Government on Commercial Cloud (GCC 2.0)

Bringing modern innovations and capabilities of commercial cloud computing platforms to Government IT systems

What is the Government on Commercial Cloud (GCC) service?

GCC allows Singapore government agencies to tap on commercial cloud software – provided by multinational conglomerates – to incorporate advanced functionalities into their digital services.

Think of GCC as a "wrapper" platform for the onboarding of government digital services into the Cloud. This means that agencies do not have to reinvent the wheel by building customised cloud infrastructure or maintaining hardware on-site.
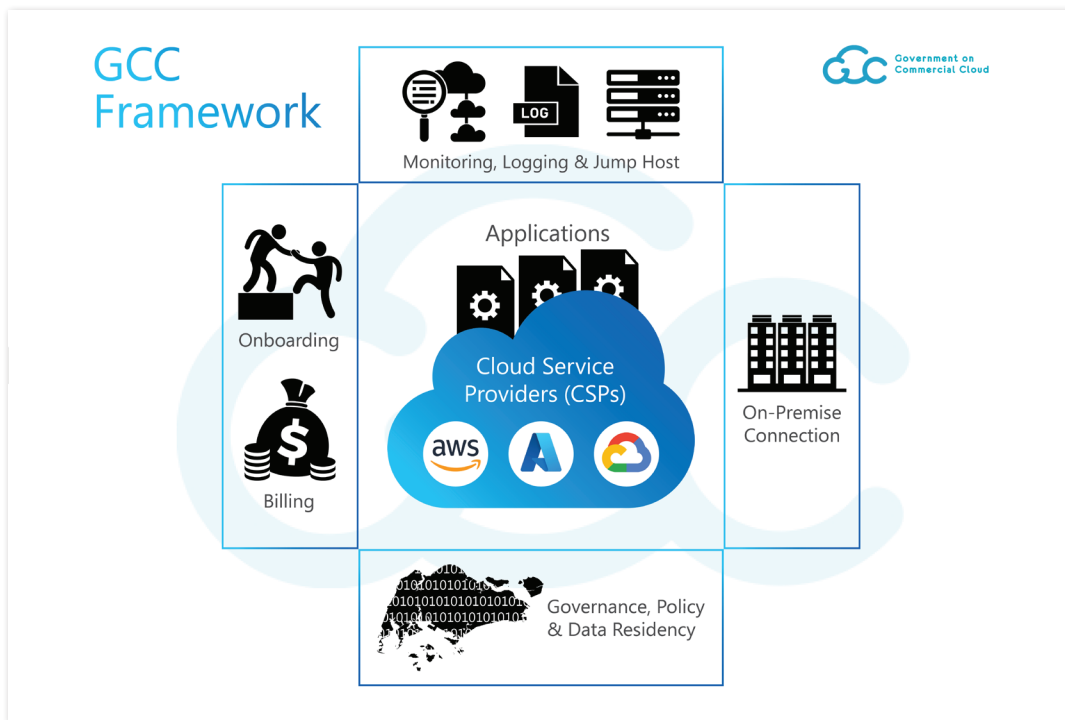
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Fig 1: Illustration of GCC's "wrapper" platform

Hosting digital services on GCC brings the modern innovations and capabilities of commercial cloud computing platforms to less-sensitive government systems. Government agencies thus gain access to a global ecosystem of ready-made solutions to add advanced features to their digital services, instead of trying to create a brand-new solution from scratch. These leading ICT capabilities are augmented by robust cybersecurity measures and systems to protect the data that resides on commercial cloud platforms.

Part of CODEX

GCC is a key part of CODEX (Core Operations, Development Environment, and eXchange), the digital platform that enables the Singapore government to deliver better digital services to citizens faster and more cost-efficiently.

Other pillars of CODEX include the Singapore Government Technology Stack (SGTS) which is designed for modern app development and the Government Data Architecture. CODEX is one of the Strategic National Projects under Singapore's Smart Nation initiative.

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*The DGB is a statement of the Singapore Government's ambition to better leverage data and harness new technologies, and to drive broader efforts to build a digital economy and digital society, in support of Smart Nation.

GCC in Action

Overall, GCC allows GovTech and other agencies to pursue government digital transformation and advancement of citizen and business services through cloud capabilities.

Product teams in GovTech and other agencies can focus on building and delivering digital applications for citizens in a faster and more scalable way. With GCC, application testing and deployment can be automated and done in real-time, speeding up the delivery of high-quality government digital services to citizens and businesses.

By mid-2021, around 600 systems have been successfully migrated to the cloud, and we are on track to have more than 70% of eligible systems on the cloud by the end of 2022 – achieving a key performance indicator of Singapore's Digital Government Blueprint (DGB).*

Key Singapore Government Services on GCC include:

- **GoBusiness** and **GoBusiness Licensing Portal**: The GoBusiness platform provides businesses with easy access to over 300 Government-to-Business e-services, including applications for licenses.

- **SupplyAlly**: A mobile app that facilitates logistics distribution

- **SHIP-HATS**: SHIP (Secure Hybrid Integration Pipeline)-HATS (Hive Agile Testing Solutions) is a multi-tenanted Software-as-a-Service (SaaS) for government developers that is part of SGTS.

- **WOGAA** (Whole-of-Government Application Analytics): A platform that monitors the performance of government websites and digital services in real-time.

- **MyCareersFuture**: A job search and career guidance portal by government agencies

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Use Cases of GCC

- **Taxation**: The Inland Revenue Interactive Network (IRIN), the integrated tax administration system of the Inland Revenue Authority of Singapore (IRAS), migrated to GCC in 2021 to improve the user experience for taxpayers through the shift to microservices. For example, taxpayers can complete their tax obligations – from tax assessment to payment in one sitting. The tax submission processes for corporate taxpayers have been simplified, and more integrated with their corporate systems and accounting software.

- **Education**: During the COVID-19 pandemic in 2020, the Ministry of Education (MOE) was able to successfully enable home-based learning (HBL) within a week's notice. It was possible due to the hosting of its Student Learning Space (SLS) on the GCC, which allowed SLS to tap on cloud IaaS and PaaS functionalities to deliver a seamless and smooth HBL experience for students.

GCC also allowed SLS to meet the increased demand for HBL during the pandemic, by scaling its uptake from 100,000 to 300,000 concurrent students.

Meet The New GCC 2.0

To improve the user experience, GCC has been redesigned as GCC 2.0. GCC 2.0 offers a simpler onboarding process and fewer service requests, while meeting increased needs for automation and cloud-native solutions.

GCC 2.0 will be leveraged as a Whole-of-Government (WOG) platform along with the SGTS for modern app development in the government.

- Software approach to infrastructure: Utilises Infrastructure as Code (IaC) to implement a core cloud platform

- Native cloud solutions: Encourage more usage of native cloud solution for more dynamic configuration controls and less static system-wide controls

- Identity and access management (IAM) focused: Utilisation of roles for security beyond networks, where multiple accounts are consolidated to Single Sign-On (SSO) accounts to enable strong account identity

The roadmap for the development of GCC 2.0 including its integration with different cloud service providers and the implementation of a co-sourced model is as shown below.
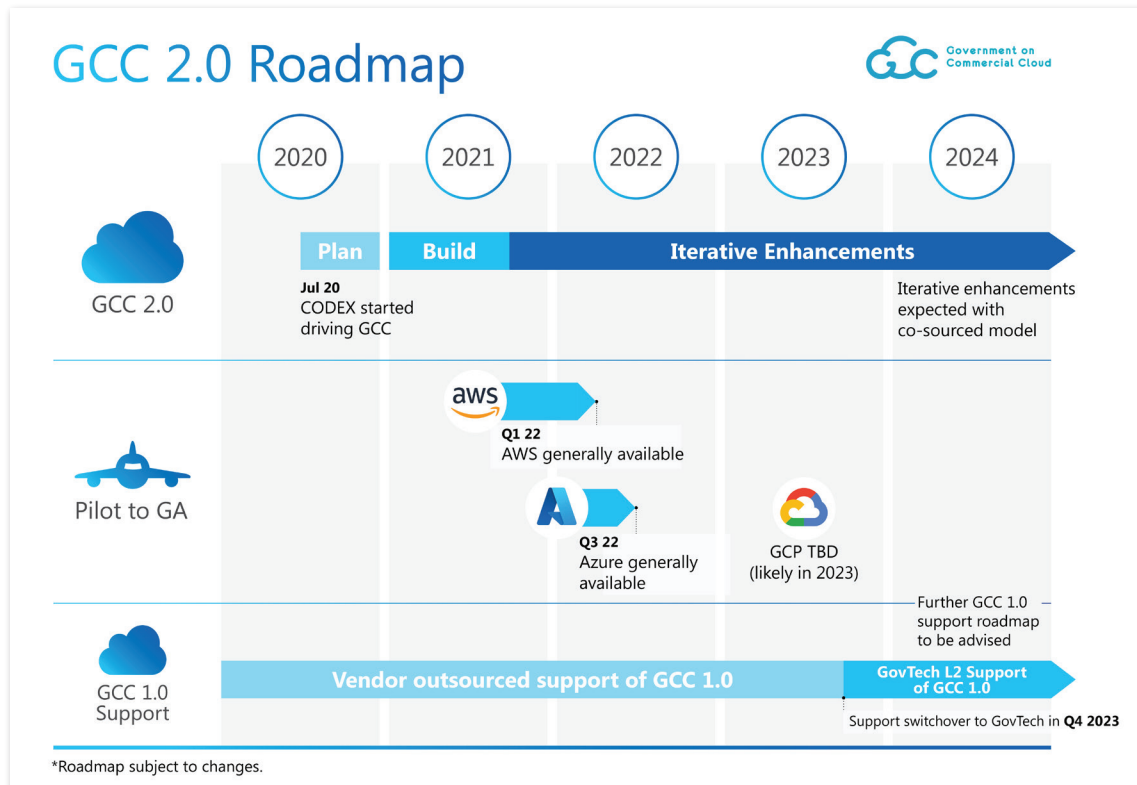

Fig 2: Fig 2: GCC 2.0 roadmap

Key Features of GCC 2.0

- Simplified onboarding process: GCC 2.0's onboarding process and experience has been streamlined to be on par with the standard industry practice. Users can onboard GCC 2.0 solely using TechPass, an IAM solution developed by GovTech. Simplified onboarding enables engineers to come on board quickly and start their development activities immediately.

- Automated workflows: The workflow for creating various user accounts and managing cloud users are automated in GCC 2.0, shortening the turnaround time and eliminating the need to create service requests.

- Enhanced cybersecurity: The Secure Engineering Environment Device Platform (SEED) used by GCC 2.0 provides greater visibility of the endpoints leading to continuous, real-time security posture analysis. It is a paradigm shift from the traditional perimeter-based security model to a Zero Trust model. If a non-compliant device tries to access government engineering resources, SEED automatically revokes access for this device.

- Improved observability, auditability, and monitoring: GCC 2.0 adopts a Policy-as-Code approach where policies are defined, updated, shared and enforced as code. This means all resources provided, by default, will have a policy compliance check. GCC 2.0's compliance checking happens in real-time to check for security vulnerabilities.

- Continuous compliance: A light-touch approach towards cloud-native solutions is adopted. Native solutions from Cloud Service Providers (CSPs) are used to achieve continuous compliance. By default, all the resources provisioned have a policy compliance check as well. By defining policies as codes, the latency in security assessments is reduced, making it possible to evaluate the compliance state of cloud workloads quickly and for resource configuration changes to be detected earlier.

Collaboration

We look forward to exchanging ideas on GCC, and discussing how our experience in developing government digital applications and services on commercial cloud can help your digital transformation journey.

• Explore the Singapore Government Developer Portal for GCC and other GovTech-developed solutions at **go.gov.sg/gcc-overview**

• Get in touch with the GovTech team at **tmo@tech.gov.sg**.

• For more information about Singapore's Digital Government Journey, visit this **page**.