

# System Galaxy

# System Specifications



SG 10.4.1  
MAR 2015

System Galaxy  
Quick Guide  
**SG 10 Specifications**

**9th Edition – MAR 2015**

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# System Galaxy Requirements

This document provides minimum requirements for installing and operating System Galaxy (SG) Client Software, Database, and GCS services. The following information is addressed:

- Operating System Requirements
- Installation Requirements, Security Notes
- Database Requirements
- PC Com Port & Firewall Requirements, and network considerations
- Known considerations for 3<sup>RD</sup> party integrations (badging, biometrics, wireless, visitor reg., etc.)
- Minimum PC requirements for each System Galaxy computer based on its role in a *Networked* or *Standalone* system.

## GENERAL NOTICES & WARNINGS:

**NOTICE:** These requirements are subject to change without notice. Consult your Galaxy Dealer / Galaxy Technical Support before making time-sensitive and cost-sensitive decisions.

**IMPORTANT:** Specifications, requirements and compatibilities may vary depending on your individual system or application needs. *This document does not necessarily supersede any recommendations or specifications for integrated applications/technologies. This manual should be viewed in comparison with, or addition to, information from 3<sup>rd</sup> party sources.*

**IMPORTANT:** System Galaxy database and GCS Services are fully supported on Windows Server 2012 R2 and Server 2008/2008 R2 (32bit / 64bit). System Galaxy application can be installed on the server OS for diagnostic purposes. With the advent of stricter server roles and security, many hardware devices and drivers are not supported on current server operating systems. Due to this fact, Galaxy does not support using a server OS for a standalone system or workstation (i.e. monitoring, badging, biometric enrollment, etc).

**IMPORTANT:** please carefully read all associated materials to confirm your specific requirements. Contact Galaxy Control Systems with any questions you cannot resolve or in the following situations:

- You are planning a large-scale system install or upgrade
- You are migrating to a different operating system
- You are upgrading or expanding a system using 3<sup>rd</sup> Party applications
- You are upgrading from a version that is more than 2 or 3 versions behind
- You are installing an integrated 3<sup>rd</sup> Party application
- you encounter a unique or unusual site situation

**WARNING:** Remember to properly plan all upgrades and properly back up the database, archive database, and all system assets (reports, photos, badge templates, signature files, icons, etc.)

## System Galaxy Operating System Requirements:

- ▶ **Operating System compatibility:** *System Galaxy software & GCS Services*

Windows® 8 Pro (32/64-bit) | Windows® 7 Pro (32/64-bit)

Windows Server® 2012 R2 / 2008/2008 R2 (32bit / 64bit) and 2003

**IMPORTANT:** Some 3rd party applications/technologies may not be supported or recommended on a server OS platform (e.g. biometric enrollment, credential enrollment devices). See the section on Integrated Applications in this guide for specifics).

**IMPORTANT OS RECOMMENDATIONS FOR SYSTEM GALAXY:** System Galaxy client software is supported on Server OS *for diagnostic purposes*. SG Operator may need user privileges to the license files or other files in the System Galaxy directory.

## System Galaxy Installation & Registration Requirements:

- ▶ **GalSuite installation DVD:** System Galaxy installs using a DVD

**Part-1) Prerequisite Components** (Microsoft .NET Framework (**Required\***))

**Part-2) Database Management Software** (MS SQL Express2008 R2 included)

**Part-3) System Galaxy Application** (SG software, GCS Services)

**\* SG 10 prerequisite components must always be installed on every Galaxy server/client, even when upgrading from previous versions of System Galaxy.**

- ▶ **System Galaxy requires administrative rights** on the computer to properly install the system. **System Galaxy operators need power-user rights** to operate the system.
- ▶ **'User Account Protection' option (Windows XP) must be unchecked/disabled** during Part-1 and Part -2 of the Software Installation DVD. Uncheck this option when prompted by the Windows Installer application (see install README for part 1 and 2).
- ▶ **Note:** System Galaxy Client software & services, SG Web Module are **Microsoft .NET Framework-based**.
- ▶ **SG uses *Product Levels* in System Registration.** Customer product level is labeled on the Software Install CD and available through Galaxy Customer Service department.
  - NOTE:** Core features are available by default on all product levels. Certain features or integrated applications are available based on purchased product levels and options.
  - NOTE:** Customers upgrading from SG v6 may need to consider hardware upgrades. 500 non-i-series controllers must be replaced with 600-series or 500i-series controllers.

## System Galaxy Database Requirements:

- ▶ **System Galaxy is designed to use SQL Native Client (ODBC driver) for database connections.**

Microsoft® Native Client components are included in the GalSuite Install Part 2. The SQL Client components must be installed on every computer running System Galaxy Software or Services.

- ▶ **SG 10.4 is packaged with MS SQL Server® 2008 Express (32b/64b).** You must choose which version (64bit or 32bit) you will install during Part 2.

- Early versions of SG 10 came with 2005 Express (default).
- SG 10.2 and 10.3 offered both 2005 and 2008 Express versions

**NOTE:** Starting in **SQL Server 2008 R2**, the Reporting Services component no longer supports Itanium-based servers running Windows Server 2003 or Windows Server 2003 R2. Reporting Services continues to support other 64-bit operating systems, including Windows Server®2008 for Itanium-Based Systems and Windows Server®2008°R2 for Itanium-Based Systems. To upgrade to SQL Server 2008 R2 from a SQL Server 2008 installation with Reporting Services on an Itanium-based system edition of Windows Server 2003 or Windows Server 2003 R2, you must first upgrade the operating system.

**NOTE:** SQL Server 2008 R2 is not supported on Windows Server **2008 SP2 Server Core** or Windows Server **2008 R2 Server Core** installations.

**NOTE:** System Galaxy is compatible with Microsoft SQL Server® 2005/2008/2012 **ENTERPRISE Versions.**

- ▶ **System Galaxy database size** is the inherent size of the database engine you choose (imposed by Microsoft). SQL Server® 2008 R2 has a 10GB max. limit. Microsoft SQL Server® Enterprise has an unlimited size.

## General PC Hardware Requirements:

These are the minimum requirements for a typical standalone system and a workstation PC.

*See other sections for Operating System and Service Pack Requirements.*

- ▶ **Microsoft® Windows Compatible PC with Intel Pentium Dual Core 3.2 GHz or better**
  - » 2 GB of RAM
  - » 40GB of free Hard Drive space for SG
  - » **Standard graphics card** capable of 24-bit color (min. recommended 1280 x 1024 wide-resolution\*)
  - » 1 NIC card
- ▶ **Wide-screen Monitor:** \*size of monitor should support recommended resolution
- ▶ **Standard DVD Drive** (required for installing system)
- ▶ **Serial Communication Ports**
  - » 1 USB (dedicated if camera is used for photo capture)
  - » 1 USB (dedicated if local badge printer is used for enrolling)
  - » 1 USB (dedicated if local line printer is used for printing system reports)
  - » 1 USB (or COM) (dedicated if an enrollment reader used for access card enrollment)
  - » 1 USB (or COM) (available if configuring panels via HyperTerminal / SG 600 Config. Tool)
  - » 1 on-board COM (dedicated; 1 per each 500i primary panel, if using direct-connect method of communication; IMPORTANT: primary controllers do not support USB Serial converters)

*NOTE: the 508i optionally supports TCP/IP where COM ports are not available.*
- ▶ **Uninterruptable Power Supply - UPS** (recommended)
- ▶ **Windows® compatible printer**
- ▶ **Microsoft® Internet Explorer® v8** or later

## System Galaxy Hardware S28 Flash and Boards

Flash code must be confirmed. A new install should verify the flash version on the boards matches the software version. An upgrade or repair situation requires the boards to be flashed to the correct version of flash.

- ▶ **IF you are running SG 10 you should have the following flash:**

600/635-series Controller	508i-series Controller
S28 Flash file v 10.4.1 (SG 10.4.1)	S28 Flash file v8.20c
S28 Flash file v 10.4 (SG 10.4)	<i>Subordinate boards and peripheral modules do not contain flash code.</i>
S28 Flash file v 5.04 (SG 10.3.1)	
S28 Flash file v 5.0 (SG 10.2)	
S28 Flash file v 4.77 (SG 10.1)	
Output Relay Module & 635 Input Module: no flash on board Relay board used for Elevator or Output Relay control.	
<b>All controller CPUs have an embedded web page for troubleshooting; Port 80 must be open.</b>	



See the **600-series Hardware Installation Manual**, **508i-series Installation Addendum**, and **500-series Hardware Manual** for specifications on installing and operating System Galaxy hardware .

## Integrated Applications & 3rd Party Technologies

This section covers the high-level requirements for integrated applications and interfacing technologies.

**CAUTION:** you must compare the Galaxy recommendations with the requirements published by the manufacturers of the 3<sup>rd</sup> party applications / technologies. Additionally, you must reference the integration requirements printed in the appropriate System Galaxy Guide.

**NOTICE:** The recommendations in this manual do not supersede any requirements or limitations imposed by the maker of 3<sup>rd</sup> party applications, hardware or technologies not manufactured by Galaxy Control Systems.

**NOTICE:** Technical support may be based on these recommendations.

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### Genesis Time & Attendance

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Genesis SQL (GENSQL) is compatible with *MS SQL Server 2000, but not MSDE.*

- ♦ If using a “shared server” connection, System Galaxy 8.1 (or later) is compatible with SQL Server 2000. However, you must manually copy and attach the databases and manually create the database logins.
- ♦ If using a “linked server” connection, System Galaxy can run on SQL Server<sup>®</sup> 2005 Express. No claims are made/implicit that Genesis is or is not compatible with SQL Server<sup>®</sup> 2005 Express.



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See *Galaxy Interface Guide for Genesis Time & Attendance* for full requirements.

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### Important PassagePoint™

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PassagePoint Global v10 is compatible with System Galaxy 10.

- ♦ **There are no special registration requirements in System Galaxy.** The integration is done through linked SQL Server connections and stored procedures. SG 10 includes the STOPware stored procedure for the SysGal database.
- ♦ **At least one access profile must be created in System Galaxy to be used for visitor access privileges.** *The access profile name must be added to PassagePoint and is case sensitive.*
- ♦ **PassagePoint must be registered for Directory Linking if host names are imported from SysGal.** Importing of names is administrative only. There is no linking of access rules through the host name.
- ♦ **PassagePoint requires set up of the SysGal database connection, Access Profile name, and sign-in/sign-out scripts.**



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See *Galaxy Quick Guide for PassagePoint v10* for full requirements and configuration / use.

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## MorphoTrak SIGMA Readers

System Galaxy v10.4.1 supports SIGMA Prox and SIGMA Bio Readers using the *MA5G operation mode* in tandem with MorphoManager 6.2.0 software in ‘Integrated’ mode.

**NOTICE:** Other SIGMA Models are supported in ‘Biometric’ Multifactor Mode.

**NOTICE:** All SIGMA Readers must be assigned a valid Multifactor Mode that works with the intended credentials.

**NOTICE:** Also, each credential must be enrolled with the Authentication Type that matches the Multifactor Mode at the SIGMA Reader.

### SYSTEM GALAXY SUPPORTS INTEGRATION WITH SIGMA MA5G AS FOLLOWS:

- 1) Requires **System Galaxy v10.4.1** (Registered for Biometric Support; and configuring for MorphoManager/BioBridge).
- 2) Requires **SIGMA Reader v1.2.4\*** minimum (configured for MA5G (factory default)).
- 3) Requires **MSO Enrollment Station v10.00.g\*** minimum.
- 4) Requires **635 Panels v10.4.1** flash
- 5) Requires **MorphoManager v6.2.0** client-server software;
  - a) Must provide the Server\_name\Instance and the valid SA login during the MorphoManager Server installation in order to install the MorphoManager Database.
  - b) MorphoManager Client must be installed at every Galaxy workstation that will perform enrollment.
  - c) Must start the MorphoManager server service after reboots.
  - d) Recommend creating an automatic client login that allows the BioBridge Enrollment Module to automatically launch from System Galaxy.
  - e) MorphoManager Client must be configured with specific settings to integrate with System Galaxy.

\* MorphoTrak firmware upgrade utilities are included on Disk-2 of the Galaxy Install Suite.

### SYSTEM GALAXY SUPPORTS ENROLLMENT AS FOLLOWS:

- 1) Supports enrolling credentials from within System Galaxy Cardholder screen.
- 2) Supports enrolling biometric credentials on existing card that has been given an active access privilege.
- 3) Supports all/any combination of Access Groups, Access Profiles, and Personal Doors are supported – access is decisioned/determined by the panel (not by the reader).
- 4) Supports two unique fingers per credentials
- 5) Supports two Authentication Types (Prox + Biometric and Biometric only); Credentials must be enrolled with the Authent. Type that matches the reader’s assigned Multifactor Mode.

<b>Enroll Authentication Type</b> <i>Assigned in the User Group &amp; chosen at time of enrollment</i>		<b>SIGMA Multifactor Mode</b> <i>Configured in Device Profile, which is assigned to Reader</i>	<b>SIGMA Reader Model</b> <i>Running in MA5G Operating Mode</i>
Proximity + Biometric	=>	Proximity Card	SIGMA-Prox
Biometric Only	=>	Biometric	SIGMA-Bio; SIGMA-Prox; <i>or other model set to Biometric mode</i>



See **Galaxy Quick Guide for SIGMA & MorphoManager v6.2** for full requirements, configuration, and use.

## Important Sagem Interface Notes

System Galaxy 10 supports fingerprint capture, pin, biopin and smart card encoding from within the cardholder screen. **HID iClass 16x16 and MIFARE 4k cards are supported.**



System Galaxy supports **MA SIGMA Readers** in 'Legacy' operating mode (i.e. not MA5G) using the Traditional "Sagem" System Setting. *To integrate with MA SIGMA Readers in MA5G mode, you must use MorphoManager Integrated mode.*

### SYSTEM GALAXY SUPPORTS INTEGRATION AS FOLLOWS:

- ♦ MA500-series, MA100-series, J-series, SIGMA-Legacy are supported
- ♦ SG registration and setup is required.
- ♦ **The MSO 100 driver must be uninstalled before installing an MSO 300 driver whenever a system is upgrading to SG 10.** This requirement pertains to all version of SG since v8.2.4
- ♦ **You must install the MSO300 driver while the MSO300 IS NOT connected to the PC.** using the setup.exe on the System Galaxy installation DVD – browse the disk to this path 'Installers\Drivers\Sagem\Sagem\_MorphoSmart\_USB\_Driver\Version 3.56.01\\*\*\setup.exe (\*\* select either the 64 bit or 62 bit driver according to whether you are installing on a 64bit or 32bit machine).
- ♦ **Contact Sagem for information about operating system compatibility where MSO fingerprint scanners and capture devices/drivers are concerned.**
- ♦ **You must install the SCM SDI011 smart card driver and contactless driver** using the setup.exe on the System Galaxy installation DVD – browse the disk to this path 'Installers\Drivers\SCM\_SDI011\setup.exe (the same setup.exe installs them both). You may need to reboot your PC to allow the drivers to take effect.

### SYSTEM GALAXY SUPPORTS ENROLLMENT AS FOLLOWS:

- ♦ SG 10 supports two unique fingers per credential.
- ♦ SG 10 supports enrolling fingers directly from a reader – *this may or may not be a recommended solution for enrollment workstations that perform a high volume of credentialing or for large-scale systems that manage a large quantity of templates.*
- ♦ **Identification mode and Authentication modes including multifactor are supported, as well as other modes using bypass, card id only, external reader, etc.** *Multi-technology cards are also supported.*
- ♦ **SMART CARD ENROLLMENT ENABLED:** In the System Galaxy System Settings screen, on the General tab, you must enable/check the [Smart Card Support Enabled] option under the Sagem Morpho setting in order to enroll smart cards in the Sagem Enrollment window of the Cardholder enrollment screen. This feature is OFF/unchecked by default when you initially install the System Galaxy Client software. When this feature is OFF, you will only see the Finger Capture fields.
- ♦ **RESOLVING KEY FILE ERRORS WHEN ENROLLING SMART CARDS ON WINDOWS-7 OS:** You may need to ENABLE the RUN AS ADMINISTRATOR option in the Compatibility Properties of the System Galaxy desktop shortcut in order to enroll smart cards. On the client desktop, right click on the System Galaxy shortcut. Choose Properties from the menu and select the Compatibility tab. At the bottom of the tab, you must CHECK/enable the 'Run As Administrator' option. Then click the [Change for all users] button and CHECK/enable the 'Run As Administrator' option at the bottom of the window. Click APPLY and OK, then APPLY and OK again to save all your changes. When you start SG the Windows-7 UAC dialog will open and require you to confirm [YES] to run the software as administrator.



See the **Galaxy Quick Guide for Sagem MA520 or Sagem MA110** for full requirements.

See the **Galaxy Quick Guide for Finger-Only MA1xx** for full requirements.

## Important Schlage Interface Notes

### SCHLAGE WIRELESS PIM-ODT-485 (Legacy hardware)

**Schlage Wireless PIM-ODT-485 is mainly a hardware interface.** *Some limitations are inherent to the nature of wireless technology and need to be considered.*

- ♦ **Microsoft® Java *msjavx86.exe* must be installed** on your PC in order to operate the CDT software. *This is found on the Galaxy Install CD (Disc 2) in the Schlage folder at the root of the CD.*
- ♦ **Microsoft® IE 6.0 browser is needed** to run the CDT software (MS-IE 8 may not work).
- ♦ The Internet Explorer configuration interactive option for **Sun Java must be unchecked** and the option for Microsoft Java must be checked.
- ♦ **The CDT v1.7 (Configuration Demo Tool)** from Schlage in order to program the WAPM devices/doors. This installs on the C-drive in a typical directory path c > Program Files > WirelessDemoTool > WyrelessDemo.html. *This tool is found on the Galaxy Install CD (Disc 2) in the Schlage folder at the root of the CD.*



See the ***Galaxy Quick Guide for Schlage PIM-ODT-485-RS*** for requirements specific to the integration with System Galaxy. **Also see Schlage documentation for product information.**

### SCHLAGE AD400 WIRELESS & AD300 HARDWIRED

- ♦ System Galaxy supports Schlage AD-400 wireless readers/PIMs as of SG 10.1
- ♦ System Galaxy supports Schlage AD-300 hardwired readers (no PIM) as of SG 10.2/Flash 5.0
- ♦ All AD-Series hardware requires the new Hand Held Device & running Schlage Utility Software in order to couple and configure PIM addresses, RF channels, and link/address wireless Readers.

### HARDWARE UPGRADES AND EXPANSIONS:

When adding AD300 hardwired readers to a DSI board that already supports wireless readers, you have two options.

- a) **Separate Networks\***: you can keep the readers separate (wired/wireless) by reserving one section of the DSI board for wireless (i.e. AD400 only) and the other section of the DSI for hardwired readers (i.e. AD300 only).
- b) **Mixed Networks\***: you can add AD300 hardwired readers to the same bus that supports AD400 wireless readers (or legacy ODT Wireless PIMs if you have older equipment).



**NOTE:** You must configure the Serial Channel programming in the SG Software for the correct Network Type (i.e. wireless-only, hardwired-only, or mixed-network) to match what you installed on the 485-network bus of the DSI board.



See the ***Galaxy Quick Guide for Schlage AD400/AD300*** for full list requirements and instructions to integrate with System Galaxy. **Also see Schlage documentation for product information.**

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## Known Requirements for SQL Server® 2008 Express

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As of SG 10.4 installation suite will install the 2008 Express version of SQL Server as well as the required Microsoft .NET Framework.

**Hardware:** Galaxy Control Systems recommends meeting the recommended requirements.

**Operating Systems:** Galaxy Control Systems suggests meeting the recommended requirements for each computer in the type of system (standalone or distributed) that you are installing.

SQL Server® 2008 Express is known to be compatible with the following operating systems. **However, you should consult the last section in this manual to determine which operating system fits your system needs.**

- Microsoft Windows® 2000 with Service Pack 4
- Microsoft Windows Vista® (Ultimate or Business) Service Pack 1
- Microsoft Windows® Server 2003 Service Pack 1
- Microsoft Windows® Small Business Server 2003 Service Pack 1

### Prerequisites for SQL Server 2008 Express:

- Installation of v 3.5 & 4.0 .NET Framework (GalSuite CD installs .NET Framework during Part 1)
- MDAC 2.8 SP1 for Windows® 2000 (GalSuite CD installs this automatically during Part 1))
- The presence of **Internet Explorer 6 with Service Pack 1** (this is not installed by GalSuite Install)

See **Microsoft® SQL Server® product documentation** requirements specific to your product.

# System Galaxy IT Requirements

This section covers the IT and Security information concerning System Galaxy.

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## System Galaxy Security Notes

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- ♦ **The following ports/applications must be unblocked for System Galaxy:**
  - 5010, 3001, 4000, 4001, 4002, 4003, 4004, 4005 and sqlservr.exe, sqlbrowser.exe for a networked system. See the full chart in Section 5.0.
  - The GalSuite Install program may automatically “open” Windows® Firewall Exceptions, depending on which installation choices are selected. **IF you are doing a standalone install and no other clients will connect remotely to the SG Database/Comm. Server,** then you will want to edit the firewall manually to use only those exceptions you truly need.

**REMEMBER:** you must manually open the required ports for any 3<sup>rd</sup> party firewall applications or port blocking applications.

**REMEMBER:** port 3001 is used for communication to Galaxy hardware controllers.

- ♦ **Also, note that any network switches or routers must also meet port requirements.**
- ♦ **If using *Time and Attendance* with “linked” database servers,** TCP Ports 135 and 6000 to 6050 are designated for DTC service on both the SG database server and the Time & Attendance database server. Note that the DTC authentication settings must match on both servers. If you are running Windows® 2000, then both servers will have to use “NONE” as the authentication setting.

**TIP:** A “.reg” file is included on the GalSuite CD that opens the T&A ports on both database servers if a linked server is used. Be aware that the “.reg” file will configure the DTC security settings, so you may want the IT personnel to approve running this or allow them to manually incorporate the needed DTC configuration. The “.reg” file can be viewed in notepad.

## PC Firewall Exceptions Table

The table below lists default ports and program exceptions that System Galaxy requires to operate. If these ports are not available on your customer's network, then you will need to work with their IT Professional to configure the ports.

Allow/Open	Who uses it	Where to open it
sqlservr.exe	2008 SQL Express Server	On the computer running the SQL Server if other computers need to make ODBC connections
sqlbrowser.exe	2008 SQL Server Browser	On the computer running the SQL Server if other computers need to make ODBC connections
3001	GCS Event Service	On any computer running the GCS Event Service
3001	GCS Comm Service	On any computer running GCS Comm Service
4000	GCS Comm Service	On any computer running GCS Comm Service
4001	GCS DBWriter Service	On the computer running the GCS DBWriter Service
4002	GCS Gateway Service	On the computer running the GCS Gateway Service
4003	GCS Event Service	On any computer running the GCS Event Service
4004	GCS Alarm Panel Service	On the computer running the GCS Alarm Panel Service
4005	GCS Event Service	On any computer running the GCS Event Service
5010	GCS Gateway Service	On the computer running the GCS Gateway Service
<b>The following exceptions are used for Genesis Time &amp; Attendance on Linked SQL Servers</b>		
TCP 135	MSDTC Service	On both the Genesis and Galaxy Database Servers
6000 thru 6050	MSDTC Service	On both the Genesis and Galaxy Database Servers
<p><b>TIP:</b> A ".reg" file is included on the GalSuite CD that opens the Time &amp; Attendance ports if linked servers are used. It must be run on both servers.</p> <p><b>BE AWARE</b> that the .reg file will configure the DTC security settings, so you may want the IT personnel to approve running this or allow them to manually incorporate the DTC configuration.</p> <p><b>ALSO NOTE</b> that the DTC authentication setting must match on both servers. <b>IF running on Windows 2000, the authentication setting must be set to NONE.</b></p>		

## SG Server & Workstation Recommendations

System Galaxy supports a wide variety of configurations that range from small professional to corporate or enterprise. System Galaxy is also designed to meet the future needs for system expansion.

System Galaxy is designed to support a networked architecture. The 600-series and 500i-series hardware uses TCP/IP connectivity. The System Galaxy software and databases can be installed on a single computer (standalone) for very small systems, or in a ***distributed solution*** (multiple computers) using TCP/IP connectivity.

As computers and hardware have advanced in capabilities and cost-effectiveness, many sites will benefit from installing a ***distributed solution***.

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### System Architectures Supported by Galaxy

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**Both system architectures are networked solutions**

- ♦ A ***standalone solution*** uses one computer and the hardware using TCP/IP connectivity
- ♦ A ***distributed solution*** uses multiple computers and hardware using TCP/IP connectivity.

***Dedicated Computer:*** In the context of this document, the term “***dedicated computer***” means that the computer (client or server) is solely devoted to running the System Galaxy applications and services for the purposes of monitoring, controlling access, and other System Galaxy features such as card enrollment/badging.

***Minimum Recommendations:*** In the context of this document, the term “***minimum recommendations***” means that the computer (client or server) running System Galaxy should, at a minimum, meet stated specifications. However, there may be reasons to increase certain specifications. Because systems vary, minimum recommendations may need adjusting. The specifications in this document do not cover applications/uses that are not related to Galaxy (e.g. email, editors, and other software).

***Distributed Solution:*** In the context of this document, a “***distributed solution***” means that the System Galaxy components (*i.e. System Galaxy software, GCS Services, and SG database*) are installed on two or more computers. The hardware connects to the SG Communication/Event Server via TCP/IP LAN/WAN. A networked or distributed system is the most commonly installed solution.

***Single-Server Solution:*** In the context of this document, a “***standalone solution***” means that the System Galaxy components (*i.e. SG software, GCS Services, & SG databases*) are installed on one computer. The hardware connects to this SG Communication/Event Server via TCP/IP LAN/WAN. This solution is not recommended for large systems or enterprise environments due to IT security policies and constraints. A stand-alone solution is not supported on a server operating system.

**IMPORTANT:** IF you are specifying requirements for a system that will *expand (grow)* or must *share resources with other applications* (email, web browsers, programs, etc), you must take these goals into consideration. Multi-use environments can cause resource conflicts, undesirable performance and could require you to increase your system specifications.

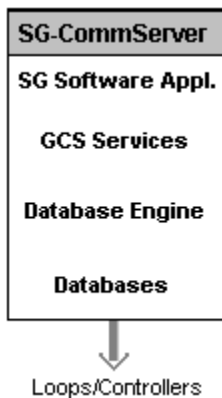
## Minimum Recommendations for a Single-Server Solution

A *Standalone Solution* is described as having all the software components (databases, database engine, services, and SG software application) running on a single computer which is also responsible for connecting to the hardware loop/controllers.

**IMPORTANT: The following assumptions are made for all system recommendations:**

- **Assumption:** that all connected loops will utilize TCP/IP connections to the networked Communication Server PC (or Standalone PC).
- **Assumption:** that no other software is running on any workstation where System Galaxy is installed/operating. Be aware that any additional programs must be taken into account when configuring a multi-use computer system.

It is important to remember that these are minimum recommendations with examples given. If you are specifying requirements for a system that will need to expand (grow), you should take those goals into consideration.



<< This diagram depicts a **Single-server (or Standalone) PC**. All system components reside on the same/one computer.

**\* A SERVER OPERATING SYSTEM IS NOT RECOMMENDED FOR A STANDALONE INSTALLATION**

## Worksheet for a Single-Server (Standalone) System

Computer Description	OS Compatibility	Minimum Hardware Recommendations
All System Galaxy components running on the same computer with no additional SG client workstations connected.	Windows 7 Pro / 8 Pro	3.2 GHz Pentium Dual Core 4.0 GB RAM or greater 40 GB HD or greater for SG
	<i>Server OS not recommended.</i>	
<p><b>IMPORTANT:</b> Some 3<sup>rd</sup> Party applications or technologies may not be supported on Server OS. SG Operators may need privileges set to license files or other files in the System Galaxy directory.</p>		



## Minimum Recommendations for Distributed Solutions

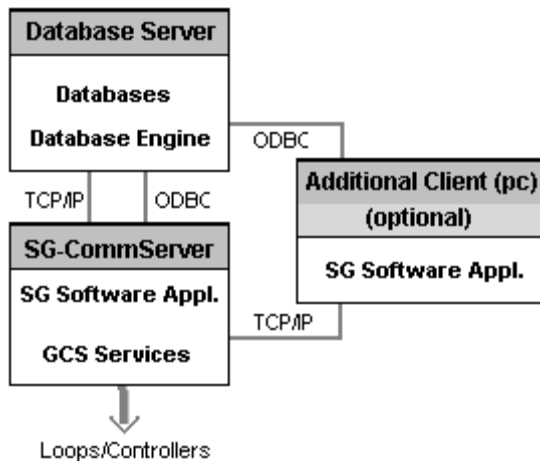
### Database Server Minimum Recommendations - Distributed Solution

A *Database Server* is described as housing the main SysGal and Archive databases and hosting the Database Engine in a Networked System. In a networked system, the software components are distributed among more than one PC.

**IMPORTANT:** The following assumptions are made for all system recommendations:

- **Assumption:** that all connected loops will utilize TCP/IP connections to the networked Communication Server PC (or Standalone PC).
- **Assumption:** that no other software is running on any workstation where System Galaxy is installed/operating. Be aware that any additional programs must be taken into account when configuring a multi-use computer system.

It is important to remember that these are minimum recommendations with examples given. If you are specifying requirements for a system that will need to expand (grow), you should take those goals into consideration.



<< *This diagram depicts a Database Server connecting to a Communication Server and Client Workstation in a typical Distributed Solution.*

**\* A SERVER OS IS NOT RECOMMENDED FOR A WORKSTATION ROLE (monitoring, badging, enrollment). since certain 3<sup>rd</sup> Party devices may not be compatible with a Server OS.**

*Contact Galaxy Technical support for assistance for more complex scenarios.*

### Worksheet for a Database Server in a Distributed System

Computer Description	Database Server OS Min. Recommendations	Minimum Hardware Recommendations
Computer running DB engine, System Galaxy Client software and GCS Services ( with up to <b>2</b> additional System Galaxy client workstations connected)	Windows 7 Pro / 8 Pro	3.2 GHz Pentium Dual Core 4.0 GB RAM or greater 40 GB HD or greater for SG
Computer only running DB engine, and GCS services (not SG Client Software). ( with <b>3 or more</b> additional System Galaxy client workstations connected)	Windows Server 2012 R2   2008 R2 ( 32-bit / 64-bit )	
<b>IMPORTANT:</b> Some 3 <sup>rd</sup> Party applications or technologies may not be supported on Server OS. SG Operators may need privileges set to license files or other files in the System Galaxy directory.		

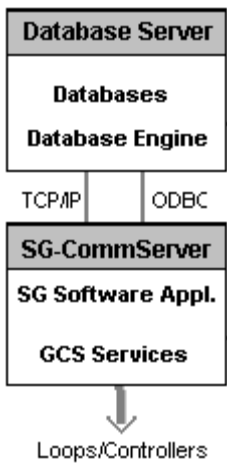
## Communication Server Minimum Recommendations - Distributed Solution

A *Communication Server* (or Loop Communication Server, LCS) is the PC/Server that handles the communication to the Loops/controllers in a Networked System. In a networked system, the software components can be distributed among more than one PC. Thus, the database may or may not reside on the Communication Server.

**IMPORTANT: The following assumptions are made for all system recommendations:**

- **Assumption:** that all connected loops will utilize TCP/IP connections to the networked Communication Server PC (or Standalone PC).
- **Assumption:** that no other software is running on any workstation where System Galaxy is installed/operating. Be aware that any additional programs must be taken into account when configuring a multi-use computer system.

It is important to remember that these are minimum recommendations with examples given. If you are specifying requirements for a system that will need to expand (grow), you should take those goals into consideration.



<< This diagram depicts a Communication Server connecting to a separate Database Server in a Distributed Solution.

*Contact Galaxy Technical support for assistance for more complex scenarios.*

### Worksheet for a Communication Server in a Distributed System

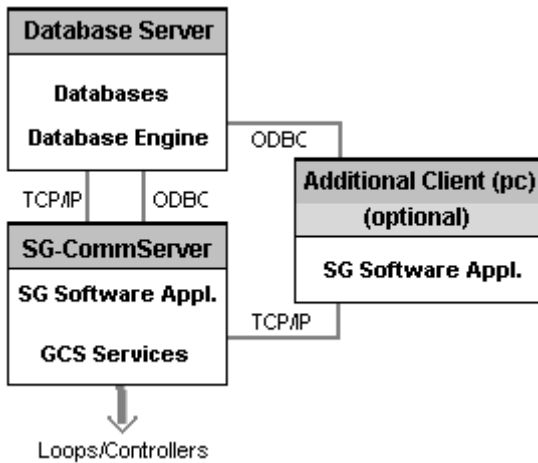
Computer Description	Communication Server OS Min. Recommendations	Minimum Hardware Recommendations
Computer running System Galaxy Client software and GCS Services ( with the DB engine on separate computer and up to <b>3</b> additional SG Workstations connected)	Windows 7 Pro / 8 Pro	3.2 GHz Pentium Dual Core 4.0 GB RAM or greater 40 GB HD or greater for SG
Computer running System Galaxy Client software and GCS Services ( with the DB engine on separate computer & <b>4 or more</b> additional SG Workstations connected)	Windows Server 2012 R2   2008 R2 ( 32-bit / 64-bit )	
<b>IMPORTANT:</b> Some 3 <sup>rd</sup> Party applications or technologies may not be supported on Server OS. SG Operators may need privileges set to license files or other files in the System Galaxy directory.		

## Client Workstation Minimum Recommendations - Distributed Solution

A *Client Workstation* is described the additional workstation that runs the System Galaxy software for monitoring or badging purposes. This additional client will operate in a Networked environment and make TCP/IP connections to both the Database Server and the SG CommServer.

**IMPORTANT: The following assumptions are made for all system recommendations:**

- **Assumption:** that no other software is running on any workstation where System Galaxy is installed and operating. Any additional programs must be considered when planning a multi-use computer system.
- **Assumption:** these are minimum recommendations for examples given. If you are specifying requirements for a system that will need to expand (grow), you should take those goals into consideration.



<< This diagram depicts a Client Workstation connected to the Communication Server and the Database Server in a Distributed Solution.

*Contact System Galaxy Technical support for assistance for more complex needs.*

### Worksheet for a Client Workstation in a Distributed System

Computer Description	Additional Client Workstation Minimum Recommendations	Minimum Hardware Recommendations
Workstation Running System Galaxy Client software for monitoring or badging, but not running the GCS Services.	Windows 7 Pro / 8 Pro	3.2 GHz Pentium Dual Core 4.0 GB RAM or greater 40 GB HD or greater for SG
<b>IMPORTANT:</b> Some 3 <sup>rd</sup> Party applications or technologies may not be supported on Server OS. SG Operators may need privileges set to license files or other files in the System Galaxy directory.		