

A large suspension bridge with a prominent archway, spanning a body of water under a clear sky. The bridge is the central visual element of the top half of the cover.

**Bridging
Business &
Technology**

IBM Cognos TM1

VS

SAP BPC Version 10

An ACG Point Of View

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Background

This paper represents a summary of our findings gathered while evaluating SAP BPC Version 10 compared to IBM Cognos TM1. ACG is a specialist in implementing tools and processes to support Business Analytics and Financial Performance Management. Our primary expertise is implementing IBM Cognos TM1 but we have extensive experience in building other systems such as Essbase, Hyperion Planning, Oracle and other. We do not have any first-hand expertise in implementing SAP BPC. The below notes are a result of our analysis and research of SAP BPC Version 10 that was driven by our involvement in evaluation of the two systems by our current and prospective clients. These notes are a result of our research, discussions with industry experts, demos and webinars with consultants specializing in implementing SAP BPC and competitive analysis from IBM.

We hope that this paper will provide a helpful reference to someone who knows and understands IBM Cognos TM1 but is new to SAP BPC or is in early stages in evaluating the tool as an alternative to IBM Cognos TM1. A more in-depth research and analysis would be required to perform a comprehensive evaluation of these tools.

About SAP BPC Version 10

What is SAP BPC?

Business Planning and Consolidation (BPC) is SAP's flagship product for Financial Planning and Consolidation. SAP BPC is the re-branded acquisition of OutlookSoft by SAP in 2007. BPC is part of SAP's Enterprise Performance Management (EPM) suite of tools that is a result of multiple acquisitions by SAP. Other tools in the suite include Pilot Software, Business Objects (which acquired Cartesis, SRC, and Armstrong Laing), Sybase and Cundus.

BPC includes both a planning and a consolidation component. The system seems to be geared primarily for Financial planning and consolidation based on the core framework and minimum structural requirements (mentioned below). The consolidation functionality seems to be very basic, customers with extensive consolidation requirements may have to purchase SAP Business Objects Financial Consolidation (Cartesis) separately.

New in BPC Version 10.0

The latest version of SAP BPC currently sold / marketed is version 10. It replaces previous version 7 that was on the market since 200x. In version BPC 10.0, SAP invested heavily in a unified user interface across all of their EPM products so the user would have the same experience from one product to another. The EPM products can also be accessed in a common workspace. The majority of the enhancements have been to the front end, there seems to have been little investment in integrating the products on the backend.

The key changes / improvements in SAP BPC Version 10 are the following:

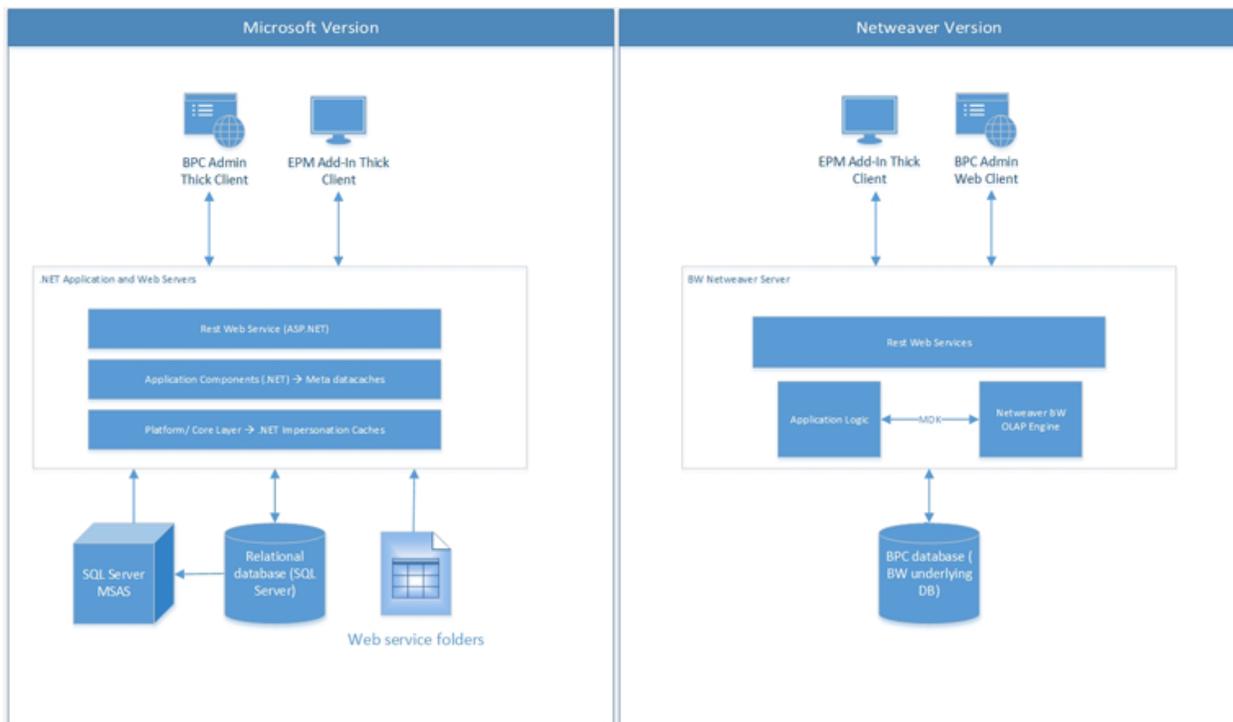
- A unified and streamlined web user interface across all EPM modules.
- Improved system performance using HANA on Business Warehouse (BW) platform and MS SQL xVelocity ColumnStore indexing on Microsoft platform.
- Improved Microsoft Office integration.
- Broader platform choice – full 64-bit support for all server components

Technical Review

Core Architecture

BPC itself is not a database, but rather an EPM add-on, which leverages an underlying database. There are two platforms which BPC is available for: Microsoft, which leverages MS SQL Server and MS Analysis Services, and NetWeaver which leverages SAP's NetWeaver BW. Although SAP is offering and maintaining both platforms, it is apparent that the NetWeaver platform is getting the majority of the attention since it fits in tightly with SAP's long-term strategy.

Our research was based on review of the NetWeaver BW version of BPC. This version is native to BW, it is housed inside the BW application / structures where all the cubes, dimensions, hierarchies and data are stored. BPC is essentially an end-user interface that provides access to the part of BW that contains the BPC structures.



Data Storage

BPC stores all its data and structures in a traditional relational database that sits on a hard drive. Depending on the version the database could be either MS SQL and MS Analysis Services (for the MSFT version), or SAP NetWeaver (for the BW version). This means there is an inherent latency with regards to data retrieval. As such, BPC will likely have more performance constraints compared to TM1. TM1 stores data in-memory to allow for faster calculation and consolidation of data on demand. This means the data is never far from the user and is always located within TM1 rather than BPC, which must always go back to its database to retrieve values and perform calculations.

BPC with HANA

SAP'S answer to this performance gap is SAP HANA, SAP's in-memory database that is marketed as part of SAP BPC version 10.0. SAP HANA, which requires a separate appliance sold at an extra cost, will deliver significant performance improvement to BW (BW on HANA), which will benefit BPC. As of the date of this writing, it is our understanding that the functionality HANA and BPC is limited to querying actuals from an ERP system and allowing BPC to see them in real-time. There does not seem to be functionality where HANA will run BPC calculations in-memory at this moment.

SAP HANA represents a significant investment for an organization in terms of cost, resources and transformation of existing processes. For organizations that already operate BW on HANA, the performance difference between BPC and TM1 will likely be smaller. For those that still need to make that investment, the cost of incremental hardware, software licensing, implementation and business transformation is significant and needs to be considered as part of the overall business case.

There is a nice side-benefit of SAP HANA for companies that currently run TM1 on top of BW. One of the key challenges in integrating BW and TM1 has always been the complexity of structures in BW and need to source data from various disparate tables. This process requires an in-depth understanding of the design in BW and typically comes with restrictions as relates to data completeness, timeliness and overall performance. With BW on HANA, the integration is vastly simplified – TM1 can point directly to HANA and pull the required data and can completely bypass BW and avoid the current complexity and eliminate most of the constraints.

Application Architecture

Models

The basis for a BPC application is a model. Similar to cubes in TM1, models are collections of dimensions specific to the end-users' requirements. There are three pre-determined models that can be selected, and each has a certain number of required dimensions. Additional dimensions may be added if necessary, however the minimum required dimensions for each model type are listed below.

Models		
Standard	Planning	Consolidation
1. Account 2. Category 3. Entity 4. Time	1. Account 2. Category 3. Entity 4. Currency 5. Time	1. Account 2. Category 3. Audit 4. Entity 5. Group 6. Intercompany 7. Currency 8. Sub-tables 9. Time

BPC seems more geared towards financial planning / consolidation. A new model in BPC is built using a web-based administration interface and must include all necessary dimensions, even if they are not relevant for the model's purpose. The extraneous dimensions must either be worked around or repurposed, possibly creating a design flaw or causing a compromise on design which may have usability and performance implications. Data modelling is more flexible within TM1 that allows creation of objects with any dimensionality. As such, TM1 is more of a "blank canvas" that allows flexibility in designing applications that meet specific business needs (eg sales, marketing, demand planning oriented applications) and is not constrained by any minimum model requirements.

Dimensions

There are several types of pre-defined dimensions available in BPC.

- Account
- Category
- Entity
- Time
- Currency
- Intercompany
- User-Defined
- Data Source
- Sub-table

Each dimension type has its own associated members and properties (the BPC equivalent of elements and attributes in TM1), and with the exception of User-Defined dimensions, only one of each type of dimension can be included in a model. Whereas in TM1 where dimensions may be defined with a type but a type is not required, dimensions within BPC come pre-built with the metadata included. BPC models can use either the pre-built dimensions that come with the install or new versions of the pre-built dimensions may be created by copying the included dimensions to ensure that all necessary metadata is present. The system allows multiple hierarchies in each dimension.

Maintenance of dimensions within BPC must also be done via a web-based administration interface. In TM1 it is common practice to update both cube data and dimension structure via a TurboIntegrator (TI, the ETL tool included with TM1) process. In BPC it is not possible to update dimensions automatically; the administrator must enter new dimension members and their properties' values directly into the web GUI and click Save before the new members or hierarchies are added to the dimensions. There is also no GUI dimension editor as there is in TM1 allowing for a hierarchical view of the dimension...users enter the BPC member name and parent name into a spreadsheet-like dialog box, very similar to XDI (Original Excel based dimension editing tool that is still supported) worksheets in TM1.

Again, TM1 seems to have better flexibility with regards to design of dimensions and their attributes and the maintenance of dimensions structure.

Calculations

Calculations in BPC are performed using one of four methods:

- Member Formulas – dimension member calculations, i.e., $ACCOUNT.[A] = ACCOUNT.[B] + ACCOUNT.[C]$
- Business Rules – pre-built calculations accessed from the Admin Console. Includes functions like financial calculations and rate calculations.
- Controls – enables testing of the validity of the data and generates warnings
- Script Logic – BPC programming language for custom calculations. These define a section of data, a calculation to apply to that section, and the return measure to place the data under.

Overall, BPC seems to provide the same core capabilities that TM1 but there would likely be more scripting / stored data that will need to be managed compared to TM1.

Calculations in BPC take place on the underlying database server and must be queried and relayed back to BCP as opposed to TM1 where calculations are run directly from the TM1 engine allowing for faster “what if” analysis and report generation.

Additionally, cube-to-cube data movement is more easily accomplished in TM1 than application-to-application data movement in BPC, which is a laborious task.

BPC is capable of performing business logic calculations; in fact many of the common rate conversions and financial calculations are natively included with BPC. This is in contrast to TM1, where any and all calculations must be derived from scratch via rules (TM1 calculation language) or TI processes.

TM1 is capable of establishing live calculations that calculate immediately upon data becoming available, whereas logic scripts within BPC must be triggered when new data is brought into BPC to update calculations. Logic script calculations only fire for the data that is in the database at the present time of logic script execution. Additional administration tasks would be needed to ensure logic scripts are executed in a timely fashion for data integrity.

Administration and Security

Administration

Administration in Cognos TM1 is performed primarily via the Server Explorer Windows application and allows for GUI or TurboIntegrator script-based tasks. Within BPC, administration is done via a web-based interface and does not allow for scripted maintenance...it must be done via the front-end GUI.

Security

Security within BPC is driven by Task Profiles and Data Profiles. These profiles determine what access a user has to perform tasks within the application and what dimensions they have access to, respectively. Once the task profiles and data profiles are established, user accounts can be created and assigned to teams, and teams are assigned task and data access profiles. This is similar to TM1's group based security wherein users are assigned to groups and groups are assigned access rights to objects such as cubes, dimensions, elements, application items and folders, and processes.

End User Functionality

User Interface

BPC is deployed via a XLS add-on. The two components are EPM (for reporting) and Data Manager (Provides Transactional Capabilities). Web is available but it is not a real user-friendly option for viewing and manipulating data by end users.

TM1, on the other hand, has several user interfaces available: CubeViewer, Perspectives Excel Add-In, TM1 Web, TM1 Contributor, and Cognos Insight.

End User Functionality

BPC seems to provide much less options and flexibility in terms of usability compared to TM1. TM1 has much more robust ad-hoc reporting and analytical capabilities and is a more rich, robust and intuitive user interface. Some of the key differentiators we noticed were the following:

1. There is no simple way to rotate data views within BPC as there is in CubeViewer. TM1 does this natively directly in the XLS interface (Similar to a pivot table) with easy access / manipulation. BPC requires a configuration screen that seems somewhat technical and is not very user friendly.
2. User defined personal scenarios (sandboxing) are not available in BPC. What-if scenarios can be handled at a system / application level through another scenario or some other mechanism any personal scenarios would need to be built using macros or some other coding in XLS directly. TM1 has personal scenarios natively built in the user interface.
3. Basic data spreading capabilities (proportional splits, end user allocations, holds on elements) are available in BPC but are not user friendly, they require selection wizards and setting parameters. TM1 has this easily available from a cell's right-click drop down menu.
4. Ability to see changes to data on input forms before they are committed to the system – TM1 highlights this in a different color, BPC only notes how many cells were changed but does not show which ones.

5. Flexibility when adding new member to a hierarchy – in BPC the new member will be included in the hierarchy and will be available upon drill-down, however the XLS form will not flex automatically, a new row or column would need to be added and formatted as necessary to accommodate the new member.
6. There is no functionality to match TM1's Active Form which will allow consolidations to be drilled up or down directly in an Excel sheet; BPC users must manually add in a new dimension member to a report via Excel.
7. BPC does not allow for server based formatting. Formatting must be applied at the Excel level for each report. Within TM1, formats may be set for individual dimension members, allowing for consistent formatting across clients.

Workflow

BPC incorporates Business Process Flow, a configurable set of step-by-step processes, which are assigned to users and must be submitted for review upon completion. Business Process Flow is similar to TM1 Application Web applications designed with an Approval Hierarchy, which governs data entry flow for organizational Forecasting and Planning cycles.

Total Cost Of Ownership

It is clear based on our review that SAP BPC has a significantly larger footprint and thus results in a much higher TCO (Total Cost of Ownership) compared with IBM Cognos TM1. BPC is likely to be an enterprise-wide solution that will have dependencies and will be deployed on top of already considerable and sizeable SAP infrastructure and managed centrally by the IT group. This may not be a major factor for institutions that already operate SAP and have most of the infrastructure components in place, however is a significant factor to consider for new implementations. Specific attention must be paid to the necessity of HANA to match the performance and real-time capabilities of TM1.

In contrast to this, TM1 has a much smaller footprint that does not require significant infrastructure investment and can be managed separate from the company's core infrastructure. As a standalone application, can even be managed by Finance / Business with some infrastructure support from the central group.

Implementation costs will vary significantly. More integration between various components is required for BPC, plus more scripting to achieve the same benefit. We understand that the ratio between implementing BPC vs TM1 could be as high as 5 to 1 in terms of cost, resources (team size) and timelines. Average BPC implementation seems to be 18-24 months compared with 6-9 months for TM1 for a comparable size application.