

TECHNIQUES AND PROCEDURES FOR R/3 RELEASE UPGRADES

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- **Regular Upgrades Keep You on the Cutting Edge of Technology**
- **Simple Operation with Graphical User Interface**
- **Dramatic Runtime Reduction for Import of Data and Languages in Release 2.2**
- **Release Upgrade in Just a Few Hours with New Upgrade Procedure in Release 3.0**
- **Upgrade Hotline Also Available on Weekends**
- **New Releases To Be Shipped Annually**



TECHNIQUES AND PROCEDURES FOR THE R/3 RELEASE UPGRADE

With every version of the R/3 System, SAP has refined its automated techniques for performing release upgrades. The new procedure available in Release 3.0 is called the "Repository switch", and provides a major advantage: the production systems can be used again just a few hours after the upgrade. The handling of the upgrade tools has been simplified, as well.

The SAP Strategy for Release Upgrades

Each version of the SAP R/3 System utilizes the availability of powerful new functions and technology. The changes and enhancements are grouped together in new releases - in this case, Release 3.0.

In contrast, maintenance levels only contain minor enhancements, technological upgrades, and error corrections to the current release. As a result, installation in the customer system hardly requires any effort at all.

The price of progress in this case is the effort required to install the new software, in order to take advantage of the increased performance and enhanced functionality in the new release. Furthermore, the production system cannot be used during the upgrade process.

To keep the effort required as low as possible, the following factors must be emphasized:

- The release upgrade must be fast and problem-free, and be possible without large monetary expenditures or great staff effort. In particular, it should be possible without requiring external specialists.

- Should problems occur, qualified help must be available as quickly as possible.

- After an upgrade, the old applications and data must be usable without restriction.

- The changes and new modules must be available for use immediately and must be problem-free.

- Release upgrades should only be necessary in longer intervals (e.g. once a year).

Due to SAP's intensive contact with its customers, we are aware of these requirements and difficulties, and the R/3 System was designed to meet them. For example, an automated procedure enables an upgrade to be performed over a single weekend, without requiring a lengthy planning project. Advantage: the production system is only down for a short period of time. Furthermore, only a few hours are required to install a new maintenance level, and the upgrade procedure is supported by an easy-to-use graphical user interface. The benefits? The upgrade can be performed by a customer employee and does not require any external support. Should problems occur, an Upgrade Hotline is available every day - even on

weekends - from 8 a.m. to 6 p.m. CET. In addition, easy-to-use tools enable customers to migrate modifications made in prior releases to the new version.

SAP At Your Service

To meet these requirements, a number of core concepts were followed during the development of the R/3 System. For example, every R/3 version is forwards compatible. This means that all existing functions and datasets can continue to be used, which is an important prerequisite for installing a new release. Furthermore, R/3 is based on the use of relational databases, which have established themselves as the standard for modern business applications. Consequently, forwards-compatible changes are particularly easy to implement.

Another principle: All Data Dictionary objects (such as table descriptions, domains, and indices), programs, data, and screens are stored in the SAP Repository, which itself is stored in the database. As a result, all components of R/3 are accessible in one place and in a uniform format, and can be easily adapted during a release upgrade. Lastly, all modifications to the R/3 stan-



standard system are recorded in a separate version database. This enables the changes to be duplicated and traced at any time.

Rapid Pace for Technology Infusion

Every R/3 Release is assigned a version number, consisting of one digit for the main release followed by a period and an additional digit for the sub-release (e.g. 2.2).

Maintenance levels are indicated by an additional letter (e.g. 2.2A).

After the introduction of the R/3 System, SAP reacted quickly and flexibly to market input and offered several release upgrades per year, in order to incorporate customer requirements and new technologies. In the meantime, R/3 has achieved a functional spectrum whose versatility and flexibility is without equal in today's IT market. As a result, the future will bring no more than one new release per year. When a new release is shipped, maintenance levels will continue to be made available at regular intervals, as necessary (with minor enhancements, technological upgrades, and error corrections).

A Continual Process of Innovation

With Release 2.0 of its R/3 System, SAP presented a fully automated release upgrade procedure in June 1993. This event set new standards in time savings and ease of use, and made external help (consultants, specialists, etc.) unnecessary. It enabled customers to carry out the upgrades themselves. Release 2.2, shipped last fall, provided additional benefits. In particular, modifications could automatically be transported from a test to a production system during a release upgrade, and the downtime of the production system during the upgrade was reduced yet again.

Quick Switch

SAP's new upgrade procedure is called "Repository switch" and will be used for the upgrade to Release 3.0. One significant advantage of the new technique for SAP users is a reduction in the downtime of the production system to just a few hours. This drastic decrease was made possible by constructing the new release in a new Repository in the background, completely independent of the production system.

The new Repository is constructed in a "shadow database". All customer modifications are imported into the new database, which temporarily requires about two gigabytes of

disk space. Incidentally, the space required for the shadow database is balanced by the fact that the upgrade CD-ROM no longer needs to be imported into the file system. During the data transfer, the production system can continue to be used without interruption. As soon as a new Repository has been constructed and furnished with all the customer modifications, production work is stopped, and the customer data only needs to be converted to the new format.

Step-by-Step Procedure

The new upgrade procedure involves the following steps:

- Importing the new release into the shadow database in the system
- Copying the customer modifications from the production Repository to the newly created one
- Shutdown of production work
- Switching to the new Repository by simply renaming the database files
- Activating the new release and converting the customer data
- Comparing the customer changes from the database
- Resuming production work

The reduction in system downtime provided by the new procedure is illustrated in tables



1 and 2. the runtimes were calculated using workstations at SAP (runtimes on other platforms may vary). In addition to the reduction in downtime, the Repository switch also provides other benefits: this new upgrade procedure enables you to skip intermediate versions (e.g. from 2.1 to 3.0), which was not possible under the former methods. Because customers are supplied with a complete copy of the SAP delivery system, they can - based on the resynchronized standard system - import their modifications using the tools provided.

Further improvements have been made to the language import process for non-German customers. The runtime is now significantly shorter and integrated in the upgrade procedure. SAP also offers tips on how you can use online backups to minimize the time required for saving data before and after the upgrade. As part of its "Zero Downtime" project, SAP will also provide functionality for converting data by component to make the next release changeover ever easier. Customers will then be able to resume productive operation with unaffected applications immediately.

Steps carried out parallel to productive operation			
Standard procedure:		New procedure:	
Importing the Data Dictionary	2-3 hours	Importing the new Repository	2-3 hours
		Transferring the customer changes to the new Repository	Around 20 min./1000 objects
Total:	2-3 hours		Several hours

Productive operation halted			
Standard procedure:		New procedure:	
Activating the Data Dictionary	Several hours	Switching the active Repository with the new one	A few minutes
Importing the new Repository	Several hours	Activating the customer Data Dictionary objects	Around 20 min./1000 objects
Import of control data (customizing);	1 to 2 hours	Import of control data (customizing);	1 to 2 hours
Database conversion	2 to 4 hours	Database conversion	2 to 4 hours
Total:	> 1 day		Several hours

Comparison of former and present time requirements for an R/3 release upgrade

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