Emerson Cloud Hosted Digital Twin

Control System Simulation with
DeltaV™ Simulate

Process Simulation with
Mimic™ Simulation Software

Digital Twin with Emerson Cloud Hosted Service.

- Convenient Access
- Minimized Maintenance
- Managed Security

Traditionally, dynamic simulation solutions have been deployed on site, adding a maintenance burden to keep current with security patching, hardware, and software upgrades. The Emerson Cloud Hosted Digital Twin offers an alternative that eliminates this burden, expanding Digital Twin accessibility and return on investment for the business.

Introduction

Making online changes to a running production system can introduce risk of process downtime or failure. To improve the operation of the plant or train operators on achieving desired outcomes with confidence, best practice involves validating changes in an offline development system. The Digital Twin integrates dynamic process models with control simulation to provide a platform that supports:

- Control Strategy Development and Testing
- Operator Training & Competency Assessment
- Operability Studies and Improvement Projects
- Standards Management
- Virtual Commissioning Support

Benefits

Convenient Access. Conveniently access your system engineering and operations environments from your own desktop. Only pre-authorized users can access the protected system following Emerson's rigorous cybersecurity standards. Users include your designated personnel – at one or multiple locations – and Emerson support personnel.

Minimized Maintenance. With the Emerson Cloud Hosted Digital Twin, your development system maintenance effort is minimal.

Emerson maintains your Digital Twin host environment, performs routine backups, and applies patches to your virtual system upon request.

DELTAV™

EMERSON™

Managed Security. Emerson conforms to cybersecurity best practices by implementing measures to secure the networks, virtual machines and host infrastructure for the Cloud Hosted Digital Twin. To minimize risk of malware infection of the host environment, for example, Emerson deploys antivirus software to all virtual machines and scans files to be imported to the system.

Services Description

Managed System Subscription

The Cloud Hosted Digital Twin systems are commissioned by Emerson per the specifications for the DeltaV™ Distributed Control System (DCS) and Mimic™ Simulation Software. The hosted systems and infrastructure are fully managed and supported by Emerson.

Named personnel will utilize a secure virtual private network and login to DeltaV Simulate or Mimic Simulation Software applications. If they encounter any issues, support is available 24x7x365.

Subscriptions are renewable on an annual basis.

System Architecture

Digital Twin system architecture includes virtualized DeltaV nodes which may include virtual controllers, CHARM I/O cards (CIOC), Ethernet I/O cards (EIOC), and workstations.

A DeltaV virtual controller runs as a virtual machine in the hosting environment and enables control configuration development or testing without physical controller hardware. Configuration is the same since the same software runs in the virtual machine.

Use Cases

- **Collaboration:** Multi-user, multi-site cooperation on control system projects.

- **Standards Management:** Maintain control system database and operating activity standards.

- **Development:** Create, modify and manage process displays, dynamos, control strategies, modules and function blocks and test the same within the virtual system.

- **Informal Training:** Train personnel and get feedback on usability of modified displays and/or control strategies.

- **Operator Training Systems (OTS):** Deploy training scenarios designed to test individual capability to respond as needed to normal and abnormal situations.

- **Virtual Commissioning:** Use the cloud based system to conduct a virtual loop check of the control system. Required changes can be identified and tested with zero impact on the commissioning of the production system

Included Services

The following cloud hosted services are included with each hosted system:

System Setup

Initial environment setup includes:

- Creation of DeltaV and Mimic virtual machines based upon the preferred architecture

- Creation of authorized end user accounts

- Connectivity verification for each user

Application Setup

The application setup establishes the desired DeltaV project by importing the customer-provided DeltaV project configuration files, such as fhx and graphic files. The required Mimic Simulation Software applications and model database will also be deployed.

Data Transfer

As you work with the cloud hosted system to develop and verify code, you will be able to export configuration files for use on the production system. Any files that you transfer to the cloud hosting environment will be scanned for malware and managed appropriately.

Guardian for Cloud Hosted Services

Guardian Support for DeltaV DCS and Guardian Support for Mimic Simulation Software deliver extensive support features including expert technical phone support, DeltaV DCS software updates, Mimic software updates, Knowledge Base Articles, and operating system security update management. The Cloud Hosted Digital Twin incorporates these features and is integrated into the Guardian Web Portal.

Software Upgrade

Emerson can upgrade the system to the version of software you need, even if that differs from the production system version. Upgrade to the cloud hosted system provides an opportunity to explore newer DeltaV features without affecting the production system.

Service Termination

- Decommission the hosted virtual system.

- Transfer DeltaV configuration files to the customer.

- Remove all customer data from Emerson host environment.

Optional Services

Dynamic Simulation Services

Lifecycle dynamic simulation services include engineered solutions such as:

- Integrated I/O simulation with your DeltaV configuration

- Process models

- Operator Training Systems (OTS)

- Operator Training Manager applications

- Automated testing & reporting with Test Bench

Cloud Sharing: Add, Remove or Change User

As your needs change, your named users may also change. Emerson manages new user account creation and will add users after verifying authenticity of the request.

System Expansion

If system needs exceed the initial architecture limits, Emerson can create additional DeltaV virtualized system nodes.

Synchronization with The Production System

To keep your Digital Twin in step with the live production system requires periodic backup of production system database and subsequent transfer to the cloud hosted environment. Mimic model refresh may be required when significant changes are made to the production system.

Synchronization services are established on a schedule basis or upon request.

Recovery from a backup

Backups are made on a periodic basis. If you need to return to a prior saved configuration, Emerson offers a recovery service to apply a prior saved project configuration on your cloud hosted system.

Educational Services & Training

Emerson's Educational Services can leverage your Cloud Hosted Digital Twin system for on-site training courses. This gives you access to high-quality industry educators and courses without the need for your team to travel or rent and set up classroom hardware.

Service Requirements and Ordering Information

- DeltaV DCS version 11.3.1 or higher required.

- Each subscription is specific to a single DeltaV version.

- For each user: Install Cisco AnyConnect secure socket layer virtual private network client and provide connection to the site's internet service.

To learn more, contact your local Emerson sales office or representative, or visit **www.emerson.com/mimic**.

DELTAV™   **EMERSON™**