

# Questions and Answers - Global Language Support



## Applies to:

SAP NetWeaver 2004, SAP NetWeaver 7.0, SAP Web Application Server 6.20, SAP ERP.  
For more information, visit the [Software Logistics homepage](#).

## Summary

Frequently asked questions about Global Language Support and the necessary code page conversion for IBM i customers on EBCDIC platforms

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## Q&A Document: Global Language Support

### What are the recent announcements?

The recent announcements are as follows:

IBM and SAP announced general availability of Global Language Support (GLS) on the iSeries. This supports languages that require Double Byte Character Support (DBCS), such as Japanese or Chinese. This also supports MultiProcess MultiDisplay (MDMP), an SAP method for combining languages from multiple code pages within a single database. The GLS version is an ASCII based solution. Previous iSeries and AS/400 solutions have been EBCDIC based.

In addition, IBM and SAP announced the availability of a Windows 2000 application server for the iSeries, which requires the GLS version of SAP to work.

Finally, SAP and IBM announced that future releases of mySAP.com will be based only on the GLS (ASCII) version. For customers running SAP R/3 this has no impact until the next release of SAP R/3 beyond 4.6C that is based on the new kernel (6.10 and 6.20). For customers looking to move forward on new mySAP.com solutions like mySAP CRM and mySAP BI, which are based on the 6.10 kernel now, these will be GLS (ASCII) only. Previous production versions of mySAP CRM and mySAP BI based on the previous kernel technology are available in both ASCII and EBCDIC versions to allow easy migration at this stage for existing customers.

What are the benefits of this announcements?

- GLS with ASIAN languages
- Use of more than one code page in one application
- Possibility to use Windows 2000 application servers combined with iSeries database servers
- The future developments are in mainstream with the future SAP developments

### What are the pre requisites for the GLS version of mySAP.com?

- 60-70% more disk space than current EBCDIC solution (same number of I/Os, but more bytes needed for character data)
- 10-20% more main memory than current EBCDIC solution
- OS/400 V4R5 or higher
- iSeries PRPQ 5799-AAS (ASCII support)
- Available on selected releases of SAP software only (e.g. SAP R/3 4.6C or higher, SAP BW 2.1C or higher,...)

### What are the prerequisites for running the Windows 2000 application server?

You must have installed the GLS version of the iSeries SAP support. The Windows 2000 application server must be an SAP certified server such as the IBM e(logo)Server xSeries servers. A high speed interface - GB Ethernet is recommended.

### Why do I need 70% more disk - why not 100%?

Only the alphanumeric (character) data is double byte. Internal SAP objects are not affected. This character data needs 2bytes per character instead of 1 byte per character in the standard EBCDIC version.

### Does the amount of disk space needed increase if I add more languages?

The customer data will not be any larger, no matter how many languages (code pages) are used. The language imports themselves will add some size, but less than 1 GB per language.

### Why is there not a larger impact on memory and disk if we are moving twice the amount of data?

On memory utilization - a study done in the performance area on what was in memory for an SAP benchmark system showed that only a small percentage of memory was used by DB objects (data space

and index). Most (80-90%) was used for things that are not affected by the size of the character in the data space: SAP buffers, open data paths, QQ work spaces, code etc. The QQ work spaces probably do increase in size, but only part of them are used for data, so the increase for them is less than 70%.

On CPU - for single record operations, the DB pathlength is almost entirely for things like parsing and interpreting the statement and the package, navigating to the data (one index operation takes several thousand instructions), serialization/locking, etc. The actual movement of the data is an insignificant part of the pathlength. A simple record retrieval takes 10's of thousands of instructions - the actual movement of the data takes only a 100 or so, depending primarily on the record length. For large blocked operations or table scans, then this part of the pathlength increases, but is still usually dominated by the other aspects. Updates and inserts have even more overhead as the indexes must be updated, potentially doing some tree balancing.

### **Do you need the iSeries and Windows 2000 integrated xSeries adapter (iXA) to use the Windows 2000 application server?**

No.

### **Must an existing customer migrate to this new solution?**

No.

### **Why might an existing customer choose to migrate to GLS?**

For four reasons:

- a) For DBCS language support such as Japanese, Chinese, Korean, and Taiwanese
- b) For the ability to run multiple code pages in a single database - also called MDMP support. For example, running a Latin-1 language such as French, with a Latin-2 language such as Polish together in a single database.
- c) To run Windows 2000 application servers
- d) To run the APO database on the iSeries - Actually, as this would be on a separate SAP system - there would be no need to migrate. This customer could run their current R/3 system in their current form (EBCDIC OR ASCII representation) and their APO DB using the new GLS (ASCII) solution. APO ????
- e) To be ready for new releases of SAP software based on the 6.10 or higher kernel.

### **How difficult is it to migrate to GLS from an existing solution on iSeries? From another platform?**

This uses the standard SAP migration approaches from moving from one database to another. It requires planning and the SAP tools.

What are the impacts of such a migration? Cost? Downtime?

### **How well does this solution perform?**

This solution performs as well as the existing iSeries SAP solutions once the additional memory (10%) and disk (60 to 70%) is added.

### **What parts of mySAP SCM will be added?**

We plan to add the ability to run the APO Database on the iSeries. This decision has not been made.

### **Do you need a separate server to run all these different solutions?**

No, a single iSeries can run an R/3 database, an APO database, a CRM database, and a BW database as well as development and test environments. In addition, both GLS and the existing (EBCDIC) solution can run on the same iSeries server in the same partition. Finally, you can mix SAP components such as mySAP Workplace running in the classical (EBCDIC) form and have it work with both GLS and Classic Solutions. As an example, here is how it would work:

1. User would login in ENGLISH to WP Server
2. in the launchpad he would select a component system in Japanese e.g. R/3:

- the component system must run in cp 8000 or MDMP (ASCII)
- The ITS must be configured for MDMP
- The Web Browser (IE 5) is fully configured to Japanese

Then it would be possible for the user in the Workspace window to work in Japanese, etc.

3. The Workplace Server is "active" at login , so the user would have to login to WP in ENGLISH
4. For every role language he has to define an own RFC connection to the component system with the proper RFC login language

**When is this solution available - GLS? W2K application servers? SCM extensions?**

GLS is available now as a GA solution, W2K is available now as a CA solution. The SCM extensions will be available in early 2002. 2.1C BW is available in Controlled Availability.

<i>Product</i>	<i>Release</i>	<i>Status</i>	<i>Plan</i>
SAP R/3	4.6C (SR2)	09/2001 GA (incl. Win AS)	
SAP BW	2.1C	09/2001 CA	Q1/2002 (incl. Win AS)
SAP KW (KM??)	5.1 (SR1), 5.2	09/2001 CA (incl. Win AS)	12/2001 (incl Win AS)
SAP WP	2.11		Open

<i>Product</i>	<i>Release</i>	<i>Plan</i>
SAP WebAS	6.10, 6.20	11/2001 (GA) Q2/2002 (GA)
SAP R/3 E	"4.7"	Q2/2002
SAP BW	3.0A, 3.0B	12/2001 (CA) Q2/2002 (GA)
SAP KW isn't that KM?	5.2	Q3/2002
SAP CRM/EBP	3.0 (SR1) , 4.0	12/2001 (CA) Q2/2002 (GA)
SAP APO????????	3.1	1H/2002 (pilot)

## How will SAP support this solution? Will it be any different than the existing solution?

The Kernel is more or less the only difference during the installation. The installation needs a kernel CD, export CDs and perhaps language CDs. All CDs are the same for ALL SAP platforms during the installation or the upgrade, with the exception of the kernel CD. We are now shipping 2 different kernel-CDs for the iSeries. One kernel CD for the platform OS/400 (EBCDIC) and another kernel-CD for the platform OS/400A (ASCII). These CDs are absolutely NOT compatible, as it is not possible to run an SAP system with the ASCII kernel CD and the EBCDIC database or vice versa. This would produce unpredictable results (in other words - don't do it!).

### Kernel patches are in different directories.

You find the EBCDIC 4.6D kernel patches in the following directories on sapserv:

<http://sapserv3.wdf.sap-ag.de/home/ftp/general/R3server/patches/rel46D/OS400/V4R4M0/> .

You find the ASCII 4.6D kernel patches in the following directories on sapserv:

[http://sapserv3.wdf.sap-ag.de/home/ftp/general/R3server/patches/rel46D/OS400/V4R5M0\\_ASC/](http://sapserv3.wdf.sap-ag.de/home/ftp/general/R3server/patches/rel46D/OS400/V4R5M0_ASC/) .

You can find the patches in the marketplace (<http://service.sap.com>) at the following links:

You could use the shortcut <http://service.sap.com/swcenter-main> and then you could select the following entries of the launchpads: SAP mySAP.com => SAP mySAP.com 4.6C => Binary Patches => SAP Kernel 4.6D => OS/400 V4R4M0 => DB2/400.

The ASCII and EBCDIC patches are at the same level. So, we do not expect differences in availability of current SAP releases.

## What are the differences between this GLS solution and the existing solution?

In most ways, the solutions are more similar than dissimilar. The install procedure is essentially the same, all SAP applications run in the same way, and most of the systems management tasks run in a similar manner. Please see Q. 7

### Enhanced compatibility with SAP

As SAP is a company that uses ASCII everywhere except on the iSeries, SAP has some coding which is not codepage independent, (for example - assuming a particular sort-order). With iSeries EBCDIC this can cause problems which must be fixed by the joint IBM-SAP iSeries development team, because the SAP developers have, understandably, not considered problems in connection with EBCDIC.

These problems will not occur when using the ASCII solution.

### A larger database requirement

As the ASCII database is stored in the Unicode database on the iSeries, it needs about 60-70% more disk space. Unicode uses 2 bytes to represent every character, while EBCDIC and ASCII use only one.

### Reduced compatibility with legacy applications in the ASCII solution

As the database is running in UNICODE, legacy applications such as RPG and COBOL might have problems reading this data, because these languages are partly not UNICODE-enabled, or at least the software is not UNICODE enabled. As the SAP database shouldn't (at least from SAP's standpoint) be accessed directly by external programs, it should be possible to change such applications to use RFC. SAP is working on some interfaces to reduce the impact of this for most customers.

## How do I look at SAP table information ?

When you are using the original solution and try to have a look at the data and normally use the DSPPFM command . BUT, with the GLS solution this shows

the data in a binary format and thus not in a readable format. When using the GLS you should use STRSQL and then "SELECT \* from mara" or RUNQRY QRYFILE(MARA) you'd see the correct data. This will work as long as you are viewing Latin-1 data.

There is a tool called CRTSAPVIEW out that would create views with the CCSID

500 in order to have input access in RPG programs. For methods input, update and insert use interactive or embedded SQL. As your job always has the CCSID 037 or 500, the IBM-SQL-interface will translate this automatically to unicode (or ascii) and vice versa.

## Can you give me a more detailed understanding of how all this works?

The first thing to know is that the two solutions use different ways of describing data. The traditional iSeries method uses EBCDIC, the traditional UNIX and NT method has been to use ASCII. It is not difficult to translate between these two standards, but they do have differences.

The GLS solution uses ASCII, as the ability to run DBCS languages in SAP assumes an ASCII database.

The Windows 2000 application server uses ASCII, so the use of an ASCII database on the iSeries makes it much easier to use an ASCII application server like Windows 2000.

However, the iSeries commands continue to be in EBCDIC, so while the data is stored in ASCII, all commands must be converted to EBCDIC. There is an interface routine on the iSeries called QADRT that does this. This introduces minimal overhead to the system as no data is translated - just OS/400 commands.

## General Questions

### What is a code page?

A: Languages are either represented by characters or by symbols. For a binary representation of language data these characters or symbols must be mapped to a set of binary data. This mapping is called a *code page*. As different languages use different character sets there are different code pages for different sets of languages.

### What is a code point?

A: A *code point* is defined as the pair of a character/symbol language element and its internal binary representation in a code page. The same character/symbol may have different internal representations in different code pages.

### What is a Single Byte Character Set (SBCS)?

A: As long as all characters/symbols of a language or of a set of languages can be represented by 256 separate positions without any overlap, they can be mapped onto a common code page where each character is represented by one byte of data. These code pages are called *Single Byte Character Sets* or *SBCS*.

### What is Double Byte Character Set (DBCS)?

A: Languages utilizing the symbol approach require far more than 256 code points and must therefore be represented by more than one byte. These code pages are called *Double Byte Character Sets* or *DBCS*.

### What is the Common Character Set (CCS)?

A: A *CCS* consists of those code points that are identical in a set of code pages. As an example, every ASCII code page contains the character that are used in the english language. This is therefore also referred to as the US 7-bit ASCII *CCS*.

## What is the difference between EBCDIC and ASCII?

### What is Unicode?

A: Unicode is a character encoding system designed to support the interchange, processing, and display of the written texts of today's world. It exhibits a double byte standard containing nearly all characters and symbols of today's languages in one code page. Unicode is one of 3 different standards (UNICODE, ASCII, EBCDIC) for data encoding, which is the technical basis for language support and character representation. ASCII and EBCDIC allow single-byte coding (8 bit; SBCS) plus double-byte coding (16 bit; DBCS).

### What is the advantage of Unicode?

A: Unicode generally uses multibyte (2-byte or 4-byte) coding, thus allowing a larger address space, and a greater variety of characters than EBCDIC or ASCII. A 2-byte Unicode encoding has as much as 65,536 different code points which is currently sufficient to represent commonly used symbols in languages of the industrialized countries.

### What is MDMP?

A: The code page solution is to have overlapping code point definitions by utilizing the same binary representation for different characters/symbols. With this solution it is not necessary to reduce the set of available characters/symbols. A work process may run in different code pages depending on the sign on language of the current user. The interpretation of the binary representation of the character/symbol is then specific to these environment parameters. This implementation is called *multi display multi process (MDMP)* and it introduces the concept of a so called *ambiguous* code page definition.

### Additional information on language support and code pages?

A: See: SAP White Paper 'Global language Support' (Pub# 50037803 0003/13).

## Strategy Questions

### How strategic is the iSeries solution to SAP?

A: iSeries is one of SAP's strategic platform lines for mySAP.com. The iSeries market is of special interest to SAP since the iSeries platform, with more than 600,000 installed systems, is the market leader in commercial midrange systems.

### How important is the relationship with SAP to IBM?

A: SAP is one of IBM's most important relationships. SAP's mySAP.com solution and IBM Hardware, Operating System Software, Middleware Software and Services offerings are an ideal match. For many years both companies have benefited from their work together, and have been able to develop and provide a complete offering to the advantage of our customers.

### What is the value of an iSeries solution to an SAP customer?

A: By combining mySAP.com with the iSeries, we provide our customers with the best of both worlds. mySAP.com integrates company business processes while the iSeries server is a single integrated solution that ensures a customer's business is ready for e-business. The benefits for a customer are many:

- High transactional volume is enabled via 64-bit technology.
- The rigorous demands of e-commerce applications, such as mySAP.com, are supported by top-notch scalability through our new extreme business machines.
- Fully tested, highly reliable, integrated machines result in the lowest downtime of any single server solution - 99.94% available.
- There is no need for a database administrator - DB2 Universal Database for iSeries is self-managing.
- Put this all together and you have the Lowest total cost of ownership.

### What was the development effort on this solution from IBM and SAP?

A: Both SAP and IBM invested a considerable amount of time and resources to develop and roll out this solution. The design and implementation of this solution started in early 1999 and has been mainly done in Walldorf, Germany and in Rochester, Minnesota, USA.

## Solution Questions

### What benefits does this solution bring to SAP customers?

A: There has been strong customer demand for mySAP.com on the iSeries from the Asian marketplace. This solution provides Asian language support for mySAP.com on iSeries. In addition, the capability to support Windows 2000 application servers with an iSeries database server gives customers the flexibility to combine the strengths of the two platforms. Finally, this announcement provides customers with a solution that is consistent with the SAP language strategy.

### What benefit has the ASCII application server on Windows 2000?

A: The new solution allows attaching ASCII application servers to the iSeries database. This provides flexibility for customers to combine the strengths of the two platforms and it will increase the availability of complementary solutions.

### Why is the DBCS solution not based on EBCDIC double byte support?

A: The SAP DBCS implementation is based upon ASCII code pages, with a future direction of providing its complete multi language support based on Unicode code pages. The SAP ASCII/DBCS implementation has had excellent stability and reliability over the past years making it a proven approach for Asian language support.

### How does the iSeries support ASCII/DBCS applications?

A: The ability to run ASCII applications on the iSeries has been available for years and has been used, for example, in the iSeries implementation of Lotus Domino. A special OS/400 library provides an ASCII/EBCDIC translation layer between the system and the application. This implementation has been enhanced for the new SAP solution to also support ASCII/DBCS functionality and is now a separate IBM iSeries product.

## Impact Questions

### What is the impact of this solution on system resources?

A: Unicode generally uses 2-byte or 4-byte encoding of characters/symbols and the solution introduced here uses UCS-2, a 2-byte Unicode encoding scheme. Because the ASCII and the EBCDIC implementations use only one byte to store language dependent data, this will result in an increased demand for disk capacity.

Also, the 2-byte encoding results in larger volumes of data that need to be read, copied, and stored in the system's main memory.

Early IBM lab tests seemed to indicate, that a fresh install of a Unicode database on the iSeries requires approx. 60-70% additional disk space, approx. 10% additional main memory and very little increased CPU workload, compared to an EBCDIC database on the iSeries. Most of the additional requirements will occur on the database. The effect on the application server(s) are significantly less.

### Are there any performance measurements or benchmarks available?

A: We have very good initial performance information. Benchmarks are planned to be worked on in the near future.

## Support Questions

### Can there be communication between these systems?

A: Yes, there is no problem with communications between an EBCDIC and ASCII solution.

### Can there be transports between these systems?

A:

### Will the EBCDIC systems continue to be supported in the future?

A: mySAP.com solutions on the iSeries utilizing an EBCDIC database show a long history of success in the market. So current EBCDIC releases will be supported like any SAP release. Current dates for end of support for SAP R/3 3.11 is 2003, and for SAP R/3 4.6C is 2005. However, 4.6C, the current release as of December 2001, will be the last EBCDIC release for SAP R/3. All future releases will be available only in the GLS (ASCII) solution. This is a straightforward migration from ASCII to EBCDIC (at release 4.6C) and then a standard upgrade to the next version (for example, 4.6C to 4.7B)

### Will the GLS systems continue to be supported once a full Unicode solution is available?

A: There are no plans to discontinue support for GLS systems.

### Will SAP provide Upgrades, hotpackages, LCP for these ASCII systems or do I have to stay to one Release ?

A: Support for ASCII systems on the iSeries will be the same as for any other platform

### Will there be front-end- client- printer- support for Asian languages?

A: The SAP GUI is able to display the symbols of Asian languages. You can also print these languages, if your printer supports the required symbols.

### Will there be host-printer-support for Asian languages?

A: Yes.

### Will the iSeries operation management tools work with this solution?

A: Yes.

## Decision Questions

**If a customer wants to install a NEW Latin-1 (Latin-2, ...) (SBCS) system, should he consider an EBCDIC system or an GLS system?**

**A:** As a general rule, new customers should install the GLS solution. If the customer intends to add an Asian language in the future or needs to install mySAP.com solutions which require an NT application server, he should install an GLS system.

**If a customer wants to install mySAP CRM or mySAP BI what solution should they consider?**

New releases of both mySAP CRM and mySAP BI will be supported as GLS solutions only. So current releases (2.1C) would better added as GLS, as would new releases (3.0A). Most customers starting now on mySAP CRM or mySAP BI would start with 3.0A as a GLS (ASCII) solution, and then move to 3.0B for production when 3.0B is available for all platforms from SAP.

**If a customer has an existing EBCDIC Latin-1 (Latin-2, ...) system, should he keep it as it is or migrate it to GLS?**

**A:** If the customer does not feel the need to add an Asian language to his system or to use more than one code page, he can stay with the EBCDIC solution until there is a requirement to go beyond SAP R/3 release 4.6C. At this point, only the GLS version will be the supported version.

**What needs to be done to add Asian language support to an existing EBCDIC Latin-1 (Latin-2, ...) system?**

**A:** It is necessary to migrate the existing EBCDIC system to the new GLS solution.

**What kind of education is available on the new solution?**

**A:** SAP standard education will be extended to include implementation and management of new versions of mySAP.com.

**Will the mySAP.com functionality on UNICODE be different from ASCII / EBCDIC ?**

**A:** Application functionality will be the same for UNICODE/ ASCII/EBCDIC, with the exception of language support. UNICODE will offer better, easier and broader language support than ASCII/EBCDIC, allowing unrestricted coexistence of all major world languages in one single SAP system. Full Unicode support is not yet available from SAP.

## Marketing perspective:

### How many customers run SAP applications on the iSeries?

Approximately 1300 SAP implementations are running on IBM iSeries.

iSeries is one of SAP's strategic platform lines for mySAP.com. The iSeries market is of special interest to SAP since the iSeries platform, with more than 600,000 installed systems, is the market leader in commercial midrange systems. Research analysts such as OVUM expect that the total market share of iSeries servers will grow to about 5%. SAP expects this rate to grow in the future and therefore continues its investment in this platform by dedicating substantial resources to porting, marketing and supporting mySAP.com on iSeries.

### Why did it take this long to get a DBCS version of mySAP.com for the iSeries?

Our primary focus was to port and develop a solution that would perform optimally for the largest markets, which were at the time Europe and the Americas. When that solution was well established we then deployed our resources to focus on the Asian language development.

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