Oracle Fusion Human Resources

How do I administer Time and Labor rules using fast formulas?

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Contents

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1 Formula Types, Contexts, Functions, and Input Attributes for Workforce Management

Rule Templates, Rules, and Rule Sets for Time and Labor

You configure time validations, processing, and compliance using fast formula, rule templates, rules, and rule sets.

Rule Templates

Rule templates make it easy to adapt a formula for use with different rules. The formula parameters and outputs are easy to identify and configure in a template. You don't have to work with the whole formula statement to figure out what details you must change to achieve a particular result.

The rule template makes sure that you satisfy these conditions:

- The parameters are of the correct parameter type.
- The output uses only specific time attributes.
- The correct number of outputs is associated with the formula results.

Rules

When you create a rule, you select a template to use rather than a formula. The template automatically populates the description of all outputs and helps you enter correct parameter values. You can create multiple rules from a single template, varying the parameter and output values of each rule. For example, you create two rules using a time entry rule template for maximum period. The defined maximum limit of the rules is 36 and 40 hours, respectively.

Rule Type	Description	Rule Use Example
Advanced time category	Defines advanced conditions that you then associate with a time category.	Create time interaction rules to find time events or time entries that don't match published schedule times.
Time calculation	Creates or updates time card entries and uses the data to create calculated results based on formula logic.	Handle overtime or premium pay by updating reported time or creating other calculated time.
Time device	Evaluates time events imported from time collection devices and creates time entry exceptions.	Create time entry exceptions for entries affected by time reported outside the specified grace period.
Time entry	Validates time card entries and generates a message with a defined severity.	When reported time exceeds a specified weekly maximum, display the specified message.
Time submission	Identifies when to automatically save and submit time card entries created with time events imported from time collection devices.	Automatically save a time card after each Out application event.

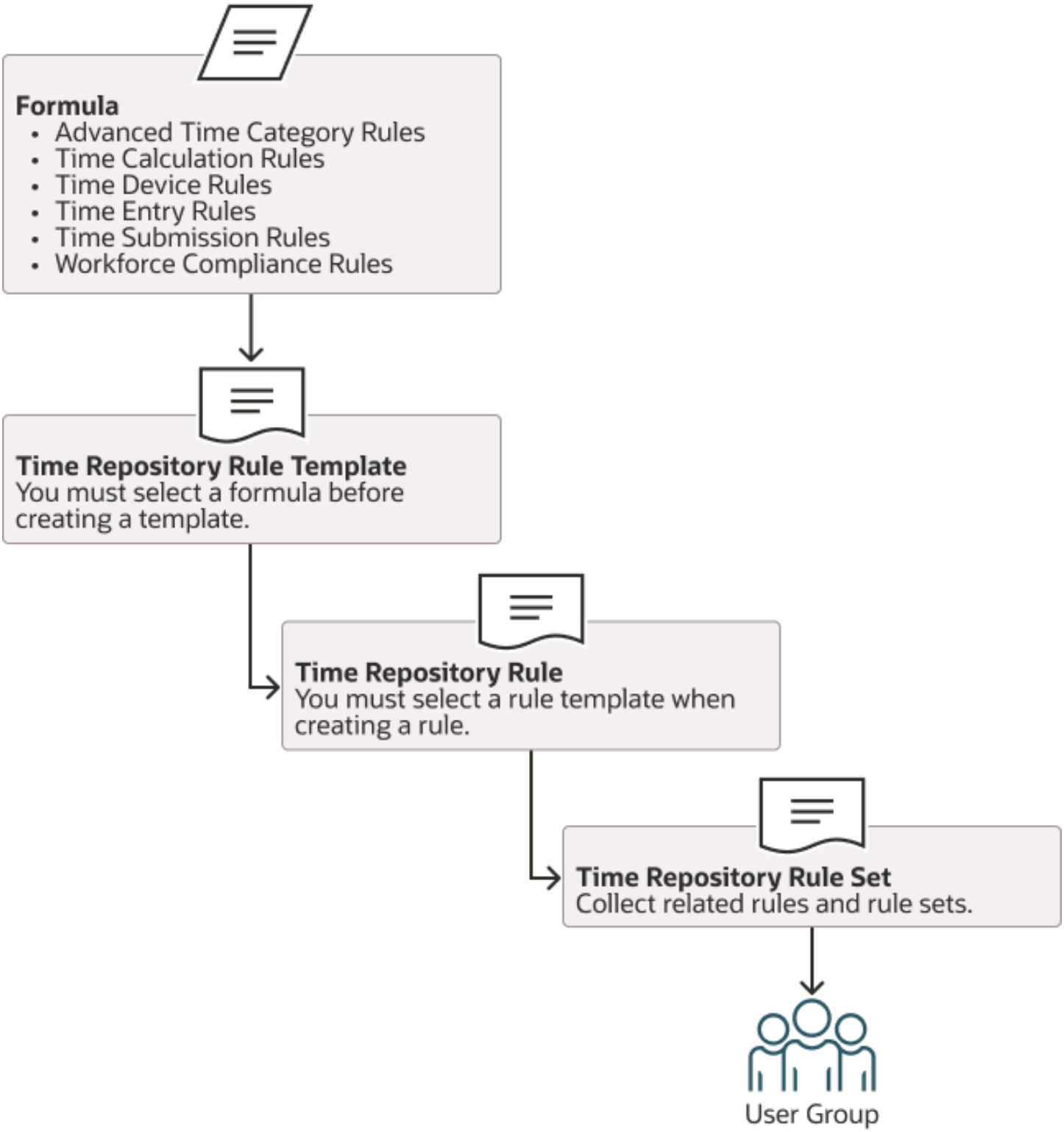
Rule Type	Description	Rule Use Example
Workforce compliance	Identifies upcoming compliance exceptions by reviewing time card data and unprocessed time events to help you prevent or quickly fix any exceptions.	Notify managers when young people are approaching mandated worked time limits.

Rule Sets

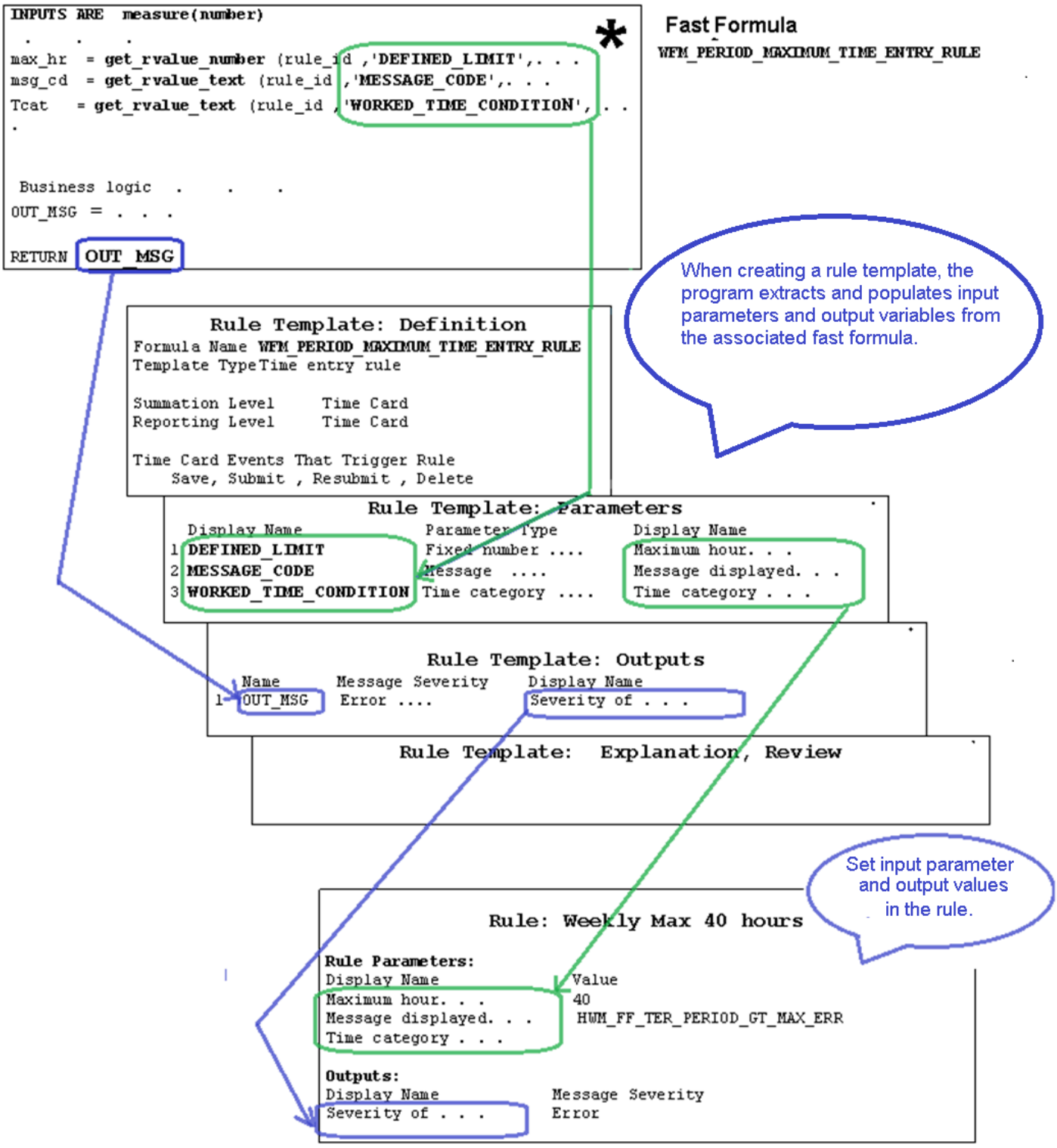
A rule set is a date-effective collection of rules or rule sets of the same type. Effective dates enable you to add, delete, and edit rules and embedded rule sets within the rule set. You associate rule sets to groups of workers with similar time validations or processing requirements with time processing profiles.

Associations Among Formulas, Rule Templates, Rules, and Rule Sets

This high-level flow shows the association among formulas, rule templates, rules, and rule sets.



This more detailed example follows the Defined_Limit parameter, used to set the maximum number of work hours. You see the parameter in the time entry rule formula associated with the rule template. It appears on the parameters page of the rule template, and then in the parameters section of the rule.


INPUTS ARE measure(number)
max_hr = get_rvalue_number (rule_id ,'DEFINED_LIMIT',. . .
msg_cd = get_rvalue_text (rule_id ,'MESSAGE_CODE',. . .
Tcat = get_rvalue_text (rule_id ,'WORKED_TIME_CONDITION',. . .
Business logic . . .
OUT_MSG = . . .
RETURN OUT_MSG
Fast Formula
WFM_PERIOD_MAXIMUM_TIME_ENTRY_RULE
When creating a rule template, the program extracts and populates input parameters and output variables from the associated fast formula.
Rule Template: Definition
Formula Name WFM_PERIOD_MAXIMUM_TIME_ENTRY_RULE
Template TypeTime entry rule
Summation Level Time Card
Reporting Level Time Card
Time Card Events That Trigger Rule
Save, Submit , Resubmit , Delete
Rule Template: Parameters
Display Name
1 DEFINED_LIMIT
2 MESSAGE_CODE
3 WORKED_TIME_CONDITION
Parameter Type
Fixed number ....
Message ....
Time category ....
Display Name
Maximum hour. . .
Message displayed. . .
Time category . . .
Rule Template: Outputs
Name
1 OUT_MSG
Message Severity
Error ....
Display Name
Severity of . . .
Rule Template: Explanation, Review
Set input parameter and output values in the rule.
Rule: Weekly Max 40 hours
Rule Parameters:
Display Name
Maximum hour. . .
Message displayed. . .
Time category . . .
Value
40
HWM_FF_TER_PERIOD_GT_MAX_ERR
Outputs:
Display Name
Severity of . . .
Message Severity
Error

Formula Types for Workforce and Time Rule Templates

These are the available formula types for workforce and time rule templates:

- Time Advanced Category Rule
- Time Calculation Rule
- Time Device Rule
- Time Entry Rule
- Time Submission Rule
- Workforce Compliance Rule

Delivered formulas created from these formula types have the WFM designation in the name.

Other WFM formula types available for WFM formulas but not for rule templates are:

- Workforce Management Subroutine
- Time Management Utility

Reference

For information about array processing versus normal fast formulas, including delivered equivalent formulas with annotations, see *Array Processing Formulas*. You can also access a spreadsheet with the Workforce Management database items.

Time Advanced Category Rule Formula Type

To create formulas that identify time events and entries using complex logic not available for time categories, use this formula type. You can select only formulas of this type when you create advanced time category rule templates.

Time Calculation Rule Formula Type

To create formulas that create or update time entries, use this formula type. The formulas also use relevant time data to create calculated time results.

You can select only formulas with this formula type when creating time calculation rule templates.

Header Indicator	Description
Rule Classification	Choice list with the values applicable to time calculation rules
Rule Execution Type	Specify whether rules must create more hours or update existing hours. This indicator displays only for time calculation rule templates when the associated formula includes this indicator. Examples:

Header Indicator	Description
	• **Create**: Rule processing creates total calculated time of 12 hours, which is 2 hours more than the reported time. This keeps the 10 hours of Regular time at the regular hourly rate. It also creates 2 hours of Premium time at .5 times the regular hourly rate. Calculation example: `(10 hours * 10 USD) + (2 hours * 5 USD) = 110 USD` • **Update**: Rule processing creates total calculated time of 10 hours, which matches the reported time. Processing adjusts the pay rate for 2 of the 10 reported hours. It does this with 8 hours of Regular time at the regular hourly rate, and 2 hours of Overtime at 1.5 times the regular hourly rate Calculation example: `(8 hours * 10 USD) + (2 hours * 15 USD) = 110 USD`
Summation Level	Specify at what level the rule applies. This indicator displays only when the associated formula includes this indicator. • **Details**: Process the rule against all time entries that match the time category condition. • **Day**: Process the rule against hours entered for the entire day that match the time category conditions. • **Time Card**: Process the rule against hours entered for the entire period that match the time category conditions.

Time Device Rule Formula Type

To create formulas that evaluate time device events, use this formula type. Also create time entry exceptions, when appropriate. You can select only formulas with this formula type when you create time device rule templates.

Header Indicator	Description
Rule Classification	Choice list with the values applicable to time calculation rules
Summation Level	Specify at what level the rule applies. This indicator displays only when the associated formula includes this indicator. • **Details**: Process the rule against all time entries that match the time category condition. • **Day**: Process the rule against hours entered for the entire day that match the time category conditions. • **Time Card**: Process the rule against hours entered for the entire period that match the time category conditions.
Reporting Level	Specify at what level to display the rule message results. This indicator displays only when the associated formula includes this indicator. • **Details**: Display rule results for all time entries that match the time category condition. • **Day**: Display rule results for the hours reported for the entire day that match the time category conditions. • **Time Card**: Display rule results for the hours reported for the entire period that match the time category conditions.

Header Indicator	Description
Suppress Duplicate messages Display	Specify how to handle the generation of repeated messages by selecting one of these two values: • **Yes**: Display the message just once. • **No**: Display the message every time that the message generation event occurs.

Time Entry Rule Formula Type

To create formulas that validate time card entries and generate messages with the specified severity when appropriate, use this formula type. You can select only formulas with this formula type when you create time entry rule templates.

Header Indicator	Description
Rule Classification	Choice list with the values applicable to time calculation rules
Summation Level	Specify at what level the rule applies. This indicator displays only when the associated formula includes this indicator. • **Details**: Process the rule against all time entries that match the time category condition. • **Day**: Process the rule against hours entered for the entire day that match the time category conditions. • **Time Card**: Process the rule against hours entered for the entire period that match the time category conditions.
Reporting Level	Specify at what level to display the rule message results. This indicator displays only when the associated formula includes this indicator. • **Details**: Display rule results for all time entries that match the time category condition. • **Day**: Display rule results for the hours reported for the entire day that match the time category conditions. • **Time Card**: Display rule results for the hours reported for the entire period that match the time category conditions.
Suppress Duplicate messages Display	Specify how to handle the generation of repeated messages by selecting one of these two values: • **Yes**: Display the message just once. • **No**: Display the message every time that the message generation event occurs.
Process Empty Time Card	Specify whether to process time card days with no time entry values. If you select **Yes**, then the rule processes all entries, not just those with hours. Example: A worker reports these time entries: • Day 1: 8 hours • Day 2: 8 hours • Day 3: No reported hours • Day 4: 4 hours

Header Indicator	Description
	• Day 5: 8 hours • Day 6: No reported hours • Day 7: No reported hours If you select **Yes**, the rule with this formula type generates error messages for days 3, 4, 6, and 7. If you select **No**, the rule generates a message for day 4 only.

Time Submission Rule Formula Type

To create formulas that identify when to automatically save and submit time card entries created from time device events, use this formula type.

You can select only formulas with this formula type when you create time submission rule templates.

Header Indicator	Description
Rule Classification	Choice list with the values applicable to time calculation rules
Summation Level	Specify at what level the rule applies. This indicator displays only when the associated formula includes this indicator. • **Details**: Process the rule against all time entries that match the time category condition. • **Day**: Process the rule against hours entered for the entire day that match the time category conditions. • **Time Card**: Process the rule against hours entered for the entire period that match the time category conditions.

Workforce Compliance Rule Formula Type

To create formulas that identify potential or actual noncompliance with organizational and regulatory policies, use this formula type. You can select only formulas with this formula type when you create workforce compliance rule templates.

You must create your compliance formulas and then the rule templates, rules, and rule sets that use those formulas.

Header Indicator	Description
Rule Classification	Choice list with the values applicable to time calculation rules
Summation Level	Specify at what level the rule applies. This indicator displays only when the associated formula includes this indicator. • **Details**: Process the rule against all time entries that match the time category condition.

Header Indicator	Description
	• **Day**: Process the rule against hours entered for the entire day that match the time category conditions. • **Time Card**: Process the rule against hours entered for the entire period that match the time category conditions.
Reporting Level	Specify at what level to display the rule message results. This indicator displays only when the associated formula includes this indicator. • **Details**: Display rule results for all time entries that match the time category condition. • **Day**: Display rule results for the hours reported for the entire day that match the time category conditions. • **Time Card**: Display rule results for the hours reported for the entire period that match the time category conditions.
Suppress Duplicate messages Display	Specify how to handle the generation of repeated messages by selecting one of these two values: • **Yes**: Display the message just once. • **No**: Display the message every time that the message generation event occurs.

Workforce Management Subroutine Formula Type

Fast formulas have many limitations, including that you can't create functions or procedures inside the formula. This formula type is a workaround for that limitation. You use this formula type to create formulas that provide specific functionality for parent formulas.

Because this formula type isn't associated with any rule template type, you can't select it when you create rule templates. You can call this formula in formulas of other formula types.

Time Management Utility Formula Type

This formula type has functionality that's very similar to the Workforce Management Subroutine formula type. You can use the Workforce Management Subroutine and Time Management Utility formula types interchangeably.

When you use the most appropriate type, people can more easily identify which formulas are function-specific and which formulas are general utility for all formulas.

Formula Contexts for Workforce Management

Formula contexts of different types define the formula's application-specific execution context. Control this context by setting context values for the formula. These contexts affect database item and formula function values. Usually, you set context values immediately before calling a formula.

You can now include context values in formula expressions, so you no longer have to set context values on entering a formula. You can test whether a context value is set, and modify the execution context of a formula in the formula.

<table>
<tr><th>Context</th><th>Description</th></tr>
<tr><td>HWM_FFS_ID</td><td>Most workforce management functions use the unique fast formula session ID and rule ID as a key identifier for logs and work area related record processing.

For more details, see the next topic on Workforce Management functions.</td></tr>
<tr><td>HWM_SUMMATION_LEVEL</td><td>The summation level comes from the rule template page and indicates how to summarize time cards. This table describes the valid values.

<table><tr><th>Valid Value</th><th>Description</th></tr><tr><td>DETAIL</td><td>Process each record individually. Usually no summation is required.</td></tr><tr><td>DAY</td><td>Sum and calculate values on a daily basis.</td></tr><tr><td>TIMECARD</td><td>Sum and calculate values for the entire time card period.</td></tr></table></td></tr>
<tr><td>HWM_RECORD_POSITION</td><td>The record position value indicates the type of record getting processed. This table describes the valid values.

<table><tr><th>Valid Value</th><th>Description</th></tr><tr><td>DETAIL</td><td>Detail record</td></tr><tr><td>END_DAY</td><td>End of day record; enables day summation calculation</td></tr><tr><td>END_PERIOD</td><td>End period record; the last record for the time card</td></tr></table>
The fast formula gets the time card records in this sequence, repeating the steps for each day of the time card period:

1. Detail records for the time card day, sorted in a predefined order.
2. End of day record for the day.
The end period record for the time card is the final record that the formula gets from the time card.

Note: Applies to nonAP formulas only. For AP formulas, use HWM_CTXARY_RECORD_POSITIONS in the 'Inputs Are...' parameter instead of HWM_RECORD_POSITION context.</td></tr>
<tr><td>HWM_RULE_ID</td><td>The rule ID is the key for the rule currently getting processed. This key is used to get parameter values set in the rule and, along with HWM_FFS_ID, to store and retrieve work area values.</td></tr>
<tr><td>HWM_PROJECT_ID</td><td>The project ID associated with the time card record currently getting processed.</td></tr>
<tr><td>HWM_RESOURCE_ID</td><td>The resource ID or person ID associated with the time card record currently getting processed.</td></tr>
<tr><td>HWM_CTX_SEARCH_END_DATE</td><td>The end date used to search for the relevant records to process.</td></tr>
</table>

Context	Description
HWM_CTX_SEARCH_START_DATE	The start date used to search for the relevant records to process.
HWM_MEASURE_DAY	The total measure for the time card day to use when processing records. Measure is a quantity, typically of hours, but it can also be units.
HWM_MEASURE_PERIOD	The total measure for the time card period to use when processing records. Measure is a quantity, typically of hours, but it can also be units.
HWM_SUBRESOURCE_ID	The subresource ID or assignment ID associated with the time card record currently getting processed.
HWM_CTX_PERIOD_END_DATE	Date identifying the end of the time card period used to process records.
HWM_CTX_PERIOD_START_DATE	Date identifying the start of the time card period used to process records.
HWM_ALLOCATION_DATA_LEVEL	The summation level comes from the allocation page and indicates how to summarize time entries for the allocation. This table describes the valid values. **Valid Value** / **Description** DAY — Sum and calculate values on a daily basis. TIMECARD — Sum and calculate values for the entire time card period.
HWM_ALLOCATION_ID	The allocation ID is the key for the allocation currently getting processed.
HWM_ALLOCATION_RULE_ID	The allocation rule ID is the key for the time calculation rule currently getting processed. This key is used to get parameter values set in the rule and allocation. It's also used with HWM_FFS_ID to store and retrieve work area values. This ID is different from the normal rule ID because it refers to different conditions in the allocation definition. Each source that makes up an allocation has a different rule and rule ID.
HWM_ALLOCATION_START_DATE	The date when the allocation becomes effective and the time calculation rule can use it.
GRP_TYPE_ID	The ID for the group type associated with the worker time processing profile containing the rule that's currently processing time card records.
HWM_REPEATING_TM_PERIOD_ID	The ID for the repeating period associated with the worker time processing profile containing the rule that's currently processing time card records.

Workforce Management Functions

Fast formula methods work only between fast formula calls. Workforce Management passes records from Java programs and these values must be stored during the call, so you must use these workforce management functions to store and retrieve values between calls.

Don't use fast formula working storage area methods, such as WSA_GET and WSA_SET.

Function	Description
`SET_WRK_NUM( P_FFS_ID , P_PARM_NAME , P_PARM_SEQ , P_PARM_VALUE )`	Set the numeric value for the item called P_PARM_NAME. Any existing item with the same name is overwritten. Parameters: • **P_FFS_ID**: Use the HWM_FFS_ID context (see Appendix 2: Contexts). • **P_PARM_NAME**: Any alphanumeric name. • **P_PARM_SEQ**: Set to 0 unless storing multiple values with the same PARM_NAME. • **P_PARM_VALUE**: Numeric value.
`SET_WRK_DATE( P_FFS_ID , P_PARM_NAME , P_PARM_SEQ , P_PARM_VALUE )`	Same as SET_WRK_NUM, except it's used to store date values. Parameters: • **P_FFS_ID**: Use the HWM_FFS_ID context (see Appendix 2: Contexts). • **P_PARM_NAME**: Any alphanumeric name. • **P_PARM_SEQ**: Set to 0 unless storing multiple values with the same PARM_NAME. • **P_PARM_VALUE**: Date value.
`SET_WRK_TEXT( P_FFS_ID , P_PARM_NAME , P_PARM_SEQ , P_PARM_VALUE )`	Same as SET_WRK_NUM, except it's used to store string values. Parameters: • **P_FFS_ID**: Use the HWM_FFS_ID context (see Appendix 2: Contexts). • **P_PARM_NAME**: Any alphanumeric name. • **P_PARM_SEQ**: Set to 0 unless storing multiple values with the same PARM_NAME. • **P_PARM_VALUE**: String value.
`GET_WRK_TEXT( P_FFS_ID , P_PARM_NAME , P_PARM_SEQ , DEFVAL ) RETURN VARCHAR2`	Get the stored value for the item called P_PARM_NAME. If there's no item called P_PARM_NAME, then return the default-value. The data type of the default value is the expected data type for the item. Parameters: • **P_FFS_ID**: Use the HWM_FFS_ID context (see Appendix 2: Contexts). • **P_PARM_NAME**: Any alphanumeric name. • **P_PARM_SEQ**: Set to 0 unless storing multiple values with the same PARM_NAME. • **DEFVAL**: Default value VARCHAR2 • **RETURN VARCHAR2**: Return a varchar value
`GET_WRK_NUM( P_FFS_ID , P_PARM_NAME , P_PARM_SEQ , DEFVAL ) RETURN NUMBER`	Same as GET_WRK_TEXT, except it's used to return numeric values. Parameters: • **P_FFS_ID**: Use the HWM_FFS_ID context (see Appendix 2: Contexts). • **P_PARM_NAME**: Any alphanumeric name. • **P_PARM_SEQ**: Set to 0 unless storing multiple values with the same PARM_NAME. • **DEFVAL**: Default value NUMBER • **RETURN VARCHAR2**: Return a NUMBER value

Function	Description
`GET_WRK_DATE( P_FFS_ID , P_PARM_NAME , P_PARM_SEQ , DEFVAL ) RETURN DATE`	Same as GET_WRK_TEXT, except it's used to return date values. Parameters: • **P_FFS_ID**: Use the HWM_FFS_ID context (see Appendix 2: Contexts). • **P_PARM_NAME**: Any alphanumeric name. • **P_PARM_SEQ**: Set to 0 unless storing multiple values with the same PARM_NAME. • **DEFVAL**: Default value DATE • **RETURN VARCHAR2**: Return a DATE value

Rule Parameter and Header Values Functions

Use these workforce management functions to get rule header and parameter values. Any names used in a rule parameter function appear as input parameter values on the rule template Parameters page.

<table>
<tr><th>Function</th><th>Description</th></tr>
<tr><td><code>GET_HDR_TEXT(P_RULE_ID , P_COLUMN_NAME , DEFVAL) RETURN VARCHAR2</code></td><td>Use this function to get these text field values, which are set in the basic information section of the rule template definition page.
Parameters:
• P_RULE_ID: Use HWM_RULE_ID context (see Appendix 3: Contexts)
• P_COLUMN_NAME: Use one of these valid column names.
<table>
<tr><th>Column Name</th><th>Description</th><th>Possible Return Values</th></tr>
<tr><td>RUN_TBB_LEVEL</td><td>Reporting level</td><td>DAY, DETAIL, TIMECARD</td></tr>
<tr><td>RULE_EXEC_TYPE</td><td>Rule execution type</td><td>CREATE, UPDATE</td></tr>
<tr><td>SUPPRESS_DUP_MSGS</td><td>Suppress duplicate messages display</td><td>Y, N</td></tr>
<tr><td>INCLUDE_EMPTY_TC</td><td>Process empty time cards</td><td>Y, N</td></tr>
</table>
• DEFVAL: Default value
• RETURN VARCHAR2: Return varchar value</td></tr>
<tr><td><code>FUNCTION get_hdr_num(P_rule_Id In Number, p_column_ name IN VARCHAR2, defval IN Number) RETURN Number;</code></td><td>Use this function to get the numeric field value set in the basic information section of the rule or rule template definition page.
Parameters:
• P_RULE_ID: Use HWM_RULE_ID context (see Appendix 3: Contexts)
• P_COLUMN_NAME: Use this valid column name.</td></tr>
</table>

<table>
<tr><th>Function</th><th>Description</th></tr>
<tr><td></td><td>
<table>
<tr><th>Column Name</th><th>Description</th><th>Possible Return Values</th></tr>
<tr><td>RUN_TBB_LEVEL</td><td>Reporting level</td><td>DAY, DETAIL, TIMECARD</td></tr>
</table>

DEFVAL: Default value
RETURN Number: Return numeric value

</td></tr>
<tr><td><pre>GET_RVALUE_NUMBER(
P_RULE_ID ,
P_VALUE_NAME ,
DEFVAL)
RETURN NUMBER</pre></td><td>Use this function to get numeric values; set in the Rule Parameters section of the rule.

Note: A rule template uses the name from P_VALUE_NAME to populate the Parameters section of the rule template.

Parameters:
P_RULE_ID: Use the HWM_RULE_ID context (see Appendix 2: Contexts).
P_VALUE_NAME: Use only upper case alpha characters and underscores. The rule template uses this name to populate the Formula Parameter Name section of the Parameter page.
DEFVAL: Default value
RETURN NUMBER: Return numeric value
</td></tr>
<tr><td><pre>GET_RVALUE_TEXT(
P_RULE_ID ,
P_VALUE_NAME ,
DEFVAL)
RETURN VARCHAR2</pre></td><td>Same as GET_RVALUE_NUMBER, except it returns string values.

Parameters:
P_RULE_ID: Use the HWM_RULE_ID context (see Appendix 2: Contexts).
P_VALUE_NAME: Use only upper case alpha characters and underscores. The rule template uses this name to populate the Formula Parameter Name section of the Parameter page.
DEFVAL: Default value
RETURN NUMBER: Return varchar value
</td></tr>
<tr><td><pre>GET_RVALUE_DATE(
P_RULE_ID ,
P_VALUE_NAME ,
DEFVAL)
RETURN DATE</pre></td><td>Same as GET_RVALUE_NUMBER, except it returns date values.

Parameters:
P_RULE_ID: Use the HWM_RULE_ID context (see Appendix 2: Contexts).
P_VALUE_NAME: Use only upper case alpha characters and underscores. The rule template uses this name to populate the Formula Parameter Name section of the Parameter page.
DEFVAL: Default value
RETURN NUMBER: Return date value
</td></tr>
</table>

Miscellaneous Functions

Function	Description

<pre>ADD_RLOG(
P_FFS_ID ,
P_RULE_ID ,</pre>
	Create a log for tracing and debug. All logs with this function appear on the Analyze Rule Processing Details page of the Time Management work area. They're in the Rule Processing Log column of the Processing Results section.

Function	Description
`P_LOG_TEXT )`	Parameters: • **P_FFS_ID**: Use the HWM_FFS_ID context (see Appendix 2: Contexts). • **P_RULE_ID**: Use the HWM_RULE_ID context (see Appendix 2: Contexts). • **P_LOG_TEXT**: Any string for log or debug purposes.

`GET_OUTPUT_MSG1(P_APP_SHORT_NAME, P_MESSAGE_NAME , TOKEN1_NAME , TOKEN1_VALUE ) RETURN VARCHAR2`	In time entry rule formulas, use this function to format the data repository message for output.
	Note: Any message that's passed as output for the data repository MUST use the appropriate GET_OUTPUT_MSG function for proper formatting.
	Use this function for the message code with a single token. It creates a single message string with one token for the output, formatted for use in workforce management.
	Parameters:
	• **P_APP_SHORT_NAME**: 3-character application short name, usually FND
	• **P_MESSAGE_NAME**: The message code as defined in the FND_MESSAGES table
	• **TOKEN1_NAME**: The token name as defined in the FND_MESSAGES table
	• **TOKEN1_VALUE**: The token Value
	• **RETURN VARCHAR2**: Formatted message ready for output
	Example:
	`message_name: 'HWM_FF_TER_PERIOD_GT_MAX_WRN'`
	`message_text : The hours entered for the period exceed the maximum limit {DEF_LIMIT} defined for the time card.`
	`from fnd_messages`
	`P_MESSAGE_NAME: HWM_FF_TER_PERIOD_GT_MAX_WRN TOKEN1_NAME: 'DEF_LIMIT' TOKEN1_VALUE: 8`
	`OUT_MSG = get_output_msg1 ( 'HWM' , P_MESSAGE_NAME, TOKEN1_NAME , TOKEN1_VALUE)`

`GET_OUTPUT_MSG2(P_APP_SHORT_NAME, P_MESSAGE_NAME , TOKEN1_NAME , TOKEN1_VALUE , TOKEN2_NAME , TOKEN2_VALUE ) RETURN VARCHAR2`	In time entry rule formulas, use this function to format the data repository message for output. Same as GET_OUTPUT_MSG1, except for messages that use two tokens.
`GET_OUTPUT_MSG( P_APP_SHORT_NAME , P_MESSAGE_NAME ) RETURN VARCHAR2`	In time entry rule formulas, use this function to format the data repository message for output. Same as GET_OUTPUT_MSG1, except for messages with no tokens.
`get_msg_tags`	Used only with workforce compliance rules. Add comma-separated tags to the message.

Function	Description
p_msg_tags IN VARCHAR2) RETURN VARCHAR2	Sample: pTagVals = ' tag1, tag2, Compliance ' tm = get_msg_tags(pTagVals) || get_output_msg1 ('FND' ,pMsgCd ,tkn , val)
FUNCTION time_hhmm_to_dec(time_dec IN NUMBER) RETURN NUMBER;	This function converts time to decimal, for example, 2.59 hhmm to 2.983 dec.
FUNCTION raise_error(p_ffs_id IN NUMBER , p_rule_id IN NUMBER , p_message_text IN varchar2) return number ;	Stop processing and raise an application error.
FUNCTION get_measure_from_time(start_time IN date, stop_time IN date) RETURN NUMBER;	Calculate duration (measure) using the start and stop date_time stamps.
FUNCTION get_date_day_of_Week(p_in_date IN date) RETURN VARCHAR2;	Return the short (3 character), upper case day of week from the date, such as MON and TUE.
FUNCTION get_is_date_same_as_dow(p_in_date IN date , p_in_day_of_week IN VARCHAR2) RETURN VARCHAR2;	Compare the date with the string day of week and return YES or No.
FUNCTION is_date_between(compare_date IN date, start_time IN date, stop_time IN date) RETURN number;	Verify if compare_date is between the start_time and stop_time. • If the date time is between the start and stop dates, the function returns 1. • If the date time isn't between the start and stop dates, the function returns 0.
FUNCTION get_current_date RETURN date;	Return the current server date and time. The date time isn't based on user Time zone.
FUNCTION get_current_time (o_staus_log varchar2, o_current_time date, resource_id NUMBER, zone_type IN varchar2, zone_code IN varchar2, gmt_offset IN number,) RETURN O_STATUS VARCHAR2;	Get the current time stamp for the given resource, time zone type, and so on. Input: resource_id: if resource Id provided function will return current time based on resource (person) time zone. If Resource ID is not provided or to get current time for specific time zone: zone_type - valid Values ' ZONE' , ' OFFSET' zone_code Zone code, if Zone type set to 'Zone' gmt_offset gmt Offset, if zone type is set to ' OFFSET' Outputs o_current_time : current time for specified user/time zone, If Status is ''SUCCESS' Return O_STATUS ('SUCCESS', 'FAILED') - Status

Function	Description
	o_staus_log: If Status is Failed, information for failure
FUNCTION get_duration_start_to_now (o_staus_log varchar2, o_calculated_Hours number, resource_id IN NUMBER, start_Time IN date, start_zone_type IN varchar2, start_zone_code IN varchar2, start_gmt_offset IN number) RETURN O_STATUS VARCHAR2;	Calculate the duration from start_time to current time based on the user's time zone or the supplied zone and offset. Input: resource_id: if resource Id provided function will return current time based on resource (person) time zone. start_Time: Start Date time, of duration to current time If Resource ID is not provided or to get current time for specific time zone: zone_type - valid Values ' ZONE' , ' OFFSET' zone_code Zone code, if Zone type set to 'Zone' gmt_offset gmt Offset, if zone type is set to ' OFFSET' Outputs o_calculated_Hours: Calculated duration(hours) time for specified user/time zone, If Status is ''SUCCESS' Return O_STATUS ('SUCCESS', 'FAILED') - Status o_staus_log: If Status is Failed, information for failure
get_unprocessed_event_set (staus_log out varchar2, row_count out number, event_rs_key out varchar2, resource_id IN NUMBER, start_date IN date, end_date IN date) RETURN STATUS VARCHAR2;	Select unprocessed events for a given resource and date range, similar to (executeQuery). The function caches the identified data. Use the get_unprocessed_event_rec function to loop through and retrieve each row. STATUS TEXT Output. Request status, possible values are: • 'NO_REC_FOUND' • 'SUCCESS' • 'FAILED' status_log TEXT The output log file containing detailed information related to the 'FAILED' status and corresponding process data. row_count NUMBER Number of rows selected event_rs_key Text - Output row set key required for get_unprocessed_event_rec function resource_id NUMBER Input Resource Id used to select records start_date date Start Date for row selection end_date date End date for row selection
get_unprocessed_event_rec (staus_log out varchar2, Event_Type out varchar2, Event_Time out date, Event_InOut out varchar2, event_rs_key IN VARCHAR2 , row_index IN NUMBER) RETURN STATUS VARCHAR2;	Get individual rows selected by the get_unprocessed_event_set function. STATUS TEXT Output. Request status, possible values are: • 'NO_REC_FOUND' • 'SUCCESS' • 'FAILED' staus_log TEXT The output log file containing detailed information related to the 'FAILED' status and corresponding process data. Event output information: Event_Type, Event_Time, Event_InOut event_rs_key Text - Input row set key from get_unprocessed_event_set function row_index use index from 0 to row_count from get_unprocessed_event_set function to loop through and select rows

Function	Description
`get_null_ff_text() RETURN VARCHAR2;`	Get the time rule or formula null value. The returned value is text.
`get_null_ff_num () RETURN NUMBER ;`	Get the time rule or formula null value. The returned value is numeric.
`get_null_ff_date () RETURN date;`	Get the time rule or formula null value. The returned value is a date.

Data Access View Entry (DAVE) Functions

These functions let you filter and summarize time repository data that aren't available in the current time card period. The details for each DAVE function are included in Data Access Functions for Workforce Management Fast Formulas chapter.

Input Attributes for Workforce Management Fast Formulas

You can use these input attributes from the HWM_TM_ATRB_FLDS_VL table and elsewhere in workforce management fast formulas.

INPUT (ATTRIBUTE NAME)	Description	Data Type
LayerGroupType	Type of time card Value is either 'REPORTED_TIME_CARD_ MISSING' or Null	Text
OraHwmHeaderComment	Header comment	Text
OraHwmTcRowStatus	Indicates whether the row was changed or not. Valid values are 'MODIFIED' or Null	Text

You can use any attribute listed in the HWM_TM_ATRB_FLDS_VL table as an input for fast formula. To get a complete list from your time repository data dictionary, use this SQL: `(SELECT NAME,DISPLAY_NAME, ATTRIBUTE_TYPE FROM HWM_TM_ATRB_FLDS_VL)`

INPUT (ATTRIBUTE NAME)	Display Name	Description
Measure	Hours	Time duration in Hours
StartTime	Start Time	Time that the entry started

INPUT (ATTRIBUTE NAME)	Display Name	Description
StopTime	Stop Time	Time that the entry ended
UnitOfMeasure	Unit Of Measure	Unit of measure for the time entry, either Hours or Units
StartGmtOffset	Start GMT Offset	Number of hours to add to GMT to match the zone of the start time for the entry
StartTimeZoneCode	Start TimeZone Code	Zone code for the time that the entry ended
ZoneType	Zone Type	Time Zone Type (Time zone code or Offset)
TimeRecordType	Record Type	Type of Record 'RANGE' (Start/stop time was used to calculate time duration) or 'MEASURE' (Time duration was entered without start/stop time
CostSegment	Cost Segment	Payroll cost segment associated with the time entry
LDG_ID	Legislative Data Group	Identifier for partitioned payroll and related data
PJC_PROJECT_ID	Project	Project time attribute associated with the time entry
PJC_TASK_ID	Task	Task time attribute associated with the time entry
PayrollTimeType	Payroll Time Type	Payroll time type attribute associated with the time entry
Location	State	Top level of the geographical hierarchy of state, county, and city in the United States

2 Data Access Functions for Workforce Management Fast Formulas

Find Time Gaps Function

To look back at previous time cards and find the specified gap between time entries based on the start or stop time of each time entry, use the DAVE_FIND_TIME_GAP function.

Parameters

Parameter	Data Type	Comments
resource_id	NUMBER	Resource ID (Person ID) is available as a context value for current time card: GET_CONTEXT(HWM_RESOURCE_ID, 0)
max_lookback_days	NUMBER	The number of days that the function looks back to find the gap. The number must be more than 0 and less than 91. Valid values: (1 to 90)
gap_date_compare_type	TEXT	Indicates which dates are compared to identify the gap. Valid values: (START_START, START_STOP, STOP_START, STOP_STOP) • **START_START**: Compares the start time of one time entry to the start time of another time entry • **START_ STOP**: Compares the start time of one time entry to the stop time of another time entry • **STOP_START**: Compares the stop time of one time entry to the start time of another time entry • **STOP_STOP**: Compares the stop time of one time entry to the stop time of another time entry.
gap_limit_minutes	NUMBER	The number of minutes between 2 time entries.
first_detail_start	DATE	The start date and time of the current time card entry that the function uses as the point to begin looking back for the gap. The function begins with the time card that includes the date and start time, and looks back through older time cards until if finds the gap or reaches the maximum days to look back.
first_detail_stop	DATE	The stop date and time of the current time card entry that the function uses as the point to

Parameter	Data Type	Comments
		begin looking back for the gap. The function begins with the time card that includes the date and stop time, and looks back through older time cards until if finds the gap or reaches the maximum days to look back.
rec_grp_type	TEXT	For the record group select reported or calculated values Values: (REPORTED, CALCULATED)
time_card_ui_type	TEXT	In memory processing Time values: (REPORTED, CALCULATED)
time_card_status	TEXT	The time card status could include one or more of these values, separated by comma: (SUBMITTED, APPROVED, SAVED) A Null or blank status means select all values
time_Category_id	TEXT	Filter selection results by the time category ID: • Use the category ID selected for the main rule using the parameter type "Time category" (TIME_CATEGORY), or • Select a specific time category for this function using the parameter type "Function time category" (ORA_HWM_FF_CAT), or • Include all time card entries (no filter by time category) by setting this parameter to Null
assignment_Ids_Filter	TEXT	Filter selection results by one or more assignment IDs (subresource ID): • To include all assignments (no filter by assignment), set this parameter to Null • To filter by more than one assignment ID, use a comma to separate values • The current assignment ID is available from the formula input **`HWM_CTXARY_SUBRESOURCE_ID [idx]`**

Outputs

Parameter	Data Type	Comments
Status	TEXT	Request status, possible values are: • 'NO_REC_FOUND'

Parameter	Data Type	Comments
		• 'SUCCESS' • 'FAILED'
status_log	TEXT	The log file containing detailed information related to the 'FAILED' status and corresponding process data.
gap_found_in_minutes	NUMBER	Values: • Less than zero (-1): No gap found • Greater than zero: Number of minutes between Gap_before_...and gap_after_ ...dates, based on gap_date_compare_ type.
gap_before_start	DATE	Start date and time of the time entry before the gap
gap_before_stop	DATE	Stop date and time of the time entry before the gap
gap_after_start	DATE	Start date and time of the time entry after the gap
gap_after_stop	DATE	Stop date and time of the time entry after the gap

Example

Sample input parameters:

```
MAX_LOOKBACK_DAYS = 30
GAP_DATE_COMPARE_TYPE = STOP_START
GAP_LIMIT_MINUTES = 1440 Minutes (24 hours * 60)
FIRST_DETAIL_START = 4/22/18 8:00 AM
FIRST_DETAIL_STOP = 4/22/18 5:00 PM
```

Using the sample input parameters, the DAVE_FIND_TIME_GAP function returns these values:

```
GAP_FOUND_IN_MINUTES = 1620 Minutes (27 hours * 60)
GAP_BEFORE_START = 4/6/18 7:00 AM
GAP_BEFORE_STOP = 4/6/18 4:00 PM
GAP_AFTER_START = 4/7/18 7:00 PM
GAP_AFTER_STOP = 4/7/18 10:00 PM
```

The values

			Gap in Hours			
Date	**Start Time**	**Stop Time**	**START_START**	**START_STOP**	**STOP_START**	**STOP_START**
Mon, Apr 02, 2018	4/2/18 8:00 AM	4/2/18 11:00 AM	NA	NA	NA	NA
Tue, Apr 03, 2018	4/3/18 9:30 AM	4/3/18 11:20 AM	25.50	27.33	22.50	24.33
Wed, Apr 04, 2018	4/4/18 7:00 PM	4/4/18 10:00 PM	33.50	36.50	31.67	34.67

			Gap in Hours			
Date	**Start Time**	**Stop Time**	**START_START**	**START_STOP**	**STOP_START**	**STOP_START**
Thu, Apr 05, 2018	4/5/18 8:00 AM	4/5/18 5:00 PM	13.00	22.00	10.00	19.00
Fri, Apr 06, 2018	**4/6/18 7:00 AM**	**4/6/18 4:00 PM**	23.00	32.00	14.00	23.00
Sat, Apr 07, 2018	**4/7/18 7:00 PM**	**4/7/18 10:00 PM**	36.00	39.00	27.00	30.00
Sun, Apr 08, 2018	4/8/18 8:00 AM	4/8/18 5:00 PM	13.00	22.00	10.00	19.00
Mon, Apr 09, 2018	4/9/18 4:00 PM	4/9/18 10:00 PM	32.00	38.00	23.00	29.00
Tue, Apr 10, 2018	4/10/18 10:00 AM	4/10/18 7:00 PM	18.00	27.00	12.00	21.00
Wed, Apr 11, 2018	4/11/18 3:00 PM	4/11/18 9:00 PM	29.00	35.00	20.00	26.00
Thu, Apr 12, 2018	4/12/18 5:00 AM	4/12/18 4:00 PM	14.0	25.00	8.00	19.00
Fri, Apr 13, 2018	4/13/18 3:00 PM	4/13/18 7:00 PM	34.00	38.00	23.00	27.00
Sat, Apr 14, 2018	4/14/18 6:00 PM	4/14/18 10:00 PM	27.00	31.00	23.00	27.00
Sun, Apr 15, 2018	4/15/18 7:00 PM	4/15/18 10:00 PM	25.00	28.00	21.00	24.00
Mon, Apr 16, 2018	4/16/18 8:00 AM	4/16/18 4:00 PM	13.00	21.00	10.00	18.00
Tue, Apr 17, 2018	4/17/18 1:00 PM	4/17/18 6:00 PM	NA	NA	NA	NA
Tue, Apr 17, 2018	4/17/18 1:00 PM	4/17/18 6:00 PM	NA	NA	NA	NA
Tue, Apr 17, 2018	4/17/18 1:00 PM	4/17/18 6:00 PM	NA	NA	NA	NA
Tue, Apr 17, 2018	4/17/18 1:00 PM	4/17/18 6:00 PM	NA	NA	NA	NA
Tue, Apr 17, 2018	4/17/18 1:00 PM	4/17/18 6:00 PM	NA	NA	NA	NA
Tue, Apr 17, 2018	4/17/18 1:00 PM	4/17/18 6:00 PM	NA	NA	NA	NA

Select and Prepare Data Function

The DAVE_TIME_SCAN_SET function is the first function that you include in relevant formulas. Use this function to select and prepare data for processing similar to (vo.executeQuery).

The function caches the identified data so that all later calls to these DAVE functions are free. That's they don't involve database queries or selections: DAVE_TIME_SCAN_REC_DAY, DAVE_TIME_SCAN_REC_DTL, and DAVE_TIME_SCAN_REC_TOTAL.

Parameters

Parameter	Data Type	Comments
resource_id	NUMBER	Resource ID (Person ID) is available as a context value for current time card: GET_CONTEXT(HWM_RESOURCE_ID, 0).
start_date	DATE	The start date of the time card data. The scan gets the entire time card though. For example, if the time card period is October 2 to 8, and you enter a start date of October 5 and an end date of October 10, the scan gets two time cards. One time card for the period October 2 to 8 and another for the period October 9 to 15.
end_date	DATE	The end date of the time card data. The scan gets the entire time card though. For example, if the time card period is October 2 to 8, and you enter a start date of October 5 and an end date of October 10, the scan gets two time cards. One time card for the period October 2 to 8 and another for the period October 9 to 15.
rec_grp_type	TEXT	For the record group, select reported or calculated values. Values: (REPORTED, CALCULATED)
time_card_ui_type	TEXT	In memory processing. Time values: (REPORTED, CALCULATED)
time_card_status	TEXT	The time card status could include one or more of these values, separated by comma: (SUBMITTED, APPROVED, SAVED). A Null or blank status means select all values.
time_Category_id	TEXT	Filter selection results by the time category ID: • Use the category ID selected for the main rule using the parameter type "Time category" (TIME_CATEGORY), or • Select a specific time category for this function using the parameter type "Function time category" (ORA_HWM_FF_CAT), or • Include all time card entries (no filter by time category) by setting this parameter to Null.
assignment_Ids_Filter	TEXT	Filter selection results by one or more assignment IDs (subresource ID): • To include all assignments (no filter by assignment), set this parameter to Null.

Parameter	Data Type	Comments
		• To filter by more than one assignment ID, use a comma to separate values. • The current assignment ID is available from the formula input **`HWM_CTXARY_SUBRESOURCE_ID [idx]`**.

Outputs

Output	Data Type	Comments
status	TEXT	Request status, possible values are: • 'NO_REC_FOUND' • 'SUCCESS' • 'FAILED'
status_log	TEXT	The log file containing detailed information related to the 'FAILED' status and corresponding process data.
row_count_day	NUMBER	The quantity of detail records selected.
row_count_dtl	NUMBER	The quantity of detail records selected.
rpt_start_date	DATE	The actual start date for the report, which might differ from the requested start date, based on the time card period. The report start and end dates include the start and end dates of the time card period, for requested time.
rpt_end_date	DATE	The actual end date for the report, which might differ from the requested end date, based on the time card period. The report start and end dates include the start and end dates of the time card period, for requested time.
rpt_rs_key	TEXT	All later DAVE operations, such as these, require the row set key: • DAVE_TIME_SCAN_REC_DAY • DAVE_TIME_SCAN_REC_DTL • DAVE_TIME_SCAN_REC_TOTAL

Initialize Row Pointer Function

To loop through all the rows without an index (vo.first), set the row pointer to the first row in the DAVE_TIME_SCAN_RESET_INDEX function.

Parameter

Parameter	Data Type	Comments
rpt_rs_key	TEXT	The row set key provided as an output by the DAVE_TIME_SCAN_SET function.

Output

Output	Data Type	Comments
status	TEXT	Request status, possible values are: • 'SUCCESS' • 'FAILED'

Access Daily and ITD Totals Function

To get the day total for one day (SUM_DAY) or the interval to date (SUM_ITD), use the DAVE_TIME_SCAN_REC_DAY function.

Parameters

Parameter	Data Type	Comments
rpt_rs_key	TEXT	The row set key provided as an output by the DAVE_TIME_SCAN_SET function.
eff_date	DATE	Get the time totals for a specific date. The row index must be null or -2
is_sum_itd	TEXT	Indicate whether to sum time for the day or interval to date (ITD). Valid values are: • 'Y' = Sum ITD • 'No' = Sum Day Sum ITD sums all the daily time totals from the start of the period to the requested date (eff_date parameter). Sum Day returns a summed time total for just the requested day (eff_date parameter).
is_use_day_type	TEXT	Indicate whether the day total should use the reported time card date, overtime date, or earned date.

Parameter	Data Type	Comments
		Valid values: • Y, REFERENCE, OVERTIME: Use reference date or overtime days • N, TIMECARD, or leave blank: Use time card date • EARNED: Use Earned date
period_id (optional)	NUMBER	If the period start date is different from the time card start date, for ITD time totals select period start dates using the period ID. If the value is 0 or Null (this parameter is optional), the function uses the time card period to calculate ITD time totals. There are three ways to obtain the period ID. • Use GET_REPEATING_PERIOD_ID to retrieve the overtime period ID associated with the person assignment or, if not there, then the person profile, by person ID. • Use GET_PERIOD_ID_BY_BAL_DIM_NAME to retrieve the period ID associated with the balance definition, by balance dimension name. • Use the parameter type "Time period" (ORA_HWM_PERIOD), to pass the period ID using the rule parameter.
row_index (optional)	NUMBER	This parameter is optional if eff_date is used. Use the row index to loop through by index or select a specific row by index. Values: • 0 to row_count_day where row_count_day is the number of days provided as an output by the DAVE_TIME_SCAN_SET function • 1 (negative one) for next record, similar to vo.next; no need to use the row index • -2 (negative two) or don't use this parameter if selecting by eff_date and the date is not Null; row index is ignored

Outputs

Output	Data Type	Comments
status	TEXT	Request status, possible values are:

Output	Data Type	Comments
		• 'SUCCESS' • 'FAILED'
status_log	TEXT	The log file containing detailed information related to the 'FAILED' status and corresponding process data.
tc_date	DATE	The actual date retrieved. The tc_date matches the eff_date parameter when the function uses the parameter.
measure	NUMBER	The summed time totals for the day or ITD.
PrdStDate	DATE	Period start date

Access Time Totals Function

To get the time total for the requested date range, use the DAVE_TIME_SCAN_REC_TOTAL function.

Parameters

Parameter	Data Type	Comments
rpt_rs_key	TEXT	The row set key provided as an output by the DAVE_TIME_SCAN_SET function.
is_use_day_type	TEXT	Indicate whether the day total should use the reported time card date, overtime date, or earned date. Valid values: • Y, REFERENCE, OVERTIME: Use reference date or overtime days • N, TIMECARD, or leave blank: Use time card date • EARNED: Use Earned date
start_date	DATE	Start date for the period total (optional). Both the start and end dates are required for a specific period total, otherwise the total returns the row set period total.
stop_date	DATE	End date for the period total (optional). Both the start and end dates are required for a specific period total, otherwise the total returns the row set period total.

Outputs

Output	Data Type	Comments
status	TEXT	Request status, possible values are: • 'NO_REC_FOUND' • 'SUCCESS' • 'FAILED'
status_log	TEXT	The log file containing detailed information related to the 'FAILED' status and corresponding process data.
measure	NUMBER	The summed time totals for the date range specified by the start and end dates.

Get Overtime Repeating Period ID by Resource Function

To get the overtime repeating period ID associated with the person profile by resource ID (person ID), use the GET_REPEATING_PERIOD_ID function.

Parameters

Parameter	Data Type	Comments
resource_id	NUMBER	The resource ID (person ID) is available as a context value for the current time card: GET_CONTEXT(HWM_RESOURCE_ID, 0)
start_date	DATE	The start date of the time card.

Outputs

Output	Data Type	Comments
status_log	TEXT	The log file containing detailed information related to the 'FAILED' status and corresponding process data.
period_id	NUMBER	The period ID for the overtime repeating period. A 0 value means that the function didn't find a period ID. Check the log file for more details.

Get Details for Selected Time Card Rows Function

To get detailed information for the selected time card rows, use the DAVE_TIME_SCAN_REC_DTL2 function.

Parameters

Parameter	Data Type	Comments
rpt_rs_key	TEXT	The row set key provided as an output by the DAVE_TIME_SCAN_SET function.
row_index	NUMBER	This parameter is optional. Use the row index to loop through by index or select a specific row by index. Values: • 0 to **`row_count_ dtl`**, where **`row_count_ dtl`** is the number of detail records from DAVE_TIME_SCAN_SET output. • Use negative one (-1) for next record, similar to vo.next. You don't need to use index.

Outputs

Output	Data Type	Comments
status_log	TEXT	Request status, possible values are: • 'NO_REC_FOUND' • 'SUCCESS' • 'FAILED'
status_log	TEXT	The log file containing detailed information related to the 'FAILED' status and corresponding process data.
tc_date	DATE	The actual date retrieved. The tc_date matches the eff_date parameter when the function uses the parameter.
is_use_day_type	TEXT	Indicate whether the day total should use the reported time card date, overtime date, or earned date. Valid values:

Output	Data Type	Comments
		• Y, REFERENCE, OVERTIME: Use reference date or overtime days • N, TIMECARD, or leave blank: Use time card date • EARNED: Use Earned date
Overtime_Date	DATE	Date to use for the time entry when calculating overtime
Earned_Date	DATE	Date to use when processing the time entry for payment
measure	NUMBER	The summed time totals for the selected rows.
uom	TEXT	Unit of measure for the time date in the selected rows, valid values are Hours and Units.
start_time	DATE	The start time of the time entry.
stop_time	DATE	The end time of the time entry.
abs_type	TEXT	The absence type time attribute, which Oracle Fusion Absence Management provides.
pay_type	TEXT	The payroll time type attribute, which Oracle Fusion Global Payroll provides.
time_data_type	TEXT	The type of time data, valid values are: MEASURE and RANGE • MEASURE: The time entry value is a duration rather than a combination of start and end times. • RANGE: The time entry value is composed of start and end times rather than a duration.
zone_type	TEXT	The zone type to use when offsetting start and end dates and times.
start_time_zone_code	TEXT	The zone code to use when offsetting the start date and time.
stop_time_zone_code	TEXT	The zone code to use when offsetting the stop date and time.
start_gmt_offset	NUMBER	The Greenwich Mean Time (GMT) to use when offsetting the start date and time.
stop_gmt_offset	NUMBER	The Greenwich Mean Time (GMT) to use when offsetting the stop date and time.

Access Overtime Period ID for Balance Dimension Function

To get the ID for the overtime repeating period associated with the balance dimension, use the GET_PERIOD_ID_BY_BAL_DIM_NAME function.

Parameter

Parameter	Data Type	Comments
base_dimension_name	TEXT	The name of the balance dimension that includes the overtime repeating period.

Outputs

Output	Data Type	Comments
status_log	TEXT	The log file containing detailed information related to the 'FAILED' status and corresponding process data.
period_id	NUMBER	The period ID for the overtime repeating period. A 0 value means that the function didn't find a period ID. Check the log file for more details.

3 Advanced Time Category Rule Fast Formulas

Find Out if Person Is Scheduled to Work

The ORA_WFM_ACR_ENTRY_AND_NO_SCHEDULE_AP fast formula, which uses array processing, identifies whether a person is schedule to work that day. For example, use the formula to show an attestation that warns the person that they weren't scheduled to work today.

This fast formula isn't associated with any delivered advanced time category rule templates.

Example

A time category includes the formula as an advanced condition. An attestation set with an attestation that appears when a person reports time on a day they aren't scheduled to work includes the time category.

The person reporting time is scheduled to work the Regular shift (8:00a to 2:00p) on days 1, 2, 4, and 5. They aren't scheduled to work on day 3.

Day	Web Clock Events	Time Entry	Output	Attestation
1	In: 8:02a Out: 2:01p	8:02a to 2:01p	False	None
2	In: 8:03a Out: 1:58p	8:03a to 1:58p	False	None
3 (current day)	In: 8:01a	8:01a	True	A question about working extra hours appears.

Compare Reported Time with Scheduled Time and Grace Period

The ORA_WFM_ACR_VALIDATE_SCHEDULE_DEVIATION_AP formula, which uses array processing, identifies whether the reported In or Out time is before or after the scheduled time, plus or minus the grace period.

For example, use the formula to display an attestation that warns of a schedule deviation. This fast formula isn't associated with any delivered advanced time category rule templates.

Parameter

Name	Type	Description
PAYTYPES_TO_VALIDATE	Fixed text	List of comma-separated payroll time types that identify the reported time to compare with the schedule. If blank or equal to null, the formula uses all payroll time types.

Function

The formula output is True if the reported time doesn't match the scheduled time and is outside the grace period.

Example

A time category includes the formula as an advanced condition. An attestation set with an attestation that appears when the formula finds a schedule deviation includes the time category.

The person reporting time is scheduled to work the Morning shift (6a to 11a), which has these limits:

- Grace period: 5 minutes
- Start early and late, and end early and late periods: 30 minutes

Day	Web Clock Events	Time Entry	Output	Attestation
1	In: 6:02a Out: 11:05a	6:02a to 11:05a	False	None
2	In: 6:11a Out: 11:05a	6:11a to 11:05a	True	A question about schedule deviation appears because the start time is after the scheduled start plus the grace period.
3	In: 6:05a Out: 11:15a	6:05a to 11:15a	True	A question about schedule deviation appears because the end time is after the scheduled end plus the grace period.
4	In: 5:13a Out: 11:01a	5:13a to 11:05a	True	A question about schedule deviation appears because the start time is before the scheduled start minus the grace period and the start early period.
5	In: 5:50a Out: 11:05a	5:50a to 11:05a	True	A question about schedule deviation appears because the start time is before the scheduled start minus the grace period.

Identify Shift Work Hours and Meal Break Requirements

The ORA_WFM_ACR_SHIFT_DURATIONS_AP formula, which uses array processing, calculates a shift's work duration and the number of meal breaks according to the web clock buttons properties. It then evaluates whether the worker worked the expected duration and took the expected breaks.

Use this fast formula, for example, to display an appropriately configured attestation that asks the worker why they didn't take the expected meal breaks.

Parameters

Name	Type	Description
SHIFT_WORK_DURATION	Fixed number	Duration worked for the shift defined by the start and end set of buttons, such as Clock In and Clock Out.
Minimum number of meal breaks	Fixed number	Number of meal breaks taken during the shift. A meal break is de end set of the related web clock buttons, such as Meal In and Me
Work Payroll Time Types	Fixed text	List of semicolon-separated payroll time types to use to identify to calculate the work duration of a shift.
Meal Break Payroll Time Types	Fixed text	List of semicolon-separated payroll time types to use to identify calculate the number of meal breaks taken.

Function

If the calculated shift work duration is greater than or equal to the value of the SHIFT_WORK_DURATION parameter and the number of meal breaks is less than the value of the Minimum number of meal breaks parameter, then use the time entry for processing.

Examples

The time category is used in an attestation set. The worker sees an attestation when they didn’t take enough meal breaks based on their shift work duration.

Web clock buttons configuration:

Clock Event	Time Attribute	Default Time Attribute Value
Clock In	Clock Property	Start Shift
Meal In	Clock Property	Meal Start
Meal Out	Clock Property	Meal End
Clock Out	Clock Property	Shift End

Fast formula parameter values:

- Shift Work Duration: 10h
- Number of Meal Breaks: 2
- Work Payroll Time Types: Regular Hours

Web clock events and corresponding time entries:

	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
Web Clock Events	Clock In: 8:00a Meal In: 12:00p Meal Out: 12:30p Clock Out: 5:00p	Clock In: 8:00a Meal In: 12:00p Meal Out: 12:30p Clock Out: 7:00p	NA	Clock In: 8:00a Meal In: 11:00a Meal Out: 11:30a Meal In: 3:00p Meal Out: 3:30p Clock Out: 7:30p	Clock In: 8:00a Meal In: 12:00p Meal Out: 12:30p Clock Out: 5:00p	Clock In: 8:00a Meal In: 11:00a Meal Out: 11:30a Meal In: 3:00p Meal Out: 3:30p Clock Out: 6:00p
Time Entries	8:00a to12:00p 12:30p to 5:00p	8:00a to12:00p 12:30p to 7:00p	NA	8:0 a to 11:00a 11:30p to 3:00p 3:30p to 7:30p	8:00a to 12:00p 12:30p to 5:00p	8:00a to 11:00a 11:30p to 3:00p 3:30p to 6:00p
Work duration	8h30m	10h30m	NA	10h30m	8h30m	8h
Meal breaks	1	1	NA	2	1	2
			NA			
Attestation	None	Meal Break question	NA	None	None	None

4 Time Calculation Rule Fast Formula

Verify Attestation Response for Additional Time Entry

The ORA_WFM_TCR_ACCESS_ATTESTATION_ANSWERS_AP formula, which uses array processing, check the specified attestation to see if the person submitted an answer that requires the formula to generate another time entry.

For example, generate a penalty when the person didn't take a meal break for business reasons. This fast formula isn't associated with any delivered time calculation rule templates.

Parameters

Name	Data Type	Description
QUESTION_CODE	Fixed text	Code of the question asked in the attestation.
ANSWER_CODE	Fixed number	Code of the answer that the worker submitted in the attestation.
GENERATED_QUANTITY	Fixed number	Quantity of the time entry that the formula generates.

Outputs

Name	Output Group	Time Attribute	Description
GRP1_MEASURE	1	Measure	Original quantity
GRP1_START_TIME	1	StartTime	Original start time
GRP1_STOP_TIME	1	StopTime	Original start time
GRP2_QUANTITY	2	Measure	Quantity, in hours or units, of the time entry that the formula generates according to the answer code.

Function

Generate a time entry with the specified quantity when both of these conditions get met:

- The question code is equal to the specified value of the Question code parameter
- The answer code is equal to the specified value of the Answer code parameter

Example

The person has an attestation set that includes a meal break attestation. The attestation time category from this attestation set helps identify a clock out more than 5 hours after the previous clock in. Because the elapsed duration is more than 5 hours, the meal break attestation appears. When the person confirms that they didn't take a meal break, they get asked why--personal or business reasons? If it was for business reasons, the formula generates the specified payroll time entry.

Day	Web Clock Events	Time Entry	Elapsed Duration Between In and Out	Meal Break	Attestation	Generated Time Entry
1	In: 8:02a Out: 1:01p	8:02a to 1:01p	4h 59m	0	None because the elapsed duration is less than 5h.	None
2	In: 8:03a Out: 1:58p	8:03a to 1:58p	5h 55m	0	A question about the meal break appears because the elapsed duration is more than 5h. The person answers that they didn't take their meal break for business reasons.	1 credit The payroll time type is measure in Units.
3	In: 8:01a	8:01a	8:01a	0	None because the person didn't clock out, and it's this action that causes the attestation to appear.	NA
4	In: 8:03a Out: 1:58p	8:03a to 1:58p	7h 55m	0	A question about the meal break appears because the elapsed duration is more than 5h. The person answers that they did take their meal break. They need to report it or ask their manager to do so.	None
5	In: 7:58a Out: 1:58p	7:58a to 1:58p	6h 00m	0	A question about the meal break appears because the elapsed duration is more than 5h. The person answers that they didn't take their meal break for personal reasons.	None

Allocate Source Time Across Output Attributes

The ORA_WFM_TCR_ALLOCATION_TIME_AP formula, which uses array processing, is associated with the delivered Time Allocation Template rule template. The formula allocates the time identified by the source time category across the output time attributes.

If the person has a time allocation assigned by the Allocation Assignments task, then the formula uses that allocation. Otherwise, it uses the allocation selected in the rule configuration. In both cases, this allocation formula uses either reported or calculated time, depending on the processing sequence of the allocation rule in the rule set.

If you want the review page of the time card to show the cost segment outputs configured in the time allocation, complete these tasks:

1. Configure the time review layouts for workers and managers accordingly.
2. Associate the appropriate layout set with the worker time entry profiles.

Parameter

Name	Type	Description
ASSIGN_FRACTION_TO_LAST_ROW	Yes or No	Indicates whether to adjust the last row of the time allocation output so that total allocated hours match the number of hours identified by the allocation rule. The time allocations that use this parameter have either the type Percent or Equally.

Outputs

This formula has no output variables. It uses the outputs configured for the time allocation assigned to the person when the rule runs.

Examples of Percentage Allocations

Example 1: The reported time doesn't include any conflicts with the person's assigned allocation.

Day	Worked Time	Department	Reported Time	Calculated Time
Mon thru Fri	Regular	 Cardiac Care Intensive Care	8a to 4p	 4h 4h
	Daily Totals	Regular:	8h	0h
		Regular, Cardiac Care:	0h	4h
		Regular, Intensive Care:	0h	4h

Day	Worked Time	Department	Reported Time	Calculated Time
		Total	8h	8h
	Weekly Totals	Regular:	40h	0h
		Regular, Cardiac Care:	0h	20h
		Regular, Intensive Care:	0h	20h
		Total:	40h	40h

Example 2: The reported time includes conflicts with the person's assigned allocation.

Day	Worked Time	Department	Reported Time	Calculated Time
Mon	Regular	Cardiac Care Intensive Care	8a to 4p	4h 4h
	On-Call	Intensive Care	2p to 4p	2h
		Daily Total:	8h	8h
Tue	Regular	Cardiac Care Intensive Care	8a to 12p	2h 2h
	Regular	Emergency	8a to 4p	8h
		Daily Total:	8h	8h
Wed	Regular	Cardiac Care Intensive Care	8a to 4p	4h 4h
		Daily Total:	8h	8h
Thu	Regular	Emergency	8a to 4p	8h
		Daily Total:	8h	8h
Fri	Regular	Cardiac Care Intensive Care	8a to 12p	2h 2h
		Daily Total:	4h	4h
Sat	Regular	Emergency	1p to 5p	4h
		Daily Total:	4h	4h

Day	Worked Time	Department	Reported Time	Calculated Time
	Weekly Totals	Regular:	22h	0h
		Regular, Cardiac Care:	0h	11h
		Regular, Intensive Care:	0h	11h
		On-Call, Intensive Care:	2h	2h
		Regular, Emergency:	16h	16h
		Total:	40h	40h

Examples of Quantity Allocations

Allocation configuration: These next four allocation examples distribute the first 20 hours of reported regular time to Cardiac Care. They distribute the next 20 hours to Intensive Care.

Example 1: The total for the time card period equals the defined allocation quantity.

Day	Worked Time	Department	Reported Time	Calculated Time
Mon	Regular	Cardiac Care	8a to 4p	8h
		Daily Total:	8h	8h
Tue	Regular	Cardiac Care	8a to 4p	8h
		Daily Total:	8h	8h
Wed	Regular	Cardiac Care Intensive Care	8a to 4p	4h 4h
		Daily Total:	8h	8h
Thu	Regular	Intensive Care	8a to 4p	8h
		Daily Total:	8h	8h
Fri	Regular	Intensive Care	8a to 4p	8h
		Daily Total:	8h	8h
	Weekly Totals	Regular:	40h	0h
		Regular, Cardiac Care:	0h	20h

Day	Worked Time	Department	Reported Time	Calculated Time
		Regular, Intensive Care:	0h	20h
		Total:	40h	40h

Example 2: The total for the time card period is less than the defined allocation quantity.

Day	Worked Time	Department	Reported Time	Calculated Time
Mon	Regular	Cardiac Care	8a to 12p	4h
		Daily Total:	4h	4h
Tue	Regular	Cardiac Care	8a to 4p	8h
		Daily Total:	8h	8h
Wed	Regular	Cardiac Care	8a to 4p	8h
		Daily Total:	8h	8h
Thu	Regular	Intensive Care	8a to 4p	8h
		Daily Total:	8h	8h
Fri	Regular	Intensive Care	1p to 5p	4p
		Daily Total:	4h	4h
	Weekly Totals	Regular:	32h	0h
		Regular, Cardiac Care:	0h	20h
		Regular, Intensive Care:	0h	12h
		Total:	32h	32h

Example 3: The total for the time card period is more than the defined allocation quantity.

Day	Worked Time	Department	Reported Time	Calculated Time
Mon	Regular	Cardiac Care	8a to 4p	8h
		Daily Total:	8h	8h

Day	Worked Time	Department	Reported Time	Calculated Time
Tue	Regular	Cardiac Care	8a to 6p	10h
			Daily Total: 10h	10h
Wed	Regular	Cardiac Care Intensive Care	8a to 4p	2h 6h
			Daily Total: 8h	8h
Thu	Regular	Intensive Care	8a to 4p	8h
			Daily Total: 8h	8h
Fri	Regular	Intensive Care	8a to 4p	2h 6h
			Daily Total: 8h	8h
Sat	Regular		8a to 4p	8h
			Daily Total: 8h	8h
	Weekly Totals	Regular:	50h	10h
		Regular, Cardiac Care:	0h	20h
		Regular, Intensive Care:	0h	20h
		Total:	50h	50h

Example 4: The total for the time card period is more than the defined allocation quantity. Also, the reported time includes conflicts with the person's assigned allocation.

Day	Worked Time	Department	Reported Time	Calculated Time
Mon	Regular	Cardiac Care	8a to 2p	6h
	On-Call	Intensive Care	2p to 4p	2h
			Daily Total: 8h	8h
Tue	Regular	Cardiac Care	8a to 12p	4h
	Regular	Emergency	1p to 5p	4h

Day	Worked Time	Department	Reported Time	Calculated Time
		Daily Total:	10h	10h
Wed	Regular	Cardiac Care	8a to 4p	8h
		Daily Total:	8h	8h
Thu	Regular	Emergency	8a to 4p	8h
		Daily Total:	8h	8h
Fri	Regular	Cardiac Care Intensive Care	8a to 12p	2h 2h
	On-Call	Intensive Care	1p to 5p	4h
		Daily Total:	8h	8h
Sat	Regular	Intensive Care	8a to 12p	4h
		Daily Total:	4h	4h
Sun	Regular	Emergency	8a to 12p	4h
		Daily Total:	4h	4h
Weekly Totals:		Regular:	26h	0h
		Regular, Cardiac Care:	0h	20h
		Regular, Intensive Care:	0h	6h
		On-Call, Intensive Care:	6h	6h
		Regular, Emergency:	16h	16h
		Total:	48h	48h

Allocation configuration: This allocation example distributes reported regular time as shown here. Also, the reported time includes conflicts with the person's assigned allocation.

Priority	Allocation Type Quantity	Department
5	20	Cardiac Care
10	20	Intensive Care
15	Balance	Operation

Day	Worked Time	Department	Reported Time	Calculated Time
Mon	Regular	Cardiac Care	8a to 4p	8h
		Daily Total:	8h	8h
Tue	Regular	Cardiac Care	1p to 5p	4h
	Regular	Emergency	1p to 5p	4h
		Daily Total:	12h	12h
Wed	Regular	Cardiac Care Intensive Care	8a to 4p	6h 2h
		Daily Total:	8h	8h
Thu	Regular	Intensive Care Operation	8a to 4p	6h 2h
	Regular	Emergency	8a to 4p	8h
		Daily Total:	16h	16h
Fri	Regular	Operation	8a to 12p	4h
		Daily Total:	4h	4h
Sat	On-Call	Emergency	8a to 12p	4h
		Daily Total:	4h	4h
Sun	Regular	Emergency	8a to 4p	8h
		Daily Total:	8h	8h
	Weekly Totals	Regular:	36h	0h
		Regular, Cardiac Care:	0h	20h
		Regular, Intensive Care:	0h	10h
		Regular, Operation:	0h	6h
		Regular, Emergency:	20h	20h
		On-Call Emergency:	4h	4h
		Totals:	60h	60h

Examples of Quantity Allocations

Allocation configuration: These next four allocation examples distribute the first 20 hours of reported regular time to Cardiac Care. They distribute the next 20 hours to Intensive Care.

Example 1: The total for the time card period equals the defined allocation quantity.

Day	Worked Time	Department	Reported Time	Calculated Time
Mon	Regular	Cardiac Care	8a to 4p	8h
		Daily Total:	8h	8h
Tue	Regular	Cardiac Care	8a to 4p	8h
		Daily Total:	8h	8h
Wed	Regular	Cardiac Care Intensive Care	8a to 4p	4h 4h
		Daily Total:	8h	8h
Thu	Regular	Intensive Care	8a to 4p	8h
		Daily Total:	8h	8h
Fri	Regular	Intensive Care	8a to 4p	8h
		Daily Total:	8h	8h
	Weekly Totals	Regular:	40h	0h
		Regular, Cardiac Care:	0h	20h
		Regular, Intensive Care:	0h	20h
		Total:	40h	40h

Example 2: The total for the time card period is less than the defined allocation quantity.

Day	Worked Time	Department	Reported Time	Calculated Time
Mon	Regular	Cardiac Care	8a to 12p	4h
		Daily Total:	4h	4h

Day	Worked Time	Department	Reported Time	Calculated Time
Tue	Regular	Cardiac Care	8a to 4p	8h
		Daily Total:	8h	8h
Wed	Regular	Cardiac Care	8a to 4p	8h
		Daily Total:	8h	8h
Thu	Regular	Intensive Care	8a to 4p	8h
		Daily Total:	8h	8h
Fri	Regular	Intensive Care	1p to 5p	4h
		Daily Total:	4h	4h
	Weekly Totals	Regular:	32h	0h
		Regular, Cardiac Care:	0h	20h
		Regular, Intensive Care:	0h	12h
		Total	32h	32h

Example 3: The total for the time card period is more than the defined allocation quantity.

Day	Worked Time	Department	Reported Time	Calculated Time
Mon	Regular	Cardiac Care	8a to 4p	8h
		Daily Total:	8h	8h
Tue	Regular	Cardiac Care	8a to 6p	10h
		Daily Total:	10h	10h
Wed	Regular	Cardiac Care Intensive Care	8a to 4p	2h 6h
		Daily Total:	8h	8h
Thu	Regular	Intensive Care	8a to 4p	8h

Day	Worked Time	Department	Reported Time	Calculated Time
		Daily Total:	8h	8h
Fri	Regular	Intensive Care	8a to 4p	2h 6h
		Daily Total:	8h	8h
Sat	Regular		8a to 4p	8h
		Daily Total:	8h	8h
	Weekly Totals	Regular:	50h	10h
		Regular, Cardiac Care:	0h	20h
		Regular, Intensive Care:	0h	20h
		Total	50h	50h

Example 4: The total for the time card period is more than the defined allocation quantity. Also, the reported time includes conflicts with the person's assigned allocation.

Day	Worked Time	Department	Reported Time	Calculated Time
Mon	Regular	Cardiac Care	8a to 2p	6h
	On-Call	Intensive Care	2p to 4p	2h
		Daily Total:	8h	8h
Tue	Regular	Cardiac Care	8a to 12p	4h
	Regular	Emergency	1p to 5p	4h
		Daily Total:	10h	10h
Wed	Regular	Cardiac Care	8a to 4p	8h
		Daily Total:	8h	8h
Thu	Regular	Emergency	8a to 4p	8h
		Daily Total:	8h	8h
Fri	Regular	Cardiac Care	8a to 12p	2h

Day	Worked Time	Department	Reported Time	Calculated Time
		Intensive Care		2h
	On-Call	Intensive Care	1p to 5p	4h
			Daily Total: 8h	8h
Sat	Regular	Intensive Care	8a to 12p	4h
			Daily Total: 4h	4h
Sun	Regular	Emergency	8a to 12p	4h
			Daily Total: 4h	4h
		Weekly Totals Regular:	26h	0h
		Regular, Cardiac Care:	0h	20h
		Regular, Intensive Care:	0h	6h
		On-Call, Intensive Care:	6h	6h
		Regular, Emergency:	16h	16h
		Total	48h	48h

Allocation configuration: This allocation example distributes reported regular time as shown here. Also, the reported time includes conflicts with the person's assigned allocation.

Priority	Allocation Type Quantity	Department
5	20	Cardiac Care
10	20	Intensive Care
15	Balance	Operation

Day	Worked Time	Department	Reported Time	Calculated Time
Mon	Regular	Cardiac Care	8a to 4p	8h
			Daily Total: 8h	8h
Tue	Regular	Cardiac Care	8a to 4p	8h
	Regular	Emergency	1p to 5p	4h
			Daily Total: 12h	12h

Day	Worked Time	Department	Reported Time	Calculated Time
Wed	Regular	Cardiac Care Intensive Care	8a to 4p	6h 2h
		Daily Total:	8h	8h
Thu	Regular	Intensive Care Operation	8a to 4p	6h 2h
	Regular	Emergency	8a to 4p	8h
		Daily Total:	16h	16h
Fri	Regular	Operation	8a to 12p	4h
		Daily Total:	4h	4h
Sat	On-Call	Emergency	8a to 12p	4h
		Daily Total:	4h	4h
Sun	Regular	Emergency	8a to 4p	8h
		Daily Total:	8h	8h
	Weekly Totals	Regular:	36h	0h
		Regular, Cardiac Care:	0h	20h
		Regular, Intensive Care:	0h	10h
		Regular, Operation:	0h	6
		Regular, Emergency:	20h	20h
		On-Call, Emergency:	4h	4h
		Total:	60h	60h

Examples of Equally Distributed Allocations

Allocation configuration: These next two allocation examples distribute reported regular time equally across these departments: Cardiac Care, Intensive Care, and Emergency.

Example 1: The reported time doesn't include any conflicts with the person's assigned allocation.

Day	Worked Time	Department	Reported Time	Calculated Time
Mon thru Fri	Regular	Cardiac Care	8a to 40	2.66h

Day	Worked Time	Department	Reported Time	Calculated Time
		Intensive Care Emergency		2.66h 2.66h
	Daily Totals	Regular:	8h	0h
		Regular, Cardiac Care:	0h	2.66h
		Regular, Intensive Care:	0h	2.66h
		Regular, Emergency:	0h	2.66h
		Total:	8h	7.98h
	Weekly Totals	Regular:	40h	0h
		Regular, Cardiac Care:	0h	13.3h
		Regular, Intensive Care:	0h	13.3h
		Regular, Emergency:	0h	13.3h
		Total:	40h	39.9h

Example 2: The reported time includes conflicts with the person's assigned allocation.

Day	Worked Time	Department	Reported Time	Calculated Time
Mon	Regular	Cardiac Care Intensive Care Emergency	8a to 2p	2h 2h 2h
	On-Call	Intensive Care	2p to 4p	2h
		Daily Total:	8h	8h
Tue	Regular	Cardiac Care Intensive Care Emergency	8a to 12p	1.33h 1.33h 1.33h
	Regular	Emergency	1p to 5p	4h
		Daily Total:	8h	7.99h
Wed	Regular	Cardiac Care Intensive Care	8a to 4p	2.66h 2.66h

Day	Worked Time	Department	Reported Time	Calculated Time
		Emergency		2.66
		Daily Total:	8h	7.98h
Thu	Regular	Emergency	8a to 4p	8h
		Daily Total:	8h	8h
Fri	Regular	Cardiac Care Intensive Care Emergency	8a to 12p	1.33h 1.33h 1.33h
		Daily Total:	4h	3.99h
Sat	On-Call	Intensive Care	1p to 5p	4h
		Daily Total:	4h	4h
	Weekly Totals	Regular:	22h	0h
		Regular, Cardiac Care:	0h	7.32h
		Regular, Intensive Care:	0h	7.32h
		Regular, Emergency:	12h	12h
		On-Call, Intensive Care:	6h	6h
		Total:	40h	39.96h

Examples of Daily Overtime Calculations and Percentage Allocations

Allocation configuration: These next two allocation examples distribute 50 percent of the reported and calculated time to Cardiac Care and the other 50 percent to Intensive Care.

Example 1: The reported time doesn't include any conflicts with the person's assigned allocation.

Day	Worked Time	Department	Reported Time	Calculated Time
Mon	Regular	Cardiac Care Intensive Care	8a to 6p	4h 4h
	Overtime	Cardiac Care Intensive Care		1h 1h
		Daily Total:	10h	10h

Day	Worked Time	Department	Reported Time	Calculated Time
Tue	Regular	Cardiac Care Intensive Care	8a to 4p	4h 4h
		Daily Total:	8h	7.99h
Wed	Regular	Cardiac Care Intensive Care	8a to 4:30p	4h 4h
	Overtime	Cardiac Care Intensive Care		.25h .25h
		Daily Total:	8.5h	8.5h
Thu	Regular	Cardiac Care Intensive Care	8a to 4p	4h 4h
		Daily Total:	8h	8h
Fri	Regular	Cardiac Care Intensive Care	8a to 5p	4h 4h
	Overtime	Cardiac Care Intensive Care		.5h .5h
		Daily Total:	9h	9h
	Weekly Totals	Regular:	43.5h	0h
		Regular, Cardiac Care:	0h	20h
		Regular, Intensive Care:	0h	20h
		Overtime, Cardiac Care:	0h	1.75h
		Overtime, Intensive Care:	0h	1.75h
		Total:	43.5h	43.5h

Example 2: The reported time includes conflicts with the person's assigned allocation.

Day	Worked Time	Department	Reported Time	Calculated Time
Mon	Regular	Cardiac Care	7a to 12p	2.5h

Day	Worked Time	Department	Reported Time	Calculated Time
		Intensive Care		2.5h
	Regular	Emergency	1p to 4p	3h
	On-Call	Intensive Care	4p to 6p	
	Overtime	Intensive Care		2h
			Daily Total: 10h	10h
Tue	Regular	Emergency	8a to 5p	8h
	Overtime	Emergency		1h
			Daily Total: 9h	9h
Wed	On-Call	Intensive Care	8a to 4:30p	8h
	Overtime	Intensive Care		.5h
			Daily Total: 8.5h	8.5h
Thu	Regular	Cardiac Care Intensive Care	8a to 5p	4h 4h
	Overtime	Cardiac Care Intensive Care		.5h .5h
			Daily Total: 9h	9h
Fri	Regular	Cardiac Care Intensive Care	8a to 5p	4h 4h
	Overtime	Cardiac Care Intensive Care		.5h .5h
			Daily Total: 9h	9h
	Weekly Totals	Regular:	23.5h	0h
		Regular, Cardiac Care:	0h	10.5h
		Regular, Intensive Care:	0h	10.5h
		Regular, Emergency:	12h	11h
		On-Call, Intensive Care:	10.5h	8h
		Overtime, Emergency	0h	1h

Day	Worked Time	Department	Reported Time	Calculated Time
		Overtime, Cardiac Care:	0h	1h
		Overtime, Intensive Care:	0h	3.5h
		Total:	45.5h	45.5h

Examples of Daily Overtime Calculations and Quantity Allocations

Allocation configuration: This allocation example distributes the first 20 hours of reported and calculated time to Cardiac Care. They distribute the next 20 hours to Intensive care.

Example: The reported time includes conflicts with the person's assigned allocation. The total for the time card period is more than the defined allocation quantity.

Day	Worked Time	Department	Reported Time	Calculated Time, No Daily OT	Calculated Time, Daily OT
Mon	Regular	Cardiac Care	8a to 2p	6h	6h
	On-Call	Intensive Care	2p to 4p	2h	2h
	Regular	Emergency	4p to 6p	2h	
	Overtime	Emergency		2h	2h
		Daily Total:	10h	10h	10h
Tue	Regular	Cardiac Care	8a to 12p	4h	4h
	Regular	Emergency	1p to 5p	4h	4h
		Daily Total:	8h	8h	8h
Wed	Regular	Cardiac Care	7a to 12p	5h	5h
	On-Call	Intensive Care	1p to 4p	3h	3h
	Regular	Emergency	4p to 6p	2h	
	Overtime	Emergency			2h
		Daily Total:	10h	10h	10h
Thu	Regular	Emergency	8a to 4p	8h	8h
		Daily Total:	8h	8h	8h
Fri	Regular	Cardiac Care	8a to 12p	4h	4h
	On-Call	Intensive Care	1p to 5p	4h	4h

Day	Worked Time	Department	Reported Time	Calculated Time, No Daily OT	Calculated Time, Daily OT
		Daily Total:	8h	8h	8h
Sat	Regular	Cardiac Care Intensive Care	8a to 12p	1h 3h	1h 3h
		Daily Total:	4h	4h	4h
Sun	Regular	Emergency	8a to 12p	4h	4h
		Daily Total:	4h	4h	4h
	Weekly Totals	Regular:	23h	0h	0h
		Regular, Cardiac Care:	0h	20h	20h
		Regular, Intensive Care:	0h	3h	3h
		Regular, Emergency:	20h	20h	16h
		On-Call, Intensive Care:	9h	9h	9h
		Overtime, Emergency	0h	0h	4h
		Total:	52h	52h	52h

Allocation configuration: This allocation example distributes reported and calculated time as shown here:

Priority	Allocation Type Quantity	Department
5	20	Cardiac Care
10	20	Intensive Care
15	Balance	Operation

Example: The reported time includes conflicts with the person's assigned allocation.

Day	Worked Time	Department	Reported Time	Calculated Time, No Daily OT	Calculated Time, Daily OT
Mon	Regular	Cardiac Care	8a to 6p	10h	8h
	Overtime	Cardiac Care			2h
		Daily Total:	10h	10h	10h

Day	Worked Time	Department	Reported Time	Calculated Time, No Daily OT	Calculated Time, Daily OT
Tue	Regular	Cardiac Care	7a to 4p	9h	8h
	Overtime	Cardiac Care			1h
		Daily Total:	9h	9h	9h
Wed	Regular	Cardiac Care Intensive Care	8a to 4p	1h 7h	1h 7h
		Daily Total:	8h	8h	8h
Thu	Regular	Intensive Care Operation	8a to 4p	3h 5h	3h 5h
	On-Call	Emergency	4p to 6p	2h	
	Overtime	Emergency			2h
		Daily Total:	10h	10h	10h
Fri	Regular	Operation	8a to 5p	9h	8h
	Overtime	Operation	NA	0h	1h
		Daily Total:	9h	9h	9h
Sat	On-Call	Emergency	8a to 12p	4h	4h
		Daily Total:	4h	4h	4h
Sun	On-Call	Emergency	8a to 12p	4h	4h
		Daily Total:	8h	8h	8h
	Weekly Totals	Regular:	44h	0h	0h
		Regular, Cardiac Care:		20h	17h
		Regular, Intensive Care:	0h	10h	10h
		Regular, Operation:	0h	14h	13h
		On-Call, Emergency:	14h	14h	12h
		Overtime, Cardiac Care	0h	0h	3h
		Overtime, Emergency	0h	0h	2h

Day	Worked Time	Department	Reported Time	Calculated Time, No Daily OT	Calculated Time, Daily OT
		Overtime, Operations	0h	0h	1h
		Total:	58h	58h	58h

Identify Time Entries That Span Overtime and Earned Days

The ORA_WFM_TCR_OT_EARNED_DAYS_FOR_ENTRIES_THAT_SPAN_DAYS formula, which uses array processing, is associated with the delivered Time Entries That Span Overtime and Earned Days AP rule template. It identifies whether time entries span days. If they do, the formula identifies these days:

- The day to use in calculations that include reported time entries that span days
- The earned day for reported time entries that span days

By default, this fast formula uses rule parameter values. When the rule doesn't pass any values, the formula uses the values of the person's workday definition.

Parameters

Name	Type	Description
OVERTIME_DAY_START_TIME	Time HH:MM	Time in hours and minutes that marks the start of the day to use in time calculation rules that calculate overtime.
EARNED_RESOLVE_SPAN_RULE	Fixed text	Rule to use to identify the earned day for reported time entries that span days. Valid values are: • START_DAY: Time calculation rules should treat time entries as being entirely on the start day. • STOP_DAY: Time calculation rules should treat time entries as being entirely on the stop day. • SPLIT_AT_DAY_START: Time calculation rules should split time entries at the time where one day ends and the other starts.
EARNED_GROUPING_THRESHOLD	Fixed number	Threshold, in minutes, used to group reported time entries on one or another of the multiple days.
ORA_HWM_FF_DAY_BREAKER_FLAG	Exclude	Internal indicator to split the day. Doesn't show on the rule pages.

Outputs

This formula has no outputs shown on the rule template or rule.

Function

The function specifies to resolve time entries that span days using the rule {EARNED_RESOLVE_SPAN_RULE} for earned day. It automatically uses the rule SPLIT_AT_DAY_START for overtime. For this rule, the day start time is midnight and the threshold for grouping time entries on one day or the other is {EARNED_GROUPING_THRESHOLD} minutes. When identifying the overtime day, the day start time is {OVERTIME_DAY_START_TIME}.

Update Daily Reported Time for Overtime Entry

The ORA_WFM_TCR_THRESHOLD_WITH_EVENT_CHANGES_MSR_AP formula, which uses array processing, decides whether daily reported time should be updated to include an overtime entry. If it does, the formula updates the existing reported time to the value stored on the assignment record.

In this formula's case, the assignment value is a descriptive flexfield named OT Hours Threshold. OT Hours Threshold maps to Assignment Attribute2, which gets the initial value from the PER_ASG_ATTRIBUTE2 database item and the event from ASS_ATTRIBUTE2. The formula also adds an overtime entry with the remaining reported time. If the stored value changes in the middle of the time card period, the formula uses the new stored value to calculate overtime for the remaining days. To check whether the stored overtime value changed, the event database items use the person ID for the time card individual, the time card period, and the assignment OT Hours Threshold field. This fast formula isn't associated with any delivered time calculation rule template.

Parameters

Name	Type	Description
WORKED_TIME_CONDITION	Time category	Time category that identifies the time entries to use to decide the hours below and over the thresholds
DEFAULT_HOURS_BEFORE_OVERTIME	Fixed number	Default hours limit, which is used if the initial assignment and event threshold values are Null.

Outputs

Name	Output Group	Time Attribute	Description
OUT_GRP1_MEASURE_UNDER	1	Measure	Calculated hours below the daily threshold
OUT_GRP1_START_TIME_UNDER	1	StartTime	Start time below the daily threshold
OUT_GRP1_STOP_TIME_UNDER	1	StopTime	Stop time below the daily threshold
OUT_GRP2_MEASURE_OVER	2	Measure	Calculated hours over the daily threshold

Name	Output Group	Time Attribute	Description
OUT_GRP2_START_TIME_OVER	2	StartTime	Start time over the daily threshold
OUT_GRP2_STOP_TIME_OVER	2	StopTime	Stop time over the daily threshold

Function

This formula calculates daily overtime using rule input values stored on the assignment record. The input values can change over the time card period, so you use this formula to get the correct value for each day. This way the daily overtime calculation results are always correct.

This formula sums the daily time entries identified by the WORKED_TIME_CONDITION and uses the specified overtime threshold to calculate daily overtime.

- If the assignment OT Hours Threshold descriptive flexfield is Null, the formula uses the DEFAULT_HOURS_BEFORE_OVERTIME value.
- If the flexfield value isn't Null, the formula uses the PER_ASG_ATTRIBUTE2 database item value of PER_ASG_ASSIGNMENT_DETAILS Route (PER_ALL_ASSIGNMENTS_M table), for the overtime threshold.

  To get any changes to the OT Hours Threshold field from the events table, the formula uses the ORA_HWM_PROCESS_EVENTS_CHG_RN route database items.

Example

Scenario: You store people's overtime thresholds on the OT Hours Threshold descriptive flexfield. The initial threshold value for Chris, who works 40 hours a week is 8, but changes on Wednesday to 10.

Example: You create a rule with your template where the default daily threshold is 8 hours. The time category is All Payroll Time Types and the payroll time type for calculated hours over the threshold is Overtime.

Day	Payroll Time Type	Reported Time	Calculated time
Mon	Regular	10h	8h
	Overtime	0h	2h
Tue	Regular	10h	8h
	Overtime	0h	2h
Wed	Regular	10h	8h 2h
Thu	Regular	12h	10h
	Overtime	0h	2h

Generate Unit Time Attribute for Reported Day

The ORA_WFM_TCR_UNIT_CALC_PAYTYPE_AP formula, which uses array processing, generates a unit time attribute for the day, if the reported time category hours on that day include the specified time attributes.

This fast formula isn't associated with any delivered time calculation rule templates.

Parameters

Name	Type	Description
WORKED_TIME_CONDITION	Time category	Time category of reported hours that include the specified time attributes used to decide whether to generate a units time attribute.
NUMBER_OF_UNITS	Fixed number	Numeric value for the number of units with UN unit of measure to allocate for each detail found.

Outputs

Name	Output Group	Time Attribute	Description
CALC_START_TIME	1	StartTime	Original start time
CALC_STOP_TIME	1	StopTime	Original stop time
MEASURE_UNITS	2	Measure	Number of units
UOM_UNITS	2	UnitOfMeasure	UN unit of measure
RATE_AMOUNT	2	Rate_Amount	Sets the rate amount to Null
PERIODICITY	2	Periodicity	Sets the periodicity of the rate amount to Null
UNITS_PAYTYPE	2	PayrollTimeType	Payroll time type to associate with the units

Note that for start and stop times, the formula resets the rate amount and periodicity values in the generated units time entry to empty values.

Function

For each detail time card record found, depending on the time category, add the number of units specified in NUMBER_OF_UNITS to the time card. The unit amount is 'UN' (Units).

Example

When the person breaks for a meal, they're paid a meal allowance if the time category identifies the Meal payroll time type.

Day	Payroll Time Type	Reported Time	Calculated Time
1 thru 4	Regular	8a to 12p 1p to 4p	4h 3h
	Meal	12p to 1p	1h
	Meal Allowance	NA	1 unit
5	Regular	8a to 12p	4

Identify Unit Quantities for Spanning Time Ranges

The ORA_WFM_TCR_UNIT_CALC_TIME_RANGE_AP formula, which uses array processing, identifies unit quantities for reported time that spans a specific time range. It generates a unit time attribute for the day, if the reported time category hours span the specified range.

This fast formula isn't associated with any delivered time calculation rule templates.

Parameters

Name	Type	Description
WORKED_TIME_CONDITION	Time category	Time category of reported hours that include the specified time attributes used to decide whether to generate a units time attribute.
NUMBER_OF_UNITS	Fixed number	Numeric value for the number of units with UN unit of measure to allocate for each detail found.
START_TIME_HHMM24	Time HH:MM	Start of time range to allocate units for.
STOP_TIME_HHMM24	Time HH:MM	End of time range to allocate units for.

Both start and stop time parameters must have a value in every rule associated with this formula. These parameters indicate to generate the specified unit of measure, if reported time during that range included time entries identified by the specified time category.

Outputs

Name	Output Group	Time Attribute	Description
CALC_START_TIME	1	StartTime	Original start time
CALC_STOP_TIME	1	StopTime	Original stop time
MEASURE_UNITS	2	Measure	Number of units
UOM_UNITS	2	UnitOfMeasure	UN unit of measure
RATE_AMOUNT	2	Rate_Amount	Sets the rate amount to Null
PERIODICITY	2	Periodicity	Sets the periodicity of the rate amount to Null
UNITS_PAYTYPE	2	PayrollTimeType	Payroll time type to associate with the units

Function

For each detail time card record found, depending on the time category, if the time card start time is between START_TIME_HHMM24 and STOP_TIME_HHMM24, add the number of units specified in NUMBER_OF_UNITS to the time card. The unit amount is 'UN' (Units).

Example

When the person works from 6:00 PM to midnight, they receive a night shift stipend.

Day	Payroll Time Type	Reported Time	Calculated Time
1	Regular	10a to 5p	8h
2	Regular	8p to11p	3h
	Night Shift Stipend	NA	1 unit
3	Regular	10a to 5p	8h
4	Regular	8p to 11p	8h
	Night Shift Stipend	NA	1 unit
5	Regular	10a to 5p	8h

Identify Unit Quantity for Weekend Reported Time

The ORA_WFM_TCR_UNIT_CALC_WEEKEND_AP formula, which uses array processing, identifies unit quantity for reported weekend time. It generates a unit time attribute for the day if the reported time category hours occur on a weekend day.

This fast formula isn't associated with any delivered time calculation rule templates.

Parameters

Name	Type	Description
WORKED_TIME_CONDITION	Time category	Time category of reported hours that include the specified time attributes used to decide whether to generate a units time attribute.
NUMBER_OF_UNITS	Fixed number	If Yes, generate the number of units when the person associated with a rule using this formula works any day defined as weekend day. If No, generate the number of units only when the person associated with a rule using this formula works all days defined as weekend days.
IS_MON_WEEKEND	Yes or No	Indicate if Monday is a weekend day.
IS_TUE_WEEKEND	Yes or No	Indicate if Tuesday is a weekend day.
IS_WED_WEEKEND	Yes or No	Indicate if Wednesday is a weekend day.
IS_THU_WEEKEND	Yes or No	Indicate if Thursday is a weekend day.
IS_FRI_WEEKEND	Yes or No	Indicate if Friday is a weekend day.
IS_SAT_WEEKEND	Yes or No	Indicate if Saturday is a weekend day.
IS_SUN_WEEKEND	Yes or No	Indicate if Sunday is a weekend day.

Outputs

Name	Output Group	Time Attribute	Description
CALC_START_TIME	1	StartTime	Original start time
CALC_STOP_TIME	1	StopTime	Original stop time
MEASURE_UNITS	2	Measure	Number of units
UOM_UNITS	2	UnitOfMeasure	UN unit of measure
RATE_AMOUNT	2	Rate_Amount	Sets the rate amount to Null
PERIODICITY	2	Periodicity	Sets the periodicity of the rate amount to Null
UNITS_PAYTYPE	2	PayrollTimeType	Payroll time type to associate with the units

Function

For each detail time card record found for the time category, if the function finds any time entry for days specified as weekend day (IS_MON_WEEKEND…), select WORK_ANY_WEEKEND_DAY.

WORK_ANY_WEEKEND_DAY SETTING	What Happens
Yes	Add the number of units specified in NUMBER_OF_UNITS to the time card with a unit amount of UN (Units). It doesn't matter if the person worked only one or every day defined as a weekend day.
No	Add the number of units specified in NUMBER_OF_UNITS to the time card with a unit amount of UN (Units), only if the person worked every day defined as weekend days.

Examples of WORK_ANY_WEEKEND_DAY is Yes

For these examples, the weekend days are Saturday and Sunday.

Day	Payroll Time Type	Reported Time	Calculated Time
Wed thru Fri	Regular	8h	8h
Sat	Regular	2h	2h
Sun	Regular	9h	9h
	Weekend Allowance	NA	1 unit

Day	Payroll Time Type	Reported Time	Calculated Time
Wed thru Fri	Regular	8h	8h
Sat	Regular	2h	2h
	Weekend Allowance	NA	1 unit

Day	Payroll Time Type	Reported Time	Calculated Time
Wed thru Fri	Regular	8h	8h
Sun	Regular	9h	9h
	Weekend Allowance	NA	1 unit

Examples of WORK_ANY_WEEKEND_DAY is No

For these examples, the weekend days are Saturday and Sunday.

Day	Payroll Time Type	Reported Time	Calculated Time
Wed thru Fri	Regular	8h	8h
Sat	Regular	2h	2h

Day	Payroll Time Type	Reported Time	Calculated Time
Wed thru Fri	Regular	8h	8h
Sun	Regular	9h	9h

Generate Premium Entries for Insufficient Rest Between Shifts

The WFM_TCR_INSUFFICIENT_REST_PERIOD_PREMIUM_AP formula, which uses array processing, is associated with the delivered Insufficient Rest Premium Template rule template.

The fast formula compares the end and start times of consecutive reported time entries identified by the time category of the rest period. If the interim time is less than the defined rest period, it generates another, premium time entry. The premium entry is for all the reported hours for the second shift. Or it's only the reported hours until the rest period is met.

Parameters

Name	Type	Description
WORKED_TIME_CONDITION	Time category	Time category that identifies the time entries to use to decide whether the minimum rest period was met for the two shifts
REST_PERIOD_IN_MINUTES	Fixed number	Minimum nonworked time, in minutes, required between consecutive time entries
IS_ENTIRE_SHIFT_PREMIUM	Yes or No	Specify to pay all the reported hours for the second shift at the premium rate. Or pay only those hours reported in the second shift before the rest period is met at the premium rate.

Outputs

Name	Output Group	Time Attribute	Description
MEASURE_UNDER	1	Measure	Calculated nonpremium hours, which are outside the rest period

Name	Output Group	Time Attribute	Description
MEASURE_OVER	2	Measure	Calculated premium hours, which are within the rest period

Examples

Scenario: The interim 6 hours between the end time on Monday and the start time on Tuesday is less than the minimum rest period of 8 hours.

Example 1: You pay a premium for the entire shift.

Day	Payroll Time Type	Reported Time	Calculated Time
Mon	Regular	11a to 10p	11h
Tue	Regular	4a to 10a	
	Premium	NA	6h

Example 2: You pay a premium for only the time worked in the second shift until the rest period is met.

Day	Payroll Time Type	Reported Time	Calculated Time
Mon	Regular	11a to 10p	11h
Tue	Regular	4a to 10a	4h
	Premium	NA	2h

Compare Total Hours Against Threshold for Shift Premium

The WFM_SHIFT_PREMIUM_CALCULATION formula is associated with the delivered Shift Premium Template rule template.

The fast formula compares the total daily or period hours identified by the time category with the threshold value. It converts hours over the threshold to a single payroll time type. It leaves hours below the threshold as the same payroll time type or converts them to a new, single payroll time type.

Parameters

Name	Type	Description
PREM_START_TIME	Time HH:MM	Start time of the premium shift in a 24-hour format, such as 18:00 instead of 6:00p

Name	Type	Description
PREM_STOP_TIME	Time HH:MM	End time of the premium shift in a 24-hour format, such as 23:30 instead of 11:30p
WORKED_TIME_CONDITION	Time category	Time category that identifies the time entries to use to decide the hours that qualify for premium pay

Outputs

Name	Output Group	Time Attribute	Description
OUT_MEASURE_UNDER	1	Measure	Calculated based hours
OUT_MEASURE_OVER	2	Measure	Calculated premium hours

Function

Compares the start and end time for the detailed entries identified by the time category that are within the defined time range. Time entries that fall within the defined time range get another time attribute. This formula requires start and end time entries. The calculation splits hours entries that span midnight and the calculated hours appear separately on each day. The summation level is set to Detailed.

Examples

Scenario: You don't include a payroll time type for calculated hours below the threshold because you want to use those of the reported time entries. You add a payroll time type output for calculated hours over the threshold to use instead of the reported time type. You create a rule with your template where the premium shift starts at 6:00 PM, ends at 12:00 AM, with a time category of All Payroll Time Types.

Example1: The person doesn't work any evening hours, so doesn't qualify for the shift premium.

Day	Payroll Time Type	Reported Time	Calculated Time
Mon thru Fri	Regular	8a to 4p	8h

Example 2: The person works evening hours that qualify for the shift premium.

Day	Payroll Time Type	Reported Time	Calculated Time
Mon	Regular	4p to 12a	8h
	Premium	NA	6h
Tue	Regular	2p to 10p	8h
	Premium	NA	4h
Wed	Regular	10a to 6p	8h

Day	Payroll Time Type	Reported Time	Calculated Time
Thu	NA	NA	NA
Fri	Regular	9p to 5a	8h
	Premium	NA	3h

Compare Reported Time with Assigned Public Holidays

The WFM_TCR_HOLIDAY_THRESHOLD_PREMIUM_AP formula, which uses array processing, compares the reported time with a specific category of public holidays attached to the person's assigned schedule.

If the reported time is on a qualifying holiday, the person gets a holiday premium payroll time type. This fast formula isn't associated with any delivered time calculation rule templates.

> **Note:** If the person should also receive a premium for hours worked over some defined threshold value, you need to use a separate threshold premium rule.

Parameters

Name	Type	Description
WORKED_TIME_CONDITION	Time category	Time category that identifies the time entries to compare with the public holiday category of entries associated with the person's schedule
OVRD_PUB_HOLIDAY_CATEGORY	Value set	Category of public holiday entries associated with the person's schedule to compare with the time entries identified by the specified time category

Outputs

Name	Output Group	Time Attribute	Description
OUT_MEASURE_ARY_below	1	Measure	Calculated hours that aren't on a public holiday
OUT_MEASURE_ARY_OVER	2	Measure	Calculated hours that are on a public holiday

Function

This formula gets a list of holidays for the given public holiday category and time card period. It assigns all time entries that don't match a public holiday date to the OUT_MEASURE_ARY_UNDER measure. It assigns any time entries that do match to the measure OUT_MEASURE_ARY_OVER measure.

Example

Scenario: You don't include a payroll time type for calculated hours below the threshold because you want to use those of the reported time entries. You add a payroll time type output for calculated hours over the threshold to use instead of the reported time type.

Example: You create a rule with your template where the time category is All Pay Time Types. For calculated hours over the threshold, the payroll time type is Overtime. Thursday and Friday are public holidays (PH).

Day	Payroll Time Type	Reported Time	Calculated Time
Mon	Regular	8h	8h
Tue	Regular	8h	8h
Wed	Regular	9h	8h
	Overtime	NA	1h
Thu (PH)	Regular	8h	0h
	Overtime	NA	8h
Fri (PH)	Regular	8h	0h
	Overtime	NA	8h
Sat	Regular	8h	8h

Compare Hours to Daily, Period, and Seventh Day Thresholds

The WFM_TCR_THRESHOLD_TWO_TIER_SEVEN_DAY_AP formula, which uses array processing, is associated with the delivered Day Periods and Seventh Day Threshold Template rule template.

The fast formula compares the total daily, period, or seventh consecutive day hours identified by the time category with the corresponding threshold values. It converts hours over the threshold to a single payroll time type. It leaves hours below the threshold as the same payroll time type or converts them to a new payroll time type.

Parameters

Name	Type	Description
WORKED_TIME_CONDITION	Time category	Time category that identifies the time entries to use to decide the hours below and over the thresholds
DAILY_THRESHOLD_1	Fixed number	Number of hours marking the threshold for the first day

Name	Type	Description
DAILY_THRESHOLD_2	Fixed number	Number of hours marking the second threshold for the first day
SEVENT_DAY_THRESHOLD	Fixed number	Number of hours marking the threshold for the seventh day
WEEKLY_THRESHOLD	Fixed number	Number of hours marking the threshold for the weekly time card

Outputs

Name	Output Group	Time Attribute	Description
OUT_MEASURE_ARY_UNDER	1	Measure	Calculated hours below the first daily threshold
OUT_MEASURE_OVER_1	2	Measure	Calculated hours between the first and second daily thresholds
OUT_MEASURE_OVER_2	3	Measure	Calculated hours over the second daily threshold

Function

The general overtime provision requires that people get 1.5 times their regular pay rate when they work more than X hours a day or more than Y hours a week. People can work more than X hours a day or more than 6 days a week if they get overtime pay according to these tiers.

- The first overtime tier includes all hours worked beyond X hours, up to and including X2 hours in a day. It also includes the first X hours worked on the seventh consecutive day of the week.
- The second overtime tier includes all hours worked beyond X2 hours in a day. It also includes all hours worked in excess of X on the seventh consecutive day of the week.

Daily Rule:

- Overtime is based on 2 threshold values or parameters.
- Hours worked below the first threshold get paid at the regular rate.
- Hours worked over the first threshold and below the second threshold get paid at an overtime rate of 1.5 times the regular rate.
- Hours worked over the second threshold get paid at an overtime rate of 2 times the regular rate.

Weekly Rule:

- Overtime is based on 1 threshold value or parameter.
- Hours worked below the first threshold get paid at the regular rate.
- Hours worked over the first threshold get paid at an overtime rate of 1.5 times the regular rate.

Assumption in processing order:

1. The rule that checks for and processes any seventh day worked hours runs first. Typically, US rules use a threshold of 8 hours and calculate hours below the threshold as overtime and over it as double time.
2. The daily rules that check thresholds and process any worked hours run next. Typically, US rules have these configurations:
   - Daily double time rule (X2): The daily threshold is 12 hours with calculated hours below the threshold as regular and over it as double time.
   - Daily overtime rule (X): The daily threshold is 8 hours with calculated hours below the threshold as regular and over it as overtime.
3. The weekly rule that checks the threshold and processes any worked hours runs last. Typically, US rules use a threshold of 40 hours and calculate hours below the threshold as regular and over it as overtime.

Examples

Scenario: The person's rule set includes the following four rules, created with this formula.

Processing Sequence	Rule	Parameter Configuration	Output Configuration
1	Seventh Day DT and OT	SEVENT_DAY_THRESHOLD = 8	PAY _TYPE_UNDER = Overtime PAY _TYPE_OVER_1 = Double Time
2	Daily Over 12 DT and RT	DAILY_THRESHOLD_2 = 12	PAY _TYPE_UNDER = Regular PAY _TYPE_OVER_2 = Double Time
3	Daily Over 8 OT and RT	DAILY_THRESHOLD_1 = 8	PAY _TYPE_UNDER = Regular PAY _TYPE_OVER_1 = Overtime
4	Weekly OT and RT	WEEKLY_THRESHOLD = 40	PAY _TYPE_UNDER = Regular PAY _TYPE_OVER_1 = Overtime

Example 1: The seventh day and both daily rules don't run, but the weekly overtime rule does.

Day	Payroll Time Type	Reported Time	Calculated Time
1 thru 5	Regular	8h	8h
6	Regular	8h	0h
	Overtime	NA	8h

Example 2: The seventh day and daily double time rules don't run, but the daily and weekly overtime rules do.

Day	Payroll Time Type	Reported Time	Calculated Time
1 thru 3	Regular	6h	6h
4 thru 5	Regular	12h	8h
	Overtime	NA	4h
6	Regular	10h	6h
	Overtime	NA	4h

Example 3: The seventh day rule doesn't run, but both daily rules and the weekly overtime rules do.

Day	Payroll Time Type	Reported Time	Calculated Time
1	Regular	13h	8h
	Overtime	NA	4h
	Double Time	NA	1h
2	Regular	6h	6h
3 thru 5	Regular	13h	8h
	Overtime	NA	4h
	Double Time	NA	1h
6	Regular	10h	2h
	Overtime	NA	8h

Example 4: The seventh day, both daily, and the weekly overtime rules all run.

Day	Payroll Time Type	Reported Time	Calculated Time
1	Regular	4h	4h
2	Regular	8h	8h
3	Regular	12h	8h
	Overtime	NA	4h
4 thru 5	Regular	8h	8h
6	Regular	3h	3h
7	Regular	3h	
	Overtime	NA	3h

Example 5: The seventh day, both daily, and the weekly overtime rules all run.

Day	Payroll Time Type	Reported Time	Calculated Time
1 thru 3	Regular	4h	4h
4	Regular	13h	8h
	Overtime	NA	4h
	Double Time	NA	1h
5	Regular	8h	8h
6	Regular	4h	4h
7	Regular	9h	0h
	Overtime	NA	8h
	Double Time	NA	1h

Example 6: The seventh day and weekly overtime rules run, but both daily rules don't.

Day	Payroll Time Type	Reported Time	Calculated Time
1 thru 5	Regular	8h	8h
6	Regular	8h	0h
	Overtime	NA	8h
7	Regular	4h	0h
	Overtime	NA	4h

Example 7: The seventh day, daily double time, and weekly overtime rules run, but the daily overtime rule doesn't.

Day	Payroll Time Type	Reported Time	Calculated Time
1 thru 5	Regular	8h	8h
6	Regular	12h	0h
	Overtime	NA	8h
	Double Time	NA	4h
7	Regular	13h	0h
	Overtime	NA	8h
	Double Time	NA	5h

Example 8: The seventh day rule runs, but both daily rules and the weekly overtime rule don't.

Day	Payroll Time Type	Reported Time	Calculated Time
1 thru 6	Regular	4h	4h
7	Regular	4h	0h
	Overtime	NA	4h

Example 9: The seventh day and daily double time rules don't run, but the daily and weekly overtime rules do.

Day	Payroll Time Type	Reported Time	Calculated Time
2 thru 6	Regular	10h	8h
	Overtime	NA	2h
7	Regular	7h	0h
	Overtime	NA	7h

Example 10: The seventh day and weekly rules run, but both daily rules don't.

Day	Payroll Time Type	Reported Time	Calculated Time
1	Regular	2h	2h
2 thru 5	Regular	8h	8h
6	Regular	8h	6h
	Overtime	NA	2h
7	Regular	5h	0h
	Overtime	NA	5h

Compare Daily or Weekly Hours to Threshold

The WFM_THRESHOLD_TIME_CALCULATION_RULE formula is associated with the delivered Daily Threshold Template and Weekly Threshold Template rule template.

The fast formula compares the total daily or period hours identified by the time category with the threshold value. It converts hours over the threshold to a single payroll time type. It leaves hours below the threshold as the same payroll time type or converts them to a new, single payroll time type.

Parameters

Name	Type	Description
WORKED_TIME_CONDITION	Time category	Time category of reported hours that include the specified time attributes to convert and copy to payroll cost segments.
DEFINED_LIMIT	Fixed Number	Number of hours marking the daily or weekly threshold

Outputs

\Name	Output Group	Time Attribute	Description
OUT_MEASURE_ARY_UNDER	1	Measure	Calculated hours below the daily or weekly threshold
OUT_MEASURE_ARY_OVER	2	Measure	Calculated hours over the daily or weekly threshold

Function

This formula sums time entries for each day and the entire time card. If the total hours worked exceed the defined limit for the selected summation level, it splits the totaled time between the measures OUT_MEASURE_ARY_UNDER and OUT_MEASURE_ARY_OVER.

Examples

Scenario: You don't include a payroll time type for calculated hours below the threshold because you want to use those of the reported time entries. You add a payroll time type output for calculated hours over the threshold to use instead of the reported time type. Also, Sick and Jury Duty are pay time attributes instead of absence time attributes.

Example 1: You create a rule with your template where the daily threshold is 8 hours. The time category is All Payroll Time Types and the payroll time type for calculated hours over the threshold is Overtime.

Day	Payroll Time Type	Reported Time	Calculated Time
Mon	Regular	7h	7h
	Sick	1h	1h
Tue	Regular	8h	8h
Wed	Regular	9h	8h
	Overtime	NA	1h
Thu	Regular	10h	8h
	Overtime	NA	2h

Day	Payroll Time Type	Reported Time	Calculated Time
Fri	Jury Duty	8h	8h
	Regular	NA	8h

Example 2: You create a rule with your template where the weekly threshold is 40 hours. The time category is All Payroll Time Types, and the payroll time type for calculated hours over the threshold is Overtime.

Day	Payroll Time Type	Reported Time	Calculated Time
Mon	Regular	7h	7h
	Sick	1h	1h
Tue	Regular	8h	8h
Wed	Regular	9h	9h
Thu	Regular	10h	10h
Fri	Jury Duty	8h	5h
	Overtime	NA	3h

Scenario: You add a payroll time type output for calculated hours both below and over the threshold to use instead of the reported time types. Also, Sick and Jury Duty are pay time attributes instead of absence time attributes.

Example 3: You create a rule with your template where the daily threshold is 8 hours and the time category is All Payroll Time Types. The payroll time type for calculated hours below the threshold is Straight Time and over the threshold is Overtime.

Day	Payroll Time Type	Reported Time	Calculated Time
Mon	Regular	7h	
	Sick	1h	
	Straight Time	NA	8h
Tue	Regular	8h	
	Straight Time	NA	8h
Wed	Regular	9h	
	Straight Time	NA	8h
	Overtime	NA	1
Thu	Regular	10h	0h
	Straight Time	NA	8h
	Overtime	NA	2h
Fri	Jury Duty	8h	

Day	Payroll Time Type	Reported Time	Calculated Time
	Straight Time	NA	8h

Example 4: You create a rule with your template where the weekly threshold is 40 hours and the time category is All Payroll Time Types. The payroll time type for calculated hours below the threshold is Straight Time and over the threshold is Overtime.

Day	Payroll Time Type	Reported Time	Calculated Time
Mon	Regular	7h	
	Sick	1h	
	Straight Time	NA	8h
Tue	Regular	8h	0h
	Straight Time	NA	8h
Wed	Regular	9h	0h
	Straight Time	NA	9h
Thu	Regular	10h	0h
	Straight Time	NA	8h
	Overtime	NA	2h
Fri	Jury Duty	8h	0h
	Straight Time	NA	5h
	Overtime	NA	3h

Compare Daily or Weekly Hours to Threshold

The WFM_THRESHOLD_TIME_CALCULATION_RULE_AP formula, which use array processing, is associated with the delivered Daily Threshold AP Template and Weekly Threshold AP Template rule template.

The fast formula compares the total daily or period hours identified by the time category with the threshold value. It converts hours over the threshold to a single payroll time type. It leaves hours below the threshold as the same payroll time type or converts them to a new payroll time type.

Parameters

Name	Type	Description
WORKED_TIME_CONDITION	Time category	Time category that identifies the time entries to use to decide the hours below and over the thresholds
DEFINED_LIMIT	Fixed number	Number of hours marking the detail, daily or weekly threshold

Outputs

Name	Output Group	Time Attribute	Description
OUT_MEASURE_ARY_UNDER	1	Measure	Calculated hours below the daily or weekly threshold
OUT_MEASURE_ARY_OVER	2	Measure	Calculated hours over the daily or weekly threshold

Function

This formula sums time entries for each day and the entire time card. It splits the totaled time between the measures OUT_MEASURE_ARY_UNDER and OUT_MEASURE_ARY_OVER, if the total hours worked exceed the defined limit for the selected summation level.

Examples

Scenario: You don't include a payroll time type for calculated hours below the threshold because you want to use those of the reported time entries. You add a payroll time type output for calculated hours over the threshold to use instead of the reported time type. Also, Sick and Jury Duty are payroll time attributes instead of absence time attributes.

Example 1: You create a rule with your template where the daily threshold is 8 hours and the time category is All Pay Time Types. For calculated hours over the threshold, the payroll time type is Overtime.

Day	Payroll Time Type	Reported Time	Calculated Time
Mon	Regular	7h	7h
	Sick	1h	1h
Tue	Regular	8h	8h
Wed	Regular	9h	8h
	Overtime	NA	1h
Thu	Regular	10h	8h
	Overtime	NA	2h

Day	Payroll Time Type	Reported Time	Calculated Time
Fri	Jury Duty	8h	8h

Example 2: You create a rule with your template where the weekly threshold is 40 hours and the time category is All Pay Time Types. For calculated hours over the threshold, the payroll time type is Overtime.

Day	Payroll Time Type	Reported Time	Calculated Time
Mon	Regular	7h	7h
	Sick	1h	1h
Tue	Regular	8h	8h
Wed	Regular	9h	9h
Thu	Regular	10h	10h
Fri	Jury Duty	8h	5h
	Overtime	NA	3h

Scenario: You add a payroll time type output for calculated hours both below and over the threshold to use instead of the reported time type. Also, Sick and Jury Duty are payroll time attributes instead of absence time attributes.

Example 3: You create a rule with your template where the daily threshold is 8 hours and the time category is All Pay Time Types. For calculated hours below the threshold, the payroll time type is Straight Time. For calculated hours over the threshold, it's Overtime.

Day	Payroll Time Type	Reported Time	Calculated Time
Mon	Regular	7h	0h
	Sick	1h	0h
	Straight Time	NA	8h
Tue	Regular	8h	0h
	Straight Time	NA	8h
Wed	Regular	9h	0h
	Straight Time	NA	8h
	Overtime	NA	1h
Thu	Regular	10h	0h
	Straight Time	NA	8h
	Overtime	NA	2h
Fri	Jury Duty	8h	0h
	Straight Time	NA	8h

Example 4: You create a rule with your template where the weekly threshold is 40 hours and the time category is All Pay Time Types. For calculated hours below the threshold, the payroll time type is Straight Time. For calculated hours over the threshold, it's Overtime.

Day	Payroll Time Type	Reported Time	Calculated Time
Mon	Regular	7h	0h
	Sick	1h	0h
	Straight Time	NA	8h
Tue	Regular	8h	0h
	Straight Time	NA	8h
Wed	Regular	9h	0h
	Straight Time	NA	9h
Thu	Regular	10h	0h
	Straight Time	NA	10h
Fri	Jury Duty	8h	0h
	Straight Time	NA	5h
	Overtime	NA	3h

Compare Daily or Period Hours Including Absences to Defined Threshold

The WFM_THRESHOLD_W_ABS_TIME_CALCULATION_RULE_AP formula, which uses array processing, is associated with the delivered Daily Threshold with Absences AP Template and Weekly Threshold with Absences AP Template rule template.

The fast formula compares the total daily or period hours identified by the time category, which might include absence time, with the threshold value. It converts hours over the threshold to a single payroll time type. It leaves hours below the threshold as the same payroll time type or converts them to a new, single payroll time type.

Parameters

Name	Type	Description
WORKED_TIME_CONDITION	Time category	Time category that identifies the time entries to use to decide the hours below and over the thresholds
DEFINED_LIMIT	Fixed number	Number of hours marking the daily or weekly threshold

Name	Type	Description
RESTRICTED_ABSENCE_TYPE1	Fixed text	First absence type attribute to identify
RESTRICTED_ABSENCE_TYPE2	Fixed text	Optional second absence type attribute to identify
RESTRICTED_ABSENCE_TYPE3	Fixed text	Optional third absence type attribute to identify
RESTRICTED_ALL_ABSENCE_Y	Fixed text	Maintain all absence entries

Outputs

Name	Output Group	Time Attribute	Description
MEASURE_ UNDER	1	Measure	Calculated hours below the daily or weekly threshold
MEASURE_ OVER	2	Measure	Calculated hours over the daily or weekly threshold

Function

Compares the total hours identified by the time category, which might include absence time, for the day or with the threshold value. The function converts hours over the threshold to a single payroll time type attribute. For hours below the threshold, it either keeps the attribute or converts the attribute to a new payroll time type attribute.

Examples

Scenario: You don't include a payroll time type for calculated hours below the threshold because you want to use those of the reported time entries. You add a payroll time type output for calculated hours over the threshold to use instead of the reported time type. Also, Sick and Jury Duty are payroll time attributes instead of absence time attributes.

You create a rule with your template where the weekly threshold is 40 hours and the time category is All Payroll Time Types. Calculations include the vacation absence type and the payroll time type for calculated hours over the threshold is Overtime.

Example 1: The person's hours total to 48 for the time card period when it includes absence time.

- If your rule execution type is Update, then on Friday, the rule splits the calculated hours. It keeps the hours below the 40-hour threshold associated with the reported payroll time type. It associates the calculated hours over the threshold with the Overtime payroll time type.
- If your rule execution type is Create, the rule keeps all calculated hours associated with the existing payroll time types. It then creates a new time entry for the hours over the threshold and associates it with the Overtime payroll time type.

Day	Payroll Time Type	Reported Time	Calculated (Update)	Calculated (Create)
Mon	Vacation	8h	8h	8h
Tue thru Thu	Regular	10h	10h	10h

Day	Payroll Time Type	Reported Time	Calculated (Update)	Calculated (Create)
Fri	Regular	10h	2h	10h
	Overtime	NA	8h	0h
	OT Differential	NA	0h	8h

Example 2: The person's hours total to 48 for the time card period when it includes absence time.

- If your rule execution type is Update, the rule splits the calculated hours. It keeps the hours below the 40-hour threshold associated with the reported payroll time type. It associates the calculated hours over the threshold with the Overtime payroll time type. Because update calculation rules can only create other overtime entries on nonabsence days, the rule enters the calculated overtime on Thursday.
- If your rule execution type is Create, the rule keeps all calculated hours associated with the existing payroll time types. It then creates a new time entry for the hours over the threshold and associates it with the Overtime payroll time type.

Day	Payroll Time Type	Reported Time	Calculated (Update)	Calculated (Create)
Mon thru Wed	Regular	10h	10h	10h
Thu	Regular	10h	2h	10h
	Overtime	NA	8h	0h
Fri	Vacation	8h	8h	8h
	OT Differential	NA	0h	8h

Separate Hours Above and Below Variable Day Threshold

The WFM_VARIABLE_DAY_START_TIME_CALCULATION formula is associated with the delivered Variable Day Threshold Template rule template.

The fast formula compares the total hours identified by the time category for the variable day with the threshold value. It converts hours over the threshold to a single payroll time type. It leaves hours below the threshold as the same payroll time type or converts them to a new, single payroll time type.

Parameters

Name	Type	Description
SHIFT_START_TIME	Time HH:MM	Start time of the first shift of the variable day in a 24-hour format

Name	Type	Description
BREAK_LENGTH_MIN	Fixed number	Minimum nonworked time, in minutes, between consecutive entries
DEFINED_LIMIT	Fixed number	Number of hours marking the threshold for the variable day
WORKED_TIME_CONDITION	Time category	Time category that identifies the time entries to total for the variable and compare with the defined limit

Outputs

Name	Output Group	Time Attribute	Description
OUT_MEASURE_UNDER	1	Measure	Calculated based hours
OUT_MEASURE_OVER	2	Measure	Calculated premium hours

Function

The function compares the total variable day hours identified by the time category with the threshold value. It coverts hours over the threshold to a single payroll time type attribute. For hours below the threshold, it either keeps the attribute or converts the attribute to a new payroll time type attribute. The function defines the variable day by the start time of the first entry after a specified time. The day calculation considers all entries from the first time entry time until just before the same time on the next day, unless the person got an insufficient break during the variable day. If the person did get an insufficient break, the function includes entries after the same time on the next day, in the overtime calculation for the first day. This formula requires start and end time entries. The calculation splits hours entries that span midnight and the calculated hours appear separately on each day. The summation level is Detailed.

Examples

Scenario: You don't include a payroll time type for calculated hours below the threshold because you want to use those of the reported time entries. You add a payroll time type output for calculated hours over the threshold to use instead of the reported time type. Also, Sick and Jury Duty are payroll time attributes instead of absence time attributes. You create a rule with your template with these parameters:

- The new day starts with a time entry at or after 10:00p.
- The break length minimum is 3 hours.
- The threshold is 8 hours.
- The time category is All Payroll Time Types.

Example 1: The time entries have more than 3 hours between them and no time entry starts before the shift start time.

Day	Payroll Time Type	Reported Time	Calculated Time
Mon thru Fri	Regular	6a to 2p	8h

Example 2: The person works an extra shift that starts an hour before the usual shift start time. This start causes the entire shift to count as part of the same variable day, thus qualifying the person for overtime.

Day	Payroll Time Type	Reported Time	Calculated Time
Mon	Regular	6a to 2p 9p to 11p	8h
	Overtime	NA	2h
Tue thru Fri	Regular	6a to 2p	8h

Example 3: The person works an extra shift on Tuesday. The rule considers the shift above the threshold even though it starts after the shift start time. It does this because the reported start time is only 2.5 hours after the reported end time of the previous shift.

Day	Payroll Time Type	Reported Time	Calculated Time
Mon	Regular	2p to 10p	8h
	Overtime	NA	3.5h
Tue	Regular	12:30a to 4a 12p to 8p	8h
Wed thru Fri	Regular	12p to 8p	8h

Example 4: The person works a second shift on Tuesday that starts earlier than the shift start time. The rule adds these extra 3 hours to the 6 hours reported earlier in the day and calculates 1 hour of over time. Then, on Wednesday, the person's shift starts less than 3 hours after the end of the previous shift. So even though this is a new day, the rule calculates these hours on Tuesday, as overtime.

Day	Payroll Time Type	Reported Time	Calculate Time
Mon	Regular	12p to 8p	8h
Tue	Regular	8a to 2p 8p to 11p	8h
	Overtime	NA	8h
Wed	Regular	1a to 8a	0h
Thu	NA	NA	NA

5 Workday Definition and Time Calculation Rule Fast Formula

Workday Definition Example

This example shows the differences between the earned day definition (ActualDate) and overtime day definition (RefDate).

The earned day definition(ActualDate) has the spanning days rule as Start day and the grouping threshold as 180 minutes.

- For any time entry that crosses midnight, the ActualDate is the date of the entry StartTime. For example, if the StartTime is 2019-Nov-10 07:00, then the ActualDate is 2019-Nov-10.
- For any time entry that starts less than 180 minutes after the previous entry stops, the ActualDate is the date of the previous entry's StartTime.

The overtime day definition has the day start time as 5:00p of the current day. For any time entry between 5:00p today and 5:00p tomorrow, the RefDate is today's date. For example, the RefDate for the entry 2019-Nov-12 13:00 to 2019-Nov-12 16:00 is 2019-Nov-11.

For any time entry that starts before and stops after 5:00p, the entry is split between the previous and current days, or yesterday and today. For example, the entry 2019-Nov-12 15:00 to 2019-Nov-12 19:00 is split into 2 entries: 2019-Nov-12 15:00 to 2019-Nov-12 17:00 and 2019-Nov-12 17:00 to 2019-Nov-12 19:00 The RefDate is 2019-Nov-11 for the first entry and 2019-Nov-12 for the second entry.

Sample Time Cards

The time card period for this time card is November 4 through 10, 2019. The person reported time for only Sunday, 10 November.

Day	Payroll Time Type	Start Time	Stop Time
Sun, Nov 10	Regular	7:00a 6:00p	4:00p 3:00a

The time card period for this time card is November 11 through 17, 2019. The person reported time for Monday through Wednesday, November 11 through 13.

Day	Payroll Time Type	Start Time	Stop Time
Mon to Tue Nov 11 to 12	Regular	5:00a 1:00p 6:00p	7:00a 5:00p 3:00a

Day	Payroll Time Type	Start Time	Stop Time
Wed, Nov 13	Regular	5:00a	7:00a

Generated ActualDates and RefDates

These generated ActualDates and RefDates are passed to time calculation formulas for processing. The ActualDates and RefDates in bold are both the same as the date of the start time, even though the date of the stop time is the next day. The measure (also known as quantity) is the duration between entry start and stop times.

Start Time	Stop Time	Measure	Payroll Time Type	ActualDate	RefDate
2019-Nov-10 07:00	2019-Nov-10 16:00	9h	Regular	2019-Nov-10	2019-Nov-9
2019-Nov-10 18:00	2019-Nov-11 03:00	9h	Regular	**2019-Nov-10**	**2019-Nov-10**
2019-Nov-11 05:00	2019-Nov-11 07:00	2h	Regular	2019-Nov-11	2019-Nov-10
2019-Nov-11 13:00	2019-Nov-11 17:00	4h	Regular	2019-Nov-11	2019-Nov-10
2019-Nov-11 18:00	2019-Nov-12 03:00	9h	Regular	**2019-Nov-11**	**2019-Nov-11**
2019-Nov-12 05:00	2019-Nov-12 07:00	2h	Regular	2019-Nov-11	2019-Nov-11
2019-Nov-12 13:00	2019-Nov-12 17:00	4h	Regular	**2019-Nov-12**	**2019-Nov-11**
2019-Nov-12 18:00	2019-Nov-13 03:00	9h	Regular	2019-Nov-12	2019-Nov-12

Delivered Time Calculation Rule Threshold Formulas Use StartTime

Delivered formulas summarize at the day and time card levels, depending on the date of the start time. They don't use the ActualDate or RefDate generated from the person's workday definition.

Here are detailed results for the sample November 11 through 17, 2019 time card. The person reported time for Monday through Wednesday, November 11 through 13. Any time that they worked above an 8-hour daily threshold is overtime.

Day	Payroll Time Type	Start Time	Stop Time
Mon to Tue Nov 11 to 12	Regular	5:00a 1:00p 6:00p	7:00a 5:00p 3:00a
Wed, Nov 13	Regular	5:00a	7:00a

For example, if someone works 10 hours in a day, 8 hours is calculated as regular time and 2 hours as overtime. Hours over and below the threshold are identified using StartTime and the overtime workday--5:00p to 5:00p. The delivered threshold formulas find that the person worked 15 hours on November 11 because all 3 entries start on that day. The ActualDate for all 9 hours of the third entry on November 11 is the same as the date for the start time. The RefDate is also the same, because the start and stop times of that entry are within the 5:00p to 5:00p workday. The ActualDate for the first time entry on 2019-Nov-12 is 2019-Nov-11 because there's less than 180 minutes between when it starts and the 2019-Nov-12 03:00 entry stops.

Start Time	Stop Time	Measure	Payroll Time Type	ActualDate	RefDate
2019-Nov-11 05:00	2019-Nov-11 07:00	2h	Regular	2019-Nov-11	2019-Nov-10
2019-Nov-11 13:00	2019-Nov-11 17:00	4h	Regular	2019-Nov-11	2019-Nov-10
2019-Nov-11 18:00	2019-Nov-12 03:00	9h	Regular	2019-Nov-11	2019-Nov-11
	Daily total:	15h			
2019-Nov-12 05:00	2019-Nov-12 07:00	2h	Regular	2019-Nov-11	2019-Nov-11
2019-Nov-12 13:00	2019-Nov-12 17:00	4h	Regular	2019-Nov-12	2019-Nov-11
2019-Nov-12 18:00	2019-Nov-13 03:00	9h	Regular	2019-Nov-12	2019-Nov-12
	Daily total:	15h			
2019-Nov-13 05:00	2019-Nov-13 07:00	2h	Regular	2019-Nov-12	2019-Nov-12
	Daily total:	2h			

Start Time	Stop Time	Measure	Payroll Time Type	ActualDate	RefDate
2019-Nov-11 05:00	2019-Nov-11 07:00	2h	Regular	2019-Nov-11	2019-Nov-10
2019-Nov-11 13:00	2019-Nov-11 17:00	4h	Regular	2019-Nov-11	2019-Nov-10
2019-Nov-11 18:00	2019-Nov-11 20:00	2h	Regular	2019-Nov-11	2019-Nov-11
2019-Nov-11 20:00	2019-Nov-12 03:00	7h	Overtime	2019-Nov-11	2019-Nov-11
2019-Nov-12 05:00	2019-Nov-12 07:00	2h	Regular	2019-Nov-11	2019-Nov-11
2019-Nov-12 13:00	2019-Nov-12 17:00	4h	Regular	2019-Nov-12	2019-Nov-11
2019-Nov-11 18:00	2019-Nov-11 20:00	2h	Regular	2019-Nov-12	2019-Nov-12
2019-Nov-11 20:00	2019-Nov-12 03:00	7h	Overtime	2019-Nov-12	2019-Nov-12
2019-Nov-13 05:00	2019-Nov-13 07:00	2h	Regular	2019-Nov-12	2019-Nov-12

Here's the pseudo code for the delivered threshold fast formula.

```
INPUTS ARE
 HWM_CTXARY_RECORD_POSITIONS,
 HWM_CTXARY_HWM_MEASURE_DAY,
 Measure,
 StartTime,
 StopTime,
```

```
….

wkTotalHrsDay = 0
nidx = 0
WHILE (nidx < wMaAry ) LOOP (
 nidx = nidx + 1
 tcMeasure = 0
 tcMeasureDay = 0
 tcStartTime = nullDate

 aiRecPosition = HWM_CTXARY_RECORD_POSITIONS[nidx]
 if (MEASURE.exists(nidx) ) then ( tcMeasure = MEASURE[nidx] )
 if (StartTime.exists(nidx) ) then ( tcStartTime = StartTime [nidx] )

if (recPosition = RecPositoinEoDay ) then (
 /* trunc(tcStartTime) is different last trunc(tcStartTime )
 wkTotalHrsDay = tcMeasure
) else (
 wkTotalHrsDay = wkTotalHrsDay + tcMeasure
)

If (wkTotalHrsDay > p threshold (
 /* create overtime … */
)
…
```

Custom Threshold Formula That Uses Either the ActualDate or RefDate

To calculate daily totals using either the earned day (ActualDate) or overtime day (RefDate) from the person's workday definition, create a custom threshold formula.

Here are detailed results for the sample November 11 through 17, 2019 time card. The person reported time for Monday through Wednesday, November 11 through 13.

Day	Payroll Time Type	Start Time	Stop Time
Mon to Tue Nov 11 to 12	Regular	5:00a 1:00p 6:00p	7:00a 5:00p 3:00a
Wed, Nov 13	Regular	5:00a	7:00a

The daily total is calculated using either the ActualDate or RefDate instead of the start time. Both dates still use the overtime workday. Time worked above the 8-hour daily ActualDate or RefDate threshold is overtime. The explanations for ActualDate and RefDate both use November 11, because both daily totals have ActualDates and RefDates for November 11. Only RefDate has entries for November 10.

- Daily Totals by ActualDate: The custom threshold formula finds that the person worked 17 hours on November 11 because all the first three entries start on that day. The ActualDate for the first time entry on 2019-Nov-12 is

2019-Nov-11 because there's less than 180 minutes between when it starts and the 2019-Nov-12 03:00 entry stops.

Start Time	Stop Time	Measure	Payroll Time Type	ActualDate	RefDate
2019-Nov-11 05:00	2019-Nov-11 07:00	2h	Regular	**2019-Nov-11**	2019-Nov-10
2019-Nov-11 13:00	2019-Nov-11 17:00	4h	Regular	**2019-Nov-11**	2019-Nov-10
2019-Nov-11 18:00	2019-Nov-12 03:00	9h	Regular	**2019-Nov-11**	2019-Nov-11
2019-Nov-12 05:00	2019-Nov-12 07:00	2h	Regular	**2019-Nov-11**	2019-Nov-11
	Daily total:	17h			
2019-Nov-12 13:00	2019-Nov-12 17:00	4h	Regular	**2019-Nov-12**	2019-Nov-11
2019-Nov-12 18:00	2019-Nov-13 03:00	9h	Regular	**2019-Nov-12**	2019-Nov-12
2019-Nov-13 05:00	2019-Nov-13 07:00	2h	Regular	**2019-Nov-12**	2019-Nov-12
	Daily total:	15h			

- Daily Totals by RefDate. The custom threshold formula finds that the person worked 15 hours on November 11 because all three entries are within the workday defined as 5:00p to 5:00p.

Start Time	Stop Time	Measure	Payroll Time Type	ActualDate	RefDate
2019-Nov-11 05:00	2019-Nov-11 07:00	2h	Regular	2019-Nov-11	**2019-Nov-10**
2019-Nov-11 13:00	2019-Nov-11 17:00	4h	Regular	2019-Nov-11	**2019-Nov-10**
	Daily total:	6h			
2019-Nov-11 18:00	2019-Nov-12 03:00	9h	Regular	2019-Nov-11	**2019-Nov-11**
2019-Nov-12 05:00	2019-Nov-12 07:00	2h	Regular	2019-Nov-11	**2019-Nov-11**
2019-Nov-12 13:00	2019-Nov-12 17:00	4h	Regular	2019-Nov-12	**2019-Nov-11**
	Daily total:	15h			
2019-Nov-12 18:00	2019-Nov-13 03:00	9h	Regular	2019-Nov-12	**2019-Nov-12**
2019-Nov-13 05:00	2019-Nov-13 07:00	2h	Regular	2019-Nov-12	**2019-Nov-12**
	Daily total:	11h			

- Calculated Overtime by ActualDate: Because the threshold is 8 hours, the formula splits the 2019-Nov-11 18:00 to 2019-Nov-12 03:00 entry into these two entries:
  - The regular 2019-Nov-11 18:00 to 2019-Nov-11 20:00 entry
  - The overtime 2019-Nov-11 20:00 – 2019-Nov-12 03:00 entry

  But the overtime entry spans working days. So the formula splits it into 2 overtime entries: 2019-Nov-11 20:00 to 2019-Nov-12 00:00 and 2019-Nov-12 00:00 to 2019-Nov-12 03:00. Because the 2019-Nov-12 05:00 entry starts less than 180 minutes after the end of the previous entry, it too is included in the overtime calculation for November 11.

Start Time	Stop Time	Measure	Payroll Time Type	ActualDate	RefDate
2019-Nov-11 05:00	2019-Nov-11 07:00	2h	Regular	**2019-Nov-11**	2019-Nov-10
2019-Nov-11 13:00	2019-Nov-11 17:00	4h	Regular	**2019-Nov-11**	2019-Nov-10
2019-Nov-11 18:00	2019-Nov-11 20:00	2h	Regular	**2019-Nov-11**	2019-Nov-11
2019-Nov-11 20:00	2019-Nov-12 03:00	7h	Overtime	**2019-Nov-11**	2019-Nov-11
2019-Nov-12 05:00	2019-Nov-12 07:00	2h	Overtime	**2019-Nov-11**	2019-Nov-11
2019-Nov-12 13:00	2019-Nov-12 17:00	4h	Regular	2019-Nov-12	2019-Nov-11
2019-Nov-11 18:00	2019-Nov-11 20:00	2h	Regular	**2019-Nov-12**	2019-Nov-12
2019-Nov-11 20:00	2019-Nov-11 22 00	2h	Regular	**2019-Nov-12**	2019-Nov-12
2019-Nov-11 22:00	2019-Nov-12 03:00	5h	Overtime	**2019-Nov-12**	2019-Nov-12
2019-Nov-13 05:00	2019-Nov-13 07:00	2h	Overtime	**2019-Nov-12**	2019-Nov-12

- Calculated Overtime by RefDate: Because the threshold is 8 hours, the formula splits the 2019-Nov-11 18:00 to 2019-Nov-12 03:00 entry into these two entries:
  - The regular 2019-Nov-11 18:00 to 2019-Nov-12 02:00 entry
  - The overtime 2019-Nov-12 02:00 to 2019-Nov-12 03:00 entry

  The remaining entries starting on November 12 all stop before day's end at 5:00p, so they're calculated as overtime.

Start Time	Stop Time	Measure	Payroll Time Type	ActualDate	RefDate
2019-Nov-11 05:00	2019-Nov-11 07:00	2h	Regular	2019-Nov-11	**2019-Nov-10**
2019-Nov-11 13:00	2019-Nov-11 17:00	4h	Regular	2019-Nov-11	**2019-Nov-10**
2019-Nov-11 18:00	2019-Nov-12 02:00	8h	Regular	2019-Nov-11	**2019-Nov-11**
2019-Nov-12 02:00	2019-Nov-12 03:00	1h	Overtime	2019-Nov-11	**2019-Nov-11**

Start Time	Stop Time	Measure	Payroll Time Type	ActualDate	RefDate
2019-Nov-12 05:00	2019-Nov-12 07:00	2h	Overtime	2019-Nov-11	**2019-Nov-11**
2019-Nov-12 13:00	2019-Nov-12 17:00	4h	Overtime	2019-Nov-12	**2019-Nov-11**
2019-Nov-11 18:00	2019-Nov-11 02:00	8h	Regular	2019-Nov-12	**2019-Nov-12**
2019-Nov-12 02:00	2019-Nov-12 03:00	1h	Overtime	2019-Nov-12	**2019-Nov-12**
2019-Nov-13 05:00	2019-Nov-13 07:00	2h	Overtime	2019-Nov-12	**2019-Nov-12**

Here's the pseudo code that you can use to create threshold formulas that calculate overtime using the earned day as the ActualDate.

```
…... .

INPUTS ARE
 HWM_CTXARY_RECORD_POSITIONS,
 HWM_CTXARY_HWM_MEASURE_DAY,
 Measure,
 StartTime,
 StopTime,
 ActualDate


….

wkTotalHrsDay = 0
lastActualDate= nulldate
nidx = 0
WHILE (nidx < wMaAry ) LOOP (
 nidx = nidx + 1
 tcMeasure = 0
 tcMeasureDay = 0
 tcActualDate = nullDate

 aiRecPosition = HWM_CTXARY_RECORD_POSITIONS[nidx]
 if (MEASURE.exists(nidx) ) then ( tcMeasure = MEASURE[nidx] )
 if (ActualDate.exists(nidx) ) then (tcActualDate = StartTime [nidx] )

if (lastActualDate <> tcActualDate) then (
 / lastActualDate = tcActualDate
 wkTotalHrsDay = tcMeasure
) else (
 wkTotalHrsDay = wkTotalHrsDay + tcMeasure
)

If (wkTotalHrsDay > p threshold (
 /* create overtime … */
)
…
```

The logic to use the overtime day as the RefDate is the same. Just replace all instances of ActualDate in the preceding pseudo code with RefDate.

6 Time Device Rule Fast Formula

Show Messages for Insufficient Rest Periods

The WFM_TDR_VALIDATE_REST_PERIOD_DURATION_AP formula, which uses array processing, is associated with the delivered Compare Rest Between Time Events Template rule template.

The fast formula compares the end and start times of consecutive reported time entries identified by the time category of the rest period. If the interim time is less than the defined rest period, the corresponding defined message appears. If no message is defined, the default message appears. The message severity is an output value associated with the displayed message.

Parameters

Name	Data Type	Description
WORKED_TIME_CONDITION	Time category	Time category that identifies the time entries to use to decide whether the minimum rest period was met for the two shifts.
REST_PERIOD_IN_MINUTES	Fixed number	Minimum nonworked time, in minutes, required between consecutive end and start time entries.
OVERRIDE_MESSAGE_CODE	Message	Message that appears when the time between the end of one shift and start of the next shift is less than the defined rest period.

Outputs

Name	Message Severity
OUT_MSG	Specify whether the output message is informational, warning, or error

Example

Scenario: The rule parameter REST_PERIOD_IN_MINUTES has the value 480 minutes.

Day	Payroll Time Type	Mon	Output
Mon	Regular	11a to 10p	None
Tue	Regular	4a to 10a	The message appears because the rest period is less than 480 minutes (8 hours).

Show Message for Schedule Deviations

The WFM_TDR_VALIDATE_SCHEDULE_DEVIATION_AP formula, which uses array processing, is associated with the delivered Validate Schedule Deviation Template rule template.

The fast formula compares reported shift start and end times to the assigned schedule and shift limits. If the reported time entries don't match the scheduled time, a message appears. The formula validates the start time, end time, and scheduled duration with different messages appearing for early or late entries. If no message is defined, the default message appears. The message severity is an output value associated with the displayed message.

Parameters

Name	Type	Description
WORKED_TIME_CONDITION	Time category	Time category that identifies the reported time entries to use to find whether the start and end times or durations were within shift limit deviations
VALIDATE_SCHEDULED_IN_TIME	Yes or No	Specify whether to validate the reported start time against the scheduled start time. Default value is Yes
VALIDATE_SCHEDULED_OUT_TIME	Yes or No	Specify whether to validate the reported end time against the scheduled end time. Default value is Yes
VALIDATE_SCHEDULED_DURATION	Yes or No	Specify whether to validate the reported duration against the scheduled duration. Default value is Yes
OVERD_MSG_IN_TIME_LATE	Message	Message that appears when the reported start time is after the scheduled start time
OVERD_MSG_IN_TIME_EARLY	Message	Message that appears when the reported start time is before the scheduled start time
OVERD_MSG_OUT_TIME_LATE	Message	Message that appears when the reported end time is after the scheduled end time
OVERD_MSG_OUT_TIME_EARLY	Message	Message that appears when the reported end time is before the scheduled end time
OVERD_MSG_DURATON_LONG	Message	Message that appears when the reported duration is longer than the scheduled duration
OVERD_MSG_DURATON_SHORT	Message	Message that appears when the reported duration is shorter than the scheduled duration

Output

Name	Message Severity
OUT_MSG_DURATION	Specify whether the output message related to the duration is informational, warning, or error
OUT_MSG_START_TIME	Specify whether the output message related to the start time is informational, warning, or error
OUT_MSG_STOP_TIME	Specify whether the output message related to the end time is informational, warning, or error

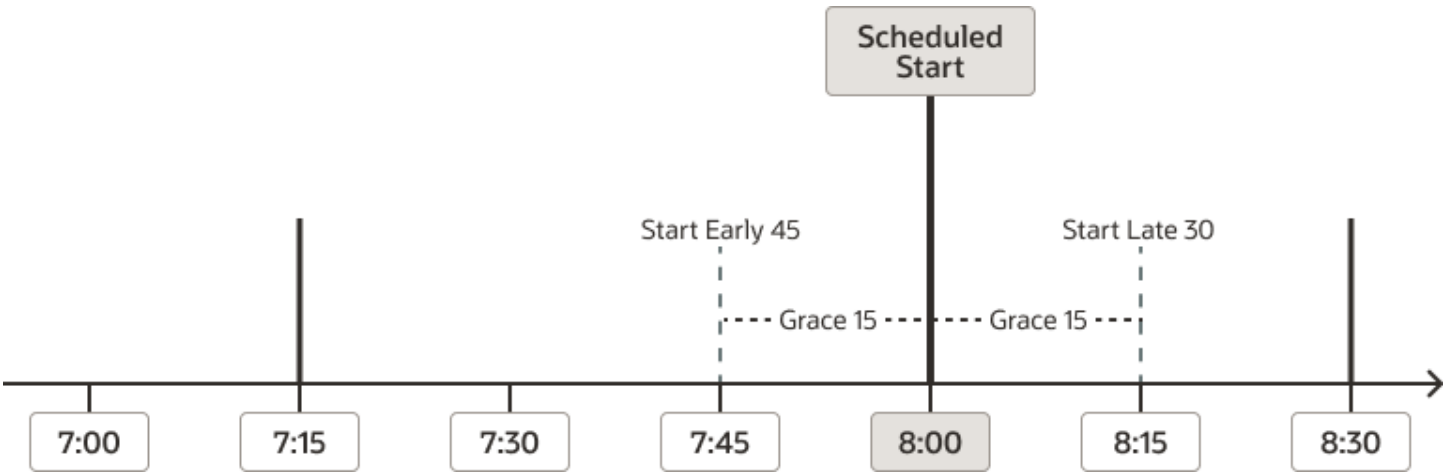
Function

The following scenarios explain this formula best.

Check the In

In this scenario, the scheduled shift starts at 8:00a and has these limits:

- Grace period: 15 minutes before and after the start time (7:45a to 8:00a and 8:00a to 8:15a)
- Start early: 45 minutes, including the grace period (7:15a to 8:00a)
- Start late: 30 minutes, including the grace period (8:00a to 8:30a)



The formula uses the scheduled time and limits to check the reported start time against shift limits in this order:

1. If it's between 7:15a and 7:45a, the formula displays the default start early error message HWM_FF_TDR_EARLY_IN_ERR and the corresponding error type Shift START_EARLY_ERR_TYPE. If it exists, the error type is the violation type set for the start early shift limit. Otherwise, it's the message severity set in the rule.
2. Else if it's between 8:15a and 8:30a, the formula displays the default start late error message HWM_FF_TDR_LATE_IN_ERR and the corresponding error type Shift START_LATE_ERR_TYPE. If it exists, the

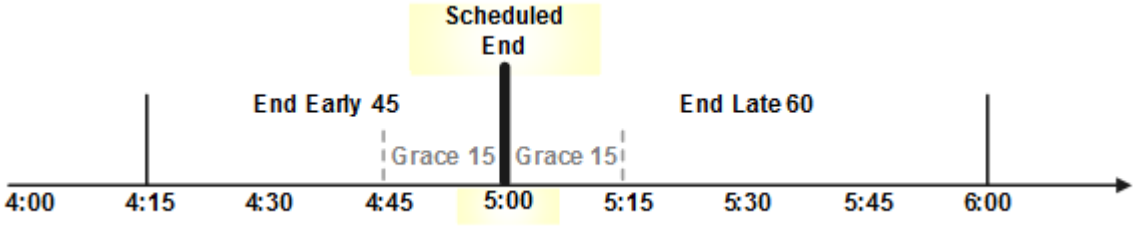
error type is the violation type set for the start early shift limit. Otherwise, it's the message severity set in the rule.

3. Else if it's before 7:15a or after 8:30a, the formula displays the default error message HWM_FF_TDR_INVALID_IN_ERR. It also displays the corresponding error type of the message severity set in the rule.

Check the Out

In this scenario, the scheduled shift ends at 5:00p and has these shift limits:

- Grace period: 15 minutes before and after the end time (4:45p to 5:00p and 5:00p to 5:15p)
- End early: 45 minutes, including the grace period (4:15p to 5:00p)
- End late: 60 minutes, including the grace period (5:00p to 6:00p)



The formula uses the scheduled time and limits to check the reported end time against shift limits in this order:

1. If it's between 4:15p and 4:45p, the formula displays the default end early error message HWM_FF_TDR_EARLY_OUT_ERR and the corresponding error type Shift END_EARLY_ERR_TYPE. If it exists, the error type is the violation type set for the start early shift limit. Otherwise, it's the message severity set in the rule.
2. Else if it's between 5:15p and 6:00p, the formula displays the default end late message HWM_FF_TDR_LATE_OUT_ERR and the corresponding error type Shift END_LATE_ERR_TYPE. If it exists, the error type is the violation type set for the start early shift limit. Otherwise, it's the message severity set in the rule.
3. Else if it's before 4:15p or after 6:00p, the formula displays the default error message HWM_FF_TDR_INVALID_OUT_ERR. It also displays the corresponding error type of the message severity set in the rule.

Check the Duration

1. If the reported duration is less than the short duration, the formula displays the default message HWM_FF_TDR_SHORT_DURATION_ERR. It also displays the corresponding error type of the message severity set in the rule.
2. Else if the reported duration is more than the long duration, the formula displays the default message HWM_FF_TDR_LONG_DURATION_ERR. It also displays the corresponding error type of the message severity set in the rule.

Examples

Example 1: The scheduled shift is 8:00a – 5:00p. The early start and end limits are 10 minutes. The late start and end limits are 15 minutes.

Day	Payroll Time Type	Mon	Output
1	Regular	8a to 5p	No message appears because the reported start and end times match the scheduled times.
2	Regular	7:52a to 4:45p	The start early message for the violation type of the start early shift limit, if any, appears. If no violation type exists, the message for the message severity in the rule appears. The end early message appears because the reported time is before the scheduled time and end early shift limit.
3	Regular	8:13a to 5:13p	The start late and end late messages specified by the violation type of each late shift limit, if any, appear. If no violation type exists, the messages for the message severities in the rule appear.
4	Regular	7:45a to 4:52	The start early rule message for the message severity appears because the reported time is before the scheduled time and start early shift limit. The end early message for the violation type of the end early shift limit, appears. If no violation type exists, the rule message for the message severity appears.
5	Regular	8:20a to 5:20p	The start late and end late rule messages for the message severities appear because the reported time is before the scheduled time and late shift limits.

Example 2: The scheduled shift duration is 8 hours. The end early limit is 10 minutes and the end late limit is 15 minutes.

Day	Payroll Time Type	Reported Time	Output
1	Regular	8h	No message appears because the reported duration matches the scheduled duration.
2	Regular	7h 51m	The short duration message for the violation type of the end early shift limit appears. If no violation type exists, the rule message for the message severity appears.
3	Regular	7h 48m	The short duration rule message for the message severity appears because the reported duration

Day	Payroll Time Type	Reported Time	Output
			is shorter than the scheduled duration and end early shift limit.
4	Regular	8h 13m	The long duration message for the violation type of the end late shift limit appears. If no violation type exists, the rule message for the message severity appears.
5	Regular	8h 17m	The long duration rule message for the message severity appears because the reported duration is longer than the scheduled duration and end late shift limit.

Evaluate Events Imported from Time Collection Devices

The WFM_TDR_VALIDATE_SUPPLIER_EVENT_AP formula, which uses array processing, is associated with the delivered Validate Time Event Template rule template.

The fast formula evaluates events imported from time collection devices to identify the specified events that the device automatically generated. If the event is one of up to three specified automatically generated events, a message appears. If no message is defined, the default message appears. The message severity is an output value associated with the displayed message.

Parameters

Name	Type	Description
WORKED_TIME_CONDITION	Time category	Time category that identifies the time entries made of the events to compare with the specified automatically generated event.
SUPPLIER_EVENT_OUT_EXCEPTION_1	Fixed text	First automatically generated time event to identify.
SUPPLIER_EVENT_OUT_EXCEPTION_2	Fixed text	Optional second automatically generated time event to identify.
SUPPLIER_EVENT_OUT_EXCEPTION_3	Fixed text	Optional third automatically generated time event to identify.
OVERRIDE_MESSAGE_CODE	Message	Message that appears when the reported duration is shorter than the scheduled duration.

Output

Name	Message Severity
OUT_MSG	Specify whether the output message is informational, warning, or error

Function

This formula compares the SupplierEventOut attribute to the input parameters SUPPLIER_EVENT_OUT_EXCEPTION_1, SUPPLIER_EVENT_OUT_EXCEPTION_2, and SUPPLIER_EVENT_OUT_EXCEPTION_3. If the SupplierEventOut attribute matches any of the parameter values, it generates a message.

Example

Scenario: You create a rule with your template where SUPPLIER_EVENT_OUT_EXCEPTION_1 is AUTO_CHECK_OUT.

Day	Payroll Time Type	Reported Event Time	Output
Mon	Check In	8a	None
	AUTO_CHECK_OUT	5p	The rule message for the message severity appears.
Tue	Check In	8a	None
	Check Out	4p	None
Wed	Check In	10a	None
	Check Out	5p	None

7 Time Entry Rule Fast Formula

Compare Reported Unit Quantities to Defined Limits

The ORA_WFM_TER_MIN_MAX_PAYTYPE_UNITS_AP formula, which uses array processing, identifies whether reported units time entries for the units time category are below or over the defined minimum and maximum unit quantities.

The fast formula compares the reported time category quantity to the defined minimum and maximum unit quantities. If the reported unit quantities are below or over the defined limits, the corresponding defined message appears. If no message is defined, the default message appears. The message severity is an output associated with the displayed message. This formula isn't associated with any delivered time entry rule templates.

Parameters

Name	Data Type	Description
WORKED_TIME_CONDITION	Time category	Time category of reported units to sum and compare with the defined minimum and maximum unit quantities.
MIN_HOURS	Fixed number	Minimum hours required for the worker associated with the rule that uses this formula to qualify for units.
MIN_UNITS	Fixed number	Minimum units required.
MAX_UNITS	Fixed number	Maximum units allowed.
OVERRIDE_MSG_CD_MIN_QTY	Message	Message that overrides the default message that appears if the summed units value is less than the minimum units required.
OVERRIDE_MSG_CD_MAX_QTY	Message	Message that overrides the default message that appears if the summed units value exceeds the maximum units allowed.
OVERRIDE_MSG_CD_MIN_HRS	Message	Message that overrides the default message that appears if the minimum number of required reported hours wasn't reached.

Output

Name	Message Severity
OUT_MSG	Specify whether the output message is informational, warning, or error

Example Error Messages

The bold items in each row identify where the reported hours or units don't match the applicable rule parameter.

			Rule Parameters			
Regular (hours)	**Meal (hours)**	**Meal Allowance (units)**	**MIN_HOURS**	**MIN_UNITS**	**MAX_UNITS**	**Error Status**
7	1	1	1	1	1	No errors
7	2	**0**	1	1	**1**	The quantity of the {UNITS_TIME_ATTR} time attributes for the period is less than the {MIN_UNITS} minimum limit defined for the time card.
7	3	**2**	1	1	**1**	The quantity of the {UNITS_TIME_ATTR} time attributes for the period exceeds the {MIN_UNITS} maximum limit defined for the time card.
7	**3**	1	**4**	1	1	The {UNITS_TIME_ATTR} time attribute was reported, although the minimum number of reported hours wasn't reached.
7	4	**1**	3	**2**	4	The quantity of the {UNITS_TIME_ATTR} time attribute for the period is less than the {MIN_UNITS} minimum limit defined for the time card.
7	1	**5**	6	2	**4**	The quantity of the {UNITS_TIME_ATTR} time attribute for the period exceeds the {MAX_UNITS} maximum limit defined for the time card. The {UNITS_TIME_ATTR} time attributes were reported, although the minimum number of reported hours wasn't reached.

			Rule Parameters			
Regular (hours)	**Meal (hours)**	**Meal Allowance (units)**	**MIN_HOURS**	**MIN_UNITS**	**MAX_UNITS**	**Error Status**

Show Messages When Maximum Hours are Exceeded

The ORA_WFM_TER_PERIOD_MAX_WITH_MSG_MEASURE_FORMAT_OPTION_AP formula, which uses array processing, identifies whether reported time entries for the time category exceed the specified maximum hours. If they do exceed the maximum, the defined message appears.

The message includes the specified maximum and the reported hours in one of these formats:

- Decimal format, such as 10.30
- Hours and minutes separated by a colon, such as 10:30
- Hours and minutes separate by a space, such as 10h 30m

If you don't specify a message, the default message HWM_FF_TER_PER_GT_MAX_MSG_ERR appears. The message severity is an output value associated with rule settings. This fast formula isn't associated with any delivered time entry rule templates.

Parameters

Name	Type	Description
WORKED_TIME_CONDITION	Time category	Time category of reported hours that include the specified time attributes used to decide whether to generate a units time attribute.
OVERRIDE_MSG_CD	Message	Code of the message that overrides the code of the default message that appears if the attribute values are invalid.
DEC_HRS_COLON_HRS_SPACE	Text	Specify how the specified message shows the hours and minutes: • 'DEC' shows time in HH.ddd (10.30) • HRS_COLON shows time in HH:MM (10:30) • HRS_SPACE shows time in ##h ##m (10h 30m)

Output

Name	Message Severity
OUT_MSG	Specify whether the output message is informational, warning, or error

Examples

'DEC' message format: The reported time, 10.30, for the period exceeds the 7 maximum allowed for the time card.

'HRS_COLON' message format: The reported time, 10:30, for the period exceeds the 7 maximum allowed for the time card.

'HRS_SPACE' message format: The reported time, 10h 30m, for the period exceeds the 7 maximum allowed for the time card.

Validate Time Attribute Values on Resubmit

The ORA_WFM_TER_RESUBMIT_VALIDATION_AP formula, which uses array processing, identifies whether the time attribute values are still valid for the new assignment and time profiles. It calls an API to complete the validation.

For any attribute values it finds that are invalid, it displays the specified warning message. The message severity is defined as an output associated with the displayed message. This fast formula isn't associated with any delivered time entry rule templates.

Parameters

Name	Type	Description
WORKED_TIME_CONDITION	Time category	Time category of reported hours that include the specified time attributes used to decide whether to generate a units time attribute.
OVERRIDE_MSG_CD	Message	Code of the message that overrides the code of the default message that appears if the attribute values are invalid.

Output

Name	Message Severity
OUT_MSG	Specify whether the output message is informational, warning, or error

Examples

Scenario: Today's date is November 2. The person has an existing time card with a time card period of October 1 – 7. The person also has a retroactive assignment change for October 4. Because of this retro-change, the person changed group membership. The new group has a different time entry profile and layout set.

Day	Payroll Time Type	State Worked	Reported Time
Oct 1	Regular	CA	8h
Oct 2	Regular	NV	8h
Oct 3 thru 7	Regular	NA	8h

Example 1: The new layout set requires an entry that was optional on the previous layout set.

Day	Payroll Time Type	State Worked	Reported Time
Oct 1	Regular	CA	8h
Oct 2	Regular	NV	8h
Oct 3	Regular	NA	8h

Day	Payroll Time Type	State Worked	Reported Time	Message
Oct 4 thru 7	Regular	NA	8h	Required field, State Worked, not populated

Example 2: The Payroll Time Type choice list in new layout set has Time Worked instead of Regular. The person is still eligible for the Regular pay. But it doesn't appear on the time card because the value isn't in the new layout.

Day	Payroll Time Type	State Worked	Reported Time
Oct 1	Regular	CA	8h
Oct 2	Regular	NV	8h
Oct 3	Regular	NA	8h

Day	Payroll Time Type	State Worked	Reported Time	Message
Oct 4 thru 7	NA	NA	8h	You must provide a value for the Payroll Time Type attribute.

Identify If Unit Entries Meet Defined Quantity Limits

The ORA_WFM_TER_WEEKEND_UNITS_AP formula, which uses array processing, identifies whether reported units time entries for the Units time category are under or over the defined minimum and maximum unit quantities.

The fast formula compares the reported time category quantity to the defined minimum and maximum unit quantities. If the reported unit quantities are under or over the defined limits, the corresponding defined message appears. If no message is defined, the default message appears. The message severity is defined as an output associated with the displayed message. This fast formula isn't associated with any delivered time entry rule templates.

Parameters

Name	Data Type	Description
WORKED_TIME_CONDITION	Time category	Time category of reported units to sum and compare with the defined minimum and maximum unit quantities.
MIN_UNITS	Fixed number	Minimum units required.
MAX_UNITS	Fixed number	Maximum units allowed.
WORK_ANY_WEEKEND_DAY	Yes or No	If Yes, generate the number of units when the worker associated with a rule using this formula works any day defined as weekend day. If No, generate the number of units only when the worker associated with a rule using this formula works all days defined as weekend days.
IS_MON_WEEKEND	Yes or No	Indicate if Monday is a weekend day.
IS_TUE_WEEKEND	Yes or No	Indicate if Tuesday is a weekend day.
IS_WED_WEEKEND	Yes or No	Indicate if Wednesday is a weekend day.
IS_THU_WEEKEND	Yes or No	Indicate if Thursday is a weekend day.
IS_FRI_WEEKEND	Yes or No	Indicate if Friday is a weekend day.
IS_SAT_WEEKEND	Yes or No	Indicate if Saturday is a weekend day.
IS_SUN_WEEKEND	Yes or No	Indicate if Sunday is a weekend day.
OVERRIDE_MSG_CD_MIN_QTY	Message	Message that overrides the default message that appears if the summed units value is less than the minimum units required.
OVERRIDE_MSG_CD_MAX_QTY	Message	Message that overrides the default message that appears if the summed units value exceeds the maximum units allowed.

Name	Data Type	Description
OVERRIDE_MSG_CD_MIN_HRS	Message	Message that overrides the default message that appears if the minimum number of required reported hours wasn't reached.

Output

Name	Message Severity
OUT_MSG	Specify whether the output message is informational, warning, or error

Examples of WORK_ANY_WEEKEND_DAY Is Yes

For these examples, the weekend days are Saturday and Sunday.

			Rule Parameters		
Day	**Regular (hours)**	**Weekend Allowance (units)**	**MIN_UNITS**	**MAX_UNITS**	**Error Status**
Sat	2	0	NA	NA	No error
Sun	7	1	1	1	No error

			Rule Parameters		
Day	**Regular (hours)**	**Weekend Allowance (units)**	**MIN_UNITS**	**MAX_UNITS**	**Error Status**
Sat	0	0	NA	NA	No error
Sun	7	1	1	1	No error

			Rule Parameters		
Day	**Regular (hours)**	**Weekend Allowance (units)**	**MIN_UNITS**	**MAX_UNITS**	**Error Status**
Sat	3	1	1	1	No error
Sun	0	0	NA	NA	No error

			Rule Parameters		
Day	**Regular (hours)**	**Weekend Allowance (units)**	**MIN_UNITS**	**MAX_UNITS**	**Error Status**
Sat	3	4	1	3	The quantity of {UNITS_TIME_ATTR} time attributes for the weekend period exceeds the {MAX_UNITS} maximum limit defined for the time card.
Sun	0	0	NA	NA	No error

			Rule Parameters		
Day	**Regular (hours)**	**Weekend Allowance (units)**	**MIN_UNITS**	**MAX_UNITS**	**Error Status**
Sat	3	1	2	3	The quantity of {UNITS_TIME_ATTR} time attributes for the weekend period is less than the {MIN_UNITS} minimum limit defined for the time card.
Sun	0	0	NA	NA	No error

Examples of WORK_ANY_WEEKEND_DAY Is No

			Rule Parameters		
Day	**Regular (hours)**	**Weekend Allowance (units)**	**MIN_UNITS**	**MAX_UNITS**	**Error Status**
Sat	7	1	1	1	No error
Sun	7	1	1	1	No error

			Rule Parameters		
Day	**Regular (hours)**	**Weekend Allowance (units)**	**MIN_UNITS**	**MAX_UNITS**	**Error Status**
Sat	7	1	1	1	No error
Sun	7	0	1	1	The quantity of {UNITS_TIME_ATTR} time attributes for the weekend period is less

			Rule Parameters		
Day	**Regular (hours)**	**Weekend Allowance (units)**	**MIN_UNITS**	**MAX_UNITS**	**Error Status**
					than the {MIN_UNITS} minimum limit defined for the time card.

			Rule Parameters		
Day	**Regular (hours)**	**Weekend Allowance (units)**	**MIN_UNITS**	**MAX_UNITS**	**Error Status**
Sat	7	0	NA	NA	No error
Sun	7	3	1	1	The quantity of {UNITS_TIME_ATTR} time attributes for the weekend period exceeds the {MAX_ UNITS} maximum limit defined for the time card.

			Rule Parameters		
Day	**Regular (hours)**	**Weekend Allowance (units)**	**MIN_UNITS**	**MAX_UNITS**	**Error Status**
Sat	7	0	NA	NA	No error
Sun	7	3	1	1	The quantity of {UNITS_TIME_ATTR} time attributes for the weekend period exceeds the {MAX_ UNITS} maximum limit defined for the time card.

			Rule Parameters		
Day	**Regular (hours)**	**Weekend Allowance (units)**	**MIN_UNITS**	**MAX_UNITS**	**Error Status**
Sat	0	0	NA	NA	No error
Sun	7	1	1	1	The {UNITS_TIME_ ATTR} time attributes were reported, although all weekend days weren't worked.

			Rule parameters		
Day	**Regular (hours)**	**Weekend Allowance (units)**	**MIN_UNITS**	**MAX_UNITS**	**Error Status**
Sat	2	0	NA	NA	No error
Sun	7	1	1	1	No error

			Rule Parameters		
Day	**Regular (hours)**	**Weekend Allowance (units)**	**MIN_UNITS**	**MAX_UNITS**	**Error Status**
Sat	3	1	1	1	The {UNITS_TIME_ATTR} time attributes were reported, although all weekend days weren't worked.
Sun	0	0	NA	NA	No error

Compare Reported Hours to Published or HR Schedule

The WFM_COMPARE_WRKR_SCHEDULE_TO_REPORTED_HOURS formula is associated with the delivered Compare Schedule to Reported Hours Template rule template. It compares the total reported time for the day or period with either the published workforce management schedule or the HR employment schedule.

The fast formula first checks whether the published schedule exists in the time repository. If the published schedule doesn't exist, the formula compares the reported hours with the HR employment schedule using a PL/SQL availability API. If the total reported hours aren't within the scheduled hours plus or minus the defined variance, the defined message appears. If no message is defined, the default message appears. The message severity is an output value associated with the displayed message.

Parameters

Name	Data Type	Description
VARIANCE_THRESHOLD_IN_MIN	Fixed number	Allowable variance, in minutes, between scheduled and reported hours
MESSAGE_CODE	Message	Message overriding the default one that appears if time entries matching the time category conditions total to less or more than the scheduled hours, minus or plus the variance
WORKED_TIME_CONDITION	Time category	Time category that identifies the reported time entries to use to decide whether the total hours match the scheduled hours or within the allowed variance

Output

Name	Message Severity
OUT_MSG	Specify whether the output message is informational, warning, or error

Example

You created a rule with your template that has a variance threshold of plus or minus 10 minutes. It also has the time category All Payroll Time Types. The person has an assigned 9-hour work schedule that includes a 1-hour break, Monday through Friday.

Day	Payroll Time Type	Reported Time	Output
Mon	Regular	7:55a to 4:55p	None
Tue	Regular	8a to 5p	None
Wed	Regular	8:05a to 5:05p	None
Thu	Regular	7:49a to 5p	The rule message for the message severity appears because the total reported hours are less than the scheduled hours minus the variance.
Fri	Regular	8a to 5:12p	The rule message for the message severity appears because the total reported hours are greater than the scheduled hours plus the variance.

Compare Total Hours to Period Maximum Limit

The WFM_PERIOD_MAXIMUM_TIME_ENTRY_RULE formula is associated with the delivered Period Maximum Hours Template rule template.

The fast formula compares the total daily or period hours identified by the time category with the defined maximum limit. If the total hours are greater than the maximum limit, the defined message appears. If no message is defined, the default message appears. The message severity is an output value associated with the displayed message.

Parameters

Name	Data Type	Description
DEFINED_LIMIT	Fixed number	Maximum total hours expected for the day or time card period

Name	Data Type	Description
MESSAGE_CODE	Message	Message that appears when the total hours for the day or time card period exceed the defined maximum limit
WORKED_TIME_CONDITION	Time category	Time category that identifies the reported time entries to total for the day or time card period and compare with the defined maximum limit

Output

Name	Message Severity
OUT_MSG	Specify whether the output message is informational, warning, or error

Examples

Example 1: You created a rule with your template that has a daily maximum of 8 hours and the time category All Payroll Time Types.

Day	Payroll Time Type	Reported Time	Output
Mon thru Wed	Regular	8h	None
Thu	Regular	6h	None
	Jury Duty	4h	The message appears because the daily total of payroll hours exceeds the maximum limit of 8.
Fri	Regular	8h	None

Example 2: You created a rule with your template that has a weekly maximum of 40 hours and the time category All Payroll Time Types.

Day	Payroll Time Type	Reported Time	Output
Mon thru Wed	Regular	8h	None
Thu	Regular	6h	None
	Jury Duty	4h	None
Fri	Regular	8h	The message appears because the weekly total of payroll hours exceeds the maximum limit of 40.

Show Messages for Hours Below Minimum Requirement

The WFM_PERIOD_MINIMUM_TIME_ENTRY_RULE formula is associated with the delivered Period Minimum Hours Template rule template.

The fast formula compares the total daily or period hours identified by the time category with the defined minimum limit. If the total hours are less than the minimum limit, the defined message appears. If no message is defined, the default message appears. The message severity is an output value associated with the displayed message.

Parameters

Name	Data Type	Description
DEFINED_LIMIT	Fixed number	Maximum total hours expected for the day or time card period
MESSAGE_CODE	Message	Message that appears when the total hours for the day or time card period are less than the defined minimum limit
WORKED_TIME_CONDITION	Time category	Time category that identifies the reported time entries to total for the day or time card period and compare with the defined minimum limit

Output

Name	Message Severity
OUT_MSG	Specify whether the output message is informational, warning, or error

Examples

Example 1: You created a rule with your template that has a daily minimum of 8 hours and the time category All Payroll Time Types.

Day	Payroll Time Type	Reported Time	Output
Mon thru Wed	Regular	8h	None
Thu	Jury Duty	4h	The message appears because the daily total of payroll hours is less than the minimum limit of 8.
Fri	Regular	8h	None

Example 2: You created a rule with your template that has a weekly minimum of 36 hours and the time category All Payroll Time Types.

Day	Payroll Time Type	Reported Time	Output
Mon thru Thu	Regular	8h	None
Fri	Jury Duty	3h	The message appears because the weekly total payroll hours are less than the minimum limit of 36.

Show Messages for Time Entries on Public Holidays

The WFM_TER_COMPARE_WRKR_HOLIDAY_TO_REPORTED_HOURS_AP formula, which use array processing, is associated with the delivered Holiday Reported Hours Template rule template.

The fast formula compares the person's assigned public holidays to the reported time entries for the day that the time category identified. If the reported time is on a public holiday, the defined message appears. If no message is defined, the default message appears. The message severity is an output value associated with the displayed message.

Parameters

Name	Data Type	Description
WORKED_TIME_CONDITION	Time category	Time category that identifies the reported time entries to compare with the public holiday
OVERRIDE_MESSAGE_CODE	Message	Message overriding the default one that appears if time entries matching the time category conditions are reported on the public holiday
OVRD_PUBLIC_HOLIDAY_CATEGORY	Fixed text	Optional holiday classification to compare with the reported time entries

Output

Name	Message Severity
OUT_MSG	Specify whether the output message is informational, warning, or error

Function

This formula compares the person's assigned public holiday defined in the lookup type PER_CAL_EVENT_CATEGORY to the reported time for the day that matches the time category conditions. If the reported time is on a public holiday, the defined message appears. If no message is defined, the default message appears.

Example

The rule compares Regular time entries for each day with the person's assigned public holidays.

Day	Payroll Time Type	Reported Time	Output
1	Regular	8a to 5p	None
2	Regular	8a to 5p	None
3	Regular	8a to 5p	The rule message for the message severity appears because this day is a public holiday for the worker.
4	Regular	8a to 5p	None
5	Regular	8a to 5p	None

Compare Rest Periods Between Consecutive Shifts

The WFM_TER_VALIDATE_REST_PERIOD_DURATION_AP time entry rule fast formula is associated with the delivered Compare Rest Between Shifts Template rule template.

The fast formula compares the reported end and start times for consecutive shifts. If the rest period between the two shifts is less than the defined rest period, it displays the configured message.

Parameters

Name	Data Type	Description
WORKED_TIME_CONDITION	Time category	Time category of reported time entries to compare with the defined rest period.
REST_PERIOD_IN_MINUTES	Fixed number	Minimum nonworked time, in minutes, that workers must have between consecutive shifts.
OVERRIDE_MESSAGE_CODE	Message	Message that appears when the time between the end of one shift and start of the next shift is less than the defined rest period.

Output

Name	Message Severity
OUT_MSG	Specify whether the output message is informational, warning, or error

Example

Scenario: The rule parameter REST_PERIOD_IN_MINUTES has the value 30 minutes.

Day	Payroll Time Type	Reported Time	Output
Mon	Regular	8a to 1p 1:15p to 6p	The message appears because the rest period is less than 30 minutes
Tue	Regular	8a to 1p 1:30p to 6p	No message appears because the rest period equals the minimum required 30 minutes
Thu	Regular	8a to 1p 2p to 6p	No message appears because the rest period exceeds the minimum required 30 minutes

8 Time Submission Rule Fast Formula

Submit Time Card When Out Event Minimum Is Met

The WFM_TSR_SUBMIT_OR_SAVE_ON_NUMBER_OF_DEVICE_EVENTS_AP formula, which uses array processing, is associated with the delivered Number of Time Entries Template rule template.

The fast formula compares the imported Out device events that match the conditions of the specified time category with the minimum entries defined for the Submit action. If the number of reported Out events is the minimum or more, the formula submits the time card. Otherwise, it compares the Out events with the minimum entries defined for the Save action. If the number of Out events is the minimum or more, it saves the time card. If neither condition is met, the formula sets the time card status to Entered.

Parameters

Name	Data Type	Description
WORKED_TIME_CONDITION	Time category	Time category that identifies the reported time entries to use to decide whether to save or submit the time card.
MIN_ENTRY_SUBMIT	Fixed number	Minimum reported Out events required to automatically submit the time card.
MIN_ENTRY_SAVE	Fixed number	Minimum reported Out events required to automatically save the time card.

Output

Name	Message Severity
OUT_MSG	Time card action automatically started

Example

Your people clock out and in when taking their breaks (2 per workday), and meal. They also clock out just before leaving for the day, for a total of 4 clock outs in a standard workday. The time card period is weekly. You create a rule with this formula that automatically completes the appropriate action:

1. If the total reported Out events are 35 hours or more, submit the time card.
2. Else, if the total reported Out events are 7 hours or more, save the time card.
3. Else, set the time card status to Entered.

Device Event	Payroll Time Type	Day 1	Day 2	Day 3	Day 4	Day 5
In	Regular	8:00a	8:00a	8:00a	8:00a	8:00a

Device Event	Payroll Time Type	Day 1	Day 2	Day 3	Day 4	Day 5
Out and In	Break	10:00a	10:00a	10:00a	10:00a	10:00a
Out and In	Regular	10:15a	10:15a	10:15a	10:15a	10:15a
Out and In	Lunch	12:00p	12:00p	12:00p	12:00p	12:00p
Out and In	Regular	1:00p	1:00p	1:00p	1:00p	1:00p
Out and In	Break	3:00p	3:00p	3:00p	3:00p	3:00p
Out and In	Regular	3:15p	3:15p	3:15p	3:15p	3:15p
Out	Regular	5:00p	5:00p	5:00p	5:00p	5:00p
	Output	Save time card	Save time card	Save time card	Save time card	Submit time card

Set Time Card Status When Minimum Hours Not Reached

The WFM_TSR_SUBMIT_OR_SAVE_ON_NUMBER_OF_HOURS_AP formula, which uses array processing, is associated with the delivered Number of Hours Submission Template rule template.

The fast formula compares the imported time device events that match the conditions of the specified time category with the minimum hours defined for the Submit action. If the total hours are the minimum or more, it submits the time card. Otherwise, it compares the total hours with the minimum defined for the Save action. If the total hours are the defined minimum or more, it saves the time card. If neither condition is met, it sets the time card status to Entered.

Parameters

Name	Data Type	Description
WORKED_TIME_CONDITION	Time category	Time category that identifies the reported time entries to use to decide whether to save or submit the time card.
MIN_HOURS_SUBMIT	Fixed number	Minimum total reported hours required to automatically submit the time card.
MIN_HOURS_SAVE	Fixed number	Minimum total reported hours required to automatically save the time card.

Output

Name	Message Severity
OUT_MSG	Time card action automatically started

Example

Your people typically work 8 Regular hours per day and 5 days per week, which is the time card period. You create a rule with this formula that automatically completes the appropriate action:

1. If the total Regular hours are 40 hours or more, submit the time card.
2. Else, if the total Regular hours are 8 hours or more, save the time card.
3. Else, set the time card status to Entered.

Day	Payroll Time Type	Reported Time	Output
1 thru 4	Regular	8a to 12p 1p to 5p	Save time card
5	Regular	8a to 12p 1p to 5p	Submit time card

Submit Time Card When Specific Day Minimum Is Met

The WFM_TSR_SUBMIT_OR_SAVE_ON_SPECIFIC_DAY_AP formula, which uses array processing, is associated with the delivered Specific Day Submission Template rule template.

The fast formula compares the imported time device events that match the conditions of the specified time category with the minimum hours defined for the Submit action. If the total hours are the minimum or more, it submits the time card. Otherwise, it compares the total hours with the minimum defined for the Save action. If the total hours are the defined minimum or more, it saves the time card. If neither condition is met, it sets the time card status to Entered.

Parameters

Name	Data Type	Description
WORKED_TIME_CONDITION	Time category	Time category that identifies the reported time entries to use to decide whether to save or submit the time card.
SAVE_SUBMIT_ON_MON	Fixed text	Submit or save time cards with time entries on or after Monday. Valid values are Save and Submit.
SAVE_SUBMIT_ON_TUE	Fixed text	Submit or save time cards with time entries on or after Tuesday. Valid values are Save and Submit.
SAVE_SUBMIT_ON_WED	Fixed text	Submit or save time cards with time entries on or after Tuesday. Valid values are Save and Submit.

Name	Data Type	Description
SAVE_SUBMIT_ON_THU	Fixed text	Submit or save time cards with time entries on or after Thursday. Valid values are Save and Submit.
SAVE_SUBMIT_ON_FRI	Fixed text	Submit or save time cards with time entries on or after Friday. Valid values are Save and Submit.
SAVE_SUBMIT_ON_SAT	Fixed text	Submit or save time cards with time entries on or after Saturday. Valid values are Save and Submit.
SAVE_SUBMIT_ON_SUN	Fixed text	Submit or save time cards with time entries on or after Sunday. Valid values are Save and Submit.

Output

Name	Message Severity
OUT_MSG	Time card action automatically started

Example

Your people typically work 8 Regular hours per day and 5 days per week, which is the time card period. You create a rule with this formula that automatically completes the appropriate action:

1. If any time entries match the time category condition on Monday, save the time card.
2. Else if any time entries match the time category condition on Tuesday, save the time card.
3. Else if any time entries match the time category condition on Wednesday, save the time card.
4. Else if any time entries match the time category condition on Thursday, save the time card.
5. Else if any time entries match the time category condition on Friday, submit the time card.
6. Else if any time entries match the time category condition on Saturday, submit the time card.
7. Else if any time entries match the time category condition on Sunday, submit the time card.

Day	Payroll Time Type	Reported Time	Output
1 thru 4	Regular	8a to 12p 1p to 5p	Save time card
5	Regular	8a to 12p 1p to 5p	Submit time card

Compare Out Events to Work Schedule Submit Range

The WFM_TSR_SUBMIT_OR_SAVE_ON_WORK_SCHEDULE_AP formula, which uses array processing, is associated with the delivered Work Schedule Submission Template rule template. It compares the imported Out device events that match the conditions of the time category with the submit range.

The fast formula calculates the submit range using the defined threshold, last scheduled workday, and time. If the Out event is in that range, it submits the time card. Otherwise, the formula compares the reported Out event with the save range. If the Out event is in that range, it saves the time card. If neither condition is met, it sets the time card status to Entered.

Parameters

Name	Data Type	Description
WORKED_TIME_CONDITION	Time category	Time category that identifies the reported time entries to use to decide whether to save or submit the time card.
SUBMIT_THRESHOLD_IN_MINUTES	Fixed number	Minutes used with last scheduled workday and reported time entries to decide whether to submit the time card.
SAVE_THRESHOLD_IN_MINUTES	Fixed number	Minutes used with last schedule day and reported time entries to decide whether to save the time card.

Output

Name	Message Severity
OUT_MSG	Time card action automatically started

Examples

Scenario: Your people typically work 8 Regular hours per day and 5 days per week, which is the time card period. You create a rule with this formula that compares the total day and weekly hours to the scheduled total of 40 hours. The submit threshold is 4 and the save threshold is 9. If the formula can't find the schedule or the total hours equals 0, then submit the time card.

Example1: The total reported payroll hours equal 30 hours. This total is less than both the 36 submit and 31 save threshold hours so the formula sets the time card status to Entered.

Day	Payroll Time Type	Reported Time	Output
1	Regular	5h 3h	8h

Day	Payroll Time Type	Reported Time	Output
2	Regular	8h	8h
3	Regular	2h 6h	8h
4	Regular	5h 1h	6h
		Total reported payroll hours:	30h

Example 2: The total reported payroll hours equal 32 hours. Because this total is between the 36 submit and 31 save threshold hours, the formula saves the time card.

Day	Payroll Time Type	Reported Time	Output
1	Regular	5h 3h	8h
2	Regular	8h	8h
3	Regular	2h 6h	8h
4	Regular	5h 3h	8h
		Total reported payroll hours:	32h

Example 3: The total reported payroll hours equal 38 hours, which is over the 36 submit threshold hours so the formula submits the time card.

Day	Payroll Time Type	Reported Time	Output
1	Regular	5h 3h	8h
2	Regular	8h	8h
3	Regular	2h 6h	8h

Day	Payroll Time Type	Reported Time	Output
4	Regular	5h 3h	8h
5		6h	6h
		Total reported payroll hours:	38h

9 Workforce Compliance Fast Formula

Send Approval Reminders and Escalations for Pending Approvals

The ORA_WFM_WCR_APPR_REMIND_ESCALATE_AP formula, which uses array processing, identifies whether the individual, their manager, or both approved the time card. If not, it sends the specified approval reminder and escalation messages.

Before generating the messages, the formula checks whether the individual is on the manually maintained exclusion list. If yes, then the process doesn't generate or send reminder and escalation notifications.

Depending on your time approval configuration, individuals might need to approve their time cards to indicate they consider the time card data to be correct. And, managers approve submitted time cards as part of the approval workflows. The formula continues to send reminders if the approval statuses for the time card don't change. This fast formula isn't associated with any delivered workforce compliance rule templates.

Parameters

Name	Data Type	Description
APPROVAL_TYPE	Fixed text	Specify who gets the reminders. You can configure worker reminders with different parameters than the manager reminders and escalations. The formula has different escalation and delegation options. The formula doesn't differentiate between payroll and project managers. It just looks at who the approver is. Valid values: Worker, Manager, or Both Default and NULL values: Manager The Worker type looks at the worker approval status. The Manager type looks at the time card status.
ESCL_TO_LEVEL	Fixed Number	The formula compares the value on the process with the value set in the rule. If the process value is less, the formula sends an escalation reminder. If the process value is more, it doesn't send an escalation message. Valid values are Arabic numerals. Default and NULL values: 0
ENABLE_DELEGATION	Yes or No	Valid values: Yes or No Default and NULL values: No

Name	Data Type	Description
REM_UNITS_AFTER_END_DATE	Fixed Number	Number of units after the end date for the time card period when the process and rule run and generate the reminder message. If today is on or after the end date + this number, then the rule can send the reminder message. Otherwise, it doesn't send the message. The parameter assumes Days if the selected UOM is D, Hours if it's H, and Minutes if it's M. Valid values are Arabic numerals. Default and NULL values: 7
ESCL_UNITS_AFTER_END_DATE	Fixed Number	Number of units after the end date of the time card period when the process and rule run and generate the escalation message. If today is on or after the end date + this number, the rule can send the escalation message to the appropriate manager in the hierarchy. Otherwise, it doesn't send the message. The parameter assumes Days if the selected UOM is D, Hours if it's H, and Minutes if it's M. Valid values are Arabic numerals. Default and NULL values: 10
ESCALATION_CADENCE	Fixed Number	Identifies how long after the first escalation to send the escalation notification to the next management level. For example, If escalation cadence = 7, the management level increases every 7 units. The unit comes from the UOM parameter. Valid values are Arabic numerals. Default and NULL values: 7
UOM	Fixed Text	Used to define what the number of units is after the end date of the time card period. If D, for days, then the parameter for start reminder and escalations is measured in days. If H, then the parameter is measured in number of hours. If M, then the parameter is measured in number of minutes. Valid Values: D (Days), H (Hours), M (Minutes) Default and NULL values: D (Days)
OVERRIDE_WRKR_REM_MSG	Message	Reminder message for missing worker approval. The default message is HWM_FF_WCR_WRKR_APPR_RMDR

Name	Data Type	Description
OVERRIDE_MGR_REM_MSG	Message	Reminder message for missing manager approval. The default message is HWM_FF_WCR_MGR_APPR_RMDR
OVERRIDE_WRKR_ESCL_MSG	Message	Escalation message for missing worker approval. The default message is HWM_FF_WCR_WRKR_APPR_ESCL
OVERRIDE_MGR_ESCL_MSG	Message	Escalation message for missing manager approval. The default message is HWM_FF_WCR_MGR_APPR_ESCL

Output

Name	Message Severity
OUT_MSG	The message generated by the rule and sent to the worker's email and worklist notification. Three message templates were delivered (two for reminders and one for escalations). You can reference them using the Alerts Composer tool and the Event Alert: HWM Time Approval Reminders and Escalations alert template. To change the content of the message, you can edit the alert template body.

Example

Parameter	Setting	Comments
APPROVAL_TYPE	Both	Send reminders and escalations for both the time card and worker approval tasks
UOM	D	Days
REM_UNITS_AFTER_END_DATE	0	NA
ESCL_UNITS_AFTER_END_DATE	1	NA
ESCL_TO_LEVEL	5	NA
ESCALATION_CADENCE	1	NA
ENABLE_DELEGATION	No	NA
Override messages	NA	Using the default messages

Scenario: The 07/21/20 to 07/27/20 time card was submitted on 07/26/20 and approval notifications were immediately sent to the worker and manager. Neither the individual nor their manager approved the time card on 7/26/20 or the next day. The manager is a first-level manager, M1. In this example, the Generate Time Exceptions from Compliance Rules process runs daily.

Results:

1. The first day after the end of the time card period is 07/28/20. The process sends reminder notifications to both the individual and the manager because they haven't approved the time card.
2. If the individual and manager still haven't approve the time card when the process runs on 07/29/20, it sends them both second reminders. It also sends escalation notifications. A notification goes to the individual's manager to let the manager know the individual hasn't approved their time card. Another notification goes to the manager's manager to let them know that the individual's direct manager hasn't approved the time card.
3. If the individual and manager still haven't approved the time card, when the process runs on 07/30/20, it sends them both third reminders. It sends second escalation notifications to the manager and the manager's manager. It also sends escalation notifications to the second-level and third-level managers to let them know that the first-level manager hasn't approved the time card.

The reminders and escalations continue until the individual and their manager approve the time card. The escalation level continues until the process notifies the fifth-level manager. At that point, the reminders and escalations continue to go to the same people.

Notify Manager Based on Attestation Response

The ORA_WFM_WCR_ATTESTATION_ANSWER_NOTIFY_MGR_AP formula, which uses array processing, identifies whether the attestation answer requires the formula notify the manager. The message severity is an output associated with the generated message.

This fast formula isn't associated with any delivered workforce compliance rule templates.

Parameters

Name	Data Type	Description
QUESTION_CODE	Fixed text	Code of the question asked in the attestation.
ANSWER_CODE	Fixed text	Code of the answer submitted in the attestation.
OVERRIDE_MSG_CODE	Message	Code of the message that overrides the code of the delivered default message ORA_WFM_WCR_ATTESTATION_ANSWER_NOTIFY_MGR_AP, which is HWM_FF_WCR_ACCESS_ATTN_RESP
Tag Values	Fixed text	Optional, comma-separated tags

Output

Name	Message Severity
OUT_MSG	Specify whether the output message is informational, warning, or error.

Function

If the question code equals the specified Question code parameter value and the answer code equals the specified Answer code parameter value, generate an exception. Depending on the setup, also send a notification to the manager.

Example

The attestation set that includes a meal break attestation. The attestation time category from this attestation set helps identify a clock out done more than 5 hours after the previous clock in. Because the elapsed duration is more than 5 hours, the meal break attestation appears. When the person confirms they didn't take a meal break, they're asked why, personal or business reasons? If it was for business reasons, their manager is notified because organizational policy requires that the manager grant a penalty.

	Day 1	Day 2	Day 3	Day 4	Day 5
Web Clock events	In: 8:02a Out: 1:01p	In: 8:03a Out: 1:58p	In: 8:01a	In: 8:03a Out: 1:58p	In: 7:58a Out: 1:58p
Time entry	8:02a to 1:01p	8:03a to 1:58p	8:01a	8:03a to 1:58p	7:58a to 1:58p
Elapsed duration between In and Out	4h 59m	5h 55m	NA	5h 55m	6h 00m
Meal break	0	0	0	0	0
Attestation	None because the elapsed duration is less than 5h.	A question about the meal break appears because the elapsed duration is more than 5h. The person answers that they didn't take their meal break for business reasons.	None because the person didn't clock out, and it's this action that causes the attestation to appear.	A question about the meal break appears because the elapsed duration is more than 5h. The person answers that they did take their meal break. They need to report it or ask their manager to do so.	A question about the meal break appears because the elapsed duration is more than 5h. The person answers that they didn't take their meal break for personal reasons.

Check for Existing Time Card

The ORA_WFM_WCR_MISSING_TIME_CARD_AP formula, which uses array processing, identifies whether a time card exists. If the formula doesn't find one, the corresponding defined message is generated. The message severity is an output associated with the generated message.

This fast formula isn't associated with any delivered workforce compliance rule templates.

Parameters

Name	Type	Description
OVERRIDE_MSG_CODE	Message	Code of the message that overrides the code of delivered default code, which is HWM_FF_WCR_MISSING_TIME_CARD
TAGS_COMMA_SEPARATOR	Fixed text	Comma-separated tags

Output

Name	Message Severity
OUT_MSG	Specify whether the output message is informational, warning, or error.

Identify Missing Time Entries for Scheduled Day

The ORA_WFM_WCR_MISSING_DAY_TIME_ENTRIES_AP formula, which uses array processing, identifies whether the person is scheduled to work the current day. If yes, it identifies whether time entries exist for the current day.

If the formula doesn't find any entries, it generates the corresponding defined message. The message severity is an output associated with the generated message. This fast formula isn't associated with any delivered workforce compliance rule templates.

Parameters

Name	Data Type	Description
OVERRIDE_MSG_CODE	Message	Code of the message that overrides the code of the delivered default message, which is HWM_FF_WCR_MISSING_DAY_ENTRIES
TAGS_COMMA_SEPARATOR	Fixed text	Comma-separated tags

Output

Name	Message Severity
OUT_MSG	Specify whether the output message is informational, warning, or error.

Examples

For these examples, the current day is Wednesday, March 4, 2020.

Example 1: The formula generates a missing day exception for Tuesday and Wednesday because the person is scheduled to work and no entry exists.

Start and End Times	Mon 2 Mar 2020	Tue 3 Mar 2020	Wed 4 Mar 2020	Thu 5 Mar 2020	Fri 6 Mar 2020	Sat 7 Mar 2020	Sun 8 Mar 2020
Schedule	8:00 to 16:00	8:00 to 16:00	8:00 to 16:00	8:00 to 16:00	8:00 to 16:00	NA	NA
Reported	8:00 to 16:00	NA	NA	NA	NA	NA	NA

Example 2: The formula doesn't generate an exception because the person is scheduled to work and an entry exist.

Start and End Times	Mon 2 Mar 2020	Tue 3 Mar 2020	Wed 4 Mar 2020	Thu 5 Mar 2020	Fri 6 Mar 2020	Sat 7 Mar 2020	Sun 8 Mar 2020
Schedule	8:00 to 16:00	8:00 to 16:00	8:00 to 16:00	8:00 to 16:00	8:00 to 16:00	NA	NA
Reported	8:00 to 16:00	8:00 to 16:00	9:00 to 14:00	NA	NA	NA	NA

Example 3: The formula doesn't generate an exception because the person isn't scheduled to work and no entry exists.

Start and End Times	Mon 2 Mar 2020	Tue 3 Mar 2020	Wed 4 Mar 2020	Thu 5 Mar 2020	Fri 6 Mar 2020	Sat 7 Mar 2020	Sun 8 Mar 2020
Schedule	8:00 to 16:00	8:00 to 16:00	NA	8:00 to 16:00	8:00 to 16:00	NA	NA
Reported	8:00 to 16:00	8:00 to 16:00	NA	NA	NA	NA	NA

Example 4: The formula doesn't generate an exception because the person has an absence and no entry exists.

Start and End Times	Mon 2 Mar 2020	Tue 3 Mar 2020	Wed 4 Mar 2020	Thu 5 Mar 2020	Fri 6 Mar 2020	Sat 7 Mar 2020	Sun 8 Mar 2020
Schedule	8:00 to 16:00	8:00 to 16:00	Sick	8:00 to 16:00	8:00 to 16:00	NA	NA
Reported	8:00 to 16:00	8:00 to 16:00	NA	NA	NA	NA	NA

Check for Incomplete Time Entries

The ORA_WFM_WCR_IN_OUT_DANGLERS_AP formula, which uses array processing, identifies whether time entries are incomplete, meaning that either the start or end time is missing. If the formula finds an incomplete entry, it generates the corresponding defined message.

The message severity is an output associated with the generated message. This fast formula isn't associated with any delivered workforce compliance rule templates.

Parameters

Name	Data Type	Description
TAGS_COMMA_SEPARATOR	Fixed text	Comma-separated tags
MESSAGE_CODE_START	Message	Code of the message that overrides the code of the delivered default message for entries missing the start time, which is HWM_FF_WCR_MISSING_START_TIME
MESSAGE_CODE_END	Message	Code of the message that overrides the code of the delivered default message for entries missing the end time, which is HWM_FF_WCR_MISSING_STOP_TIME

Output

Name	Message Severity
OUT_MSG	Specify whether the output message is informational, warning, or error.

Function

Because workforce compliance rules don't account for incomplete entries, the default logic sets missing start time entries to 12:00a and a duration of 0. It sets missing end time entries to 23.59.59 and a duration of 0.

- The formula generates a missing start message if the time entry start time is 12:00a and the duration is 0.
- The formula generates a missing end message if the time entry stop time is 23.59.59 and the duration is 0.

Example

The formula generates a missing start exception on Tuesday, March 6, 2018. It generates a missing end exception on Wednesday, March 8, 2018.

Start and End Times	Mon 2 Mar 2020	Tue 3 Mar 2020	Wed 4 Mar 2020	Thu 5 Mar 2020	Fri 6 Mar 2020
Start and End Times Imported from Time Collection Device	8:00 to 16:00	0:00 to 17:00	9:00 to 23:59	8:00 to 16:00	21:59 to 23:59
Start and End Times Shown in the Application	8:00 to 16:00	__ to 17:00	NA	NA	NA
Duration Imported from Time Collection Device	8	0	0	NA	2
Duration Shown in the Application	8	–	–	NA	2