

GE Healthcare

Project Implementation Guide

Perioperative products

Working together to get your new technology online so you can begin providing patient care.



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1.0 Introduction

1.1 About this manual

To ensure the successful implementation of your new perioperative system from GE Healthcare, this guide provides information needed to prepare for planning, installation, testing, and activation of your system. Your sales representative will guide you through this process. The contents of this manual and the detailed steps may not apply to every installation as equipment, site needs, and customer requirements can differ from hospital to hospital.

Implementation of GE products in the perioperative environment is best accomplished through a team effort involving both the customer and GE. The activities outlined in this guide are designed to:

- Define the team members and their responsibilities
- Outline high-level project tasks
- Define what information is needed, who should supply it, and when it should be supplied
- Create and communicate the project schedule
- Transition the customer to successful operation of the product

1.2 Intended audience

The Project Implementation Guide is an information resource for both GE and customer team members involved in any phase of implementation. This guide also can be useful to hospital administrators, managers, and staff who have an interest in the overall implementation process. Our intent is to keep this guide concise and, when possible, reference other documents published by GE for product descriptions, and clinical and technical information.

1.3 Product specifications

Please refer to product brochures and service manuals for detailed physical, electrical, and environmental specifications.

2.0 Implementation teams

2.1 Team roles and responsibilities

The success of a system implementation depends on critical factors such as leadership, project planning, effective communication, and proficient execution of tasks. Teams with defined project goals and objectives will deliver a more timely and efficient system implementation.

Guidelines for team members' roles and responsibilities are outlined below. Depending on the size and scope of the system implementation, some roles may either be combined or further subdivided. However, the overall responsibilities of these roles will remain as defined under these guidelines. If any roles and responsibilities need to be modified to meet the specific needs of the project, the changes should be documented, communicated, and agreed upon by the Project Team.

The Project Team is composed of both GE and hospital personnel. All team members should review the following team member definitions and responsibilities.

Customer core team members

Project Manager (PM)—Maintains overall responsibility and authority for project activities. This person will be the central contact for planning meetings, scheduling site visits, and gathering and disseminating any documentation that needs to be provided to the GE Project Team throughout project implementation.

Medical Director/Lead CRNA—Represents the clinical aspects of the project, including system configuration, equipment placement, and training. This person must have the knowledge and authority to represent the clinical needs of the organization in relation to this project. They will help assess the need for and promote physician training and will function as a training resource to help coordinate physician training.

Director of Surgical Services/Director of Perioperative Services—Represents the Pre-Op/PACU/OR nursing staff for the project, including staff availability and training requirements. This person must have the knowledge and authority to represent the clinical needs of the organization in relation to this project. He or she will approve the install schedule and training timeline for the implementation.

Lead Clinical Educator—Facilitates staff education planning. Responsibilities includes: selection of Monitoring/Ventilation Resource staff; determination of class schedules; planning, pre-scheduling, and posting staff attendance; and gathering data and resources to configure monitor/ventilation defaults. Role also includes verification of pre-training preparation for each participant.

Nursing Director/Manager—Represents the clinical aspects of the project, including system configuration, equipment placement, and hospital monitoring policies and standards. This person must have the knowledge and authority to represent the clinical needs of the organization as they relate to this project.

Lead Clinical Educator—Facilitates staff education process for each unit. Responsibilities include: selection of the Monitoring Resource Team; determination of class schedules; planning, pre-scheduling, and posting staff attendance; and gathering data and resources to configure monitor defaults. Role also includes verification of pre-training preparation for each participant.

Biomedical Engineer Director/Manager—Represents the customer medical equipment requirements, specifications, and standards. This person should be familiar with physiologic monitoring equipment and network interfaces.

Information Technology Director/Manager (IT)—Provides the knowledge and authority needed to represent the IT department throughout the planning, installation, and GoLive phases of the project. It is imperative that this person be authorized to represent the network standards and policies for the hospital.

Facilities Manager-Represents the customer on electrical, mechanical, carpentry, and telecommunications standards. The Facilities Manager is the main point of contact for hospital buildings, trash disposal, power, HVAC, and telecommunications, and provides GE access to hospital loading dock and equipment staging areas, if required.

GE Core Team members

Project Manager (PM) or Account Coordination Specialist (ACS)-Provides leadership and serves as primary contact of the GE Core Team for the successful planning, execution, and acceptance of the GE system(s). The GE PM/ACS works with GE and customer project teams to coordinate all implementation activities, resources, documentation, and training.

Field Engineer (FE)-Coordinates and performs site survey, configuration of networks, final assembly, system checkout, and assistance with the installation into the clinical area. The Field Engineer coordinates with hospital personnel and leads GE installation team members and contractors in completing the system implementation.

Network, Design & Integration Engineer (ND&I)-Performs system design and may assist in identifying network requirements pre-sale, conducting the site survey and collaborating with the core team to configure and validate VPN connectivity.

Clinical Applications Specialist (CAS)-Collaborates with Lead Clinical Educator to develop a Training and/or GoLive schedule within the guidelines of the purchased training plan. Provides educational materials and training objectives as determined by the selected training program. CAS will provide education on the features and functionality of the system, explain defaults and configuration options to the appropriate Clinical Sub Team members, and support the staff during system GoLive.

Sales Representative-Defines requirements and sets customer expectations throughout the sales process. Obtains architectural drawings prior to the site survey and provides quotes for any additions to or changes in scope.

2.2 Customer sub teams

Technical sub team

Depending on the size and scope of the project, the customer implementation team may require a separate team to review technical needs, provide expert recommendations and decisions, and coordinate technical tasks associated with the project. This Technical Sub Team would typically include representatives from Biomedical/Clinical Engineering, Information Technology, Facilities Management, and Telecommunications. The team will address specific technical tasks and considerations such as cable installation, facility guidelines, code requirements, hospital network infrastructure, telecommunication equipment, carpentry, storage, product placement, heating and ventilation, and electrical requirements.

Clinical sub team

The customer implementation team also may choose to form a Clinical Sub Team to review system needs and considerations, provide system recommendations and decisions, and establish policies and procedures relating to the GE system. Recommendations for membership and responsibilities of this Clinical Sub Team are described in Section 6.

3.0 Additional responsibilities

3.1 Customer responsibilities

The customer is responsible for performing the following tasks prior to and during the implementation of the GE system. All action items will be reviewed in detail during project kickoff. Unavailability of, or delays in, providing certain items prior to installation may result in delayed GoLive and/or additional customer cost. **Please note that any changes to the project schedule require advance mutual agreement.**

Project management

The customer will assign a primary contact person to assemble customer resources and requirements as needed throughout the implementation process, and who is responsible for the implementation schedule and deliverables owned by the customer.

Vendor credentialing

If an on-site visit is required by the GE team, throughout the project, the customer will provide any information needed for vendor credentialing prior to the site visit.

Document approval

The customer will provide the appropriate individuals to approve documents created throughout the project purchase. The customer is responsible for coordinating timely customer review of, response to, and approval of project documentation.

Architectural drawings

Prior to the scheduled site survey, the customer is responsible for providing multiple sets of full-scale, hardcopy architectural drawings, as well as electronic (AutoCAD®) drawings for all equipment locations. Locations of bedside monitors, central stations, and network closets should be marked with a highlighter on the hardcopy drawings, and care unit names should be clearly identified. AutoCAD files shall include floor plan and room number/name layers.

Equipment placement and security

The customer is responsible for identifying equipment placement locations prior to site survey and for assuring the availability of these spaces during installation. The network equipment locations shall have controlled access and environmental controls. The customer shall provide members of the GE implementation team with access to secure locations, as needed. Any subsequent change in equipment placement will likely cause a delay in project completion. The customer will be responsible for any applicable costs associated with the change.

Closet location and rack/space allocation

The customer is responsible for providing adequate communication closet space, environmental control, and power source for installation of system network components. The ND&I team will review the closet locations noted on the customer's architectural drawings and provide the requirements to the hospital at the end of the site survey.

Equipment storage and transportation

It is the customer's responsibility to receive all system components shipped to the hospital, including all monitoring equipment and installation materials. The customer also is responsible for equipment transportation from the receiving dock to its designated storage and/or staging location(s). The customer is responsible for the proper and secure storage of the equipment.

Cable installation

Depending on the networking level purchased, it may be the customer's responsibility to install, terminate, and/or certify cables per system design. In any case, it is the customer's responsibility to identify any unique color and/or labeling requirements for network cables and wall plates. The customer also is responsible for providing cable trays and hooks for horizontal cable runs, as well as adequate conduit space for vertical cable runs.

Fiber connectivity

Certain products offer billable options for network integration. Please refer to your sales contracts for details. If the network integration option is not purchased, fiber installation, termination, and certification are the responsibility of the customer to follow the specifications recommended by GE.

Carpentry and construction

The customer is responsible for any carpentry and/or construction work required for installation of the GE systems. Millwork required to house system components, installation of grommets and/or vertical wall channels, and any other construction required for the systems will be the responsibility of the customer. If a server is to be located in a cabinet, the cabinet must be equipped with a cooling fan.

Electrical outlets

The customer is responsible for providing any additional electrical outlets required for the system and networking components. All electrical supplies must be on the hospital's emergency power system and have generator backup. If hubbell plugs are needed, it is the customer's responsibility to provide, install, and perform electrical safety tests.

Core drilling

All core drilling-vertically and/or horizontally-shall be the responsibility of the customer regardless of whether the customer or GE pulls cable.

Conduit

GE does not require horizontal cable runs to be in conduit. If conduit is required by the hospital, installation of any new conduit is the responsibility of the customer.

Local codes and special requirements

At the beginning of the project, the customer must inform the GE PM/ACS of any local codes and/or special requirements to which the installation team must adhere. Necessary permits and/or inspections must be secured by the customer. If hospital or local labor requirements preclude GE from using its own employees and non-union contractors for the installation, all installation work shall be performed by the customer at their own expense and without reimbursement from GE.

Infection control & dust containment

It is the customer's responsibility to inform the GE sales team prior to final quotation of any infection control and/or dust containment requirements. Such infection control and/or dust requirements can add to the duration and cost of system implementation. For dust containment, GE will provide carts and hepa filter vacuum, as needed. Any additional required infection control equipment and/or garments shall be provided by the hospital for use by GE during installation.

Asbestos and hazardous conditions

The customer must inform the GE PM/ACS at the beginning of the project if there is any asbestos or industrial hazard with which the installation team members may come in contact. Proper abatement and removal of hazards must take place at customer expense before any GE personnel will begin or resume work.

Refuse disposal

GE will make every effort to keep refuse, such as packing materials and shipping cartons, organized and stowed away during installation. It is the responsibility of the hospital to make arrangements for the proper disposal of the installation refuse.

Remote connectivity

Certain GE products are equipped with InSite™ ExC, a digital services interface that allows remote access to the GE Healthcare Support Center via a secure Internet connection to enable On-Demand or Proactive Digital Services. Use of InSite ExC requires a physical connection through a router supplied by GE to the hospital's enterprise LAN and outbound Internet access for the device using HTTPS protocol. Hospital IT staff will be asked to provide information and actions required for the Insite ExC digital services. Please refer to the product brochure for additional details.

WAN communication links

If applicable, the customer is responsible for the acquisition and configuration of all wide area network (WAN) communication links and associated routing equipment (e.g., ISDN, T1, T3, fiber, routers, DSU, etc.). GE will provide consulting services, if purchased.

Uninterruptible power sources

Uninterruptible Power Sources (UPS) are required for all network components. UPS for monitoring equipment are optional purchase items highly recommended by GE. If the customer chooses to supply the UPS, it is the responsibility of the hospital to ensure that the UPS meet GE product specifications. In any case, the customer is responsible for ongoing maintenance of the UPS.

Assigned IP addresses

Most GE monitoring products come with pre-assigned IP addresses, and GE strongly suggests that customers retain these pre-assigned IP addresses. If an alternate IP address scheme is required by the hospital, the customer is responsible for assigning permanent IP addresses for the monitoring system.

System configuration and default settings

Working in conjunction with the GE Clinical Applications Specialist, it is the customer's responsibility to determine the system default settings such as alarm limits, printing formats, etc. Final decisions must be made and provided to the CAS in advance of GoLive.

Customer-supplied equipment

The customer is responsible for ensuring all hospital-supplied parts, equipment, and furniture will be available on time, as agreed per the project timeline. Any delay on these items will impact the schedule and may delay the project GoLive. In addition, the customer must verify the on-site availability of monitoring supplies purchased from other vendors, such as vaporizers, invasive cables, sync cables, recording paper, and other disposable products. The customer must proactively ensure the equipment and supplies purchased outside of GE meet applicable minimum specifications for use with the GE CARESCAPE™ system, and the customer is responsible for installing any hardware not purchased from GE.

Peripheral interface

The customer is responsible for the provision, setup, and support of any peripheral interfaces, such as laser printers and video displays that are hospital-supplied and purchased from a third-party vendor.

Training facility accommodations

The hospital will provide an adequate training room/facility that promotes an educational atmosphere. Space to accommodate tables, chairs, attendees, Anesthesia System, and/or monitors shall be provided. The location shall have available electrical outlets, and medical gas outlets also may be required. If the training facility is located in a secured area, arrangements for access to elevators, hallways, and the classroom should be discussed prior to the training phase.

Staff training expectations

It is the hospital's responsibility to see that the appropriate Anesthesia and nursing staff attends training as scheduled by the CAS and the hospital project manager or appointed contact. If there is low attendance or no one shows for the classes, more training time can be purchased and will be rescheduled based on CAS team availability.

3.2 GE responsibilities

GE is responsible for the following tasks prior to and/or during the system implementation.

Project management

GE will assign a Project Manager and/or Account Coordination Specialist to coordinate the planning, installation, and GoLive of the monitoring system. This person will assemble GE resources and requirements as needed throughout the implementation process and is responsible for the implementation schedule and deliverables owned by GE.

Scheduling

GE will facilitate with the customer to schedule resources for installation, testing, training, and GoLive. However, the customer is responsible for scheduling and managing hospital facility specific tasks required per project scope and timeline.

Hours of operation

The installation and upgrade will be performed during normal GE business hours of 8 a.m. to 5 p.m. local customer time. If a customer wishes for the installation or upgrade to begin outside of those normal business hours, there will be additional fees associated with the overtime hours.

Router or remote connectivity

If an InSite ExC compatible product is purchased, GE will provide, install, and configure the router necessary to bridge between the monitoring network and the hospital's enterprise network. In some cases, a router may not be required.

Installation of network infrastructure

Depending on the networking purchased, GE may be responsible for some or all of the following: system network design, supplying infrastructure parts, cable pulls, termination, network installation, and certification of the network.

Installation and configuration of CARESCAPE System

GE will install, configure, test, and validate all CARESCAPE system components as purchased per the sales agreement. GE will input system default settings that are provided by the customer.

Installation and configuration of Anesthesia System

The GE Healthcare implementation team is responsible for setup and assembly of Anesthesia Systems and related accessories, and will place the equipment in customer-designated locations. The GE Healthcare implementation team is responsible for configuring Anesthesia System alarms and operating parameters as outlined by customer.

System verification

After system installation, GE will perform system verification to confirm system operation and integrity prior to GoLive.

Training

GE provides clinical training on the GE CARESCAPE system and/or Anesthesia System as stated in the sales agreement. The customer's equipment will typically be used for training.

GoLive support

The GE Core Team will be on-site as needed to support the system during GoLive. The GE Clinical Applications Specialist will be available on-site or remotely to provide support during the GoLive according to the purchased training plan.

Site documentation

Depending on the networking purchased, GE will provide as-built installation documentation to the customer project manager following GoLive. This documentation contains all relevant installation information, such as networked equipment locations, rack and wiring diagrams, and an interconnect matrix.

4.0 Project actions and ownerships

The GE implementation consists of the major activities listed below. Most of the planning and decisions are made in project meetings and discussions that focus on the preparation and implementation of these activities. The following is a list of tasks and their ownership to help team members manage and track their progress. Based on the scope, complexity, and product(s) purchased, some key actions may not apply.

Key Actions

- Initiating
- Planning
- Executing
- Monitoring and controlling
- Closing

4.01 Pre-sale

The purpose of the pre-Sale and pre-Quote Phase is to educate the customer regarding product features, installation requirements, and customer responsibilities. GE and the customer work together to ensure compatibility of the existing/planned network, define the scope of GE ND&I consultation services, and determine the complement of equipment to be purchased from GE.

Pre-sale			
Task		GE	Customer
1	Distribute medical device sales brochures to customer	Sales	
2	Distribute technology and service sales brochures to customer	Sales	
3	Meet with customer to discuss responsibilities for equipment purchase, installation and service, and GE ND&I consultation services	Sales	PM, IT
4	Generate budgetary quote, if requested by customer	Sales	

4.1 Initiating

This phase consists primarily of an internal exchange of information intended to familiarize the GE Core Team with the scope of the project and prepare for the project kickoff.

Information gathering		
Task	GE	Customer
1 Provide multiple sets of full-scale, hardcopy architectural drawings, as well as electronic (AutoCAD) drawings marked up with all equipment and network closet locations	Sales	PM
2 Obtain copy of sales order	PM/ACS	
3 Provide customer contact information	Sales	
4 Contact customer for introductory project discussion and to schedule Kick Off meeting	PM/ACS	PM
5 Estimate project timeline and resources	PM/ACS	
6 Allocate resources and form implementation team	PM/ACS	
7 Conduct internal call with GE implementation team to review sales order and high-level project scope	Core Team	

4.2 Planning

The intent of the Planning Phase is to assemble the customer core team, conduct the Kick Off meeting. During this phase a preliminary timeline will be established. Follow-up meetings or calls also will be scheduled at this time.

Project kick off		
Task	GE	Customer
1 Generate Project Book and project-specific documentation	PM/ACS	
2 Provide customer with necessary project documentation	PM/ACS	
3 Conduct Kick Off meeting (on-site or via teleconference)	PM/ACS	Core Team
a. Review project scope and system configuration based on sales agreement(s)	Core Team	Core Team
b. Review customer and GE roles and responsibilities	Core Team	Core Team
c. Review actions, tasks, and ownership	Core Team	Core Team
d. Identify third-party vendor roles, responsibilities, and contacts, if applicable	Core Team	Core Team
e. Review training based on sales agreement(s)	Core Team	Core Team
f. Review implementation timelines and target GoLive date	Core Team	Core Team
4 Allocate resources based on GoLive schedule	PM/ACS	PM
5 Define mechanism and frequency of future project communications	Core Team	Core Team
6 Document any open issues and/or action items	PM/ACS	
7 Publish and distribute Project Book and project implementation schedule	PM/ACS	

Site survey		
Task	GE	Customer
1 Conduct site survey	FE and/or ND&I	PM, IT, Biomed, Facilities
2 Identify closet and rack space requirements	FE and/or ND&I	
3 Identify any electrical, facility, and/or carpentry requirements	FE and/or ND&I	Core Team
4 Hospital commits closet and rack space		PM, IT, Biomed, Facilities
5 Hospital assigns IP addresses, if required		PM, IT
6 Update workbook to document site survey results	FE and/or ND&I	

System design		
Task	GE	Customer
1	Confirm complete site survey deliverables have been submitted to ND&I	FE and ND&I
2	Perform system design, as per purchase agreement	ND&I
3	Design review and approval	ND&I
4	Submit infrastructure parts order with required ship date, as per purchase agreement	ND&I
5	Document and post completed design	ND&I

Education planning		
Task	GE	Customer
1	Schedule and finalize class schedule, location and attendance	CAS Lead Clinical Educator
2	Order training materials and supplies	CAS
3	Confirm training equipment requirements	CAS
4	Provide cheater hoses, gasses, and GE supplies and accessories needed for training	PM/ACS
5	Confirm availability of training rooms	CAS Lead Clinical Educator
6	Set up training room	FE, CAS

4.3 Executing

This phase includes equipment delivery, system installation, data conversion (if applicable), HL7 configuration and testing, and system training.

Cable installation		
Task	GE	Customer
1 Confirm receipt of infrastructure parts	FE	PM
2 Identify qualified cable contractors, if applicable ¹	FE	Facilities, PM
3 Schedule cable installation ¹	FE or PM/ACS	Facilities, PM
4 Provide cable-pull documents to contractor ¹	FE, ND&I	
5 Install and terminate cable ¹	FE, Contractors	Facilities, Contractor
6 Install additional power outlets, if required		Facilities, Contractor
7 Confirm completion and approve cable test results	FE	PM, Biomed

¹Cable installation may either be the responsibility of GE or the customer. Please refer to sales agreement for appropriate terms and conditions regarding cable installation.

System installation and test		
Task	GE	Customer
1 Confirm on-site delivery of monitoring equipment	PM/ACS	PM
2 Verify on-site availability of components provided by other vendors and completion of hospital's site preparation work, if applicable	PM/ACS	PM
3 Perform physical inventory	FE, Contractors	
4 Set up and check out equipment in area identified for equipment staging	FE	
5 Install and configure network hardware	FE, Contractors	
6 Complete incoming inspection and asset tagging		Biomed
7 Prepare training equipment	FE	

System training (if applicable)		
Task	GE	Customer
1 Distribute training agenda outlining class objectives	PM	
2 Provide training literature to the class attendees (i.e., Quick Reference Guide, Operators Manual)		
3 Conduct training and ensure adherence to class size guidelines to best meet training objectives	CAS	
4 Conduct course evaluation	CAS	Lead Clinical Educator, staff
5 Award CE certificates if criteria is met and doing so is applicable to state guidelines	CAS	
6 Complete training report/post training summary	CAS	

GoLive readiness		
Task	GE	Customer
1 Move new GE equipment into clinical area/OR	FE	
2 Install all accessories from GE Healthcare (ECG cables, SPO2 probe, BP cuffs)	FE	
3 Final functional test in clinical area	FE	
4 Stock system/drawers with hospital accessories and supplies		Anesthesia technician or other hospital-appointed person
5 Move other hospital-owned equipment		Anesthesia technician or other hospital-appointed person
6 Finalize system configuration	FE	Anesthesia technician or other hospital-appointed person
7 Finalize GoLive plan, including review of system downtime for upgrade sites	PM/ACS	PM
8 Conduct pre-GoLive status call to confirm completion of required customer site preparation activities and make go/no-go decision regarding start of GE on-site installation activities	Core Team	Core Team

4.4 Monitoring and controlling

This phase includes the transition to a live production environment and supporting the clinical team immediately following GoLive.

System GoLive			
	Task	GE	Customer
1	Finalize system default settings	CAS	Super User
2	System GoLive	Core Team	Core Team
3	Administer GoLive Support, if purchased	CAS	
4	Conduct GoLive status call	Core Team	Core Team

4.5 Closing

The Closing Phase ensures that any open items have been documented and assigned for completion, and formalizes final system acceptance in accordance with GE standard Terms and Conditions. This phase provides project closure and detailed plan for ongoing customer support.

Project closure		
Task	GE	Customer
1 Conduct Closeout meeting	Core Team	Core Team
2 Review system performance, project commitments, and post-GoLive support during Closeout meeting	Core Team	Core Team
3 Review open issues and establish follow-up plan	Core Team	Core Team
4 Confirm customer acceptance, per standard Terms and Conditions	PM/ACS	PM
5 Forward Closeout and site documentation to customer	PM/ACS	

5.0 Technical requirements

The GE system has several requirements that must be met in order to ensure a successful implementation. The list below will be used as a guideline to develop specific requirements based on the unique requirements of your site.

5.1 Space and access

Adequate space and access is required for a successful patient monitoring system implementation. Therefore, it is the hospital's responsibility to provide locations for monitoring equipment and network infrastructure that meet the design requirements as coordinated with GE. Members of the GE Core Team working on-site must have access to those locations at appropriate points throughout the implementation process.

5.2 Network infrastructure

GE network infrastructure supports industry standard 100BASE-T (UTP cable) and 100BASE-FX (multimode fiber optic) interconnectivity. Both of these media provide 100 Mbps full duplex throughput.

5.3 Network materials

The GE CARESCAPE network backbone cabling is standard 62.5/125 micron multimode fiber, terminated to SC connectors at the fiber connection panel. The GE Network, Design and Implementation Engineer must approve use of another type of connector in advance.

All copper network cabling conforms to TIA-568 standards for Cat5E UTP. All segments in plenum spaces are plenum rated cable. All dedicated UTP patch panels also conform to TIA-568 standards for Cat5E UTP.

5.4 Cable requirements

Listed below are the requirements pertaining to the installation of Category 5 and fiber-optic cables:

- Category 5 cable runs shall be dedicated to the GE system network infrastructure and shall only be routed through patch, interconnect, or cross-connect panels provided for the exclusive use of the GE network infrastructure.
- Use of existing Category 5 cable runs is prohibited unless they have been reviewed, tested, certified, and approved by GE.
- Cables shall be labeled per the interconnect matrix in the GE design package.
- Category 5 cables terminated in wiring closets or to equipment racks shall only be punched down into punch panels specified by GE.
- Punch-down panels shall be labeled per the summary sheet of the interconnect matrix in the GE design package.
- Category 5 cable runs to workstation locations shall be terminated with industry-standard RJ-45 wall jacks supplied by the cable contractor.
- Fiber-optic cable cross-connects shall be minimized.
- Use of pre-existing fiber-optic cable runs is prohibited unless each fiber-optic run has been reviewed, tested, certified, and approved by GE.
- Fiber-optic cables shall be labeled per the interconnect matrix in the GE design package.
- Fiber-optic cables shall be terminated to industry-standard interconnect panels or trays provided by the cabling contractor.
- Fiber-optic interconnect panels shall use type SC connectors, unless approved in advance by the GE Network, Design and Implementation Engineer.

5.5 Closets

- Adequate space shall be provided in designated equipment closets to house GE infrastructure components.
- Closets shall be made accessible for the GE installation team during all phases of implementation for the purposes of installing, integrating, testing, and troubleshooting the CARESCAPE system.
- Proper ventilation and/or cooling shall be provided in designated equipment closets. Ambient temperature immediately surrounding the distribution racks should be no more than 35 C.

5.6 AC power

Hospital emergency power must be provided for GE CARESCAPE system(s) and infrastructure components. Separate AC outlet(s) with sufficient amperage rating must be provided for laser printers.

6.0 Clinical applications

The involvement and support from the clinical administration and staff are vital to the success of the GE system implementation. It is essential for clinical administration to manage the change process and facilitate open communication with affected staff. GE recommends that customers create an Implementation Sub Team to focus on specific monitoring and/or ventilation needs and considerations. This section defines staff requirements and outlines GE training guidelines.

6.1 Clinical sub team

Depending on the size and scope of the project, the implementation may choose to form a Clinical Sub Team that will work one on one with the GE Clinical Application Specialist to review your institution's monitoring/ventilation needs and to meet the specific considerations or concerns of each monitored unit.

Members of this committee should include:

- **Anesthesia Department Chair, Lead CRNA**—The chairperson of this committee, who is also the representative to the GE project team.
- **Perioperative Unit Managers**—Includes all managers of nursing or other units who will use the GE monitoring system.
- **Clinical Educators** – Assist with planning and participate in the training sessions. Assumes responsibility for education and support of staff following the implementation.
- **Anesthesia Technician, Biomed**—Supervisor or assigned staff member to provide input into operational issues and assist with adoption of system capabilities into the care setting.

Communication updates should be scheduled on a routine basis. Frequency of meetings should be based on the following:

- Amount of time required by the committee to establish policies, procedures, equipment configuration criteria, and standards of care
- Completion of pre-requisite education, as required
- Training of staff

Clinical Monitoring/Ventilation Sub Team members will work with the GE CAS during the Education Planning, System Training, System GoLive and Support phases of the project.

6.2 Clinical staff definitions

GE has created a training program designed to meet the dynamic needs of your staff. Depending on the education program you have selected, our CAS staff will assist you with establishing a comprehensive training program and will provide support during the GoLive phase.

Monitoring/Ventilation Resource Team

To maximize unit resources and independence, GE strongly suggests that customers establish a Monitoring/Ventilation Resource Team for each unit and shift. The Resource Team may include nurse manager(s), educator(s), and two or three clinicians who will be using the GE products.

It is vital the Resource Team participate in the GoLive training to support the GE CAS, as they will be the post-GoLive resource to hospital personnel. The GE CAS will work with this group to provide training information and clinical support. A GE Clinical Applications Specialist will be working side by side with the Monitoring/Ventilation Resource Team during the GoLive phase.

The following attributes can be used to assist with the selection process of these key leaders:

- Demonstrated ability to function as a liaison between the clinical staff and outside vendors
- Strong clinical knowledge and skills with the ability to apply the monitor features and functionality in accordance with hospital policies and standards
- Acknowledged by peers as someone with strong interpersonal and technical skills
- Possesses the ability to learn new technology and assist others with the same
- When needed, provides appropriate training, support, resources, and encouragement during the implementation process
- Views learning opportunities as a welcomed challenge; recognizes and rewards others' endeavors throughout the process
- Assesses baseline knowledge and monitors performance improvement activities

6.3 Clinical training guidelines

The GE Clinical Application Specialist will work closely with your Lead Clinical Educator and make every attempt to meet your scheduling needs for training based on the following guidelines.

- Minimum time requirement for Advanced System Training is 4 hours.
- Minimum time requirement for Clinical User Training is 2 hours.
- Minimum time requirement for Basic Product Training is 1 hour.
- Class size not to exceed six participants per class.
- Classes are to be held in a dedicated class/conference room.
- The Lead Clinical Educator at the hospital is responsible for establishing the location.
- The GE Field Engineer is responsible for initial setup of training equipment.
- The CAS will provide educational materials based on class number.
- Classes will begin no earlier than 2 p.m. on Monday and will end by 12 p.m. on Friday. The Lead Clinical Educator has ownership of class participation and ensuring attendance is met according to schedule.
- Total amount of class time not to exceed six hours per day.
- Allow a minimum one-hour meal break for lunch and/or dinner, if classes are being conducted during an eight or 12-hour block of time.
- Allow a minimum of 10 hours between the end of the last class during evening /night and the beginning of the first class or GoLive the next morning.
- GoLive support is typically an eight-hour day. Formal, scheduled classes are not offered on GoLive day(s) due to CAS involvement with GoLive support activities. CAS support is provided via a combination of remote and on-site. One CAS will provide GoLive support, unless a second CAS has been negotiated as part of the purchase.
- If hospital policy and procedures are being added or changed and this information is to be presented during staff training, the Lead Clinical Educator must provide this information to the CAS in advance of the first class.
- Class and instructor evaluations will be given for each participant, and a class roster will be provided. CEs will be given for the approved educational classes.

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