

Applies to:

SAP Governance, Risk and Compliance Process Control (PC) 10.1, all service pack levels.

Summary

Continuous Controls Monitoring (CCM) is an essential feature of SAP Process Control, and a key differentiator in the market. Customers who use CCM can schedule most monitoring rules using the Scheduler. Many customers have requested a clear explanation of the various features of the CCM scheduler, including its interaction with dynamic date binding, Business Rule Parameters (BRPs), and Organization-level System Parameters (OLSPs). This document presents an overview of the Scheduler, with links and references to other available documents for further details.

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Created on: November 11, 2015

Typographic Conventions

Type Style	Description
<i>Example Text</i>	Words or characters quoted from the screen. These include field names, screen titles, pushbuttons labels, menu names, menu paths, and menu options. Cross-references to other documentation
Example text	Emphasized words or phrases in body text, graphic titles, and table titles
Example text	File and directory names and their paths, messages, names of variables and parameters, source text, and names of installation, upgrade and database tools.
Example text	User entry texts. These are words or characters that you enter in the system exactly as they appear in the documentation.
<Example text>	Variable user entry. Angle brackets indicate that you replace these words and characters with appropriate entries to make entries in the system.
EXAMPLE TEXT	Keys on the keyboard, for example, F2 or ENTER.

Icons

Icon	Description
	Caution
	Note or Important
	Example
	Recommendation or Tip

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1. Business Scenario

Customers use SAP Governance, Risk and Compliance (GRC) Process Control (PC) to model regulations and policies, and monitor business processes (which must comply with the regulations) and organizational units (to which these regulations and policies apply). PC provides powerful methods of Continuous Controls Monitoring (CCM) which help customers automatically track compliance, identify deficiencies in their processes, and track remediation.

To fully understand when and how to use CCM, refer to [Section 6, External References](#); the overview documents referenced there provide a very detailed description of CCM. For example, the SAP Press book describes some practical strategies on how to approach CCM, and how to scale the effort to make maintenance easier.

The final step in setting up CCM in PC is to schedule rules for execution. Customers have pointed out that the documents referenced in [Section 6](#) do not describe the scheduling process well enough, leaving many customers unable to leverage all the features offered there.

The goal of this document is to address that specific gap. This document focuses almost exclusively on maintaining schedules for CCM using the Scheduler with a few exceptions where brief explanations of the context in which users would encounter the scheduler are included. Related documents are referenced throughout the text in context.

2. Background Information

Customers intending to conduct continuous monitoring will need to perform extensive setup and rule definitions. All of these steps are explained in detail elsewhere (see [Section 6](#)). In brief, CCM monitoring rules are defined and assigned to local controls. Within the date validity of the local controls and the business rules, users can then use the Scheduler to define when PC should execute these rules.

Accessing the PC Scheduler

Locate the Scheduler (Scheduling) in the Rule Setup tab of Process Control by selecting the first link, Automated Monitoring, in the Scheduling group shown highlighted [Figure 1](#). For an overview of CCM functionality, and for guidance on when to use specific types of rules, refer to [other documents](#).

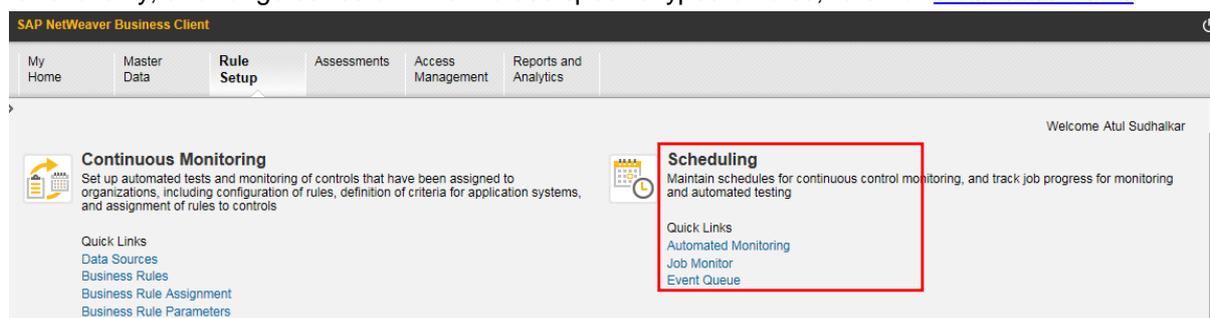


Figure 1: Access Scheduling

Before trying to schedule any continuous monitoring, customers should:

1. Configure CCM (including establishing RFC connections to backend systems to be monitored).
2. Define all relevant master data (including organizational hierarchies, business processes, regulations, controls, etc). This includes creating the local controls (the control instances applied to specific organizational contexts).

3. Define data sources and business rules, and assign the business rules to the appropriate local controls for monitoring.
4. Ensure that all validity date ranges match up as desired, to ensure there is a clear set of rules available for scheduling in the desired test period.
5. Optional, but essential in practice: ensure that either OLSP or (for PC 10.1 SP10 and later) BRP values are bound at the appropriate organizational hierarchy nodes.
6. Optional, but frequently needed in practice: dynamic date binding is set up for date filters in the rule.

3. Prerequisites

The Automated Monitoring (or CCM) Scheduler is a core part of PC functionality, and has been included in all versions and service packs of PC since at least release 10.0.

The next section describes in detail how to use the Scheduler.

4. Scheduling CCM Jobs

Next, select the "Automated Monitoring" link (**Error! Reference source not found.**) to display a list all jobs scheduled in the selected timeframe, as shown in **Figure 2**, Scheduler Job List.

The highlighted button marked „Create Job“ starts the process of defining a new scheduled job as shown in. Figure 3, Define new schedule, shows the launch of the new job creation process.

Job Name	Regulation	Time Frame	Year	Created On	Created Time	Created By	Changed On	Changed Time	Changed By	Status
DATE-TIME EXEC TEST	SOX	Year	2015	11/10/2015	14:02:29	I808813	11/10/2015	14:02:48	I808813	In Progress
TEST IMMEDIATE EXEC	SOX	Year	2015	11/10/2015	13:58:42	I808813	11/10/2015	13:59:57	I808813	In Progress
CREDIT CHECK 2	Financial Accounting Standard 133	Year	2015	04/20/2015	13:20:44	I808813	04/20/2015	13:22:21	RFCUSER	Completed
SD CREDIT CHECK	Financial Accounting Standard 133	Year	2015	04/20/2015	12:18:15	I808813	04/20/2015	12:18:21	RFCUSER	Completed

Figure 2: Scheduler Job List

Continuous Monitoring Scheduler

* Timeframe: Year

* Year: 2015

* Job Type: Automated Monitoring Job

Figure 3: Creating a new Job

Continuous Monitoring Scheduler: Step 1 (Header)

< Previous | Next > | Save

1 Header | 2 Share Regulation | 3 Select Controls | 4 Control Details

Figure 4: Scheduler Job Creation Steps

4.1 Scheduled Job Characteristics

The scheduler is a multi-step wizard (see Figure 5) with the first step focused on job characteristics.

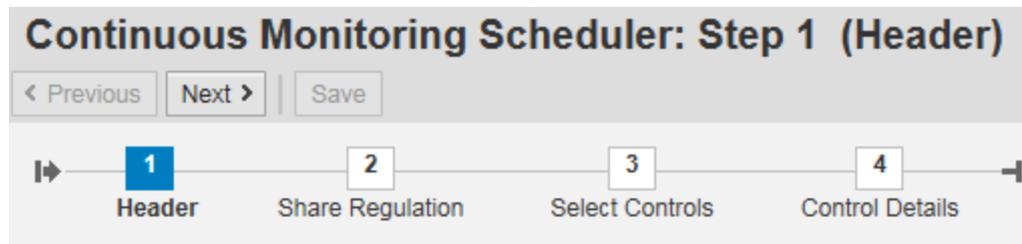


Figure 5: Scheduler Wizard, Step 1

Identifying job characteristics is the main source of uncertainty and confusion for customers. This first step determines when monitoring jobs run, over what timeframe, and defines the associated runtime date filters.

The “Header” step (see Figure 5) defines the essential job characteristics. Experience shows that this step causes the most confusion for customers, so this section takes extra care to define and explain the concepts involved.

When a customer schedules a job, the system needs to determine various characteristics from user inputs:

- how many jobs to run
- when to run the jobs
- what test dates each job will cover.

When monitoring, the customer’s intent to run a job every month should not require them to manually schedule a job each month—that would be time-consuming, an inefficient use of effort, and unbearably cumbersome. It would be more useful to let the customer express their intention to run a monthly job for the next year.

Refer to Figure 6, Scheduler which shows user inputs that determine these characteristics. The rest of this section describes the meaning and use of each user input on that screen.

* Job Type: Automated Monitoring Job

* Job name: ONE-TIME VENDOR USAGE

* Execution Type: Date/Time

Start time: 00:00:00

Execution Days: 000

After

Before

* Frequency: Monthly

* Test Period From: 01.01.2015

* Test Period To: 31.12.2015

Target Connector:

Comment:

Figure 6: Scheduler

4.1.1 Test Period

This characteristic defines the range of dates over which the job in question will test the business process data examined by the business rule to be executed.

NOTE

For this test period to actually work as intended, customers will have to first configure Business Rules as described in [Section 5.1!](#)

4.1.2 Frequency

This characteristic defines the time interval or how often the job executes. Figure 7 shows the possible frequencies.

* Frequency: Monthly

Test Period From:

Test Period To:

Target Connector:

Comment:

- Monthly
- Annually
- Daily
- Quarterly
- Daily
- Monthly
- Weekly
- Year
- Semi-Annually
- biannual

Figure 7: Job Frequencies

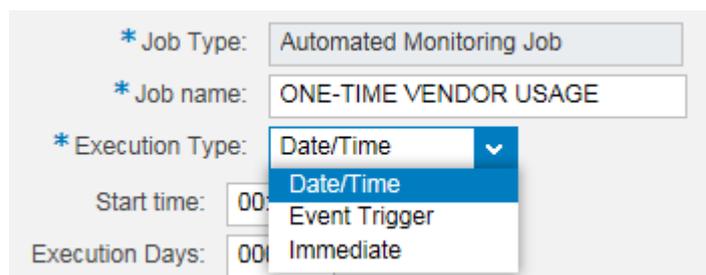
The *frequency* setting combines with the *test period* to define how many *job steps* will be included in this job. For example, Figure 6 shows a test period for the entire calendar year 2015; combined with

the monthly interval shown in Figure 7. These characteristics mean the job will include 12 steps, one for each month of the year.

Each job step will have a job step test period which is a corresponding subset of the job test period. Continuing our example, setting the monthly frequency over the whole of 2015 yields 12 job steps, with a test period done for each month: [01.01.2015-31.01.2015]¹, [01.02.2015-28.02.2015], etc.

4.1.3 Execution Type

The next scheduler attribute to consider is the execution type. Figure 8 shows the available options, Date/Time, Event Trigger, and Immediate.



The screenshot shows a configuration window for a job. The fields are as follows:

- * Job Type: Automated Monitoring Job
- * Job name: ONE-TIME VENDOR USAGE
- * Execution Type: A dropdown menu is open, showing three options: Date/Time (highlighted in blue), Event Trigger, and Immediate.
- Start time: 00
- Execution Days: 00

Figure 8: Execution Types

4.1.3.1 Date/Time

An execution type of date/time is by far the most relevant for most practical situations. For example, a job scheduled to run over a whole year with a monthly frequency, and with Execution Type of Date/Time, will execute on the last day of each job step period. In the current example, this means the monitoring job would execute on 31.01.2015, 28.02.2015, etc.

4.1.3.2 Event Trigger

Event-triggered schedules are related to event-driven data source types and business rules based upon such data sources. Event-driven rules bypass the scheduler altogether, since their execution is never driven by the scheduler. The event-driven schedule is a very special case, wherein the execution of an event-driven rule (again, triggered originally by an external event, not the scheduler) is then supposed to trigger another rule. For historical reasons, this linkage is driven through the scheduler user interface.

Since event-driven rules as a category are so separate from any scheduler logic, we will not explain this feature in detail here. We will take that up in documentation specific to event-driven monitoring.

4.1.3.3 Immediate

Immediate means that all job steps will execute immediately. Of course, depending on the number of job steps involved, system load and other factors, this might not literally be true.

Immediate execution type is very close in behavior to the Date/Time execution type. It differs in only one respect: for the current job step, it executes immediately, instead of waiting till the end of the test period.

For example, on 15.10.2015, monthly frequency monitoring for all of 2015, "Immediate" would execute 11 jobs more or less immediately: those with job step test periods of January through November 2015. Only the December job step would remain pending, and would execute on 31.12.2015.

¹ For consistency, all dates in this document are in the DD.MM.YYYY format.

NOTE

This differs from the “Date/Time” execution type in one respect only: for a Date/Time job and the same setup, 10 jobs would execute immediately (January through October), and two jobs would remain pending.

4.1.4 Start Time

For many monitoring scenarios, the end of the testing period still leaves some relevant transactions pending. Customers have stated that their preference is to execute monitoring jobs a few days after each test period actually ends—to let the dust settle, so to speak. They can then rely upon the CCM date filtering to catch the right transactions for the relevant period. This is the purpose of the Execution Days setting shown in Figure 9.

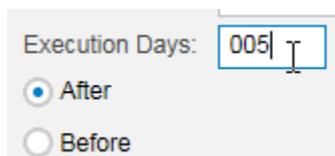


Figure 9: Execution Days Setting

The default behavior (i.e., with Execution Days set to zero) is to execute the monitoring job on the last day of the job step test period. Setting Non-zero Execution Days defines how many days before or after the end of the job step test period to execute the monitoring job.

In this example, with the test period over the whole year and monthly frequency, Date/Time execution type and Execution Days offset of 5 days after, there will be 12 monitoring jobs, executing on 05.02.2015, 05.03.2015, etc.

4.2 Regulations

The next step in the scheduled job creation wizard process offers users the opportunity to pick the regulation which motivates this monitoring rule.

Note

The job runs under the support of one regulation, but users have the choice of sharing the results with other regulations. Users can choose not to share monitoring results with other regulations, share with some, or share with all.

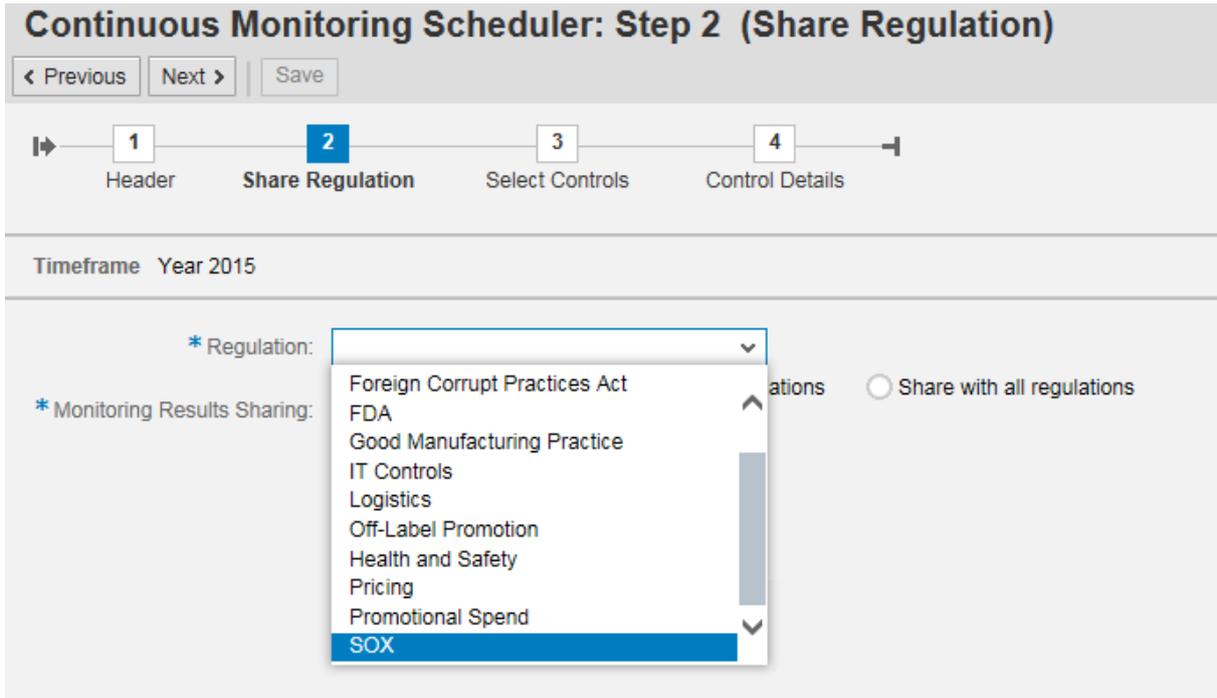


Figure 10: Picking Regulations

4.3 Controls

Once regulations are selected, the next step is to select the controls for which the job is to be scheduled. Controls can be searched by various related attributes, as seen in Figure 11: Organization, Process, Control, Business Rule, etc.

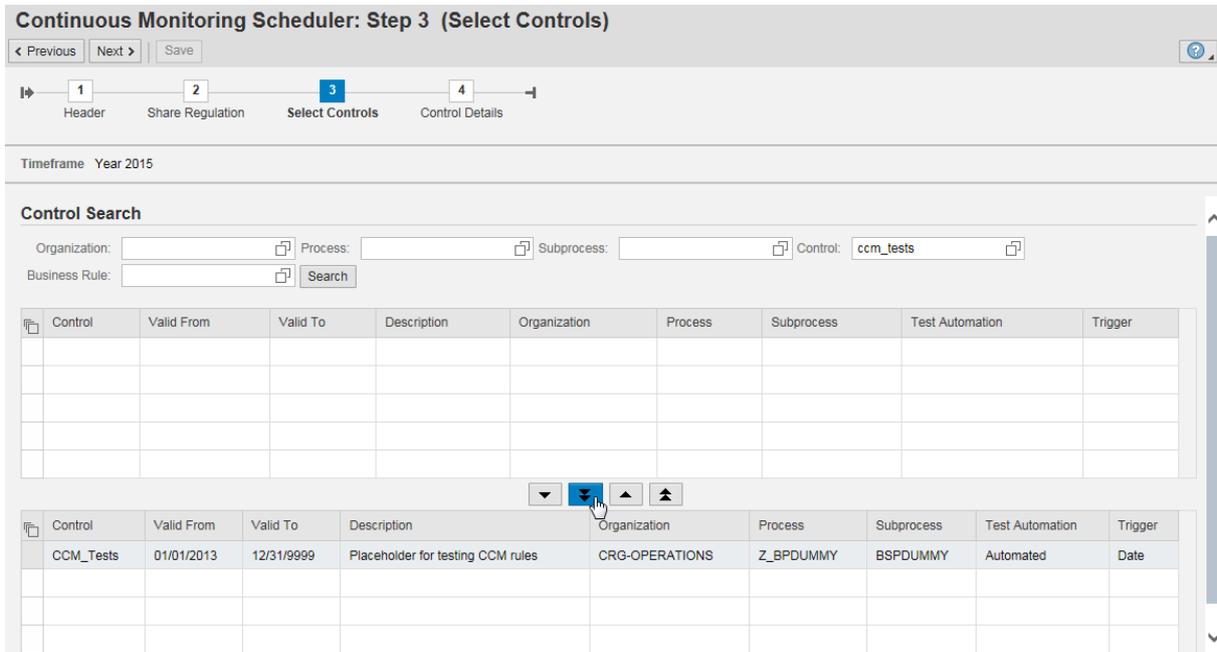


Figure 11: Selecting Controls

NOTE

More than one control can be selected when scheduling a job. While this is a great time-saver for the busy user with many jobs to schedule, it needs to be used judiciously. Changing the schedule becomes harder, since it would require cancelling a single large job and replacing most of it back via another scheduled job. Users should take care to define schedules at the level of detail they need.

4.4 Control Details

The next step shows the Control Details page. Figure 12 shows the associated monitoring Business rule and the control together.

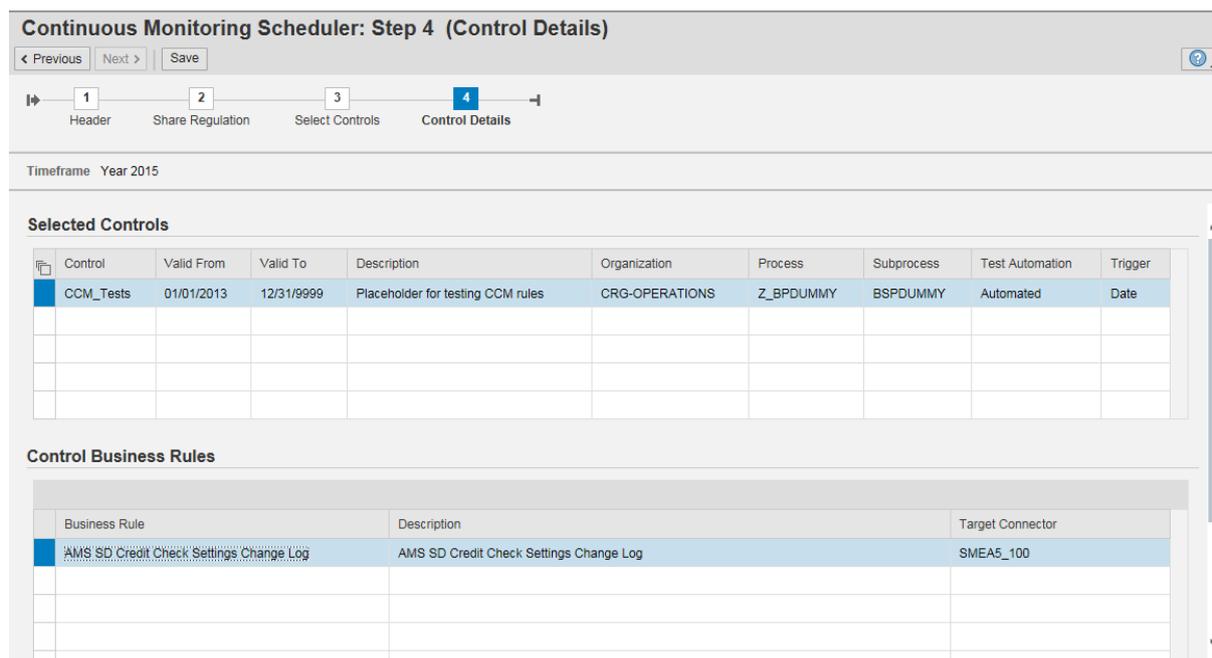


Figure 12: Control Details

While this page is particularly simple in the screen shown in Figure 12, note that this is an artifact of the specific rule available for the selected control. As described in Section 5, Related Features, below, a different rule, using certain features, would exhibit a somewhat different page in this step.

5. Related Features

Apart from the scheduler characteristics directly related to the Scheduler wizard described in Section 4.1, Scheduled Job Characteristics, two features of PC CCM, Runtime (Dynamic) Date Binding and Parameter Binding, interact directly with the Scheduler in essential ways.

The following section on Runtime Date Binding describes one such feature in detail. The next subsection on Parameter Binding describes the related functionality briefly, and refers readers to related documents where this is described more fully.

5.1 Runtime (Dynamic) Date Binding

Runtime date binding is an attribute of business rules, not the scheduler. But it is best explained in the context of the scheduler. In most scenarios it is important that each monitoring job properly identify transactions which fall within the appropriate time-window, typically the job step test period. Figure 13 shows how users can tell PC to use the test period to filter dates. The screen shot also shows the relevant part of the Filter Criteria tab in Business Rule definitions—as mentioned in the [CCM Overview](#)

document on SCN, this setting only becomes available when a Date type field is chosen as a filter field.

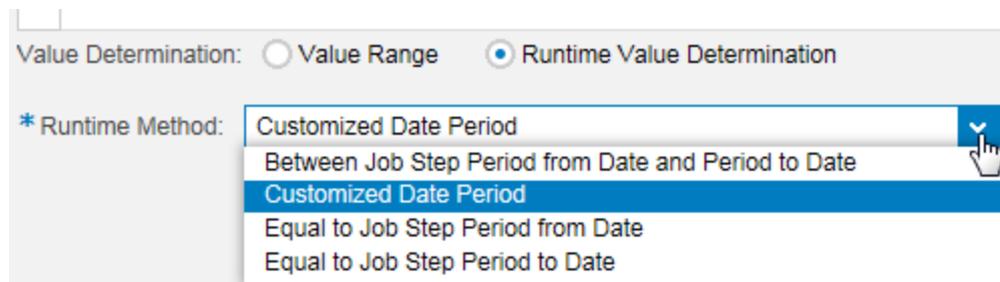


Figure 13: Runtime Date Filtering

Between Job Step Period from Date and Period to Date

The first selection in the dropdown list, *Between Job Step Period from Date and Period to Date*, is the most intuitive. It restricts the monitoring rule to transactions where the chosen date filter field has values inside the test period range.

Equal to Job Step Period from Date and Equal to Job Step Period to Date

The third and fourth choices are more specialized, since they equate the field value to the start/end of the test period. Their use would not make sense for a transaction date, but rather when the field in question relates the transaction to significant dates such as the start or end of a business-significant period: quarter, month, year, etc.

Customized Date Period

The most interesting option is the one highlighted in Figure 13, *Customized Date Period*. This is expected to be used for filtering transaction date fields. For instance, invoice posting date, creation date, last changed date, etc.

This option allows customers to choose transactions which do not fall strictly within the test period (since that choice is already available using *Between Job Step Period from Date and Period to Date*), but fall instead inside a related date range defined by the customer.

A customer example of this is the use of the SAP-delivered duplicate invoice check monitoring rule. The customer wanted to use overlapping test periods. That is, at each monthly monitoring they wanted to examine the past two months of invoices.

The first step, is to define the filter condition in the business rule itself to be "Runtime", using the "Customized" method as shown in Figure 13.

The next step is to set the offset parameter value for that rule in IMG.

Figure 14 shows how to navigate to the appropriate node in the SAP Reference IMG via transaction SPRO.

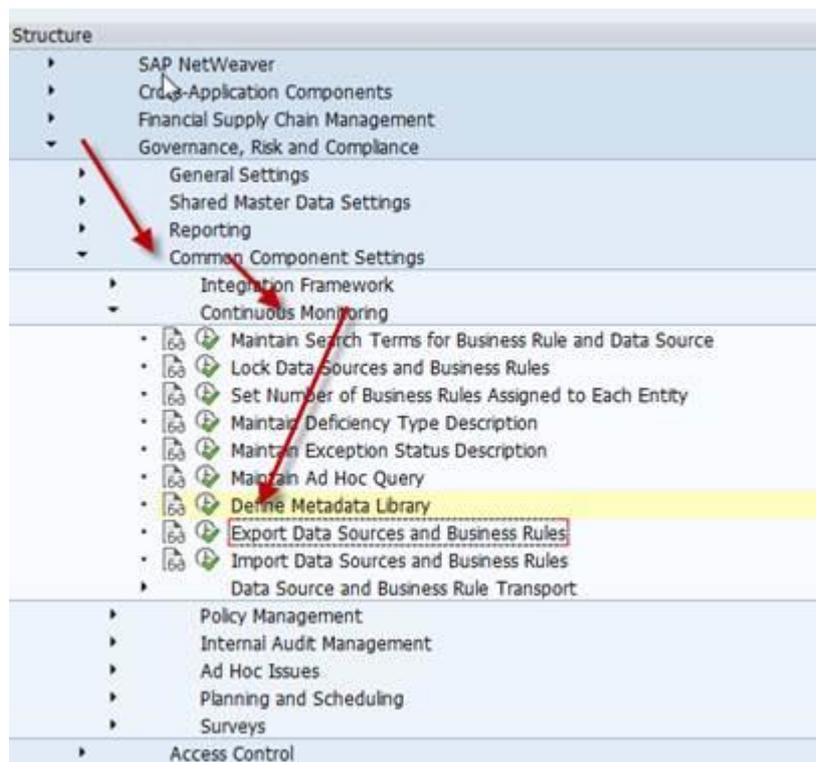


Figure 14: SAP Reference IMG Location of Date Customization

Next, navigate to the correct parameter in that IMG node; see Figure 15.

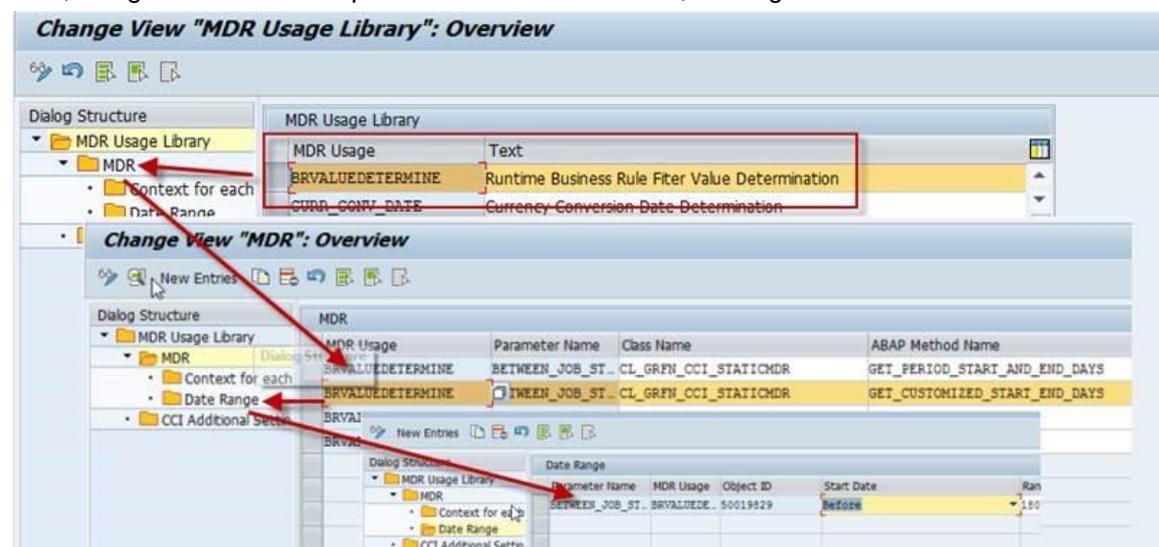


Figure 15: Date Customization Parameter

For clarity, the final table is reproduced in the text, as Table 1. The values in grey don't change—they are what the code looks up. The remaining columns have user-input values. The main parameters define the offset from the test period *start and end*, and the unit of value is *a day*. “Before” or “After” select whether the offset is earlier or later than the nominal test period start/end.

Parameter name	MDR Usage	BR ID	Before or After	Range Value	Before or After	Range Value
----------------	-----------	-------	-----------------	-------------	-----------------	-------------

			Start Date		End Date	
BETWEEN_JOB_STEP_PERIOD_START_AND_END_DAYS_CUSTOMIZATION	BRVALUEDETERMINE	50019829	Before	15	Before	0

Table 1: Date Customization Parameter Values

Note

Each entry in this table is specific to a rule, as indicated by the BR ID column. This is the technical, internal ID of the Business Rule, and PC looks for custom-defined offsets by rule. Users have the extra work of creating a row in the table shown in Figure 15 for each Business Rule which needs to use such offset test period dates for filtering, but it does give them great flexibility.

5.2 Parameter Binding

When executing rules to run in different organizational contexts, customers usually want to use different values for related filters such as company code, plant code, etc. From its earliest releases, PC has supported this contextual value binding via Organization Level System Parameters (OLSP). OLSP allows customers to define such values at the Organization node, while the scheduler binds values at runtime according to context. This functionality is described in the overview documents referenced in [Section 6](#).

OLSP was limited to only few known fields in the ABAP data dictionary, and over the years customers have asked for a more flexible parameter-binding capability. With PC 10.1 SP10, we introduced Business Rule Parameters, which allows customers to name and define any parameter by organization context, and apply them to rules.

With BRPs, we also addressed another major limitation of OLSP: OLSPs could only be used in filter operations, but customers had a need to apply different deficiency thresholds for different organization nodes. With PC 10.1 SP11, we also introduced mass export/import of BSP values for the whole Organization hierarchy, which greatly facilitates maintenance of such values. All of this is fully described in the BRP document referenced in [Section 6](#).

6. External References

Title	Description
Implementing SAP GRC	Published January 2014, SAP Press. This document includes extensive coverage of PC 10.1 CCM in Chapters 12-14. For a more thorough discussion of the optimal use of PC CCM, refer to Chapters 13 and 14.
SAP Process Control 10.0. Automated Monitoring Overview	An overview of continuous controls monitoring in Process Control 10.0 published on SAP Community Network (SCN) in 2011. This document applies to PC 10.1 as 10.1 extended the CCM framework of PC 10.0 to cover HANA. All other aspects of CCM remain as they did for PC 10.0.

[SAP Process Control 10.1
Monitoring HANA-based
Applications](#)

A complete guide to monitoring HANA-based applications such as SAP ERP Suite on HANA, using Process Control 10.1.

[Business Rules Parameters in
SAP Process Control 10.1](#)

A complete guide to Business Rule Parameters (BRPs), a new feature in PC 10.1 SP10 which allows much greater rule re-use in different organizational contexts. BRPs generalize and extend the OLSP functionality in prior releases of PC.

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http://www.surveymonkey.com/s.aspx?sm=stdoYUlaABrbKUBpE95Y9g_3d_3d

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