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1. Purpose of this Document

The OFS Data Export Service (OFSDES) is intended for users wanting to create ad-hoc reports in external data analysis tools, such as Excel, Business Objects etc. It is also a useful foundation for integration between OFS and other client based systems, EG ERP, Quality etc.

OFSDES is implemented as a RESTful API, allowing it to be called on demand via URL in any browser. It may also be implemented in web service calls for integration applications.

2. Change Log

- 12/6/2012 v6.2 Build 2702 Added 'columns' parameter
- 19/7/2012 v7.0 Build 3077 Added columns as indicated
- 3/9/2013 v8.1 Build xxxx Added exports and columns as indicated
- 1/6/2015 v8.2 Build xxxx Added exports (yellow) and column changes

3. Export Streams

There are a number of individual data exports which can be outputted as a file/stream (CSV, TSV) or alternatively displayed on-screen as HTML.

Syntax: https://<server IP>/<OFS LINE ID>/server/export/export_name?parameters

Where Server IP can be the server's IP address or hostname, and the OFS Line ID corresponds to an individual line you wish to query.

The following table lists the valid export_names:

Export	Parameters	Description
/export/line	*start, end, heading, tsv, html,strictStart, groupBy*	Line data aggregated for date range. groupBy=hour|day|week|month|year|total
/export/lineByCrew	*start, end, heading, tsv, html,strictStart, groupBy*	Line data segmented by crew for date range. groupBy=shift|day|week|month|year|total
/export/product	*start, end, heading, tsv, html,strictStart, groupBy*	Product data aggregated for date range. groupBy=job|day|week|month|year|total
/export/productByCrew	*start, end, heading, tsv, html,strictStart, groupBy*	Product data segmented by crew for date range. groupBy=jobByShift|day|week|month|year|total
/export/reason	*start, end, heading, tsv, html,strictStart, groupBy*	Lost time data segmented by reason for date range. groupBy=day|week|month|year|total
/export/reasonByCrew	*start, end, heading, tsv, html,strictStart, groupBy*	Lost time data segmented by reason by crew for date range. groupBy=shift|day|week|month|year|total
/export/reasonByProduct	*start, end, heading, tsv, html,strictStart, groupBy*	Lost time data segmented by reason by product for date range. groupBy=job|day|week|month|year|total
/export/drilldown	*start, end, heading, tsv, html*	
/export/comments	*start, end, heading, tsv, html*	Comment data for date range (max 3 months)

/export/events	*start, end, heading, tsv, html, strictStart*	All high level event data for date range (max 3 months)

4. Parameters

The following table explains the valid parameters:

Parameter	Description	Default value
start	Specifies the start of the period: start={shift,day,week,month,stop,setup,job}-X where X=0 means now, start=YYYY-MM-DD HH:MM:SS	day-0
end	Specifies the end of the period: start={shift,day,week,month,stop,setup,job}-X where X=0 means now, start=YYYY-MM-DD HH:MM:SS	current time
html	Specifies the output to be returned as html for on-screen display.	false
tsv	Returns rows in tab-separated variables (tsv) rather than comma (csv).	false
heading	Returns a header row, e.g. for use in excel.	true
strictStart	If strictStart = false then rows intersecting the start time are returned, e.g. if a downtime commenced earlier and runs across the start parameter. If strictStart = true then only rows that are >= start will be returned.	false
groupBy	Aggregates results by jobByShift|shift|job|hour|day|week|month|year|total. If hour is specified, then one row per hour within the period will be returned, week one row per week etc.	total
columns	Returns only column names specified e.g. columns=StartTime,EndTime	all columns
Drilldowns		
spanReport	Applies to drilldown export only. Parameter defines which drilldown to use. Default is reasonSummary. Also works with eventChart.	reasonSummary
timeBound	One of: "", day, week, month, year, total. Adjusts the start and end times to match the requested time bounds. The start and end time will be pushed (back and forward respectively) to the requested period boundaries. If strictstart is true, the start time is pushed forward to the next time boundary.	
spanBound	One of: "", shift, job, jobbyshift. Adjusts the start and end times to the boundaries of the shifts / jobs or jobShifts starting in the requested time period. This allows retrieval of spans for periods that match OFS statistic aggregations.	
filter	Only return spans that match a comma separated list of filter clauses of the form column:value . e.g filter=UserName:Joe%20Smithers,GroupType:running	

4.1 Examples

4.11 Month-to-date machine performance

../server/export/line?start=month-0&groupBy=total

Returns: 1 row summarised for the current month.

4.12 24 hour statistics by hour

../server/export/line?start=hour-23&groupBy=hour

Returns: 1 row per hour over the last 24 hours

4.13 Crew KPIs, for yesterday

../server/export/lineByCrew?start=day-1&end=day-0&groupBy=day

Returns: 1 row per crew for shifts starting yesterday.

4.14 Trends, e.g. OEE trend, summarised by month, for the past 12 months

..server/export/line?start=month-11&groupBy=month

Returns: 12 rows, one per month, summarised by month.

4.15 OEE trend, summarised by week, from 1-Jan-12 to 31-Mar-12 11pm

..server/export/line?start=2012-01-01 00:00:00&end=2012-03-31 23:00:00&groupBy=week

Returns: 1 row per week, aggregated by week.

4.16 Product KPIs, summarised by week, for the last 3 weeks

../server/export/product?start=week-2&groupBy=week

Returns: 1 row per product (SKU) per week, aggregated by week, for the last 3 weeks.

4.17 All jobs run in the last 4 hours

../server/export/product?start=hour-3&groupBy=job

Returns: 1 row per job started in the past 4 hours (note: a job is an order/instance of a product)

4.18 Downtime reason summary since 1-Jan-12

../server/export/reason?start=2012-01-01 00:00:00

Returns: 1 row per downtime reason, summarised by reason for the period.

4.19 Downtime Reasons by Crew, by week, this month

../server/export/reasonByCrew?start=month-0&groupBy=week

Returns: 1 row per downtime reason per crew, summarised by reason by week, this month.

Filter (in Excel etc.) to the specific class (e.g. Flow Wrapper) by the ReasonCategory column.

4.20 Drilldown Filter to "Flow Wrapper" Downtime by Shift, for week commencing last month until now

../server/export/drilldown?start=month-1&timeBound=week&spanBound=shift&filter=ReasonDescription:Flow Wrapper

Returns: 1 row per occurrence of "Flow Wrapper" downtime for shifts starting in the first week that intersects with the start of last month until "now"

4.21 Case Packer monitor comments in the last week

../server/export/comments?start=week-1&end=week-0

Returns: All comments entered last week.

Filter (in Excel etc.) to the specific monitor (e.g. Case Packer) by the SpanClass column.

4.22 All raw events for the last completed shift

../server/export/events?start=shift-1&end=shift-0

Returns: All raw events for the previous shift.

5. Data Returned by OFSDES

5.1 Line / LineByCrew

(highlighted rows appear in lineByCrew only)

Column Heading	Description
WorkcentreId	Machine ID
WorkcentreName	Machine Name
StartTime	Period Start
EndTime	Period End
DurationSeconds	Duration in seconds of the period
ShiftEvents	Number of shifts started in period
JobEvents	Number of jobs stared in period
CrewId	Crew ID
CrewName	Crew Name
CrewSortIndex	Integer used to sort crews, e.g Day(1), Afternoon(2), Night(3)
UserId	OFS Operator ID (may not be present in aggregate)
UserName	Operator Name (may not be present in aggregate)
SpanId	Internal OFS SPan ID (may not be present in aggregate)
SpanType	Always shift for the shift export (may not be present in aggregate)
ShiftSpanId	OFS Shift ID (may not be present in aggregate)
OpenUnitsIn	Units IN counted during ‘Open Time’ in the period
ProductionUnitsIn	Units IN counted during ‘Production Time’ in the period
RunUnitsIn	Units IN counted during ‘Run Time’ in the period
UnitsIn	Total units IN for the period
UnitsOut	Total units OUT for the period
UnitsRated	Max possible units for the period, based on the individual SKU speeds per job run
UnitsNamePlate	Max possible units for the period, based on nameplate speed of the machine
SetupUnitsIn	Units IN counted during ‘Setup Time’
ShiftSeconds	Total seconds spent during shift(s) within the period
OpenSeconds	Open seconds within the period
ProductionSeconds	Production seconds within the period
SetupSeconds	Setup seconds during period
SetupEvents	Number of setups started during period
UnplannedDowntimeSeconds	Unplanned downtime during period
UnplannedDowntimeEvents	Number of unplanned downtimes during period
UnplannedSetupDowntimeSeconds	Unplanned downtime during setup during period
UnplannedSetupDowntimeEvents	Number of unplanned downtimes during setup during period
PlannedDowntimeSeconds	Planned downtime during period
PlannedDowntimeEvents	Number of planned downtimes during period
ShortStopSeconds	Short stop time during period

ShortStopEvents	Number of short stops during period
RunSlowSeconds	Run slow time during period
RunSlowEvents	Number of run slow occurrences during period
RunSeconds	Run time during period
RunEvents	Number of run spans during period
RunSpeed	Average run speed achieved during period
ProductionSpeed	Average production speed achieved during period
OpenSpeed	Average open speed achieved during period
OEE	OEE%
AVA	AVA%
PE	PE%
Quality	Quality%
metaData_	Any metaData attached to a shift will appear in groupBy=shift

5.2 Product / ProductByCrew

(highlighted rows appear only in productByCrew)

Column Heading	Description
WorkcentreId	Machine ID
WorkcentreName	Machine Name
StartTime	Period Start
EndTime	Period End
DurationSeconds	Duration in seconds of the period
ShiftEvents	Number of shifts started in period
JobEvents	Number of jobs started in period
CrewId	Crew ID
CrewSortIndex	Integer used to sort crews, e.g Day(1), Afternoon(2), Night(3)
CrewName	Crew Name
UserId	OFS Operator ID (may not be present in aggregate)
UserName	Operator Name (may not be present in aggregate)
OrderID	Order ID
OrderQuantity	Order quantity as supplied by schedule or entered by operator
SKUID	SKU ID / Code
SKUDescription	SKU Description
SpanId	Internal OFS Span ID (may not be present in aggregate)
SpanType	Always shift for the shift export (may not be present in aggregate)
JobSpanID	OFS Job ID
ShiftSpanId	OFS Shift ID (may not be present in aggregate)
OpenUnitsIn	Units IN counted during 'Open Time' in the period
ProductionUnitsIn	Units IN counted during 'Production Time' in the period
RunUnitsIn	Units IN counted during 'Run Time' in the period
UnitsIn	Total units IN for the period
UnitsOut	Total units OUT for the period
UnitsRated	Max possible units for the period, based on the individual SKU speeds per job run

UnitsNamePlate	Max possible units for the period, based on nameplate speed of the machine
SetupUnitsIn	Units IN counted during 'Setup Time'
ShiftSeconds	Total seconds spent during shift(s) within the period
OpenSeconds	Open seconds within the period
ProductionSeconds	Production seconds within the period
SetupSeconds	Setup seconds within the period
SetupEvents	Number of setups started during period
UnplannedDowntimeSeconds	Unplanned downtime during period
UnplannedDowntimeEvents	Number of unplanned downtimes during period
UnplannedSetupDowntimeSeconds	Unplanned downtime during setup during period
UnplannedSetupDowntimeEvents	Number of unplanned downtimes during setup during period
PlannedDowntimeSeconds	Planned downtime during period
PlannedDowntimeEvents	Number of planned downtimes during period
ShortStopSeconds	Short stop time during period
ShortStopEvents	Number of short stops during period
RunSlowSeconds	Run slow time during period
RunSlowEvents	Number of run slow occurrences during period
RunSeconds	Run time during period
RunEvents	Number of run spans during period
RunSpeed	Average run speed achieved during period
ProductionSpeed	Average production speed achieved during period
OpenSpeed	Average open speed achieved during period
OEE	OEE%
AVA	AVA%
PE	PE%
Quality	Quality%
metaData_	Any metaData attached to a product will appear when groupBy=job

5.3 Reason / ReasonByCrew / ReasonByProduct

(red highlighted rows appear in reasonByCrew only)

(yellow rows appear in reasonByProduct only)

(SpanID/SpanType appear in both reasonByCrew and reasonByProduct)

Column Heading	Description
WorkcentreId	Machine ID
WorkcentreName	Machine Name
StartTime	Event start time
EndTime	Event end time
DurationSeconds	Duration in seconds of the period
OrderId	Order ID
OrderQuantity	Order quantity as supplied by schedule or entered by operator
SKUId	SKU ID / Code
SKUDescription	SKU Description
CrewId	Crew ID
CrewName	Crew Name
CrewSortIndex	Integer used to sort crews, e.g Day(1), Afternoon(2), Night(3)
UserId	OFS Operator ID
UserName	Operator Name
ReasonId	The ID / Reason code for the downtime reason
ReasonDescription	The downtime reason selected
ReasonCategory	The class of the downtime reason E.G. {Admin, Technical, Flow Wrapper etc.}
SpanId	Internal OFS SPan ID
SpanType	OFS Internal Span Type
ShiftSpanId	OFS Shift ID in which the event occurred
JobSpanID	OFS Job ID in which the event occurred
GroupType	OFS group type identifier (runNormal, runSlow, unplannedDowntime etc.)
GroupClass	Event label {Running, Run Slow, Setup, Unplanned Downtime etc.}
UnitsIn	Total units IN for the Event
UnitsOut	Total units OUT for the Event
UnitsRated	Max possible units for the Job, based on the individual SKU speeds per job run.
UnitsNamePlate	Max units at nameplate speed (only for run / run slow events)
ReasonSeconds	Total seconds spent in reason
ReasonEvents	Number of events for reason (count / frequency)
LostTimeSeconds	If in downtime, this is the same as ReasonSeconds. If in Run/RunSlow this is equates to the lost opportunity if the machine would have run at rated speed

5.4 Events

Column Heading	Description
WorkcentreId	Machine ID
WorkcentreName	Machine Name
StartTime	Event start time
EndTime	Event end time
DurationSeconds	Duration in seconds of the period
CrewId	Crew ID
CrewName	Crew Name
CrewSortIndex	Integer used to sort crews, e.g Day(1), Afternoon(2), Night(3)
UserId	OFS Operator ID
UserName	Operator Name
OrderId	When OFS is integrated with a schedule, the order number, otherwise SKU ID
OrderQuantity	When OFS is integrated with a schedule, the Order Quantity
SKUId	SKU ID as provided in product data
SKUDescription	SKU Description as provided in product data
SpanId	Internal OFS SPan ID
SpanType	OFS Internal Span Type
SpanClass	The type of event this is - IE {Shift, Running, Job, Setup, Downtime etc.}
JobSpanId	OFS Job span ID for if the event occurred during a job
ShiftSpanId	OFS Shift ID in which the event occurred
UnitsIn	Total units IN for the Event
UnitsOut	Total units OUT for the Event
UnitsRated	Max possible units for the Job, based on the individual SKU speeds per job run.
ReasonId	The ID / Reason code for the downtime reason
ReasonDescription	The downtime reason selected
ReasonCategory	The class of the downtime reason E.G. {Admin, Technical, Operational etc.}

5.5 Comments

Column Heading	Description
WorkcentreId	Machine ID
WorkcentreName	Machine Name
StartTime	Event start time
EndTime	Event end time
DurationSeconds	Duration in seconds of the period
CrewId	Crew ID
CrewName	Crew Name
CrewSortIndex	Integer used to sort crews, e.g Day(1), Afternoon(2), Night(3)
UserId	OFS Operator ID
UserName	Operator Name
OrderId	When OFS is integrated with a schedule, the order number, otherwise SKU ID
OrderQuantity	When OFS is integrated with a schedule, the Order Quantity
SKUId	SKU ID as provided in product data
SKUDescription	SKU Description as provided in product data
SpanId	Internal OFS SPan ID
SpanType	OFS Internal Span Type
SpanClass	The type of event this is - IE {Shift, Running, Job, Setup, Downtime etc.}
JobSpanId	OFS Job span ID for if the event occurred during a job
ShiftSpanId	OFS Shift ID in which the event occurred
UnitsIn	Total units IN for the Event
UnitsOut	Total units OUT for the Event
UnitsRated	Max possible units for the Job, based on the individual SKU speeds per job run.
ReasonId	The ID / Reason code for the downtime reason
ReasonDescription	The downtime reason selected
ReasonCategory	The class of the downtime reason E.G. {Admin, Technical, Operational etc.}
PostId	The OFS ID for the Post
PostFromOFSX	If true, then this is an auto comment by OFS. For all user comments this is false.
PostSubject	The original subject of the post IE the first post made in a comment chain
PostCommentId	The OFS ID for the comment
PostCommentDate	Date and time of comment
PostCommentAuthor	User that entered the comment
PostCommentText	Actual comment - will be the same as PostSubject for single thread comments