Premium Maintenance & Support (M&S) Services

GE Digital offers a comprehensive portfolio of Premium M&S Services to further complement our standard M&S programs. Premium M&S Services are part of the GE Digital M&S portfolio, backed by GE Digital’s experience and deep domain expertise. By partnering with us, we can help your organization achieve business goals and objectives, by providing application support and value-added services.

*eterra & PowerOn branding have been discontinued by GE. Products are still available under new, updated names. Please contact your sales representative if further clarification is needed.
Protect your data investment by shifting from reactive problem solving to proactive system management and optimization.

Services Offering

Consulting Services for GE Transmission and Distribution product lines
Work with GE’s technical staff to ensure you obtain the maximum benefit from GE Transmission and Distribution software products.

Consulting Services for GE GIS product line
Achieve maximum value from your GE GIS software products by working with GE’s technical experts.

Educational Services and eLearning Packages for GE Digital product lines
A full range of technical training for customers of our GE Digital products.

Managed Services solution for GE Transmission, Distribution and GIS product lines
A wide range of technical IT services for customers and potential customers of our GE Digital products.

Grid Security Support Services
Specific support services to help our customers address Cyber Security updates and compliance for their mission critical systems.
Consulting Services for GE Transmission and Distribution product lines

System Administration Consulting Offerings

**Systems Administration**
This service applies to all Transmission and Distribution products (eterra, PO Reliance*, PO Advantage/ADMS Series 6)
Duration: 5-10 days
Location: On-Site and Off-Site

**Key Customer Benefits:**
- Improved system performance
- Improved customer staff knowledge in configuring, maintaining, and troubleshooting

**Description:**
The consultancy services address all aspects of system administration and management relating to Digital Energy products. Beyond the structured Technical Training courses, our SMEs provide customers with expert advice relating to:
- System health checks
- System configuration
- System maintenance
- Customer-led updates
- Troubleshooting
- Tuning
- Analysis and troubleshooting to identify performance issues
- Customer staff mentorship in maintaining Digital Energy products

**User Account Propagation Implementation**
This service applies to eterra Transmission and Distribution products
Duration: 15 days
Location: Off-Site

**Key Customer Benefits:**
- Benefit from synchronized AD and PERMIT functionality

**Description:**
The UAP implementation service addresses the synchronization of Microsoft’s Active Directory (AD) with Habitat PERMIT. Our SMEs provide customers with expert advice relating to:
- Define any custom requirements (scope of customs) in the production system
- Provide specifications to create Active Directory User Groups relative to PERMIT User Database
- Provide User Account Propagation scripts with guidance on best practices
- Support customer in the implementation and testing of scripts
- Tune active directory configuration and user groupings
- Tune, configure, and UAP implementation
- Review final PERMIT database and revise process as needed
- Develop and implement any custom requirements identified above
Systems Health checks
This service applies to all Transmission and Distribution products (eterra, PO Reliance*, PO Advantage/ADMS Series 6)
Duration: 5-10 days
Location: On-Site and Off-Site
Key Customer Benefits:
• Benefit from expert analysis of system health
• Receive knowledge transfer so that health checks may be performed by customer staff (internally)
Description:
The System Health Check service provides the customer with an expert analysis of their system performance and provides solutions to improving that performance. The SME will prepare for the health check remotely by providing scripts to the customer:
• Prepare and supply health check scripts
• Review and analyze results from scripts
• Provide summary report of findings on health of the current system
The SME will visit the customer site to provide:
• Workshop:
  - Review summary report of system health check with customer
  - Prioritize issues that have been identified
  - Provide approaches/solutions/best practices to address any health check concerns that have been identified
• Support to implement a selection of solutions for the high priority issues in remaining time

Customer-based Updates and Upgrades
This service applies to all Transmission and Distribution products (eterra, PO Reliance*, PO Advantage/ADMS Series 6)
Duration: 10-15 days
Location: On-Site and Off-Site
Key Customer Benefits:
• GE SME available to provide expert advice on upgrade/update process
• Additional short-term expert resources to complete the process in a timely manner
Description:
The Customer-based Update and Upgrade service provides the customer with technical assistance in upgrading their system but is not intended to replace a full-service upgrade.
• The SME will prepare the customer for the update and upgrade remotely by:
  • Reviewing the existing system
• Identifying minimum software revisions required for this system
• Determining the most appropriate upgrade path
• Providing a summary report on the most appropriate software requirements and upgrade to be implemented
• Advising customer on downloading the required software
The SME will visit the customer site to:
• Assist customer personnel in updating software version to the most appropriate version
• Assist customer personnel in testing system operation and refining as necessary
• Assist customer personnel in testing and verifying fail-over to the backup system
• Advise customer on creating any scripts or other tools necessary to automate this process
Source Consulting
This service applies to all eterra products
Duration: 5-10 days
Location: On-site and Off-site

Key Customer Benefits:
• Use best practices in customer modeling processes
• Provide techniques for more efficient modeling

Description:
Improved customer staff knowledge in Source. The consultancy services address all aspects of database modeling using Source and related SWS products. Beyond the structured Technical Training courses, our SMEs provide customers with expert advice relating to customer-specific modeling processes and database deployment. Some of the activities that our SMEs can assist with are:

• Evaluate existing modeling process flow, enhancing with best practices and plan improvements
• Set up model workspace for optimum resource usage and optimum modeling
• Provide best practices in modeling SCADA and Network systems concurrently including:
  - Make the best use of SCADA and Network containers
  - Review Table usage with respect to concurrent modeling
  - Apply federation of modeling details through SCADA and Network hierarchy
  - Understanding federation of the Generator through Network and SCADA
  - (Optional) Modeling PV and Wind
  - (Optional) Templates for modeling PV and Wind
  - Ensure customer staff are skilled in Generation Telemetry Templates (mapping measurements from SCADA to Gen)
• Developing Templates to improve efficient modeling. This includes:
  - Using Templates for efficient modeling
  - Ensure customer staff are well-versed in the process of creating a Template
  - Review creating a Template for an ALineSegment
  - Understand creating a SCADA-only Template
• Model merges
• Metamodelling to improve efficiency in UI Interface

• Observe current processes and advise on more efficient approaches
• Preferred methods of data export
• Ensuring best validation processes
• Implementing best practices
• Use of modeling tools
• Managing project lifecycles
• Customer staff mentorship in maintaining SWS products
• Review modeling processes setup and implementation, including the unique needs of the customer system and environment. Included in this are:
  - Project naming conventions
  - Project lifecycle
  - Mapping from Habitat database to source
• Review database deployment detailed processes. This includes:
  - Project organization
  - Project dependencies
• Ensure SCADA modeling is efficient and well implemented. This includes review and improvement of:
  - Measurements and mapping
  - RTU and Front End Modeling
  - Use of Excel and Templates for RTU Modeling
  - SCADA as a client of Alarm
  - Block Load shed, and Rotating Load shed modeling
  - SCADA best practices and things to avoid
• Refine Network Modeling to include
  - Optimize Sequencing of Network Modeling
  - Develop separation of modeling functions into different Projects
  - Review Templates for LINES and ALineSegments for correct use
  - Review of Various methods to create a new Substation
  - Assist customer staff in the creation of a Substation using Deep Clone
  - Assist customer staff in creating a Substation using Graphic Modeler
  - Modeling CTGS in ETS
• Review Generation Modeling to include
  - Assist customer staff in creating a new Generator using Deep Copy or Deep Clone

Modeling Consulting
Display Building

This service applies to all Transmission and Distribution products (eterra, PO Reliance*, PO Advantage/ADMS Series 6)

Duration: 3-6 months
Location: On-site and Off-site

Key Customer Benefits:
- Use best practices in customer display building processes
- Provide techniques for more efficient display building

Description:
Improved customer staff knowledge in FG Builder, Substation Editor, and Reliance Display Editor. The display building service addresses all aspects of developing displays for GE’s products. Beyond the structured Technical Training courses, our SMEs provide customers with expert advice relating to:
- Displaying project planning and design
  - Reviewing existing legacy displays and advise on updates using best practices
  - Providing planning of display standards
- Developing display elements and prototypes to provide optimum results
- Building and linking displays to databases
- Providing business processes for maintenance, update, and support of displays:
  - Revision control best practices
  - Define maintenance/configuration control/update process
- Mentoring customer staff in the use of display building tools

Advanced Applications Consulting

Power/Network Applications

This service applies to all Transmission and Distribution products (eterra, PO Reliance*, PO Advantage/ADMS Series 6)

Duration: 3-5 days
Location: On-site

Key Customer Benefits:
- Enhance skill sets of customer Network Applications staff by collaborative development of the use of power system analysis
- To have access to additional short-term resources to meet immediate needs in power system applications

Description:
Power or Network Applications consulting areas include 1-on-1 mentorship with customers to demonstrate and coach the use of best practices and understand the resulting information from studies (beyond formal technical training). More advanced opportunities include optimization of the system, use of state estimating, best practices using Power Factor Analysis, advanced Contingency Analysis, and Voltage Transient stabilization. In addition, options include assisting customers with external model replacement or improvement, and observability analysis (advice on placement of measurement points).

This can also be linked with the use of the DTS to obtain meaningful results from Power System Studies.
Simulator Applications (DTS/DOTS)

This service applies to all Transmission and Distribution products.

Duration: Driven by customer requirements
Location: On-Site and Off-Site

Key Customer Benefits:
• Improve operations and leverage available functionality of the software simulator
• Improve simulation experience for end users and provide a more realistic training environment

For DTS:
• Provide knowledge transfer to customer instructional staff to train and prepare the operators for reliable operation and control of the grid (NERC-PER-005 or international equivalent certification) and Outage response/Restoration drills (NERC-EOP-005 or international equivalent) certifications

For DOTS:
• Provide knowledge transfer to customer’s instructional staff to train and prepare the operators for internal certification programs
• Provide storm response training at corporate level

Description:
Consulting on advanced uses of the DTS and DOTS applications to enhance the skills and confidence of end-user trainers in customer’s organization. GE SMEs will provide mentorship and advanced knowledge transfer to customer trainers so that Operators and Dispatchers carry out their roles efficiently and successfully.

Phase I activities include:
• Initial customer meeting, understanding specific use case scenarios
• Clone the DTS/DOTS environment on the GE customer support system to provide a credible test platform for any software fixes that may be necessary
• Test DTS/DOTS to ensure it is working properly (ensure DTS/DOTS starts up, cycles and simulation time is advancing)
• Perform an initial Health Check of DTS/DOTS System

Phase II activities include (but are not necessarily limited to):

- Work with Customer staff to correct any issues discovered
- Ensure that the DTS/DOTS is a satisfactory representation of the production environment
- DTS specific: Data Model Tuning. Tune data per customer’s requirements
- Document issues uncovered and suggest corrective actions. Work with customer staff to address any issues discovered
- The GE SME will provide recommendations on best practices with regards to keeping the simulator in sync with production, initializing from snapshots of state estimator and/or power flow save cases, and modeling scenarios for realistic training setup. Customer will implement GE recommendations on their own or include requirements in Phase II for GE SME to implement.
- Training courses for DTS/DOTS Instructor and Support Staff (up to 25 training credits included)
- For DOTS Storm readiness training: Identify scenario types (for example storm preparation training based on archived data information or hypothetical statistical damage data)

DTS specific:
• The GE SME will assist in designing Black-start scenarios and restoration procedures to create the most realistic situations for customer’s trainees. Tuning scenarios and cases for best training performance. This tuning includes the modeling and review of Black-start units to properly handle aspects of grid synchronization
• The GE SME will provide modeling consultancy to help simulate the customer’s network analysis applications (state estimation, real-time contingency analysis, power flow studies, automatic generation and control), load shedding procedures and/or other critical operational procedures on the DTS. Depending on the nature of devices involved and level of realism expected, such simulation may require consideration of software enhancements. Tuning power system model to represent utilities equipment
• Where applicable, the GE SME will discuss the scope and requirements for coordinated simulation scenarios such as with neighboring utilities.
utilities, ISOs or with another simulator. Depending on the nature of the requirements, software enhancements may need to be discussed and implemented at customer’s discretion.

**DOTS specific:**
- The GE SME will assist the customer in designing test scenarios and restoration procedures to create the most realistic situations for customer’s trainees. This tuning includes the modeling and review of any existing scenarios to ensure they are operating properly.
- The GE SME will provide modeling consultancy to help simulate network analysis applications, load shedding procedures and/or other critical operational procedures on the DOTS. Depending on the nature of the devices involved, such simulation may require consideration of software enhancements depending on the level of realism expected.
- Where applicable, the GE SME will discuss the scope and requirements for coordinated simulation scenarios such as with the Transmission simulator for training on major power system event restoration training. Depending on the nature of the requirements, software enhancements may need to be discussed, and implemented at customer’s discretion.
- For Storm readiness training: Creation of test case scenarios based on archived data information or hypothetical statistical damage data.

**For DTS and DOTS:**
- Set up the training scenarios using customer models.
- Testing of scenarios.
- Investigate and triage software and model issues found during this service.
- Develop training procedures and manuals for customer-specific cases. Create customer-specific processes for maintaining up-to-date training schedules.
- Develop and tune fault line scenarios.
Data Archiving

This service applies to PO Advantage/ADMS Series 6
Duration: Driven by customer requirements
Location: On-site and Off-Site

**Key Customer Benefits:**
Are you concerned about the performance of your system and the volume of data stored? Are you confident all the data maintained is actively being used by your application? Are you looking to optimize your hardware and eliminate unnecessary constraints? This service can achieve it all.

- Improve operations and performance
- Optimize existing software and eliminate unnecessary hardware cost

**Description:**
With the Data Archiving Service solution, our subject matter experts apply technology knowledge to deliver a preventive maintenance program that provides an appraisal of the Application Database within the Network Management System servers replicated environment. The review can be carried out on-site or remotely by experienced GE technical staff. The Service is designed to ensure that your live system database contains the largest amount of relevant operational data without impacting the storage and performance capabilities of the system.

This service is comprised of three phases (Discovery, Design, and Implementation).

**Phase I Discovery**
In the initial phase, the Archive Service will comprise the following tasks to accomplish the data gathering, analysis and archiving data based on the problem statement. Activities included in this phase:

- Kick-off & Planning Meeting
  - User review sessions for performance and/or stability concerns
- Review Image Management / System Concerns (Admin and User input)
- Gather initial system structure, environment, and database information
- Configuration of GE analysis tools and data capture using SQL queries
- Table analysis based on the data captured
- Review current archiving policy if applicable
- Application Analysis
- Assessment and Recommendation Report

An Assessment and Recommendations report will be provided at the end of this phase.

**Phase II: Design and Preparation**
Based on the Assessment and Recommendations Report from Phase 1, a design for the new Archive Database policy will be determined which will include activities such as schema design, scheduled tasks, and configuration. Application areas that we are going to archive data from are Alarms, Jobs, Incidents, Events, and other key elements within system.

- Design profiles: <Customer Name> will work with GE and design ADMS profiles for each table to be archived based on agreed retention period
- Prepare scripts/tools used for archive validation and updates
- Identify repository location for the archived data

A report for the new architecture overview will be provided at the end of this phase.

**Phase III: Implementation**
During this phase our SME will implement the newly designed archive solution in the QA environment and validate the archive solution meets the requirements (based on retention period and data types).

Following validation of the solution in the QA environment, the newly designed archive solution will be deployed in the Prod environment.
Monitoring Solutions in general are designed to ensure greater reliability and utilization, improved operations, enhanced security and reduced costs without impacting the performance of the system. This constant overview presents real-time status and inconsistencies in a dashboard that managers can quickly review as to how the system is used and it facilitates improved engagement between administrators and users.

Diagnostics is a vertically-based monitoring tool - not to be confused with monitoring tools that look at systems horizontally. Horizontally-based monitoring tools can tell you that there is a problem with any IT system, but they cannot tell you what the exact problem is in that specific system. Diagnostics on the other hand can intrinsically tell the customer exactly what the problem is inside Smallworld* - relevant to any customer desiring to monitor their GE Smallworld* GIS. For example, when uptime of the server/service becomes an issue, both the vertical and the horizontal solutions can identify the problem – but to get to the root of the issue one needs to dig vertically into the specific system and sometimes pretty deep. The picture below illustrates how only a purpose-built vertical monitoring solution is able to provide actionable insights into a single domain, coexisting with a horizontal monitoring solution that provides basic insights across all systems.

Diagnostics out-of-the-box can facilitate a proactive approach to monitoring. Diagnostics acquires granular information about the performance and use of GE Smallworld* and presents that information in easy to understand dashboards and charts to assist customers by informing and alerting them to compromising activities. Diagnostics provides a real-time constant overview of GE Smallworld* usage and can prevent severe implications if it breaks down, is improperly used or does not perform to expectations.

Innovative and Flexible operator environment

Move beyond just guessing how your production environment is performing and know precisely what is happening. Detailed information on performance, networks, downtime, quality, business processes and more – visualized and made easy for you to understand. Getting a holistic, comprehensive view of how your GE Smallworld* environment is performing at any given time is essential in keeping focus on the most critical tasks and not wasting time.

Keep track of what’s most important

What are the used or unused features? Are features being used properly as per training? Managers want to understand whether the investment made was 

"Save time by speeding up your Smallworld* environment"
worth it. One of the most important features in Diagnostics is the ability to log the whole range of activity within the GE Smallworld* environment. No need to run complicated queries or wait for other people to run reports for you. Your dashboard is always up to date with real-time data, configure KPI's and insights to match the needs of every user in your company. It is a hyper-flexible environment designed to meet your needs in monitoring.

Prevent Data Corruption
Often not following proper business processes can cause data corruption. Real-time data monitoring (RTDM) is a process through which an administrator can review, evaluate, and modify the addition, deletion, modification and use of data on software, a database, or a system. It enables data administrators to review the overall business processes and functions performed on the data in real-time, through graphical charts and bars on a central interface/dashboard.

Alarm Management for faster resolution
Imagine reaching system limits that cause usage disruption and potential system downtime. Diagnostics is the most advanced alarm system in the GE Smallworld* environment where alerts about users, networks, file sizes, super files, checkpoints, versions and latency can preempt problems before they happen. When not following defined business processes, generate an immediate alert, and then investigate the generated alert so that it can be resolved.

Improved User Engagement
When assessing various alerts or improper software use, advance notice of potentially compromising situations is appreciated by users. Preventing user from making mistakes and completing tasks on time is the key to successful software usage. Bad user behavior or potential lost work is pre-empted resulting in a positive impact on both productivity and user satisfaction due to this interaction.

Data logging to keep the history
Keeping historical data allows the customer to investigate past activities. Data is stored in a “Big Data” database where it is easy to create dashboards to visualize trends based on raw data. Use initial data to determine the baseline for databases, application usage, performance and software configuration. Compare this baseline and subsequent baselines to visualize the improvements and changes made to every released GE Smallworld* environment; Gradually make incremental improvements. Make migrations easier and reduce expensive customizations by excluding non-used functions in the upgrade process.

Intuitive Reporting
Managers always wish to see an overview of the system whether it be dashboards or reporting, which is why these are critical functions in Diagnostics. Easily keep track of all your production data and discover opportunities for improvements with daily, weekly or monthly reports on time usage, downtime, quantities and cycle times. Diagnostics keeps track of all errors, including errors not seen by the user.

Use case: conflict investigation
Can be used to help troubleshoot issues during upgrades and in day-to-day operations. Can provide logs and assist GE Support with resolving the issue up to 50% faster.
Diagnostics Customer Use Cases

Reports and Queries run time
Challenge: A Telecommunications company regularly runs an extensive query and update process to their Smallworld database. This type of update could only be run at night or in non-productive hours. As the database grew in size this update would take longer and eventually would spill over into production hours and affect the overall performance of the system and user productivity.

Solution: Diagnostics was used to determine that one query was taking the majority of the time in the process. Diagnostics suggested caching the query results and improving database indexes.

Benefit: The update process now runs more efficiently in the nightly timeslot and finishes before peak user productivity is impacted.

Upgrade Planning
Challenge: Customer is getting ready to upgrade a customized Smallworld environment. The customization consists of several expensive to maintain user productivity tools.

Solution: Data about what functions are used most commonly and by how many users can be gathered and analyzed using Diagnostics to record every user action within Smallworld.

Benefit: By using the insights that Diagnostics can provide, the customer decided to retire up to 30% of the customizations that were deemed not used by their users, saving the long term costs associated with maintaining code that was no longer used.

Operational Success
Challenge: A user has difficulties operating the system due to unexpected behavior. They key user tries to reproduce the situation but is not able to and the situation remains unresolved.

Solution: The past action path is shown by Diagnostics, so the key user can review the user steps and provide clearer instructions or ask the developers for a code fix.

Benefit: User engagement and satisfaction will increase due to more fruitful interactions, user success will improve due to higher bug fixing rate, both leading to improved overall productivity.

System Performance Optimization Service from GE Digital

Performance is one of the key factors to determine the success of a system implementation

- Do you ever think your system is just too slow?
- Are you concerned that your hardware is approaching its limits?
- Are you planning a customization or bulk data load and want to measure its effect on performance?
- Do you want to keep an eye on performance with regular health-checks and monitoring tools?

GE Digital has a service solution to meet your needs...

System Performance Optimization Service

With the System Performance Optimization Service solution, our customer service team applies its technology knowledge and experience to analyze the Smallworld* database component performance—and all the elements around it that can affect the final application performance. With this analysis, we can determine the optimum parameters and architecture for your system.

Phase I
Define a set of procedures to be executed in order to analyze your Smallworld* system performance and to determine whether or not the configuration is appropriate.

Phase II
Analyze the results and identify opportunities for improvement.

Phase III
Propose recommendations for actions to be performed on the system and present reports to you including the following:

- Establish a benchmark for your system and compare it to current performance levels
Consulting Service Package from GE Digital

Comprehensive Analysis

With the Consulting Service Package, our customer support team applies its deep domain expertise and technology skills to analyze your Smallworld* database component performance (System Performance Optimization Service). In addition to the System Performance Optimization offering, this package also includes an additional 200hrs of support per year*.

This comprehensive analysis is done as part of the System Performance and Optimization service. A complete Health Check Assessment report, including performance assessment and recommendation, will be provided at the end of the analysis. The report will include the following:

- Establish a benchmark for your system and compare it to current performance levels
- Analysis of read/write speeds to your database
- A breakdown of hardware capacity and how close you are to system limits
- Checks on drainage of Unique Values from the database
- Analysis of wasted space within the database and recommendations on how to maintain a healthy database
- Database size, locks and integrity
- Memory parameters
- Performance analysis of internet-deployed solutions
- Set a baseline for your system performance from which to measure future improvement or degradation
- Recommendations for architecture enhancements and potential improvements from upgrading
- System monitoring tools to keep tabs on the health of your system
- Alternative and checkpoint review
- Recommendations for architecture enhancements and potential improvements from upgrading
- System monitoring tools to keep tabs on the health of your system

In addition to the Health Check, this package includes two user conference passes and 200 additional support hours per year* which can be used for:

- On demand support
- What if analysis
- Upgrade gap analysis
- Support related to customizations

* The 200 additional support hours must be used within the year and cannot be transferred to the next year.
Educational Services Package from GE Digital

GE Digital Education and Consulting Services provide a full range of technical training for customers of our Digital Energy products

Open Registration Training
The GE Technical Training Institute (GE-TI) offers scheduled training courses throughout the year at various GE-TI locations and Centers of Excellence. The courses are open to supported customers to meet the needs of those wishing to update their skills in specific aspects of the Digital Energy software products.

The courses range from introductory courses to more advanced topics. Small class sizes and state of the art facilities provide an excellent environment to achieve learning objectives. Courses include lectures, and substantial experiential learning through hands-on lab. Some locations offer remote attendance options. In addition, we offer selected courses through eLearning delivery. This allows users to participate in training on their schedule.

Customer Site Training
The GE-TI offers delivery of training courses at customer sites. Scheduling is arranged to meet the customer needs and the courses may be customized to address specific topics of interest. Optional training environments are available including dual screen, fully loaded laptop workstations and a cloud lab environment.

Advanced workshops are also available where customers may specify the topics of interest and SMEs provide a flexible less structured knowledge transfer opportunity.

Project Training
The GE-TI provides training throughout the delivery of larger projects. This includes training for new customer staff to provide the skills and knowledge to operate a new Digital Energy solution. A formal training plan is designed to ensure all the needs of a new customer are met and that the recommended courses are delivered to align with the project timelines and milestones.

In the case of upgrade projects, training courses are provided that highlight the new features and improvements to the software so that customers may quickly make use of these features and operate the updated system efficiently.

The GE-TI Training Team
The GE training team is comprised of experienced subject matter experts and GE engineers. They are well practiced in delivering the courses, take an empathetic approach to instructing others and have an excellent understanding of the needs of the Customer.

Locations
GE Digital delivers Global Education Services to customers at GE-TI locations below as well as on-site. The GE-TI/Centers of Excellence below represent GE’s offices for Digital Energy Technical Training activities:

- Bucharest, Romania
- Dubai, UAE
- Livingston, UK
- Massy, France
- Melbourne, Australia
- Melbourne, Florida, USA
- Redmond, Washington, USA

AEMS Learning Paths | ADMS Series 3 Learning Paths | ADMS Series 6 Learning Paths
---|---|---
Training Credits | eLearning & Webinar package |
Training package for Transmission and Distribution product lines

Location: Off-site - eLearning and Webinar package

Key Customer Benefits:
- Pay once for your team's training needs and avoid procurement and approval processes for one-off training purchases
- Pre-purchase with confidence even if you have not planned your training strategy
- Leverage your "use or lose" budget to ensure your team gets the training they require
- Earn discounts

Description:
We work with you to bridge the gap between the theory and real-world knowledge in the comfort and the convenience of your own home office. Our Educational Service Package is a price-reduced bundle available exclusively to all our Transmission and Distribution customers with a current maintenance subscription. It includes 15 eLearning enrollment and 4 Webinar sessions.

Training Credits for Transmission, Distribution and GE GIS product lines

Location: On-site and Off-site

The Training Credit program offers your business the following benefits:
- Encourages that critical training needs are addressed as the project is scoped without having to know the specific class and schedule details.
- Enables training to be budgeted for and procured up front on a single purchase order.
- Simplifies the purchasing process and reduces administrative overhead by eliminating the need to generate multiple purchase orders during a project or budget cycle.
- Locks in volume discount savings of up to 20% by aggregating training purchases.
- Drives an ongoing conversation to ensure that organizational readiness and technology proficiency are prioritized and meeting the needs of your business.

Description:
GE Digital Educational Services equip you and your teams with the capabilities needed to journey from adoption readiness to product proficiency to outcome attainment. As projects are being defined, scoped and budgeted, specific training requirements are not always well known. Organizations need a way to budget for their critical training needs up front yet have flexibility to set the classes and timing that will functionally deliver the desired business outcomes.

GE Digital Educational Services Training Credits exist to provide your organization with the maximum flexibility to purchase and redeem training throughout a 12-month period from the date of the GE invoice reflecting your purchase. Training Credits are valid currency for open enrollment classes, eLearning, Webinars and on-site learning at one of the GE training facilities. You have the option to select between 25, 50 or 100 training credits.

* Customer may not return and/or receive a refund (partial or otherwise) for unused Training Credits. Unused credits cannot be used the subsequent year.
Select a training path to become a subject matter expert in the following topics:

- System Management
- Front End Processing
- Loadforecasting
- DTS Instructor
- Source Modeling
- Power System Engineer
- Display building
- Operator training (NERC Operator CEHs*)
- Support Specialist
- Technical Specialist

**Training Paths**

**Subject Based Packages**

**eLearning and Webinar Educational Services package**

Bundle includes 15 eLearning enrolments and 4 Webinar sessions

Purchasing a packing brings the following benefits:

- Price reduced bundle
- Pre-purchase with confidence even if you have not planned your training strategy
- Pay once for your team’s training needs and avoid procurement and approval processes for one-off training purchases

**Training Credits**

Packages of 25, 50 or 100 training credits

Training Credits are the most flexible way to purchase training from GE Digital.

- Can be used for eLearning, Webinars, or classroom training
- Leverage your "use or lose" budget to ensure your team gets the training they require

Custom packages are available on request. Please contact your GE Digital sales representative for further details.
AEMS Learning Paths

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<td>GRID109</td>
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<td>EMS112</td>
<td>SCADA Modeling in Source</td>
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<td>EMS115</td>
<td>Generation Modeling in Source</td>
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<td>EMS114</td>
<td>Network Modeling in Source</td>
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<td>2</td>
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<tr>
<td>3-4</td>
<td>Advanced</td>
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Our pre-built packages will provide certification upon successful completion, but certification can also be obtained outside the packages. Our team will work with you to determine the appropriate course sequence required to achieve this.

The package price includes 10 enrolments for each eLearning class and 10 attendees for each Webinar session. A minimum of 4 attendees is needed for the webinar session to run.
ADMS Series 3 Learning Paths

<table>
<thead>
<tr>
<th>Package 1: $13,498</th>
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<tr>
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<td>Advanced DMS Series 3 Product Features</td>
<td>E</td>
<td>Customer Support</td>
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<tr>
<td>DMS101</td>
<td>Introduction to ADMS Series 3</td>
<td>E</td>
<td>Customer Support</td>
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<tr>
<td>DMS011</td>
<td>Operator training in SCADA, Navigation, UI and Alarms</td>
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<td>DMS008</td>
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<td>DMS004</td>
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ADMS Series 6 Learning Paths

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<td>TM07</td>
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<td>TM04A</td>
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ADMS Series 6 Learning Paths

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| Levels | |
|--------||
| 1 | Core concept |
| 2 | Intermediate |
| 3-4 | Advanced |

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<td>Operator</td>
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<td>100 Credits</td>
<td>$80,800</td>
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| Levels | |
|--------||
| 1 | Core concept |
| 2 | Intermediate |
| 3-4 | Advanced |

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<th>Package 7: $52,500</th>
<th>Educational Services package</th>
<th>Roles</th>
<th>Level</th>
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<td>eLearning and Webinar</td>
<td>Educational Services package</td>
<td>W - Webinar</td>
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<td>TM100</td>
<td>ADMS Series 6 Product Features</td>
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<td>ADMS Series 6 Control Engineering</td>
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<td>TM13</td>
<td>ADMS Series 6 DPF Overview</td>
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Package 4: $52,500 eLearning and Webinar Educational Services package

Our pre-built packages will provide certification upon successful completion, but certification can also be obtained outside the packages. Our team will work with you to determine the appropriate course sequence required to achieve this.

Our pre-built packages will provide certification upon successful completion, but certification can also be obtained outside the packages. Our team will work with you to determine the appropriate course sequence required to achieve this.

The package price includes 10 enrolments for each eLearning class and 10 attendees for each Webinar session. A minimum of 4 attendees is needed for the class to run.
Managed Services solution for GE Transmission, Distribution and GIS product lines

GE Digital Managed Services provides a wide range of technical IT services for customers and potential customers of our Digital Energy products.

Due to systems complexity and the unique skill sets required, GE can provide the services to manage your digital energy Transmission, Distribution, and solutions. Trust GE to be there for you, helping you maximize the benefit of our digital energy products. Managed Services is a natural extension of Maintenance and Support, providing a safer and more cost-effective IT operation in the control room.

Market Challenges
- IT environments are becoming more complex
- Security incidents can lead to high revenue losses and possible penalties. Cyber Security resource availability is scarce
- Customers cannot benefit from the new product releases at a proper pace
- IT infrastructure is moving at an accelerated rate

Benefits of Managed Services
- Cost reduction
- Lower capital expenditure
- Superior expertise and better service
- Expertise on tap
- Increased efficiency
- Reduced risk

Operating Cost Reductions
- Through Managed Services, we reduce customer’s systems ownership costs, providing higher value from investment at lower predictable cost

Improved Performance
- We eliminate surprises and maximize the reliability and availability of the customer’s system
- By optimizing system configuration and performance from the outset, we control variables that drive successful system operation and customer satisfaction

Technical Expertise
- GE has the technical and domain expertise to offer the highest level of support for GE software solutions
- Through Managed Services, we resolve issues proactively versus waiting for a support call
Managed Services

Many transmission and distribution utilities are considering adopting Managed Services, and some have already moved to that model.

GE’s strategy is to focus on the management of our software solutions and applications, where we can bring the most added value to customers and leverage our expertise for their benefit.

GE Managed Services covers full solution management: day-to-day running, maintenance, and support of the IT systems in scope.

• Complete and streamlined solution for application operation, system and database, and infrastructure management
• Improved operational activities
• IT staff augmentation without the risks and costs of additional headcount
• Removal of performance barriers that prevent you from committing to service-level agreements with your end users

GE Managed Services focuses on preventive actions and early detection in order to limit the number of service-affecting incidents and issues. This is achieved by automatic monitoring tools that reduce, to a minimum, the number of these negative issues.

GE has the technical staff to perform day-to-day operations, with the technical skills to cover all the technology-related parts of the solution (OMS, DMS, GIS, Operating Systems, DBs, VMware, Citrix, SQL, etc.).

GE has the product-specific technical and domain expertise to offer the highest level of support for GE software solutions.

Through Managed Services, we resolve issues proactively based on the implemented monitoring solution that covers all the components of our solution in scope.

We eliminate surprises and maximize the reliability and availability of the customer’s system.

Benefits of Managed Services

Automated monitoring for each customer’s solution platform:

• Solution monitoring
• Infrastructure monitoring
• Performance monitoring
• Predictive analytics for measuring system performance and supplying preventative measures to customer ICT and BAU application Tier 2 and 3 support teams
• Improved system performance
• Increased platform and solution uptime
• Improved hardware performance

• Improved solution performance
• Proactive vs. reactive maintenance
• Offers 24x7 and 8x5 SLA solution and environment support (including third-party operational software support, i.e., OS, DB, etc.)

30% increase in Mean Time Between Failures (MTBF)

By real-time proactive monitoring, we estimate the reduction in the number of service-affecting incidents at up to 30% which will result in an increase of the MTBF.
30% decrease in Mean Time To Restore (MTTR)
Due to specific tools and processes, the MTTR will decrease significantly, and this, in turn, leads to a lower risk related to productivity, reliability, and penalties avoidance.

Regulatory Benefits:
• Assist customer IT teams with easy access to system performance and event reports for production and Disaster Recovery (DR) environments
• Expedient diagnostic assistance with Root Cause Analysis (RCA) for customer IT teams
• Expedient diagnostic assistance with RCA for customer Information and Communication Technology (ICT) and Business as Usual (BAU) application Tier 2 and 3 support teams
• Historical auditing of system and environmental outages
• Project Cycle Testing and Scalability support
• Support for deployment and scalability testing
• Support for infrastructure capacity management in preparation for future growth

Services Management
✓ Capacity Management
✓ Availability Management
✓ Disaster Recovery and Business Continuity Support
✓ Configuration and Asset Management
✓ Incident Management
✓ Problem Management
✓ Change Management
✓ Release Management
✓ Security
✓ Reporting

Benefits of Managed Services
GE offers tailored Managed Services models to suit the Customer’s demands and expectations. These models are applicable to all the solutions in our portfolio (Transmission, Distribution and GE GIS solution).
Our Team
The Managed Services team has extensive experience in performing the related activities with a full complement of skill sets in different GE Solutions, IT technologies, products, and processes.

The Managed Services team has a very strong focus on automation for IT activities and monitoring. This is required to ensure proactive and real-time 24/7 control for the managed solutions.

Managed Services Monitoring and Maintenance

Mean Time Between Failures (MTBF) Increase
• Thanks to expert skills and proactive monitoring and maintenance, we are able to drastically reduce the occurrence of issues impacting system operation. An MTBF increase up to 30% can typically be achieved.

Mean Time To Restore (MTTR) Decrease
• Through extensive automation, average troubleshooting duration is significantly decreased and service restoration time is improved, reducing the overall impact on operations. A typical MTTR improvement of up to 30% is expected.
Monitoring and Maintenance dashboard

Through Managed Services, we resolve issues proactively based on the implemented monitoring solution that covers all the components of our solution in scope.
Grid Security Support Services

Security Support Services for GE Transmission Product Line

GE offers specific support services to help our customers address Cyber Security updates and compliance for their mission critical systems.

NOTE: This service applies to all GE Digital Grid (GE) Advanced EMS products (e-terra, PO Reliance) Level 2 Security Patch Testing Support Services, and Level 3 Security Patch Deployment Support Services

Key Customer Benefits:
• Helps to ensure compliance with NERC CIP and other Cyber Security regulatory requirements
• Verifies compatibility of OS / Third-Party security patches with customer solutions
• Assistance with security patch management and deployment without over-burdening EMS staff

Description:
GE customers with operational AEMS systems must maintain the patch levels of these systems to ensure that available Operating System and non-embedded Third-Party (3rd party) software security patches are installed in a timely manner. This is a continuous effort that requires careful testing and change management and must meet stringent regulatory requirements for security patching.

For GE customers with AEMS systems based on our Platform and Habitat software products, GE includes or bundles Security Update Validation (SUV) services as part of our Standard M&S contracts. These services provide security patch installation and testing for specific non-embedded 3rd party software to verify compatibility with standard GE products, as well as security vulnerability scanning for all embedded 3rd party software within the tested GE products.

For customers on Standard M&S, it remains their responsibility to perform further testing as required of their own system configurations, and to deploy the patches across their non-production and production environments. This additional testing is particularly important to address compatibility with their specific configuration, application / enterprise integration, and software customs.

GE is now offering two new optional services to assist our customers with these essential security patching activities.

Level 2 Security Patch Testing Support Services
• GE will install and test available security patches for specified operating system and 3rd Party software on a customer test system based on an agreed schedule and patching management policy
• GE will provide a report documenting the detailed scope and the results of the testing

Level 3 Security Patch Deployment Support Services
• GE will provide Engineering support services to assist the customer with the deployment of tested Operating System and 3rd Party software security patches
• GE support services will be performed either on-site at the customer location or remotely via customer provided and managed secure access provisions.
• GE will work with the customer to ensure that the tested security patches are deployed successfully, or that a plan is put in place to address any issues that prevent their deployment.
Security Support Services for ADMS Series 3

Maintain & Support your GE Digital Software
Security Support Services for GE Distribution Product Line

Level 1 Security Patch Testing
GE offers specific support services to help our ADMS Series 3 customers address Cyber Security updates and compliance for their mission critical systems. With our service you can eliminate surprises and maximize reliability and system availability.

We provide committed turnaround testing of operating system vendor security patches for compatibility with GE Core Product applications and separately installed Third-Party Software specifically integrated into GE core product applications. We also perform both inventory and security vulnerability scanning of embedded 3rd party software. This service includes customer notification of test results to verify the compatibility of the tested security patches with Series 3 ADMS products.

Security Update Validation Service Testing of individual patches is limited to those that are security-related only. Testing is limited to GE Core and Independent Products as defined in the Product Life Cycle Policy and the Maintenance Support Services Description.

Independent Security Vulnerability Testing
GE will contract with a leading Security Consulting Services company to perform security vulnerability testing of the most recent Series 3 ADMS major release. Testing will be focused on new functionality in the release, and on most likely cyber attack surfaces identified by the independent tester.

Any security vulnerabilities will be captured as security defects and assigned to GE Product Engineering to address. Remediation of critical security vulnerabilities will be based on a risk assessment of the vulnerability. A summary report of the findings will be made available to GE ADMS Series 3 customers following a specific, secure NDA and disclosure process.

NOTE: These services apply to all GE Digital Grid (GE) Advanced DMS Series 3 products. Services will begin on the ADMS version 3.12 release, and will be expanded in 2022 to cover release versions as defined by the Product Support Lifecycle.

Key Customer Benefits:
• Provide timely security patch testing and validation results from GE Support experts
  • Testing of specific ADMS versions with available security patches for specified Operating System and separately installed Third Party software.
  • Security vulnerability scanning of embedded Third Party or Open Source Software.
  • Timely reporting of results to give you the information and confidence to keep your Series 3 ADMS system at current security patching levels.
• Ensure the compatibility of security patches before they are deployed to production ADMS environments
• Test cycles aligned with current Advanced EMS (e-terra based) SUV program
• Patch compatibility testing at Business Validation Test [BVT] level, focused on assessing the overall health and functionality of the patched ADMS Series 3 system(s).
• Utilizing automated test scripts together with manual test procedures to ensure appropriate functional testing coverage.
• Scanning of release code branches for embedded Third Party and Open Source software, both for inventory scanning and security vulnerability scanning.

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