

Keys to APO Administration: The Technical Skills Your APO Project Needs

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Editor's Note: Getting the most out of APO is not as simple as hiring a couple of talented functional experts. As APO consultant Shaun Snapp has seen firsthand, APO has its own technical tools, such as LiveCache and CIF, that do not exist in other R/3 products. These tools present unique opportunities for companies to leverage their APO investment, but they also create some specific technical challenges. In this excellent overview of APO technical issues, Shaun explains why the data flow in APO is a bit different than in R/3, and he outlines the technical tools that SAP® has made available to APO users in order to optimize APO.

Introduction

Often APO projects begin as an extension of R/3 projects. Given this heritage, APO projects are often managed by the previously existing R/3 consulting or client structure. The resources of the existing R/3 infrastructure team are commonly deemed to be sufficient to handle any APO Basis and infrastructure issues, since it is considered another SAP permutation. Therefore, most of the staffing focus shifts to looking for DP, SNP, PP/DS, and gATP functional consultants. Having obtained these resources, the project manager may think his or

her staffing is complete; in most cases, this is not a correct assumption. This article will explain the multiple skills that are required to appropriately manage the administration and infrastructure of an APO implementation, and introduce some of the key transactions as well. This should provide project managers new to APO a leg up in staffing and budgeting their APO project accordingly.

APO and Data Management

SAP has put a great deal of emphasis on making R/3 completely integrated and having its various databases automatically and continuously in synch with one another. R/3 is a transaction processing system, and therefore

the rules for consistency are inherent within the product. APO is different. It is not the system of record, and it follows a planning paradigm in its data structure and data management. Most importantly, the data leaves R/3 entirely in order to be processed in APO. R/3 is only updated after APO has completed its processing and has made the necessary planning decisions. This data flow creates extra challenges that do not exist within the R/3 OLTP space.

The APO system uses a variety of data objects in order to produce its results. These objects can be administered and viewed from Administrator Workbench, transaction RSA1 (See Figure 1).

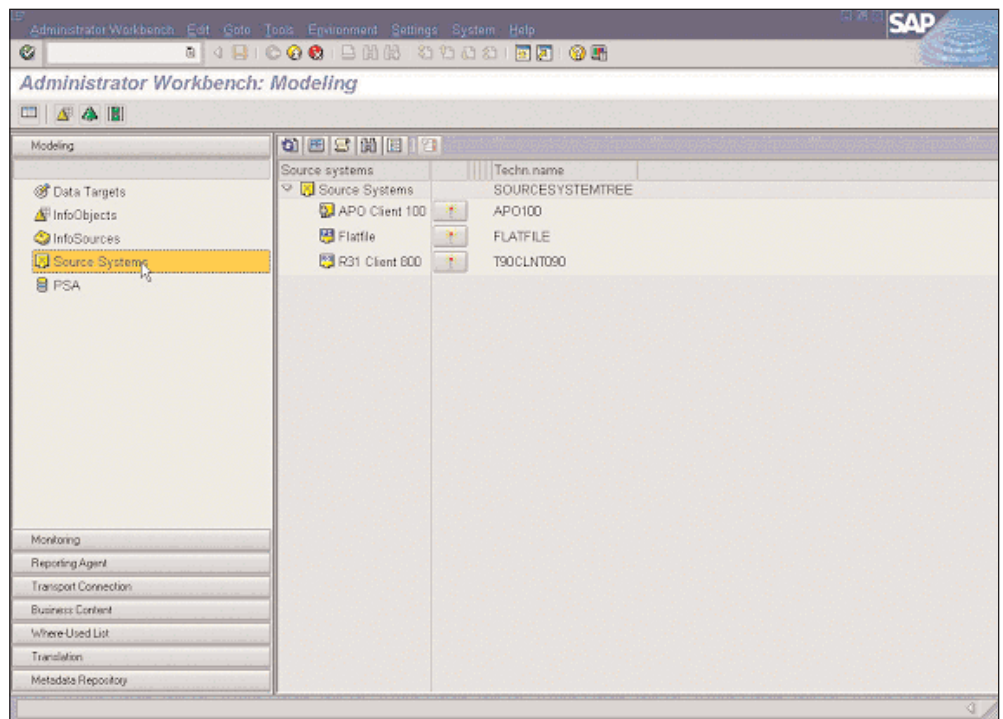


Figure 1: Administrator Workbench, RSA1

APO and R/3 Skills

While APO systems share a similar Basis and ABAP infrastructure with R/3, there are significant administration components to APO which are not used in R/3, and in which an R/3 Basis resource would not normally have experience.

This list includes the following:

1. LiveCache (APO is the first product to use LiveCache technology)
2. DBM GUI manager (the SAP open source APO database administration client—an optional component that can add some good productivity to admin tasks)
- 3a. CIF (the standard integration package for APO)
- 3b. CIF, R/3, and External Integration
4. APO DP Data Management
5. APO Optimizers
6. Landscape (e.g. APO hardware sizing and networking between the various APO servers)

Let's take a closer look at each of these new technical components.

1. LiveCache, and the APO DB

One of the important distinctions between APO and R/3, from an administration perspective, is LiveCache. LiveCache is a complex product that is made up of a

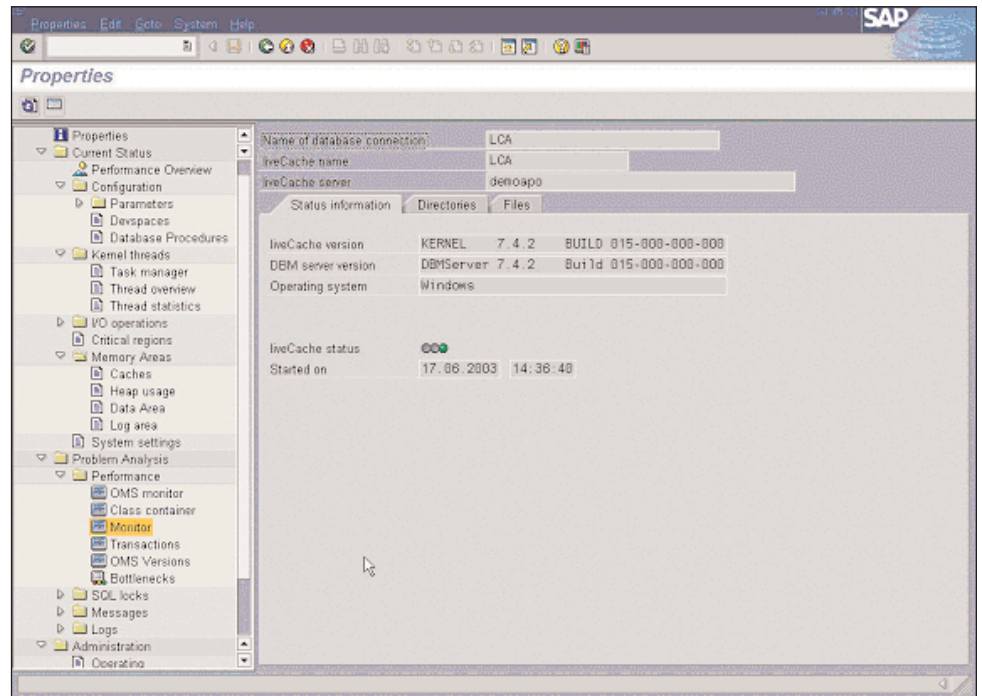


Figure 2: LiveCache Monitor Screen (/SAPAPO/LC10)

number of components including SQL, Input-Output Cache, the Operations Management System (OMS), and part of the SAP DB technology¹. Many of APO's capabilities in handling volume planning loads stem from LiveCache's

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sophisticated components. LiveCache moves the APO data into a separate memory/database area distinct from the APO database. LiveCache also provides the option of setting data checkpoints that allow you to recover the state of your APO system in the event of a crash. This brings up the issue of the internal consistency, that is, the consistency between LiveCache and the APO database.

To maintain the internal consistency between LiveCache and the APO DB, your first line of defense will be LiveCache monitoring tools such as /SAPAPO/LC10 (Figure 2), and /SAPAPO/OM17 (Consistency Check, Figure 3).

Another tool that you will want to investigate for data administration, and that may not be in the toolkit of your R/3 Basis administrator, is the DBM GUI.

¹ SAP APO System Administration, Liane Will, SAP Press, Germany, 2003.

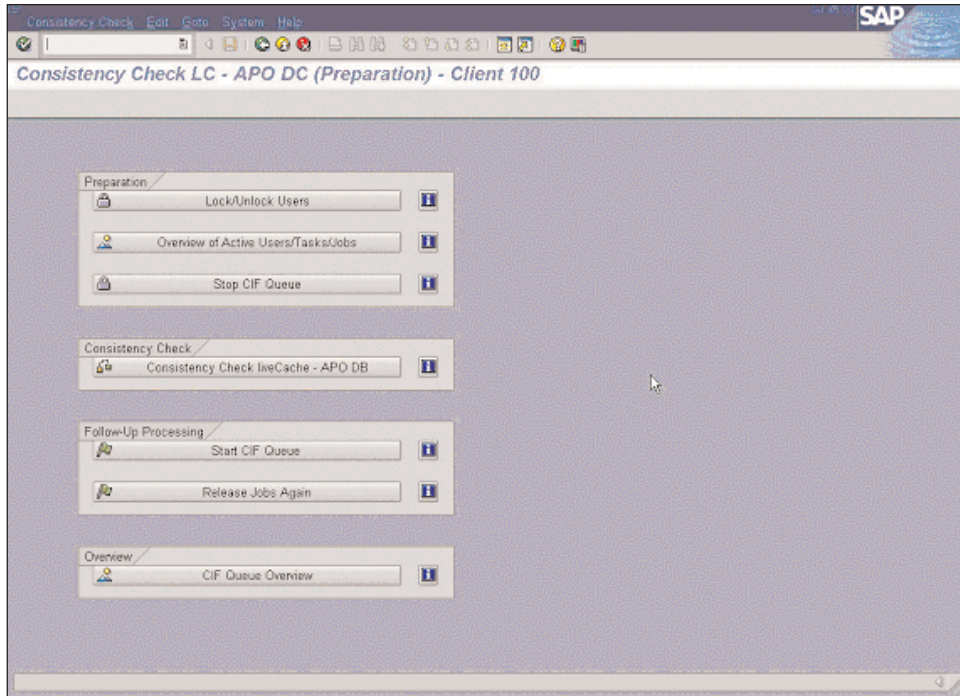


Figure 3: LiveCache Monitor Screen (/SAPAPO/OM17)

2. DBM GUI

The DBM GUI gives you display and database administration capability over the APO DB and LiveCache in a more direct way than going through the SAPGUI. It is somewhat of a departure philosophically for SAP from performing all admin functions within the SAPGUI. In many cases, this tool can be a fast alternative to the resident APO admin tools, particularly when you receive a clean bill of health on your LiveCache Consistency Check, yet you continue to receive data error messages. The DBM GUI is open source (approved by SAP, however) and available for download at http://www.sapdb.org/sap_db_downloads.htm.

These tools provide your project with internal data consistency

consultants with significant ALE experience will not have far to

checking; and, in conjunction with the CIF interface, external data consistency between R/3 and APO can be achieved as well.

3a. CIF and R/3 Integration

The CIF (Core Interface) is another term that will be new to an R/3 Basis resource. The CIF deals with the loading and consistency between the R/3 system and APO. The specific transaction for this is /SAPAPO/CCR (see Figure 4).

The CIF works off of the established ALE technology, and is configured from the R/3 side (although many monitoring tools reside in APO). Those consultants with significant ALE

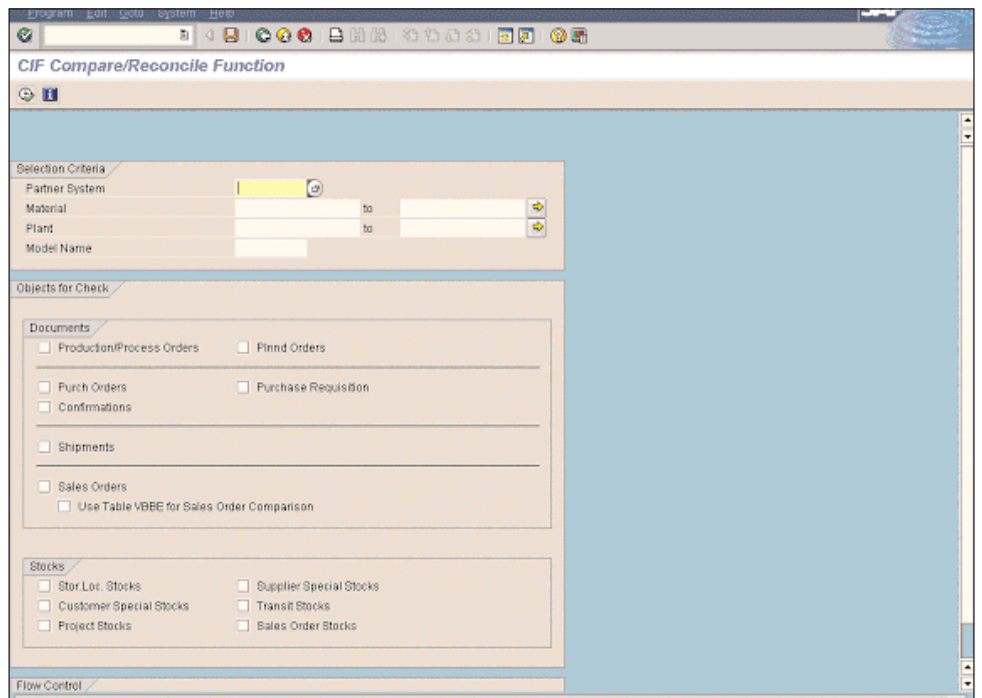


Figure 4: CIF Consistency /SAPAPO/CCR Screen

come in adapting their skills to both CIF queuing and the integration model development. SAP recommends creating a number of CIF integration models in order to optimize performance. These models must be created, deleted, and altered in order to meet the performance and functionality requirements of the project. You can define the integration model you're planning to use with transaction (CFM1) (see Figure 5).

This process requires model creation, deletion, and general model maintenance skills. The CIF has a series of tables into which data is imported from R/3, via transaction SE80 (see Figure 6).

There is also monitoring work to be done in maintenance of the

queues (performed with the qRFC Monitor (Figure 7) and SCM Queue Manager, among other tools).

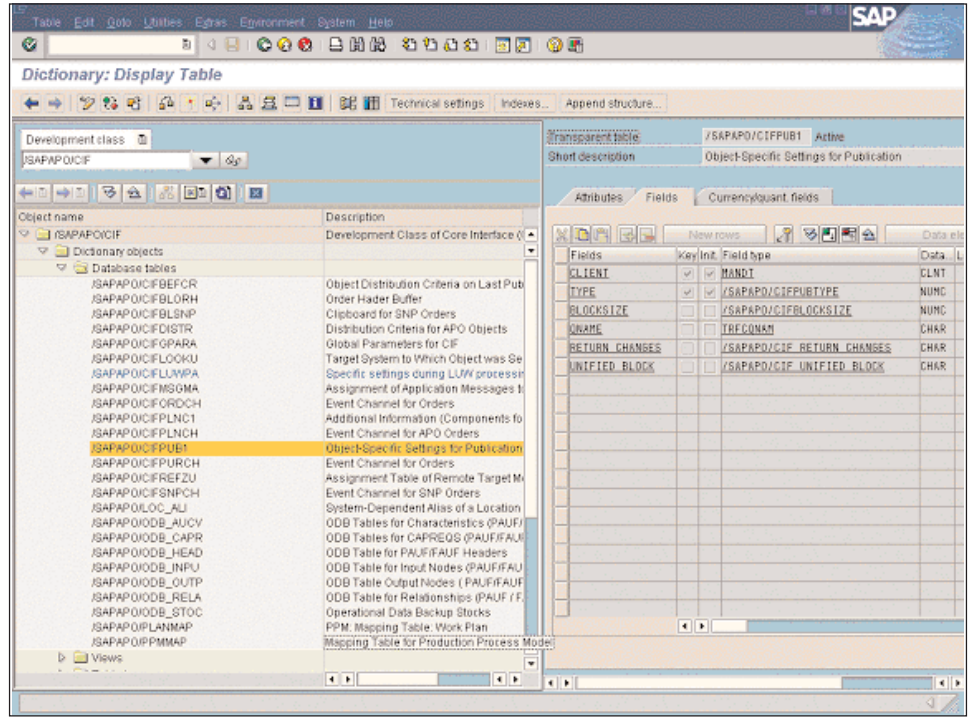


Figure 6: The CIF Tables Transaction SE80

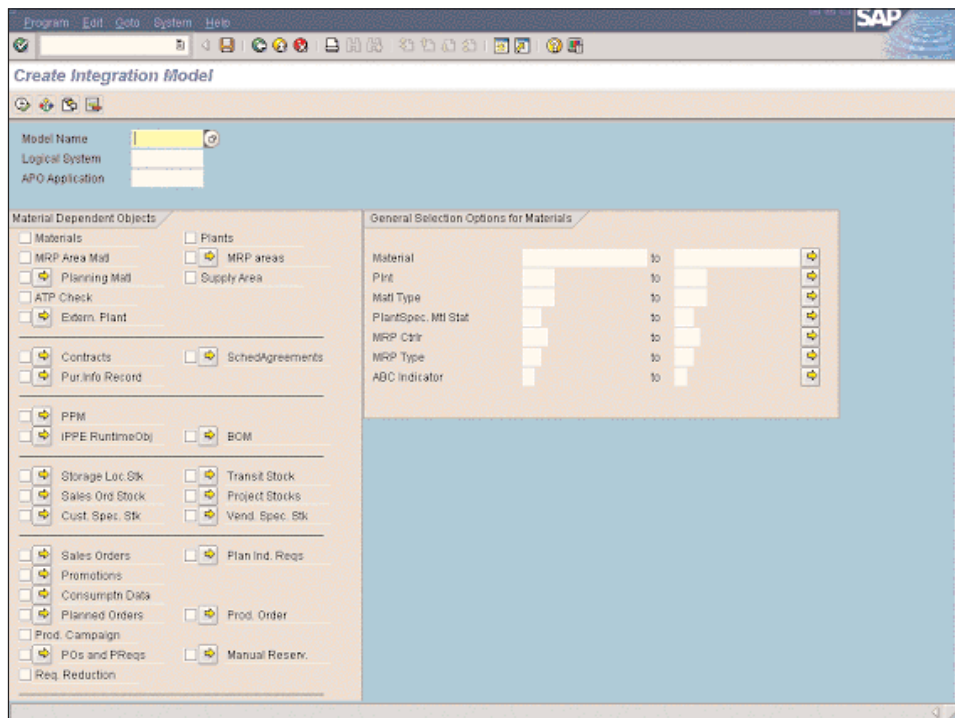


Figure 5: Define the Integration Model (CFM1) (in R/3)

3b. CIF, R/3, and External Integration

The CIF will not encompass all of your integration needs, even if R/3 is the only OLTP system that you are using. Some of the data that is required by APO will not reside in R/3, but is only maintained in APO. Although the CIF interface tRFCs will carry the data to the appropriate location in APO, either a third party system will have to provide downloads, or external master data will have to be created manually. Either all of these fields must be mapped to pre-configured BAPIs or logical data integration data structures will have to be created. The Legacy System Migration Workbench (transaction LSMW) is a handy add-on to R/3 that will allow your team to perform logical

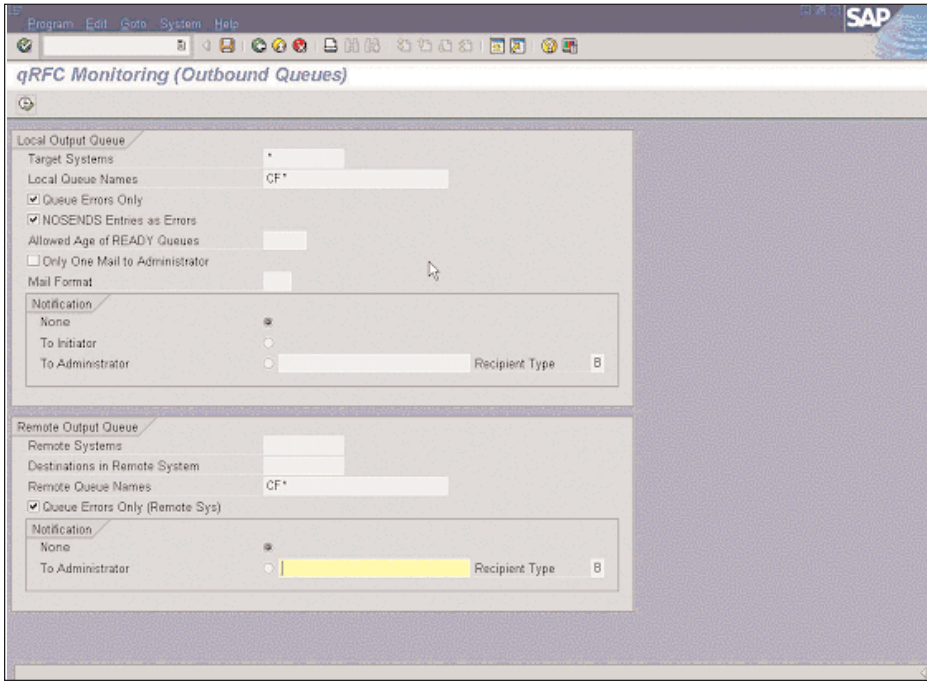


Figure 7: qRFC Outbound Monitor /SAPAPO/CW

mapping without writing code. This is something your present SAP infrastructure team should be well versed in doing.

4. APO DP Data Management

DP is the most data and administrative intensive of the APO modules. In both data volumes and data complexity and archiving, Demand Planning has significant needs and capabilities not seen in the other APO modules. Every APO instance has a complete instance of the Business Warehouse (BW), which is used specifically for APO tasks. Historical data is transferred into APO through the extraction programs within this APO BW. While the business uses of the DP module and the BW are different, the administration employs a similar toolkit.

All of this means that in addition to significant consulting resources on the business side of

Demand Planning, there is also a considerable back-end administration component for DP, which includes creating and maintaining various DP data structures, (updates, structure deletions, and archiving). A skilled APO infrastructure resource will be able to select the optimal data repositories (such as InfoCubes, Operational Data Structures, and so on) to fully support your DP business users.

5. APO Optimizers

The heart of APO is its optimizers. A little known aspect of APO, these optimizers are actually produced by the well-respected operations research firm ILOG <http://www.ilog.com/>. These optimizers, which form the "brains" of APO, are SNP, CTM, PP/DS, ND, Model Mix and Vehicle Scheduling, and Routing and Sequencing. (DP

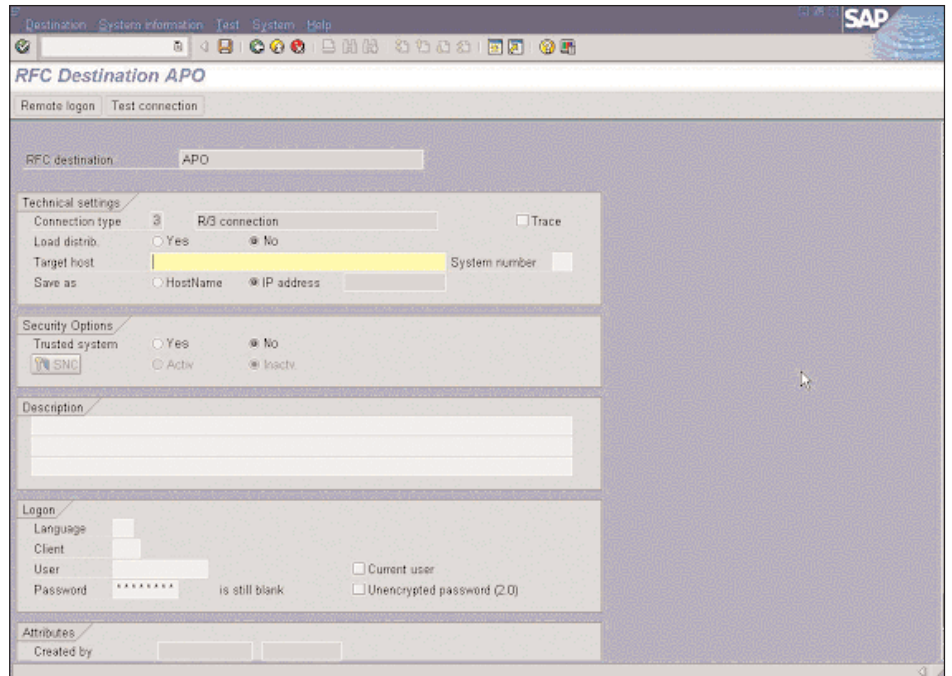


Figure 8: Checking RFC Connections SM59

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has no optimizer, as it is not solving a constrained problem, but rather applying formula to data series.) Your standard functional APO resource should be expected to configure the parameters that feed these optimizers, but be aware that APO is a very broad product. A resource will rarely understand all of APO's optimizers. The optimizers will typically require their own server—and thus require some back-end administration. In particular, the use of the PP/DS optimizer brings certain network complexities that are better handled by an experienced resource in this area. Some useful transactions include SM59

(Figure 8) for checking the RFC connections to the various optimizers, and /SAPAPO/COPT00 (Figure 9) for checking the availability of the optimizers.

6. Landscape (e.g. APO hardware sizing and networking between the various APO servers)

Finally, deep expertise in the management of the APO systems

Optimally, you will find an APO resource fresh from a project where he or she worked in the APO areas specified above.

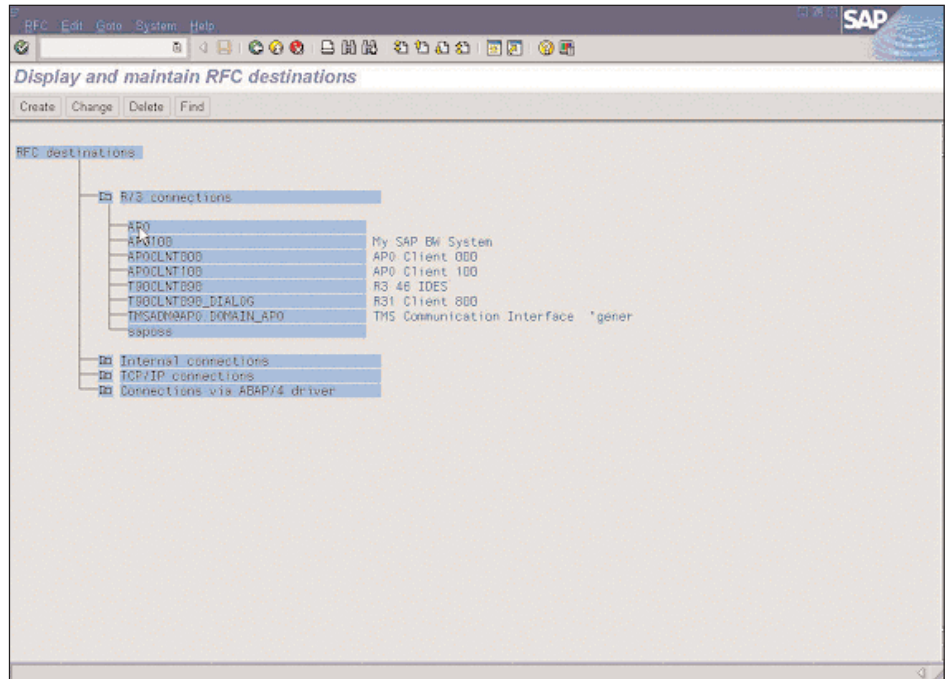


Figure 9: Checking the Availability of the Optimizers. /SAPAPO/COPT00

landscape is quite important to a successful project. Planning systems use premium hardware, solve complex problems, and have high data transfer rates between the planning areas and the transactional OLTP systems. APO will typically run on three servers: a LiveCache server, an APO server, and one server for the optimizers (if you use the optimizers in your planning, which is not mandatory however). While all the details regarding system landscape for APO are available at <http://www.service.sap.com>, there is something to be said for direct project experience in this area.

Conclusion

Hopefully you have received the accurate impression that the extra complexity associated with APO at the administration level makes it necessary to at least budget projects with dedicated time for the APO administration role. Also, for prospective hires dealing with APO administration (either permanent or contract), it

is important to make sure the applicants you are interviewing have project experience in the areas listed above. Optimally, you will find an APO resource fresh from a project where he or she worked in the APO areas specified above. However, if you cannot find one with these skills I listed, an R/3 Basis resource can pick up these skills during the project. But you'll need to have budgeted extra time to allow that person to pick up the tools and tricks of APO Administration before you rely on that resource to support a production APO environment.

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