scenario.

Cloud migration shifts government IT spending from large capital investments to paying only for resources used. The pay-as-you-go model reduces upfront infrastructure costs and overprovisioning, unlocking $2.7 billion of the $3.6 billion in fiscal savings through greater efficiency and flexibility.

Shifting operational costs away from Government reduces the need for external IT contractors managing legacy systems, delivering significant savings, and redirecting internal IT staff efforts to value-adding tasks around innovation and digital service delivery.

Cloud infrastructure unlocks additional benefits across security, productivity, and sustainability

Over the next decade, accelerated cloud adoption could result in an additional $2.3 billion in productivity benefits from AI usage. This represents a 48 per cent increase compared to the productivity gains that could be expected in the BAU scenario, where AI uptake is slower.

A Government agency's trial of Microsoft Copilot in 2024 demonstrated the potential. The evaluation found significant impacts of staff productivity, work quality and job satisfaction.

Additional benefits supported by cloud capabilities include:

- **Enhanced cybersecurity**, saving up to $121m in breach costs.
- **Improved operational resilience**, with a 19 per cent reduction in costs associated with system outages.
- **Environmental sustainability**, with an 11 per cent reduction in carbon footprint.

Government can consider three key areas to drive digital transformation and realise these benefits

Despite public cloud's clear benefits, structural, cultural, and capability barriers are preventing faster adoption.

Success requires coordinated action across three key areas:

1. **Modernise procurement frameworks**, with more flexible OpEx financing that supports consumption-based cloud models and expands procurement evaluation to assess innovation, security, and measurable business outcomes.
2. **Strengthen governance mechanisms** across government, stronger whole-of-government leadership and clearer accountability for outcomes to drive momentum and make real progress. Achieving this requires alignment across security, policy, and funding levers.
3. **Establish industry partnerships**, with co-investment models that share transformation risks, build sovereign capabilities, and invest in skills across the New Zealand Public Service.

Leading examples from the US Technology Modernization Fund, the UK's Government Digital Service, and the NSW Government's partnership with Microsoft demonstrate how coordinated approaches can drive transformation, support national capability development, and improve the delivery of government services.

Source: Mandala analysis.

New Zealand, once among leaders in digital government, is at risk of falling behind its peers

New Zealand has been a global leader in digital government transformation, ranking among the top 10 nations in the UN E-Government Development Index.[1]

However, as digital transformation accelerates globally, other nations - such as Denmark, Singapore, and the UK - have surged ahead by embracing cloud-first strategies that enable AI-powered services, seamless cross-agency data sharing, and intuitive citizen portals.

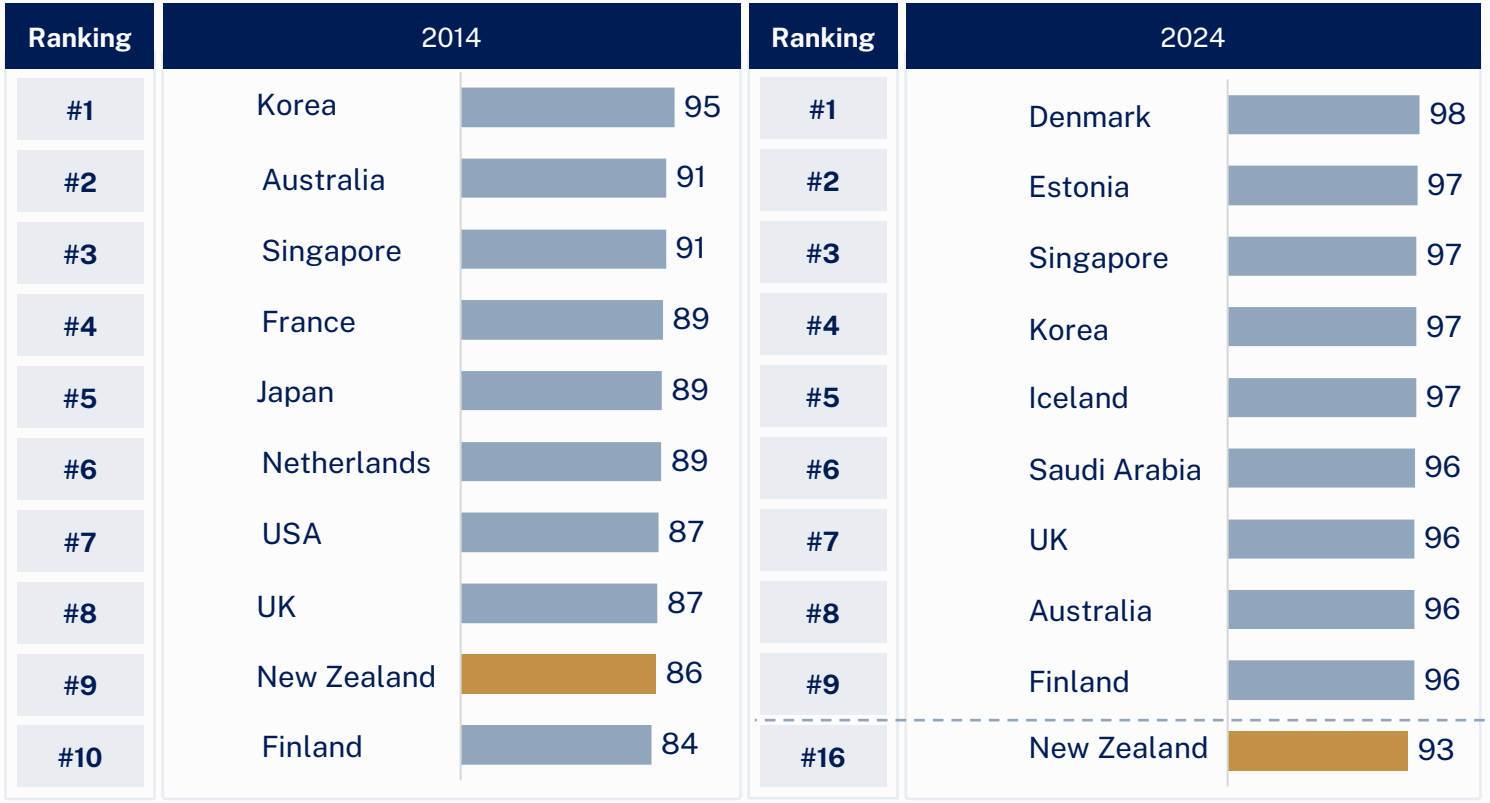
While New Zealand retains strong digital capabilities, modernising its digital infrastructure is now critical to unlocking the full potential of transformative government initiatives. This includes the All-of-Government Service Modernisation Roadmap and All-of-Government App, the Digital Identity Programme, and the newly released National Strategy for Artificial Intelligence.

Accelerating public cloud adoption offers a strategic opportunity to enhance service quality, foster innovation, and reassert New Zealand's leadership in digital government.

1 This index measures digital government maturity across online service quality, telecommunications infrastructure, and citizens' capacity to use and benefit from digital technologies.

Exhibit 1: UN E-Government Development Index[2] Rankings

Word ranking, ordinal, 2014-2024



- New Zealand was a global digital government leader, with a top 10 ranking in 2014.
- New Zealand has since fallen to 16th place, behind OECD peers like Australia, the UK, Singapore, and Denmark.

2 UN E-Government Development Index measures how well countries use information and communication technologies to deliver public services and engage with citizens online.
Source: UN E-Government Knowledgebase (n.d.) *Country data;* Mandala analysis.

Modernisation of New Zealand's government could lift public sector productivity growth

New Zealand's productivity has been in decline since 2022, falling to levels experienced by the economy pre-COVID-19. Productivity growth has averaged just 0.2% across the measured sector since 2020 – the lowest growth since the 1980s. Labour productivity in the public administration and safety sector has lagged the broader economy.

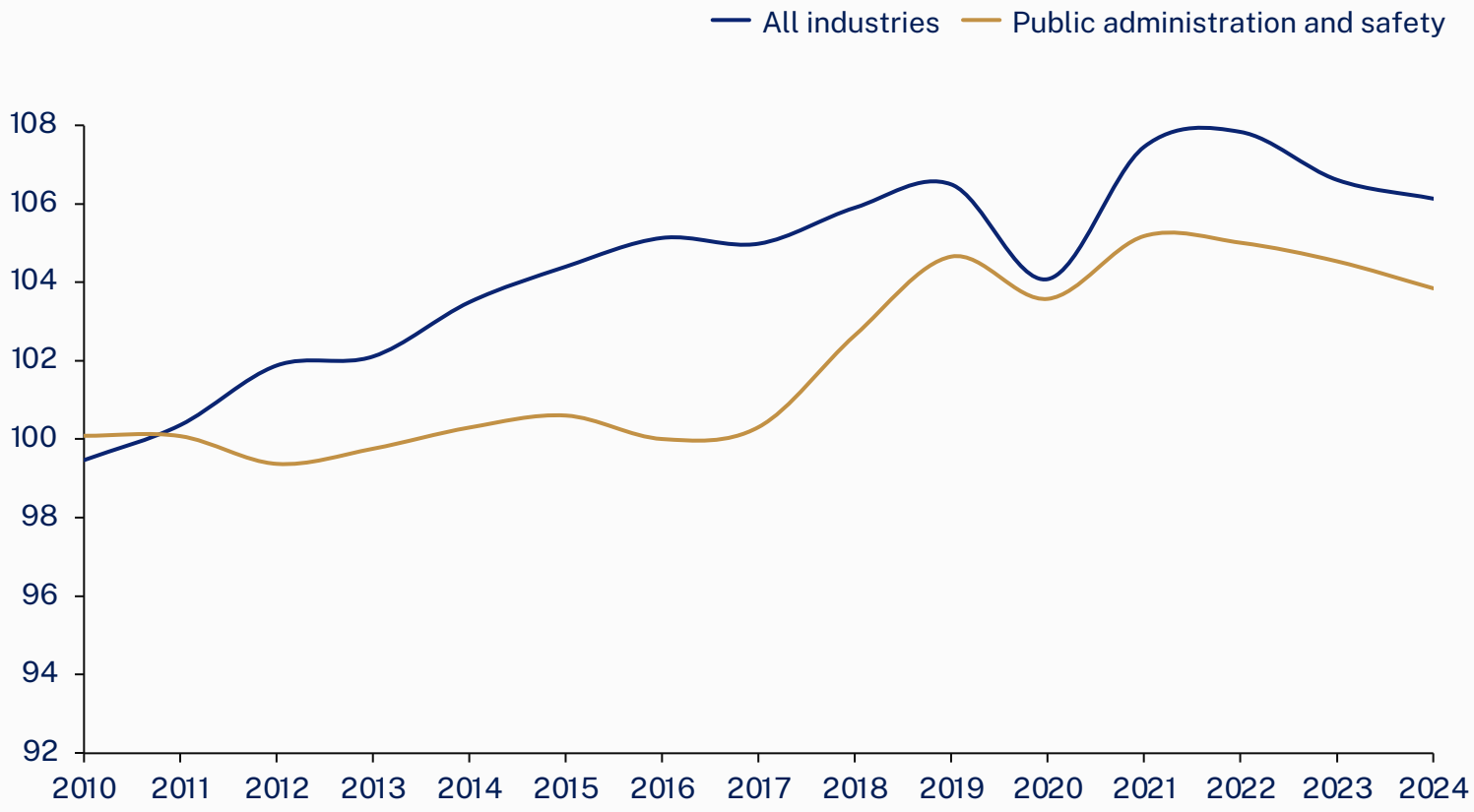
This underscores the importance of digital government modernisation – a key lever for boosting public sector productivity while advancing New Zealand's competitive position.

New Zealand has made progress on modernising government, increasingly adopting cloud solutions and ranking among global leaders in digital government maturity.[3] However, such progress has been slow in recent years, and New Zealand risks missing out on the use of emerging digital technologies such as AI. A good example of this adoption includes the New Zealand Government's trial of Copilot. The study found participants achieved time savings of up to 10 hours per month, and 76 per cent of staff said it made them more productive.[2]

1 UN E-Government (n.d.) *Country information: New Zealand.* 2 Microsoft (2024) *Real-World Benefits of Generative AI in the New Zealand public sector.*
Source: Mandala analysis.

Exhibit 2: Labour productivity in market and non-market sector[3]

Index value (July 2010=100), 2010-2024



The divergence in market and non-market sector labour productivity illustrates that the public sector has played a significant role in New Zealand's declining productivity growth.

3 Labour productivity index estimated as a ratio of GDP per jobs filled.
Source: StatsNZ (2025) *Productivity statistics;* Mandala analysis.

Broader cloud adoption is one key enabler of a more digital, productive government

Cloud service providers (CSPs) are the central pillar of the digital ecosystem, linking the hardware and software layers that underpin modern IT infrastructure. Through public cloud architecture, they deliver computing resources – such as servers, storage, databases, networking, and software – via the internet.

Cloud consumption models enable governments to flexibly scale technology infrastructure on demand, without major capital expenditure or complex maintenance.

Cloud is essential for digital government modernisation. It supports efficient delivery of digital services and applications, and enables communication and collaboration tools, powers AI technologies, provides scalable data analytics, and ensures advanced security and resilience.

Without public cloud, agencies face technical and financial barriers that limit their ability to modernise, experiment, and deliver next-generation public services.

Exhibit 3: Understanding the role of cloud infrastructure in enabling government modernisation

Cloud providers are a central pillar of the digital infrastructure driving government modernisation...

Hardware providers	Data centre operators	Cloud service providers	Applications
Provide processing and memory units known as chips needed for computing	*Provide compute power and storage to process, store, and manage data*	*Offer globally standardised IT and cloud services over the internet*	*Providers of digital services and applications and Software as a Service*
NVIDIA, DELL, AMD, cisco, intel, IBM	NEXTDC, Microsoft, DATACOM, CDC, aws, Spark NZ	IBM, Google Cloud Platform, Azure, aws, Alibaba, ORACLE	M365, Google Workspace, ATLASSIAN, Canva, xero

... enabling modern capabilities that transform how government operates and delivers services

Communication & collaboration
Tools that enable real-time teamwork, file sharing, and messaging across locations.

AI technologies
Cloud-based systems that automate tasks and generate insights using artificial intelligence.

Data analytics capabilities
Scalable tools to process, visualise, and interpret large datasets for decision-making.

Security and resilience
Cloud defences offer advanced protection and rapid recovery from threats or disruptions.

Note: Non-exhaustive examples of businesses across each category and cloud capabilities.
Source: Mandala Partners (2024) *Empowering Australia's Digital Future;* Mandala analysis.

The New Zealand Government has pursued a cloud first policy since 2012

Since 2012, New Zealand has pursued a 'Cloud First' policy to modernise the public sector, refreshing the policy in 2023. This policy has driven some momentum in cloud adoption across government agencies, and digital maturity is improving.

Agencies are required to:

- **Move away from legacy infrastructure:** Public cloud must be the default, while on-premise systems require an exemption from the Government Chief Digital Officer (GCDO).
- **Only store data classified as RESTRICTED or below:** Use of cloud for higher classifications requires approval from the GCDO and the Government Communications Security Bureau (GCSB).
- **Have a cloud plan:** Agencies must maintain a Cloud Adoption Plan to guide migration and manage risks.
- **Consider Māori perspectives:** Cloud decisions must account for Māori data sovereignty and uphold Treaty principles.
- **Consider sustainability principles:** Agencies are expected to favour energy-efficient, low-emissions cloud solutions.

Source: NZ Digital (2024) *Cloud First Policy.*

Exhibit 4: Overview of Cloud First policy and a government agency case study

New Zealand Government agencies are required to take the following actions

1. Move away from on-premise systems and infrastructure
2. Only store data classified as Restricted or below
3. Have a Cloud Adoption Plan
4. Consider Māori perspectives
5. Consider sustainability principles

Government agency case study:

A newly established agency adopted a 'cloud first' strategy and were cloud-native.

During COVID-19 lockdowns, all several thousand staff immediately transitioned to remote work without service disruption, maintaining core services.

The agency scaled their Contact Centre platform overnight to hundreds more users and support emergency COVID-19 response, then scaled back down when no longer needed.

Cloud technology enabled staff to focus on delivering business value rather than maintaining legacy systems, with productivity maintained during remote work.

Source: NZ Digital (2024) *Cloud First Policy*, Department of Internal Affairs (2023) *Proposals for refreshing the Cloud First Policy and strengthening cloud adoption across the public service.*

Despite Cloud First, central government agencies remain reliant on legacy systems

Legacy IT systems remain a barrier to modernisation in government. This dependence not only exposes government agencies to operational and security risks but also hinders their ability to leverage emerging digital tools such as AI.

Despite ongoing migration efforts, only 13% of public service gross IT expenditure is allocated to cloud services, and 67% of public service systems are not hosted on the cloud.[1] This limited investment in cloud highlights persistent barriers to migration such as technical complexity, skills shortages, and current fiscal and procurement frameworks.

Reliance on legacy systems not only increases fiscal pressures – due to higher maintenance costs, increased staff allocation, and the need to outlay investment for scale – but also heightens the risk of cyber threats and service outages.

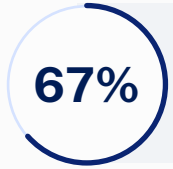
One of New Zealand's largest central government agencies is a pertinent example. With a quarter of databases and just under half of servers out-of-support, this agency faces increased security and outage risks.

1 While the Department of Internal Affairs does not distinguish between private and public cloud, it is likely these statistics refer to public cloud based on other benchmarks.
Source: Department of Internal Affairs (2023) *Proposals for refreshing the Cloud First Policy and strengthening cloud adoption across the public service;* Mandala analysis.

Exhibit 5: Adoption of cloud in New Zealand agencies

2024

13% of public service total gross spend on IT is on cloud[1]



67% of public service systems are not hosted in the cloud[1]

Exhibit 6: Case study of a large central government agency reliant on legacy IT

IT systems of a **large central government agency** in New Zealand.

Databases:
25% out-of-support.
54% on extended support.

Servers:
43% of virtual servers out-of-support.

Hardware:
50% beyond intended lifecycle.
1,000 devices > 10yrs old.

This agency's **reliance on legacy IT** is costly, presents cyber security risks, and disrupts workflows.

Costly:
Outdated systems require specialist IT staff to maintain, and high integration costs.

Security risk:
Legacy IT has outdated security systems, making them vulnerable to advanced attacks.

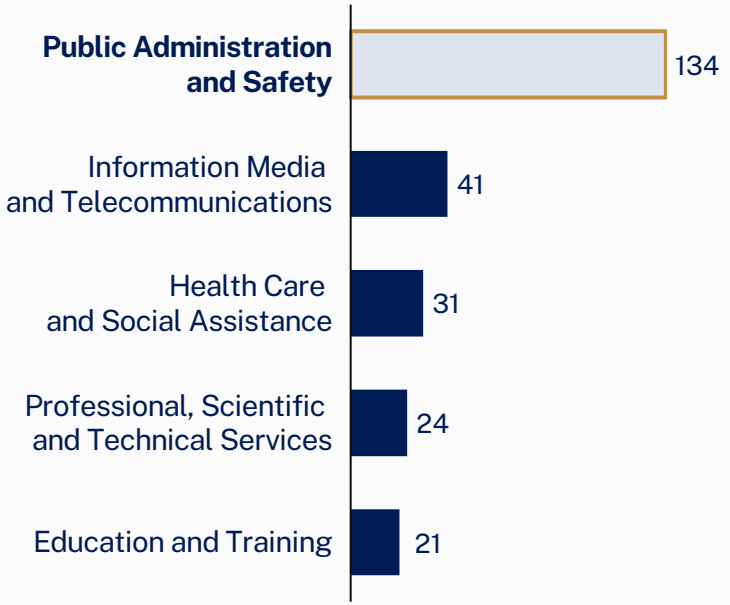
Productivity:
Legacy IT experiences greater outages and is unable to support new technologies – disrupting workflows.

Source: Department of Internal Affairs (2023) *Proposals for refreshing the Cloud First Policy and strengthening cloud adoption across the public service;* Mandala analysis.

Legacy IT infrastructure poses significant cybersecurity threats, escalates government's technical debt, and inhibits digital government transformation

Exhibit 7: Top 5 sectors affected by incidents

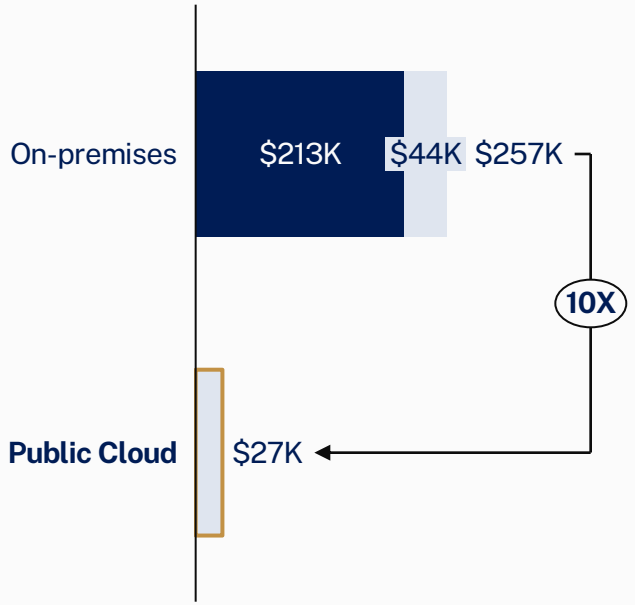
incidents of potential national significance, 2023-24



Government represented 39% (134) of nationally significant cyber incidents in 2023-24.

Exhibit 8: Cost of cloud vs on-premise systems[1]

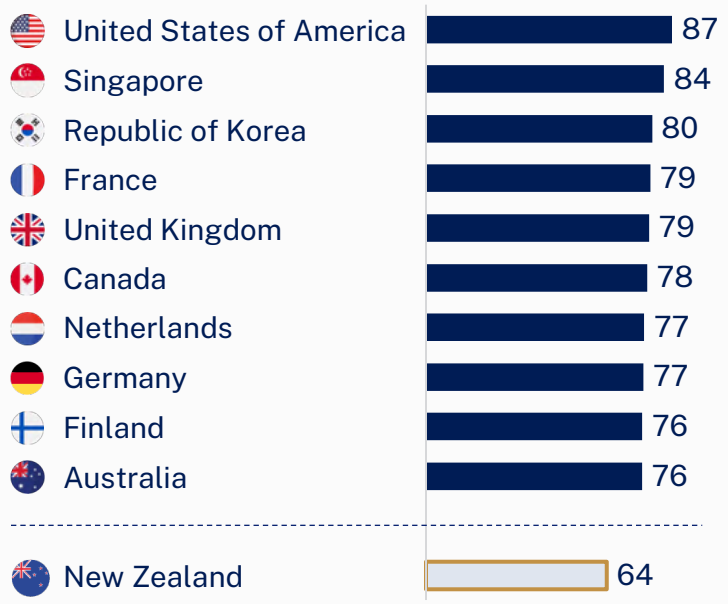
NZD, 2024, per server



On-premise infrastructure can be **10x more costly** than an equivalent public cloud configuration.

Exhibit 9: New Zealand Government AI-Readiness

Government AI-Readiness Index, 2024



New Zealand ranks **40th** in Oxford Insights 2024 Government AI-Readiness index.

1 Microsoft Azure (2025) *Total Cost of Ownership Tool*. Rounded to nearest $1K. Based on basic server configuration, including database, storage, and networking capacity (see Appendix – Methodology section 3 for full specifications). CapEx captures upfront investment in server hardware, databases and storage. OpEx captures ongoing maintenance, licensing and labour costs. Cost differentials may change depending on server configuration and workloads.

Source: National Cyber Security Centre (2024) *2023/2024 Cyber Threat Report;* Microsoft (2025) *Total Cost of Ownership (TCO) Calculator*; Oxford Insights (2024) *Government AI-Readiness Index;* Mandala analysis.

1 New Zealand can unlock significant productivity gains by advancing its leadership in digital government

2 **Faster cloud migration could save the New Zealand Government $360M a year and modernise its operations**

3 Government and industry should work together to reduce regulatory barriers and accelerate digital government

4 Appendices

Accelerating public cloud adoption can increase public sector productivity and enhance government digital services

Exhibit 10: Framework for understanding the total benefit of accelerating public cloud for the New Zealand Government

Benefits			Results[1]
Total benefit of accelerated adoption of public cloud	**Increased productivity** Public cloud reduces manual infrastructure maintenance and enables new technologies, allowing government to improve efficiency and deliver more with fewer resources.	**Direct fiscal savings** Cost reductions from more efficient use of IT labour and infrastructure.	**$360M per year** in direct IT savings
		Indirect fiscal savings Second-order productivity gains from increased adoption of cloud-enabled technologies, such as AI.	**$2.3B** in AI-driven productivity gains
	Improved quality of digital services Public cloud architecture delivers scalable and more reliable digital services. This improves both internal and citizen-facing government services.	**Strengthened security** Advanced security capabilities reduce the frequency and cost of cyber breaches.	**$121M** in avoided cyber breach costs
		Operational resilience Greater system reliability reduces outages and service disruptions.	**1.2M** hours avoided in IT downtime
		Sustainability More efficient cloud infrastructure lowers energy use and carbon emissions.	**26M kg** avoided carbon emissions[2]

1 Modelling results represent estimates over the 10-year period from 2026-2035. 2 Equivalent to the annual emissions of 14,000 cars.
Source: Mandala analysis.

1 New Zealand can unlock significant productivity gains by advancing its leadership in digital government

2 Faster cloud migration could save the New Zealand Government $360M a year and modernise its operations

2A Cloud migration supports government to reallocate resources and staff time to drive productivity gains

2B Cloud enables faster, more reliable services for government and citizens

3 Government and industry should work together to reduce regulatory barriers and accelerate digital government

Accelerating cloud adoption could drive $360M in average annual savings over 10 years

The New Zealand Government could save $1.1 billion by 2030, and $3.6 billion by 2035, if it accelerated its current timeline for public cloud adoption by just five years.[1] This represents an **average annual saving of $360M over the decade**, and a 14 per cent reduction in total IT costs compared to a 'business-as-usual' (BAU) scenario.

Cloud transition initially creates negative savings in the first year as agencies invest in migration. However, upfront costs are quickly recovered through reduced operational expenses and infrastructure requirements.

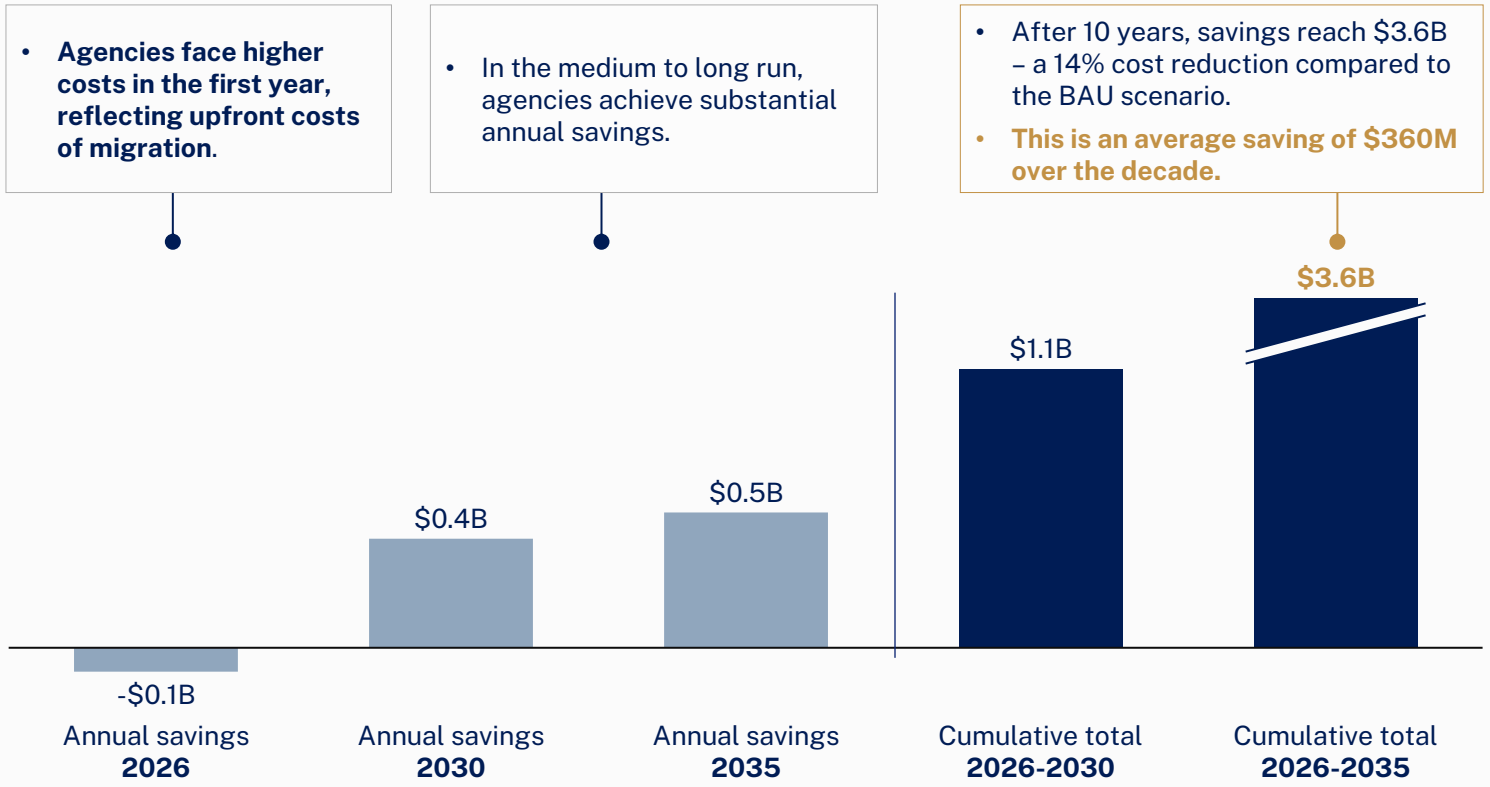
The investment profile mirrors other major infrastructure projects where initial capital outlays generate sustained operational benefits. Unlike physical infrastructure, cloud services continue improving and expanding capabilities, delivering increasing value without additional major investments.

Achieving fiscal savings of this magnitude typically requires major program cuts or tax increases. Faster cloud migration delivers these savings whilst improving service delivery and enabling new digital services.

1 The modelling estimates that average public cloud adoption across government agencies will reach 40% by 2035 in the BAU scenario, and 60% in the accelerated scenario. See appendix for more details.
Source: Mandala analysis.

Exhibit 11: Annual and cumulative fiscal savings from accelerated cloud adoption by NZ. Government

NZD, billions, 2025



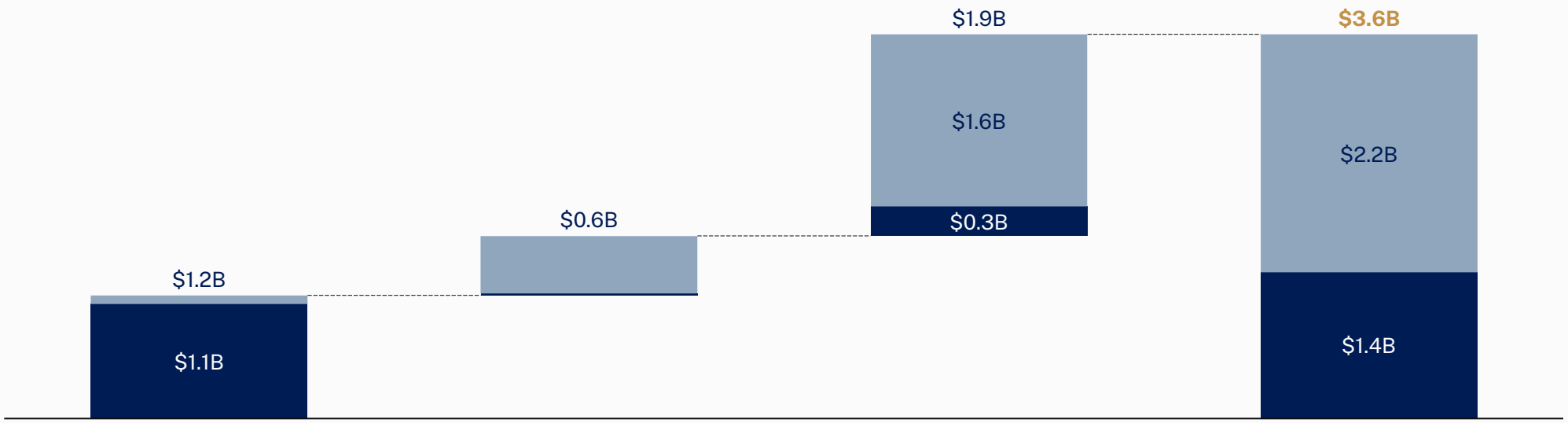
- The New Zealand Government's capacity requirements are growing over time, driven by the next wave of digital technologies.
- Accelerating public cloud adoption achieves savings of up to $3.6B over 2026-2035, by allowing agencies to efficiently meet these growing capacity demands.

Note: 7% discount rate.
Source: Pae Hokohoko Marketplace (2024) *Total Spend;* New Zealand Government Procurement (2024) *Government Electronic Tenders Service (GETS) data;* Microsoft Azure (2025) *Total Cost of Ownership Tool;* Mandala analysis.

Government agencies can reduce their total IT budgets by 12% to 25% over the decade to 2035, with large agencies delivering the majority of the savings

Exhibit 12: Total fiscal savings over 2026-2035 from accelerating cloud adoption for central government agencies

NZD, billions, 2025



Agencies grouping	Policy and regulation (E.g. Ministry of Social Development, Ministry of Health)	Security and defence (E.g. New Zealand Defence Force, New Zealand Police)	Service delivery (E.g. Te Whatu Ora - Health New Zealand, ACC, Inland Revenue)	Total direct productivity savings
% cost reduction 2026-2035	25%	13%	12%	14%

Source: Pae Hokohoko Marketplace (2024) *Total Spend;* New Zealand Government Procurement (2024) *Government Electronic Tenders Service (GETS) data;* Microsoft Azure (2025) *Total Cost of Ownership Tool*; Expert consultation; Mandala analysis.

These fiscal savings reflect productivity gains driven by public cloud's efficiency and flexibility

Cloud migration shifts government IT spending from large capital investments to paying only for resources used. The pay-as-you-go model reduces upfront infrastructure costs and overprovisioning, unlocking $2.7 billion of the $3.6 billion in fiscal savings through greater efficiency and flexibility.

Cloud's shared responsibility model drives savings across all categories. Cloud service providers (CSPs) handle infrastructure management, security updates, and system reliability – shifting operational costs away from Government. This reduces the need for external IT contractors managing legacy systems, delivering $400 million in savings.

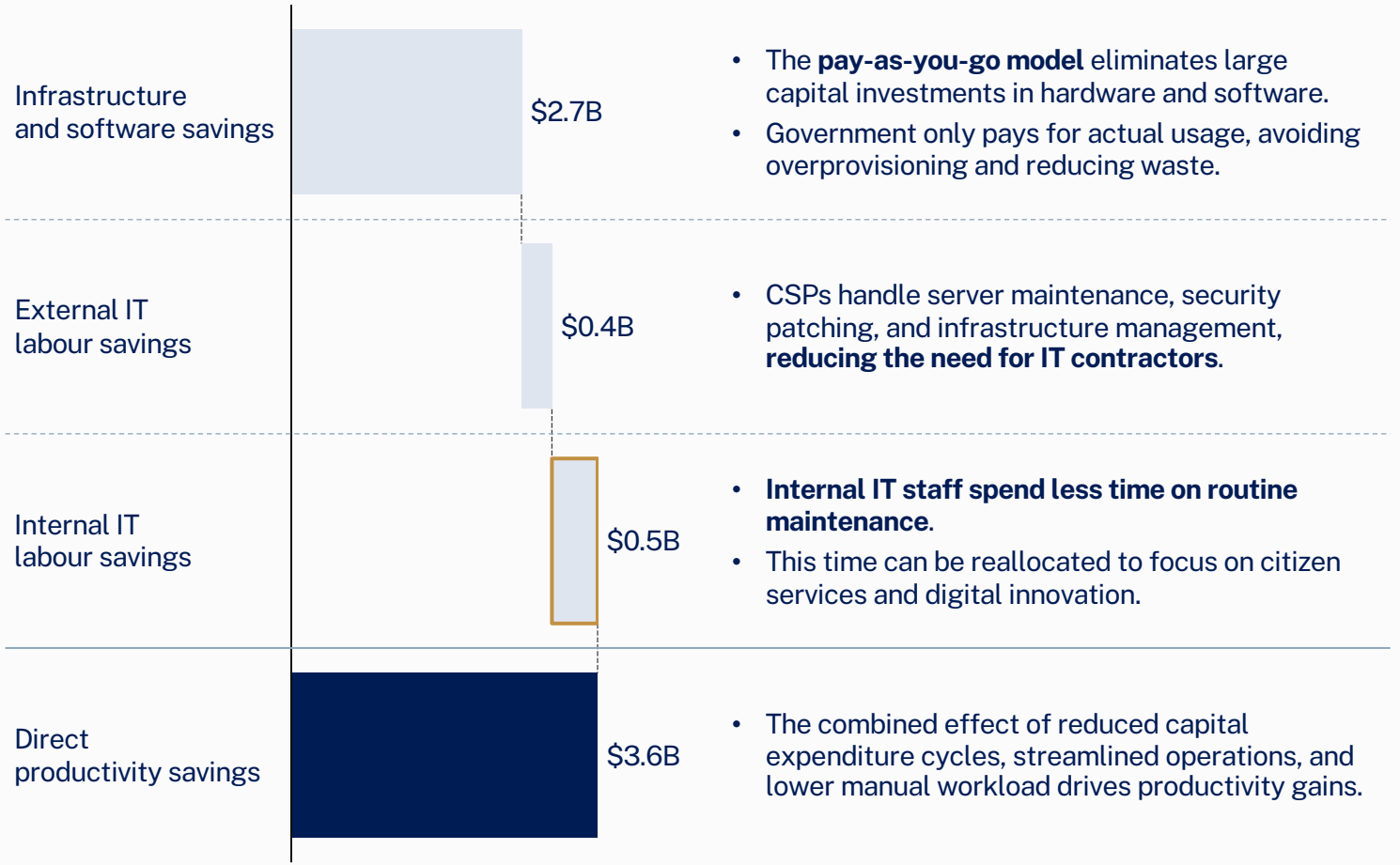
Meanwhile, this transition enables agencies to achieve significant operational cost savings of approximately $500 million through reduced infrastructure maintenance, licensing, and administration overheads.

CSPs offer economies of scale and operational flexibility that individual agencies cannot achieve through shared infrastructure, dynamic resource allocation, and higher server utilisation. The same computing work requires far fewer physical resources and less energy, contributing to lower costs and greater efficiency across government.

Source: Mandala analysis.

Exhibit 13: Breakdown of total fiscal savings over 2026-2035

NZD, billions, 2025



Note: 7 per cent discount rate. Latest available data on per cent of IT labour costs that are internal compared to external is from 2017.
Source: The Treasury - Te Tai Ōhanga (2017) *Administrative & support Services Benchmarking Results;* Microsoft Azure (2025) *Total Cost of Ownership Tool;* Mandala analysis.

Faster cloud adoption could unlock an additional $2.3B in AI-driven productivity gains

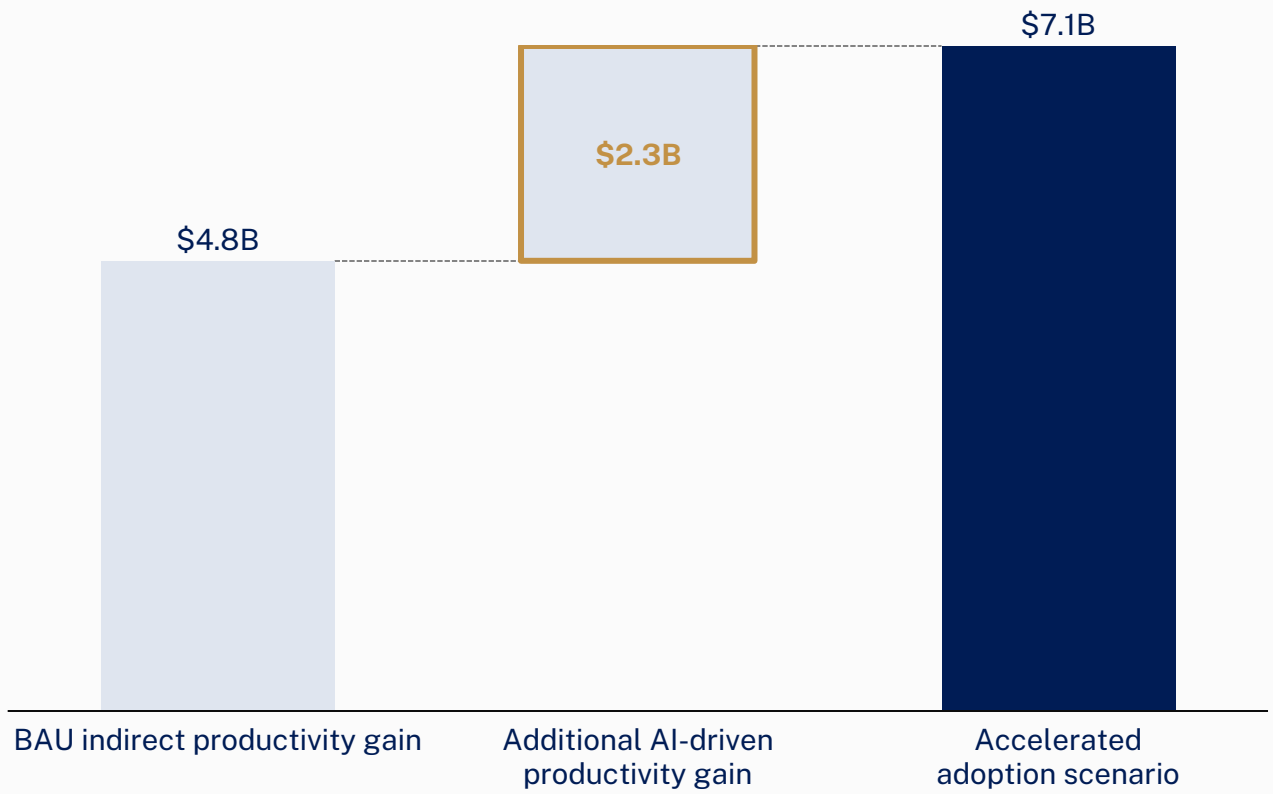
Cloud infrastructure is essential for artificial intelligence (AI) deployment in government, supporting indirect fiscal savings from harnessing productivity-enhancing AI tools.

Over the next decade, accelerated cloud adoption could result in an additional $2.3 billion in productivity benefits from AI usage. This represents a 48 per cent increase compared to the productivity gains that could be expected in the BAU scenario, where AI uptake is slower.

Cloud provides the computing power, data infrastructure, and ready-to-use AI services needed to deploy AI tools at scale. It allows organisations to access advanced capabilities – like natural language processing or predictive analytics – without investing in expensive hardware or specialist talent. By centralising data and enabling rapid testing and deployment, cloud makes it faster and easier to integrate AI into everyday workflows, unlocking productivity gains.

Exhibit 14: Accelerated cloud adoption unlocks AI-related productivity gains

NZD, billions, 2025



1 This average is across all public service employees, including those estimated to not adopt AI. See appendix for agencies included in analysis.
Source: idm (2024) *Guardrails for GenAI;* Microsoft (2024) *Real-World Benefits of Generative AI in the New Zealand public sector;* Tony Blair Institute for Global Change (2024) *The Potential Impact of AI on the Public-Sector Workforce;* Mandala analysis.

The New Zealand Public Service is experiencing an uplift in productivity through use of Microsoft Copilot

Public cloud enables scalable, cost-effective deployment of AI tools, helping government agencies modernise operations, automate routine tasks, and boost productivity.

In 2024, a public sector agency undertook a trial of Microsoft 365 Copilot to explore these benefits in practice. The evaluation found generative AI solutions, such as Copilot, can deliver significant financial benefits for public sector organisations, as well as improvements to staff productivity, work quality, and job satisfaction. Key findings included:

- **10 hours** per user per month saved on average.
- **76%** of respondents reported more productivity.
- **79%** reported improvements in quality of their work.
- **79%** reported it helped complete tasks faster.
- **78%** reported it helped spend less mental time on mundane or repetitive tasks.
- **92%** reported it was easy to use.

> *Before Copilot, much of our time was spent on repetitive tasks that had a strong impact on employee productivity. Now, we are able to dedicate that saved time to activities that drive further growth in the agency and continue to invest in our people.*
> —Trial participant: agency executive

Source: Microsoft (2024) *How generative AI is driving results in New Zealand's public sector;* Mandala analysis.

1 New Zealand can unlock significant productivity gains by advancing its leadership in digital government

2 Faster cloud migration could save the New Zealand Government $360M a year and modernise its operations

2A Cloud migration supports government to reallocate resources and staff time to drive productivity gains

2B Cloud enables faster, more reliable services for government and citizens

3 Government and industry should work together to reduce regulatory barriers and accelerate digital government

Cloud's advanced infrastructure could save $121M in breach costs for government

The public administration and safety sector reported 39% of all cyber breaches that required technical support in 2024 – the highest of any sector.[1] Accelerating public cloud adoption is an opportunity to improve this, avoiding an estimated 65 breaches over the next decade. This could save $121 million in breach-related costs over that period. Of the incidents avoided over that time, nearly a third would be significant or moderate incidents of potential national significance.

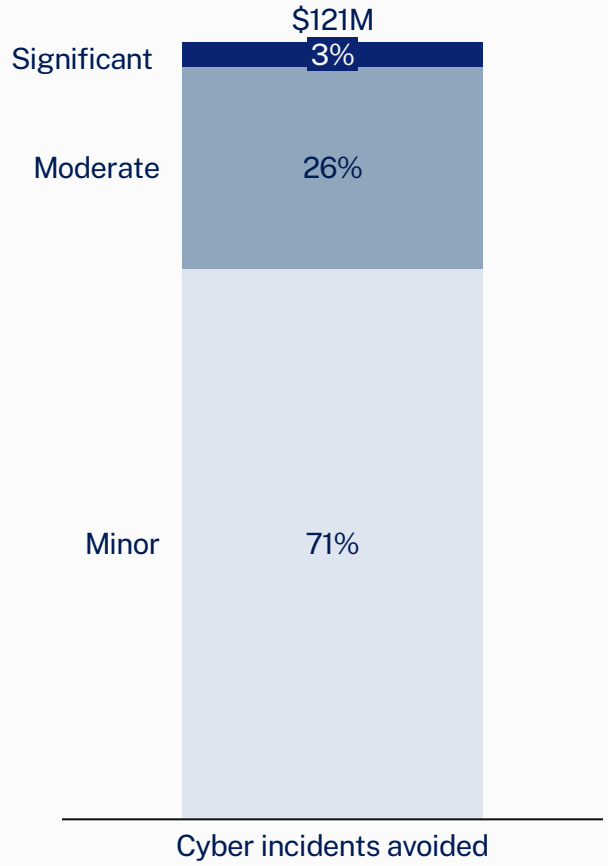
Cloud platforms deliver enhanced cybersecurity through automated threat detection and response, security updates, encryption protocols, and monitoring capabilities. Threat intelligence sharing across cloud networks enables real-time identification and mitigation of cyber threats.

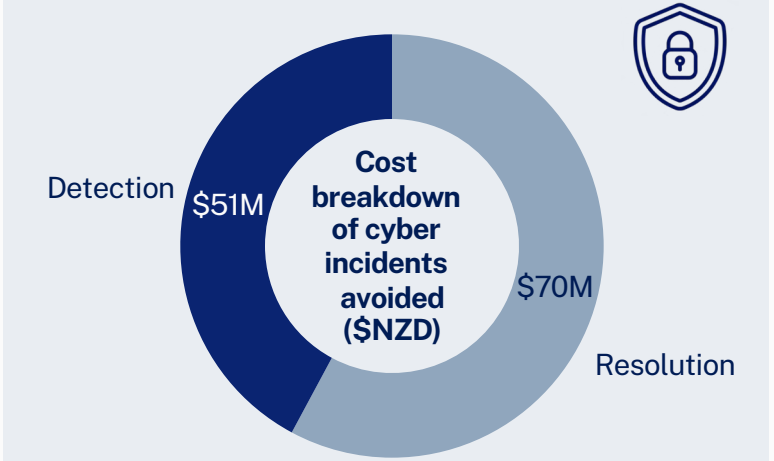
Cloud infrastructure can also strengthen cybersecurity posture through AI and automation – one of the most effective ways to reduce the cost of cyber incidents, after employee training. By shifting workloads from complex legacy systems to centralised, modern cloud environments, agencies can directly address two key drivers of cyber breach costs: system complexity and security skills shortages.[2]

1 National Cyber Security Centre (2024) *2023/2024 Cyber Threat Report.* 2 IBM (2024) *Cost of a Data Breach Report.*
Source: Mandala analysis.

Exhibit 15: Avoided number of cyber breaches by accelerating cloud adoption, by severity

NZD, 2026-2035





- Accelerating cloud adoption could prevent at least 65 cyber incidents over the next decade, 30% of which are significant or moderate **incidents of national significance**.
- This could **save $121M in breach-related cyber costs** – made up of detection and resolution costs.[3]

3 Breach costs are segmented into a) detection costs (forensic investigations, crisis management, and regulatory notifications) and b) resolution costs (citizen support services, legal expenditures, service disruption, and reputation management following breach impacts).
Source: IBM (2025) *Cost of a Data Breach Report;* New Zealand Public Service Announcement (2025) *Lifting the lid: the use of AI in New Zealand Public and community Services;* Mandala Partners (2023) *Hyperscale cloud and its benefits to the Australian economy;* Mandala analysis.

Built-in failover mechanisms and hardware refresh cycles could reduce costs associated with outages by 19%

IT outages can impose major costs on organisations, primarily due to lost employee productivity. Moving to hyperscale cloud infrastructure could reduce these costs by 19 per cent, or $40 million, from $210 million in the BAU scenario to $170 million.

This estimate reflects cloud infrastructure preventing approximately 1.2 million hours of staff downtime over the 10-year period, valued using the average wage for civil servants.

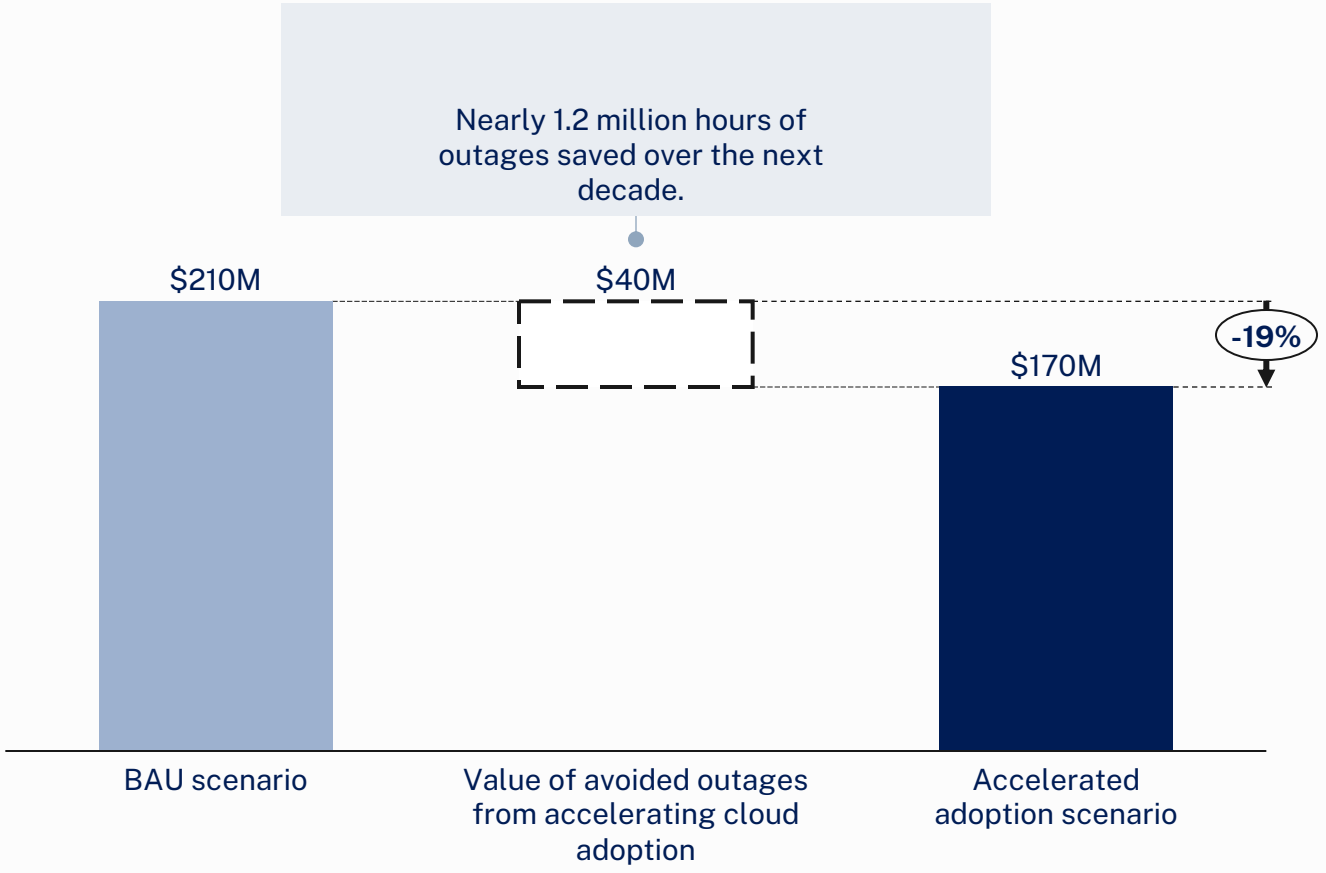
These savings result from cloud's enhanced reliability features. Cloud infrastructure uses distributed architecture with multiple backup systems, ensuring automatic failover when components fail. Built-in mechanisms instantly redirect work to functioning systems, minimising downtime when issues occur.

Cloud providers also maintain current hardware through regular refresh cycles, reducing equipment failure risk compared to ageing on-premise systems.

Source: Mandala analysis.

Exhibit 16: Reduced costs of IT system outages from accelerating cloud adoption

NZD, millions, 2025



Source: IDC White Paper (2018) *Fostering Business and Organizational Transformation to Generate Business Value with Amazon Web Services;* Te Kawa Mataaho (2024) *Latest public service workforce data released;* Mandala analysis.

Increased server efficiency could support a 11% reduction in Government's carbon footprint

Accelerated cloud adoption could save 26 million kilograms of carbon dioxide emissions over the next decade – a reduction of 11 per cent compared to the BAU scenario. This is equivalent to taking 14,000 vehicles off the road.[1]

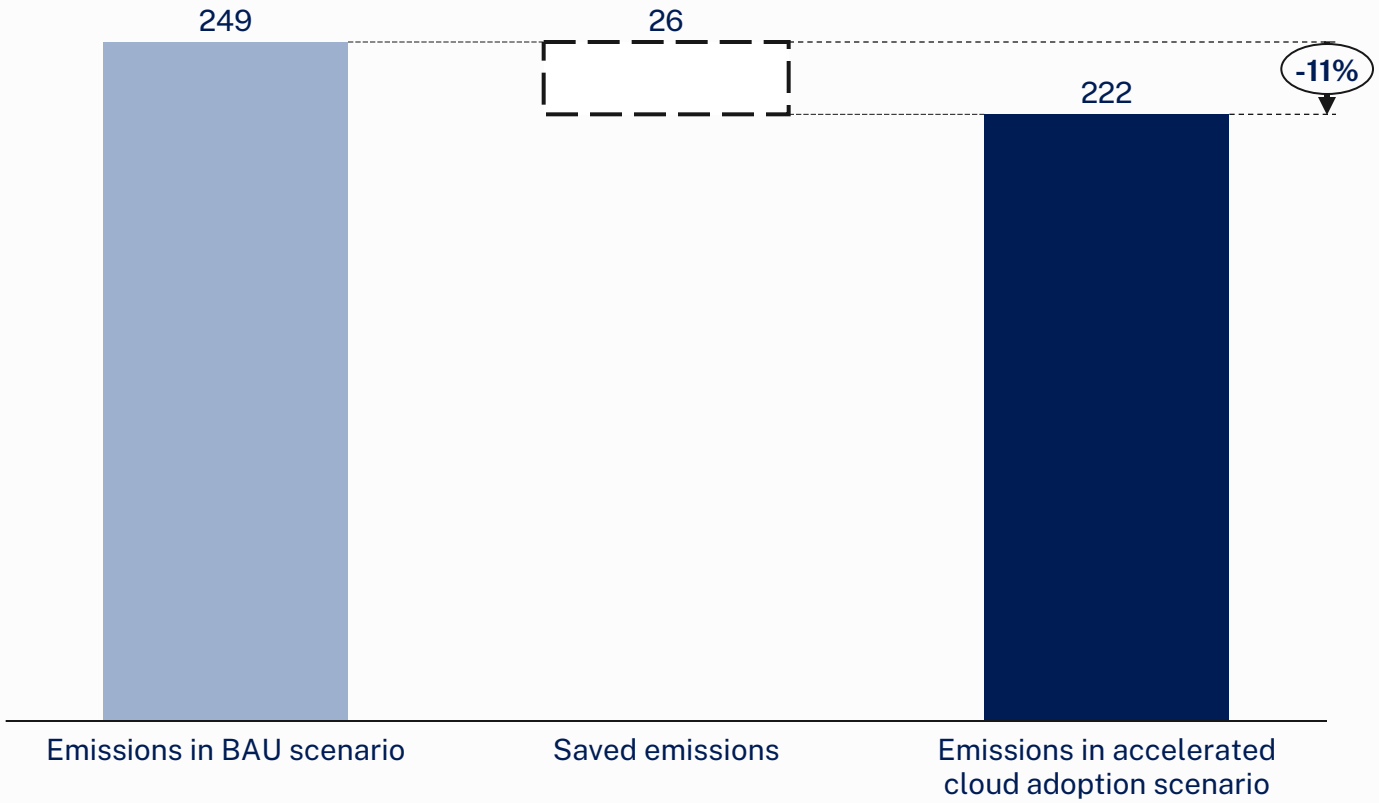
In monetary terms, this reduction represents over $1 million in environmental value – with estimated carbon costs falling from $9.8 million in the BAU scenario to $8.8 million if cloud adoption is accelerated.[2]

These avoided emissions are driven by the energy efficiency of public cloud infrastructure. Modern, optimised hardware and intelligent workload distribution reduce energy consumption, while advanced cooling systems, renewable energy sourcing, and automated resource scaling minimise the waste associated with over-provisioned on-premise servers.

1 Based on average emissions from National Transport Commission (2024) *Light vehicle emissions intensity in Australia: trends over time* and average annual distance travelled from Ministry of Transport (2015) *New Zealand Household Travel Survey. 2* Based on NPV of New Zealand Carbon Credit Units.
Source: Mandala analysis

Exhibit 17: Carbon emissions from accelerating cloud adoption

Kilograms of carbon emissions, millions, 2026-2035



Source: Microsoft Total Cost of Ownership (TCO) Calculator; SysRacks (2023) *Server Rack Energy Consumption;* One Chassis (2025) *How many servers are in a data centre;* Mandala Partners (2024) *Empowering Australia's Digital Future;* Statista (2024) *Emissions intensity from electricity generation in New Zealand;* Cloud Carbon Footprint (2025) *Embodied Emissions* – embodied emissions based on Azure B4MS server; AWS (2015) *Cloud computing, server utilisation, and the Environment;* Mandala analysis.

Cloud migration also supports the broader tech ecosystem, building digital resilience and workforce capability

Accelerating cloud adoption in the public sector will help to address New Zealand's productivity challenges – unlocking efficiency gains and improving the quality of government services.

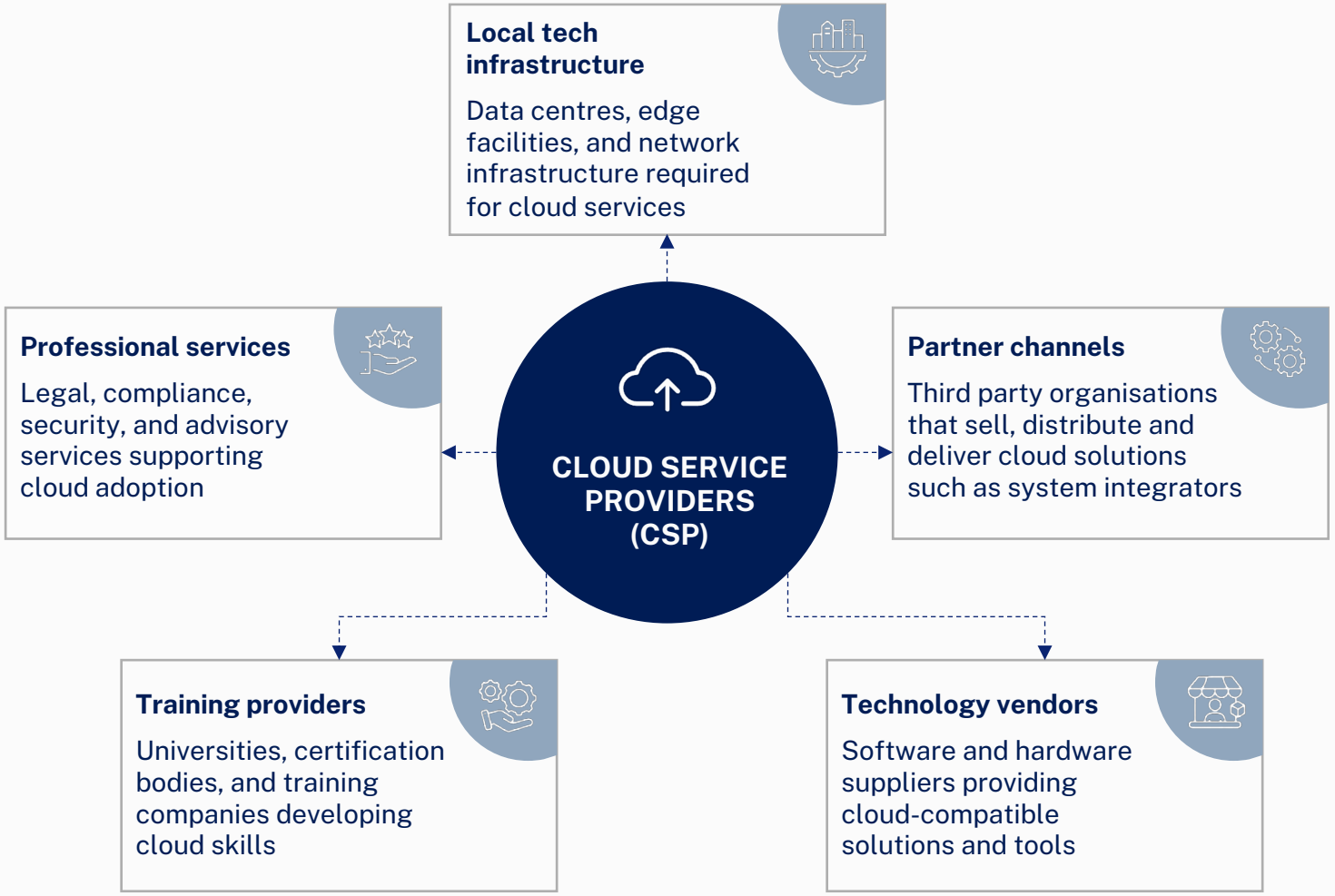
Government cloud adoption strengthens the tech ecosystem through investment from cloud service providers (CSPs) in local partnerships and infrastructure. CSPs work closely with a range of local firms to deliver and maintain services across all aspects of cloud transformation – building digital resilience across the ecosystem.

The impact of cloud adoption extends across the economy. For example, when government agencies migrate to cloud services, they create demand that supports local data centres, edge computing facilities, and network investments. Long-term investment across these layers enables specialised solutions tailored to government needs, including advanced cybersecurity, backup systems, and service continuity measures.

Finally, training and certification programs offered by CSPs and their partners help grow a pipeline of skilled professionals, strengthening New Zealand's digital workforce and supporting ongoing innovation across the economy.

Source: Mandala analysis.

Exhibit 18: How cloud providers support the local tech ecosystem



Note: The depiction of the tech ecosystem is not exhaustive.
Source: Floerecke and Lehner (2020) *Cloud computing ecosystem model: evaluation and role clusters*; Whyman (2021) *Secrets From Cloud Computing's First Stage: An Action Agenda for Government and Industry;* Mandala analysis.

1 New Zealand can unlock significant productivity gains by advancing its leadership in digital government

2 Faster cloud migration could save the New Zealand Government $360M a year and modernise its operations

3 Government and industry should work together to reduce regulatory barriers and accelerate digital government

4 Appendices

Structural, cultural, and capability barriers are preventing government from adopting cloud despite its clear benefits

Exhibit 19: Key barriers to cloud adoption in the public sector

Structural barriers	Cultural barriers	Capability barriers
Agencies face barriers in working across appropriations and moving away from CapEx IT spend to OpEx budget frameworks.	Uncertainty about the relative security of hyperscale cloud vs on premises solutions.	Public sector IT workforce lacks digital capacity and capability, while reliance on contractors limits internal capability development.
GCDO and key agencies like PSC have scope to more assertively promote the cost advantages of cloud and encourage faster migration.	Concerns about ownership of data being somehow "lost" through the cloud. This is a much greater feature of discussion in the NZ public service vs other countries.	Public service employees have limited skilling on digital transformation, including use of AI tools, which are enabled by cloud.
Upfront, short-term costs of migration can create barriers, despite the long-term value proposition of cloud.	Decisions on IT based on individual agency priorities, rather than whole-of-government transformation benefits.	Agencies do not direct funding to capability development with most IT spend directed at maintaining legacy systems.

These barriers are amplified for larger agencies.
Large-scale cloud migration requires significant organisational transformation, with large agencies often having to navigate vast amounts of data in varied silos or complex permission structures. Bureaucratic processes create additional resistance to change, making these structural, cultural, and capability barriers particularly acute for large government entities – and ultimately slowing migration.

Source: Expert consultation; Mandala analysis.

Government needs to modernise procurement, align cloud policy and security frameworks, and partner with industry to unlock productivity gains through cloud

Exhibit 20: Potential pathways to accelerating cloud adoption in the public sector

A

Modernise financial and procurement frameworks for a cloud-first government

- Introduce flexible, multi-year funding models that decouple investment from rigid appropriation structures. Cross-agency initiatives and large agencies, which receive funding from multiple appropriations, are especially constrained by outcome-specific budgets. Shifting to consumption-based OpEx models would enable investment in scalable technologies without being limited by legacy CapEx cycles or siloed funding.
- Adapt procurement and funding mechanisms to recognise digital capabilities such as AI and automation as strategic enablers of transformation, allowing agencies to invest in modest technology solutions that unlock significant savings and efficiencies across other budget areas.

B

Strengthen governance to align incentives and drive coordinated cloud adoption

- Set clear, whole-of-government goals and targets for modernisation of public sector systems and adoption of emerging technologies like AI and continue to amplify GCDO's mandate to deliver on those outcomes.
- Establish coordinated mechanisms between key government bodies (such as the Cabinet Government Administration and Expenditure Review Committees) and System Leads to ensure consistent cloud adoption signals, with coordinated policy and funding levers.

C

Establish strategic partnerships that help build cloud, AI and cyber capabilities

- Establish a whole-of-government Digital Productivity Co-investment Fund that supports more strategic investment in cloud migration and other modernisation projects across the public sector through public-private partnerships.
- Evolve centralised procurement frameworks to support more flexible, innovation-friendly terms and conditions that drive investment in emerging technologies through shared services and public-private collaboration.
- Co-invest in building digital skills and capability across the New Zealand Public Service, in partnership with industry and academia, to address legacy technology constraints and support adoption of emerging technologies.

Source: Expert consultation; Mandala analysis.

Modernising procurement frameworks will enable a digital-first government and capture its benefits

Government IT procurement frameworks must move beyond traditional approaches designed for physical infrastructure, and embrace flexible, consumption-based cloud services. Modernising procurement frameworks means agencies can:

- Access flexible, multi-year budgets that align with cloud consumption models rather than fixed appropriation models and capex cycles.
- Focus value-for-money assessments on long-term outcomes, including innovation, sustainability, security, and agility.
- Streamline procurement processes to match the speed and flexibility that public cloud services offer.
- Consider AI capability offerings in cloud panel procurement.
- Adapt procurement and funding mechanisms to allow agencies to invest in digital technology that drive better outcomes and bigger savings across the organization.

The US Technology Modernization Fund (TMF) demonstrates how central funding can accelerate digital transformation while delivering measurable returns. It enables agencies to invest in multi-year projects – such as cloud migration – without being restricted by rigid funding cycles.

Exhibit 21: US Government's Technology Modernization Fund

A model for accountable and scalable digital investment

Funding	Support	Reporting
• Initial funding released after public announcement. • Future disbursements are milestone-based. • Repayments begin within one year of first transfer.	• Agencies join a community of fellow recipients. • Share tools, troubleshoot delivery challenges, build implementation capacity.	• Agencies report regularly on performance. • Track metrics, share lessons learned, assess citizen impact.

With proven impact across US federal government agencies

Investment	Transformation	Impact
• **$1B invested** across 63 projects at 34 federal agencies. • **$240M** invested in FY24 alone across 16 new investments. • **5-year repayment model** ensures sustainable funding.	• **80%** of projects include cybersecurity improvements. • **25%** faster in transferring money to agencies. • **14 weeks** saved in proposal development process.	• **153M workers** supported through modernised systems. • **73%** of projects enable improved scalability. • **80%** reduction in processing times for key services.

Source: TMF (2025) *Our process*; TMF (2024) *FY24 annual report*; Expert consultation; Mandala analysis.

Effective coordination across government can accelerate cloud-enabled transformation

New Zealand is falling in danger of falling significantly behind in digital transformation and needs stronger whole-of-government leadership and clearer accountability for outcomes to drive momentum and make real progress. Achieving this requires alignment across security, policy, and funding levers.

Improved governance will enable agencies to:

- Move beyond siloed digital initiatives and capture shared benefits from coordinated transformation.
- Align national security objectives with digital and cloud policies to support, rather than constrain, adoption.
- Avoid duplication and fragmentation in procurement by ensuring consistent standards and integrated panels across government.
- Drive public-private innovation and investment through flexible partnership frameworks.

> *"We're on the cusp of a digital revolution, and we need to fundamentally transform how we provide services, the quality of those services, and the cost of those services to New Zealanders."*
> *— Hon Judith Collins MP*

The UK's Government Digital Service (GDS) provides a model for how a digital centre of excellence can set direction, establish shared services, and drive consistent technology adoption across departments. Australia can achieve similar benefits by amplifying the DTA's mandate and improving coordination between key decision-making bodies, such as the National Security Committee and the Expenditure Review Committee.

Exhibit 22: UK Government Digital Service

Timeline of UK Government Digital Service priorities and impact

2011 — Government Digital Service established
Leads cross-agency digital government transformation.

2012 — GOV.UK launched
A single, unified website replacing 1,700+ departmental sites.

2013-2015 — Common standards introduced
Design and service standards set clear rules for user-centred, accessible, and secure service delivery.

2014 — Digital Marketplace launched
Simplified procurement and opened access to SMEs.

2015-2020 — Cross-government collaboration enabled
e.g. supporting major agency projects through embedded teams, service assessments, and delivery communities.

2014-2017 — Reusable platforms built
Shared tools like *GOV.UK Pay and Notify* reduced duplication and sped up delivery.

2025 — Blueprint for Modern Digital Government
Reaffirms the role of GDS as a central enabler of whole-of-government transformation.

2021-2024 — Cultural and capability shift
e.g. GDS Academy trains thousands in agile and user-centred delivery, helping agencies build in-house teams.

Source: GOV.UK (2025) *Government Digital Service*; GOV.UK (2025) *Service Standard*; GOV.UK (2021) *Government Digital Service*; GOV.UK (2025) *A blueprint for modern digital government;* Expert consultation; Mandala analysis.

Co-investment with cloud providers can drive strategic transformation and build public sector capability

Strategic partnerships between government and cloud service providers can accelerate digital transformation by sharing upfront costs and risks. This approach shifts cloud adoption from a capital expense to a more manageable operational investment.

By moving beyond traditional vendor-customer relationships, government can pursue ambitious digital goals while strengthening internal capability. Collaborative procurement and co-investment models enable agencies to:

- Secure funding and support for cloud migration without large upfront budget allocations.
- Build NZ public service digital capability through joint delivery models, training, and structured knowledge transfer.
- Share transformation risks while developing in-house expertise in cloud management, cybersecurity, and AI adoption.

The NSW Government's partnership with Microsoft demonstrates this approach – enhancing cybersecurity, migrating 25 per cent of IT services to cloud, and delivering workforce upskilling through tailored training programs.

Exhibit 23: NSW Government cloud partnership with Microsoft

Three key pillars of the NSW Government's longstanding partnership with Microsoft

Cloud adoption	Cybersecurity	Upskilling
▪ The partnership supports the NSW Government's goal to migrate 25% of its IT services to the public cloud, enhancing scalability and efficiency. ▪ Supports 25 agencies and around 400,000 staff across key sectors, including health, transport, public safety, justice, and civilian government.	▪ Collaborative efforts aim to bolster the State's cybersecurity posture, providing advanced threat protection and incident response capabilities. ▪ Cyber Security NSW has since expanded its suite of products and services to enhance cyber resilience across NSW.	▪ Involves courses in AI, cybersecurity, and cloud computing, developed in partnership with Microsoft, to equip public servants with essential digital skills. ▪ This partnership is helping to address a projected shortfall of 85,000 digital workers by 2030.

> *This agreement will boost NSW Government employees' technical capabilities with a comprehensive skilling and investment program.*

Greg Wells
Managing Director, Service NSW
Former NSW Government Chief Information and Digital Officer

> *These courses have been developed hand-in-glove with industry to meet current and emerging skill needs.*

Alister Henskens
Former NSW Minister for Skills and Training

Source: Microsoft (2022) *Microsoft and the NSW Government strengthen partnership to accelerate the state's digital transformation*; NSW Government (2023) *New courses to strengthen digital workforce;* Hendry (2022) *Microsoft to support NSW gov cloud shift under new five-year partnership;* Expert consultation; Mandala analysis.

Accelerating digital government modernisation can unlock significant **productivity gains** for New Zealand

Lifting public sector productivity is key to driving broader economic growth

The majority of central government agencies **remain reliant on legacy IT systems**

Public cloud IT architecture is a key enabler of **modern government services**

Cloud migration could unlock over **$3.6B in fiscal savings** over 10 years

12% to 25%
reduction in total **IT budgets** for New Zealand federal government agencies

48%
increase in **AI-driven productivity** enabled by accelerated cloud adoption

5%
decrease in the number of **cyber breaches** due to cloud's advanced infrastructure

19%
reduce costs associated with **outages** because of built-in failover mechanisms and hardware refresh cycles

11%
reduction in government's **carbon footprint** from increased server efficiency

Government and industry should work together to **reduce regulatory obstacles and realise the full potential** of cloud technologies

Structural, cultural, and capability barriers are preventing government from adopting cloud despite its clear benefits

Government needs to **modernise procurement, strengthen coordination, and partner with industry** to unlock productivity gains enabled by cloud migration

4 Appendices

4A Methodology

4B Supporting analysis

4C References

This study quantifies the potential benefits of accelerating cloud migration for central government agencies

Exhibit A1: Overview of approach to assessing the benefits of accelerating cloud adoption across government

METHODOLOGY SECTION[1]

Government agency grouping 1

We model the benefits by agency to account for different requirements across the public sector.

Policy and regulation agencies	• Central agencies and regulators focused on policy development, oversight, and regulatory functions. *Examples: Ministries, departments*
Security and defence agencies	• Agencies responsible for national security, intelligence, and defence operations. *Examples: New Zealand Defence Force*
Service delivery agencies	• Customer-facing agencies that deliver services and payments to citizens and businesses. *Examples: Te Whatu Ora: Health New Zealand, Inland Revenue*

Each grouping is also split into small, medium and large categories, meaning there are nine groupings in total.

Cloud migration scenarios 2

For each grouping, we model two adoption scenarios to account for uptake in BAU and a step-change shift.

Business-as-usual (BAU) scenario	• Current cloud adoption trajectory continues, reaching 40 per cent public cloud adoption by 2035 based on historical trends and existing government policies.
Accelerated cloud adoption scenario	• Enhanced policy intervention accelerates migration of IT workload to the cloud by 5 years, following S-curve adoption patterns. • This modelled intervention means the federal government reaches 60 per cent public cloud adoption by 2035.

Spend on public cloud as a percentage of total IT is used as a proxy for cloud adoption.

Benefits of cloud adoption 3

We model a range of fiscal and economic benefits of accelerating cloud adoption in government.

Direct fiscal savings	• Infrastructure and operating spend efficiencies.
Indirect fiscal savings	• Productivity gains from adoption of AI technologies.
Strengthened security	• Advanced cybersecurity protection reducing breach frequency and costs.
Operational resilience	• Reduced system outages and service disruptions.
Sustainability benefit	• Lower carbon emissions from efficient cloud infrastructure.

***Area of further research**: There are a range of second order benefits to cloud adoption that are not modelled in this study.*

Source: Mandala analysis.

This study focuses on New Zealand Government Departments and Crown Entities

Exhibit A2: New Zealand public sector structure

FOCUS OF THIS STUDY[1]

Category	Core Crown segment	Crown Entities	Other public sector bodies
Description	Core Crown agencies delivering policy advice, government services, funding and commissioning. Includes • Public service departments • Departmental agencies • Interdepartmental ventures and boards.	Agencies subject to some level of Ministerial direction or influence + NZ Police, NZ Defence Force, and Parliamentary Counsel Office	• Local Government • Crown-owned companies not subject to Ministerial influence • Tertiary institutions • Legislative and Judicial Branch
Examples	• Ministry of Social Development • Ministry of Health • Aroturuki Tamariki - Independent Children's Monitor	• Te Whatu Ora: Health New Zealand • ACC • Waka Kotahi NZ Transport Agency	• Airways Corporation of New Zealand Limited • New Zealand Railways Corporation • Auckland Council

Source: Te Kawa Mataaho Public Service Commission (2024) *How the public sector is organised;* Mandala analysis.

Agencies are mapped by function and size, to capture differences in cloud adoption

Exhibit A3: Summary of agency groupings

GROUPING			COUNTS	
FUNCTION	SIZE	EXAMPLE	NUMBER OF AGENCIES	NUMBER OF FTE (MARCH 2025)
Policy and regulation	Large	Ministry of Social Development	1	9,090
Policy and regulation	Medium	Ministry for Primary Industries	13	33,349
Policy and regulation	Small	Ministry of Māori Development- Te Puni Kōkiri	62	7,518
Service delivery	Large	Health New Zealand — Te Whatu Ora	2	91,295
Service delivery	Medium	ACC	10	23,172
Service delivery	Small	Callaghan Innovation	14	2,681
Security and defence	Large	New Zealand Police	2	27,426
Security and defence	Medium	Government Communications Security Bureau	1	604
Security and defence	Small	Independent Police Conduct Authority	2	448
TOTAL			107	195,583

Key points

- The viability of cloud adoption depends on an agency's characteristics, including the type of workloads, data sensitivities, and performance requirements.
- To account for these differences, we segment agencies across two key dimensions that capture the key factors affecting cloud adoption:
    - **Function** captures different types of workloads and data sensitivities.
    - **Size** captures complexity of IT systems, and performance requirements. 'Small' is defined as less than 500 full-time equivalent staff (FTE), while 'Large' is defined as greater than 10,000 FTE.
- Function classifications and FTEs are based on the Te Kawa Mataaho Public Service Commission data.

Sources: Te Kawa Mataaho Public Service Commission (2024) *How the public sector is organised;* Te Kawa Mataaho Public Service Commission (2025) *Departmental FTE Changes,* Te Kawa Mataaho Public Service Commission (2025) *Crown-Entitity FTE Changes;* Mandala analysis.

Migrating to public cloud shifts IT workloads to a shared responsibility framework

Accelerating adoption to public cloud shifts IT workloads from legacy systems to a shared responsibility framework, with cloud service providers (CSPs) playing a supporting role to Government. CSPs partner with government agencies not only to deliver core infrastructure and services, but also to support ongoing cloud optimisation.

This collaborative approach involves continuously improving cost-efficiency, security, and performance through a range of activities such as workload right-sizing, automated scaling, resource monitoring, architectural refinements, and deployment of new service offerings.

Over time, this partnership helps agencies evolve – from basic cloud migration to strategic use of cloud capabilities – to improve operations and service delivery. This migration enables government agencies to become more agile, responsive, and innovative in deploying IT solutions.

Exhibit A4: Definition of cloud migration

Cloud migration involves a re-allocation of responsibilities between in-house government teams and specialist CSPs. Different service delivery models (IaaS, PaaS, and SaaS – see below) involve CSPs taking on progressively greater levels of responsibility.

IT stack[1]	***Legacy systems*** *On prem or private cloud solutions.*	***IaaS – Public*** *Data centres, servers, storage and networking managed by CSPs.*	***PaaS – Public*** *Development and deployment of platforms managed by CSPs.*	***SaaS – Public*** *Business applications managed and delivered by CSPs.*
Infrastructure	Govt. responsibility	CSP. responsibility	CSP. responsibility	CSP. responsibility
Platforms	Govt. responsibility	Govt. responsibility	CSP. responsibility	CSP. responsibility
Software	Govt. responsibility	Govt. responsibility	Govt. responsibility	CSP. Responsibility
Data and devices	Govt. responsibility	Govt. responsibility	Govt. responsibility	Govt. responsibility

1 Categories listed are not comprehensive.
Source: Tozzi (2024) *The cloud shared responsibility model for IaaS, PaaS and SaaS*; Farber (2023) *The importance of the Shared Responsibility Model for Your Data Security Strategy;* Expert consultation; Mandala analysis.

The study collates a range of data inputs to estimate current expenditure on public cloud, and uses this to proxy public cloud adoption

FOUR STEPS TO DEVELOPING A BASELINE VIEW OF CURRENT CLOUD ADOPTION

1 Estimate total ICT spend across Departments and Crown-Entities

To estimate total ICT spend across the whole of government, the analysis combines:

- **'Top down' estimates:** collated estimates from Department of Internal Affairs documents, Budget estimates, and procurement data.
- **'Bottom up estimates:** Multiplying ICT cost per internal estimates from 2017, by the current number of FTE in agencies.

Cross-referencing these sources, we estimate the NZ government departments and crown entities spend ~$2.5B on ICT annually.

2 Estimate current cloud adoption

To estimate current cloud expenditure, the analysis combines:

- **Existing estimates:** the Department of Internal Affairs estimates 13.4% of total ICT spend is on public cloud, and 32.5% of systems are on public cloud, based on a survey of agencies.
- **Procurement data:** we estimate 13% of total expenditure reported in the Pae Hokohoko Marketplace relates to public cloud, excluding migration costs.

The analysis therefore estimates public cloud accounts for 13% of total ICT spend.

3 Distribute ICT and public cloud spend across agency groups

Agencies are mapped to 9 function-size groups (see Section 1 of Methodology).

- Total ICT spend is distributed across these 9 agency groupings according to FTE totals, and sense-checked with public sector experts.
- Cloud adoption profiles across agency groupings are assumed equal to the respective agency groupings in Australia,[1] scaled according to the NZ whole-of-government estimate for cloud adoption (13%).

4 Make projections about BAU based on historical trends

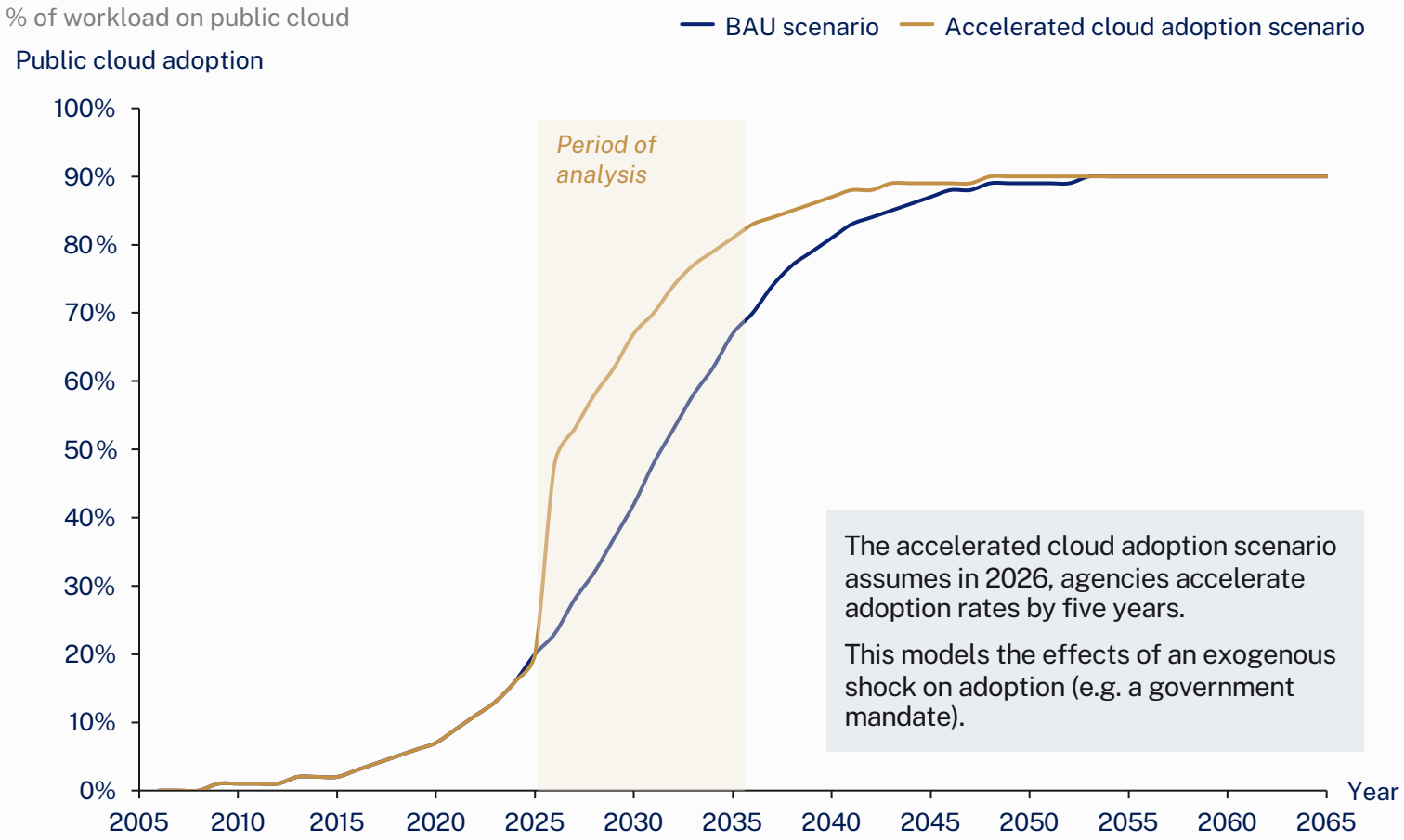
- Comparable analysis of the Australian Federal Government fitted S-curves of adoption for each agency function-size group.
- Assumed the NZ agency groupings follow the same relative future growth pathways (scaled to the NZ context).
- Used these S-curves to project future cloud adoption for each agency grouping.

1 A comparable study was undertaken in Australia. This leveraged AusTender data to estimate levels of cloud adoption for each agency, and project forward historic trends. Limitations in New Zealand's procurement data prevented the same approach.

Source: Department of Internal Affairs (2023) *Proposals for refreshing the Cloud First Policy and strengthening cloud adoption across the public service;* Department of Internal Affairs (2023) *Briefing to Incoming Minister for Digitising Government,* Pae Hokohoko Marketplace (2024) *Total Spend;* The Treasury - Te Tai Ōhanga (2018) *Benchmarking Administrative and Support Services (BASS) (2011-2018):* Mandala analysis

The study compares 'business-as-usual' public cloud adoption with an accelerated scenario that brings forward adoption by five years

Exhibit A5: Large policy and regulation agencies adoption curves[1]



Key discussion

- Adoption of new technologies typically follows a distinct pattern known as an S-curve.
- It represents a slow start as migration occurs, followed by a rapid increase, and then a slowdown as saturation is reached and more complex workloads are migrated.
- Each agency grouping's adoption can be plotted to an S-curve – projecting forward adoption into the future.
- This business-as-usual (BAU) scenario accounts for the fact agencies are pursuing cloud already, due to existing cloud-first policies.
- The 'accelerated cloud adoption' scenario models the effects of an exogenous shock on adoption (for example, a government mandate) that sees agencies accelerate adoption rates by five years.
- Adoption reaches saturation at 90%, with a conservative assumption that government agencies will always have 10% of workloads either on-premises or on private cloud.

Source: Department of Internal Affairs (2023) *Proposals for refreshing the Cloud First Policy and strengthening cloud adoption across the public service;* Department of Internal Affairs (2023) *Briefing to Incoming Minister for Digitising Government,* Pae Hokohoko Marketplace (2024) *Total Spend;* The Treasury - Te Tai Ōhanga (2018) *Benchmarking Administrative and Support Services (BASS) (2011-2018);* Mandala analysis.

Benefits of cloud adoption: direct fiscal savings (I/II)

METHODOLOGY AND KEY ASSUMPTIONS

METRIC	KEY INPUTS AND ASSUMPTIONS	METHODOLOGY	SOURCES
Cost savings from moving from on-premises systems to IaaS – Public	• The cost per workload server of a basic on-premises configuration is $257K. • The cost of an equivalent public-cloud configuration is $27K. • Migration costs per server / virtual machine are $1,900.	• **Using Microsoft's Total Cost of Ownership (TCO) Tool:** Microsoft's TCO Tool compares the costs of on-premise systems to an equivalent public cloud system. A 'basic on-premises system' is defined as 3 X 4 Proc, 8 Core/Proc, 224 GB RAM workload servers, and accompanying database, storage, and networking capacity.	Microsoft Azure (2025) *Total Cost of Ownership Tool.* • Migration costs are based on Microsoft case studies in public sector.
	• Total number of workload servers across whole of government isapproximately 8.5K.	• **Matching bottom-up assumptions with top-down total spend estimates:** Expert consultations provided estimates for the average number of servers per small, medium, and large agency. These assumptions are then scaled, so that the model's estimates for total spend on IT infrastructure approximately matches existing estimates on ICT spend.	• Department of Internal Affairs (2023) *Proposals for refreshing the Cloud First Policy and strengthening cloud adoption across the public service.* • Department of Internal Affairs (2023) *Briefing to Incoming Minister for Digitising Government.* • Pae Hokohoko Marketplace (2024) *Total Spend.* • The Treasury - Te Tai Ōhanga (2018) *Benchmarking Administrative and Support Services (BASS) (2011-2018).* • Microsoft internal experts.

Benefits of cloud adoption: direct fiscal savings (II/II)

METHODOLOGY AND KEY ASSUMPTIONS

METRIC	KEY INPUTS AND ASSUMPTIONS	METHODOLOGY	SOURCES
Cost savings from moving from on-premises platforms and software, to SaaS – Public	• The cost per user of on-premises (i.e. managed in-house) platforms and software is $18,815. • The ongoing cost per user of public cloud platforms and software (e.g. PaaS and SaaS) is $1,300. • Migration costs per user are ~$5,500. • Costs per user in New Zealand are equal to costs per user in Australia.	• **Cost per user of on-premise platforms and software:** To calculate costs per user in the Australia analysis, we divided total spend on IT platforms and software (from AusTender) by the number of users, weighted by the proportion of users on on-premises systems. We assume these per user costs are equivelent in New Zealand, and convert to NZD. • **Cost per user of public-cloud platforms and software:** Based on the average annual cost of E5 License per user.	• AusTender (2025) *Contract Notices.* • Microsoft (2025) *Microsoft 365 plans and pricing.* • Migration costs are based on Microsoft case studies in public sector, and a highly conservative estimate is taken.

Future public cloud adoption	The parameters of the S-curves are:
	• Maximum adoption rate (i.e. saturation point) is 90%.
	• Base year is set to 2005.
	• Growth rates and inflection points vary across agencies, depending on AusTender data.[1]
	The S-curve represents the proportion of workload servers and users on public cloud, compared to on-premises systems.
		• **S-curves are generated for each agency function-size classification (nine groupings in total) by:**
		  • Holding key parameters (maximum adoption and base year) fixed;
		  • Fitting an S-curve for every agency within the grouping, maximising 'goodness of fit'; and
		  • Taking the average of each agency's fitted parameters (growth rate and inflection point).
		• S-curves for Australian agency groupings are assumed equivalent for New Zealand agency groupings, scaling up to meet New Zealand's whole of government estimates for cloud spend (13%).
			• AusTender (2025) *Contract Notices.*
			• Department of Internal Affairs (2023) *Proposals for refreshing the Cloud First Policy and strengthening cloud adoption across the public service.*
			• Mandala analysis.

Benefits of cloud adoption: indirect fiscal savings (I/II)

METHODOLOGY AND KEY ASSUMPTIONS

METRIC	KEY INPUTS AND ASSUMPTIONS	METHODOLOGY	SOURCES
AI-usage	• Share of public service staff using AI in 2025: 16%	• The Government Chief Digital Officer (GCDO) surveyed 99 organisations in the public service. Respondents were asked to assess the extent of AI use in their agency (None, Emerging, Developing, Mature and Advanced). Assuming None = 0% adoption, and Advanced = 100% adoption, we calculate a weighted average of the survey results. 'Planned use' is used to estimate 2025 figure.	• DIGITAL.GOVT.NZ (2023) *Full results: 2023 cross-agency survey for artificial intelligence (AI).*
	• Future adoption of AI in public service follows an S-curve, proportional to the S-curve of public cloud.	• **Adoption of AI-technology**: the use of productivity enhancing AI-tools follows an S-curve, the same as the adoption rate of cloud computing. Each year the share of staff using AI increases at the same percentage point as cloud adoption in each scenario.	• Mandala analysis.

Benefits of cloud adoption: indirect fiscal savings (II/II)

METHODOLOGY AND KEY ASSUMPTIONS

METRIC	KEY INPUTS AND ASSUMPTIONS	METHODOLOGY	SOURCES
AI-productivity gain	• Lower bound: 6.7% • Upper bound: 19.8%	• **Establish productivity gain boundaries:** Set a **lower bound** using current evidence of AI-related productivity improvements. Based on a Microsoft Copilot trial, which reported that civil servants could save an average of 10 hours a month, representing a 6.7% increase in productivity. • Set an **upper bound** representing the maximum productivity gain from AI adoption. This is set at 19.8% which is based on analysis of the total proportion of government tasks that could be automated or augmented though AI-tools. • **Model growth trajectory using S-curve**: Apply an S-curve growth model between the lower bound (in 2026) and the upper bound (2035).	• Microsoft (2024) *Real-World Benefits of Generative AI in the New Zealand public sector.* • Tony Blair Institute for Global Change (2024) *The Potential Impact of AI on the Public-Sector Workforce.*

Benefits of cloud adoption: reduced carbon emissions

METHODOLOGY AND KEY ASSUMPTIONS

METRIC	KEY INPUTS AND ASSUMPTIONS	METHODOLOGY	SOURCES
Carbon emissions of on-premise server	• Single server energy consumption: 0.32kw • Power Usage Effectiveness (PUE) of on-premise server: 2.1 PUE • Grid emission factor: 0.11 $kgCO_2$/kWh • Embodied emissions be server: 1239 $kgCO_2$ • Expected useful life span: 4 years	• **Calculate server energy consumption**: Determine the annual energy consumption per server (measured in kWh/year). • **Account for server/data centre overhead**: Multiply the annual energy consumption by the PUE factor to estimate total energy consumption (kWh/year). • **Calculate operational emissions**: Multiply the total energy consumption by the local grid emission factor ($kgCO_2$/kWh) to determine operational carbon emissions. • **Add embodied emissions**: Add the annual embodied emissions (manufacturing impacts distributed over the server's useful life) to the operational emissions to calculate total annual carbon emissions per server ($kgCO_2$/kWh).	• Microsoft Azure (2025) *Total Cost of Ownership (TCO) Calculator* • Mandala Partners (2024) *Empowering Australia's Digital Future* • Statista (2024) *Emissions from electricity generation in New Zealand* • Embodied emissions based on Azure B4MS server – AWS (2015) *Cloud Computing, Server Utilization, & the Environment*
Carbon emissions of public cloud virtual machine	• Energy consumption per rack: 4 kw • Average servers per rack: 42 • Single server energy consumption: 0.10kw • Power Usage Effectiveness (PUE) of public cloud: 1.3 PUE • Grid emission factor: 0.11 $kgCO_2$/kWh • Embodied emissions be server: 1239 $kgCO_2$ • Expected useful life span: 4 years		• SysRacks (2023) *Server Rack Energy Consumption* • One Chassis (2025) *How many servers are in a data centre* • Mandala Partners (2024) *Empowering Australia's Digital Future* • Statista (2024) *Emissions from electricity generation in New Zealand* • Embodied emissions based on Azure B4MS server – AWS (2015) *Cloud Computing, Server Utilization, & the Environment*
• Calculate total emissions by multiplying the per-server/virtual machine carbon emissions by the projected number of servers/virtual machines in each scenario (BAU and accelerated adoption)			

Benefits of cloud adoption: reduced downtime from outages

METHODOLOGY AND KEY ASSUMPTIONS

METRIC	KEY INPUTS AND ASSUMPTIONS	METHODOLOGY	SOURCES
Annual outages per staff member utilising on-premise server	• Lost productivity per year: 4.2 hours per user • Average hourly wage of civil servant: $48.76 • Hours worked per week: 37.5 • Working weeks per year: 48 • Total number of public service FTE: 195,583	• **Estimate workforce distribution across infrastructure type**: Determine the proportion of the total New Zealand public service (NZPS) workforce using on-premise versus cloud infrastructure by using the projected public cloud adoption S-curves. • **Calculate annual work lost from on-premise outages**: Multiply the number of staff relying on-premise infrastructure by the lost productivity per year (measured in hours). • **Calculate annual work lost from cloud outages**: Multiply the number of staff relying public cloud infrastructure by the lost productivity per year (hours) • **Estimate the economic cost of outages**: Convert total work lost to dollar values by multiplying the hours of lost work from both infrastructure types by the median hourly wage for NZPS employees ($/year).	• IDC White Paper (2018) *Fostering Business and Organizational Transformation to Generate Business Value with Amazon Web Services* • Te Kawa Mataaho Public Service Commission (2025) *Departmental FTE Changes* • Te Kawa Mataaho Public Service Commission (2025) *Crown-Entitity FTE Changes*
Annual outages per staff member utilising cloud virtual machine	• Lost productivity per year: 0.3 hours per user • Average hourly wage of civil servant: $48.76 • Hours worked per week: 37.5 • Working weeks per year: 48 • Total number of public service FTE: 195,583		

Benefits of cloud adoption: improved cyber security

METHODOLOGY AND KEY ASSUMPTIONS

METRIC	KEY INPUTS AND ASSUMPTIONS	METHODOLOGY	SOURCES
Likelihood of a cyber breach on-premise infrastructure	• Share of breaches on-premise: 58% • Breach rate on-premise: 1.4% • Number of notifiable data breaches in 2024 reported by the government: 134 • Number of agencies: 107	• **Determine public cloud breach rate**: Calculate the annual probability of a security breach resulting in financial loss for public cloud infrastructure. Using historical breach statistics and a Bayesian approach with an informative prior and Beta distribution, the analysis establishes a baseline breach rate of 1% per year for public cloud environments. • **Calculate on-premise breach rate**: Determine the on-premise infrastructure breach rate by scaling the public cloud breach rate based on the relative frequency of breaches occurring on non-public cloud infrastructure compared to public cloud infrastructure, using historical breach data. • **Project total number of breaches**: Estimate the expected number of breaches by applying the weighted breach probability (steps 1 and 2 above) to the 2024 baseline breach count, with weighting based on the projected distribution of agencies using on-premise versus cloud infrastructure (proxied by server and virtual machine counts from each scenario).	• Hubbard et al. (2016) *How to measure Anything in Cybersecurity Risk* • IBM (2025) *Cost of a Data Breach Report* • ABS (2022) *Characteristics of Australian Business* • Mandala Partners (2023) *Hyperscale cloud and its benefits to the Australian economy* • Te Tira Tiaki (2024) *2023/2024 Cyber Threat Report*
Likelihood of a cyber breach public cloud infrastructure	• Share of breaches public cloud: 42% • Breach rate public cloud: 1% • Number of notifiable data breaches in 2024 reported by the government: 134 • Number of agencies: 107		
Calculate cost savings from avoided cyber incidents using IBM data. Public sector breach costs imputed for New Zealand by: 1) applying the ratio of Australia and global breach cost figures to the global public sector average breach cost to calculate Australia's average public sector breach cost; and 2) applying the ratio of APS and NZPS staff to calculate New Zealand's average public sector breach cost.			

4 Appendices

- 4A Methodology
- **4B Supporting analysis**
- 4C References

New technologies are modernising governments and driving productivity gains

Governments around the world are embracing digital tools to deliver faster, smarter, and more citizen-focused public services. From AI-powered case management systems to real-time data sharing across departments, digital transformation is reshaping how governments operate.

New Zealand has made strong progress, increasingly adopting cloud solutions and improving in digital government maturity.

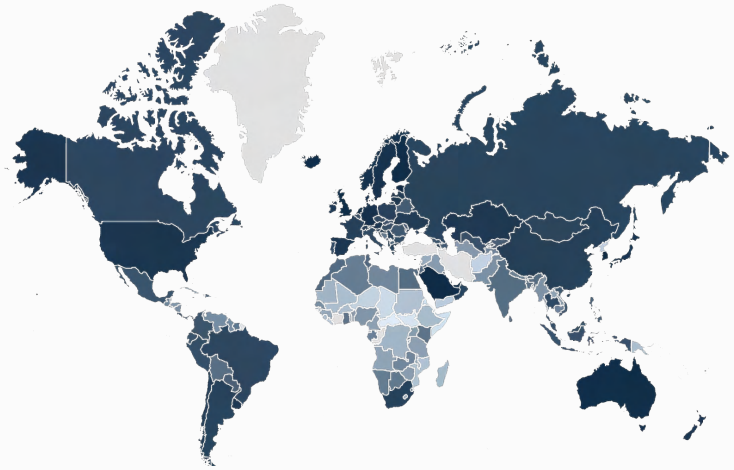
Leading countries are using digital technologies to achieve:

- **Productivity gains**: automation and digitisation reduce manual workloads, leading to faster service delivery and cost savings.
- **Enhanced service quality**: digital platforms enable more personalised and accessible services.
- **Data-driven decision making**: real-time data analytics support informed policymaking and resource allocation.
- **Increased transparency and trust**: digital systems can improve accountability and public trust through better information dissemination and engagement channels.

Source: Mandala analysis.

Exhibit A6: E-Government Development Index

2024 — Developed E-Government — Developing E-Government



UK

- **70% of government bodies** surveyed were piloting and planning AI use cases.
- UK Government developed *Extract*, an AI tool that saves workers up to **250,000 hours** by automating document reviews.

Estonia

- Rolled out over 130 AI implementations across public sector operations.
- Established an AI-powered health information system that integrates patient data for real-time analytics, and clinical decisions.

Australia

- The New Zealand Government undertook a whole-of government trial of Copilot.
- Achieved time savings of up to 1 hour daily on core government tasks.
- 86% of staff wanted to continue using AI tools after trial completion.

New Zealand

- The New Zealand Government undertook a survey of 20 agencies actively using AI.
- It identified 63 AI use cases – 51 focused on productivity and 12 on improving customer experience.
- Health agencies are most active with 27 use cases.

Note: UN E-Government Development Index measures how well countries use information and communication technologies to deliver public services and engage with citizens online.

Source: UN E-Government Knowledgebase (n.d.) *Country data;* Gov.UK (2025) *PM unveils AI breakthrough to slash planning delays and help build 1.5 million homes;* National Audit Office (2024) *Use of artificial intelligence in government;* RIT (n.d.) *Estonian Government Cloud*; Minevich (2025) *What the US can learn from Estonia's AI-powered digital government*; Hamer (2024) *Case study: AI implementation in the government of Estonia;* Mandala analysis.

Public cloud enables AI adoption across public service delivery, enhancing both effectiveness and quality for citizens

Exhibit A7: Indirect benefits of adopting cloud-based IT infrastructure

The adoption of cloud infrastructure enables use of automated systems and AI solutions. These will in turn drive productivity gains across the New Zealand Government.

Service delivery

- **Automated processing and 24/7 accessibility** can be enabled through AI, which can handle routine tasks like application processing, document verification, and initial inquiries through chatbots.
- **Personalised service and predictive analytics** through AI helps to analyse citizen data, provide tailored recommendations, and predict service needs.

15% **increase in worker productivity** for customer-support agents with access to AI.

Policy development

- AI can support productivity in **policy development** by automating labour-intensive research and analysis of information.
- Efficient **stakeholder engagement** can be supported with AI, such as recording and analysing public consultations to identify key themes and concerns.

40% average **reduction in time** taken on writing tasks with an **18% increase in quality**.

Inter-agency coordination

- AI supports **real-time data integration and shared analytics**, such as creating unified dashboards that automatically aggregate data from multiple agencies.
- AI can **automate workflow coordination and resource optimisation** by mapping inter-agency processes, eliminating redundancies, and directing tasks to the most appropriate agency.

37% **reduction in processing errors** due to workflow automation.

Source: Brynjolsson et al. (2023) *Generative AI at Work*; Microsoft and Tech Council of Australia (2023) *Australia's Generative AI Opportunity*; Noy and Zhang (2023) *Experimental evidence on the productivity effects of generative artificial intelligence*; Point Star Consulting (2025) *2025 Workflow Automation Trends: Key Statistics and Insights for Success;* Mandala analysis.

4 Appendices

4A Methodology

4B Supporting analysis

4C References

References

AWS (2015) *Cloud computing, server utilisation, and the Environment*

Brynjolsson et al. (2023) *Generative AI at Work*; Microsoft and Tech Council of Australia

Cloud Carbon Footprint (2025) *Embodied Emissions* – embodied emissions based on Azure B4MS server

CVEdetails.com (2025)

Department of Internal Affairs (2023) *Proposals for refreshing the Cloud First Policy and strengthening cloud adoption across the public service*

DIGITAL.GOVT.NZ (2023) *Full results: 2023 cross-agency survey for artificial intelligence (AI)Services*

Farber (2023) *The importance of the Shared Responsibility Model for Your Data Security Strategy*

Floerecke and Lehner (2020) *Cloud computing ecosystem model: evaluation and role clusters*

Health New Zealand Te Whatu Ora (2024) *Annual Report*

IBM (2025) *Cost of a Data Breach Report*

IDC White Paper (2018) *Fostering Business and Organizational Transformation to Generate Business Value with Amazon Web Services*

idm (2024) *Guardrails for GenAI;*

Mandala Partners (2023) *Hyperscale cloud and its benefits to the Australian economy*

Mandala Partners (2024) *Empowering Australia's Digital Future*

Microsoft and Tech Council of Australia (2023) *Australia's Generative AI Opportunity*

Microsoft (2024) *How generative AI is driving results in New Zealand's public sector*

Microsoft (2024) *Real-World Benefits of Generative AI in the New Zealand public sector*

Microsoft Azure (2025) *Total Cost of Ownership Tool*

Ministry of Transport (2015) *New Zealand Household Travel Survey*

National Cyber Security Centre (2024) *2023/2024 Cyber Threat Report*

National Transport Commission (2024) *Light vehicle emissions intensity in Australia: trends over time*

New Zealand Government Procurement (2024) *Government Electronic Tenders Service (GETS) data*

New Zealand Public Service Announcement (2025) *Lifting the lid: the use of AI in New Zealand Public and community*

Noy and Zhang (2023) *Experimental evidence on the productivity effects of generative artificial intelligence*

NZ Digital (2024) *Cloud First Policy*

One Chassis (2025) *How many servers are in a data centre*

Oxford Insights (2024) *Government AI-Readiness Index*

Pae Hokohoko Marketplace (2024) *Total Spend*

Point Star Consulting (2025) *2025 Workflow Automation Trends: Key Statistics and Insights for Success*

Statista (2024) *Emissions intensity from electricity generation in New Zealand*

StatsNZ (2025) *Productivity statistics*

SysRacks (2023) *Server Rack Energy Consumption*

Te Kawa Mataaho (2024) *Latest public service workforce data released.*

The Treasury - Te Tai Ōhanga (2017) *Administrative & support Services Benchmarking Results*

Tony Blair Institute for Global Change (2024) *The Potential Impact of AI on the Public-Sector Workforce*

Tozzi (2024) *The cloud shared responsibility model for IaaS, PaaS and SaaS*;

UN E-Government (n.d.) *Country information: New Zealand*

Whyman (2021) *Secrets From Cloud Computing's First Stage: An Action Agenda for Government and Industry*

MANDALA