Remote Operations for Industrials

Ensure safe, efficient, and reliable operations with secure, remote access
Energy industries today face a range of challenges, including:

01  
Emergency preparedness or enabling contingency operations

02  
Poor site-level visibility of control room and maintenance operations

03  
Managing one or multiple sites with minimal/reduced manpower

04  
Restricted workforce location flexibility, on-site mobility, and collaboration options

05  
Inability to leverage remote expertise and support when needed

06  
Ensuring secure and compliant remote access and control

If left unaddressed, these challenges pose significant operational, financial, security, and compliance risks.

GE Digital’s Remote Operations is a scalable, enterprise solution that addresses each of these challenges and helps ensure safe, efficient, and reliable operations – even beyond control rooms and plant sites.
What is Remote Operations?

Remote Operations is a packaged software and appliance solution that provides remote/mobile users access to essential on-site monitoring and control functions. It combines a unique secure network system, hard-token credentials, and granular access controls which ensure that remote, mobile, and on-site operators can work independently or together in a secure and compliant environment.

Remote Operations implementations can accommodate needs from urgent continuity to fault-tolerant fleet-wide operations centers.

Benefits of Remote Operations

Remote Operations allows users to remotely monitor, diagnose, instruct, control & operate, thereby helping:

- Ensure operational continuity and reliability
- Boost workforce flexibility, productivity, and safety
- Act with urgency
- Reduce travel-related costs and emissions; lower O&M costs
- Ensure security and compliance

“GE Digital’s Remote Operations enables industrial organizations to adopt remote staffing, centralized and flexible resourcing, and autonomous operations.”

Kevin Prouty
IDC, Group VP, Energy & Manufacturing Insights

Unlock these benefits with Remote Operations

01 | Workforce location flexibility, productivity & safety
   | Remote Control Center
   | Operate From Anywhere
   | Plant Control Room
   | Remote Expert
   | Mobile Worker

02 | Site/Enterprise-level visibility & control
   | Map

03 | End-to-end security & compliance
   | Shield
Unprecedented Flexibility, Visibility & Security

Anywhere, anytime flexibility
Unlock workforce location flexibility, productivity, & safety

Workers have secure and managed access to equivalent on-site HMI visualizations and essential operational controls regardless of HMI solutions in production.

On-site staff can easily collaborate with mobile workers and leverage remote experts when needed. Zero-trust security, control room managed access rights, and operational safeguards provide secure and failsafe operational flexibility across remote, mobile, and on-site staff.

Enterprise-level visibility & control
Site-level and enterprise-level visibility of control room, & maintenance ops

Enables Centralized Operations to monitor, augment, or manage control room and maintenance across multiple plants. Available in two packages, Remote Operations Response and Remote Operations Advanced, that offer authorized users the required levels of visibility and control under a highly secure environment.

End-to-end security & compliance
Designed to meet industry’s stringent security and compliance requirements for critical infrastructure.

Built around a secure connection broker appliance, it features:
- Two-factor authentication
- Role, time, and equipment-based access controls
- Session logging and recording
- Encrypted pixel-only data transfer
- Compliance standards for NERC-CIP, NIST, and others

**Unlimited remote worker access, productivity, & safety**

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*All GE Remote Operations solutions, except RO Advanced E-Stop, are OEM-agnostic. RO Advanced E-Stop has been designed for GE Mark control systems only.*
A key objective of adding Remote Operations capability is to empower our workforce and improve safety not only with remote location flexibility but also within the plant. On-site operators and maintenance staff can use Remote Operations mobility features to work together efficiently, enhancing overall personnel safety at the plant, while ensuring continuity of remote visualization, command, and control of the power generation assets at the site.”

**Bob Emmott**
Executive VP and COO, Maxim Power Corp.
Remote Operations packages

Available in the following two packages:

**RESPONSE**

Remote/mobile HMI monitoring and assistance. Immediate deployment.

Remote Operations Response is compatible with existing systems and requires only the addition of a pre-configured secure network appliance and firewall. Upon equipment arrival, installation can be done in a single working day with remote support from GE. No unit shutdown is required.

- Remote/mobile HMI monitoring
- Emergency HMI controls access
- Rapid, non-disruptive deployment

**ADVANCED**

High availability remote operations. Advanced optional features.

Remote Operations Advanced is the best choice for companies adopting remote and distributed controls as a standard, failsafe operating model for one or more facilities.

- High availability/failover deployment
- Remote E-Stop for Power Generators
- Rich optional features and customization

### Solution Options

Security-first, zero-trust design NERC-CIP+ compliant across all options

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<thead>
<tr>
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<th>RESPONSE</th>
<th>ADVANCED</th>
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<tbody>
<tr>
<td>Remote Connection Broker security appliance</td>
<td>✔️</td>
<td>✔️</td>
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<tr>
<td>Secure Firewall appliance</td>
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<tr>
<td>Two-factor authentication via supplied hard tokens</td>
<td>✔️</td>
<td>✔️</td>
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<tr>
<td>Remote/mobile HMI* access</td>
<td>✔️</td>
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<td>Remote/mobile HMI permitting</td>
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<tr>
<td>Purpose-built mobile user experience</td>
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<td>High availability with failover</td>
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### Additional Options

Remote E-Stop** | ❌ | ✔️ |

Command Center | ❌ | ✔️ |

Install, configure, customize, test (Add shipping time of 1-3 weeks) | 2 - 4 hours No shutdown required | 12 – 14 weeks estimated

* Required: Windows XP or later; RDP or VNC enabled
** Available only for GE Mark VIe and later controllers
Remote Operations Advanced Suite

Remote Operations Advanced is a robust and comprehensive solution for customers employing remote/distributed operations as a core pillar of their business strategy.

The advanced capabilities, which are available as additional options, are targeted at ensuring enterprise-level visibility, on-site mobility and productivity, and safety and compliance.

Command Center
Gain 360-degree visibility of plant, fleet, and assets
Command Center is a secure system to aggregate data into actionable information enabling enterprise-wide collaboration, regardless of location. With a code-free design experience, organizations can remotely create intuitive dashboards to monitor, analyze, and operate enterprise control rooms, fleet, and even equipment drill-downs.

- Connect, display, and aggregate data from equipment historian, HMI/SCADA, DCS, or other applications (including 3rd-party data)
- Easy drag-and-drop design tool – Proficy Operations Hub
- Alarm consolidation and prioritization (at fleet level)
- KPI tracking enables a birds-eye-view of priorities
- OEM-agnostic - can be used with any OEM infrastructure
- Infinite scalability with GE Edge high-availability server hosting complex applications via virtual machines

Mobility
Improve on-site mobility and productivity
Mobility is a purpose-built, OEM-agnostic mobile HMI software that enables workers at a plant to have full access to control room capabilities. Workers can access control room tools anywhere within the boundaries of the plant in a safe and secure manner.

- A rich and failsafe user experience across standard devices
- Familiar HMI experience in compact, mobile-first form
- View-only access as default operational mode
- Interactive control switching with control room
- Unlocking and pop-out features to confirm intent
- Support for tablets with a stylus
- ATEX cases and lanyard support

E-Stop
Ensure safety and compliance with remote capabilities
E-Stop brings remote emergency trip capabilities that ensure safety and compliance, especially in case of contingencies. It is highly useful for cases when Remote Operations is being utilized in unmanned or reduced staffing schemes.

- Same look and feel as the control room E-stop button
- Offers the reliability of a hardwired connection with ease and lower cost of a software version
Remote Operations network architecture

The recommended architecture incorporates the Remote Connection Broker as a hardened jump server with VNC access plus a GE-supplied secure firewall to create a dedicated network connection spanning the control zone, DMZ, and VPN access to remote users. Updates and maintenance of the system can be conducted through a standard web browser using MFA.

Best-in-class security with Remote Connection Broker

Remote Connection Broker provides the core security and operational functions of Remote Operations while delivering a set of secure and compliant features that are unavailable with custom-built IT projects or standard commercial communications products.

It serves as the intermediate system for network and protocol isolation, reducing the attack surface by securely streaming applications and converting remoting protocols into an encrypted display that can be presented in any browser.

Administrators control granular user access policies by time, equipment, and more, but control room operators retain interactive permission-based transfer of control. They can also create and manage user profiles in order to limit/tailor access as needed.

Authentication of remote/mobile staff sessions via hard tokens and live monitoring and recording of such sessions provide additional safeguards and historical records.

Additional specifications

- Remote Operations Response is intended for contingency operations in conjunction with a qualified on-site operator (appropriate communication and hand-off processes should be in place)
- HMIs must be based on Windows 10 or later, and support RDP or VNC communications
- GE Cimplicity HMIs may require custom screen creation for remote usage
- Each Remote Connection Broker can support up to 25 remote sessions
- Remote Operations packages include 10 Yubikeys (additional keys available)
- Firewall appliance sourced from Fortinet Corporation
- Remote Connection Broker sourced from Xona Corporation
- Authorized users can access virtualized, encrypted data via any browser in HTML format
Ready to improve reliability, safety and efficiency of your operations with secure remote access?

GET STARTED

About GE

GE Digital, an integral part of GE Vernova’s portfolio of energy businesses, is a $1 billion software business putting data to work to accelerate a new era of energy. GE Digital has pioneered technologies like Industrial AI and Digital Twins to serve industries that matter for decarbonization like energy, manufacturing, aviation. Our software drives insights customers need to transform how they create, orchestrate, and consume energy. Over 20,000 customers world-wide use our software to fuel productivity and reliable operations while reducing costs and carbon for a more sustainable world. For more information, visit www.ge.com/digital. GE Vernova, a dynamic accelerator comprised of our Power, Renewable Energy, Digital and Energy Financial Services businesses, focused on supporting customers’ transformations during the global energy transition.

Contact Information

Americas: 1-800-433-2682
gedigital@ge.com
www.ge.com/digital

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