

Life Systems Services, Technology Upgrades

Creating Point-of-Care services that meet your needs

Staying at the leading edge of patient care is critical to your forward thinking institution. That is why GE Healthcare provides software upgrades as part of our service agreements. With this option, you can access new features and feature enhancements, continuously. Hardware upgrades are also available at additional cost.

Stay at the leading edge of patient care

- **Utilize new patient parameter monitoring** — Advanced modules may not be compatible with your current system such as Entropy™, Bispectral Index (BIS™) and others.
- **Leverage the latest features** — Leverage new features and feature enhancements that come with the latest software.
- **Support for advanced ventilation modes** — For example, Pressure Control Volume Guarantee.
- **Bring uniformity to your operating rooms** — Evolve your devices, purchased over time, to the latest version.
- **Support for larger displays**
- **Extend the life of your anesthesia equipment** — Certain monitor frames and displays are no longer supported. GE Healthcare upgrades may be able to prolong the life of your investments.

Utilize the financial advantages of technology upgrades for your anesthesia equipment

- **Conserve your cash** — By including technology upgrades on your service agreement, you can pay over time, instead of incurring a large outlay up front.
- **Improve clinical outcomes** — PCV-VG mode, for example, delivers the benefits of pressure control ventilation while providing a consistent tidal volume to the patient.
- **Improve patient safety** — Apply advanced features and enhanced alarms during stressful or emergency clinical situations.
- **Ensure upgrade path** — Ensure your anesthesia machine is continually evolving to meet your needs.
- **Provide consistent quality of care** — Across all O.R.'s, uniformity in machines allow clinicians to provide consistent quality of care.

GE Healthcare works with you

GE Healthcare offers “main” system software upgrades — Includes standard new features and feature enhancements. Ventilation modes or hardware needed to support software upgrades are not included but are available at discounted pricing.

Eligible devices

- **Anesthesia machines** — Aisys®, Avance®, ADU®, Aestiva® 7900, Aespire® 7900.
- **Patient monitors** — S/5® Anesthesia Monitor, AS/3® Anesthesia Monitor and S/5 Compact Anesthesia Monitor. See specific upgrade information for the various devices in the following pages.



S/5 Avance Carestation

Technology upgrades included with service agreements

S/5 Avance Carestations purchased before October 2008 will benefit significantly from the new features of Avance 6.0. And if you purchased your machine prior to June 2007 you can expect additional benefits introduced with version 5.0. Customers that sign an agreement featuring software, will be upgraded to current version during scheduled event.

Avance release 6.0 software, 09/29/2008

Standard features in 6.0 release

- Changed alarm management during induction or bag mode.
- Extended alarm silence.
- Fresh gas flow look-ahead.
- User configurable set-ups for waves and pages.
- Default patient case configurations.
- Age adjusted MAC.
- Presetting VCV and PCV-VG based on patient weight.
- Auto exit from PSVPro® backup mode.
- Fresh gas and agent usage calculations.
- System checkout improvements.

Requirements for version 6.0 software

The 6.0 software is compatible with systems that have the HPDU installed (Software 4.xx version and greater).

Avance release 5.0 software, 06/27/2007

Standard features in 5.0 release

- Ability to turn off MV and TV alarms with a hard key.
- Timer available and hard keys for timer on the display bezel.
- Better alarm management for induction, CO₂ apnea, audible alarm silence.
- Individual gas flows or total flow settings now user configurable.
- Extended O₂ concentration settings from 80% to 100%.
- Spontaneous breath waveform indication.
- PAW gauge and faster airway pressure waveforms.
- Ability to set more parameters as user defaults.

Optional software supported by release 5.0

- Pressure Control Volume Guarantee. The PCV-VG mode delivers all the benefits of PCV while providing a consistent tidal volume to the patient. PCV can help prevent over-pressure of the lungs, while helping to avoid alveoli collapse. Supports the filling of even the stiff alveoli early in the inspiratory cycle, giving the maximum time for gas exchange. This results in better oxygenation at lower peak airway pressures.
- New mode. VCV cardiac bypass.

Requirements for 5.0 software.

- 5.0 software is compatible with all Avance machines currently using 4.0 software and High Performance Display Unit (HPDU).
- Machines currently using 3.2 software or lower utilize the Display Unit (DU) processor and screen and are not able to have 5.0 software installed. These machines will require an upgrade of the DU to HPDU. A special upgrade kit at a discounted price is available, please consult with your service representative.

Optional ventilation mode upgrades

- Pressure control.
- Pressure support ventilation with apnea backup PSVPro.
- Synchronous intermittent mandatory ventilation (SIMV).
- Pressure Control Volume Guarantee. (PCV-VG).



S/5 Aisys Carestation

Technology upgrades included with service agreements

Below are the software upgrades that have been available to customers in the past few years. In the event that the customer signs a service agreement featuring software upgrades, the customer will be upgraded to the current version during scheduled event and receive continuous upgrades.

Aisys release 4.0 software, 02/05/2008

Standard features in 4.0 Release

- Configure system to disable apnea-volume alarms for manual ventilation mode.
- Configure system to automatically select MV/TV alarms off for bag mode.
- Better control of nuisance Apnea-CO₂ alarms.
- New feature to pause alarm audio of medium priority alarms for a full 2 minutes.
- New feature to silence the family of apnea related alarms with a single alarm silence key press.
- Improved agent level low alarm text to inform users "Do not fill vap while in use."
- Check agent level alarm for Aladin™ 2 cassettes.
- Calibrate flow sensors reminder.

Requirements for 4.0 software

4.0 software is compatible with all Aisys machines currently using 3.0 software or greater and HPDU.

Aisys release 3.0 software, 09/10/2006

Summary of standard features in 3.0 release

- Ability to turn off MV and TV alarms with a hard key on the display bezel.
- Better alarm management for induction, CO₂ apnea, audible alarm silence.
- Individual gas flows or total flow settings now user configurable.
- Spontaneous breath waveform indication.
- PAW gauge and faster airway pressure waveforms.

- Respiration Rate available from all Mgas modules.
- Ability to measure Metabolics.
- Ability to set more parameters as user defaults.

Optional software supported by Release 3.0

- Pressure Control Volume Guarantee. The PCV-VG mode delivers all the benefits of PCV while providing a consistent tidal volume to the patient. PCV can help prevent over-pressure of the lungs, while helping to avoid alveoli collapse. Supports the filling of even the stiff alveoli early in the inspiratory cycle, giving the maximum time for gas exchange. This results in better oxygenation at lower peak airway pressures.
- VCV cardiac bypass. Starting with settings of 170ml, the mechanical ventilation of the lung is continued during bypass to increase the level of moisture in the lung. This promotes better patient recovery.

Requirements for 3.0 software.

3.0 software is compatible with all Aisys machines currently using 2.0 software and HPDU.



Aestiva/5 Anesthesia Delivery System

Technology upgrades included with service agreements

Aestiva/5 anesthesia machines purchased before March 2004, will benefit significantly from software 4.5 and 4.8 upgrades. Many customers choose to upgrade solely for the purpose of acquiring new modes of ventilation, such as Pressure Support Ventilation (PSV), with its many clinical benefits.

Ventilator software release 4.8, 02/03/2006

Standard features

- Improved "Pressure Mode Not Available Alarm" to prevent false positives.
- Corrected displayed O₂ percentage reading to show values greater than 100% (up to 110%) to better comply with ISO standards.

Ventilator software release 4.5, 03/09/2004

User interface and parameter changes:

- The pressure waveform is not filled.
- The expiratory minute volume is now a true measure of the volume for one full minute rather than being calculated over a nine breath series.
- The respiratory rate is now a true measure of the respiratory rate for one full minute rather than being calculated over a nine breath series.
- High priority alarms no longer have an elapsed time (timer) displayed next to the text.
- The flashing of the alarm limits has been discontinued.
- Tinspired control setting replaces I:E in the new optional modes.

Alarm and user message changes:

- When the ventilator is unable to provide tidal volume compensation, it will lock onto the last known good compensation.
- The ventilator will now save the last tidal volume compensation value when entering the cardiac bypass mode and, will use this value to restore the compensation upon exiting from the cardiac bypass mode.
- When performing an "end case" the ventilator will turn the circuit leak audio to on.

- The low drive pressure alarm will de-escalate from medium to low priority when the alarm silence button is activated.
- The user message "Minimum System Monitoring" has been changed to "Ventilate Manually".
- "PEEP Not Achieved" alarm will appear now when $P_{min} < PEEP - 2 \text{ cmH}_2\text{O}$ as well as when the original alarm would appear at $P_{min} > PEEP + 2 \text{ cmH}_2\text{O}$.

Optional ventilation mode upgrades

- Pressure support ventilation with apnea backup, PSVPro. Pressure Support Ventilation (PSV) is an invaluable addition to the practice of anesthesia. It has gained traction with the increased use of the Laryngeal Mask Airway (LMA). The LMA has encouraged clinicians to allow patients to breathe spontaneously through much of the anesthetic, usually improving clinical outcomes.
- Synchronous intermittent mandatory ventilation (SIMV).



S/5 Aespire Anesthesia Delivery System

Technology upgrades included with service agreements

With this offer we will bring your Aespire machine to release 4.8 software, or simply upgrade to acquire new modes of ventilation, such as Pressure Support Ventilation (PSV), to improve clinical outcomes.

Ventilator release 4.8 software, 03/09/2006

Standard feature changes in version 4.8 software

The new software 4.8 addresses an anomaly where the ventilator calibration data loss could occur intermittently when flow sensor calibration is performed. The modification includes delaying ventilation startup for 200 mS to prevent a pressure transit at first mechanical breath after power up that causes a "PCV/PEEP Not Available" alarm.

S/5 ADU Carestation

Technology upgrades included with service agreements

ADU machines purchased before May 2005 can benefit significantly from the new features available in 9.0 software. In particular, clinicians wishing to permit spontaneous breathing by patients during anesthesia, will find Pressure Support Ventilation (PSV) particularly useful. Release 9.0 also supports the new and improved 12" displays which, before June 2003, were not available on ADU Carestations.

ADU release 9.0 software, 05/16/2005

Summary of standard features in 9.0 release

New mode switch method. The anesthesia monitor gives the ADU patient TV/MV and pressure information from the former ventilation mode, which the ADU uses to offer default setting for the new ventilator mode.

Optional ventilation mode upgrades

Pressure support ventilation with apnea backup. Pressure Support Ventilation (PSV) is an invaluable addition to the practice of anesthesia. It has gained traction with the increased use of the Laryngeal Mask Airway (LMA). The LMA has encouraged clinicians to allow patients to breathe spontaneously through much of the anesthetic, usually improving clinical outcomes.

Optional ventilation mode upgrades

- Pressure support ventilation with apnea backup, PSVPro. Pressure Support Ventilation (PSV) is an invaluable addition to the practice of anesthesia. It has gained traction with the increased use of the Laryngeal Mask Airway (LMA). The LMA has encouraged clinicians to allow patients to breathe spontaneously through much of the anesthetic, usually improving clinical outcomes.
- Synchronous intermittent mandatory ventilation (SIMV).

Requirements for version 9.0 software

It is possible to upgrade all ADUs with serial number range starting at 40.000.000 and upwards. To be able to upgrade with the PSV option, the ADU needs to have a B-CPU4-01/02 level.

ADU release 8.0 software, 05/21/2003

Summary of standard features in 8.0 release

- Supports upgrade to 12" displays. ADUs manufactured before 2003 have the smaller 10" display. Benefits of the new and improved 12" display:
- 30% larger screen.
- Easier to view, due to improved resolution.
- Improved viewing angle.

S/5 and AS/3 Anesthesia Monitors

Technology upgrades included with service agreements

Since its official launch in 1993, GE Healthcare's anesthesia monitors have proven to be an industry-leading product. Ever since, continuous enhancements and several breakthrough improvements, have allowed clinicians that use this platform, to stay at the leading edge of patient care. What is remarkable is that just about any monitor can be fully upgraded to the latest commercial version.

Stay at the leading edge of patient care

- Increase your patient monitoring capabilities with parameter modules such as Entropy, Bispectral Index (BIS) and others.
- Improve clinical outcomes with the latest features and enhancements of up-to-date software.
- Have you purchased a new monitor and want uniformity with the rest?
- Do you need a larger display or a flat screen and need the system to support it?
- Do you want to extend the life of your anesthesia monitor? (certain frame versions and displays are no longer supported).

S/5 Anesthesia Monitor highlights

Particularly if you purchased your monitor before May 2005, there are several exciting new features released that year that makes an upgrade very attractive. The farther back your monitor goes, the more new features you will enjoy as part of the upgrade to the current version. View the list below to determine what new features you will acquire should you decide to move forward with an upgrade.

- New ECG arrhythmia algorithm (May 2005).
- Interface to PiCCO™ Plus measurement (May 2005).
- Change to leads off alarming and to the logic of HR source selection (May 2005).
- AgeMAC calculation (May 2005).
- Support for S/5 Entropy module (February 2003)
- Cardiac output catheter selections expanded (February 2003).

- Support for S/5 Bispectral Index module (March 2002).
- Improved functionality of parameters such as SPO₂ scaling, snapshot printing, trend scrolling (March 2002).
- Support for Device Interface Solution, DIS (July 2001).
- Enhanced alarm integration with Central Station (July 2001).
- Performance improvements for ECG, NIBP, TONO, EEG trends and calculations (July 2001).
- Support for 12 lead ECG (opt), extended arrhythmia (opt), metabolics (opt), tonometry (opt), beat-to-beat selection for invasive pressures (2000).
- Support for split screen and eight waveform display (1996-1998).
- Support for NMT (opt), impedance respiration (opt), oxygen calculations and alarm history (1993-1995).

GE Healthcare works with you

GE Healthcare offers "main" system software upgrades — Includes standard new features and feature enhancements. Optional features, hardware needed to support software upgrades or parameter modules are not included but are available at discounted pricing. Talk to your GE Healthcare service representative to obtain more information.



S/5 Compact Anesthesia Monitor

Technology upgrades included with service agreements

Since its official launch in 1993, GE Healthcare's anesthesia monitors have proven to be an industry-leading product. Ever since, continuous enhancements and several breakthrough advancements, have allowed clinicians that use this platform, to stay at the leading edge of patient care. What is remarkable is that just about any monitor can be fully upgraded to the latest commercial version.

S/5 Compact Anesthesia Monitor highlights

Particularly if you purchased your monitor before June 2005, there are several exciting new features released that year that makes an upgrade very attractive. The farther back your monitor goes, the more new features you will enjoy as part of the upgrade to the current version. View the list below to determine what new features you will acquire should you decide to move forward with an upgrade.

- New ECG arrhythmia algorithm (June 2005).
- Interface to PiCCO Plus measurement (June 2005).
- ECG Leads off alarm (June 2005).
- "Faulty ECG cable" and "Lead Changed" messages (June 2005).
- MACage (June 2005).
- New DIS module for interfacing ventilators -Avance, Aestiva (December 2004).
- Support for the new E-series module family. (December 2004).
- Support for S/5 Entropy module (January 2004).
- iCentral supporting features (January 2004).
- Enhancements related to hemodynamic parameters, such as NIBP and InBP alarm limits, SpO₂ messages "Poor signal" and "Low perfusion" (January 2004).
- Support for DIS, Device Interface Solution (June 2002).
- Support for M-miniC single width CO₂ module (June 2002).
- Support for Bi-spectral index module with Aspect technology (June 2002).
- Support for WLAN (Wireless Local Area Network) for S/5 Network and Central (June 2002).

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Life Systems Services Value Promise

Fast service response time — With over 180 local Field Service Engineers, we ensure fast response times and local service.

High technical competency — Our engineers average 12 years service experience and remain up-to-date on new equipment and technology.

Full parts coverage — We only use GE Healthcare parts. No substitutions. Our full parts coverage option maximizes equipment performance with predictable life cycle costs.

Clinical and technical education — Excellent support and training helps customers provide better patient care.

A team of professionals who care — When surveyed, 95% of Life Systems Services customers would recommend GE Healthcare service to a colleague.

At GE Healthcare Clinical Systems Services, we help you get to the point of care.

Every day 15 million patients around the world are touched by what we do.

Because of this, we know that every interaction counts, and that your reputation is your single biggest asset.

And at GE Healthcare, we thrive on transforming essential services into extraordinary outcomes for your people, processes and products.



GE Healthcare
P.O. Box 7550
Madison, WI 53707-7550
USA

www.gehealthcare.com



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