

# Containerizing CTS Tools on EDX

How Can Modern Technologies Enhance Efficiency and Scalability?



**Jack Sarle**

*NETL Support Contractor – EDX Research Development Specialist*



# Disclaimer & Acknowledgment



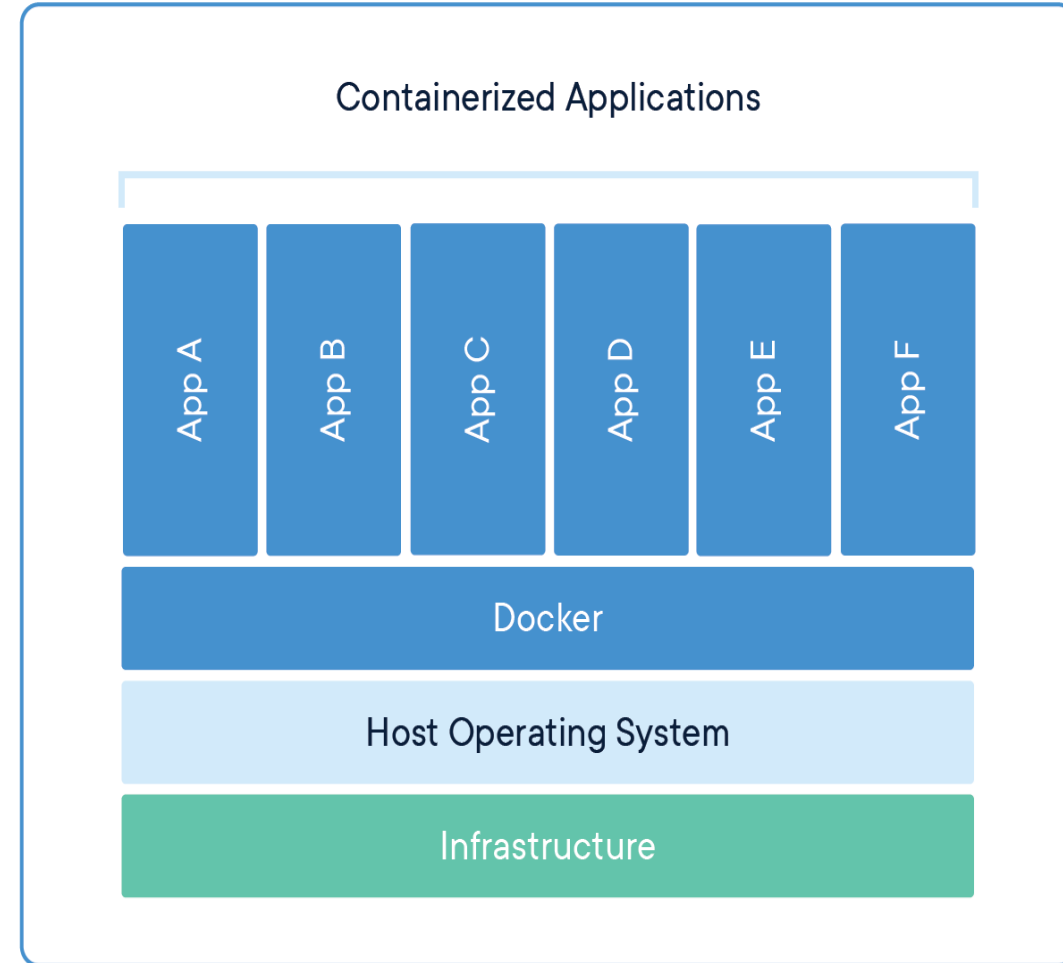
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**Acknowledgement:** This work was performed in support of the U.S. Department of Energy's (DOE) Office of Fossil Energy and Carbon Management's Geo-Analysis and Monitoring Team and was developed jointly through the U.S. DOE Office of Fossil Energy and Carbon Management's EDX4CCS Project, in part, from the Bipartisan Infrastructure Law.

# What is Containerization?

## How Do Containers Ensure Consistency and Portability?

- **Definition:** A method of packaging an application and its dependencies into a standardized unit (container).
- **Key components:** Docker, Kubernetes.

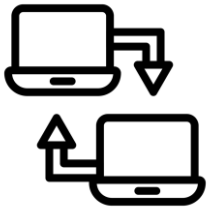


# Benefits of Containerization

## What Advantages Do Containers Offer?



- **Consistency:** Works the same in development, testing, and production environments.



- **Portability:** Easily move applications across different environments and platforms.



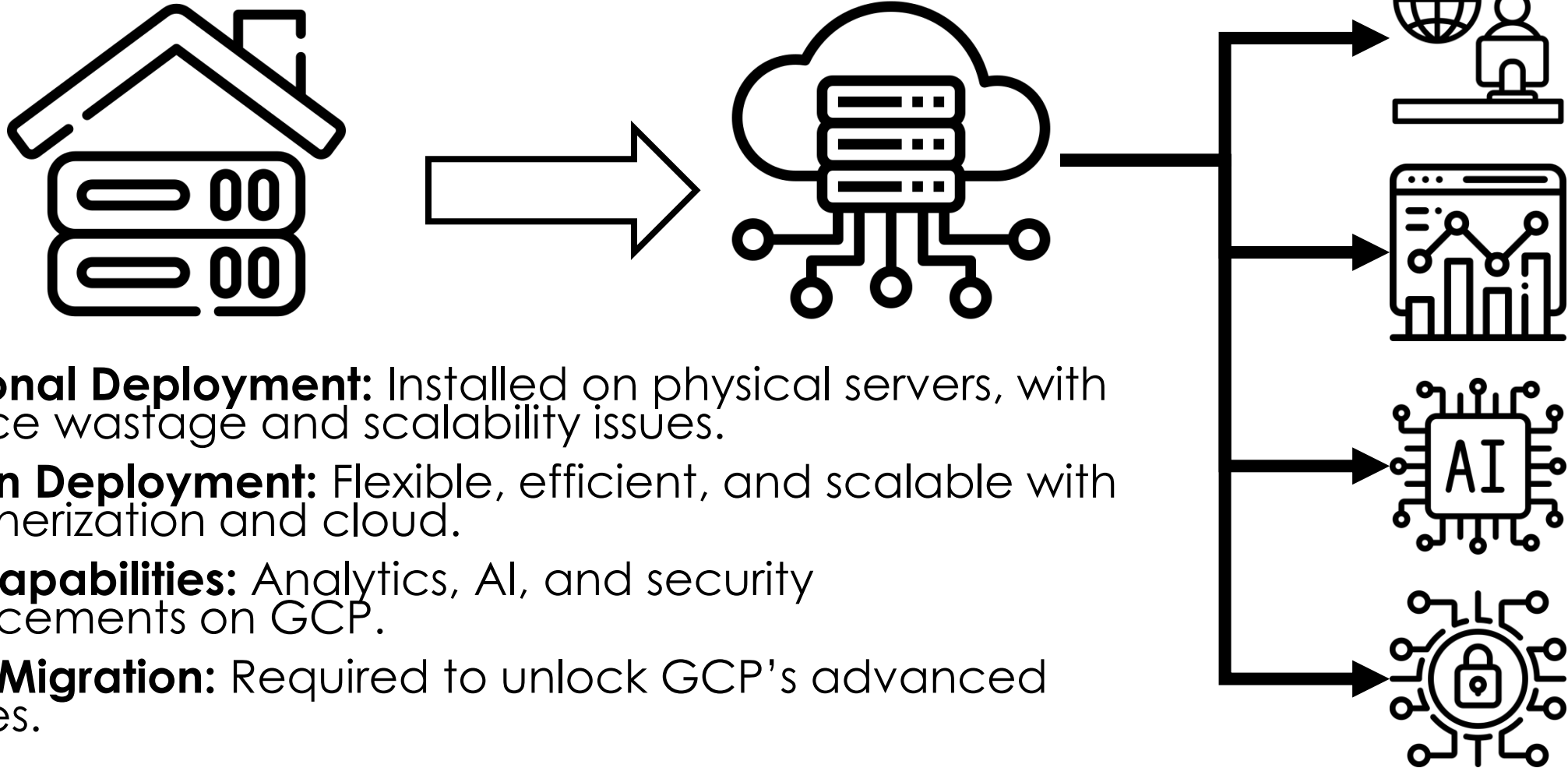
- **Isolation:** Applications run in isolation, reducing conflicts and improving security.



- **Scalability:** Easily scale applications up or down.

# Overview of Modern Deployment

## Why Transition from Traditional to Modern Deployment?

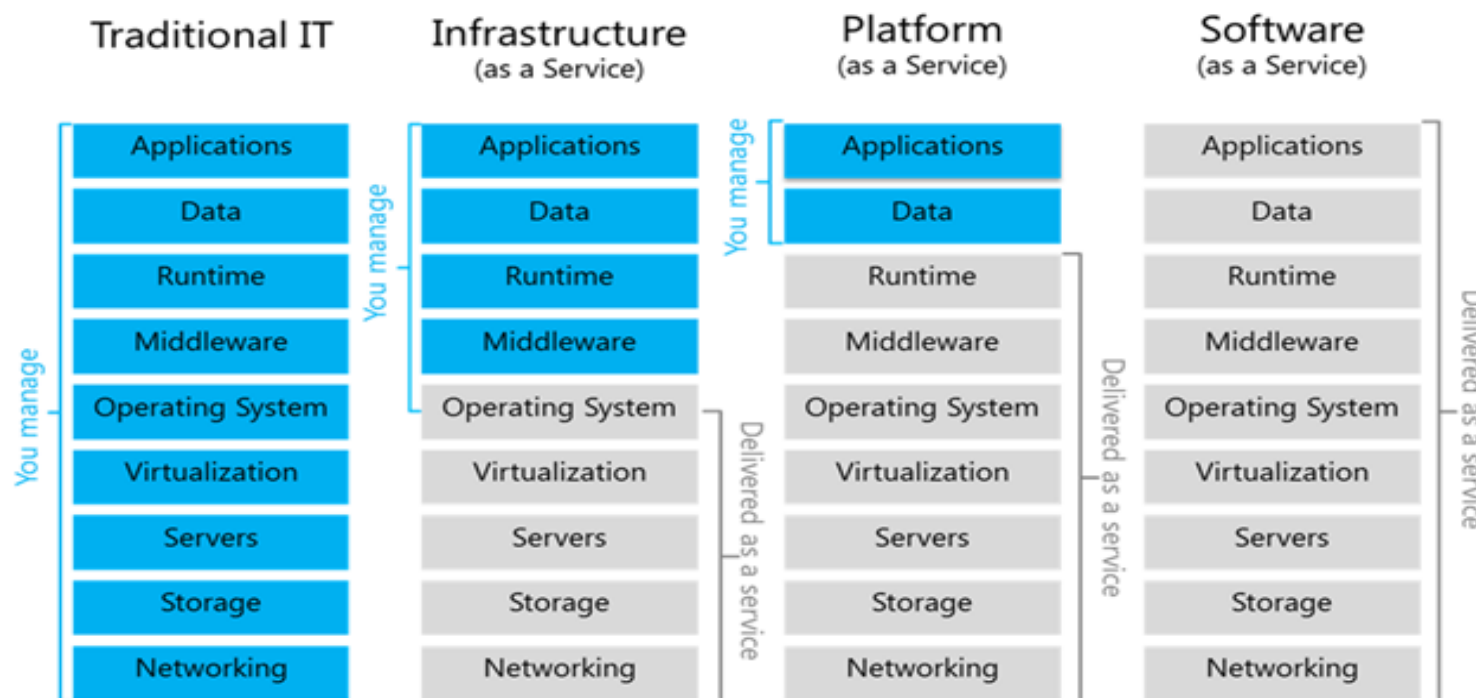


- **Traditional Deployment:** Installed on physical servers, with resource wastage and scalability issues.
- **Modern Deployment:** Flexible, efficient, and scalable with containerization and cloud.
- **New Capabilities:** Analytics, AI, and security enhancements on GCP.
- **Cloud Migration:** Required to unlock GCP's advanced features.

# What is Cloud Computing?

## How Does Cloud Computing Enable Flexibility?

- **Definition:** Delivery of computing services (servers, storage, databases, networking, software) over the Internet (the cloud).
- **Types:** Public, Private, Hybrid Clouds.
- **Models:** IaaS, PaaS, SaaS



# Benefits of Moving to the Cloud

## Why Should Projects Use Cloud Solutions?



**Cost Efficiency:** Pay-as-you-go model reduces capital expenditure.



**Scalability and Flexibility:** Instantly scale resources to meet demand.



**Disaster Recovery:** Robust backup and recovery options.

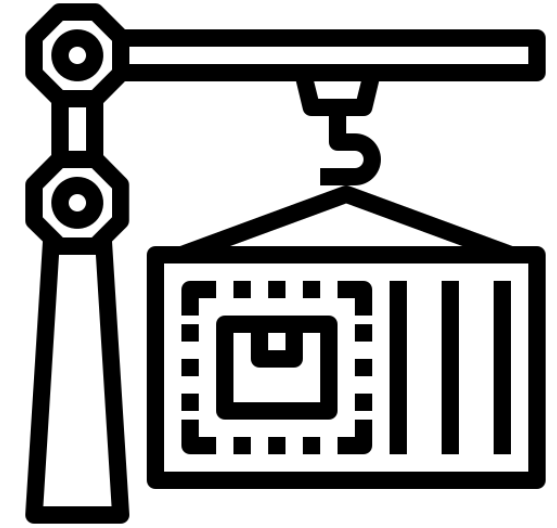
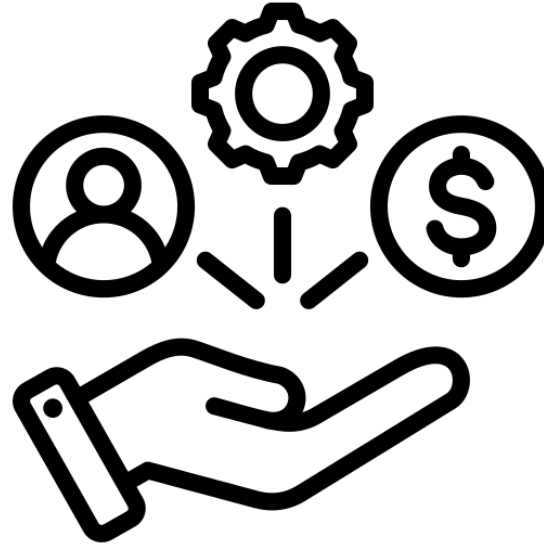
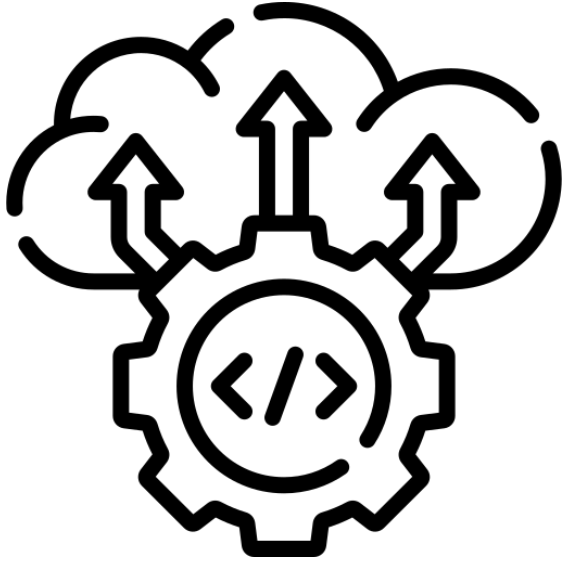


**Access Anywhere:** Access applications and data from anywhere.



# Synergy of Containerization and Cloud

## How Do Containers and Cloud Work Together?



- **Seamless Deployment:** Containers simplify moving applications to the cloud.
- **Enhanced Resource Utilization:** Cloud providers optimize container management.
- **Automated Management:** Tools like Kubernetes automate scaling, management, and deployment of containers in the cloud.



# Benefits of Containerization on EDX

## How Can We Support Your Modernization Journey?

### Cybersecurity Reviews:

Navigate complex review processes to meet standards.

### TIC 3.0 Architecture:

Benefit from existing infrastructure for compliance.

### Containerization Assistance:

Assess, plan, and implement container strategies.



### EDX OAuth2:

Implement secure user authentication.

## What Success Have Others Seen?

- Rokbase
- NRAP Open IAM Tool
- EDX4CCS Task 33 - Smart CO2 Transfer Routing Tool
- EDX4CCS Task 41 - Living Database Web Front End
- EDX4CCS Task 48 - 3D Previewer Tool
- Additional projects in discussions with us.

# DEMO & POSTER SESSION



TUESDAY, AUGUST 6, 2024

5:45 PM - 7:45PM

BALLROOM GALLERY

[See Related Demos](#)



CARBON TRANSPORT & STORAGE DATA AND  
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CONTACT:

EDX Support: [edxsupport@netl.doe.gov](mailto:edxsupport@netl.doe.gov)

Jack Sarle: [Jack.Sarle@netl.doe.gov](mailto:Jack.Sarle@netl.doe.gov)

