

# **Torch - Tolerance Optimizer**

## **Manual**

Release 3.1 — Last update: 2015/08/27

Basis Technologies

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# Introduction

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The purpose of this document is to provide end user documentation on the Node5 Architecture process pack for the “Tolerance Optimization Report” (Torch). The Tolerance Optimization Report (now referred to as Torch for the remainder of this document) is a suite of SAP programs that performs various functions required pertaining to review of SAP IS-U tolerances.

There are three standard SAP IS-U tolerances that are covered by this process pack:

- Meter Reading tolerances
- Billing Out-sort tolerances
- Invoicing Out-sort tolerances

The process pack is made up of a number of SAP ABAP programs that are written within the Node5 Architecture framework for performance and usability reasons. The programs available are:

- Tolerance analysis for review of current implausible readings
- Tolerance analysis for review of current and historical billing out-sorts
- Tolerance analysis for review of current and historical invoicing out-sorts

Each of the above programs will be explained throughout this document. The most commonly sought purpose of this process pack is to understand the impact of adjusting tolerances for meter reading upload. It becomes a “what if” analysis should a Utility desire to alter their tolerances and what the impact of doing so would be.

This document describes the pre-requisites and additional parameters required in order to execute the various programs within this BDI App.

# Pre requisites prior to execution

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You must also have installed the Node5 Architecture framework components as well as the Torch BDI App into your SAP IS-U system.

These should have been installed via your Basis Administration team as a SAINT package or transport request deployment.

The only subsequent requirement is to then have the license key installed for the given SAP system with sufficient license keys to support the various programs with the Torch.

# Available programs

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The programs available within the Torch BDI App are summarized below. Each description provides a high-level overview as to the purpose of the report.

Further details of each report are provided later in this document.

- Tolerance analysis for review of current implausible readings

Analyzes all implausible reads in the system and determines the expected consumption, actual consumption and the consumption difference plus tolerance percentage deviations. Allows for implausible reads to be automatically released if within consumption deviation range.

- Tolerance analysis for review of billing out-sorts

Analyzes and lists all billing out-sorts in the system and determines the deviation from lower/upper tolerance limits (manual outsorts are not considered).

- Tolerance analysis for review of invoicing out-sorts

Analyzes and lists the invoicing out-sorts in the system and determines the deviation from lower/upper tolerance limits (manual outsorts are not considered).

- Automatic release of implausible meter readings

Enables automatic release of implausible reads based upon a set of selection criteria. This is invoked from the implausible read analysis program above.

- Automatic release of billing out-sorts

Enables automatic release of billing out-sorts based upon a set of selection criteria. This is invoked from the billing out-sort analysis program above.

- Automatic release of invoicing out-sorts

Enables automatic release of invoicing out-sorts based upon a set of selection criteria. This is invoked from the invoicing out-sort analysis program above.

- Automatic completion / cancellation of BPEM / EMMA cases

Enables automatic completion or cancellation of BPEM cases based upon a set of selection criteria.

# Program specifications

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The following section describes each of the programs delivered as a part of this Torch package.

It provides a “purpose” for each program, why it exists and how it can be used. It then details for each program, the parameters and their meaning and a technical description of how the program executes from an IT perspective.

The output of each program is then described in detail so the user is able to understand and gain insight into the results.

## **Implausible reads tolerance optimization analysis**

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Analyzes all implausible reads in the system and determines the expected consumption, actual consumption and the consumption difference plus tolerance percentage deviations. Allows for implausible reads to be automatically released if within consumption deviation range.

## Implausibles – Program purpose

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The purpose of the implausible reads tolerance optimization report is to analyze all implausible reads in the system and determine how far above or below the existing tolerances the implausible reads are. It is useful from a “What if” analysis perspective, in the sense that if a Utility would like to understand what impact a change in the meter reading plausibility tolerances would have. For example, if tolerances were to be widened by 2%, how many implausible reads would now be able to be released? As an additional usage of this report, if you were to then change the configuration in Device Management to widen the tolerance and promote this into production, you can use this program to then automatically release those implausible reads that are now within the newly set tolerances.



## Implausibles – Technical description

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This program can be either run on-line or scheduled via a background job. It leverage's the Node5 Architecture framework of Basis Technologies which enables any ABAP program to execute with parallel processing using background work processes. The user has the flexibility of deciding how many parallel processes can be allotted to the execution of the program. If scheduled in the batch, this can be set in the variant of the program. It breaks the work to be done up by equipment (meter) number range and processes each range independently.

Please note that if the program is used to “automatically release” implausible reads that are found within a certain delta consumption range, this program will automatically release implausible reads as an outcome. It leverages a separate program in the Torch package (/BTR/MDR\_PP\_ISU\_IMPL\_AUTOREL) to achieve this. If this option is not selected, it will simply find all implausible reads in the system, determine tolerance limits (both upper / lower consumption and meter reading values, expected reading and consumption values and deviations from the set tolerances) and report on them.

Program Name:

/BTR/MDR\_PP\_ISU\_IMPL\_ANALYZE

Transaction Name:

/BTR/PP\_TORCH\_IMPLA

## Implausibles – Program usage

When the program is executed, the user is presented with a set of parameter/select-options in order to select the appropriately required data and action it. The main selection screen is as follows:



The screenshot displays the 'MDR:Process Pack for Implausible Read Analysis' software interface. At the top, there is a title bar with the program name and a standard Windows-style toolbar. Below the title bar, a section labeled 'MDR:Process Pack for Implausible Read Analysis' contains a 'Technical Settings' icon and label. The main area is divided into four sections: 'Main Selection', 'Additional Selections', 'Installation Criteria', and 'Contract Criteria'. Each section contains input fields for various parameters, often with 'to' ranges and selection buttons (yellow arrows). The 'Main Selection' section includes 'Equipment' and 'Internal MR Doc. ID'. The 'Additional Selections' section includes 'Meter reading date', 'MR category', 'Meter reading type', 'Dependent validation', and 'Indep. validation'. The 'Installation Criteria' section includes a checked 'Installation criteria active' checkbox, 'Installation', 'Division', and 'Rate category'. The 'Contract Criteria' section includes 'Contract' and 'Company Code'.

Main Selection			
Equipment	<input type="text"/>	to	<input type="text"/>
Internal MR Doc. ID	<input type="text"/>	to	<input type="text"/>


Additional Selections			
Meter reading date	<input type="text"/>	to	<input type="text"/>
MR category	<input type="text"/>	to	<input type="text"/>
Meter reading type	<input type="text"/>	to	<input type="text"/>
Dependent validation	<input type="text"/>	to	<input type="text"/>
Indep. validation	<input type="text"/>	to	<input type="text"/>

Installation Criteria			
<input checked="" type="checkbox"/> Installation criteria active			
Installation	<input type="text"/>	to	<input type="text"/>
Division	<input type="text"/>	to	<input type="text"/>
Rate category	<input type="text"/>	to	<input type="text"/>

Contract Criteria			
Contract	<input type="text"/>	to	<input type="text"/>
Company Code	<input type="text"/>	to	<input type="text"/>

Tolerance Brackets			
<input checked="" type="checkbox"/> Default/Clear Brackets			
<input checked="" type="radio"/> Deviation %			
Deviation % Brackets	<input type="text" value="610"/>	to	<input type="text" value="999999999"/> 
<input type="radio"/> Consumption Diff.			
Consumption Diff. Brackets	<input type="text" value="610"/>	to	<input type="text" value="999999999"/> 

Automatic Release of Implausibles			
<input type="checkbox"/> Autorelease if in range...			
Consumption Range	<input type="text"/>	to	<input type="text"/> 
Variant to submit release job	<input type="text"/>		
<input checked="" type="checkbox"/> Test mode			

The parameters are grouped into 4 key areas:

#### Main Selection (Optional)

- Equipment Number – Restricts the implausible reads selected to the equipment numbers or ranges of equipment numbers specified
- Meter Reading Document – Restricts the implausible reads selected to the internal meter reading document numbers specified

#### Additional Selections (Optional)

- Meter Reading Date – Only retrieve implausible reads for the specified meter reading date range (field EABL-ADAT)
- MR category – Only retrieve implausible reads for the specified meter reading category (field EABL-ABLESTYP)
- Meter reading type – Limits the results to only include meter reading types defined if specified within this option (field EABL-ISTABLART)
- Dependent validation – Limits the results to only include dependent validations defined if specified within this option (field EABL-POPCODE)
- Indep. Validation – Limits the results to only include independent validations defined if specified within this option (field EABL-PRUEFPKT)

#### Sub-category within additional selections (optional)

#### Installation Criteria

- Installation criteria active (checkbox) – If selected the installation criteria options are activated. When unselected the following options are disabled to maximize performance when these options are not

required.

- Installation – Restricts the implausible reads selected to the installation numbers or ranges of installation numbers specified.
- Division – Restricts the implausible reads selected to the division/s specified.
- Rate category – Restricts the implausible reads selected to the rate category/s specified.

#### Contract Criteria

- Contract – Restricts the implausible reads selected to the contract numbers or ranges of contract numbers specified.
- Company code – Restricts the implausible reads selected to the company code or ranges of company codes specified.

#### Tolerance Brackets (Optional)

- Default/Clear brackets (checkbox) – This option enables the default tolerance brackets to be cleared or restored.
- Deviation % (radio button) – If selected the results will be specific to the ranges specified in the percentage tolerance brackets.
- Percentage Tolerance Bracket – Puts the implausible reads that are found into brackets specified in the ranges set in this parameter. This is the percentage deviation from the expected consumption. This means that both negative and positive ranges must be specified here in order to catch both those below the ranges specified and those above the ranges specified.
- Consumption Diff. (radio button) – If selected the results will be specific to the ranges specified in the consumption difference tolerance brackets.
- Consumption Tolerance Bracket – Puts the implausible reads that are found into brackets specified in the ranges set in this parameter. This is the consumption deviation from the expected consumption. This means that both negative and positive ranges must be specified here in order to catch both those below the expected consumption and those above the expected consumption.

NOTE: The above ranges are mainly used from a display perspective only. They have no impact on the actual processing of the implausible reads apart from “grouping” those that are found into these “buckets” for output purposes or only displaying ranges in selection.

#### Automatic Release of Implausible (Optional)

- Auto release if in range ... – Turn this flag on if you would like the program to automatically release the implausible reads if they fall into the consumption deviation range specified in the following parameter. If you turn this flag on, you must specify a range in the following parameter.

- Consumption Range – If you select the previous parameter, you must specify a consumption deviation range here. This is the deviation from the expected consumption.

Example: If a meter reading was upload representing a consumption of 100, but the expected consumption was 40, then the consumption deviation is 60. If you enter a range from 50 to 100 here, this particular implausible read example will be within range and automatically released.

- Variant to submit release job – when you select the first option in this group to “Auto release in range”, then this program will perform the usual analysis of upper and lower consumption limits and derive deviations in percentage and consumption difference. Once all of the data has been “collated” back together for reporting purposes, it will then find all implausible reads that are within the consumption deviation range specified in the previous parameter and automatically release them. This program does not actually do the release. Instead, it submits the automatic implausible read release program (described later in this document), in order to perform the release itself. Therefore, when it submits this program, the SAP program variant that it submits this program with it with must be specified here. You must have setup a variant in the other program (for reference /BTR/MDR\_PP\_ISU\_TOR\_IMPL\_AUTOREL) and then specify this variant name here. You are able to specify amount of parallel processing to be done, the interval variant and various other parameters. These are the only parameters which are hard-coded “Wait for run to complete before finished” (set to true) and the “Meter Reading Document Numbers” which represent all implausible reads found which are to be automatically released. The “Test Mode” parameter (specified in the next parameter) is passed through to the automatic releases program also, so that if you would like to run it in test mode you can and the readings will not be released in this mode.

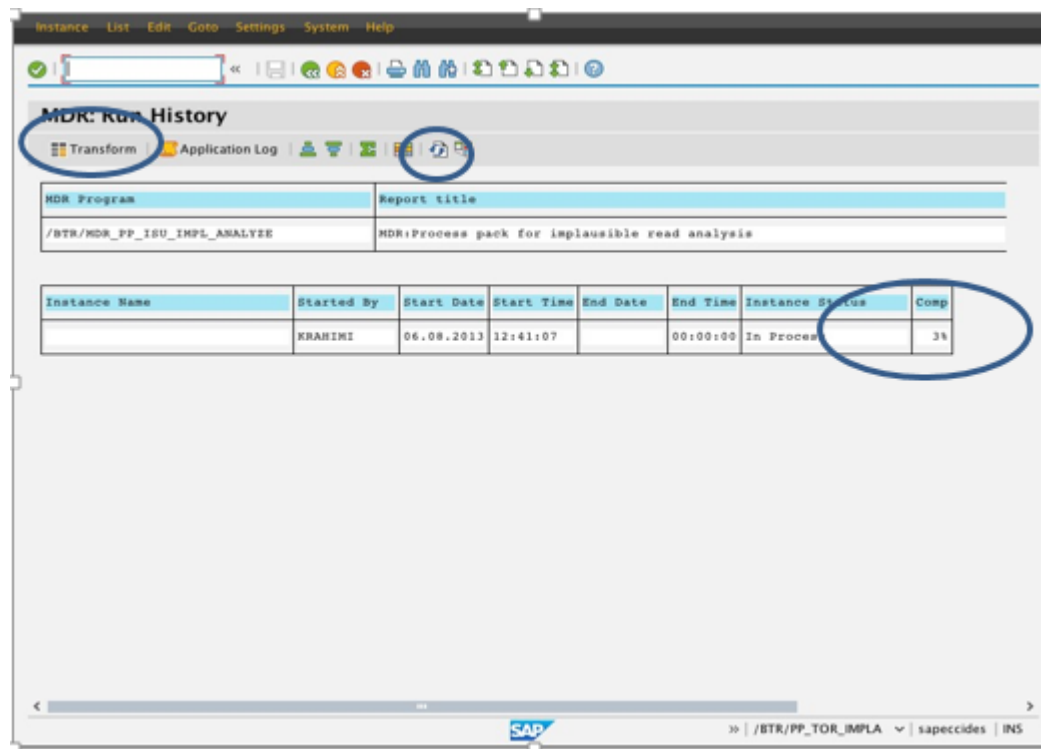
- Test Mode – Specifies that the automatic release of implausible reads program should be run in test mode so that you can identify which implausible readings are to be released. This is very useful in test systems so that you can first identify which implausible reads have been identified for automatic release but not actually release them. This enables enhanced testing of the Torch. This parameter is passed through to the “Test Mode” parameter of the automatic implausible release program /BTR/MDR\_PP\_ISU\_TOR\_IMPL\_AUTOREL.

## Technical Settings

Node5 Architecture Settings – All Torch programs are Node5 Architecture programs and all Node5 Architecture programs have the ability to specify the amount of parallel processing and the interval “variant” to be used during execution. These are generic “technical” settings that are available under the button “Technical Settings” in the application toolbar. Since these settings are generic for all Node5 Architecture programs, a later section in this document specifies the options that are available to you here.

## Implausibles – Program results/output

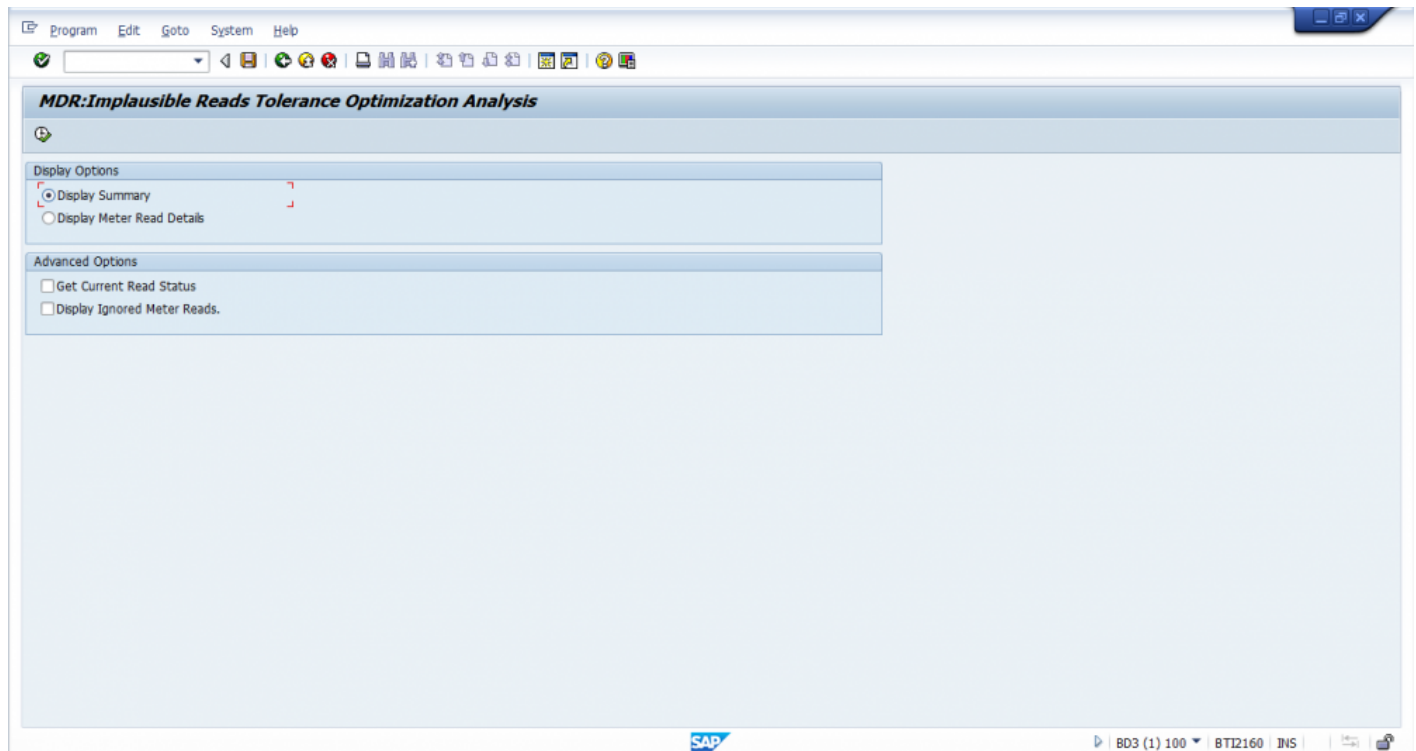
The results of the Implausible Read Analysis program are available upon the completion of the main program. After you run the Node5 Architecture program on-line, you are able to monitor the status of the program whilst it executes by repeatedly selecting the “Refresh” button in the application toolbar.



Select the “Refresh” button until the “Instance Status” becomes “Finished”. You can see how far the program has progressed via the “Comp” column which represents the % complete. Important note: You are able to get to the above screen for a previously run version of this program (or a run that you did not start yourself) by navigating to the “Run History” in transaction /BTR/MDR.

Once the program has reached 100% complete and a “Finished” status, you can select the row and press “Transform”. You will then be prompted with a further ability to restrict the output that is displayed.

### Output Options



The following options are now available to restrict the data further.

### Display Options

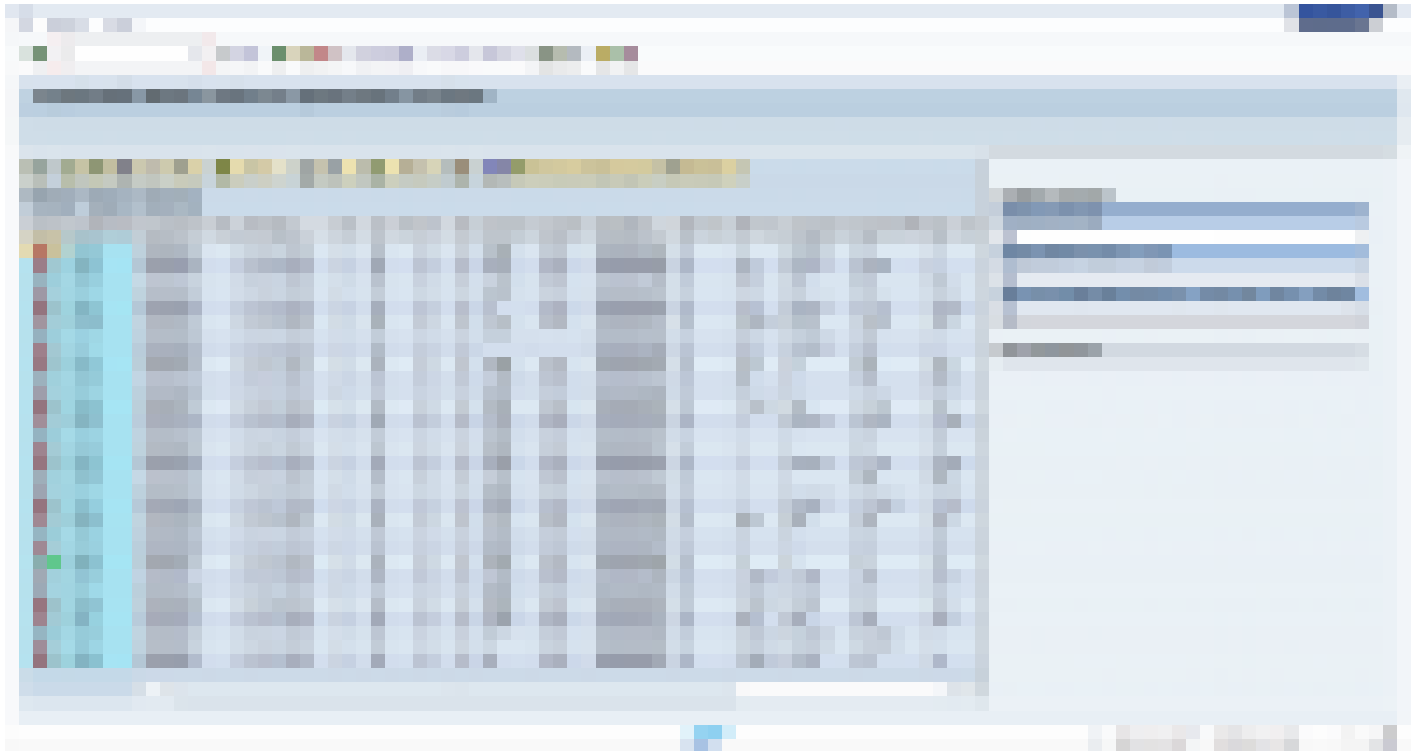
- Display Summary – This display provides a summarized view of the tolerance bracket ranges with a graphical display and details options.
- Display Meter Read Details – This enables the results of the implausible meter readings to be displayed in a tabular list view.

### Advanced Options

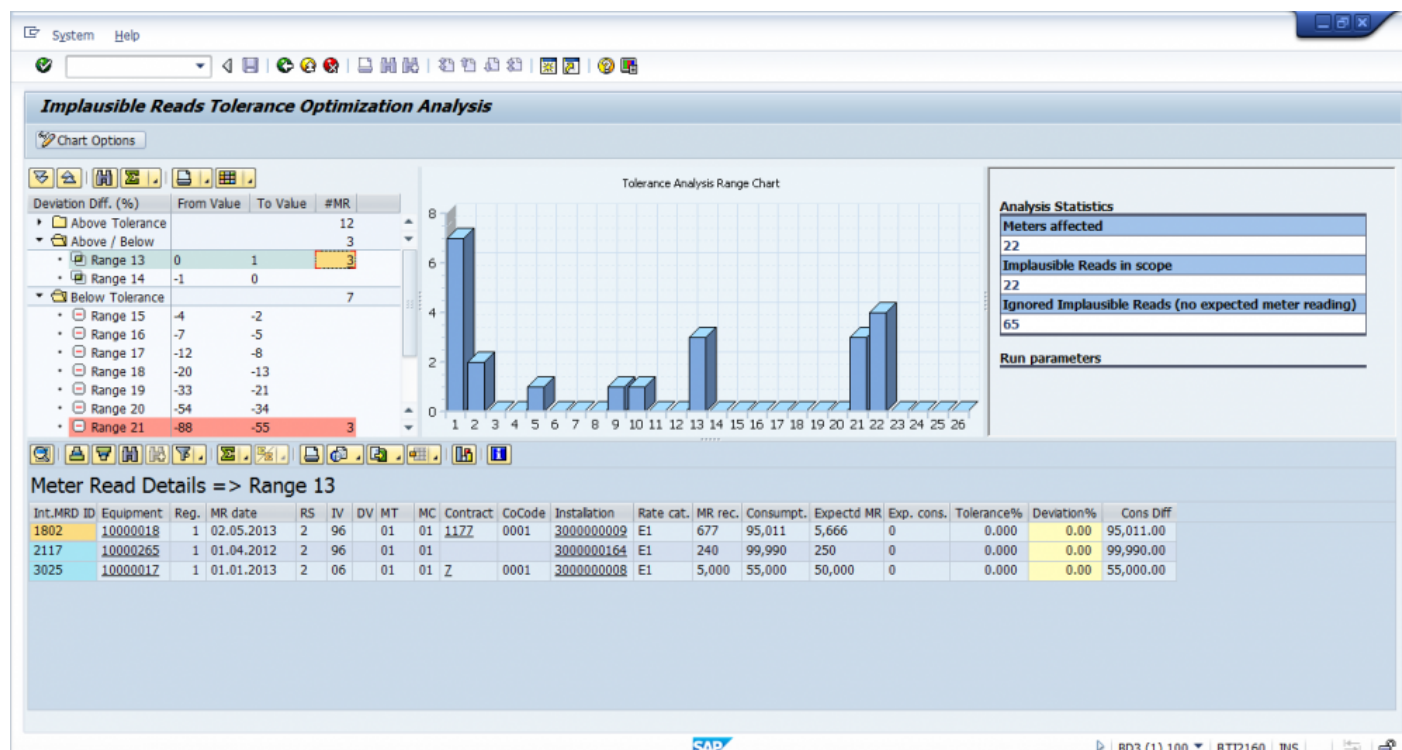
- Get Current Read Status – If you are looking at the results of a past run of the program, then between the time at which the program originally ran and the time that you present the results may mean that the status of a particular implausible read has changed (e.g. to “released” by a user). Select this option if you would like the output to re-calculate the current status of implausible reads, so those that are no longer implausible can be removed. This option generally does not need to be turned on.
- Display Ignored Meter Reads – For each implausible read that is found by the program, a calculation is done to determine the expected consumption / meter reading and the upper / lower tolerance limits. For some implausible reads, these values cannot be determined. A common example of this is when an implausible read has become implausible because the previous meter reading is also implausible. In these cases, the expected and upper / lower tolerance limits cannot be determined and will be “blank”. Therefore,

there is no deviation from either a consumption or percentage perspective. If you select this option, those “ignored” implausible reads will be output to the screen.

After you are ready to proceed, select “Execute”. You will then be prompted with the results of the implausible red analysis output:







The output of the Implausible Read Tolerance Analysis program is an ALV grid of data that represents the current state of all implausible reads found based upon user selection criteria. On the left of the screen is this list of implausible reads. On the right of the screen are the program execution parameters. By default, the fields displayed in the grid are (from left to right):

- Status

Red light indicates the read is still implausible and a green light indicates the reading has been released since the report was run (this is only displayed if the 'Get Current Read Status' checkbox is selected).

- Internal Meter Reading Document Number

Represents the unique meter reading document identifier. You can double click on this field for a particular row in the grid and it will take you to the meter reading itself in the standard IS-U transaction.

- Equipment Number

Represents the equipment number that the implausible read belongs to. You can double click on this field for a particular row in the grid and it will take you to the display of the device / meter within the standard IS-U transaction. From here you could then also display the meter reading history, other device time-slices, the installation etc.

- Register Number

Represents the register number of the meter that the implausible read belongs to.

- Meter Reading Date

Represents the actual meter reading date of the implausible read.

- Meter Reading Status

Represents the meter reading status of the implausible read.

- Independent validation

Represents the independent validation of the implausible read.

- Dependent validation

Represents the dependent validation of the implausible read.

- Meter reading type

Represents the meter reading type of the implausible read.

- Meter reading category

Represents the meter reading category of the implausible read.

- Contract

Represents the contract relating to the implausible read.

- Company code

Represents the company code associated to the contract related to the implausible read.

- Installation

Represents the installation relating to the implausible read.

- Rate Category

Represents the rate category relating to the implausible read.

- Meter Reading Recorded

Represents the meter reading of the implausible read.

- Consumption

Represents the consumption amount (in the units of the measurement device).

- Expected Meter Reading

Represents the meter reading that was expected according to whatever extrapolation has been applied to the meter reading period, whether it be via an extrapolation user-exit or period consumption set at the register installation level.

- Expected Consumption

Represents the consumption that was expected.

- Tolerance (%)

Represents the percentage difference between the expected consumption and the upper (or lower) consumption tolerance limits. This should map directly to the tolerances that have been set within the standard implausibility configuration (with rounding issues for low consumption entries).

- Deviation (%)

Represents the percentage deviation between the actual consumption (above or below) the expected consumption.

- Consumption Difference

Represents the numerical difference between the expected consumption and the actual consumption. It is this value that is used if you have opted to automatically release implausible reads that fall between a certain consumption ranges.

There are five additional fields that can be seen within the grid if you select the “Change Layout” option and add the fields into the display:

- Upper Limit of Meter Reading

Represents the upper limit of the meter reading result based upon validation class tolerances (derived dynamically)

- Lower Limit of Meter Reading

Represents the lower limit of the meter reading result based upon validation class tolerances (derived dynamically).

- Minimum Consumption / Demand

Represents the lower tolerance limit for the consumption based upon validation class tolerances (derived dynamically).

- Maximum Consumption / Demand

Represents the upper tolerance limit for the consumption based upon validation class tolerances (derived dynamically).

- Number

Counter which determines the stats details

You can add into the ALV grid these 5 fields (or remove the others that are available) via the standard ALV grid “Change Layout” option. You can also set a default layout according to your preferences so you do not need to change it each time you display the output of the implausible read tolerance analysis program. Furthermore, you can select a particular column (e.g. Consumption difference) and sort it from highest to lowest or vice versa. Additionally you can put a filter upon one or more fields in order to restrict what is displayed or search for a particular equipment or meter reading document number with the standard search button in the grid.

Finally, you are able to export to Excel in order to run enhanced manipulation or analysis of the data.

## Implausibles – Program security

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Please restrict access to this program as it can be used to release any implausible reads within your SAP IS-U system (if they already have authorizations to do this).

This can be achieved by restricting access to transaction /BTR/PP\_TORCH\_IMPLA via the standard SAP transaction restriction.

Also, if you are running this program in the mode that automatically releases implausible reads that are within a consumption range specified, the user executing the program must have authorization to release implausible reads.

## **Billing outsort tolerance optimization analysis**

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Analyzes and lists all billing out-sorts in the system and determines the deviation from lower/upper tolerance limits (manual outsorts are not considered).

This program can invoke the automatic release of billing outsorts based upon a set of selection criteria.

## Billing outsorts – Program purpose

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The purpose of the billing out-sort tolerance optimization report is to analyze all billing out-sorts in the system and determine how far above or below the existing tolerances they are. It is useful from a “What if” analysis perspective, in the sense that if a Utility would like to understand what impact a change in the billing out-sort tolerances would have. For example, if tolerances were to be widened by \$20, how many billing out-sorts would now be able to be released? As an additional usage of this report, if you were to then change the configuration in Billing to widen the tolerance and transport this into production, you can use this program to then automatically release those billing out-sorts that are now within the newly set tolerances.

## Billing outsorts – Technical description

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This program can be either run on-line or scheduled via a background job. It leverage's the Node5 Architecture framework of Basis Technologies, which enables any ABAP program to execute with parallel processing using background work processes. The user has the flexibility of deciding how many parallel processes can be allotted to the execution of the program. If scheduled in the batch, this can be set in the variant of the program. It breaks the work to be done up by contract number range and processes each contract independently.

Please note that if the program is used to “automatically release” billing outsorts that are found within a the range selected, this program will automatically release the billing outsorts in selection as an outcome. It leverages a separate program in the Torch package (/BTR/MDR\_PP\_ISU\_BOUTA\_AUTOREL) to achieve this. If this option is not selected, it will simply find all billing outsorts within the selection ranges, determine tolerance limits (both upper / lower consumption and deviations from the set tolerances) and report on them.

Program Name:

/BTR/MDR\_PP\_ISU\_BOUT\_ANALYZE

Transaction Name:

/BTR/PP\_TORCH\_BOUTA

## Billing outsorts – Program usage

When the program is executed, the user is presented with a set of parameters / select-options in order to select the appropriately required data and action it. The main selection screen is as follows:

**MDR:Process Pack for Billing Outsort Analysis**

Technical Settings

**Main Selection**

Contract		to		
Company Code		to		
Division		to		
Outsourcing chk group		to		
Billing Document No.		to		

**Additional Selections**

Created on		to		
Created by		to		
Billing Transaction		to		
Billing Validation		to		

**Tolerance Brackets**

☒ Default/Clear Brackets

☐ Percentage Tolerance Brackets

Percentage Tolerance Bracket	610	to	999999999	
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☐ Amount Tolerance Brackets

Amount Tolerance Brackets	610	to	999999999	
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**Advanced Options**

☐ Consider Historical Outsorts

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The parameters are grouped into the 4 key areas:

### Main Selection (Optional)

- Contract Number – Restricts the bill out-sorts selected to the contract numbers or range specified (field ERCH-VERTRAG).
- Company code – Restricts the bill out-sorts selected to the company code specified (field EVER-BUKRS).
- Division – Restricts the bill out-sorts selected to the division specified (field EVER-SPARTE).
- Billing Out-sort Check Group – Restricts the bill out-sorts selected to the billing outsort check group(s) specified (field EVER-AUSGRUP).
- Billing Document Number – Restricts the bill out-sorts selected to the billing document number range specified (field ERCHO-BELNR).

### Additional Selections (Optional)



- Invoice Creation Date – Restrict billing out-sorts for the specified invoice creation date range (field ERCH-ERDAT).
- Invoice Creation User – Restrict billing out-sorts for the specified invoice creation user (field ERCH-ERNAM).
- Billing Transaction – Retrieve billing out-sorts for the specified billing document reason (field ERCH-ABRVORG).
- Validation Rule – Restricts the bill out-sorts selected to the specified validation rule(s) (field ERCHO-VALIDATION).

#### Tolerance Brackets (Optional)

- Default/Clear brackets (checkbox) – This option enables the default tolerance brackets to be cleared or restored.
- Percentage Tolerance Bracket – Puts the billing out-sorts that are found into brackets specified in the ranges set in this parameter. This is the percentage deviation from the expected amount. This means that both negative and positive ranges must be specified here in order to catch both those below the ranges specified and those above the ranges specified.
- Amount Tolerance Bracket – Puts the billing out-sorts that are found into brackets specified in the ranges set in this parameter. This is the amount deviation from the expected amount. This means that both negative and positive ranges must be specified here in order to catch both those below the expected amount and those above the expected amount.

NOTE: The above ranges are mainly used from a display perspective only. They have no impact on the actual processing of the billing out-sort apart from “grouping” those that are found into these “buckets” for output purposes.

#### Advance Options (Optional)

- Consider Historical Out-sorts – Turn this flag on if you would like the program to consider historical billing out-sorts that have yet to be archived.

#### Technical Settings

All Node5 Architecture programs (including this one) have the ability to specify the amount of parallel processing and the interval “variant” to be used during execution.

These are generic “technical” settings that are available under the button “Technical Settings” in the application toolbar.

Since these settings are generic for all Node5 Architecture programs, a later section in this document specifies the options that are available to you here.

## Billing outsorts – Program results/output

!https://cdn.manula.com/user/3588/img/large/bout-results-display.png!The results of the Bill Out-sort Analysis program are available upon the completion of the main program. After you run the Node5 Architecture program on-line, you are able to monitor the status of the program whilst it executes by repeatedly selecting the “Refresh” button in the application toolbar.

MDR: Run History

Transform Application Log

MDR Program	Report title
/BTR/MDR_PP_ISU_BOUT_ANALYZE	MDR:Process pack for billing outsort analysis

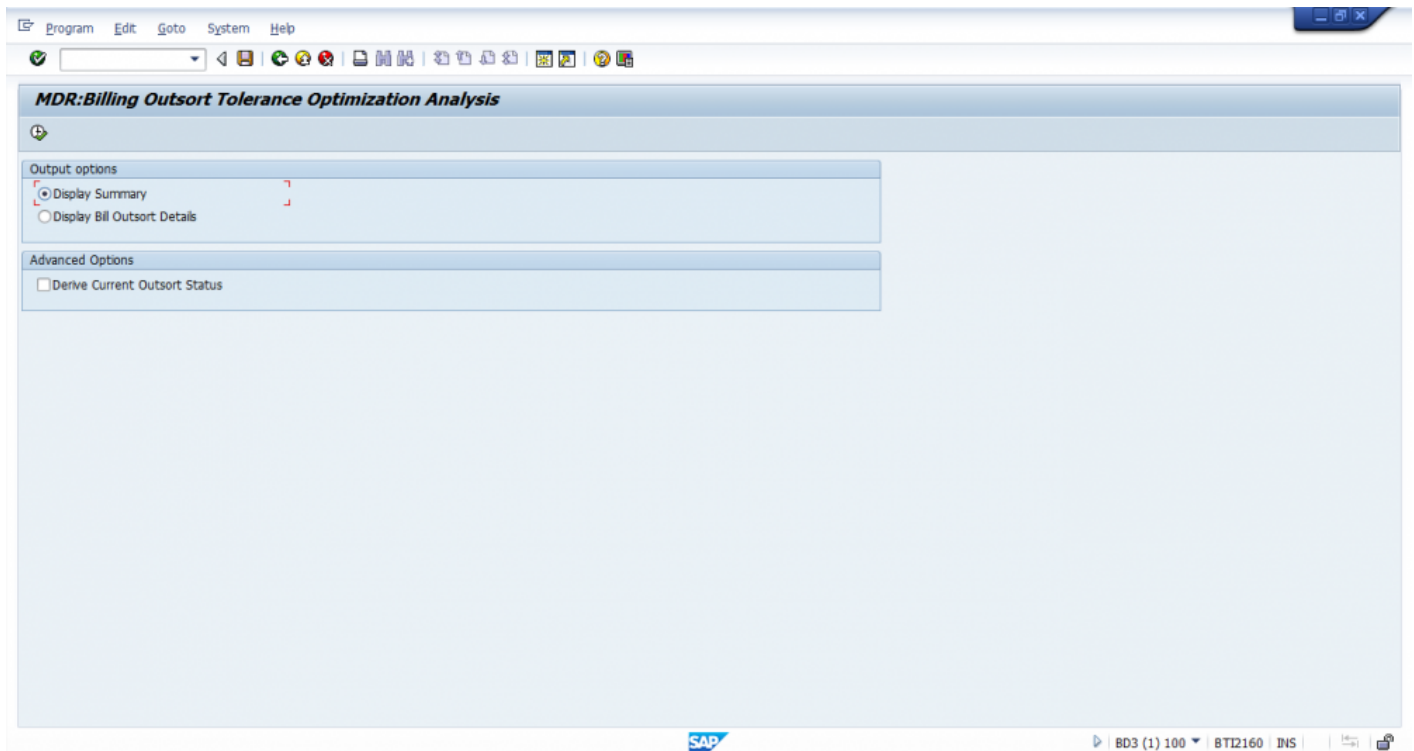
Instance Name	Started By	Start Date	Start Time	End Date	End Time	Instance Status	Comp
	KRAHIMI	06.08.2013	11:16:58		00:00:00	In Process	9%

A new run has been started in background

SAP

» | /BTR/PP\_TOR\_BOUTA sapecides | INS

Select the “Refresh” button until the “Instance Status” becomes “Finished”. You can see how far the program has progressed via the “Comp” column, which represents the percentage complete. Important note: You are able to get to the above screen for a previously run version of this program (or a run that you did not start yourself) by navigating to the “Run History” in transaction /BTR/MDR. Once the program has reached 100% complete and a “Finished” status, you can select the row and press “Transform”. You will then be prompted with a further ability to restrict the output that is displayed:



The following options are now available to restrict the data further.

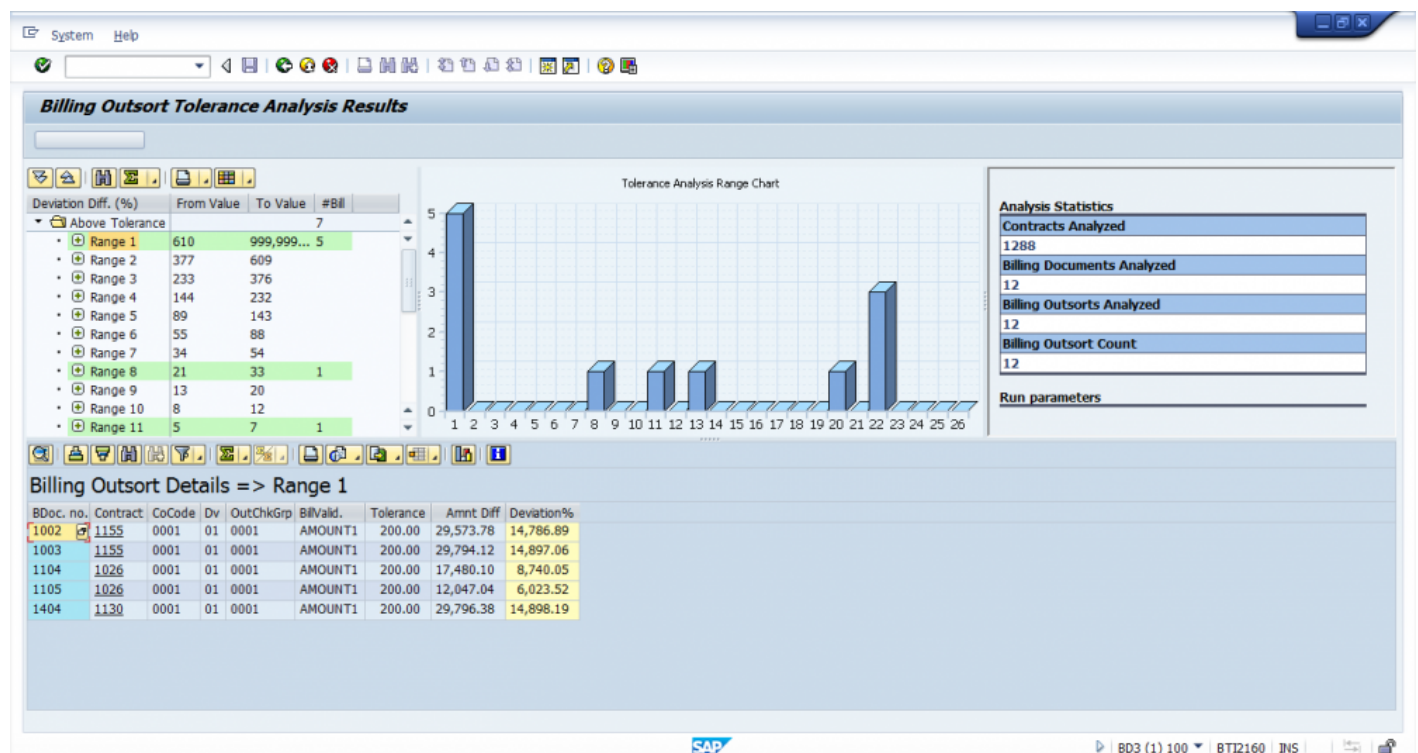
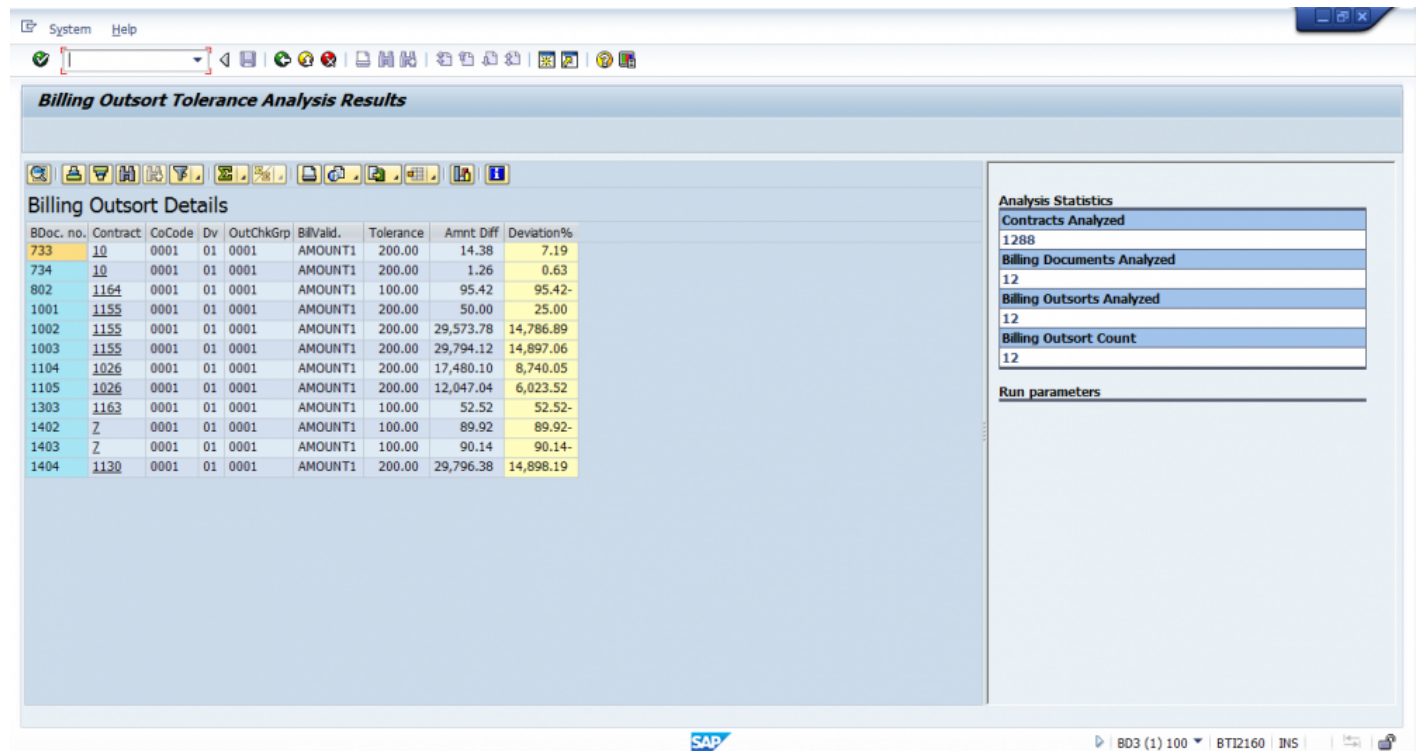
#### Output Options

- Display Summary – This display provides a summarized view of the tolerance bracket ranges with a graphical display and details options.
- Display Bill Outsort Details – This provides a tabular display of the bill out-sort details.

#### Advanced Options

- Derive current out-sorts status – If you are looking at the results of a past run of the program, then between the time at which the program originally ran and the time that you present the results may mean that the status of a particular billing out-sort has changed (e.g. to “released or reversed” by a user). Select this option if you would like to view the current status of billing out-sorts, a red light icon means the out-sort is still outstanding and a green light icon means the out-sort has been released/reversed.

After you are ready to proceed, select “Execute”. You will then be prompted with the selected results of the billing out-sort analysis output.



The output of the Billing Out-sorts Tolerance Analysis program is an ALV grid of data that represents the current state of all billing out-sorts found based upon user selection criteria. On the left of the screen is this list of billing out-sorts. On the right of the screen are the program execution parameters.

By default, the fields displayed in the grid are (from left to right):

- Status

Red light indicates the bill out-sort is still outstanding and a green light indicates that the out-sorts have been released/reversed since the report was run (this is only displayed if the 'Derive Current Outsort Status' checkbox is selected).

- Billing Document No.

Represents the Billing Document number that the billing out-sort belongs to.

- Contract

Represents the unique contract identifier.

- Company code

Represents the company code associated to the contract.

- Division

Represents the division the billing out-sort belongs to.

- Out-sorting Check group

Represents the out-sorting check that is either specified at the Contract level, or is derived from the installation time-slice that the contract is moved into and the associated Outsourcing Check group of the Rate Category.

- Bill Validation

Represents the bill validation check defined for which the out-sort had failed.

- Tolerance

Represents the configured Tolerance amount.

- Amount Difference

Represents the amount difference above or below the tolerance.

- Deviation (%)

Represents the amount difference as a percentage above or below tolerance

You can add/remove into the ALV grid these fields via the standard ALV grid "Change Layout" option. You can also set a default layout according to your preferences so you do not need to change it each time you display the output of the billing out-sort tolerance analysis program.

Furthermore, you can select a particular column (e.g. Amount difference) and sort it from highest to lowest or vice versa. Additionally you can put a filter upon one or more fields in order to restrict what is displayed or search for a particular contract or billing document number with the standard search button in the grid.

You are able to export the data to Excel in order to run enhanced manipulation or analysis of the data.

## Billing outsorts – Program security

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Please restrict access to this program as it can be used to release any billing out-sort within your SAP IS-U system. This can be achieved by restricting access to transaction /BTR/PP\_TORCH\_BOUT via the standard SAP transaction restriction. Also, if you are running this program in the mode that automatically releases billing out-sorts that are within a tolerance range specified, the user executing the program must have authorization to release billing out-sorts.

## **Invoicing outsorts tolerance optimization analysis**

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Analyzes and lists the invoicing out-sorts in the system and determines the deviation from lower/upper tolerance limits (manual outsorts are not considered).

This program can invoke the automatic release of invoicing outsorts based upon a set of selection criteria.

## Invoicing outsorts – Program purpose

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The purpose of the invoicing out-sort tolerance optimization report is to analyze all invoicing outsorts in the system and determine how far above or below the existing tolerances they are. It is useful from a “What if” analysis perspective, in the sense that if a Utility would like to understand what impact a change in the invoicing out-sort tolerances would have. For example, if tolerances were to be widened by \$50, how many invoicing out-sorts would now be able to be released?

As an additional usage of this report, if you were to then change the configuration in Invoicing to widen the tolerance and promote this into production, you can use this program to then automatically release those invoicing out-sorts that are now within the newly set tolerances.



## Invoicing outsorts – Technical description

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This program can be either run on-line or scheduled via a background job. It leverage's the Node5 Architecture framework of Basis Technologies, which enables any ABAP program to execute with parallel processing using background work processes. The user has the flexibility of deciding how many parallel processes can be allotted to the execution of the program. If scheduled in the batch, this can be set in the variant of the program. It breaks the work to be done up by contract account number range and processes each contract account independently.

Program Name:

/BTR/MDR\_PP\_ISU\_IOUT\_ANALYZE

Transaction Name:

/BTR/PP\_TORCH\_IOUTA

## Invoicing outsorts – Program usage

When the program is executed, the user is presented with a set of parameters / select-options in order to select the appropriately required data and action it. The main selection screen is as follows:

**MDR:Process Pack for Invoicing Outsourt Analysis**

Technical Settings

**Main Selection**

Contract Account		to		[Selection]
Business Partner		to		[Selection]
Standard Company Code		to		[Selection]
Outsourt. chk grp inv.		to		[Selection]
Print Document No.		to		[Selection]

**Additional Selections**

Created on		to		[Selection]
Created by		to		[Selection]
Billing Transaction		to		[Selection]
Invoicing validation		to		[Selection]

**Tolerance Brackets**

☒ Default/Clear Brackets

☐ Percentage Tolerance Brackets

Percentage Tolerance Bracket	610	to	999999999	[Selection]
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☐ Amount Tolerance Brackets

Amount Tolerance Brackets	610	to	999999999	[Selection]
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The parameters are grouped into the 3 key areas:

### Main Selection (Optional)

- Contract Account Number – Restricts the invoice out-sorts selected to the contract account numbers or range specified (field FKKVKP-VKONT).
- Business Partner – Restricts the invoice out-sorts selected to the business partner numbers or range specified (field FKKVKP-GPART).
- Standard Company Code – Restricts the invoice out-sorts selected to the standard company code related to the contract account (field FKKVKP-STDBK).
- Invoicing Out-sort Check Group – Restricts the invoicing out-sorts selected to the invoicing out-sort check group(s) specified (field FKKVKP-AUSGRUP\_IN).
- Invoicing Document Number – Restricts the invoicing out-sorts selected to the invoicing document number range specified (field FKKVKP-OPBEL).

### Additional Selections (Optional)

- Invoice Creation Date – Restrict invoicing out-sorts for the specified invoice creation date range (field ERDK-ERDAT).
- Invoice Creation User – Restrict invoicing out-sorts for the specified invoice creation user (field ERDK-ERNAM).
- Billing Transaction – Retrieve invoicing out-sorts for the specified invoice document reason (field ERDK-ABRVORG).
- Validation Rule – Restricts the invoice out-sorts selected to the specified validation rule(s) (field ERDK-VALIDAT\_IN).

### Tolerance Brackets (Optional)

- Percentage Tolerance Bracket – Puts the invoicing out-sorts that are found into brackets specified in the ranges set in this parameter. This is the percentage deviation from the expected amount. This means that both negative and positive ranges must be specified here in order to catch both those below the ranges specified and those above the ranges specified.
- Amount Tolerance Bracket – Puts the invoicing out-sorts that are found into brackets specified in the ranges set in this parameter. This is the amount deviation from the expected amount. This means that both negative and positive ranges must be specified here in order to catch both those below the expected amount and those above the expected amount.

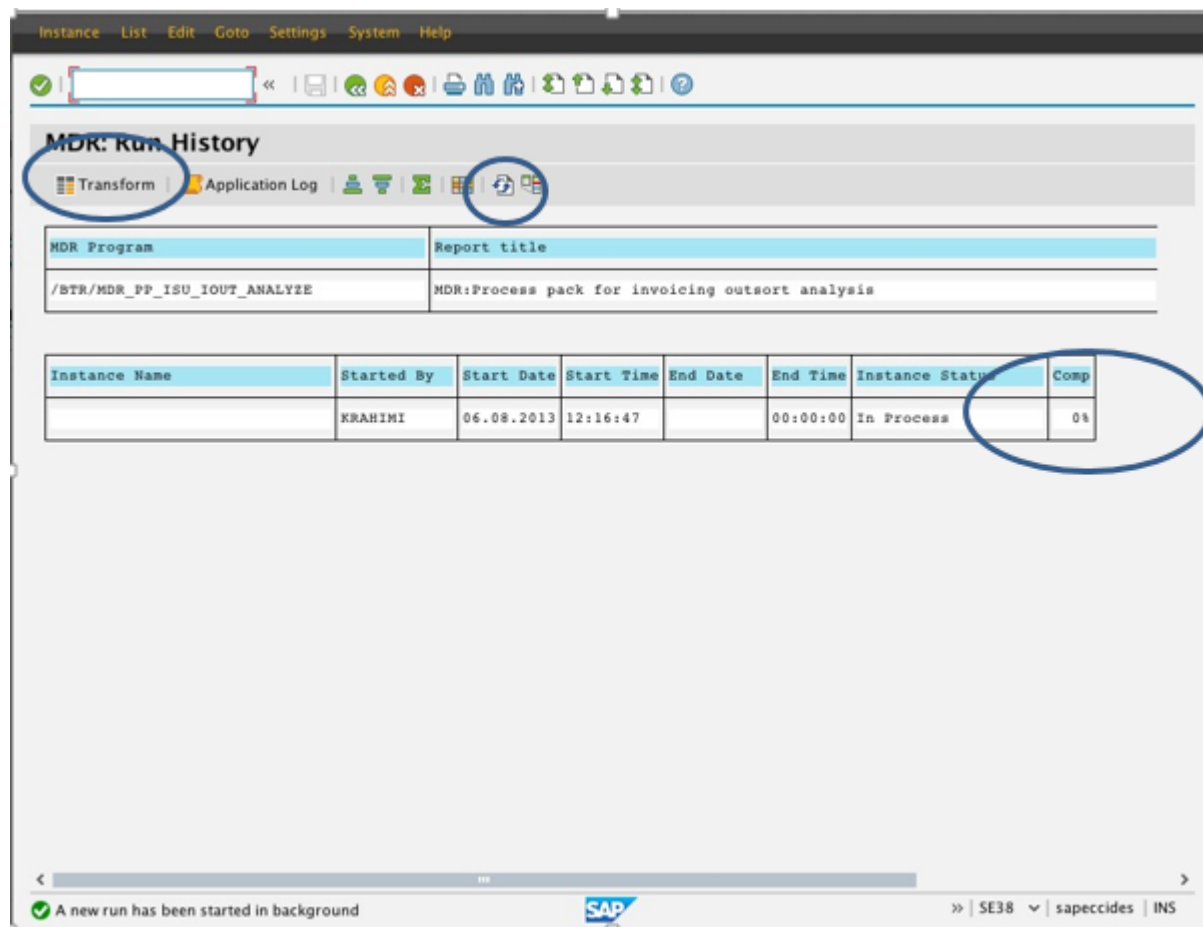
NOTE: The above ranges are mainly used from a display perspective only. They have no impact on the actual processing of the invoicing out-sort apart from “grouping” those that are found into these “buckets” for output purposes.

### Technical Settings

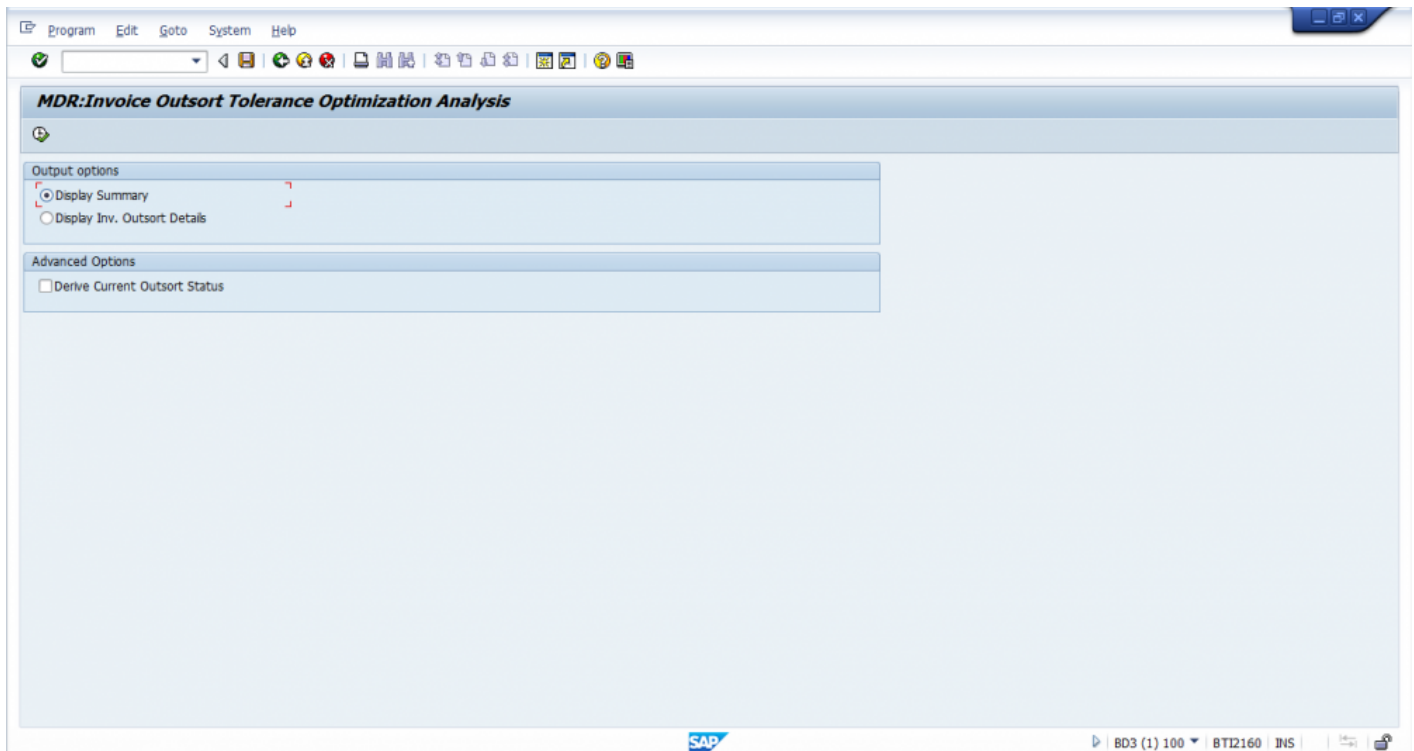
Node5 Architecture Settings – All Torch programs are Node5 Architecture programs and all Node5 Architecture programs have the ability to specify the amount of parallel processing and the interval “variant” to be used during execution. These are generic “technical” settings that are available under the button “Technical Settings” in the application toolbar. Since these settings are generic for all Node5 Architecture programs, a separate section in this document specifies the options that are available to you here.

## Invoicing outsorts – Program results/output

The results of the Invoice Out-sort Analysis program are available upon the completion of the main program. After you run the Node5 Architecture program on-line, you are able to monitor the status of the program whilst it executes by repeatedly selecting the “Refresh” button in the application toolbar.



Select the “Refresh” button until the “Instance Status” becomes “Finished”. You can see how far the program has progressed via the “Comp” column which represents the % complete. Important note: You are able to get to the above screen for a previously run version of this program (or a run that you did not start yourself) by navigating to the “Run History” in transaction /BTR/MDR. Once the program has reached 100% complete and a “Finished” status, you can select the row and press “Transform”. You will then be prompted with a further ability to restrict the output that is displayed:



The following options are now available to restrict the data further.

#### Output Options

- Display Summary – This display provides a summarized view of the tolerance bracket ranges with a graphical display and details options.
- Display Inv. Outsort Details – This should always be set to true in order to output the results within a list. In future versions of the Torch, additional options will be made available here for display purposes.

#### Advanced Options

- Derive Current Outsort Status – If you are looking at the results of a past run of the program, then between the time at which the program originally ran and the time that you present the results may mean that the status of a particular invoicing outsort has changed (e.g. to “released” by a user). Select this option if you would like the output to re-calculate the current status of invoice out-sorts, so those that are no longer out-sorted can be removed. Enabling this option provides the ability to release outsorts from the report.

After you are ready to proceed, select “Execute”. You will then be prompted with the results of the invoicing out-sort analysis output.

**Invoicing Outsort Tolerance Analysis Results**

**Invoicing Outsort Details**

Status	Print Doc.	Contract Acct	BPartner	StdCoCode	Inv. OCG	Inv.valid.	Tolerance	Amnt Diff	Deviation%
	30000000166	200000000506	ZZ	0001	0001	AMOUNT2	200.00	1,525.04	762.52

**Analysis Statistics**

Contract Accounts Analyzed	401
Invoicing Documents Analyzed	26
Invoicing Outsorts Analyzed	1
Invoicing Outsort Count	1

**Run parameters**

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The Display Inv. Outsort Details output option of the Invoicing Out-sorts Tolerance Analysis program is an ALV grid of data that represents the current state of all invoicing out-sorts found based upon user selection criteria. On the left of the screen is this list of invoicing out-sorts. On the right of the screen are the program execution parameters.

By default, the fields displayed in the grid are (from left to right):

- Status

Red light indicates the invoice out-sort is still outstanding and a green light indicates the invoice has been released/reversed since the report was run (this is only displayed if the 'Derive Current Outsort Status' checkbox is selected).

- Print Document No.

Represents the Print Document number that the invoicing out-sort belongs to.

- Contract Account

Represents the unique contract account number.

- Business Partner

Represents the unique business partner number.

- Standard Company Code

Represents the standard company code the contract account relates to.

- Out-sort Check Group for Invoicing

Represents the out-sorting check group that the given Contract Account belongs to.

- Invoice Validation

Represents the validation check defined for which the invoicing out-sort has failed.

- Tolerance

Represents the configured Tolerance amount set for the Invoice.

- Amount Difference

Represents the amount difference above or below the tolerance.

- Deviation (%)

Represents the amount difference as a percentage above or below tolerance .

You can add / remove into the ALV grid these fields via the standard ALV grid “Change Layout” option. You can also set a default layout according to your preferences so you do not need to change it each time you display the output of the invoicing out-sort tolerance analysis program.

Furthermore, you can select a particular column (e.g. Amount difference) and sort it from highest to lowest or vice versa. Additionally you can put a filter upon one or more fields in order to restrict what is displayed or search for a particular contract account or invoicing document number with the standard search button in the grid.

#### Options Available

- Individual Release (this option is only available if the derive current status checkbox is selected).

You can release specific invoice out-sorts by selecting and highlighting the individual line item on the ALV grid then clicking on the green flag on the grid options menu.

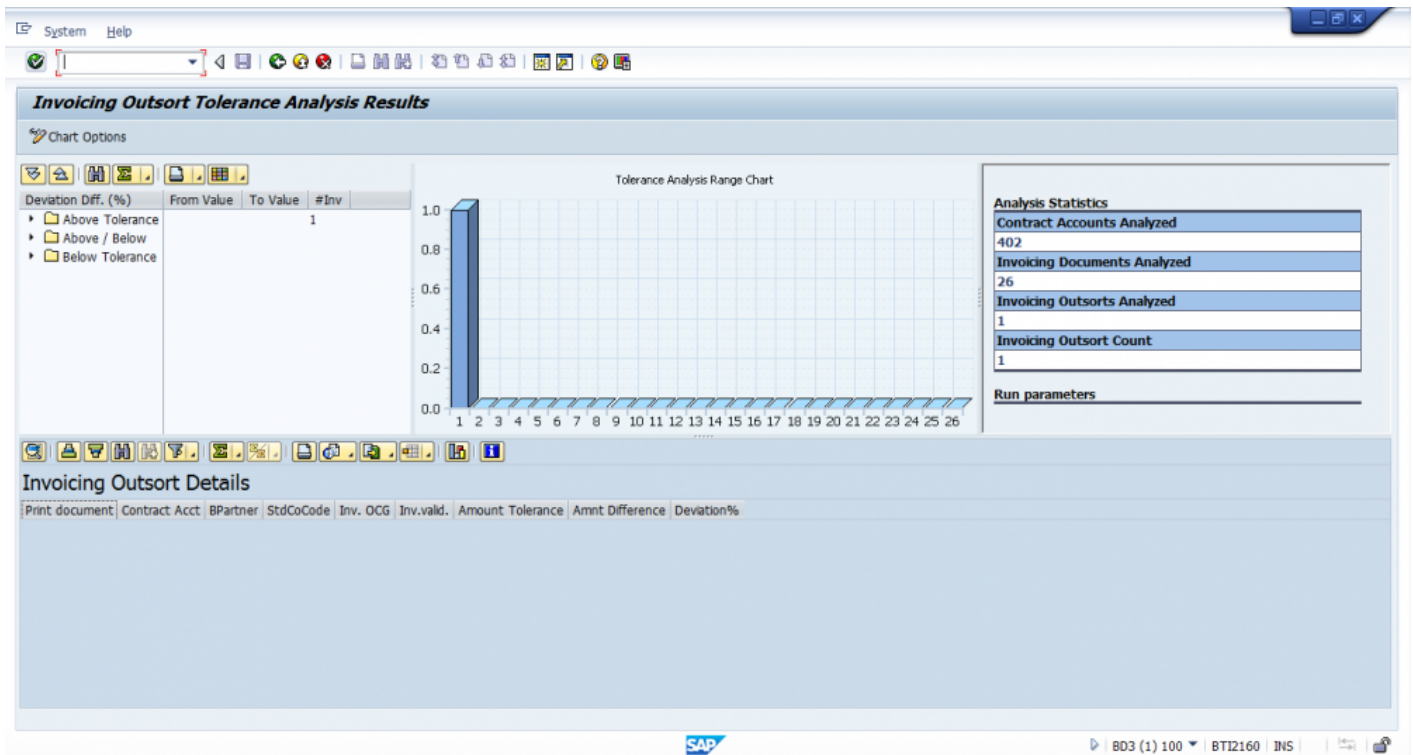
- Release All (this option is only available if the derive current status checkbox is selected).

Alternatively; all the invoicing out-sorts can be mass released by clicking on the “Release All” button on the ALV grid options menu. This will take you to automatic invoicing out-sort release Torch program (for reference /BTR/MDR\_PP\_ISU\_TOR\_IOUT\_AUTOREL) and pass through all visible invoicing out-sort document numbers.

- Export

Finally, you are able to export to Excel in order to run enhanced manipulation or analysis of the data.

The Summary output option displays a dashboard containing an ALV grid of data on the lower section of the screen that represents the current state of all invoicing out-sorts found based upon user selection criteria. On the left of the screen is this list of billing out-sorts tolerance ranges. These are grouped into 3 sections, above tolerance – any results in this section are marked in green, above/below – results in this section are marked in blue and below tolerance – results in this section are marked in red. On the right of the screen are the program execution parameters. The center contains an interactive graphical display of the data that can be edited using the chart options icon. The bars representing each tolerance range can be clicked to update the ALV grid to display that brackets invoice outsorts detailed view.





## Invoicing outsorts – Program security

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Please restrict access to this program as it can be used to release any invoicing out-sort within your SAP IS-U system. This can be achieved by restricting access to transaction /BTR/PP\_TORCH\_IOUTA via the standard SAP transaction restriction. Also, if you are running this program in the mode that automatically releases invoicing out-sorts that are within a tolerance range specified, the user executing the program must have authorization to release invoicing out-sorts.

# Performance considerations

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This topic outlines the performance considerations required to use this product.

## Node5 Architecture – Framework

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All Torch programs are built within the Node5 Architecture framework in order to achieve performance for high volume SAP IS-Utilities customers. The Node5 Architecture enables ABAP programs such as those built for the Torch process pack to be “scaled” according to the resources available within your underlying SAP system hardware.

The Node5 Architecture has a number of SAP customers who are able to achieve “direct linear scalability” of up to 300 parallel processes. This means that 10 hour batch jobs are able to run in approximately 2 minutes.

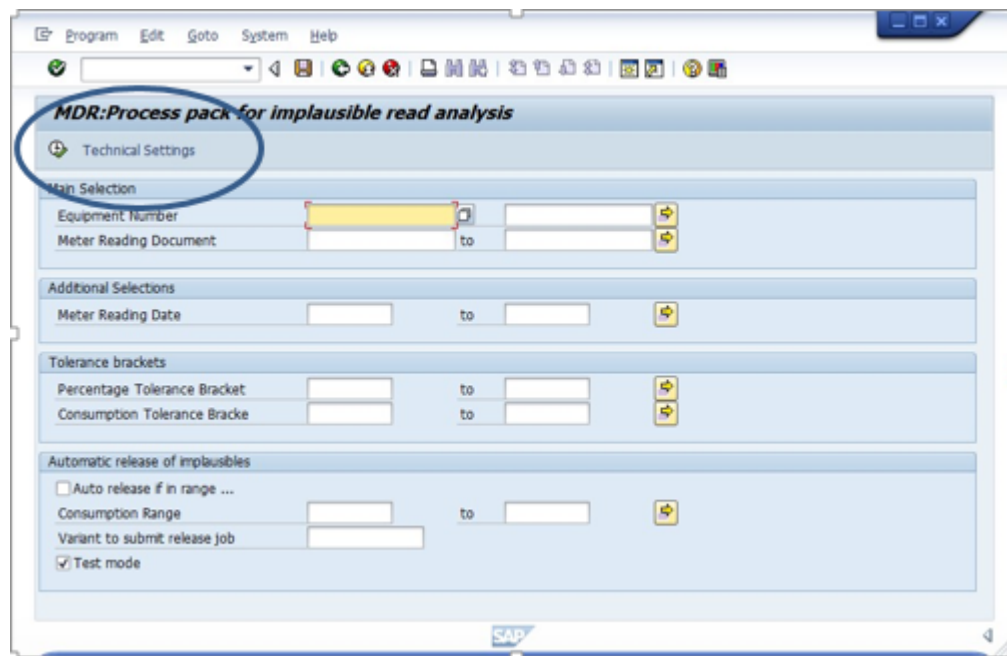
This of course means that you must schedule your Torch programs with appropriate amounts of parallel processing.

If Torch programs are run within the batch schedule, then you can specify the amount of parallel processing directly within the variant that the Torch program is run with.

## Node5 Architecture – Technical settings

All Torch programs are built within the Node5 Architecture (formally known as Mass Data Runtime MDR) framework in order to achieve performance for high volume SAP IS-Utilities customers.

All Torch programs have a “Technical Settings” option available within the application toolbar next to the “Execute” button (see below).



If you select this button, you will be prompted with the following screen:

MDR:Process pack for implausible read analysis

**Interval Settings**

Perform processing using intervals of: MDR: Equipment Interval Generator

Interval variant: [Yellow Highlighted]

**Distribution**

☒ Number of batch jobs across all servers [Text Box]

☐ Run online as a single process (debugging mode)

**Other settings**

☐ Wait for run to complete before finishing

☐ Output application log messages to job log

Distribution List: [Text Box] [Right Arrow Button]

Message log level: Other

[Help] [Save] Check [Close]

The parameters specified here are:

**Label** – The first is a label that can be specified to identify this particular execution – e.g. “Implausible Read Tolerance Analysis for May”.

**Interval Object** – This represents the Node5 Architecture interval generator which creates discrete and independent intervals of work to be processed in parallel. The value here is not changeable as it is specific to each program. In the example above, the implausible read analysis program is broken up by Equipment number ranges. The billing out-sort analysis program uses Contract number ranges and the Invoicing out-sort analysis program uses Contract Accounts.

**Interval Variant** – This must be generated prior to the run and can be re-used across Node5 Architecture programs that use the same interval object. It represents the “packet size” of how many intervals there are to be processed independently or how many objects are within each interval. These interval variants are generated through the standard Node5 Architecture program /BTR/MDR\_INTERVAL\_GENERATION (or by clicking “Interval generation” from the standard Node5 Architecture transaction /BTR/MDR). You can setup intervals to either have an “interval size” (how many objects are within each interval) or you can set them up by a number – e.g. 1000 intervals. This should be representative of how many objects you have. You should regularly “refresh” your interval variants (e.g. once per day / week / month) through the use of program /BTR/MDR\_INTERVAL\_REGENERATION and the configuration within table /BTR/INTVALVARC which specifies how often (in days) that an interval object / variant should be refreshed. This is to avoid “skewing” where the last interval to be processed becomes larger and larger as more and more master and / or transactional data is added to the SAP system.

Number of batch jobs across all servers – This specifies the number of parallel processes with which to run the Node5 Architecture program. With the Node5 Architecture, we are always looking for “direct and linear scalability”, i.e. if you run a program with 10 parallel processes then it should run 10 times faster than with a single process. The Node5 Architecture uses background work processes rather than dialog processes. You can limit the amount of parallel processing by restricting the number of background work processes available. You are also able to restrict a user from specifying this value. Further, you can default a value into this field by specifying the “Parameter Defaults” of a Node5 Architecture program via transaction /BTR/MDR. Finally, you can directly set this value within the variant that you run the Node5 Architecture Torch program with.

Run online as a single process (debugging mode) – This is only used when debugging Node5 Architecture programs and ensures the whole program runs within a single dialog process rather than a background one. It runs sequentially so both hard and soft break-points will be reached.

Wait for run to complete before finishing – This is often used when running Node5 Architecture programs on-line or when executing them via a job scheduler. It will ensure the parent process waits until all child parallel processes have completed. Once all child parallel processes have finished, control is returned to the parent for completion.

Distribution List – After a program completes within the Node5 Architecture framework it is able to send a SAP office document or external email (e.g. to Outlook or Lotus Notes) to a set of recipients that can be specified here. This means that the business users who receive the output of the reports can be specified in this list. After the program completes, an email will be automatically generated from the SAP system and sent to external email addresses (via SAP Connect). Upon receiving the email in their email client, the user can select the attachment to open the SAP GUI in order to directly view the output of the program.

Message log level – Lower limit for the priority of messages output to the application log by Node5 Architecture. For example, you can restrict output of informational application log messages by increasing the log level via this parameter.

The most important parameters for Torch programs are:

Number of batch jobs across all servers – Specify the number of jobs with which you want to run the program with. Ensure that sufficient background work processes are available. Be mindful that too much parallel processing can impact other batch/dialog processes that are running at the same time. This value will be dependent upon the how fast you would like to run the program and how much capacity you have available at the time of running the program.

Interval Variant – Pre-generated by the interval generation mechanism described earlier as standard in the Node5 Architecture framework.

Please Note: All of these parameters can be defaulted either when executing the transaction on-line or saved within a variant if the program executed in the background or via a job scheduler.

## Node5 Architecture – Execution sequence

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After you have entered the appropriate parameters for any of the Torch programs / transactions, the job will be executed immediately when run via “Execute” or started through a background job with a variant. The execution sequence is as follows:

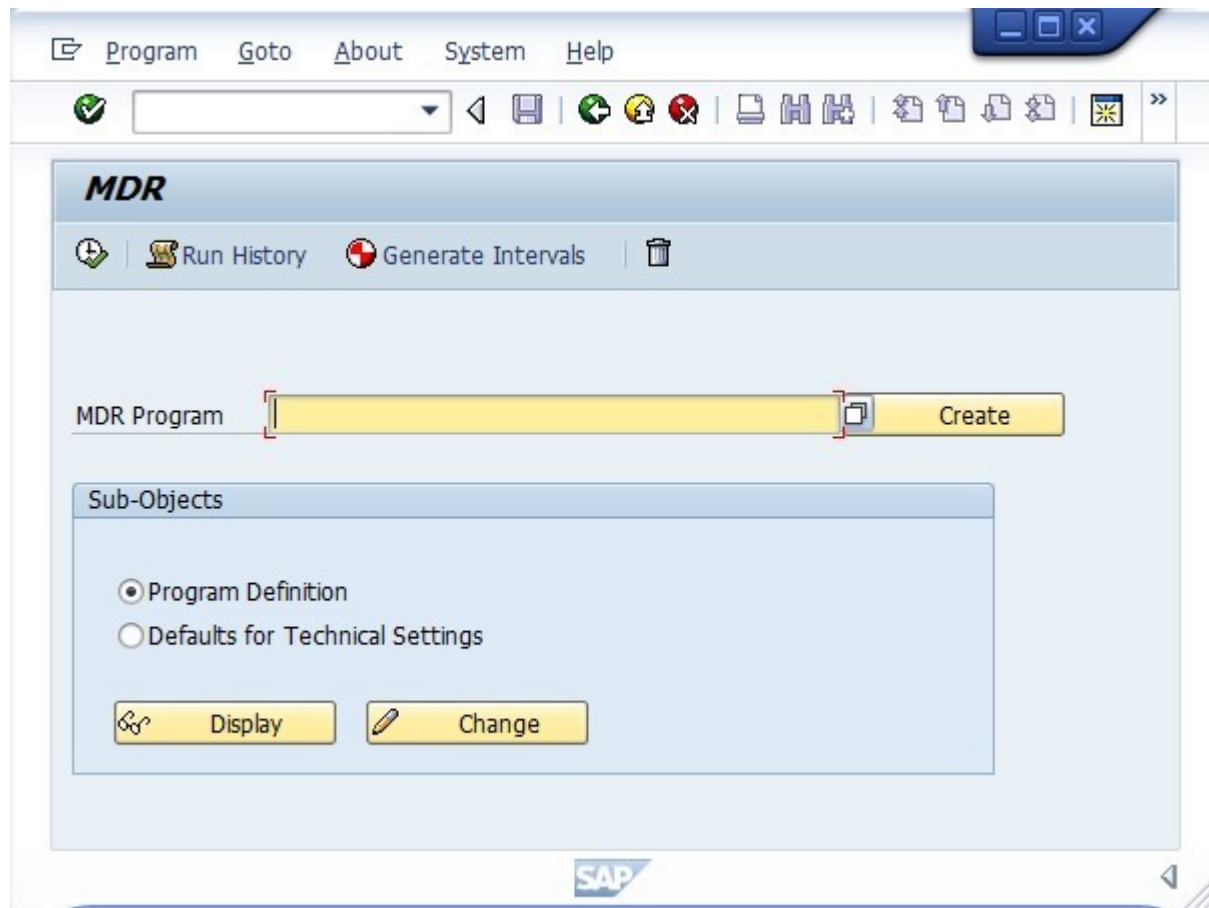
- 1) Creation of “intervals” that represent the work to be processed (either from a pre-generated interval variant or dynamically created at run-time)
- 2) Processing of each interval to determine the business logic required dependent upon the program being executed
- 3) Collation of results for aggregation of what has been done across the parallel processes
- 4) Display of aggregated result as an output (ad-hoc)

Step 2 is done with parallel processing. Steps 1 and 3 in the above sequence are done in a sequential manner with a single work process. The final step 4 is optionally performed if a Torch program has a result to be output for analysis by the user.



## Node5 Architecture – Monitoring program execution

After the program has been set running, you are able to immediately monitor the program execution. Alternatively, in another session, you are able to go to the transaction /BTR/MDR and then click on the “Run History” option.



**MDR: Run History**

Started By	COLIVER	to		→
Start Date	10.01.2013	to		→
Start Time	00:00:00	to	00:00:00	→
End Date		to		→
End Time	00:00:00	to	00:00:00	→
Instance Status		to		→

Enter today's date and you will then be presented with the "instance" which represents the run of the corresponding Torch program. You should see that it is currently in progress, the percentage complete and the number of parallel processes that are currently running.

**MDR: Run History**

Transform Application Log Results Intervals Variants

MDR Program	Report title	Run Count
/BTR/MDR_PP_FBDLS	MDR Tool: Conversion of Logical System Names (Fast)	1

Instance Name	Started By	Start Date	Start Time	End Date	End Time	Instance Status	Comp	Est. Time	Active Job	-	+
First test run of Fast BDLS	COLIVER	01.05.2013	05:14:52	01.05.2013	05:15:54	Finished	100%	00:00:00			

Interval	Low Value	High Value	Status	Results
1	SCOMM_CATEGORYI	LOGSYS	Completed	1
2	SCPEC_TERMCONV	LOGSYS	Completed	1
3	SCPEC_REFDATERI_I	LOGSYS	Completed	1
4	SRSTCMASSTERLOAD	LOGSYS	Completed	1
5	SCRMFILTAB	REM_LOGSYS	Completed	1
6	SFTI_BI_REQFLDS	LOG_SYS	Completed	1

If you are in expert mode, you are then able to increase (or decrease) the number of parallel jobs being run by selecting the “left” and “right” arrows appropriately.

You are also able to select the instance and then choose “Intervals” to see which intervals have currently been processed, which are currently in progress and those that are yet to be done. Select the “Refresh” button to refresh the current progress of the intervals.

## Important notes

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Please keep in mind the following when executing any of the Torch programs:

- Increase available background jobs – The Node5 Architecture framework makes use of background work processes rather than dialog. Increase how many are available in the system using operation modes to ensure there is sufficient capacity available for parallel processing.
- Set the number of intervals appropriately – Each interval represents discrete and independent pieces of work to be processed. An example is that an interval represents equipment records with identifiers from 0000050000 through to 0000100000. If you intend to run the program with 10 parallel processes, then as a general rule of thumb is that you should have somewhere from 10 to 100 times as many intervals. Therefore, there should be at least 100 to 1000 intervals. A separate rule of thumb is that you take the number of objects to be processed (e.g. 1 million equipment records) and divide by 1000. In that case you would have 1000 intervals with 1000 equipment records within each interval.
- Monitoring Options – The progress of the program can be monitored through the use of the standard Node5 Architecture framework monitoring tool to understand progress. This is described in an earlier section of this document.

# Conclusion

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This document has provided information on the Node5 Architecture BDI App for the Torch – Tolerance Optimization Report – which is comprised of a number of SAP transactions and programs that are executed in order to understand and adjust billing, invoicing and implausible read tolerances.

All of these programs run within the Node5 Architecture framework which enables parallel processing capabilities for ABAP in order to achieve performance on high volume SAP IS-U customers.

If you require further assistance or support, please visit our web-site at: [www.basistechnologies.com](http://www.basistechnologies.com)

Alternatively, you can request support through our support portal at:  
[www.basistechnologies.com/customer\\_support](http://www.basistechnologies.com/customer_support)