Government Cloud Enablement Platform

Change lives with a new era of government services.

Consolidate your digital assets and maximize common processes with Nokia Government Cloud Enablement Platform (G-CEP). G-CEP stimulates creativity by bringing localized computing, storage and network resources to individual departments, while controlling those resources from a central location as a single virtual datacenter.

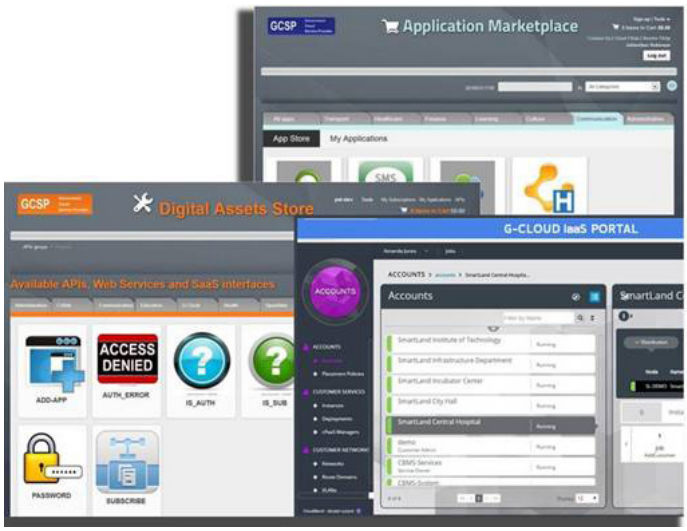
Distributed resources, centralized control

Nokia has designed an inclusive, end-to-end approach that lets you capture and streamline your government's local services development through a distributed open cloud infrastructure. G-CEP combines the benefits of a centralized management system with distributed datacenter resources in a scalable architecture.

Through G-CEP, you can bring localized computing, storage and network resources to individual public service organizations. They benefit from local computing, storage and network resources that live on the premises, which means very low latency and high service quality for the citizens they serve.

G-CEP provides you a unified view, controlling these distributed resources from a central location as a single, virtual datacenter.

With its distributed cloud model, G-CEP consolidates IT silos. And it encourages teams on the ground to create and build services that can be broadly shared, bringing real value to the public.



G-CEP offers platform services that can be opened to application developers. The developers build and share each application and the dataset becomes a foundation for the development of more end-user applications. This is Government as a Platform—or GaaP.

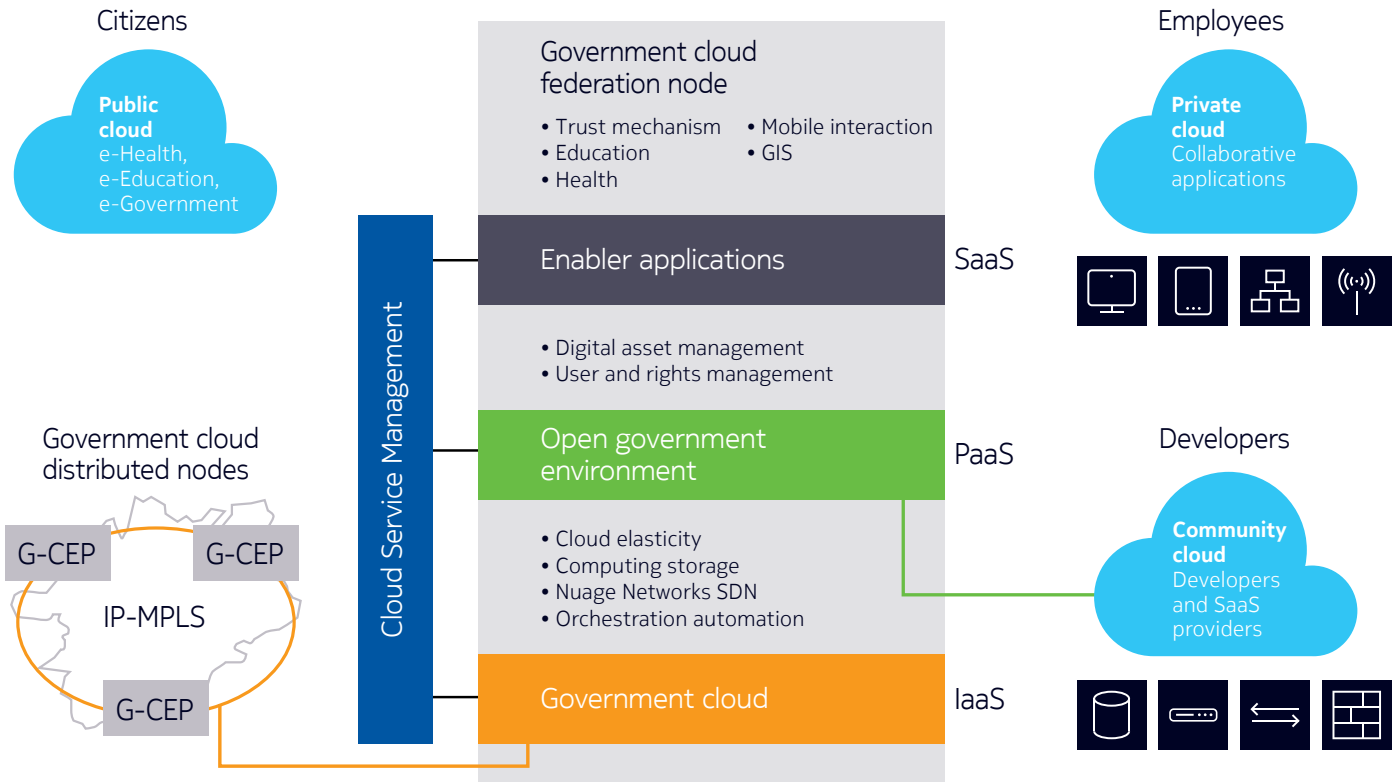
How do we do it?

Nokia's G-CEP solution offers three layers in a turnkey implementation.

- **Government distributed cloud infrastructure – Infrastructure as a Service (IaaS)**
  At its core is a single G-CEP federation node that provides a centralized cloud orchestration and management system. Distributed cloud nodes embed network, server and storage infrastructure locally.
- **Open government environment (OGE) – Platform as a Service (PaaS)**
  An open API platform, our OGE provides a secure, controllable gateway through which you can share your government's digital assets with application developers, SaaS providers, and those who own your datasets. You maintain control of your government's digital assets, and the OGE allows role-based / domain-based access so you can comply with the different policy requirements across different areas.

  The OGE also provides the identity provider—or IDP—function. An identity federation function redirects all authentication and authorization requests to the G-CEP platform. This allows access to internal and external SaaS services via a unique single sign on (SSO) for end users.
- **Government enabler applications – Software as a Service (SaaS)**
  This layer provides common software tools and processes—enabler applications such as authentication, e-signature, or mobile communications—which can then be embedded in new end-user applications.

Figure 1. Government Cloud Enablement Platform



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Key features

Government distributed cloud infrastructure (IaaS)

- Uses market-standard cloud stacks
- Comes in predefined small, medium and large form factors
- Includes pre-integrated cloud software designed for distributed clouds
- Provides application-specific network bandwidth with low end-to-end latency
- Offers a complete technical environment for datacenter virtualization and cloud service

Open government environment (PaaS)

- Provides an enabling environment for application developers in various public service sectors
- Serves as a collaboration tool to develop new apps and services by opening its interfaces to all stakeholders in the public sector
- Offers developer access to G-CEP core features via a comprehensive and secure set of northbound interfaces based on XML, REST, SOAP and web services technologies
- Enables public access to data directories while controlling, monitoring, recording and monetizing all access via a real-time API gateway
- Provides stable interfaces for the applications consuming your digital assets and efficient management of their updates and status
- Connects government digital assets to reachable end-points via stable APIs, thereby guaranteeing maximum usability and consistency
- Allows each addressable asset to become a building block in the creation of other applications

Government enabler applications (SaaS)

- May be shared across all government bodies, so you can enforce common processes regardless of agency
- Are based on open technologies
- Expose their capabilities via the OGE
- Includes pre-embedded enablers: trust mechanism and mobile interaction

Trust mechanism

This enabler provides a common trust mechanism for:

- **Strong authentication of users:** Verifies user identity when accessing an information service or performing a transaction
- **e-Signature document certification:** Enables transactions between two parties, creates a legally-binding e-signature, and serves as a universal legal proof
- **e-Safe:** Provides secure storage and legal proof creation and ensures transaction traceability

Mobile interaction

This enabler is a powerful campaign management system with mobile interaction toolsets based on SMS and MMS. Mobile services examples include:

- SMS notifications to individuals
- SMS campaign management (target populations)
- Mobile integration with EDM (Electronic Document Management) applications

Key benefits

G-CEP reduces complexity and cost while fostering the grassroots initiatives that are serving your citizens so well.

- Consolidate silos between departments
- Foster grassroots ideas and development, and manage it from a single virtual datacenter
- Coordinate with external service providers securely
- Consolidate datacenters through virtualization and outsourcing with a platform that allows both
- Trust in the security of a private, in-house cloud infrastructure
- Control, trace and monetize access to digitized government data through a centralized API control gateway that lets you comply securely with Open Data policies
- Create consistency with a set of trusted applications that can be used across departments

Technical specifications

A deployed G-CEP environment will include:

- One Federation Node that provides IaaS, PaaS and SaaS layers
- One or several Distributed Nodes that provide a scalable IaaS depending on the required network topology, user distribution scheme and deployment scale.

Table 1. G-CEP Federation Node

G-CEP Federation Node	Related components	Product information
G-CEP IaaS layer	IP-MPLS node	7750 SR and 5620 SAM
	SDN	Nuage Networks Virtualized Services Platform (VSP)
	Cloud node	CloudBand Infrastructure Software
	Commercial rack server	Validated with Nokia AirFrame, HPE C7000, Dell PowerEdge R730, etc.
G-CEP PaaS layer	Cloud orchestration	CloudBand
	Open Government Environment	API Management System
	User and rights management	SAML IDS
G-CEP SaaS layer	Mobile interaction	SMS and Mobile Service Platform
	Trust mechanism	Access Control Server, Time Stamping Server, Validation Server, Secure Storage Server and Signature Server

Table 2. G-CEP Distributed Node

G-CEP Distributed Nodes	Related components	Product information
G-CEP IaaS layer	IP-MPLS node	7750 SR or 7450 ESS, Nuage Networks Virtualized Services Controller (VSC) and Virtual Routing & Switching (VRS)
	SDN	Nuage Networks Virtualized Services Platform (VSP)
	Cloud node	CloudBand Infrastructure Software
	Commercial rack server	Validated with Nokia AirFrame, HPE C7000, Dell PowerEdge R730, etc.

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Table 3. About the Nokia products

Product	Description
Nokia 7750 Service Router Nokia 5620 Service Aware Manager	Nokia's IP-MPLS service routers—integrated with a central service aware manager—provide applications with direct access to network quality of service (QoS)
Nokia CloudBand Infrastructure Software	Pre-integrated, mounted and tested server computing, storage and switching for the VNF Infrastructure Manager (VIM). Validated with Nokia AirFrame, HPE C7000, Dell PowerEdge R730, etc.
Nuage Networks™ Software Defined Networking	Our SDN solution is fully integrated with CloudBand and allows network resources to be as consumable as compute and storage resources
Nokia CloudBand	The distributed cloud infrastructure is managed by a single centralized management and orchestration system (MANO)

Nokia solutions for government

Build competitive nations, smart cities, and long-term sustainability with ultra-broadband communication networks for governments.

Ultra-broadband networks are at the heart of government modernization projects. They connect citizens and businesses to the digital world and provide cities with smarter services that optimize resource use and management.

Nokia is at the forefront of IP, broadband and cloud innovation. We bring our knowledge and experience to help you select the right models and the best networking technologies for your government. Working with our comprehensive partner ecosystem, you can deploy the ultra-broadband communications infrastructure that ensures a prosperous and sustainable future for your citizens.

Discover Nokia solutions for governments at https://networks.nokia.com/solutions/government-cloud-enablement-platform

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