

## Whitepaper

# *yi-CLOUD*

## Cloud Enabled Execution

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Solution and Services Business HQ

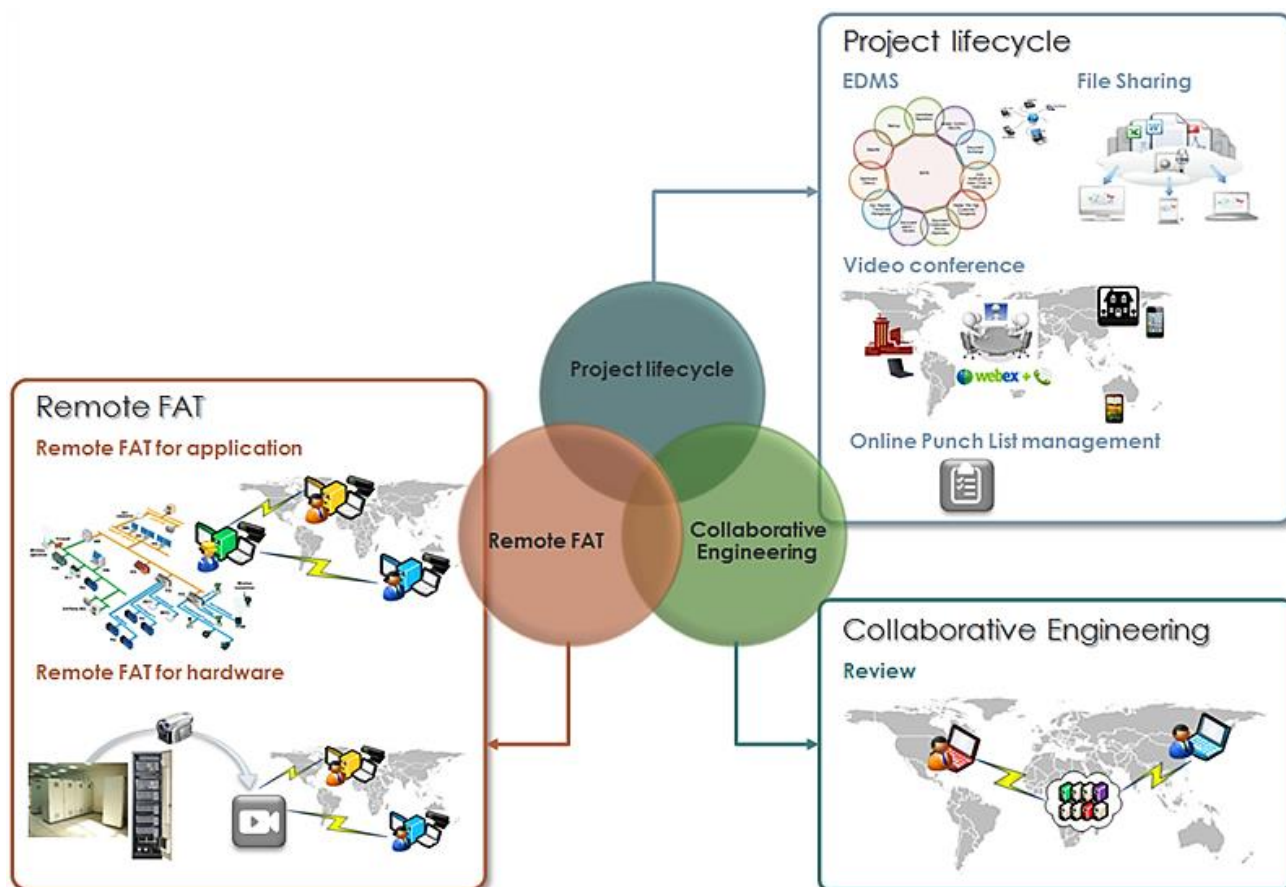
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## 1 Increasing Execution Efficiency

yi-CLOUD is a YOKOGAWA Value Delivery Service which increases project execution efficiency both for customers and YOKOGAWA. Through Cloud Enabled Execution, customers and project teams can securely collaborate with anyone, anywhere and anytime across the globe without having to travel.

yi-CLOUD combines and integrates a combination of infrastructure and software services which enables ad-hoc utilization of a suite of services based on specific needs in the execution of project.



## 2 Fit for Purpose Services

The goal of yi-CLOUD is “Cloud Enabled Execution”. Project execution is broken up into the following three phases, and describes the customer value of applying “Cloud Enabled Execution” in each phase by using yi-CLOUD:

- Remote FAT: FAT phase
- Collaborative Engineering: design phase, execution phase
- Project Lifecycle: throughout project

yi-CLOUD has a base list of services to suit the various phases of project execution. Each service has a base product and some have premium options. Based on the configuration of these services, we can offer the different engineering environment as required for the project.

Suite of Services	Products
Cloud Enabled Engineering (CEE)	Virtual engineering environment <u>Connecting service</u> Base : Yokogawa Intranet Option : Internet VPN / Exclusive PJT WAN
Cloud Enabled Test (CET)	Remote access environment <u>Connecting service</u> Base : Yokogawa Intranet Option : Internet VPN / Exclusive PJT WAN
Electronic Document Management System (EDMS)	TeamBinder
Online Punchlist management	Punchlist tool
File Sharing	FileForce
On Demand Streaming	FileForce
Live Streaming	TBA <u>Connecting service</u> Base : Yokogawa Intranet Option : Internet VPN / Exclusive PJT WAN
Video Conference	WebEx+Phone

### 2.1 Cloud Enabled Engineering (CEE)

Cloud Enabled Engineering (CEE) is the virtual engineering environment. In this system, we provide virtual machine (VM) for not only DCS engineering but also SIS engineering. We also provide VPN for each project, and these VPN are separated from each other securely, ensuring that it is not possible to access VPN of other projects. This environment is similar to virtual staging area with virtual machine. CEE allows you to develop your application software for CENTUM VP and ProSafe-RS with a team of engineers without a cluster of Engineering Workstations in your office. You can access the VM remotely regardless of the location, resulting in time and cost savings.

CEE can be accessed from not only the engineering center but also the front office / customer office. We will provide 2 types of connecting service. One is “Yokogawa Intranet” as a base service, and the other is “Internet VPN” / “Exclusive PJT WAN” as a premium option service for speedier connection.

### 2.2 Cloud Enabled Test (CET)

Cloud Enabled Test (CET) is the remote access environment. It is a “gateway” of client’s PC to connect to target machines in FAT staging area. VPN is needed to access CET gateway VM which can connect to target machine. Via this system, we can access to the target system from outside of FAT area. Therefore, we can share Human Interface System (HIS) screen, and access target system master database directly.

CET can be accessed from not only the engineering center but also the front office / customer office. We will provide 2 type of connecting service. One is “Yokogawa Intranet” as a base service, and the other is “Internet VPN” / “Exclusive PJT WAN” as a premium option service for speedier connection.

### 2.3 Electronic Document Management System

Electronic Document Management System (EDMS) allows all project documents to be efficiently and conveniently managed and accessed via the internet, 24/7. Save time locating and sharing your documents and prevent mistakes of using superseded files.

EDMS provides the following functions by TeamBinder:

- Master file management (Centralised repository)
- Documents Collaborations – Internal/External users (Review/Approval)
- Roll basis access control/Security
- Audit trail functionality
- Auto notification to Users
- Document Register/Transmittal management
- Powerful Search engine

### 2.4 Online Punchlist Management

For remote FAT, we recommend Punchlist tool for sharing Punchlist data among project members remotely. Once the FAT facilitator records the punch items, every project member can confirm contents and update the respective result. The status of items manages automatically.

### 2.5 File Sharing

We provide easy-to-use File Sharing service via the Internet between the parties involved. FileForce cloud service allows project users to share files (documents, pictures, large files and videos etc.) with customers, EPCs, as well as sub-vendors at anytime, anywhere with yi-CLOUD recommended devices (PC, Tablet, iPhone etc.).

### 2.6 On Demand Streaming

We provide on-demand video streaming service (Preview function) via the Internet between the parties involved. FileForce cloud service provides features of on-demand video streaming with customers, EPCs as well as sub-vendors at anytime, anywhere with yi-CLOUD recommended devices (PC, Tablet, iPhone etc.).

### 2.7 Live Streaming

Live Streaming service will be launched in FY15. By using this service, without going to Yokogawa FAT area in other countries, the customer and front office engineer can check the hardware itself and wiring inside cabinet in FAT area via live streaming.

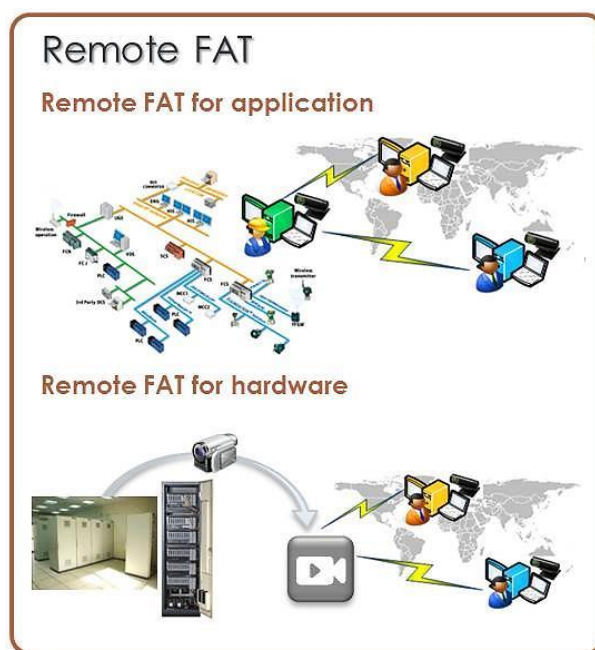
Live Streaming can be used from not only the engineering center but also the front office / customer office. We will provide 2 type of connecting service. One is “Yokogawa Intranet” as a base service, and the other is “Internet VPN” / “Exclusive PJT WAN” as a premium option service for speedier connection.

### 2.8 Video Conference

“WebEx + Phone” is a yi-CLOUD qualified service for conference meetings with external users. WebEx is a pioneer of online meetings. By using WebEx technology, it allows everyone to work together remotely regardless of their location. “WebEx + Phone” is divided into the video line and the voice line, ensuring the voice line never breaks off despite high network load. With “WebEx + Phone” service, we provide the video conferencing environment where the voice line never breaks off, and ensure good quality of voice.

### 3 Benefit Case Study: Remote FAT

This section describes “Cloud Enabled Execution” in FAT phase by using yi-CLOUD.



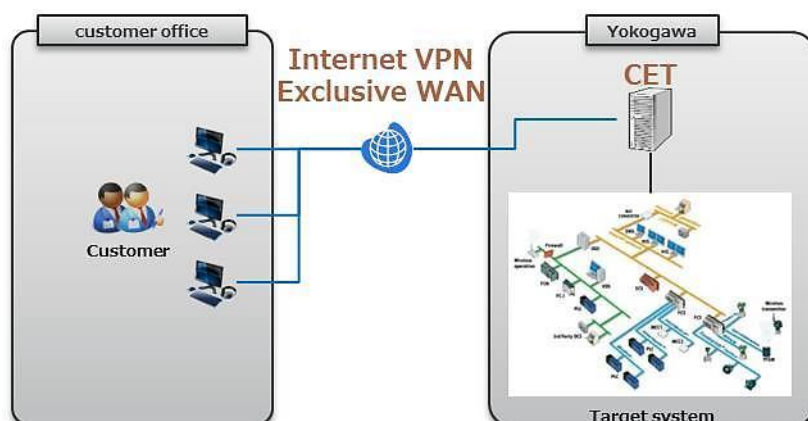
#### 3.1 Remote FAT for application at Customer office

Cloud Enabled Test (Option: Internet VPN or Exclusive PJT WAN)

Customer can participate in FAT from their office, reducing unnecessary movement and time spent.

Through Cloud Enabled Test, Yokogawa provides the environment to connect PC at customer office and target system at Yokogawa FAT area. Busy customers can participate in FAT for application remotely from their office at their convenient time, applying the 3R concept of Right People, Right Location, Right Time.

Customers can also select Exclusive PJT WAN that offers comfortable access speed.

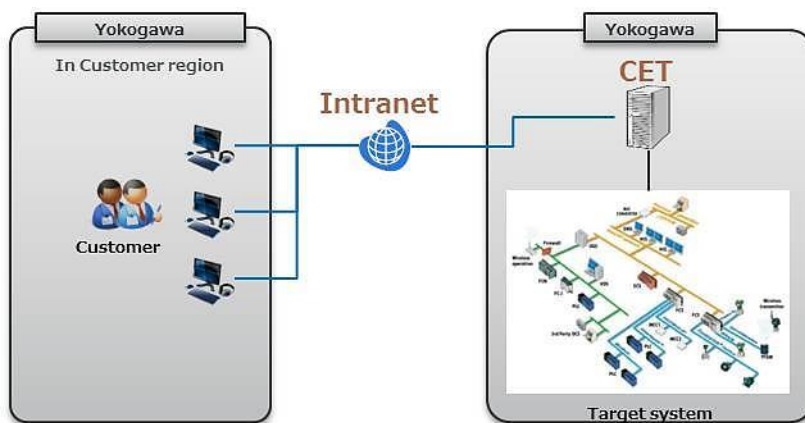


### 3.2 Remote FAT for application at Yokogawa office

#### Cloud Enabled Test (Base: Yokogawa Internet)

Customers can participate in FAT from a Yokogawa office in their region, reducing unnecessary movement and at minimal cost.

Through Cloud Enabled Test, Yokogawa provides the environment to connect PC at a Yokogawa office in their region and target system at Yokogawa FAT area. If Yokogawa FAT area is far from the customer's office, the customer does not need to travel to a far Yokogawa office, instead they can go to the nearest regional Yokogawa office. A minimal connection fee will be applied to setup the remote testing. Customers do not need to specially travel to the FAT area to do the testing, resulting in overall cost and time savings.

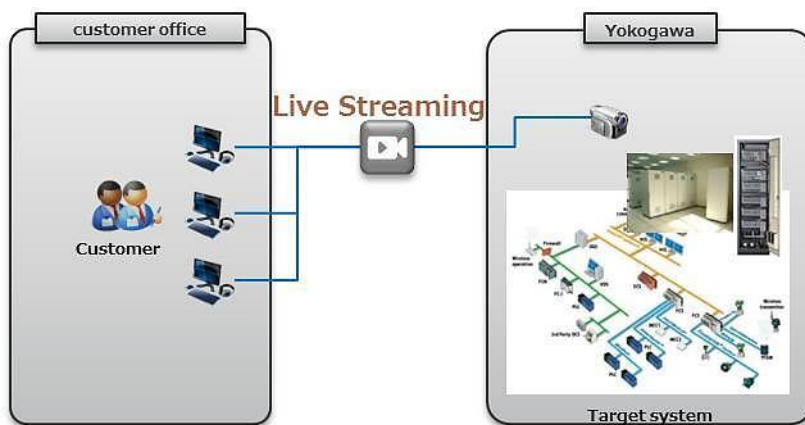


### 3.3 Remote FAT for hardware (Live Streaming)

Customers can participate in FAT for hardware from their office, reducing unnecessary travel.

Live Streaming will relay target system at Yokogawa FAT area. Yokogawa provides the environment to check hardware from out of Yokogawa FAT area. For example, the hardware engineer can wear a wearable camera on his head at the FAT area while conducting checks of the wiring panel. Customers can view the checks from the images streamed 'live' via the camera.

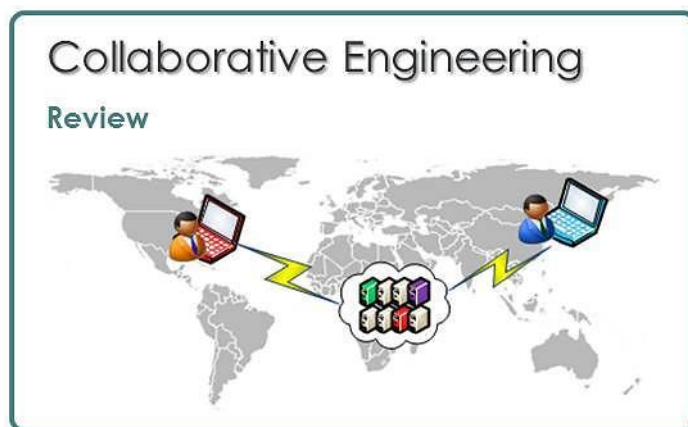
The value to customers is the convenience and ease of participating in Remote FAT from their own desk.





## 4 Benefit Case Study: Collaborative Design Review

This section describes “Cloud Enabled Execution” in design phase and execution phase by using yi-CLOUD.



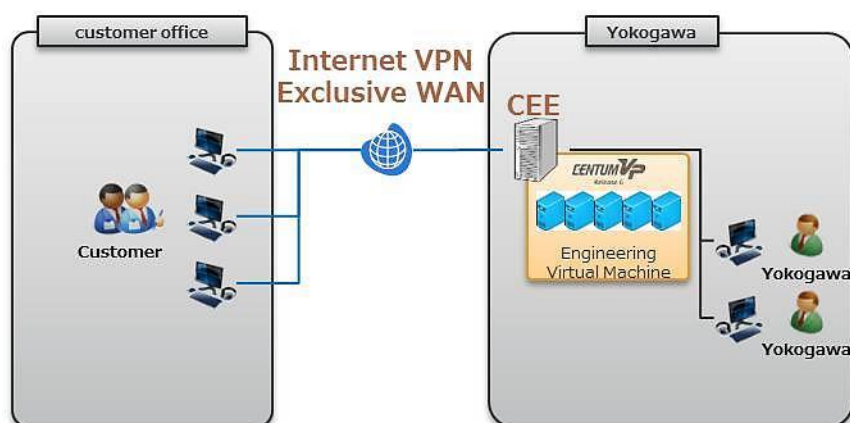
### 4.1 Review at Customer office

Cloud Enabled Engineering (Option: Internet VPN or Exclusive PJT WAN)

Customers can check application typical / graphics from their office for fundamental review in the early phase, and thus volume of late changes can be reduced. Customers can check samples / drafts before bulk engineering is carried out.

Through Cloud Enabled Engineering, Yokogawa provides the environment to connect PC at customer office and application database under development by Yokogawa. Customers can point out the gap of required specification and application database in the early phase.

Customer can also select Exclusive PJT WAN that offers comfortable access speed.

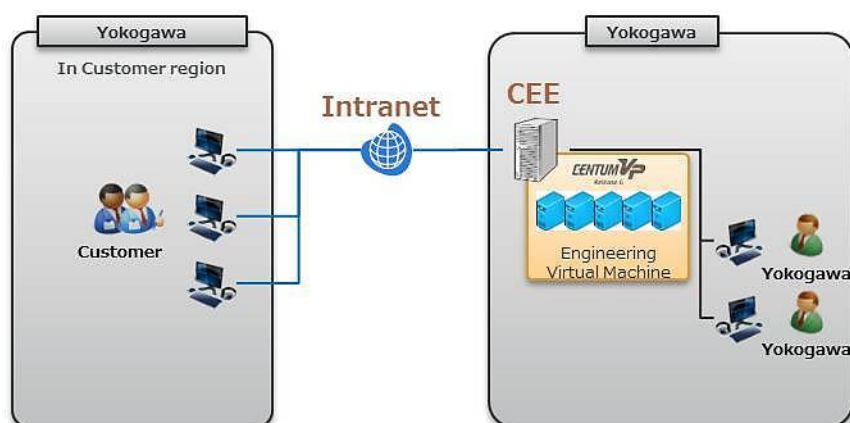


### 4.2 Review at Yokogawa office

#### Cloud Enabled Engineering (Base: Yokogawa Internet)

Customer can check application typical / graphics from a Yokogawa office in their region for fundamental review in the early phase, and thus volume of late changes can be reduced at minimum cost as intranet is included in the base service.

Through Cloud Enabled Engineering, Yokogawa provides the environment to connect PC at a Yokogawa office in their region and application database under development by Yokogawa. If the Yokogawa engineering office is far from the customer's office, customers do not need to travel to a far Yokogawa office for application check.



## 5 Benefit Case Study: Project Collaboration

### 5.1 Collaborative Communication platform

Yokogawa provides these common infrastructures as a base service. Yokogawa achieves Cloud Enabled Execution by a combination of these base common services per project.

- EDMS
- File Sharing
- Video Conference
- Online Punchlist Management



## 6 Seamless Transition to Activities on Site

YOKOGAWA provides high-speed connection to the customer's system using the highly secure VPS Remote system, to support our customer's maintenance operations. By reducing distance and time, issues related to operation and maintenance are efficiently resolved.

The difference between yi-CLOUD service and VPS Remote service is master database location only.

- yi-CLOUD: master database location at Yokogawa office
- VPS Remote: master database location at Customer site

The transition from Cloud Based Execution to VPS Remote is seamlessly integrated in the project execution plan, and reduces duplication of equipment.

### List of Abbreviations

yi-CLOUD	Yokogawa Innovation CLOUD (YOKOGAWA)
CEE	Cloud Enabled Engineering
CET	Cloud Enabled Test
EDMS	Electronic Document Management System
FileForce	File-sharing solutions product by FileForce Inc.
FileForce Inc.	File-sharing solutions company with headquarters in Tokyo, Japan
VM	Virtual Machine
SIS	Safety Instrumented Systems
DCS	Distributed Control Systems
TeamBinder	Document Control and Project Information Management Software (QA Software)
WebEx	WebEx video conference system (Cisco)
ADMDB	Automation DesignSuite Master Database
VPS Remote™	Vigilant Plant Services Remote service solution (YOKOGAWA)
HIS	Human Interface System, the Man-Machine-Interface of CENTUM

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