



Manage APO Core Interface in SAP APO (3.x) / mySAP SCM (4.x)

Best Practice for Solution Management

Version Date: February, 2004

This version is valid for SAP APO (3.0, 3.1) and mySAP SCM (4.0, 4.1)

The newest version of this Best Practice can always be
obtained through the SAP Solution Manager

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Applicability, Goals, and Requirements

To ensure that this Best Practice is the one you need, consider the following goals and requirements.

Goal of Using this Service

This Best Practice enables you to set up a business-process management and monitoring concept for business processes that are part of the mySAP **Supply Chain Management (SCM)** solution using **SAP R/3** and **SAP Advanced Planning and Optimization (APO)** and that use the APO Core Interface (CIF) for the data transfer between an APO system and one or several SAP R/3 system(s).

This business process management and monitoring concept aims to:

- Define procedures for business-process oriented monitoring, error handling, and escalation management for *APO Core Interface*
- Define the roles and responsibilities for all persons involved in the customer's support and monitoring organization with respect to *APO Core Interface*

These procedures ensure the smooth and reliable flow of the core business process in order to meet your business requirements. In the best case, this concept is already applied in the late stages of your testing phase to gain experience with these concepts.

Alternative Practices

You can get SAP experts to deliver this Best Practice onsite if you order the Solution Management Optimization (SMO) service known as the SAP Business Process Management service.

Staff and Skills Requirements

To implement this Best Practice, you require the following teams:

Application Management Team

The SCM / APO business process management concept (which this Best Practice aims to produce) should be created by the Application Management Team. This team combines experts from your company:

- ❑ Business department
- ❑ Solution support organization (for example, the IT department and the Help Desk)
- ❑ Implementation project team

Execution Teams

The execution teams are the following groups, which taken together form the customer's Solution Support Organization:

- ❑ The business process champion for each business process
- ❑ Application support
- ❑ Development support
- ❑ Program scheduling management
- ❑ Software monitoring team
- ❑ System monitoring team

More information about roles and responsibilities of these teams can be found in the superordinate Best Practice *General Business Process Management*, which you can obtain through the SAP Solution Manager.

Duration and Timing

Duration

Creating a business-process management concept can take around one week per business process.

Implementing the business-process management concept can take around one additional week.

Timing

The best time to apply this Best Practice is during the planning phase or during the implementation phase of your mySAP solution.

How to Use this Best Practice

Firstly, read the whole document to get an overview of its structure, contents, and details.

Determine one of your APO core business processes to be monitored and obtain the relevant [process oriented best practice document](#) (if already available). Record all relevant steps of your core business process using the example business process as a template. Exclude template process steps that you will not perform.

For every process step, take the monitoring elements from the tables and insert them into your own template. Complete the information according to your specific requirements, e.g. frequency and time of monitoring activity. If the process step includes CIF data transfer, add the information from this best practice, section [Operation and Monitoring of the APO CIF](#).

Don't forget to include the respective information for other interfaces besides CIF and for business process steps performed with your own (Y-, Z-) programs. Determine the related monitoring activities, tools, and responsible teams and fill in the table accordingly.

For activities that are not directly related to a business process step, such as those mentioned in [System Administration Related to the APO CIF](#), create a separate table.

Proceed in the same way with all your other core business processes and other activities you want to monitor.

Best Practice Procedure and Verification

Preliminary Information

The various strategies for using SAP R/3 and SAP APO in combination are called integration scenarios.

This Best Practice is based on the most common integration scenario for setting up a mySAP Supply Chain Management solution using SAP APO. The SAP APO system is connected to one or more SAP R/3 Online Transaction Processing (OLTP) systems via the SAP APO Core Interface.

The SAP APO Core Interface (CIF) is a standardized interface solution that enables data exchange between APO and R/3 systems. Only those data objects that are relevant for starting/designing the planning processes in APO must be transferred from R/3. In addition to initial data transfer, CIF guarantees an incremental supply of relevant data changes to APO. The CIF is an add-on to the R/3 system that is installed using the relevant R/3 Plug-In.

The interfaces to non-R/3 systems are implemented as Business Application Programming Interfaces (BAPIs) that enable object-oriented access to SAP systems. This scenario is not covered by the present Best Practice document. Also, filling SAP APO Demand Planning (DP) InfoCubes with (historical) data from SAP R/3 is done using SAP BW technology and not CIF, so this scenario is not covered by the present Best Practice document either.

The SAP APO CIF uses queued remote function calls (qRFCs) provided by SAP Technology to ensure the desired sequence and transactional security of data transmissions between SAP R/3 and SAP APO. With qRFCs, asynchronous data transfers between SAP APO and SAP R/3 are established, thus enabling business process steps to be finished in either one of the systems, without the need to wait until the data is actually transferred to the other system(s). However, there are a few exceptions, where synchronous calls are performed if immediate updates are necessary (for example, during ATP checks executed from SAP R/3 sales orders).

SAP Advanced Planning and Optimization (APO) is the planning component of mySAP SCM, the Supply Chain Management solution provided by SAP. SAP APO is used to make strategic, tactical, and operational decisions and supports you in performing the following planning activities:

- Demand Planning (DP)
- Supply Network Planning (SNP)
- Production Planning (PP)
- Detailed Scheduling (DS)
- Deployment
- Transport Load Builder (TLB)
- Transport Planning and Vehicle Scheduling (TP/VS)
- Global Available-to-Promise (gATP)

SAP APO is primarily a planning tool, although some industry-specific execution functions are available (such as production backflush for repetitive manufacturing).

In standard business scenarios, execution functions, such as confirmations, goods receipt, and purchasing, are performed in the SAP R/3 OLTP system, which contains all the business functions for Material Management MM, Sales and Distribution SD, Production Order Processing PP-SFC, Process Order processing PP-PI, Logistics Execution LES, Controlling CO, and more.

The online transaction processing (OLTP) system – provided by SAP R/3 – also provides relevant planning data (master data and transaction data) for the APO system. Products are planned in the APO system, and the planning results are transferred back to the OLTP system. If necessary, the planning can be completed in the OLTP system, for example, if not all components of a BOM structure are planned in the APO system. These planning results completed in SAP R/3 can then be transferred to the SAP APO system again if necessary.

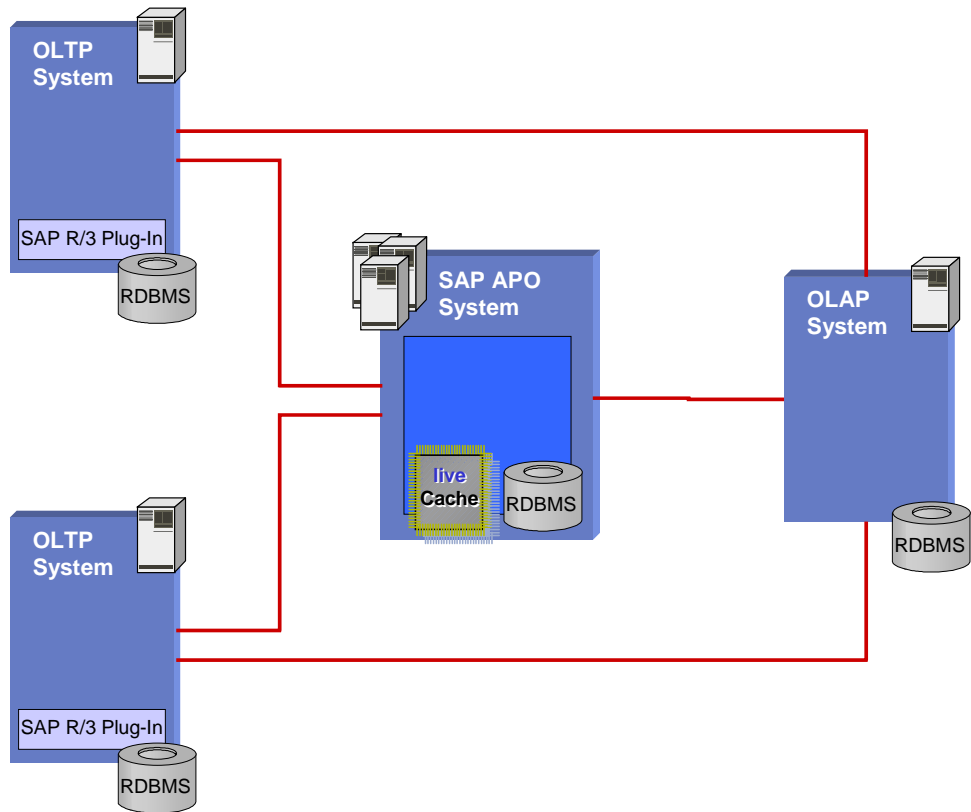
With the CIF, the planning results from the various SAP APO planning functions (manual interactive planning, heuristics, optimizers) can be sent to the SAP R/3 system directly or periodically. With periodic data transfer from SAP APO to SAP R/3, the data changes are collected in SAP APO and sent to SAP R/3 at a specific time, for example, with an overnight background job.

Additional information can be found in the [SAP Documentation](#).

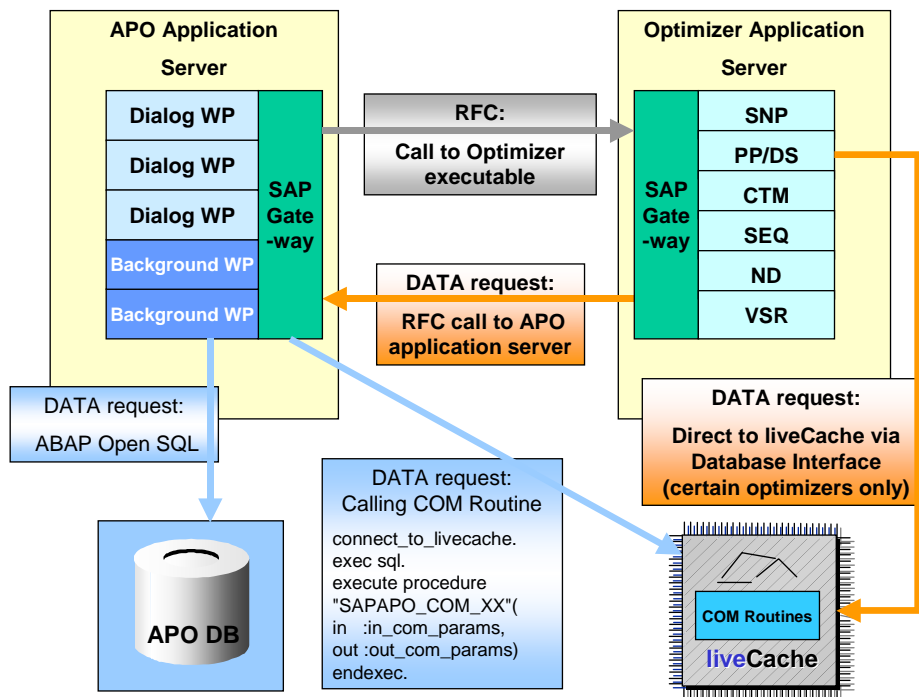
The SCM System Landscape

The substantial components of an SAP SCM system landscape are summarized in the following table and shown schematically in the subsequent illustration.

SAP APO System	<p>The SAP Advanced Planning and Optimization system facilitates the strategic, tactical, and operational planning processes.</p> <p>APO consists of several software components: a relational database system (RDBMS) as in any R/3 system, known as the APO DB; an SAP R/3 Basis; the APO application programs; a separate, very fast object-oriented SAP DB database called liveCache; application programs running in liveCache – the COM routines; and a number of programs that execute elaborated optimization algorithms, called the optimizers. These components can run on the same or on different servers.</p>
OLTP System	<p>The Online Transaction Processing system covers functions for sales and distribution, material and inventory management, controlling, shop floor control, logistic execution, and so on.</p>
OLAP System	<p>An Online Analysis Processing system, such as SAP Business Warehouse, provides cumulated historical data as a basis for future extrapolation purposes in APO Demand Planning.</p>



The following diagram shows the relationship between APO application software components and the databases:



The APO Core Interface

The SAP APO Core Interface (CIF) is used to transfer master and transaction data from one or more SAP R/3 systems to an SAP APO system and vice versa (for further general information see section [Preliminary Information](#) in this document).

The CIF is delivered as part of the R/3 Plug-In, available for SAP R/3 releases from 3.11 on. The R/3 Plug-In is applied to the SAP R/3 system(s), thus enabling them to communicate with the mySAP.com components SAP APO, SAP CRM, SAP BW, SAP SRM, and SAP EBP. For more information on the R/3 Plug-In, see SAP Service Marketplace (<http://service.sap.com/r3-plug-in>). From an operations point of view, the R/3 Plug-In release strategy is also to be considered (see SAPNet).

For SAP APO systems, the interfaces necessary for sending and receiving business data to and from R/3 are provided by SAP together with the SAP APO system in a single package. It is not necessary to apply an extra plug-in to APO.

The main tasks of the SAP APO CIF include determination of the source and the target system, provision of the APO with the relevant master and transaction data, transfer of data changes, and return of planning results from APO to the execution system(s).

The SAP APO CIF provides:

- Integration models to specify which data is to be transferred between SAP R/3 and SAP APO
- Techniques for initial, incremental, and real-time data transfer between SAP R/3 and SAP APO
- Alerting (CIF Queue Alert) and monitoring tools (SCM Queue Manager) to supervise the CIF data transfer

The data sets (master and transactional data) required for APO planning processes are selected in an integration model. An integration model is uniquely defined by its name and application. Activation of a generated integration model starts the data transfer.

The initial data supply loads planning-relevant data from an R/3 execution system to SAP APO. This applies to both master data and transaction data. After finishing the initial load, the system switches to incremental data transfer, where only data changes are transmitted. The incremental transfer distinguishes between change transfer for master data and change transfer for transactional data.

Incremental transfers of master data are filtered and routed toward APO either periodically or, if necessary, immediately. The strategy for transferring master data is determined in Customizing. Either Business Transaction Events (BTE) are used to immediately notify CIF on changes to SAP R/3 master data (Material, Customer, and Vendor Masters) or ALE change pointer are recorded for the corresponding message types. Those pointers have to be processed regularly to notify APO of a changed master data situation. The ALE customizing settings for change pointers are needed for the transfer to be executed successfully.

To reflect the current planning situation as close to real time as possible, the incremental transfer of transaction data is event-driven. Within each transaction containing a change of a planning-relevant object in R/3 (such as production orders or sales orders), the change is sent to APO immediately.

The retransmission of APO planning results into the R/3 execution system is result-based. All changes are distributed through a publish/subscribe mechanism. Depending on the application, the planning results are either extracted immediately and sent to the connected R/3 system (valid for PP/DS) or published using a certain report/transaction to be scheduled periodically (valid for SNP). These modes are the SAP standard settings delivered for those applications.

If the following principal settings for the CIF comply with the business process and functions used, they should normally be used to ensure a high-performance, smooth-running APO system landscape:

- Transfer changed SAP R/3 master data (Material, Customer, and Vendor masters) *periodically* via ALE change pointers, not immediately via Business Transaction Events (BTEs), if immediate updates of master data changes are not necessary.
- If possible, publish SAP APO planning results to R/3 *periodically*, not immediately.
- Set the PP/DS settings in the Product master to *Manual Planning* or *Automatic Planning in the Planning Run* but not to *Automatic Planning Immediately*. Continuous data changes due to immediate automatic planning put a high load on CIF if the changed data is transferred to SAP R/3 immediately.

The SAP APO CIF uses queued remote function calls (qRFCs) to transfer data between the SAP APO and SAP R/3 systems. With this SAP Basis technology, all data is transferred with transactional consistency and serialized in the correct order. By default, outbound qRFCs (on the sending system) are used. For high data transfer volumes, the CIF can be set up to use also inbound qRFCs, where consumption of system resources can better be controlled and the network load is restricted to a shorter period of time for each RFC.

The basis queue monitors can be accessed with transactions:

- SMQ1 – outbound queues in the sending system
- SMQ2 – inbound queues in the receiving system

With new qRFC versions, queue schedulers are used to control how queues are processed by the SAP systems, for example, which system resources may be used to process qRFCs.

The queue schedulers can be configured and monitored with transactions:

- SMQR – QIN scheduler for inbound queues
- SMQS – QOUT scheduler for outbound queues

As of SCM release 4.0, there is a new feature available concerning the processing of data that cannot be posted in the target system. Enabling of this feature, “CIF Error Handling”, changes system behavior so that empty CIF queues on all of the connected systems does not then necessarily mean that there are no errors and systems are synchronal.

Valid for APO 3.0 and APO 3.1:

Changes to transactional data are transferred between the systems and serialized if necessary. (see the [CIF Troubleshooting Guide](#)). Due to this serialization, erroneous queues can block other queues. For example, insufficient master data can cause erroneous queues. If queues are blocked, transfer of further data changes can be hindered and systems can get out of synchronization.

Early notification is required in order to resolve errors as quickly as possible. The CIF Queue Alert tools can be used for error notification. The CIF application logs can be used to perform error analysis where reasons for errors are listed and described. To navigate to the CIF application logs, you can use the SCM Queue Manager (transaction code /SAPAPO/CQ). For further information, please refer to the [APO 3.1 documentation](#).

Valid as of SCM 4.0:

CIF error handling ensures that all CIF queue entries are processed during the data transfer. This applies to transactional data only; master data and initial data transfer are exempt from CIF error handling. Faulty queues no longer lead to queue blocks. Instead, they are logged in post-processing records in the relevant target system for the data transfer. You can then call these post-processing records at a later time point in CIF Post-processing (transaction code /SAPAPO/PPP). Once the error has been corrected you can again send the objects to the relevant target system. CIF error handling has to be activated explicitly in APO customizing transaction /SAPAPO/C2 and applies to transfers between SAP APO and the specified logical SAP R/3 system in both directions.

Early notification is required in order to resolve errors as quickly as possible. The CIF Queue Alert tools can be used for error notification (transaction code /SAPAPO/PPPA). The CIF application logs can be used to perform error analysis where reasons for errors are listed and described. To navigate to the CIF application logs, you can use the SCM Queue Manager or the CIF Post-processing. For further information, please refer to the [SCM 4.0 documentation](#).

Monitoring Procedure

This Best Practice document is intended to support you in the management of all business processes and scenarios that use the SAP APO CIF for data transfer between an APO system and one or more SAP R/3 systems. Through SAP Solution Manager or via SAP Net, you can obtain [Best Practice documents](#) that each deal with solution management for one specific SCM / APO business process scenario, such as *Manage Production Planning in SCM / APO*. These documents contain monitoring procedures for every step of the relevant business process.

Sections [Operation and Monitoring of the APO CIF](#) and [System Administration Related to the APO CIF](#) describe monitoring activities that you need to add to the activities specifically belonging to every step of your business process that sends or receives data via CIF.

In applying this Best Practice procedure, you create a company-specific process-oriented monitoring concept. This concept consists of monitoring activities to be performed for each business-process step and its respective monitoring objects.

When adapting this concept for your company, you must specify the times, responsible teams, and escalation paths (teams) for the monitoring activities associated with each business-process step and its monitoring objects.

In the sections *Operation and Monitoring of the APO CIF* and *System Administration Related to the APO CIF*, you will find the following information:

- **Monitoring activities** for the related process step
- Error handling, restart ability, and escalation;
- A **monitoring object table**, listing each relevant monitoring object, showing the:
 - Monitoring object
 - Monitoring transaction or tool
 - Monitoring frequency
 - Monitoring time (intentionally left blank, to be filled in accordingly to your determination)
 - Indicator or error
 - Monitoring activity or error handling procedure
 - Responsible team
 - Escalation procedure

As the frequency of business processes that use CIF vary from daily activities at certain companies to only monthly or quarterly at others, the monitoring frequency in these monitoring object tables is partly only a rough estimate and has to be adapted to your particular business process. During the going-live and stabilization phase of your APO implementation project, you should closely monitor all items listed in this document. Once you have some experience with system behavior, error occurrences, and application operations, you can decrease the monitoring frequency but you should never reduce it to zero (except for functions you do not use). Normally, you need to monitor important planning jobs after each run. You can check whether regular jobs with lower priority (such as certain clean-up jobs) run as scheduled less frequently; for example, you can check daily jobs weekly.

The following seems obvious but should nevertheless be mentioned: besides the monitoring of jobs described in the business process steps below, it is essential that you check all jobs that run in your system several times per day at least for abnormal termination (status "cancelled", see [Error Handling, Restartability and Escalation](#)) and that you investigate and correct these terminations appropriately. This check can be done easily, for instance, with transaction SM37, by entering the time interval since the last check and selecting all jobs with status "cancelled". If you have no automatic notification in place that informs the people responsible for Program Scheduling Management in your Support Organization of abnormally terminated jobs, you need to take measures to ensure that this is done manually in a reliable and timely manner.

A number of jobs must run periodically in a live R/3 installation, for example, the jobs for deleting outdated jobs or spool objects. For details and comments, see SAP Note [16083](#).

Operation and Monitoring of the APO CIF

Monitoring Activities

To keep up the continuous and almost real-time data transfer between the APO and the connected R/3 OLTP system(s), several jobs must be scheduled to run regularly and some monitor activities must occur ongoing or exception triggered.

Jobs Necessary to Ensure Data Transfer (R/3)

To ensure the correct transfer of data between R/3 and APO, certain jobs must be scheduled on a regular basis. These jobs are:

- **Generate and activate integration models** with reports RIMODGEN and RIMODAC2, respectively. These reports can be scheduled in two steps of a single job. They must run for those integration models that include master data as well as for those containing transactional data (which should be separated from each other). To find out how to adjust the integration models in response to new, changed, or deleted master data, see SAP Note [187455](#).

Usually, new transactional data, for example, orders or stocks, are transferred automatically to APO without running a job, provided there is an active integration model for this type of data with selection criteria that match the respective material. However, to include new orders for new materials (so-called delta supply), the respective integration models must be generated and activated. These reports also must run in order to ensure the delta supply for new master data records themselves.

- **Detect and correct inconsistencies between material master and integration models** with report RAPOKZFX. In rare cases, inconsistencies can occur between data in integration models and field APOKZ in table MARC. They may occur if you activate a model that refers to a material master that is being changed at the same time. In this case, the activation is finished successfully but the APOKZ is not set correctly, and an error message is displayed. The inconsistency can result in an error during the ATP check and when transferring production and planned orders. For further details and corrections, see SAP Notes [201516](#), [397919](#), and [434750](#).
- As of R/3 Plug-In 2002.1, report RCIFIMAX should be scheduled regularly to **find inconsistencies between the integration model sources and their run-time versions**. This report must not be run in parallel with activations of integration models. For further information, check the online documentation of this report in your system.

Note: You can activate qRFC queues using the reports RSQOWKEX (outbound queues) and RSQIWKEX (inbound queues). For more details, see SAP Note [369007](#). In normal operation, however, it is not necessary to run these programs regularly because almost all queue entries are processed without errors. In case of queue errors, these should be detected by the procedures described below, and analyzed and corrected accordingly. The error analysis should suggest preventive measures to reduce the number of future exceptions. In exceptional cases, or, for example, on test systems, you can use reports RSQOWKEX and RSQIWKEX. If you start these reports at an inappropriate time or with too many queues selected, they may cause an excessive additional system load.

If you cannot rule out that, during a planning run like SNP heuristic, CTM run or PP/DS scheduling, data will be transferred from an SAP R/3 system to the SAP APO system (or from APO to R/3) over the CIF, you can lock inbound or outbound queues in the SAP R/3 system from the SAP APO system. This should prevent inconsistencies occurring in the planning and / or locking problems during the planning run. To lock outbound queues, you can use the /SAPAPO/CIFSTOPQUEUEES and /SAPAPO/CIFSTARTQUEUEES reports in SAP APO. Reports RSTRFCI1 and RSTRFCI3 are available for locking inbound queues (see also SAP Note [528913](#)).

Jobs Necessary to Detect and Analyze Problems in the Data Transfer (APO)

To ensure the correct transfer of data between R/3 and APO, and to get early notifications about issues, certain jobs must be scheduled on a regular basis. These jobs are:

- **qRFC-Alert** with report /SAPAPO/RCIFQUEUECHECK. Sends a mail to the selected recipient, if one of the given local (outbound APO system) or remote (outbound of one of the connected R/3 systems) queues is in error. Normally, the recipient should be the responsible administrator located in the software monitoring team. In the case of

the local system, it can also be the user who entered the object in error, except for user IDs used by the RFC connection or where technical errors occur that cannot be solved by users in a business department.

- If you have activated qRFC inbound queues, run **qRFC-Alert** with report /SAPAPO/RCIFINQUEUECHECK. This works in the same way as the report /SAPAPO/RCIFQUEUECHECK mentioned above but is for inbound queues of APO and connected R/3 systems. For information on how to customize inbound queues, see SAP Note [416475](#).

Note: Even if you have switched to Inbound Queues and are using /SAPAPO/RCIFINQUEUECHECK and monitoring SMQ2, the initial data transfer from R/3 to APO is still performed using the outbound queues up to and including PI 2001.2. As of R/3 Plug-In 2002.1, the initial data transfer also uses inbound queues in the target system. See SAP Note [505401](#).

Regardless of whether inbound queues are switched on in the target system CIF entries might remain in the outbound queue of the sending system (e.g. receiving system is down or network connection not available). Therefore, both alert reports /SAPAPO/RCIFQUEUECHECK and /SAPAPO/RCIFINQUEUECHECK must be used.

Valid as of SCM 4.0:

- If CIF error handling is activated, run **CIF post-processing alert** with report /SAPAPO/CIF_POSTPROC_ALERT to check whether post-processing records were generated during CIF error handling. When errors occur, this report sends a message to the system administrator or the initiator of the error to allow rapid error correction via CIF Post-processing (transaction code /SAPAPO/CPA).

Detect and correct external inconsistencies between APO and R/3 with report /SAPAPO/CIF_DELTAREPORT3 (transaction /SAPAPO/CCR). To ensure that all relevant transaction data objects (such as purchase, production or sales orders, and stocks) for which there are active integration models exist in both APO and R/3, this report should be scheduled to run:

- Periodically, and preferably daily, to detect and reconcile possible inconsistencies as soon as possible. This is important because otherwise further inconsistencies can be generated and cause subsequent planning to be based on incorrect data.
- In case a recovery of your liveCache or your APO database had to be executed, but was incomplete (point-in-time recovery, loss of data, ...)
- In case you have evidence of inconsistencies between your APO and your R/3 OLTP system
- In case queue entries have been deleted erroneously or background jobs with data transfer have ended with an error

This report cannot be used for regular data supply of the APO system. It may run for several hours, depending on the data volume in your system and the number of objects selected for comparison. To reduce the overall runtime, it can be run in parallel with disjoint selections of objects. This is recommended if you encounter high runtimes with a single run selecting all relevant objects. The degree of parallelization that is possible depends on the system resources available.

In background mode, the check for inconsistencies is executed without automatic error correction. Therefore, if the background run detects an inconsistency, call APO transaction /SAPAPO/CCR, execute it with the same selections as in background mode, and then browse, evaluate, and possibly correct the error by executing the send object function.

As of APO release 4.0, it is possible to save the results of a /SAPAPO/CIF_DELTAREPORT3 run (dialogue as well as background processing), and to later re-load and process these results. Therefore it is possible, for instance, to run the program in the background during the night, load the results in the morning and reconcile the inconsistencies found with dialogue interaction.

Notes:

- Our general recommendation is to always use the latest version of the CIF Compare and Reconcile tool (CCR or Delta report). Therefore /SAPAPO/CIF_DELTAREPORT3 has replaced /SAPAPO/CIF_DELTAREPORT2. If MRP Areas are to be considered, continue as follows:

APO 3.0A: - use /SAPAPO/CIF_DELTAREPORT2 and SAP Note [561822](#).
 APO 3.1: - use /SAPAPO/CIF_DELTAREPORT3 and SAP Notes [609964](#) and [610216](#).
 As of SCM 4.0: use the new report.

- /SAPAPO/DELTAREPORT3 can also be downgraded to SAP APO 3.0A and R/3 Plug-In 2001.1 (see SAP Notes [459402](#) and [458164](#), respectively). For more documentation, see SAP Note [481281](#).
- Not all inconsistencies are detected by this transaction. There are objects for which no delta report is yet available, such as reservations. Master data is not checked at all.
- Internal consistency between APO DB and liveCache is checked by transaction /SAPAPO/OM17. For details, and information about other consistency checks, see SAP Note [425825](#) and the [Best Practice Document Data Consistency Between SAP R/3 and SAP APO 3.0 / 3.1](#). If it is necessary to reconcile the internal consistency, for example in case of a recovery, we recommend doing this first before checking and reconciling external consistency.
- The CIF Delta report does not consider change pointers written by various APO planning programs such as /SAPAPO/BACKGROUND_SCHEDULING or /SAPAPO/SNP01. APO change pointers are designed to publish planning results periodically to the connected R/3 systems with transaction /SAPAPO/C5 (report /SAPAPO/RDMCPPROCESS). Consequently, if a planning run has generated or changed objects in APO and provided these objects for R/3 transfer and the Delta report runs before the changes are actually transferred, the Delta report will list all changes as (feigned) inconsistencies. Thus it is advisable to run the Delta report only after all change pointers have been processed. Furthermore, feigned inconsistencies appear for objects that are currently in transfer; i.e. for which CIF queue entries exist.

In comparison to the previous version, /SAPAPO/CIF_DELTAREPORT3 offers three additional fields in the screen section *Objects for Check*:

- *Confirmations*
- *Shipments* (requires SAP R/3 4.6B or higher)
- *Use Table VBBE for Sales Order Comparison* under the field *Sales Orders* (on the generation of table VBBE with report SDRQCR21, see SAP Note [391408](#)).

In addition to the check of existence of orders as done by the previous versions of this report, /SAPAPO/CIF_DELTAREPORT3 also checks some (but not all) attributes e.g. header quantity, position quantities, and dates. Furthermore /SAPAPO/CIF_DELTAREPORT3 has been improved regarding performance.

As of SAP SCM release 4.0 there are some new features in /SAPAPO/CIF_DELTAREPORT3:

- New objects *quality inspection lots* and *planned independent requirements* are checked by the report.
- As of SAP R/3 Enterprise (core release 4.70) with R/3 Plug-in 2003.1 or add-on Discrete Industries Mill Products (DIMP) 4.71 (and newer), *scheduling agreements (SD)* are also checked.
- As of SAP R/3 Enterprise (core release 4.70), *work packages* for APO Maintenance and Service Planning are checked.
- There is a new indicator for comparing *receipts and requirements for production and process orders* in SAP R/3 and SAP APO.
- A new function offers the possibility of saving and re-loading the results of a comparison run.

As of SAP SCM release 4.1 there are the following new features available in /SAPAPO/CIF_DELTAREPORT3:

- The report compares productions / process orders including the related operations / phases.
- As of SAP R/3 Release 4.6C, project orders and maintenance orders are also checked.
- It is possible to compare configuration data of orders in R/3 and APO. The extended configuration check (content of the configuration data is the same in R/3 and APO) is selectable as additional option. If this option is not chosen, the simple configuration check is executed (the same configuration data is referred to in the order) for the desired orders.

For background activation of qRFC queues, see the above section *Jobs Necessary to Ensure Data Transfer (R/3)*.

Monitoring of CIF using the CIF Cockpit

As of SCM 4.1, the new transaction Core Interface Cockpit is available (transaction code /SAPAPO/CC). This transaction refers to as a central entry point for checking all settings and current system states relevant to CIF. Examples of current system states shown in the cockpit are the number of existing queue entries including possibly arisen processing errors and application logs or results of the last delta report run. Examples of relevant CIF settings shown in the cockpit are the number and extend of the integration models, the strategy concerning change transfer of master data and the block sizes used for initial data transfer.

The CIF cockpit provides an excellent overview about the settings and additionally offers the possibility to perform a detailed analysis and correction by branching to single transactions. Many of the necessary data are determined thereby from the connected R/3 systems. Detail transactions, which run off in the R/3, are started directly from the CIF cockpit if the user has the corresponding authorization. For documentation please refer to the SCM 4.1 documentation.

Monitoring of CIF in Computing Center Management System (CCMS)

As of SCM 4.1 it is possible to monitor CIF-related activities in the Computing Center Management System (Transaction RZ20) of SCM 4.1 and SAP R/3. You can use CCMS for system-wide monitoring of CIF-Error handling, CIF Compare/Reconcile function (Delta report), CIF-Queues and the qRFC consumption of planned independent requirements (if asynchronous consumption queues FC* are used). Additionally, it is possible to start transactions in order to analyze CIF-problems as well as using the alert functionality of CCMS that allows sending notifications (Emails, SMS) in case of alerts. For further information see the SCM 4.1 documentation.

CCMS-Monitoring for R/3 is only possible as of release R/3 4.5B. For the releases R/3 4.5B – 4.6C you need to setup the monitoring, manually, as described in note [708361](#).

You can also use the CIF-Monitor in a central monitoring system. See note [716537](#) for details.

CIF Monitoring in CCMS will also be available for SCM 4.0 with PI 2003.1. See note [646830](#) for further information.

Monitoring and Error Correction of the Data Transfer (APO)

Use the **CIF Queue Manager** /SAPAPO/CQ as a central entry point to queue monitoring and error correction, in particular if you do not use SAP Solution Manager or CCMS / RZ20 as a monitoring and alerting tool. From here, you can easily navigate to the inbound and outbound qRFC monitors, application logs, and other displays for your APO and all connected R/3 systems.

During the transfer of data between SAP APO and SAP R/3, errors can occur that lead to faulty queue entries. Faulty queue entries need to be rectified as soon as possible, before they lead to serialization effects. To do this, you have to be able to display the contents of the queues in such a way that the objects that have caused the error can be determined as quickly as possible and any necessary changes can be made. **CIF Queue Display** enables you to do this.

CIF Queue Display can be called in SAP R/3 and SAP APO using the qRFC monitors for outbound and inbound queues (transactions SMQ1 and SMQ2, resp.) and, as of APO release 4.0, also from the CIF Queue Manager (transaction /SAPAPO/CQ). The queue contents can be processed both in SAP R/3 and SAP APO.

For availability and prerequisites for CIF Queue Display, please refer to SAP Note [555037](#) and to documentation available on the SAP Service Marketplace [R3-Plug-In homepage](#) >> SAP R/3 Plug-In >> Media Center SAP R/3 Plug-In >> Literature SAP R/3 Plug-In or to [SAP SCM documentation 4.0](#).

To be able to display queue contents using the qRFC monitor, you have to register the program CIFQEV02 in SAP R/3 and program /SAPAPO/CIF_QUEUE_EVENT2 in qRFC administration in SAP APO as the display programs for CF* queues. To do this, call transaction /SMQE. Choose *Edit* → *Register Display Program*. Under *Queue Name* enter CF* and under *Display Program* enter CIFQEV02 (for SAP R/3) or /SAPAPO/CIF_QUEUE_EVENT2 (for SAP APO).

Monitoring Object	Monitor TA/Tool	Monitor Freq.	Monitor Time	Indicator or Error	Monitoring Activity or Error Handling Procedure	Responsibility	Escalation Procedure
APO report /SAPAPO/RCIF QUEUECHECK The report ensures sending of e-mails in case of CIF errors	SM37	Daily		Status	Check if job is running as scheduled If the report is not scheduled on a regular basis, schedule it to run every 15 min.	Program scheduling management	Contact software monitoring team
APO: Mail sent by /SAPAPO/RCIF QUEUECHECK	SO01 (or resp. e-mail system)	Every 15 minutes		Mail text	Verify e-mail and apply error handling procedure described in mail text	Software monitoring team	Contact application support
APO report /SAPAPO/RCIF INQUEUECHECK The report ensures sending of e-mails in case of CIF inbound queue errors	SM37	Daily		Status	Check if job is running as scheduled. If the report is not scheduled on a regular basis, schedule it to run every 15 min.	Program scheduling management	Contact software monitoring team
APO: Mail sent by /SAPAPO/RCIF INQUEUECHECK	SO01 (or resp. e-mail system)	Every 15 minutes		Mail text	Verify e-mail and apply error-handling procedure described in mail text	Software monitoring team	Contact application support
APO: SCM Queue Manager. This transaction enables you to check all qRFC queues on the local APO and all connected R/3 systems	/SAPAPO/CQ			Queue indicator	Check if red or yellow queue indicators are displayed. /SAPAPO/CQ can be used instead of or additionally to SMQ1 and SMQ2 (it is much user-friendlier) For prerequisites, see SAP Note 419178 For qRFC inbound queues, see SAP Note 460538	Software monitoring team	Contact application support
R/3: Monitor qRFC outbound queues	SMQ1	If errors are mailed by /SAPAPO/RCIF QUEUECHECK		Queue-status of entries with queue names CF*	See Troubleshooting Guide Integration R/3 - APO in SAPNet (Literature Center) For queue status, see SAP Note 378903	Software monitoring team	Contact application support
APO: Monitor qRFC outbound queues	SMQ1	If errors are mailed by /SAPAPO/RCIF QUEUECHECK		Queue-status of entries with queue names CF*	See Troubleshooting Guide Integration R/3 - APO in SAPNet, Literature Center For queue status, see SAP Note 378903	Software monitoring team	Contact application support

Monitoring Object	Monitor TA/Tool	Monitor Freq.	Monitor Time	Indicator or Error	Monitoring Activity or Error Handling Procedure	Responsibility	Escalation Procedure
R/3: Monitor qRFC inbound queues	SMQ2	If errors are mailed by /SAPAPO/RCIFINQUEUECHECK		Queue-status of entries with queue names CF*	See Troubleshooting Guide Integration R/3 - APO in SAPNet, Literature Center For queue status, see SAP Note 378903	Software monitoring team	Contact application support
APO: Monitor qRFC inbound queues	SMQ2	If errors are mailed by /SAPAPO/RCIFINQUEUECHECK		Queue-status of entries with queue names CF*	See Troubleshooting Guide Integration R/3 - APO in SAPNet, Literature Center For queue status, see SAP Note 378903	Software monitoring team	Contact application support
R/3 application log	CFG1	At least daily		Log class	Check if there are very important logs (flagged red) or important logs (flagged yellow)	Software monitoring team	Contact application support
APO application log	/SAPAPO/C3	At least daily		Log class	Check if there are very important logs (flagged red) or important logs (flagged yellow)	Software monitoring team	Contact application support
R/3 reports RIMODGEN and RIMODAC2 (two steps in one job) These reports generate and activate integration models, respectively	SM37	Daily		Status	Check if job is running as schedule If the report is not scheduled as provided by Application Support, schedule it accordingly	Program scheduling management	Contact application support
R/3 report RAPOKZFX This report detects and corrects inconsistencies between material master and integration models	SM37	Daily		Status	Check if job is running as scheduled If the report is not scheduled on a regular basis, schedule it to run once a day	Program scheduling management	Contact application support
Output of report RAPOKZFX	SP01	Daily		Errors listed	Check for material/plant combinations where correction of APOKZ was not carried out (this is due to lock problems) If errors are reported, determine why material is locked (for example, update on material master or stock) and rerun job when lock is released	Application support	Contact process champion

Monitoring Object	Monitor TA/Tool	Monitor Freq.	Monitor Time	Indicator or Error	Monitoring Activity or Error Handling Procedure	Responsibility	Escalation Procedure
R/3 report RCIFIMAX This report detects and corrects inconsistencies between integration models and the runtime version	SM37	Daily		Status	Check if job is running as scheduled If the report is not scheduled on a regular basis, schedule it to run once a day	Program scheduling management	Contact application support
Output of report RCIFIMAX	SP01	Daily		Inconsistencies listed	Check for items listed and reconcile inconsistencies by using the generation option of report RCIFIMAX	Application support	Contact process champion
APO report /SAPAPO/CIF_DELTAREPO RT3 This report checks the external consistency between R/3 and APO and allows correction	SM37	Daily; see above		Status	Check if job is running as scheduled If the report is not scheduled on a regular basis, schedule it to run daily	Program scheduling management	Contact software monitoring team
Output of APO report /SAPAPO/CIF_DELTAREPO RT3	SP01	Daily; see above		Missing objects reported	Check for objects reported to be missing either in APO or in R/3	Application support	Contact process champion
Reconciliation of inconsistencies	/SAPAPO/CCR	If errors are reported by /SAPAPO/CIF_DELTAREPO Tx in background		Missing objects reported	Check for inconsistent objects and execute transfer of objects on respective tab strip	Application support	Contact process champion
APO report /SAPAPO/CIF_POSTPROC_ALERT This report ensures sending of e-mails in case CIF error handling generates post-processing records. (As of SCM 4.0)	SM37	Daily		Status	Check if job is running as scheduled If the report is not scheduled on a regular basis, schedule it to run every 15 minutes.	Program scheduling management	Contact software monitoring team

Monitoring Object	Monitor TA/Tool	Monitor Freq.	Monitor Time	Indicator or Error	Monitoring Activity or Error Handling Procedure	Responsibility	Escalation Procedure
APO: Mail sent by /SAPAPO/CIF_POSTPROC_ALERT (As of SCM 4.0)	SO01 (or resp. e-mail system)	Every 15 minutes		Mail text	Verify e-mail and apply error handling procedure described in mail text (post-processing)	Software monitoring team	Contact application support
Post-processing of CIF error handling (As of SCM 4.0)	/SAPAPO/CCP	If errors are mailed by /SAPAPO/CIF_POSTPROC_ALERT		Post-processing records displayed	Determine error cause (verify application log) and correct error. Re-transfer objects.	Software monitoring team	Contact application support
APO Core Interface Cockpit /SAPAPO/CC. This transaction enables an overview about all CIF related activities in the SAP APO and the connected R/3 system(s).	/SAPAPO/CC	-		All listed	As of SCM 4.1, /SAPAPO/CC can be used as a central entry point for checking all CIF related activities and enables a detailed analysis and correction by branching to the corresponding transactions listed above. All checks / monitoring activities have to be performed as specified starting from the cockpit.	-	-

In case of problems with CIF or with missing data in either R/3 or APO, see the [Troubleshooting Guide Integration R/3 – APO](#).

For help in analyzing the workload and performance on liveCache and the APO database in case of hanging or slow queues from R/3 to APO, see also the [Best Practice documents Performance Monitoring for SCM / APO](#) and [Monitoring and Administration for SCM / APO](#), which you can find in SAP Service Marketplace.

Error Handling, Restartability, and Escalation

Error Handling Procedures

Error handling for background jobs is explained in detail in the SAP R/3 documentation CD, component BC-CCM, under *Background Processing*.

If a scheduled job fails, a necessary job is not scheduled, or a scheduled job has status *Finished*, you may need to take action. Consider the status of the job and proceed as follows:

- In case of status **scheduled**, the job steps have already been defined, but the start condition has not yet been defined. Contact the program scheduling management to clarify when the job will be fully defined.
- In case of status **released**, the job has been fully defined with a start condition and will wait for that condition to be fulfilled.
- In case of status **ready**, the start condition of a released job has been fulfilled. A job scheduler has put the job in a queue to wait for an available background work process.
- In case of status **active**, the job is currently running and can no longer be modified or deleted. Check if the job is within the given timeframe. Check for particular dependencies to other jobs. If the job exceeded the given timeframe, contact the software monitoring team.

- In case of status **finished**, all steps that make up this job have completed successfully. Program scheduling management must check whether the job ran in the given timeframe, and software monitoring team and / or application support must check the respective job results (such as spool output lists, message logs, and updates).
- In case of status **cancelled**, the job has terminated abnormally. This can happen in two ways. If an administrator intentionally canceled the job, find out why they did so and whether and when the job must be rerun. Alternatively, if a program in a job step produced an error such as issuing an "E" or "A" error message, contact the software monitoring team and investigate why the error occurred. If the program is an SAP standard program and you cannot solve the problem, search for appropriate SAP notes in SAPNet and create a customer message.
- If there are problems with CIF or with data missing in either R/3 or APO, see the [Troubleshooting Guide Integration R/3 – APO](#).

Process Step Restartability

If a background job is cancelled, consider possible succeeding jobs or dependencies on other jobs when deciding whether to restart the aborted job. The aborted job may also delay the start of following jobs.

Escalation Procedures

- In general, we recommend that you search for related SAP Notes in the SAPNet R/3 Frontend system for any unknown problems or errors.
- If you have questions or problems that cannot be solved, forward the issue to your next support level. If the corresponding escalation path is not well defined, contact Application Support.
- If none of the defined support levels can provide a solution for a particular problem, we recommend that you create a customer problem message in the SAPNet R/3 Frontend system.

System Administration Related to the APO CIF

Monitoring Activities

To optimize the performance of the data transfer between the APO and the connected R/3 OLTP system(s) and to prevent accumulation of useless data in the systems, several reorganization jobs must be scheduled to run regularly.

Administration Jobs Related to Data Transfer (R/3)

To optimize the performance of the data transfer and monitoring, certain jobs must be scheduled on a regular basis in the R/3 system. These jobs are:

- **Delete application log** with report RDELALOG. If writing of application logs is enabled (R/3 transaction CFC2 or APO transactions /SAPAPO/C4 or /SAPAPO/C41) – and this should be done in a production system for certain users and for problem analysis only – old logs must be deleted regularly. The job should run daily and delete logs older than 7 days.
- **Delete ALE change pointers** with report RBDCPCLR. If changes to master data are transferred periodically via ALE (as it is recommended), processed change pointers must be deleted regularly. After completing this, if your database system on the R/3 side is Oracle, run report RBDCPIDXRE to reorganize the Oracle indexes on tables BDCP and BCDPS. See SAP Note [328355](#).
- **Delete old integration model versions** with report RIMODDEL. Every time an integration model is generated, a new version is created, distinguished by a timestamp. The old version is deactivated and the new one is activated. Old versions must be deleted regularly.

Administration Jobs Related to Data Transfer (APO)

To optimize the performance of the data transfer and monitoring, certain jobs must be scheduled on a regular basis in the APO system. These jobs are:

- **Delete application log** with report /SAPAPO/RDELLOG. Same as RDELALOG in R/3 (see above).

- **Check processing of APO change pointers** with report /SAPAPO/RDMCPPROCESS. To verify that all change pointers created are processed, after publishing of planning results to R/3 run report /SAPAPO/RDMCPPROCESS without restricting the selection of orders and confirm that message “No change pointers were selected” is displayed. If change pointers remain unprocessed, contact the application support team to clarify whether these change pointers are necessary and why they are not processed.
Note: Deleting change pointers may cause inconsistencies, as the corresponding order changes are not transferred to R/3.
- **Deletion of R/3 data that are no longer required in APO** with report /SAPAPO/SDORDER_DEL. In SAP APO database tables, the tables expand with data from SAP R/3 documents. However, this data is no longer required; no corresponding information exists in liveCache. In addition, the performance of the initial data supply or of other transfer processes with a high data volume is affected negatively. The obsolete records needs to be deleted regularly to control the size of certain tables (e.g. /SAPAPO/SDFIELD and /SAPAPO/POSMAPN) and to improve the performance of the Sales order updates on SAP APO side. For details, see SAP Note [504620](#).

Administration Jobs Related to CIF Error Handling (APO)

The following is only valid as of SCM release 4.0:

Certain jobs must be scheduled on a regular basis in the APO system in order to optimize the performance of the data transfer and monitoring. These jobs are:

- **Delete old results of CIF delta report** with report /SAPAPO/CIF_DELTAREPORT3_REORG. As it is now possible to save the results of a Delta report run, it is necessary to delete outdated results from the database. The spool list from this report contains the number of records deleted.
- **Delete post-processing records** with report /SAPAPO/CIF_POSTPROC_REORG. Processed and obsolete post-processing records are no longer required and should be deleted. This report is used to do so. Non-deletion of these records will have an increasingly negative impact on CIF performance over the time. The deletion is a two-step process. In a first run, outdated records that meet the selection criteria with the status *still to be processed* are set to status *obsolete (set manually)*. In a second run, all processed and all obsolete records are deleted.

Monitoring Object	Monitor TA/Tool	Monitor Freq.	Monitor Time	Indicator or Error	Monitoring Activity or Error Handling Procedure	Responsibility	Escalation Procedure
R/3 report RDELALOG This report deletes old application logs	SM37	Weekly		Status	Check if job is running as scheduled If the report is not scheduled on a regular basis, schedule it to run once a day	Program scheduling management	Contact software monitoring team
APO report /SAPAPO/RDELALOG This report deletes old application logs	SM37	Weekly		Status	Check if job is running as scheduled. If the report is not scheduled on a regular basis, schedule it to run once a day	Program scheduling management	Contact software monitoring team
R/3 report RBDCPCLR This report deletes ALE change pointers	SM37	Weekly		Status	Check if job is running as scheduled If the report is not scheduled on a regular basis, schedule it to run once a week	Program scheduling management	Contact software monitoring team
R/3 report RBDCPIDXRE This report reorganizes indexes for ALE change pointer tables on Oracle systems	SM37	Same as for RBDCPCLR		Status	Check if job is running as scheduled If the report is not scheduled on a regular basis, schedule it to run every time after RBDCPCLR	Program scheduling management	Contact software monitoring team

Monitoring Object	Monitor TA/Tool	Monitor Freq.	Monitor Time	Indicator or Error	Monitoring Activity or Error Handling Procedure	Responsibility	Escalation Procedure
APO report /SAPAPO/RDM CPPROCESS to display change pointers (no selection restriction)	SM37	Weekly		Status	Check if job is running as scheduled and that no change pointers are left If the report is not scheduled on a regular basis and periodic publishing of planning results is used, schedule it to run once a day	Software monitoring team	Contact application support
APO report /SAPAPO/SDO RDER_DEL	SM37	Weekly		Status	Check if job is running and scheduled. If the report is not scheduled on a regular basis. Do not run it in parallel with the delta report.	Software monitoring team	Contact software monitoring team
R/3 report RIMODDEL This report deletes old integration models (old timestamp versions)	SM37	Weekly		Status	Check if job is running as scheduled If the report is not scheduled on a regular basis, schedule it to run weekly	Program scheduling management	Contact software monitoring team
R/3 system log	SM21	Daily		Log entries	Check for log entries related to CIF (such as queue deletions) and for frequent and / or unusual entries with user IDs that are used for CIF, such as many rollback entries for such a user Investigate the reason for these entries and take preventive action in order to avoid the occurrence of these errors	Software monitoring team	Contact application support
APO system log	SM21	Daily		Log entries	Check for log entries related to CIF (such as queue deletions) and for frequent and / or unusual entries with user IDs that are used for CIF, such as many rollback entries for such a user Investigate the reason for these entries and take preventive action in order to avoid the occurrence of these errors	Software monitoring team	Contact application support
APO report /SAPAPO/CIF_DELTAREPORT3_REORG This report deletes old delta report results. (As of SCM 4.0)	SM37	Weekly		Status	Check if job is running as scheduled If the report is not scheduled on a regular basis, schedule it to run once a day	Program scheduling management	Contact software monitoring team

Monitoring Object	Monitor TA/Tool	Monitor Freq.	Monitor Time	Indicator or Error	Monitoring Activity or Error Handling Procedure	Responsibility	Escalation Procedure
APO report /SAPAPO/CIF_POSTPROC_REORG This report deletes old post-processing records. (As of SCM 4.0)	SM37	Weekly		Status	Check if job is running as scheduled If the report is not scheduled on a regular basis, schedule it to run once a day	Program scheduling management	Contact software monitoring team
Output of APO report /SAPAPO/CIF_POSTPROC_REORG (As of SCM 4.0)	SM37	Weekly		Yellow or red lamp	Check for records that could not be deleted.	Software monitoring team	Contact application support

See general issues of [Error Handling, Restartability, and Escalation](#), above. In case of problems with CIF or with data missing in either R/3 or APO, see the [Troubleshooting Guide Integration R/3 – APO](#).

For help in analyzing the workload and performance on liveCache and the APO database in case of hanging or slow queues from R/3 to APO, see the [Best Practice documents Performance Monitoring for SCM / APO](#) and [Monitoring and Administration for SCM / APO](#), which you can find in [SAP Service Marketplace](#).

Further Information

Dependencies

Remember that there are dependencies (date and time, logical sequence) to business processes and process steps not mentioned in this document. For example, these may comprise:

- General SAP R/3 system administration, (this also applies to the SAP R/3 Basis of the APO system) such as:
 - Reorganization of jobs, spool entries, and so on
 - DB offline backup – During an offline database backup no online or background activity is possible. Therefore times for such backups must be scheduled carefully.
 - Archiving of DB transaction logs
 - Updating table statistics for the DB cost based optimizer – You should not run this activity at times when application programs are likely to be creating, deleting, or updating many table entries.
- General APO-specific system administration:
 - Checkpoint writing for liveCache – You should not start a checkpoint during long running background or online planning activities because the checkpoint waits for the completion of the planning activity, so all other users that require liveCache data must wait for the completion of the checkpoint. This restriction applies only for liveCache 7.2.x.
 - Checking the internal (liveCache – APO DB) and external (APO – R/3) data consistency
 - Backup for liveCache
 - Reorganization of COM-objects and optimizer application logs with report /SAPAPO/OM_REORG_DAILY
- Transfer of master data from SAP R/3 to APO:
 - Initial transfer of master data records,
 - Delta transfer of new master data records,
 - Transfer of changes made to existing master data records. You should not transfer large packages of master data to APO when CIF is needed for the transfer of transactional data, because this can overload CIF and cause an undesirable communication delay.

Because of these dependencies, online and background application system activity cannot always occur whenever desired, but may need to wait, for example, for the completion of administration activity. Especially in APO, long-running planning activities should not collide with APO checkpoint writing, because this can cause long waits for online users (applies only for liveCache 7.2.x).

As a result, program scheduling management and the software monitoring group should plan and schedule system maintenance activities to run at appropriate times (for example, overnight or over a weekend), so that all the work necessary for the company's core business processes can be performed in the time frames determined by the business process champions. Also, certain activities – such as background jobs – should be started only after the respective preceding activity has finished.

Troubleshooting

If executing this Best Practice did not produce the desired results, proceed as follows:

- See the **Troubleshooting Guide Integration R/3 – APO**, which you can find in SAP Service Marketplace [R3-Plug-In homepage](#) >> SAP R/3 Plug-In >> Media Center SAP R/3 Plug-In >> Literature SAP R/3 Plug-In.
- For help in analyzing the workload and performance on liveCache and the APO database in case of hanging or slow queues from R/3 to APO, see also the Best Practice document **Monitoring and Administration for SAP APO**, which you can find in [SAP Service Marketplace](#)
- Search for related [SAP Notes](#)
- Open a SAP Customer message describing your problem

Background Information and References

Necessary or Useful Training Courses:

- ❑ ADM355 APO System Administration
- ❑ SCM210 Core Interface APO

Literature

For more information about the administration of SAP R/3 systems, see:

- Liane Will, *SAP R/3 System Administration*, 2000

For information about the administration of SAP APO systems, see:

- Liane Will, *SAP APO System Administration*, 2002

For information on how to monitor and tune the general system performance, see:

- Thomas Schneider, *SAP R/3 Performance Optimization*, 2001

For more information on administrative tasks with emphasis on system planning and setup, see:

- Hartwig Brand, *SAP R/3 Implementation with ASAP*, 1999

Other Best Practice Documents

In SAP Service Marketplace, alias [/scm](#) >> *Related Topics / Best Practices for Solution Management: mySAP SCM*, you can find several Best Practice documents for solution management, for example, **Performance Monitoring for mySAP SCM / SAP APO** and **Monitoring and Administration for SCM / APO**, which can help you to analyze the workload and performance on liveCache and the APO database. **System Monitoring for mySAP SCM with SAP Solution Manager and CCMS** helps you configure SCM specific monitoring including CIF. Please also pay special attention to **Data Consistency Between SAP R/3 and SAP APO 3.0 / 3.1**, which contains information about master data consistency as well as internal consistency between APO DB and liveCache.

At the same location, you find the Best Practice documents available for several SAP SCM business process scenarios (e.g. Demand Planning, Supply Network Planning, Production Planning and Detailed Scheduling, Transportation Planning and Vehicle Scheduling) and services (global Available-to-Promise). These are the basis for the business process oriented application management and monitoring concept you should set up for your core SCM business processes. As the CIF is an essential component of SAP SCM, its monitoring and administration is of critical importance for the performance and reliability of any business process that exchanges data between APO and the R/3 Systems connected to it. Therefore the monitoring tasks and administration reports mentioned in this CIF Best Practice must become part of your business process monitoring.

SAP Documentation

SAP **SCM 4.1** documentation is available on CD or in the [SAP Help Portal](#).

SAP **SCM 4.0** documentation is available on CD or in the [SAP Help Portal](#) in [German](#) or [English](#).

SAP **APO 3.1** documentation is available on CD or in the [SAP Help Portal](#) in [German](#) or [English](#).

SAP **APO 3.0** documentation is available on CD or in the [SAP Help Portal](#) in [German](#) or [English](#).

Print files (PDF format) of several chapters in both languages are available in the Media Center of the [SAP Marketplace for SCM](#).

In SAP Service Marketplace >> [SCM home page](#) >> *mySAP SCM Technology* >> *Integration*, you can find **Tips and Tricks for SAP APO CIF**, which contain valuable hints for the design of your integration models and many details concerning the functional coverage of CIF. Also from the SCM home page, *mySAP SCM Technology* >> *Consistency Checks* offers further information, notes, and links to more detailed documentation.

Additional documentation concerning the R/3 Plug-in can be found in SAP Service Marketplace [R3-Plug-In homepage](#) >> SAP R/3 Plug-In >> Media Center SAP R/3 Plug-In. Documentation available

includes:- **Integration SAP APO – SAP R/3: Troubleshooting-Guide** and **Integration SAP APO – SAP R/3: CIF Queue Display**.

SAP Notes

(See also <http://service.sap.com/notes>.)

The following SAP Notes contain useful information on the performance of SAP APO and CIF:

- [436687](#): Collective Note: Performance APO Integration
- [439438](#): Collective Note: Performance APO Delta Report
- [420600](#): Composite SAP Note for R/3 Plug-In performance
- [420601](#): Composite SAP Note for CIF performance in APO 3.0A
- [420602](#): Composite SAP Note for CIF performance in APO 3.10
- [608577](#): Composite SAP note for CIF-performance in SCM 4.0

Please also check the following [Excel Database](#) containing a collection of APO performance notes. You can also find it on the SAP Service Marketplace >> [SCM home page](#) >> *mySAP SCM Technology* >> *Performance and Configuration*.

A complete overview of current versions, minimum requirements and version history of components SAP BASIS, SAP ABA, SAP BW, SAP Kernel, SAP Frontend, SAP APO liveCache-/COM, and SAP APO Optimizer can be found on the SAP Service Marketplace >> [SCM home page](#) >> *mySAP SCM Technology* >> *Availability of SAP Support Packages, SAP liveCache and COM Builds* >> *Overview Matrix SAP APO 3.0A SP/COM /liveCache/Optimizer versions*.

Please also note the platform requirements which you can find on the SAP Service Marketplace >> >> [SCM home page](#) >> *mySAP SCM Technology* >> *Platforms & System Requirements* >> *Availability of DB, OS Platforms & System Requirements for SAP APO*.

The following SAP Notes contain useful information on qRFC and CIF:

- [166096](#): qRFC installation for 3.xx, 4.0x, 4.5x and 4.6x (with documentation qrfc.doc on <ftp://sapserv3/general/R3server/abap/note.0166096/>)
- [187455](#): Generation and activation of integration models in batch
- [193515](#): qRFC description (queued remote function call)
- [201516](#): Eliminating inconsistencies MARC-APOKZ
- [307336](#): Object locked by user
- [369007](#): qRFC: Configuration for the QIN Scheduler
- [375566](#): Many entries in tRFC and qRFC tables
- [378903](#): Queue status in SMQ1, SMQ2 and table ARFCRSTATE
- [384077](#): APO: Optimizing CIF Communication
- [384971](#): Gateway parameters for a high interface load
- [390592](#): qRFC Monitoring (with documentation QRFCMonitoring46D25.doc on <ftp://sapserv3/general/R3server/abap/note.0390592/>)
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