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Upgrading to SAP BusinessObjects Planning & Consolidation (BPC) 10.1, Version for SAP NetWeaver: The PG&E Success Story

Session ID# 7568

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Agenda

- Background

- Solution Decisions

- Implementation

- Lessons Learned

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Background

- PG&E Company

- PG&E's Finance applications (SAP)

- SAP BPC at PG&E

- Case for Change

- Project Objectives

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PG&E BY THE NUMBERS

$9.6M committed to Solar Habitat Partnership

4.4M natural gas customer accounts

42,700 miles of gas distribution pipelines

6,400 miles of gas transmission pipelines

$484M property taxes and franchise fees PG&E paid to 50 counties and 243 cities in 2015

119,700 delivery miles during PG&E's Santa Cruz LNG/CNG project

GAS

75,000 hours employees volunteer in their communities

$5B invested to enhance infrastructure, improve safety and reliability

$7.9M employee and retiree donations to nonprofits and schools via 2015 Campaign for the Community

$23M donated to nonprofits and schools

845 teenagers received workforce training thanks to PG&E Summer Jobs program

$2.1B spent on diverse suppliers in 2014

ELECTRIC

18,616 circuit miles transmission lines

146 fires detected from PG&E air patrols

5.4M electric customer accounts

67 powerhouses in hydroelectric system

141,700 circuit miles distribution lines

$2M fire/drought response assistance to 19 Fire Safe Councils

27% delivered electricity from eligible renewable resources

32% eligible renewable resources from solar

1,300 employees worked on Butte and Valley fire restoration

200,000 solar customers

22,581 employees

2,240 Diablo Canyon Power Plant energy generation in megawatts

Service area **70,000** square miles

PG&E's Finance applications (SAP)

- SAP ECC 6.0 Enhancement pack 6 SP27

- SAP Business Warehouse 7.02 SP16

- SAP Business Objects 4.1 SP05 update 2

- SAP Business Planning & Consolidation 7.5 NW SP05

- SAP Disclosure Management 10.1 SP05

- SAP BusinessObjects Analysis for Office 2.2

* Versions before BPC upgrade

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SAP BPC at PG&E

SAP Business Planning and Consolidation (BPC) is an Enterprise performance management application from SAP for planning, budgeting and forecasting finances as well as the consolidation of financial results.

- BPC has ~800 users
  - Once a year annual Budget
  - Monthly financial Consolidation for SEC and FERC reporting
  - 3-yr Rate Case budget planning
  - Unit/Driver Based Planning
  - Semi-monthly Project Forecasts

- Past Enhancements
  - Input template re-work
  - Hardware upgrades
  - Performance/Code optimization

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Case (Time) for Change

- Frequent failures with BW to BPC data loads
- Minimally acceptable Performance
- Planning Data availability issues for business forecasting
- Strategic technology alignment with business goals
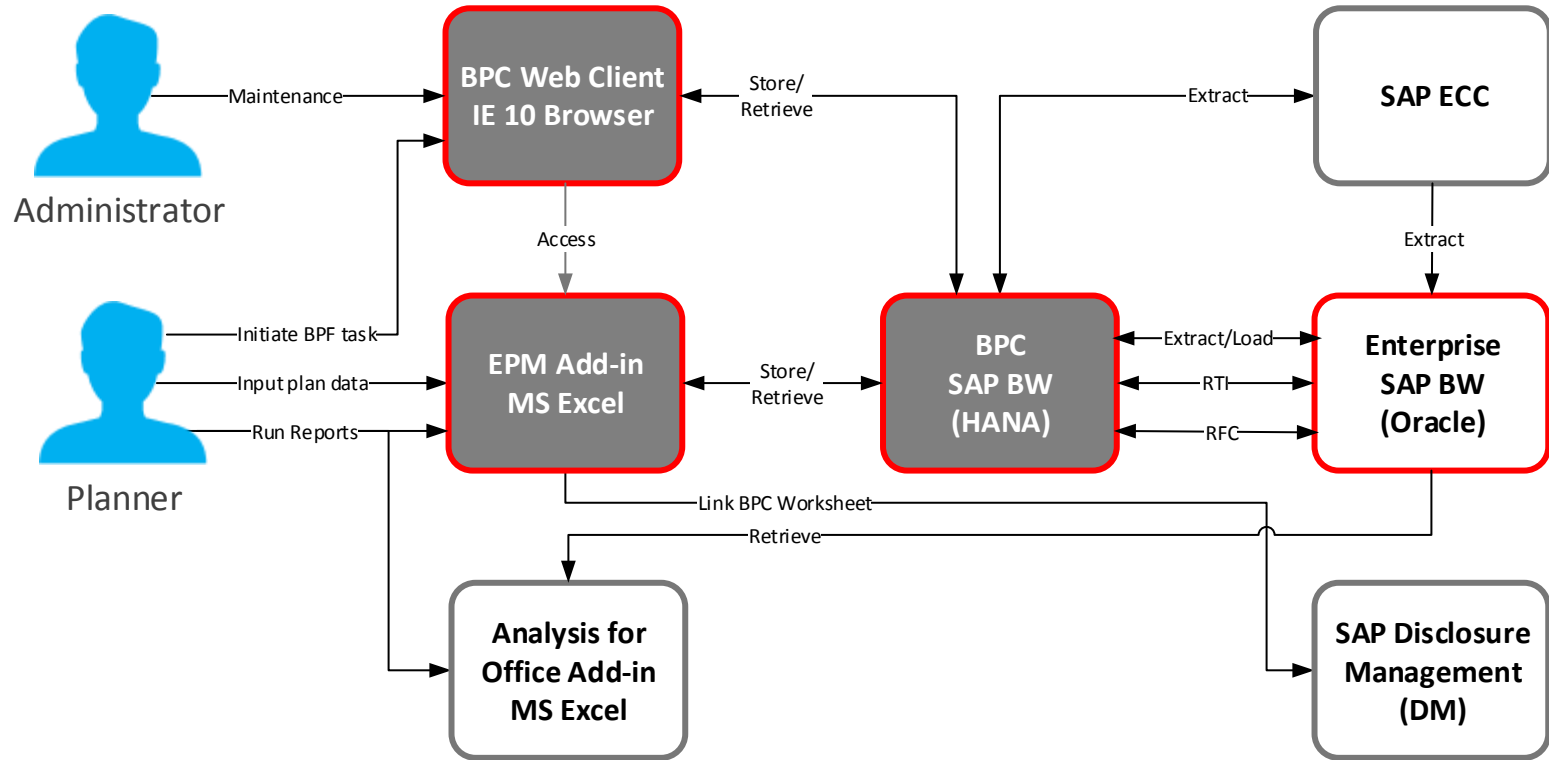- BPC 7.5 reaching end of support

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Project Objectives

- Maintain supportability of BPC

- Decrease support costs

- Increase reliability (data loads and submits)

- Increase performance (response time for refresh and submits)

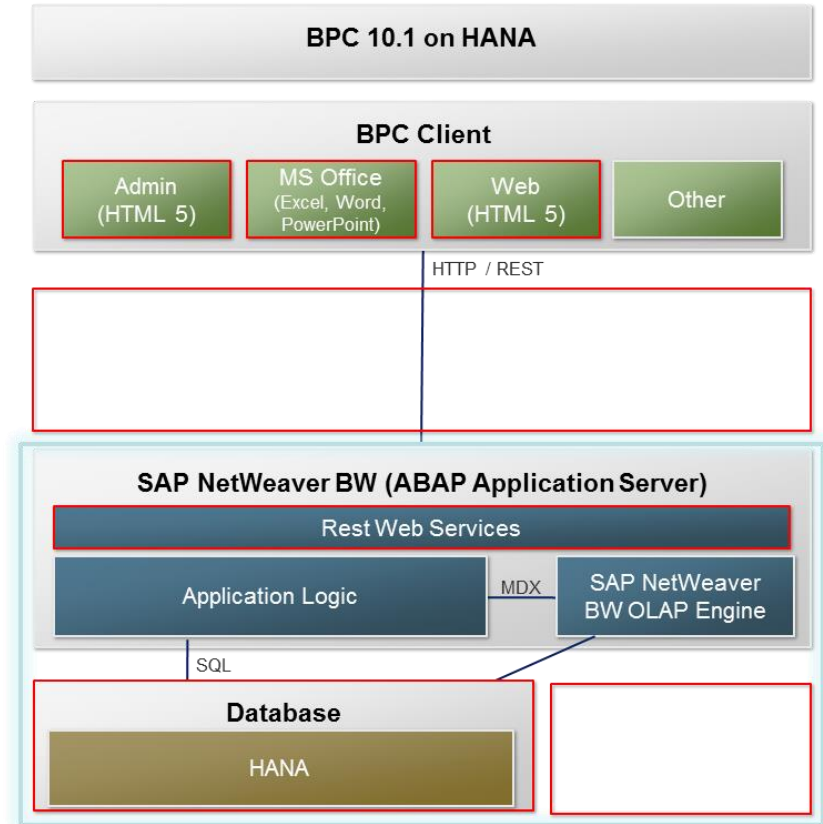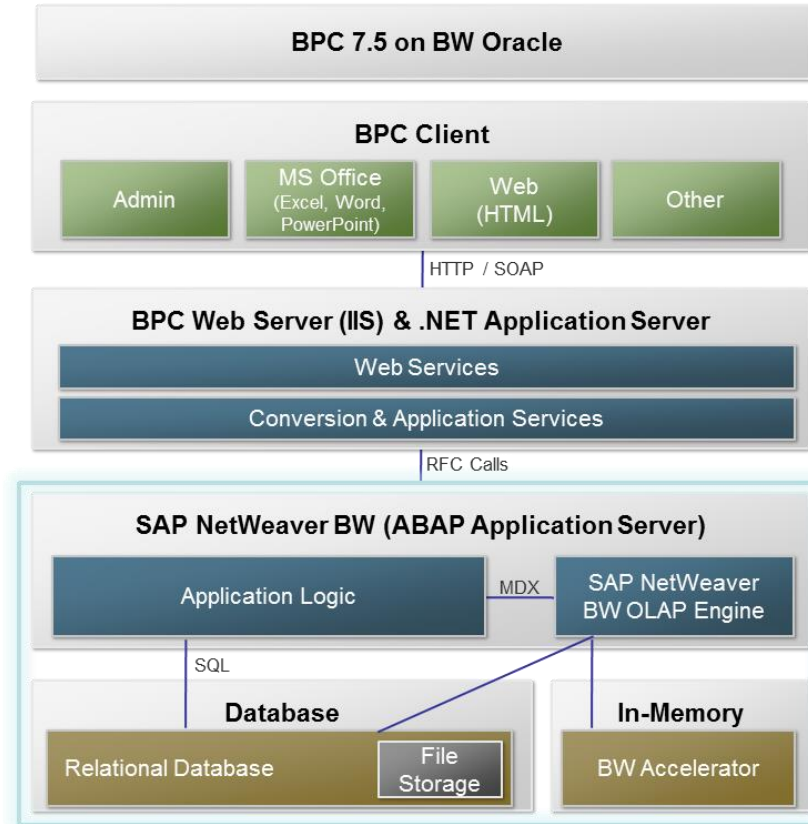- Decrease data sync latency (data load times)

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Solution Decisions

- Database
- Interfaces
- Infrastructure
- Non-BPC Dependent Objects
- BADI Compatibility
- Reports/Templates Compatibility
- Business Process Flows/Work Status compatibility
- Process Chains
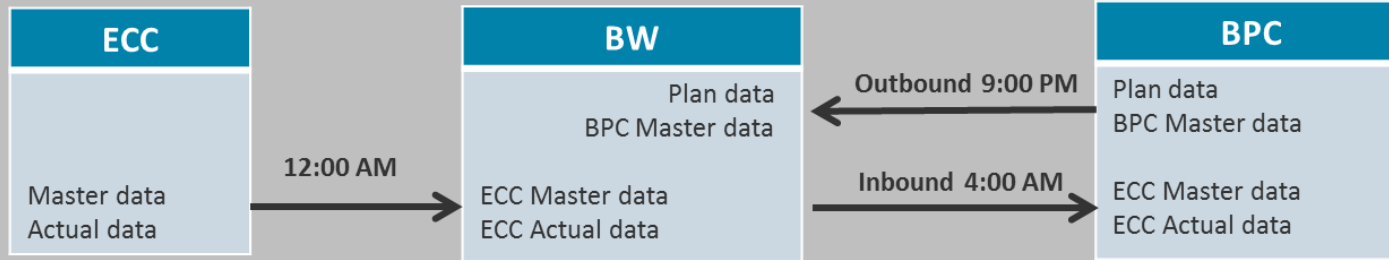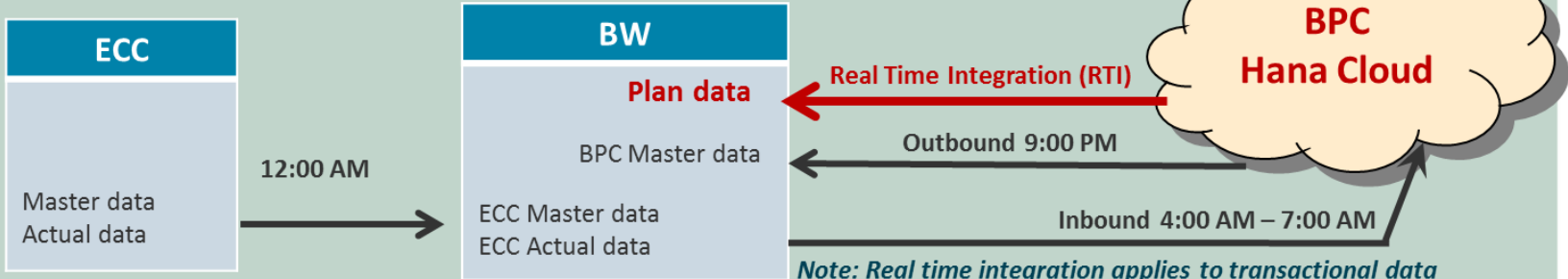- Security

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High Level Architecture

Database and 10.1 Changes

Interfaces - Business View

Current State

ECC		BW		BPC

ECC		**BW**		**BPC**
		Plan data	← Outbound 9:00 PM	Plan data
		BPC Master data		BPC Master data
Master data	12:00 AM →	ECC Master data	Inbound 4:00 AM →	ECC Master data
Actual data		ECC Actual data		ECC Actual data

Note: Master data is related to cost objects such as cost element, order, cost center and associated hierarchies.

To Be

ECC		**BW**		**BPC Hana Cloud**
		Plan data	← Real Time Integration (RTI)	
		BPC Master data	← Outbound 9:00 PM	
Master data	12:00 AM →	ECC Master data	Inbound 4:00 AM – 7:00 AM →	
Actual data		ECC Actual data		

Note: Real time integration applies to transactional data only. Master data will still be processed overnight.

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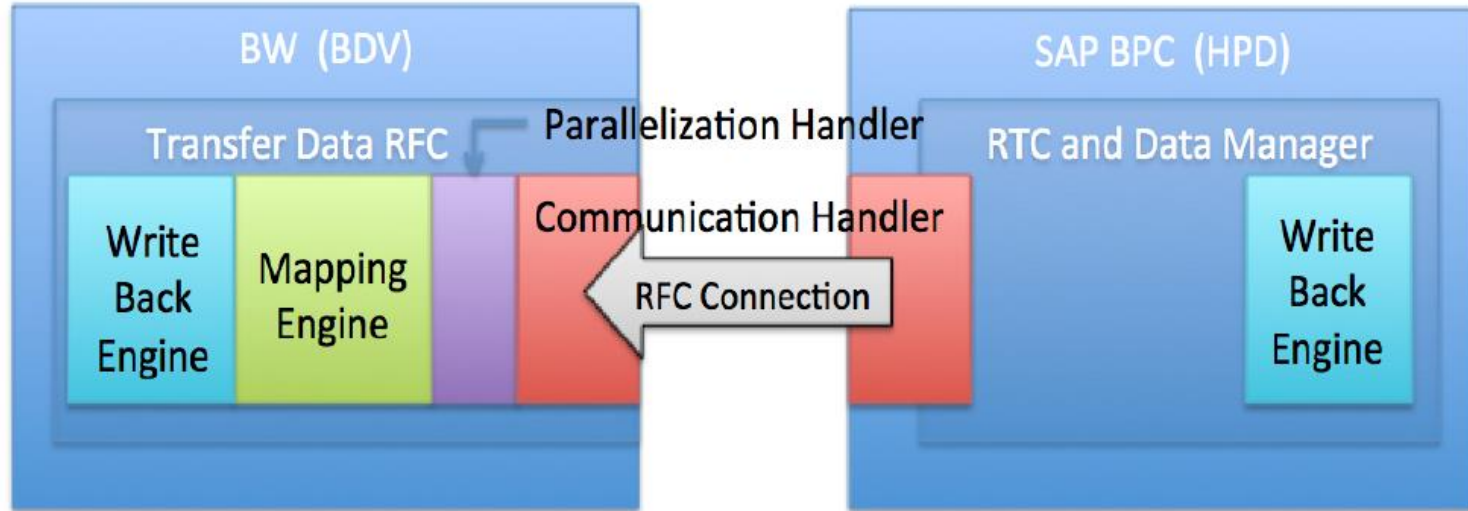# Interfaces – Technical View

15
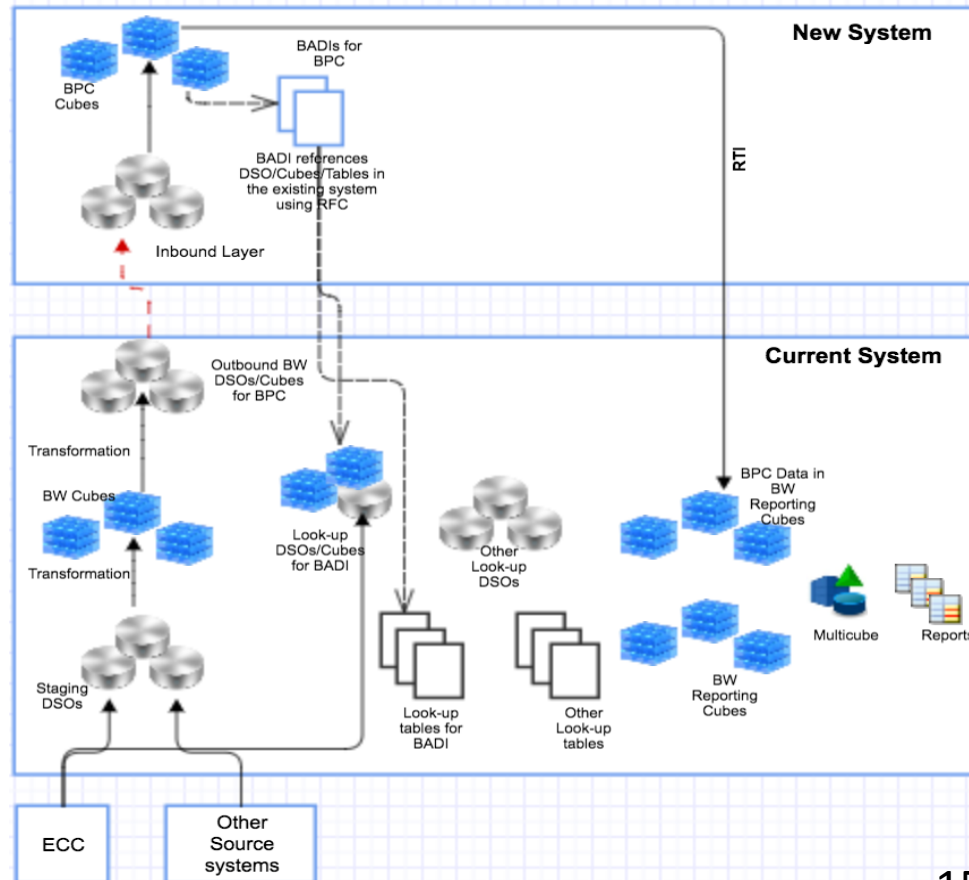
Interfaces - TruIntegration*

- Communication Handler
- Mapping Engine
- Parallelization Handler
- Write Back Engine

*Certified SAP add-on by TruQua Enterprises LLC

Infrastructure

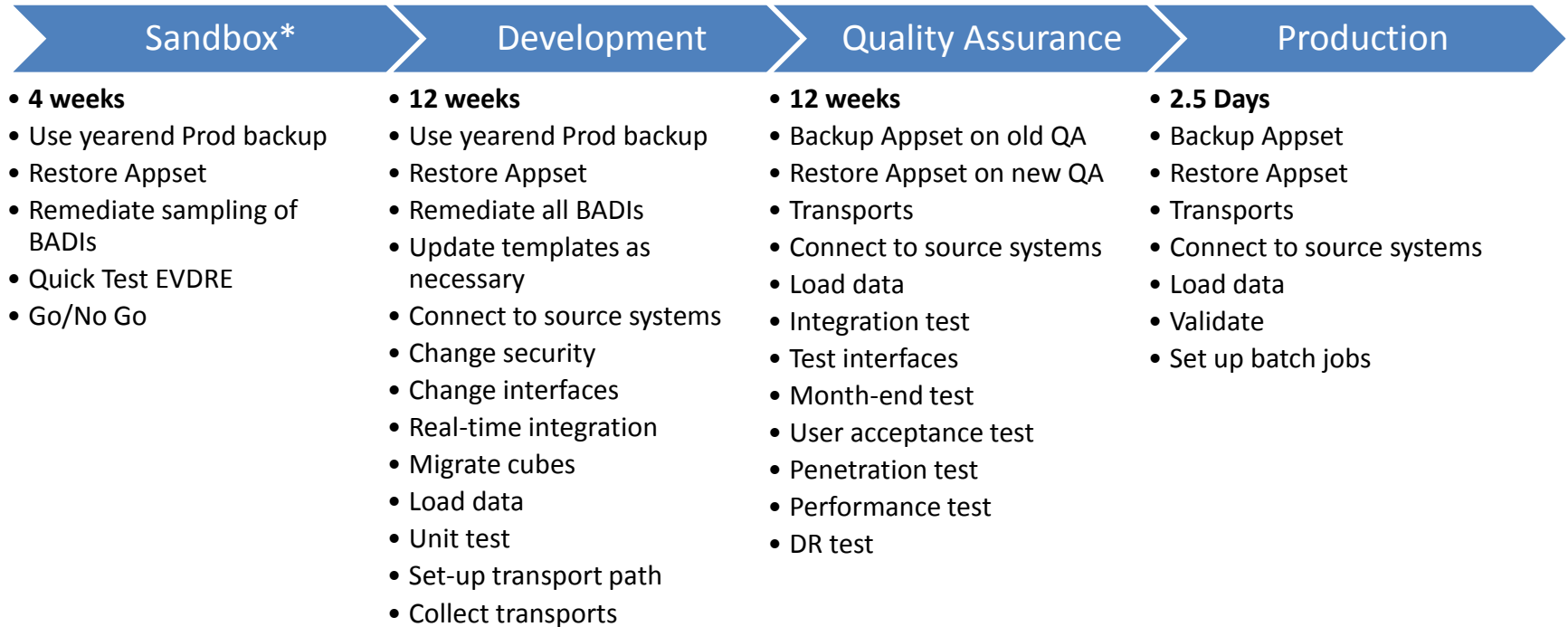| Platform	Disaster Recover	Memory

• Existing: IBM Power/AIX
 	
 • Planned: External cloud
 	
 • Realized:
  • x86/Linux internal cloud
  • DB server with 18 vCPU
  • 2 Appservers with 8 vCPU each
	• Existing: Appset Restore
	
	 • Realized: System Restore
		• Assumed: Sizing for Data x 2 = 128 Gb
		
		 • Realized: Sizing for data x 3 = 192 Gb (must include application storage)
		
		 • Aftermath: Some memory bugs in HANA and growing pains in trouble shooting HANA

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Other Decisions

Item	Decision
BADI Compatibility	Minimum fixes and add RFC to BW
Reports/Templates Compatibility	Minimum fixes
Business Process Flows/Work Status Compatibility	Change to allow locking and unlocking to be controlled using the 'work status' functionality
Process Chains	Trigger BPC Data Manager Package from BW
Security	Implement generation of SAP roles and assignment through OIM
Consolidation	Split out Group from Currency as required as of 10.0

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Implementation

Sandbox*	Development	Quality Assurance	Production
• **4 weeks** • Use yearend Prod backup • Restore Appset • Remediate sampling of BADIs • Quick Test EVDRE • Go/No Go	• **12 weeks** • Use yearend Prod backup • Restore Appset • Remediate all BADIs • Update templates as necessary • Connect to source systems • Change security • Change interfaces • Real-time integration • Migrate cubes • Load data • Unit test • Set-up transport path • Collect transports	• **12 weeks** • Backup Appset on old QA • Restore Appset on new QA • Transports • Connect to source systems • Load data • Integration test • Test interfaces • Month-end test • User acceptance test • Penetration test • Performance test • DR test	• **2.5 Days** • Backup Appset • Restore Appset • Transports • Connect to source systems • Load data • Validate • Set up batch jobs

*Sandbox was in cloud, provided by partner

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Lessons Learned

➢ Gain firm agreement from sponsors and resource owners on:
  - Objectives
  - Technology
  - Approach
  - Deadlines
➢ Involve current support/developers during:
  - Scoping/Estimating
  - Development/Testing
➢ Keep plan real by accounting for:
  - Time to get things done at your company
  - Impact design and approach changes have on resource availability and budget
➢ Avoid gaps in and between development and testing
➢ Run status meeting from project plan

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Results

☺ Users
- Performance significantly better
- No delay in reporting plan updates with actuals

☺ Support Teams
- No more babysitting loads and BWA
- No more .Net server to support

😐 Sponsor
- Budget overruns

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Appendix

- TruIntegration Overview

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TruIntegration Overview

- TruIntegration is TruQua's real time integration solution that enables BPC data to be sent real time to BW cubes/DSOs/tables which enables reporting along with other BW data

- The data is available in BW target structures as soon as the users save data in BPC

- The BPC and the BW cubes/DSOs/tables can be in the same system or in different systems

- Data can be also saved into multiple BW cubes in parallel
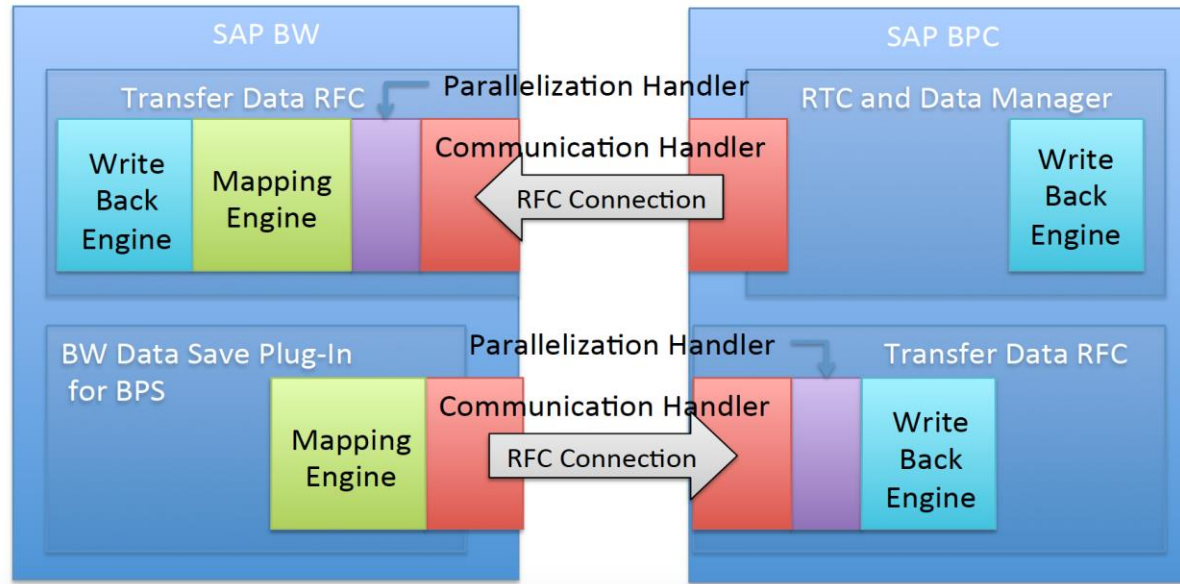
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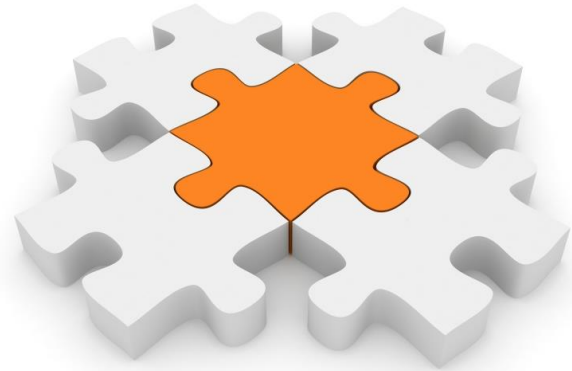
PG&E's Scenario for using TruIntegration

- TruQua implemented TruIntegration to move the BPC data from the new HANA system to their old standard system so reporting could continue to work the same way
  - This ensured the continuity of existing BW (with BPC data) reporting and BW/BPC data integration

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TruIntegration Architecture Components

How TruIntegration works

- TruIntegration uses the standard BPC write-back BAdI to trigger the calls to the integration engine when data is being written in BPC

- 2 mapping tables are maintained to map BPC data into the target BW cubes:
  - Mapping Header table: Maps the source cube to the target cubes
  - Mapping Details table: Contains field level mappings to map the individual fields for each source/target combinations
  - More complex mappings can also be built using ABAP Classes

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Mapping Header Table

- Table entries are mirrored in both BW and BPC systems (if they are separate systems) for consistency
- The field 'Class' represents the enhancement framework to introduce 'start routines' and 'end routines' for mapping. Additional filtering can also be done in these start and end routines

Data Browser: Table ZTBL_TQ_MAP_HDR Select Entries   6

SRC_STRUC	TRG_STRUC	SRC_CONN	SRC_TYPE	TRG_TYPE	TRG_CONN	CLASS	ACTIVE
TPMEM001	WWY001\SPLAN001	P22CLNT500	BPS	BPC	BWP002LS	ZCL_TQ_BPCAP_MAP_CUSTOMER	X
TPMEM002	WWY001\SPLAN001	P22CLNT500	BPS	BPC	BWP002LS	ZCL_TQ_BPCAP_MAP_CUSTOMER	X
WWY001\SPLAN001	ZI_BPC_AP	BWP002LS	BPC	BW	P22CLNT500	ZCL_TQ_APBPC_MAP_PROCESS	X
WWY001\SPLAN001	ZI_BPC_NS	BWP002LS	BPC	BW	P22CLNT500	ZCL_TQ_APBPC_MAP_PROCESS	X
WWY001\SPLAN001	ZI_BPC_TS	BWP002LS	BPC	BW	P22CLNT500	ZCL_TQ_APBPC_MAP_PROCESS	X
WWY001\SPLAN001	ZOBPC02S	BWP002LS	BPC	BW	P22CLNT500	ZCL_TQ_BASE_CHANGE_FILTER	X

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Mapping Details Table

- Used to define source and target structure mappings across logical systems across application types (BPC, BPS, BW and ABAP)
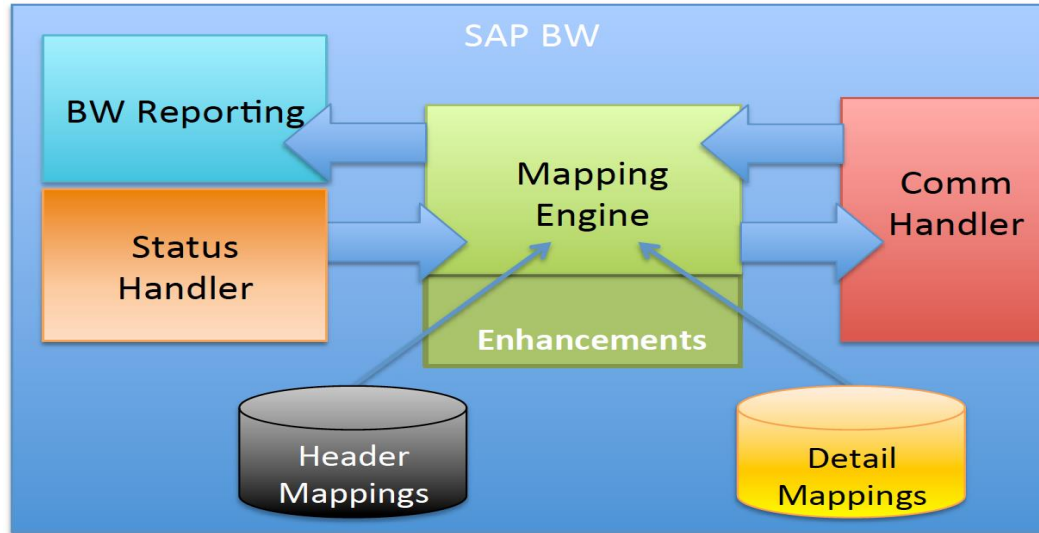
Mapping Details Table

- Complex logic can be implemented using the enhancement framework for field level routines (CLASS_NAME).

- The enhancement framework is also used for performance reasons over formula syntax (SRC_FIELD)

Data Browser: Table ZTBL_TQ_MAP_DTL Select Entries   142

RULE_GROUP	SRC_STRUC	SRC_FIELD	TRG_STRUC	TRG_FIELD	CLASS_NAME
	TPMEM001		WWY001\SPLAN001	VERSION	ZCL_TQ_BPCAP_MAP_CATEGORY
	TPMEM001	'60'	WWY001\SPLAN001	LINEITEMS	ZCL_TQ_PERF_LIT_60
	TPMEM001	'SSU'	WWY001\SPLAN001	UNIT	ZCL_TQ_PERF_LIT_SSU
	TPMEM001	S_CHAS-0CUST_SALES	WWY001\SPLAN001	ACCOUNT	ZCL_TQ_BPCAP_MAP_CUSTOMER
	TPMEM001	S_CHAS-0FISCPER(4)	WWY001\SPLAN001	PLANYR	ZCL_TQ_PERF_VAR_S_CHAS_FP_2_P
	TPMEM001	S_CHAS-0FISCPER(4)&'.'&S_CHAS-0FISCPER+5(2)&'00'	WWY001\SPLAN001	HORIZON	ZCL_TQ_PERF_VAR_S_CHAS_FP_2_H
	TPMEM001	S_CHAS-0MAT_SALES	WWY001\SPLAN001	MATERIAL	ZCL_TQ_BPCAP_MAP_PRODUCT
	TPMEM001	S_KYFS-Z_MV_SSU	WWY001\SPLAN001	SIGNEDDATA	ZCL_TQ_PERF_VAR_S_KYFS_Z_MVSS
	WWY001\SPLAN001		ZI_BPC_AP	ZCCCNTRY	ZCL_TQ_APBPC_MAP_PROCESS
	WWY001\SPLAN001		ZI_BPC_NS	ZCCCNTRY	ZCL_TQ_APBPC_MAP_PROCESS
	WWY001\SPLAN001		ZI_BPC_TS	ZCCCNTRY	ZCL_TQ_APBPC_MAP_PROCESS
	WWY001\SPLAN001	'0'&HORIZON+5(2)	ZI_BPC_AP	0FISCPER3	ZCL_TQ_PERF_HORIZ_TO_FPER3
	WWY001\SPLAN001	'0'&HORIZON+5(2)	ZI_BPC_NS	0FISCPER3	ZCL_TQ_PERF_HORIZ_TO_FPER3
	WWY001\SPLAN001	'0'&HORIZON+5(2)	ZI_BPC_TS	0FISCPER3	ZCL_TQ_PERF_HORIZ_TO_FPER3
	WWY001\SPLAN001	'020'	ZI_BPC_NS	0VTYPE	ZCL_TQ_PERF_LIT_020
	WWY001\SPLAN001	'020'	ZI_BPC_TS	0VTYPE	ZCL_TQ_PERF_LIT_020
	WWY001\SPLAN001	'10'	ZI_BPC_AP	0CURTYPE	ZCL_TQ_PERF_LIT_10
	WWY001\SPLAN001	'1000'	ZI_BPC_AP	0CO_AREA	ZCL_TQ_PERF_LIT_1000
	WWY001\SPLAN001	'1000'	ZI_BPC_AP	ZPLNCAT	ZCL_TQ_PERF_LIT_1000
	WWY001\SPLAN001	'1000'	ZI_BPC_NS	0CO_AREA	ZCL_TQ_PERF_LIT_1000
	WWY001\SPLAN001	'1000'	ZI_BPC_TS	0CO_AREA	ZCL_TQ_PERF_LIT_1000
	WWY001\SPLAN001	'2100'	ZI_BPC_TS	ZPLNCAT	
	WWY001\SPLAN001	'2102'	ZI_BPC_TS	ZPLNSCAT	
	WWY001\SPLAN001	'A'	ZI_BPC_AP	ZPLNTYPE	ZCL_TQ_PERF_LIT_A
	WWY001\SPLAN001	'A'	ZI_BPC_TS	ZPLNLVL	
	WWY001\SPLAN001	'K4'	ZI_BPC_AP	0FISCVARNT	ZCL_TQ_PERF_LIT_K4
	WWY001\SPLAN001	'K4'	ZI_BPC_NS	0FISCVARNT	ZCL_TQ_PERF_LIT_K4
	WWY001\SPLAN001	'K4'	ZI_BPC_TS	0FISCVARNT	ZCL_TQ_PERF_LIT_K4
	WWY001\SPLAN001	'K4'	ZOBPC02S	0FISCVARNT	ZCL_TQ_PERF_LIT_K4
	WWY001\SPLAN001	'N'	ZI_BPC_NS	ZPLNTYPE	ZCL_TQ_PERF_LIT_N

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