

Modernizing Applications Using CStack (Container Stack)

An SGTS Runtime Product Brought to you by GDS Central



A quick word from our main sponsors...



#SGTSBehindCitizens&Businesses







58 Agencies Onboarded

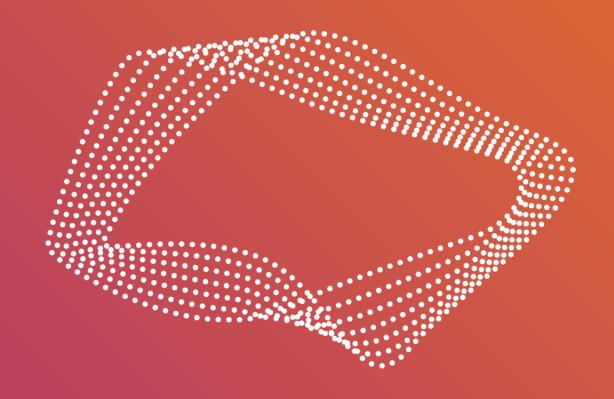


275 Systems

>3,000 Active Developers

150-200 enabled through training

Singapore Government Tech Stack (SGTS)



Say Hello to

SGTS

A set of central platform tools that streamlines and simplifies the development and monitoring process

and enables code reuse across WOG to build and monitor secure, high quality applications.

#platformengineering



Say Hello to

SGTS

Agency Built Applications

AGENCY FREE TO FOCUS ON SECURITY AND COMPLIANCE JUST FOR THEIR APPS

SG Tech Stack (SGTS)

PLATFORM TOOLS THAT ARE POLICY-COMPLIANT

Service Layer

USE AS PER NEED REUSABLE COMPONENTS

Base Layer

HIGHLY RECOMMENDED, STANDARD DEVELOPER TOOLS

Hosting Layer

MANDATED TO USE GOVERNMENT ON COMMERCIAL CLOUD



SGTS - Unpacked

Agency Built Applications

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SG Tech Stack (SGTS)

PLATFORM TOOLS THAT ARE POLICY-COMPLIANT

Service Layer

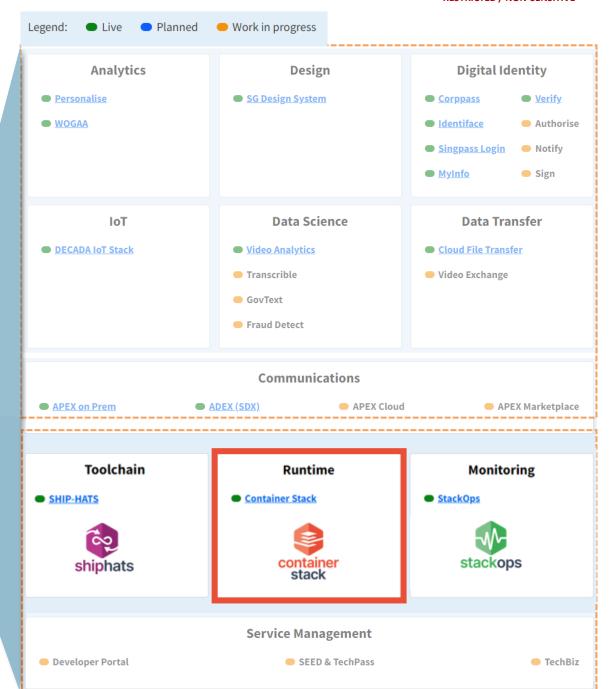
USE AS PER NEED REUSABLE COMPONENTS

Base Layer

HIGHLY RECOMMENDED, STANDARD DEVELOPER TOOLS

Hosting Layer

MANDATED TO USE GOVERNMENT ON COMMERCIAL CLOUD





Benefits of SGTS



Access to templates, and self-service capabilities with automated infrastructure operations that are IM-compliant, to reduce cognitive workload on engineers.



Increased transparency into the development process, and greater operational insights



Levelling up of **DevSecOps maturity** within agencies and across the government



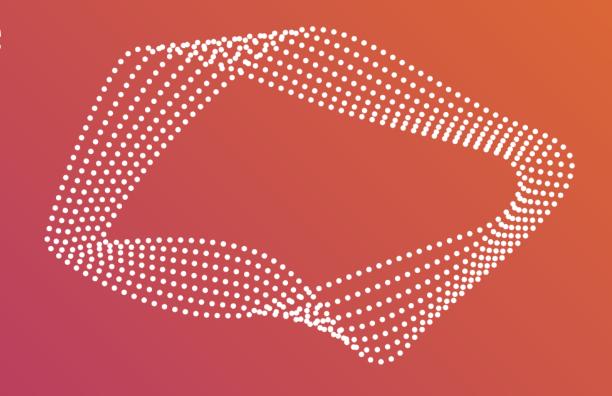
Vendor Partners

Enhanced capabilities ready to partner various government agencies deliver apps using SGTS



How to deliver bespoke apps faster?
From initial setup to releasing frequently...

Learn how to leverage the cloud and get ourselves from zero to running in the shortest time







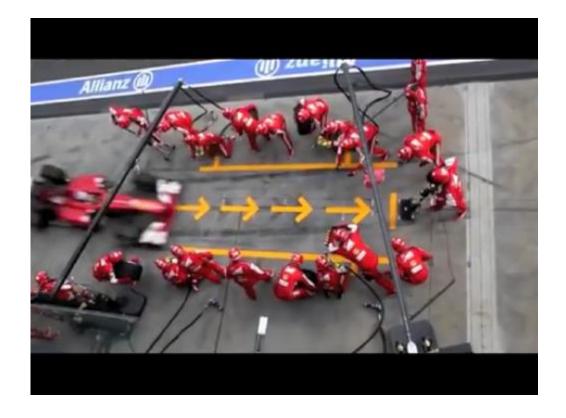
https://www.youtube.com/watch?v=RRy_73ivcms





What going faster looks like...

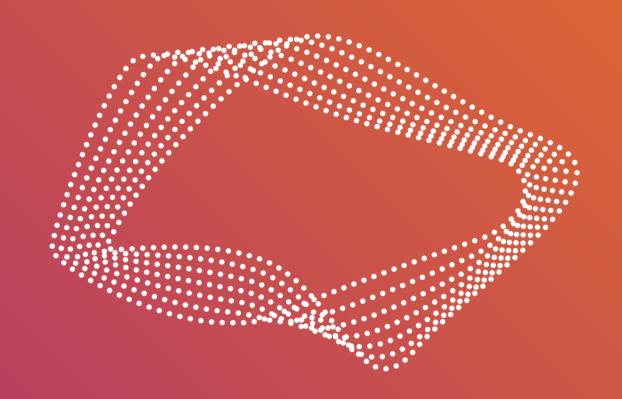






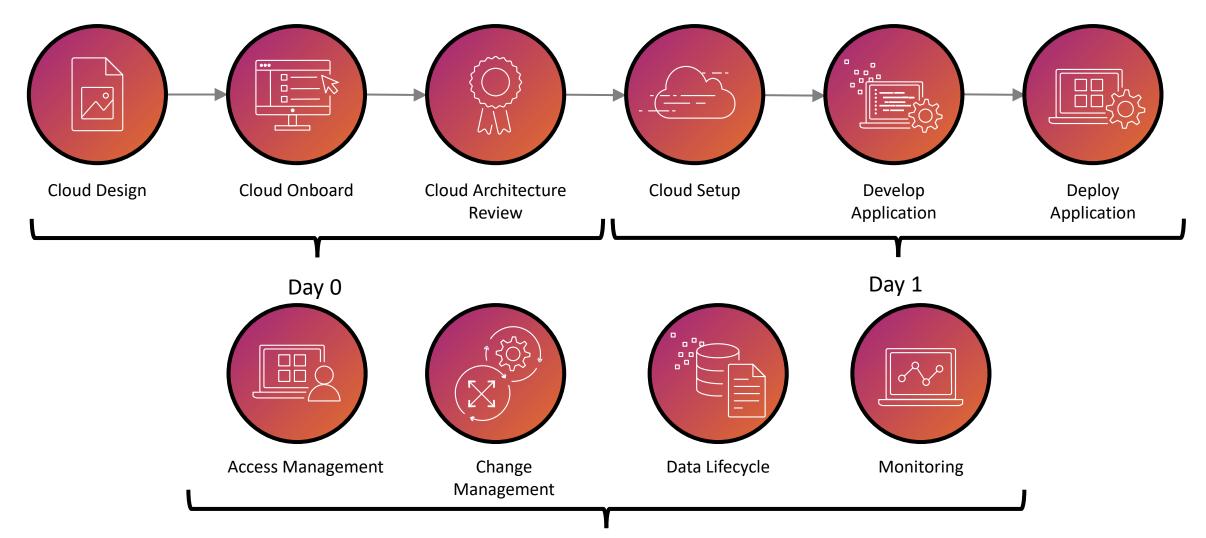
Let's imagine you have a new project today

How and where do you start?



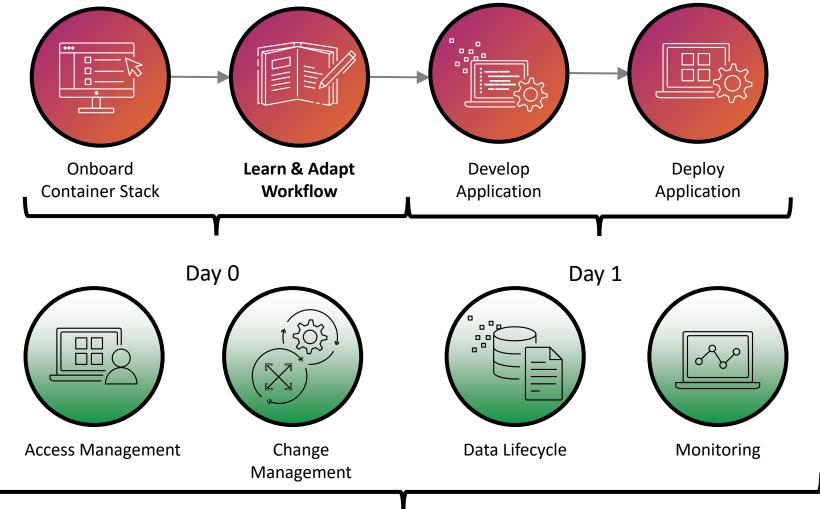


Without CStack





With CStack







Message of the Day

Modernising your applications can be challenging if it's your first time.

Setting up and running **compliant infrastructure** for modern architectures can make it difficult to get started.

Going fast can be **daunting** when you're building and **managing everything yourself**.

CStack helps you achieve sustainable app modernization using containers and Kubernetes.

Interested? Contact us to find out more!



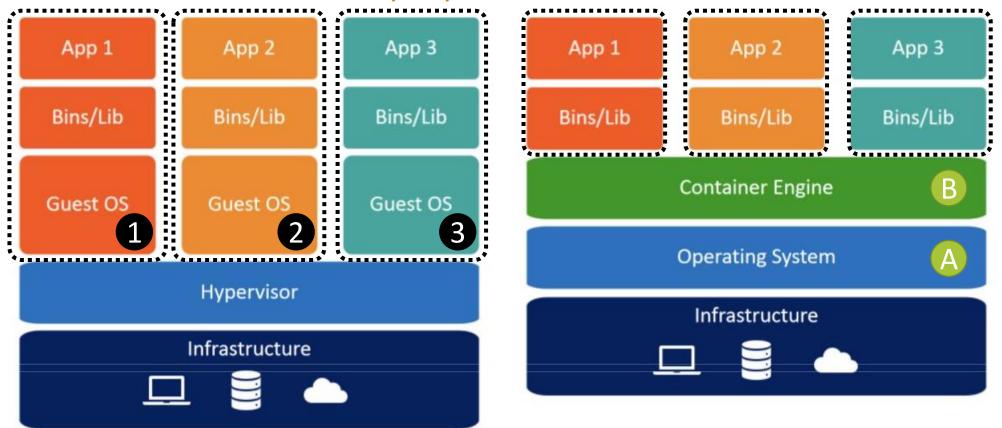
Why should WE care about Containers?





Virtualization vs. Containerization

Containers have a smaller footprint



Virtual Machines

Containers





Why care about **Container Technology**?

1

Achieve Consistency across Environments

Unlock the power of *immutable application infrastructure.*Consistent across environments.

Scalability & Reliability with Orchestration

Seconds to spin up containers **vs. minutes** to spin up EC2s. **Self**-**healing** capabilities with k8s!

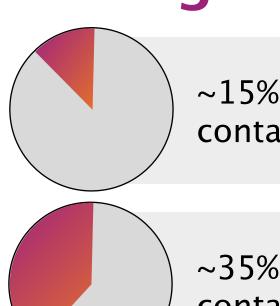
Portability of Workloads

Deploy locally on your machine, remotely to the cloud, to a data centre – *it's the same!*

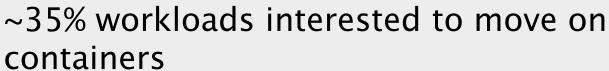


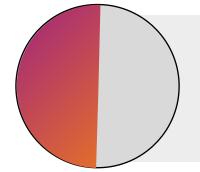


Are Govt Agencies using Containers?



~15% of existing workloads are on containers



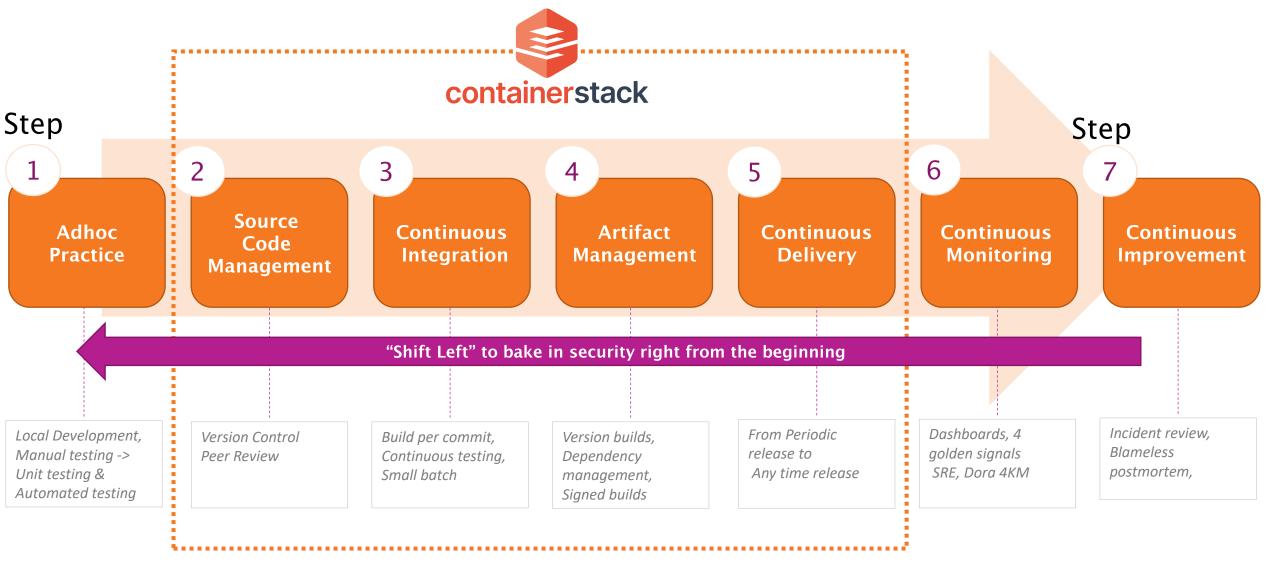


Rest are in wait & watch!



DevSecOps maturity model for Agencies







Tell us a bit about the agency you are supporting

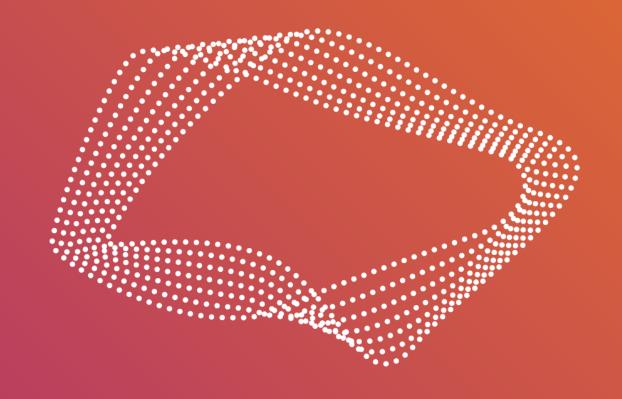
Will only take ~3 minutes ☺



https://go.gov.sg/runtime-survey



Introducing CStack (Container Stack)



Product Vision

To be the <u>SGTS Container Platform</u> that <u>simplifies compliance</u> and enable teams to <u>build and deploy apps</u> (not infrastructure)



Who should use

CStack

- For all Agency Systems that are Cloud Confidential (Eligible) and below
- Subscription by Agencies
- Greenfield/modernization projects



Product Overview



Under-the-Hood

- ✓ GCC & Kubernetes (AWS EKS)
- ✓ CNCF components
- ✓ CI/CD (SHIP 2.0)
- ✓ Monitoring (StackOps)
- ✓ Privileged Access Management (Teleport)

Benefits

- ✓ Ready-to-use environments
- ✓ Pre-configured setup for end to end
- ✓ In-built platform security & compliance
- ✓ Automated build and deployment
- ✓ Managed Platform for Containers



Key Features



Managed Platform for Compliance

- ✓ EKS and component upgrades managed by the platform team
- ✓ Save time on platform compliance, focus on application security

Out-of-the-box Pipeline for Containers

- ✓ Pre-defined base pipeline to build, scan and upload image
- ✓ Extensible pipeline to tailor for project automation needs

Automated Deployments using GitOps

- ✓ Secured runtime platform with pull-based operators
- ✓ Code repository as declarative source of truth for runtime

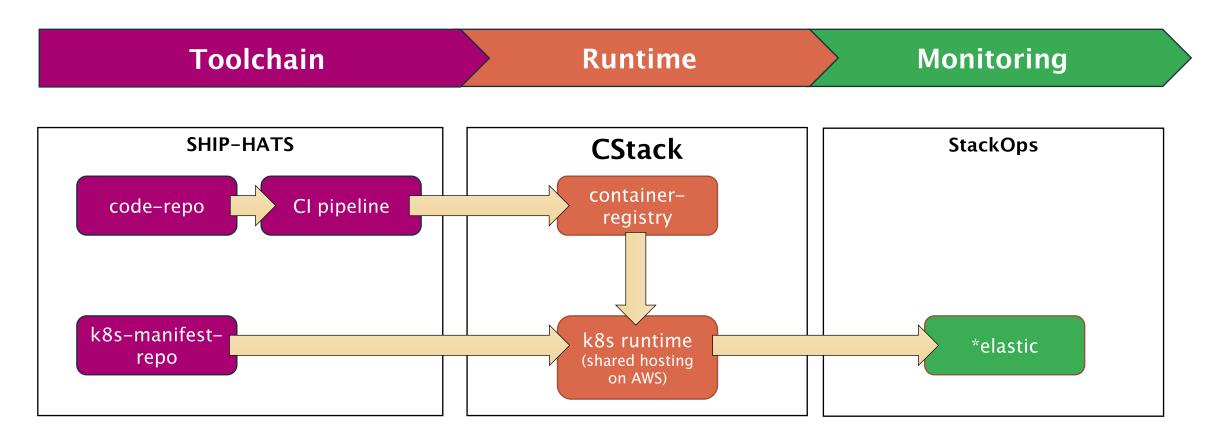
Integration to Cloud Resources

- ✓ Provision cloud resources without Terraform or Ansible
- ✓ Managed configurations and integrations for security and compliance



Application deployment on CStack

CStack is an SGTS runtime, leverages on SHIP-HATS and StackOps to provide tenants with an **end-to-end development & deployment** experience.

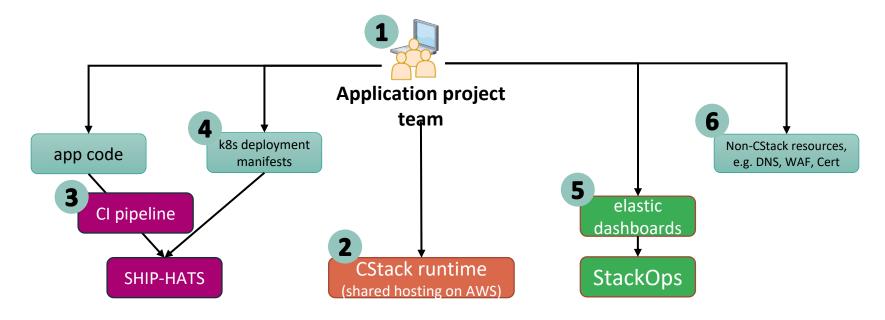




What do I need to use CStack (Shared)?

- 1 SEED enabled developer endpoint devices
- 2 CStack subscription (SHIP-HATS subscription required GitLab only)
- 3 Basic container build and SHIP-HATS experience

- 4 Basic Kubernetes manifest experience
- **5** Basic monitoring and Elastic (StackOps) experience
- 6 Separately procure and manage your own DNS, WAF, Certs, etc.







Adopting CStack (Shared) Model Today

1. Trial and explore (~1 mth)

2. Migration

3. Go-live

- Develop test container-based application with SHIP-HATS pipeline
- 2. Deploy test application on **CStack**, <u>assess</u> <u>feasibility against final requirements</u>
- 3. Monitor test application with

- 1. Implement application on **CStack**
- 2. Migrate data onto **CStack** (if any)
- 3. Perform UAT & security testing for application
- 4. Prepare for Day 2 ops

- 1. Day 2 ops
- 2. On-going application enhancements

SGTS will support the adoption journey





Why choose CStack?

1

Faster Time to Market

- ✓ Save time from cloud setup and review
- ✓ In-built compliance and best practices
- ✓ Reduced VAPT scope for faster product releases
- ✓ No procurement overheads to get started

2

Security for Public Sector Needs

- Container platform complies to security needs
- ✓ Support up to Confi-Cloud (Eligible)
 Systems with CStack
 on GCC 2.0

3

Platform for Collaboration

- Reference repo of CStack applications for adaptation
- ✓ Contribute to community templates
- ✓ Learn faster and replicate learnings across WOG

4

Modern App Architecture from Day 1

- ✓ Kubernetes-ready: leverage features of k8s without managing complexity of k8s
- Benefit from best practices curated by central engineering teams



Customer Success

Ministry of Education launched Thank You Cher' in record time with Container Stack!



Key highlights

- Made possible with small team (3 pax)
- Launched new site within 4 weeks
- Reduced VAPT scope (~1.5 months)

TLDR: Covid has hit educators and students hard. Ministry of Education (MOE) wanted to celebrate the dedication and selfless contribution of teachers with the Thank You 'Cher portal that enabled the community to show their appreciation. <u>Container Stack</u> (CStack) enabled the lean development team in MOE's Digital Office, Communications and Engagement Group (CEG) to deliver this system securely in 3 months. CStack is a Singapore Government Tech Stack product that offers an IM8 compliant cloud-based container development and hosting platform. MOE went on to reuse the system they have built with CStack to deliver <u>Proud of P6ers</u>, a platform to celebrate the PSLE cohort of 2021, within 4 weeks – reducing delivery time by 66%.

What can you do now?

Status now

- ✓ Container Stack will be FREE* till Jun 2023
- ✓ General Availability from Feb 2023

Let's collaborate!

Priority 1

Pilot for **new systems** under development to **run containers the right way**

Priority 2

Pilot for **existing systems** that are planning to **modernise via containerisation**



^{*}Pricing is under review, so it's a great time to pilot and try out containers on a GovTech managed platform!



How to find out more?



Email us!

enquiries_cstack@tech.gov.sg

Find out more about CStack

https://go.gov.sg/cstack

If you have any questions or feedback

https://go.gov.sg/cstack-contact



Contact Us

Email us at enquiries_cstack@tech.gov.sg

Join us on Slack! Scan the QR code below



https://go.gov.sg/runtime-slack



Thank You

