Flow Metrics

This section provides detailed information about each flow metrics. Long names in flow metrics are used for SAN analytics and short names are used for telemetry purposes.

For a list of supported views, see the List of Supported View Types.

Note

- When you use the **clear** keyword in the **show analytics** command, the metrics starting with *peak* and metrics ending with *min* and *max* values are cleared.

- Metric long names are printed in the JSON output of Pull queries.

- Metric short names are used in GPB-KV names in Push queries that are streamed out of the switch.

- List of Supported Flow Metrics, on page 1

List of Supported Flow Metrics

Port View Instance

Table 1: Flow Metrics for Port View Instance

Flow Metric		Type	Unit	Sortable?	Description
Long Name	Short Name				
port	port	Key	Text	No	A switch's port where the SAN Analytics feature is enabled.
scsi_target _count	stc	Metadata	Count	No	Number of targets deployed behind a switch's port where IO transactions are observed.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
scsi_initiator _count	sic	Metadata	Count	No	Number of initiators deployed behind a switch's port where IO transactions are observed.
io_app _count	IOac	Metadata	Count	No	Number of applications hosted behind a switch's port where IO transactions are observed.
logical_port _count	lpc	Metadata	Count	No	Number of VSANs configured on a switch's port where IO transactions are observed.
scsi_target _app_count	stac	Metadata	Count	No	Number of applications for which data is hosted on targets that are behind same switch's port.
scsi_initiator _app_count	siac	Metadata	Count	No	Number of applications for which data is requested by the initiators that are behind a switch's port.
active_io _read_count	raIO	Metadata	Count	Yes	Number of outstanding **read** command counts associated with a switch's port.
active_io _write_count	waIO	Metadata	Count	Yes	Number of outstanding **write** command counts associated with a switch's port.
scsi_target _it_flow_count	stITfc	Metadata	Count	No	Number of IT flows associated with various targets behind a switch's port.
scsi_initiator _it_flow_count	siITfc	Metadata	Count	No	Number of initiator-target (IT) flows associated with various initiators that are behind a switch's port.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
scsi_target _itl_flow_count	stITLfc	Metadata	Count	No	Number of ITL flows associated with various targets behind a switch's port.
scsi_initiator _itl_flow_count	siITLfc	Metadata	Count	No	Number of ITL flows associated with various initiators that are behind a switch's port.
scsi_target _tl_flow_count	stTLfc	Metadata	Count	No	Number of LUNs associated with various targets behind a switch's port.
total_read _io_count	rtIO	Metric	Count	Yes	Total **read** command data observed in the context of a switch's port.
total_write _io_count	wtIO	Metric	Count	Yes	Total **write** command data observed in the context of a switch's port.
total_seq_read_io_count	rstIOc	Metric	Count	No	Total sequential **read** command data observed in the context of a switch's port.
total_seq _write_io_count	wrstIOc	Metric	Count	No	Total sequential **write** command data observed in the context of a switch's port.
total_read _io_time	rtIOt	Metric	Microseconds	No	Accumulated total **read** completion time for observed in the context of a switch's port. You can use this information to compute the average read IO completion time.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
total_write _io_time	wtIOt	Metric	Microseconds	No	Accumulated total **write** command completion time observed in the context of a switch's port. You can use this information to compute the average write command completion time.
total_read _io_initiation_time	rtIOint	Metric	Microseconds	No	Accumulated total **read** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ commands or the first txfr_rdy for WRITE commands) observed in the context of a switch's port. The initiation time is sometimes referred to as **data access latency**. You can use this information to compute the average read IO initiation time.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
total_write _io_initiation_time	wtIOint	Metric	Microseconds	No	Accumulated total **write** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ or txfer_rdy for WRITE) observed in the context of a switch's port. The initiation time is sometimes referred to as **data access latency**. You can use this information to compute the average write command initiation time.
total_read _io_bytes	rtIOb	Metric	Bytes	Yes	Total **read** command data that is observed in the context of a switch's port.
total_write _io_bytes	wtIOb	Metric	Bytes	Yes	Total **write** command data observed in the context of a switch's port.
total_read _io_inter _gap_time	rtIOigt	Metric	Microseconds	No	Accumulated total **read** command intergap time observed in the context of a switch's port. You can use this information to compute the average read IO intergap time.
total_write _io_inter _gap_time	wtIOigt	Metric	Microseconds	No	Accumulated total **write** command intergap time observed in the context of a switch's port. You can use this information to compute the average write command intergap time.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
total_time _metric_based _read_io_count	tmrtIOc	Metric	Count	No	Total completed **read** command data observed in the context of a switch's port.
total_time _metric_based _write_io_count	tmwtIOc	Metric	Count	No	Total completed **write** command data observed in the context of a switch's port.
total_time _metric_based _read_io_bytes	tmrtIOb	Metric	Count	No	Total completed **read** command data observed in the context of a switch's port, in bytes.
total_time _metric_based _write_io_bytes	tmwtIOb	Metric	Count	No	Total completed **write** command data observed in the context of a switch's port, in bytes.
read_io_rate	rIOr	Metric	IOs per second	Yes	The **read** command data observed in the context of a switch's port.
peak_read _io_rate	prIOr	Metric	IOs per second	No	Peak read command data observed in the context of a switch's port.
write_io_rate	wIOr	Metric	IOs per second	Yes	The **write** command data observed in the context of a switch's port.
peak_write _io_rate	pwIOr	Metric	IOs per second	No	Peak write command data observed in the context of a switch's port.
read_io _bandwidth	rIObw	Metric	Bytes per second	Yes	The **read** command bandwidth observed in the context of a switch's port.
peak_read _io_bandwidth	prIObw	Metric	Bytes per second	No	Peak read command bandwidth observed in the context of a switch's port.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
write_io_bandwidth	wIObw	Metric	Bytes per second	Yes	The **write** command bandwidth observed in the context of a switch's port.
peak_write _io_bandwidth	pwIObw	Metric	Bytes per second	No	Peak write command bandwidth observed in the context of a switch's port.
read_io _size_min	rIOsMi	Metric	Bytes	Yes	Minimum **read** command size observed in the context of a switch's port.
read_io _size_max	rIOsMa	Metric	Bytes	Yes	Maximum **read** command size observed in the context of a switch's port.
write_io _size_min	wIOsMi	Metric	Bytes	Yes	Minimum **write** command size observed in the context of a switch's port.
write_io _size_max	wIOsMa	Metric	Bytes	Yes	Maximum **write** command size observed in the context of a target that is behind a switch's port.
read_io_completion _time_min	rIOctMi	Metric	Microseconds	Yes	Minimum **read** command completion time observed in the context of a switch's port.
read_io _completion _time_max	rIOctMa	Metric	Microseconds	Yes	Maximum **read** command completion time observed in the context of a switch's port.
write_io _completion _time_min	wIOctMi	Metric	Microseconds	Yes	Minimum **write** command completion time observed in the context of a switch's port.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
write_io _completion _time_max	wIOctMa	Metric	Microseconds	Yes	Maximum **write** command completion time observed in the context of a switch's port.
read_io _initiation _time_min	rIOitMi	Metric	Microseconds	Yes	Minimum **read** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ or txfer_rdy for WRITE) observed in the context of a switch's port. The initiation time is sometimes referred to as **data access latency**.
read_io _initiation _time_max	rIOitMa	Metric	Microseconds	Yes	Maximum **read** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ or txfer_rdy for WRITE) observed in the context of a switch's port. The initiation time is sometimes referred to as **data access latency**.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
write_io _initiation _time_min	wIOitMi	Metric	Microseconds	Yes	Minimum **write** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ or txfer_rdy for WRITE) observed in the context of a switch's port. The initiation time is sometimes referred to as **data access latency**.
write_io _initiation _time_max	wIOitMa	Metric	Microseconds	Yes	Maximum **write** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ or txfer_rdy for WRITE) observed in the context of a switch's port. The initiation time is sometimes referred to as **data access latency**.
read_io _inter_gap _time_min	rIOigtMi	Metric	Microseconds	Yes	Minimum **read** command intergap time observed in the context of a switch's port. read_io_inter_gap_time_min is the duration between successive IO commands and is measured in 1/256th of a microsecond.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
read_io _inter_gap _time_max	rIOigtMa	Metric	Microseconds	Yes	Maximum **read** command intergap time observed in the context of a switch's port. read_io_inter_gap_time_max is the duration between successive IO commands and is measured in 1/256th of a microsecond.
write_io _inter_gap _time_min	wIOigtMi	Metric	Microseconds	Yes	Minimum **write** command intergap time observed in the context of a switch's port. write_io_inter_gap_time_min is the duration between successive IO commands and is measured in 1/256th of a microsecond.
write_io _inter_gap _time_max	wIOigtMa	Metric	Microseconds	Yes	Maximum **write** command intergap time observed in the context of a switch's port. write_io_inter_gap_time_max is the duration between successive IO commands and is measured in 1/256th of a microsecond.
read_io_aborts	rIOa	Metric	Count	Yes	Number of read command aborts observed in the context of a switch's port.
write_io_aborts	wIOa	Metric	Count	Yes	Number of **write** command aborts observed in the context of an application that is hosted behind a switch's port.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	Short Name				
read_io_failures	rIOf	Metric	Count	Yes	Number of **read** command failures observed in the context of a switch's port.
write_io_failures	wIOf	Metric	Count	Yes	Number of **write** command failures observed in the context of a switch's port.
read_io_timeouts	rIOTo	Metric	Count	No	Number of **read** command timeouts observed in the context of a switch's port. read_io_timeouts are counted whenever IO transactions are not observed within 2.5 seconds from the time the IO command was issued.
write_io_timeouts	wIOTo	Metric	Count	No	Number of **write** command timeouts observed in the context of a switch's port.
read_io_scsi_check _condition_count	rIOSchcoct	Metric	Count	No	Number of **read** command check conditions seen in the context of a switch's port.
write_io_scsi_check _condition_count	wIOSchcoct	Metric	Count	No	Number of **write** command check conditions seen in the context of a switch's port.
read_io_scsi_busy_count	rIOsbc	Metric	Count	No	Number of **read** command busy status seen in the context of a switch's port.
write_io_scsi_busy_count	wIOsbc	Metric	Count	No	Number of **write** command busy status seen in the context of a switch's port.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
read_io_scsi_reservation _conflict_count	rIOSrecct	Metric	Count	No	Number of **read** command reservation conflicts seen in the context of a switch's port.
write_io_scsi_reservation _conflict_count	wIOSrecct	Metric	Count	No	Number of **write** command reservation conflicts seen in the context of a switch's port.
read_io_scsi_queue _full_count	rIOSQfct	Metric	Count	No	Number of **read** command queue full status seen in the context of a switch's port.
write_io_scsi_queue _full_count	wIOSQfct	Metric	Count	No	Number of **write** command queue full status seen in the context of a switch's port.
sampling_start_time	samStm	Metric	UNIX time	No	Start of the sampling time interval.
sampling_end_time	samEtm	Metric	UNIX time	No	End of the sampling time interval.

Logical Port View Instance

Table 2: Flow Metrics for Logical Port View Instance

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
port	port	Key	Text	No	A logical switch port where the SAN Analytics feature is enabled.
vsan	vsan	Key	Number	No	VSAN that is configured on a logical switch port where IO transactions are observed.
scsi_target _count	stc	Metadata	Count	No	Number of targets deployed behind a logical switch port where IO transactions are observed.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	Short Name				
scsi_initiator _count	sic	Metadata	Count	No	Number of initiators deployed behind a logical switch port where IO transactions are observed.
scsi_target _app_count	stac	Metadata	Count	No	Number of applications for which data is hosted on targets that are behind a logical switch port.
scsi_initiator _app_count	siac	Metadata	Count	No	Number of applications for which data is requested by the initiators that are behind a logical switch port.
active_io _read_count	raIO	Metadata	Count	Yes	Number of outstanding **read** command counts associated with a logical switch port.
active_io _write_count	waIO	Metadata	Count	Yes	Number of outstanding **write** command counts associated with a logical switch port.
scsi_target _it_flow_count	stITfc	Metadata	Count	No	Number of IT flows associated with various targets behind a logical switch port.
scsi_initiator _it_flow_count	siITfc	Metadata	Count	No	Number of initiator-target (IT) flows associated with various initiators that are behind a logical switch port.
scsi_target _itl_flow_count	stITLfc	Metadata	Count	No	Number of ITL flows associated with various targets behind a logical switch port.
scsi_initiator _itl_flow_count	siITLfc	Metadata	Count	No	Number of ITL flows associated with various initiators that are behind a logical switch port.
scsi_target _tl_flow_count	stTLfc	Metadata	Count	No	Number of LUNs associated with various targets behind a logical switch port.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
total_read _io_count	rtIO	Metric	Count	Yes	Total **read** command data observed in the context of a logical switch port.
total_write _io_count	wtIO	Metric	Count	Yes	Total **write** command data observed in the context of a logical switch port.
total_seq _read_io_count	rstIOc	Metric	Count	No	Total sequential **read** command data observed in the context of a logical switch port.
total_seq _write_io_count	wrstIOc	Metric	Count	No	Total sequential **write** command data observed in the context of a logical switch port.
total_read _io_time	rtIOt	Metric	Microseconds	No	Accumulated total **read** command completion time for read command data observed in the context of a logical switch port. You can use this information to compute the average read IO completion time.
total_write _io_time	wtIOt	Metric	Microseconds	No	Accumulated total **write** command completion time observed in the context of a logical switch port. You can use this information to compute the average write command completion time.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
total_read _io_initiation_time	rtIOint	Metric	Microseconds	No	Accumulated total **read** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ commands or the first txfr_rdy for WRITE commands) observed in the context of a logical switch port. The initiation time is sometimes referred to as **data access latency**. You can use this information to compute the average read IO initiation time.
total_write _io_initiation_time	wtIOint	Metric	Microseconds	No	Accumulated total **write** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ or txfer_rdy for WRITE) observed in the context of a logical switch port. The initiation time is sometimes referred to as **data access latency**. You can use this information to compute the average write command initiation time.
total_read _io_bytes	rtIOb	Metric	Bytes	Yes	Total **read** command data that is observed in the context of a logical switch port.
total_write _io_bytes	wtIOb	Metric	Bytes	Yes	Total **write** command data observed in the context of a logical switch port.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
total_read _io_inter_gap_time	rtIOigt	Metric	Microseconds	No	Accumulated total **read** command intergap time observed in the context of a logical switch port. You can use this information to compute the average read IO intergap time.
total_write _io_inter_gap_time	wtIOigt	Metric	Microseconds	No	Accumulated total **write** command intergap time observed in the context of a logical switch port. You can use this information to compute the average write command intergap time.
total_time _metric_based _read_io_count	tmrtIOc	Metric	Count	No	Total completed **read** command data observed in the context of a logical switch port.
total_time _metric_based _write_io_count	tmwtIOc	Metric	Count	No	Total completed **write** command data observed in the context of a logical switch port.
total_time _metric_based _read_io_bytes	tmrtIOb	Metric	Count	No	Total completed **read** command data observed in the context of a logical switch port, in bytes.
total_time _metric_based _write_io_bytes	tmwtIOb	Metric	Count	No	Total completed **write** command data observed in the context of a logical switch port, in bytes.
read_io_rate	rIOr	Metric	IOs per second	Yes	The **read** command data observed in the context of a logical switch port.
peak_read _io_rate	prIOr	Metric	IOs per second	No	Peak **read** command data observed, in the context of a LUN, on a target that is behind a logical switch port.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	Short Name				
write_io_rate	wIOr	Metric	IOs per second	Yes	The **write** command data observed in the context of a logical switch port.
peak_write _io_rate	pwIOr	Metric	IOs per second	No	Peak **write** command data observed, in the context of a LUN, on a target that is behind a logical switch port.
read_io_bandwidth	rIObw	Metric	Bytes per second	Yes	The **read** command bandwidth observed in the context of a logical switch port.
peak_read _io_bandwidth	prIObw	Metric	Bytes per second	No	Peak read command bandwidth observed, in the context of a logical-unit-number (LUN), on a target that is behind a logical switch port.
write_io_bandwidth	wIObw	Metric	Bytes per second	Yes	The **write** command bandwidth observed in the context of a logical switch port.
peak_write _io_bandwidth	pwIObw	Metric	Bytes per second	No	Peak **write** command bandwidth observed, in the context of a LUN, on a target that is behind a logical switch port.
read_io _size_min	rIOsMi	Metric	Bytes	Yes	Minimum **read** command size observed in the context of a logical switch port.
read_io _size_max	rIOsMa	Metric	Bytes	Yes	Maximum **read** command size observed in the context of a logical switch port.
write_io _size_min	wIOsMi	Metric	Bytes	Yes	Minimum **write** command size observed in the context of a logical switch port.
write_io _size_max	wIOsMa	Metric	Bytes	Yes	Maximum **write** command size observed in the context of a target that is behind a logical switch port.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	Short Name				
read_io _completion _time_min	rIOctMi	Metric	Microseconds	Yes	Minimum **read** command completion time observed in the context of a logical switch port.
read_io _completion _time_max	rIOctMa	Metric	Microseconds	Yes	Maximum read-command-completion time observed in the context of a logical switch port.
read_io _initiation _time_min	rIOitMi	Metric	Microseconds	Yes	Minimum **read** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ or txfer_rdy for WRITE) observed in the context of a logical switch port. The initiation time is sometimes referred to as **data access latency**.
read_io _initiation _time_max	rIOitMa	Metric	Microseconds	Yes	Maximum **read** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ or txfer_rdy for WRITE) observed in the context of a logical switch port. The initiation time is sometimes referred to as **data access latency**.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
write_io _initiation _time_min	wIOitMi	Metric	Microseconds	Yes	Minimum **write** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ or txfer_rdy for WRITE) observed in the context of a logical switch port. The initiation time is sometimes referred to as **data access latency**.
write_io _initiation _time_max	wIOitMa	Metric	Microseconds	Yes	Maximum **write** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ or txfer_rdy for WRITE) observed in the context of a logical switch port. The initiation time is sometimes referred to as **data access latency**.
read_io _inter_gap _time_min	rIOigtMi	Metric	Microseconds	Yes	Minimum **read** command intergap time observed in the context of a logical switch port. read_io_inter_gap_time_min is the duration between successive IO commands and is measured in 1/256th of a microsecond.
read_io _inter_gap _time_max	rIOigtMa	Metric	Microseconds	Yes	Maximum **read** command intergap time observed in the context of a logical switch port. read_io_inter_gap_time_max is the duration between successive IO commands and is measured in 1/256th of a microsecond.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
write_io _inter_gap _time_min	wIOigtMi	Metric	Microseconds	Yes	Minimum **write** command intergap time observed in the context of a logical switch port. write_io_inter_gap_time_min is the duration between successive IO commands and is measured in 1/256th of a microsecond.
write_io _inter_gap _time_max	wIOigtMa	Metric	Microseconds	Yes	Maximum **write** command intergap time observed in the context of a logical switch port. write_io_inter_gap_time_max is the duration between successive IO commands and is measured in 1/256th of a microsecond.
read_io_aborts	rIOa	Metric	Count	Yes	Number of **read** command aborts observed in the context of a logical switch port.
write_io_aborts	wIOa	Metric	Count	Yes	Number of **write** command aborts observed in the context of an application that is hosted behind a logical switch port.
read_io_failures	rIOf	Metric	Count	Yes	Number of **read** command failures observed in the context of a logical switch port.
write_io_failures	wIOf	Metric	Count	Yes	Number of **write** command failures observed in the context of a logical switch port.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
read_io_timeouts	rIOTo	Metric	Count	No	Number of **read** command timeouts observed in the context of a logical switch port. read_io_timeouts are counted whenever IO transactions are not observed within 2.5 seconds from the time the IO command was issued.
write_io_timeouts	wIOTo	Metric	Count	No	Number of **write** command timeouts observed in the context of a logical switch port.
read_io _scsi_check _condition_count	rIOSchcoct	Metric	Count	No	Number of **read** command check conditions seen in the context of a logical switch port.
write_io _scsi_check _condition_count	wIOSchcoct	Metric	Count	No	Number of **write** command check conditions seen in the context of a logical switch port.
read_io _scsi_busy_count	rIOsbc	Metric	Count	No	Number of **read** command busy status seen in the context of a logical switch port.
write_io _scsi_busy_count	wIOsbc	Metric	Count	No	Number of **write** command busy status seen in the context of a logical switch port.
read_io _scsi_reservation _conflict_count	rIOSrecct	Metric	Count	No	Number of **read** command reservation conflicts seen in the context of a logical switch port.
write_io _scsi_reservation _conflict_count	wIOSrecct	Metric	Count	No	Number of **write** command reservation conflicts seen in the context of a logical switch port.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
read_io _scsi_queue _full_count	rIOSQfct	Metric	Count	No	Number of **read** command queue full status seen in the context of a logical switch port.
write_io _scsi_queue _full_count	wIOSQfct	Metric	Count	No	Number of **write** command queue full status seen in the context of a logical switch port.
sampling _start_time	samStm	Metric	UNIX time	No	Start of the sampling time interval.
sampling _end_time	samEtm	Metric	UNIX time	No	End of the sampling time interval.

Application View Instance

Table 3: Flow Metrics for Application View Instance

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
port	port	Key	Text	No	A switch's port where the SAN Analytics feature is enabled.
app_id	app_id	Key	Count	No	Application identifier for the application that is hosted behind a switch's port.
scsi_target _itl_flow_count	stITLfc _	Metadata	Count	No	Number of target ITL flows associated with an application that is hosted behind a switch's port.
scsi_initiator _itl_flow_count	siITLfc	Metadata	Count	No	Number of initiator ITL flows associated with an application that is hosted behind a switch's port.
active_io _read_count	raIO	Metadata	Count	Yes	Number of outstanding **read** command counts associated with an application that is hosted behind a switch's port.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
active_io _write_count	waIO	Metadata	Count	Yes	Number of outstanding **write** command counts associated with an application that is hosted behind a switch's port.
scsi_target _app_count	stac	Metadata	Count	No	Number of targets that host data for an application that is hosted behind a switch's port.
scsi_initiator _app_count	siac	Metadata	Count	No	Number of initiators that access data from an application that is hosted behind a switch's port.
scsi_target _tl_flow_count	stTLfc	Metadata	Count	No	Number of LUNs associated with an application that is hosted behind a switch's port.
sampling _end_time	samEtm	Metric	UNIX time	No	End of the sampling time interval.
sampling _start_time	samStm	Metric	UNIX time	No	Start of the sampling time interval.

Target View Instance

Table 4: Flow Metrics for Target View Instance

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
port	port	Key	Text	No	A switch's port where the SAN Analytics feature is enabled.
vsan	vsan	Key	Count	No	VSAN configured on a switch's port where IO transactions are observed.
target_id	did	Key	Text	No	Target Fibre Channel ID that is deployed behind a switch's port where IO transactions are observed.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
scsi_target _app_count	stac	Metadata	Count	No	Number of applications for which data is hosted on a target that is behind a switch's port.
scsi_target _lun_count	stLc	Metadata	Count	No	Number of LUNs seen on a target that is behind a switch's port.
active_io _read_count	raIO	Metadata	Count	Yes	Number of outstanding **read** command counts associated with a target that is behind a switch's port.
active_io _write_count	waIO	Metadata	Count	Yes	Number of outstanding **write** command counts associated with a target that is behind a switch's port.
scsi_target _entity_it _flow_count	stITfc	Metadata	Count	No	Number of IT flows associated with a target that is behind a switch's port.
scsi_target _entity_itl _flow_count	stITLfc	Metadata	Count	No	Number of ITL flows associated with a target that is behind a switch's port.
total_read _io_count	rtIO	Metric	Count	Yes	Total **read** command data observed in the context of a target that is behind a switch's port.
total_write _io_count	wtIO	Metric	Count	Yes	Total **write** command data observed in the context of a target that is behind a switch's port.
total_seq _read_io_count	rstIOc	Metric	Count	No	Total sequential **read** command data observed in the context of a target that is behind a switch's port.
total_seq _write_io_count	wrstIOc	Metric	Count	No	Total sequential **write** command data observed in the context of a target that is behind a switch's port.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
total_read _io_time	rtIOt	Metric	Microseconds	No	Accumulated total **read** command completion time observed in the context of a target that is behind a switch's port. You can use this information to compute the average read IO completion time.
total_write _io_time	wtIOt	Metric	Microseconds	No	Accumulated total **write** command completion time observed in the context of a target that is behind a switch's port. You can use this information to compute average **write** command completion time.
total_read _io_initiation_time	rtIOint	Metric	Microseconds	No	Accumulated total **read** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ commands or the first txfr_rdy for WRITE commands) observed in the context of a target that is behind a switch's port. The initiation time is sometimes referred to as **data access latency**. You can use this information to compute average read IO initiation time.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
total_write _io_initiation_time	wtIOint	Metric	Microseconds	No	Accumulated total **write** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ or txfer_rdy for WRITE) observed in the context of a target that is behind a switch's port. The initiation time is sometimes referred to as **data access latency**. You can use this information to compute average **write** command initiation time.
total_read _io_bytes	rtIOb	Metric	Bytes	Yes	Total **read** command data that is observed in the context of a target that is behind a switch's port.
total_write _io_bytes	wtIOb	Metric	Bytes	Yes	Total **write** command data observed in the context of a target that is behind a switch's port.
total_read _io_inter _gap_time	rtIOigt	Metric	Microsecond	No	Accumulated total **read** command intergap time observed in the context of a target that is behind a switch's port. You can use this information to compute average read IO intergap time.
total_write _io_inter _gap_time	wtIOigt	Metric	Microseconds	No	Accumulated total **write** command intergap time data observed in the context of a target that is behind a switch's port. You can use this information to compute average **write** command intergap time.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
total_time _metric_based _read_io_count	tmrtIOc	Metric	Count	No	Total completed **read** command data observed in the context of a target that is behind a switch's port.
total_time _metric_based _write_io_count	tmwtIOc	Metric	Count	No	Total completed **write** command data observed in the context of a target that is behind a switch's port.
total_time _metric_based _read_io_bytes	tmrtIOb	Metric	Count	No	Total completed **read** command data observed in the context of a target that is behind a switch's port, in bytes.
total_time _metric_based _write_io_bytes	tmwtIOb	Metric	Count	No	Total completed **write** command data observed in the context of a target that is behind a switch's port, in bytes.
read_io_rate	rIOr	Metric	IOs per second	Yes	The **read** command data observed in the context of a target that is behind a switch's port.
peak_read _io_rate	prIOr	Metric	IOs per second	No	Peak **read** command data observed in the context of a target that is behind a switch's port.
write_io_rate	wIOr	Metric	IOs per second	Yes	The **write** command data observed in the context of a target that is behind a switch's port.
peak_write _io_rate	pwIOr	Metric	IOs per second	No	Peak **write** command data observed in the context of a target that is behind a switch's port.
read_io_bandwidth	rIObw	Metric	Bytes per second	Yes	The **read** command bandwidth observed in the context of a target that is behind a switch's port.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
peak_read _io_bandwidth	prIObw	Metric	Bytes per second	No	Peak **read** command bandwidth observed in the context of a target that is behind a switch's port.
write_io_bandwidth	wIObw	Metric	Bytes per second	Yes	The **write** command bandwidth observed in the context of a target that is behind a switch's port.
peak_write _io_bandwidth	pwIObw	Metric	Bytes per second	No	Peak **write** command bandwidth observed in the context of a target that is behind a switch's port.
read_io _size_min	rIOsMi	Metric	Bytes	Yes	Minimum **read** command size observed in the context of a target that is behind a switch's port.
read_io _size_max	rIOsMa	Metric	Bytes	Yes	Maximum **read** command size observed in the context of a target that is behind a switch's port.
write_io _size_min	wIOsMi	Metric	Bytes	Yes	Minimum **write** command size observed in the context of a target that is behind a switch's port.
write_io _size_max	wIOsMa	Metric	Bytes	Yes	Maximum **write** command size observed in the context of a target that is behind a switch's port.
read_io _completion _time_min	rIOctMi	Metric	Microseconds	Yes	Minimum **read** command completion time observed in the context of a target that is behind a switch's port.
read_io _completion _time_max	rIOctMa	Metric	Microseconds	Yes	Maximum **read** command completion time observed in the context of a target that is behind a switch's port.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
write_io _completion _time_min	wIOctMi	Metric	Microseconds	Yes	Minimum **write** command completion time observed in the context of a target that is behind a switch's port.
write_io _completion _time_max	wIOctMa	Metric	Microseconds	Yes	Maximum **write** command completion time observed in the context of a target that is behind a switch's port.
read_io _initiation _time_min	rIOitMi	Metric	Microseconds	Yes	Minimum **read** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ or txfer_rdy for WRITE) observed in the context of a target that is behind a switch's port. The initiation time is sometimes referred to as **data access latency**.
read_io _initiation _time_max	rIOitMa	Metric	Microseconds	Yes	Maximum **read** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ or txfer_rdy for WRITE) observed in the context of a target that is behind a switch's port. The initiation time is sometimes referred to as **data access latency**.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	Short Name				
write_io _initiation _time_min	wIOitMi	Metric	Microseconds	Yes	Minimum **write** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ or txfer_rdy for WRITE) observed in the context of a target that is behind a switch's port. The initiation time is sometimes referred to as **data access latency**.
write_io _initiation _time_max	wIOitMa	Metric	Microseconds	Yes	Maximum **write** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ or txfer_rdy for WRITE) observed in the context of a target that is behind a switch's port. The initiation time is sometimes referred to as **data access latency**.
read_io _inter_gap _time_min	rIOigtMi	Metric	Microsecond	Yes	Minimum **read** command intergap time observed in the context of a target that is behind a switch's port. read_io_inter_gap_time_min is the duration between successive IO commands and is measured in 1/256th of a microsecond.
read_io _inter_gap _time_max	rIOigtMa	Metric	Microsecond	Yes	Maximum **read** command intergap time observed in the context of a target that is behind a switch's port. read_io_inter_gap_time_max is the duration between successive IO commands and is measured in 1/256th of a microsecond.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
write_io _inter_gap _time_min	wIOigtMi	Metric	Microseconds	Yes	Minimum **write** command intergap time observed in the context of a target that is behind a switch's port. write_io_inter_gap_time_min is the duration between successive IO commands and is measured in 1/256th of a microsecond.
write_io _inter_gap _time_max	wIOigtMa	Metric	Microseconds	Yes	Maximum **write** command intergap time observed in the context of a target that is behind a switch's port. write_io_inter_gap_time_max is the duration between successive IO commands and is measured in 1/256th of a microsecond.
read_io_aborts	rIOa	Metric	Count	Yes	Number of **read** command aborts observed in the context of a target that is behind a switch's port.
write_io_aborts	wIOa	Metric	Count	Yes	Number of **write** command aborts observed in the context of a target that is behind a switch's port.
read_io_failures	rIOf	Metric	Count	Yes	Number of read-command failures observed in the context of a target that is behind a switch's port.
write_io_failures	wIOf	Metric	Count	Yes	Number of **write** command failures observed in the context of a target that is behind a switch's port.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
read_io_timeouts	rIOTo	Metric	Count	No	Number of **read** command timeouts observed in the context of a target that is behind a switch's port. read_io_timeouts are counted whenever IO transactions are not observed within 2.5 seconds from the time the IO command was issued.
write_io_timeouts	wIOTo	Metric	Count	No	Number of **write** command timeouts observed in the context of a target that is behind a switch's port.
read_io _scsi_check _condition_count	rIOSchcoct	Metric	Count	No	Number of **read** command check conditions seen in the context of a target that is behind a switch's port.
write_io _scsi_check _condition_count	wIOSchcoct	Metric	Count	No	Number of **write** command check conditions seen in the context of a target that is behind a switch's port.
read_io _scsi_busy_count	rIOsbc	Metric	Count	No	Number of **read** command busy status seen in the context of a target that is behind a switch's port.
write_io _scsi_busy_count	wIOsbc	Metric	Count	No	Number of **write** command busy status seen in the context of a target that is behind a switch's port.
read_io _scsi_reservation _conflict_count	rIOSrecct	Metric	Count	No	Number of **read** command reservation conflicts seen in the context of a target that is behind a switch's port.
write_io _scsi_reservation _conflict_count	wIOSrecct	Metric	Count	No	Number of **write** command reservation conflicts seen in the context of a target that is behind a switch's port.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
read_io _scsi_queue _full_count	rIOSQfct	Metric	Count	No	Number of **read** command queue full status seen in the context of a target that is behind a switch's port.
write_io _scsi_queue _full_count	wIOSQfct	Metric	Count	No	Number of **write** command queue full status seen in the context of a target that is behind a switch's port.
sampling _start_time	samStm	Metric	UNIX time	No	Start of the sampling time interval.
sampling _end_time	samEtm	Metric	UNIX time	No	End of the sampling time interval.

Initiator View Instance

Table 5: Flow Metrics for Initiator View Instance

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
port	port	Key	Text	No	A switch's port where the SAN Analytics feature is enabled.
vsan	vsan	Key	Count	No	VSAN configured on a switch's port where IO transactions are observed.
initiator_id	sid	Key	Text	No	Initiator Fibre Channel ID that is deployed behind a switch's port where the IO transactions are observed.
scsi_initiator _app_count	siac	Metadata	Count	No	Number of applications for which data is hosted on an initiator that is behind a switch's port.
active_io _read_count	raIO	Metadata	Count	Yes	Number of outstanding **read** command counts associated with an initiator that is behind a switch's port.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
active_io _write_count	waIO	Metadata	Count	Yes	Number of outstanding **write** command counts associated with an initiator that is behind a switch's port.
scsi_initiator _entity_it _flow_count	siITfc	Metadata	Count	No	Number of IT flows associated with an initiator that is behind a switch's port.
scsi_initiator _entity_itl _flow_count	siITLfc	Metadata	Count	No	Number of ITL flows associated with an initiator that is behind a switch's port.
total_read _io_count	rtIO	Metric	Count	Yes	Total **read** command data observed in the context of an initiator that is behind a switch's port.
total_write _io_count	wtIO	Metric	Count	Yes	Total **write** command data observed in the context of an initiator that is behind a switch's port.
total_seq _read_io_count	rstIOc	Metric	Count	No	Total sequential **read** command data observed in the context of an initiator that is behind a switch's port.
total_seq _write_io_count	wrstIOc	Metric	Count	No	Total sequential **write** command data observed in the context of an initiator that is behind a switch's port.
total_read _io_time	rtIOt	Metric	Microseconds	No	Accumulated total **read** command completion time observed in the context of an initiator that is behind a switch's port. You can use this information to compute the average read IO completion time.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
total_write _io_time	wtIOt	Metric	Microseconds	No	Accumulated total **write** command completion time observed in the context of an initiator that is behind a switch's port. You can use this information to compute the average **write** command completion time.
total_read _io_initiation_time	rtIOint	Metric	Microseconds	No	Accumulated total **read** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ commands or the first txfr_rdy for WRITE commands) observed in the context of an initiator that is behind a switch's port. The initiation time is sometimes referred to as **data access latency**. You can use this information to compute the average read IO initiation time.
total_write _io_initiation_time	wtIOint	Metric	Microseconds	No	Accumulated total **write** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ or txfer_rdy for WRITE) observed in the context of an initiator that is behind a switch's port. The initiation time is sometimes referred to as **data access latency**. You can use this information to compute the average **write** command initiation time.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
total_read _io_bytes	rtIOb	Metric	Bytes	Yes	Total **read** command data that is observed in the context of an initiator that is behind a switch's port.
total_write _io_bytes	wtIOb	Metric	Bytes	Yes	Total **write** command data observed in the context of an initiator that is behind a switch's port.
total_read _io_inter _gap_time	rtIOigt	Metric	Microsecond	No	Accumulated total **read** command intergap time observed in the context of an initiator that is behind a switch's port. You can use this information to compute the average read IO intergap time.
total_write _io_inter _gap_time	wtIOigt	Metric	Microseconds	No	Accumulated total **write** command intergap time data observed in the context of an initiator that is behind a switch's port. You can use this information to compute the average **write** command intergap time.
total_time _metric_based _read_io_count	tmrtIOc	Metric	Count	No	Total completed **read** command data observed in the context of an initiator that is behind a switch's port.
total_time _metric_based _write_io_count	tmwtIOc	Metric	Count	No	Total completed **write** command data observed in the context of an initiator that is behind a switch's port.
total_time _metric_based _read_io_bytes	tmrtIOb	Metric	Count	No	Total completed **read** command data observed in the context of an initiator that is behind a switch's port, in bytes.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
total_time _metric_based _write_io_bytes	tmwtIOb	Metric	Count	No	Total completed **write** command data observed in the context of an initiator that is behind a switch's port, in bytes.
read_io_rate	rIOr	Metric	IOs per second	Yes	The **read** command data observed in the context of an initiator that is behind a switch's port.
peak_read _io_rate	prIOr	Metric	IOs per second	No	Peak **read** command data observed in the context of an initiator that is behind a switch's port.
write_io_rate	wIOr	Metric	IOs per second	Yes	The **write** command data observed in the context of an initiator that is behind a switch's port.
peak_write _io_rate	pwIOr	Metric	IOs per second	No	Peak **write** command data observed in the context of an initiator that is behind a switch's port.
read_io_bandwidth	rIObw	Metric	Bytes per second	Yes	The **read** command bandwidth observed in the context of an initiator that is behind a switch's port.
peak_read _io_bandwidth	prIObw	Metric	Bytes per second	No	Peak **read** command bandwidth observed in the context of an initiator that is behind a switch's port.
write_io_bandwidth	wIObw	Metric	Bytes per second	Yes	The **write** command bandwidth observed in the context of an initiator that is behind a switch's port.
peak_write _io_bandwidth	pwIObw	Metric	Bytes per second	No	Peak **write** command bandwidth observed in the context of an initiator that is behind a switch's port.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
read_io _size_min	rIOsMi	Metric	Bytes	Yes	Minimum **read** command size observed in the context of an initiator that is behind a switch's port.
read_io _size_max	rIOsMa	Metric	Bytes	Yes	Maximum **read** command size observed in the context of an initiator that is behind a switch's port.
write_io _size_min	wIOsMi	Metric	Bytes	Yes	Minimum **write** command size observed in the context of an initiator that is behind a switch's port.
write_io _size_max	wIOsMa	Metric	Bytes	Yes	Maximum **write** command size observed in the context of an initiator that is behind a switch's port.
read_io _completion _time_min	rIOctMi	Metric	Microseconds	Yes	Minimum **read** command completion time observed in the context of an initiator that is behind a switch's port.
read_io _completion _time_max	rIOctMa	Metric	Microseconds	Yes	Maximum **read** command completion time observed in the context of an initiator that is behind a switch's port.
write_io _completion _time_min	wIOctMi	Metric	Microseconds	Yes	Minimum **write** command completion time observed in the context of an initiator that is behind a switch's port.
write_io _completion _time_max	wIOctMa	Metric	Microseconds	Yes	Maximum **write** command completion time observed in the context of an initiator that is behind a switch's port.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
read_io _initiation _time_min	rIOitMi	Metric	Microseconds	Yes	Minimum **read** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ or txfer_rdy for WRITE) observed in the context of an initiator that is behind a switch's port. The initiation time is sometimes referred to as **data access latency**.
read_io _initiation _time_max	rIOitMa	Metric	Microseconds	Yes	Maximum **read** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ or txfer_rdy for WRITE) observed in the context of an initiator that is behind a switch's port. The initiation time is sometimes referred to as **data access latency**.
write_io _initiation _time_min	wIOitMi	Metric	Microseconds	Yes	Minimum **write** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ or txfer_rdy for WRITE) observed in the context of an initiator that is behind a switch's port. The initiation time is sometimes referred to as **data access latency**.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
write_io _initiation _time_max	wIOitMa	Metric	Microseconds	Yes	Maximum **write** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ or txfer_rdy for WRITE) observed in the context of an initiator that is behind a switch's port. The initiation time is sometimes referred to as **data access latency**.
read_io _inter_gap _time_min	rIOigtMi	Metric	Microsecond	Yes	Minimum **read** command intergap time observed in the context of an initiator that is behind a switch's port. read_io_inter_gap_time_min is the duration between successive IO commands and is measured in 1/256th of a microsecond.
read_io _inter_gap _time_max	rIOigtMa	Metric	Microsecond	Yes	Maximum **read** command intergap time observed in the context of an initiator that is behind a switch's port. read_io_inter_gap_time_max is the duration between successive IO commands and is measured in 1/256th of a microsecond.
write_io _inter_gap _time_min	wIOigtMi	Metric	Microseconds	Yes	Minimum **write** command intergap time observed in the context of an initiator that is behind a switch's port. write_io_inter_gap_time_min is the duration between successive IO commands and is measured in 1/256th of a microsecond.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
write_io _inter_gap _time_max	wIOigtMa	Metric	Microseconds	Yes	Maximum **write** command intergap time observed in the context of an initiator that is behind a switch's port. write_io_inter_gap_time_max is the duration between successive IO commands and is measured in 1/256th of a microsecond.
read _io_aborts	rIOa	Metric	Count	Yes	Number of **read** command aborts observed in the context of an initiator that is behind a switch's port.
write _io_aborts	wIOa	Metric	Count	Yes	Number of **write** command aborts observed in the context of an initiator that is behind a switch's port.
read _io_failures	rIOf	Metric	Count	Yes	Number of **read** command failures observed in the context of an initiator that is behind a switch's port.
write _io_failures	wIOf	Metric	Count	Yes	Number of **write** command failures observed in the context of an initiator that is behind a switch's port.
read _io_timeouts	rIOTo	Metric	Count	No	Number of **read** command timeouts observed in the context of an initiator that is behind a switch's port. read_io_timeouts are counted whenever IO transactions are not observed within 2.5 seconds from the time the IO command was issued.
write _io_timeouts	wIOTo	Metric	Count	No	Number of **write** command timeouts observed in the context of an initiator that is behind a switch's port.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	Short Name				
read_io _scsi_check _condition_count	rIOSchcoct	Metric	Count	No	Number of **read** command check conditions seen in the context of an initiator that is behind a switch's port.
write_io _scsi_check _condition_count	wIOSchcoct	Metric	Count	No	Number of **write** command check conditions seen in the context of an initiator that is behind a switch's port.
read_io _scsi_busy_count	rIOsbc	Metric	Count	No	Number of **read** command busy status seen in the context of an initiator that is behind a switch's port.
write_io _scsi_busy_count	wIOsbc	Metric	Count	No	Number of **write** command busy status seen in the context of an initiator that is behind a switch's port.
read_io _scsi_reservation _conflict_count	rIOSrecct	Metric	Count	No	Number of **read** command reservation conflicts seen in the context of an initiator that is behind a switch's port.
write_io _scsi_reservation _conflict_count	wIOSrecct	Metric	Count	No	Number of **write** command reservation conflicts seen in the context of an initiator that is behind a switch's port.
read_io _scsi_queue _full_count	rIOSQfct	Metric	Count	No	Number of **read** command queue full status seen in the context of an initiator that is behind a switch's port.
write_io _scsi_queue _full_count	wIOSQfct	Metric	Count	No	Number of **write** command queue full status seen in the context of an initiator that is behind a switch's port.
sampling _start_time	samStm	Metric	UNIX time	No	Start of the sampling time interval.
sampling _end_time	samEtm	Metric	UNIX time	No	End of the sampling time interval.

Target Application View Instance

Table 6: Flow Metrics for Target Application View Instance

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
port	port	Key	text	No	A switch's port where the SAN Analytics feature is enabled.
vsan	vsan	Key	Count	No	VSAN configured on a switch's port where IO transactions are observed.
app_id	app_id	Key	Count	No	Application identifier for an application that is hosted behind a switch's port.
target_id	did	Key	text	No	Target Fibre Channel ID that is deployed behind a switch's port where IO transactions are observed.
scsi_target _entity_itl _flow_count	stITLfc	Metadata	Count	No	Number of ITL flows associated with an application for which data is hosted on a target that is behind a switch's port.
scsi_target _lun_count	stLc	Metadata	Count	No	Number of LUNs seen in the context of an application on a target that is behind a switch's port.
active_io _read_count	raIO	Metadata	Count	Yes	Number of outstanding **read** command counts associated with an application for which data is hosted behind a target that is behind a switch's port.
active_io _write_count	waIO	Metadata	Count	Yes	Number of outstanding **write** command counts associated with an application for which data is hosted behind a target that is behind a switch's port.
sampling _start_time	samStm	Metric	UNIX time	No	Start of the sampling time interval.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
sampling _end_time	samEtm	Metric	UNIX time	No	End of the sampling time interval.

Initiator Application View Instance

Table 7: Flow Metrics for Initiator Application View Instance

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
port	port	Key	text	No	A switch's port where the SAN Analytics feature is enabled.
vsan	vsan	Key	Count	No	VSAN configured on a switch's port where IO transactions are observed.
app_id	app_id	Key	Count	No	Application identifier for an application that is hosted behind a switch's port.
initiator_id	sid	Key	text	No	Initiator Fibre Channel ID that is deployed behind a switch's port where the IO transactions are observed.
scsi_initiator _entity_itl _flow_count	siITLfc	Metadata	Count	No	Number of ITL flows associated with an application for which data is accessed by an initiator that is behind a switch's port.
active_io _read_count	raIO	Metadata	Count	Yes	Number of outstanding **read** command counts associated with an application for which the data is accessed by an initiator that is behind a switch's port.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
active_io _write_count	waIO	Metadata	Count	Yes	Number of outstanding **write** command counts associated with an application for which the data is accessed by an initiator that is behind a switch's port.
sampling _start_time	samStm	Metric	UNIX time	No	Start of the sampling time interval.
sampling _end_time	samEtm	Metric	UNIX time	No	End of the sampling time interval.

Target IT Flow View Instance

Table 8: Flow Metrics for Target IT Flow View Instance

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
port	port	Key	text	No	A switch's port where the SAN Analytics feature is enabled.
vsan	vsan	Key	Count	No	VSAN configured on a switch's port where IO transactions are observed.
target_id	did	Key	Text	No	Target Fibre Channel ID that is deployed behind a switch's port where IO transactions are observed.
initiator_id	sid	Key	text	No	Initiator Fibre Channel ID where the IO transactions are being performed on a target that is deployed behind a switch's port.
active_io _read_count	raIO	Metadata	Count	Yes	Number of outstanding **read** command counts associated with a target-IT-flow record.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
active_io _write_count	waIO	Metadata	Count	Yes	Number of outstanding **write** command counts associated with a target-IT-flow record.
scsi_target _entity_itl _flow_count	stITLfc	Metadata	Count	No	Number of ITL flows associated with a target-IT-flow record.
total_read _io_count	rtIO	Metric	Count	Yes	Total **read** command data observed in the context of a target-IT-flow record.
total_write _io_count	wtIO	Metric	Count	Yes	Total **write** command data observed in the context of a target-IT-flow record.
total_seq _read_io_count	rstIOc	Metric	Count	No	Total sequential **read** command data observed in the context of a target-IT-flow record.
total_seq _write_io_count	wrstIOc	Metric	Count	No	Total sequential **write** command data observed in the context of a target-IT-flow record.
total_read _io_time	rtIOt	Metric	Microseconds	No	Accumulated total **read** command completion time observed in the context of a target-IT-flow record. You can use this information to compute the average read IO completion time.
total_write _io_time	wtIOt	Metric	Microseconds	No	Accumulated total **write** command completion time observed in the context of a target-IT-flow record. You can use this information to compute the average **write** command completion time.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
total_read _io_initiation_time	rtIOint	Metric	Microseconds	No	Accumulated total **read** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ commands or the first txfr_rdy for WRITE commands) observed in the context of a target-IT-flow record. The initiation time is sometimes referred to as **data access latency**. You can use this information to compute the average read IO initiation time.
total_write _io_initiation_time	wtIOint	Metric	Microseconds	No	Accumulated total **write** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ or txfer_rdy for WRITE) observed in the context of a target-IT-flow record. The initiation time is sometimes referred to as **data access latency**. You can use this information to compute the average **write** command initiation time.
total_read _io_bytes	rtIOb	Metric	Bytes	Yes	Total **read** command data that is observed in the context of a target-IT-flow record.
total_write _io_bytes	wtIOb	Metric	Bytes	Yes	Total **write** command data observed in the context of a target-IT-flow record.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
total_read _io_inter_gap_time	rtIOigt	Metric	Microsecond	No	Accumulated total **read** command intergap time observed in the context of a target-IT-flow record. You can use this information to compute the average read IO intergap time.
total_write _io_inter_gap_time	wtIOigt	Metric	Microseconds	No	Accumulated total **write** command intergap time data observed in the context of a target-IT-flow record. You can use this information to compute the average **write** command intergap time.
total_time _metric_based _read_io_count	tmrtIOc	Metric	Count	No	Total completed **read** command data observed in the context of a target-IT-flow record.
total_time _metric_based _write_io_count	tmwtIOc	Metric	Count	No	Total completed **write** command data observed in the context of a target-IT-flow record.
total_time _metric_based _read_io_bytes	tmrtIOb	Metric	Count	No	Total completed **read** command data observed in the context of a target-IT-flow record, in bytes.
total_time _metric_based _write_io_bytes	tmwtIOb	Metric	Count	No	Total completed **write** command data observed in the context of a target-IT-flow record, in bytes.
read_io_rate	rIOr	Metric	IOs per second	Yes	The **read** command data observed in the context of a target-IT-flow record.
peak_read _io_rate	prIOr	Metric	IOs per second	No	Peak **read** command data observed in the context of a target-IT-flow record.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
write_io_rate	wIOr	Metric	IOs per second	Yes	The **write** command data observed in the context of a target-IT-flow record.
peak_write _io_rate	pwIOr	Metric	IOs per second	No	Peak **write** command data observed in the context of a target-IT-flow record.
read_io_bandwidth	rIObw	Metric	Bytes per second	Yes	The **read** command bandwidth observed in the context of a target-IT-flow record.
peak_read _io_bandwidth	prIObw	Metric	Bytes per second	No	Peak **read** command bandwidth observed in the context of a target-IT-flow record.
write_io_bandwidth	wIObw	Metric	Bytes per second	Yes	The **write** command bandwidth observed in the context of a target-IT-flow record.
peak_write _io_bandwidth	pwIObw	Metric	Bytes per second	No	Peak **write** command bandwidth observed in the context of a target-IT-flow record.
read_io _size_min	rIOsMi	Metric	Bytes	Yes	Minimum **read** command size observed in the context of a target-IT-flow record.
read_io _size_max	rIOsMa	Metric	Bytes	Yes	Maximum **read** command size observed in the context of a target-IT-flow record.
write_io _size_min	wIOsMi	Metric	Bytes	Yes	Minimum **write** command size observed in the context of a target-IT-flow record.
write_io _size_max	wIOsMa	Metric	Bytes	Yes	Maximum **write** command size observed in the context of a target-IT-flow record.
read_io _completion _time_min	rIOctMi	Metric	Microseconds	Yes	Minimum **read** command completion time observed in the context of a target-IT-flow record.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
read_io _completion _time_max	rIOctMa	Metric	Microseconds	Yes	Maximum **read** command completion time observed in the context of a target-IT-flow record.
write_io _completion _time_min	wIOctMi	Metric	Microseconds	Yes	Minimum **write** command completion time observed in the context of a target-IT-flow record.
write_io _completion _time_max	wIOctMa	Metric	Microseconds	Yes	Maximum **write** command completion time observed in the context of a target-IT-flow record.
read_io _initiation _time_min	rIOitMi	Metric	Microseconds	Yes	Minimum **read** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ or txfer_rdy for WRITE) observed in the context of a target-IT-flow record. The initiation time is sometimes referred to as **data access latency**.
read_io _initiation _time_max	rIOitMa	Metric	Microseconds	Yes	Maximum **read** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ or txfer_rdy for WRITE) observed in the context of a target-IT-flow record. The initiation time is sometimes referred to as **data access latency**.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
write_io _initiation _time_min	wIOitMi	Metric	Microseconds	Yes	Minimum **write** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ or txfer_rdy for WRITE) observed in the context of a target-IT-flow record. The initiation time is sometimes referred to as **data access latency**.
write_io _initiation _time_max	wIOitMa	Metric	Microseconds	Yes	Maximum **write** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ or txfer_rdy for WRITE) observed in the context of a target-IT-flow record. The initiation time is sometimes referred to as **data access latency**.
read_io _inter_gap _time_min	rIOigtMi	Metric	Microsecond	Yes	Minimum **read** command intergap time observed in the context of a target-IT-flow record. read_io_inter_gap_time_min is the duration between successive IO commands and is measured in 1/256th of a microsecond.
read_io _inter_gap _time_max	rIOigtMa	Metric	Microsecond	Yes	Maximum **read** command intergap time observed in the context of a target-IT-flow record. read_io_inter_gap_time_max is the duration between successive IO commands and is measured in 1/256th of a microsecond.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
write_io _inter_gap _time_min	wIOigtMi	Metric	Microseconds	Yes	Minimum **write** command intergap time observed in the context of a target-IT-flow record. write_io_inter_gap_time_min is the duration between successive IO commands and is measured in 1/256th of a microsecond.
write_io _inter_gap _time_max	wIOigtMa	Metric	Microseconds	Yes	Maximum **write** command intergap time observed in the context of a target-IT-flow record. write_io_inter_gap_time_max is the duration between successive IO commands and is measured in 1/256th of a microsecond.
read_io_aborts	rIOa	Metric	Count	Yes	Number of **read** command aborts observed in the context of a target-IT-flow record.
write_io_aborts	wIOa	Metric	Count	Yes	Number of **write** command aborts observed in the context of a target-IT-flow record.
read_io_failures	rIOf	Metric	Count	Yes	Number of **read** command failures observed in the context of a target-IT-flow record.
write_io_failures	wIOf	Metric	Count	Yes	Number of **write** command failures observed in the context of a target-IT-flow record.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
read_io_timeouts	rIOTo	Metric	Count	No	Number of **read** command timeouts observed in the context of a target-IT-flow record. read_io_timeouts are counted whenever IO transactions are not observed within 2.5 seconds from the time the IO command was issued.
write_io_timeouts	wIOTo	Metric	Count	No	Number of **write** command timeouts observed in the context of a target-IT-flow record.
read_io _scsi_check _condition_count	rIOSchcoct	Metric	Count	No	Number of **read** command check conditions seen in the context of a target-IT-flow record.
write_io _scsi_check _condition_count	wIOSchcoct	Metric	Count	No	Number of **write** command check conditions seen in the context of a target-IT-flow record.
read_io _scsi_busy_count	rIOsbc	Metric	Count	No	Number of **read** command busy status seen in the context of a target-IT-flow record.
write_io _scsi_busy_count	wIOsbc	Metric	Count	No	Number of **write** command busy status seen in the context of a target-IT-flow record.
read_io _scsi_reservation _conflict_count	rIOSrecct	Metric	Count	No	Number of **read** command reservation conflicts seen in the context of a target-IT-flow record.
write_io _scsi_reservation _conflict_count	wIOSrecct	Metric	Count	No	Number of **write** command reservation conflicts seen in the context of a target-IT-flow record.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
read_io _scsi_queue _full_count	rIOSQfct	Metric	Count	No	Number of **read** command queue full status seen in the context of a target-IT-flow record.
write_io _scsi_queue _full_count	wIOSQfct	Metric	Count	No	Number of **write** command queue full status seen in the context of a target-IT-flow record.
sampling _start_time	samStm	Metric	UNIX time	No	Start of the sampling time interval.
sampling _end_time	samEtm	Metric	UNIX time	No	End of the sampling time interval.

Initiator IT Flow View Instance

Table 9: Flow Metrics for Initiator IT Flow View Instance

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
port	port	Key	Text	No	A switch's port where the SAN Analytics feature is enabled.
vsan	vsan	Key	Count	No	VSAN configured on a switch's port where IO transactions are observed.
initiator_id	sid	Key	Text	No	Initiator Fibre Channel ID that is deployed behind a switch's port where the IO transactions are observed.
target_id	did	Key	Text	No	Target Fibre Channel ID that is executing IO transactions initiated by an initiator behind a switch's port.
active_io _read_count	raIO	Metadata	Count	Yes	Number of outstanding **read** command counts associated with an initiator-IT-flow record.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
active_io _write_count	waIO	Metadata	Count	Yes	Number of outstanding **write** command counts associated with an initiator-IT-flow record.
scsi_initiator _entity_itl _flow_count	siITLfc	Metadata	Count	No	Number of ITL-flows associated with an initiator-IT-flow record.
total_read _io_count	rtIO	Metric	Count	Yes	Total **read** command data observed in the context of an initiator-IT-flow record.
total_write _io_count	wtIO	Metric	Count	Yes	Total **write** command data observed in the context of an initiator-IT-flow record.
total_seq _read_io_count	rstIOc	Metric	Count	No	Total sequential **read** command data observed in the context of an initiator-IT-flow record.
total_read _io_time	rtIOt	Metric	Microseconds	No	Accumulated total **read** command completion time observed in the context of an initiator-IT-flow record. You can use this information to compute the average read IO completion time.
total_seq _write_io_count	wrstIOc	Metric	Count	No	Total sequential **write** command data observed in the context of an initiator-IT-flow record.
total_write _io_time	wtIOt	Metric	Microseconds	No	Accumulated total **write** command completion time observed in the context of an initiator-IT-flow record. You can use this information to compute the average **write** command completion time.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
total_read _io_initiation_time	rtIOint	Metric	Microseconds	No	Accumulated total **read** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ commands or the first txfr_rdy for WRITE commands) observed in the context of an initiator-IT-flow record. The initiation time is sometimes referred to as **data access latency**. You can use this information to compute the average read IO initiation time.
total_write _io_initiation_time	wtIOint	Metric	Microseconds	No	Accumulated total **write** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ or txfer_rdy for WRITE) observed in the context of an initiator-IT-flow record. The initiation time is sometimes referred to as **data access latency**. You can use this information to compute the average **write** command initiation time.
total_read _io_bytes	rtIOb	Metric	Bytes	Yes	Total **read** command data that is observed in the context of an initiator-IT-flow record.
total_write _io_bytes	wtIOb	Metric	Bytes	Yes	Total **write** command data observed in the context of an initiator-IT-flow record.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
total_read _io_inter _gap_time	rtIOigt	Metric	Microsecond	No	Accumulated total **read** command intergap time observed in the context of an initiator-IT-flow record. You can use this information to compute the average read IO intergap time.
total_write _io_inter _gap_time	wtIOigt	Metric	Microseconds	No	Accumulated total **write** command intergap time data observed in the context of an initiator-IT-flow record. You can use this information to compute the average **write** command intergap time.
total_time _metric_based _read_io_count	tmrtIOc	Metric	Count	No	Total completed **read** command data observed in the context of an initiator-IT-flow record.
total_time _metric_based _write_io_count	tmwtIOc	Metric	Count	No	Total completed **write** command data observed in the context of an initiator-IT-flow record.
total_time _metric_based _read_io_bytes	tmrtIOb	Metric	Count	No	Total completed **read** command data observed in the context of an initiator-IT-flow record, in bytes.
total_time _metric_based _write_io_bytes	tmwtIOb	Metric	Count	No	Total completed **write** command data observed in the context of an initiator-IT-flow record, in bytes.
read_io_rate	rIOr	Metric	IOs per second	Yes	The **read** command data observed in the context of an initiator-IT-flow record.
peak_read _io_rate	prIOr	Metric	IOs per second	No	Peak **read** command data observed in the context of an initiator-IT-flow record.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
write_io_rate	wIOr	Metric	IOs per second	Yes	The **write** command data observed in the context of an initiator-IT-flow record.
peak_write _io_rate	pwIOr	Metric	IOs per second	No	Peak **write** command data observed in the context of an initiator-IT-flow record.
read_io_bandwidth	rIObw	Metric	Bytes per second	Yes	The **read** command bandwidth observed in the context of an initiator-IT-flow record.
peak_read _io_bandwidth	prIObw	Metric	Bytes per second	No	Peak **read** command bandwidth observed in the context of an initiator-IT-flow record.
write_io_bandwidth	wIObw	Metric	Bytes per second	Yes	The **write** command bandwidth observed in the context of an initiator-IT-flow record.
peak_write _io_bandwidth	pwIObw	Metric	Bytes per second	No	Peak **write** command bandwidth observed in the context of an initiator-IT-flow record.
read_io _size_min	rIOsMi	Metric	Bytes	Yes	Minimum **read** command size observed in the context of an initiator-IT-flow record.
read_io _size_max	rIOsMa	Metric	Bytes	Yes	Maximum **read** command size observed in the context of an initiator-IT-flow record.
write_io _size_min	wIOsMi	Metric	Bytes	Yes	Minimum **write** command size observed in the context of an initiator-IT-flow record.
write_io _size_max	wIOsMa	Metric	Bytes	Yes	Maximum **write** command size observed in the context of an initiator-IT-flow record.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
read_io _completion _time_min	rIOctMi	Metric	Microseconds	Yes	Minimum **read** command completion time observed in the context of an initiator-IT-flow record.
read_io _completion _time_max	rIOctMa	Metric	Microseconds	Yes	Maximum **read** command completion time observed in the context of an initiator-IT-flow record.
write_io _completion _time_min	wIOctMi	Metric	Microseconds	Yes	Minimum **write** command completion time observed in the context of an initiator-IT-flow record.
write_io _completion _time_max	wIOctMa	Metric	Microseconds	Yes	Maximum **write** command completion time observed in the context of an initiator-IT-flow record.
read_io _initiation _time_min	rIOitMi	Metric	Microseconds	Yes	Minimum **read** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ or txfer_rdy for WRITE) observed in the context of an initiator-IT-flow record. The initiation time is sometimes referred to as **data access latency**.
read_io _initiation _time_max	rIOitMa	Metric	Microseconds	Yes	Maximum **read** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ or txfer_rdy for WRITE) observed in the context of an initiator-IT-flow record. The initiation time is sometimes referred to as **data access latency**.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
write_io _initiation _time_min	wIOitMi	Metric	Microseconds	Yes	Minimum **write** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ or txfer_rdy for WRITE) observed in the context of an initiator-IT-flow record. The initiation time is sometimes referred to as **data access latency**.
write_io _initiation _time_max	wIOitMa	Metric	Microseconds	Yes	Maximum **write** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ or txfer_rdy for WRITE) observed in the context of an initiator-IT-flow record. The initiation time is sometimes referred to as **data access latency**.
read_io _inter_gap _time_min	rIOigtMi	Metric	Microsecond	Yes	Minimum **read** command intergap time observed in the context of an initiator-IT-flow record. read_io_inter_gap_time_min is the duration between successive IO commands and is measured in 1/256th of a microsecond.
read_io _inter_gap _time_max	rIOigtMa	Metric	Microsecond	Yes	Maximum **read** command intergap time observed in the context of an initiator-IT-flow record. read_io_inter_gap_time_max is the duration between successive IO commands and is measured in 1/256th of a microsecond.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
write_io _inter_gap _time_min	wIOigtMi	Metric	Microseconds	Yes	Minimum **write** command intergap time observed in the context of an initiator-IT-flow record. write_io_inter_gap_time_min is the duration between successive IO commands and is measured in 1/256th of a microsecond.
write_io _inter_gap _time_max	wIOigtMa	Metric	Microseconds	Yes	Maximum **write** command intergap time observed in the context of an initiator-IT-flow record. write_io_inter_gap_time_max is the duration between successive IO commands and is measured in 1/256th of a microsecond.
read_io_aborts	rIOa	Metric	Count	Yes	Number of **read** command aborts observed in the context of an initiator-IT-flow record.
write_io_aborts	wIOa	Metric	Count	Yes	Number of **write** command aborts observed in the context of an initiator-IT-flow record.
read_io_failures	rIOf	Metric	Count	Yes	Number of **read** command failures observed in the context of an initiator-IT-flow record.
write_io_failures	wIOf	Metric	Count	Yes	Number of **write** command failures observed in the context of an initiator-IT-flow record.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
read_io_timeouts	rIOTo	Metric	Count	No	Number of **read** command timeouts observed in the context of an initiator-IT-flow record. read_io_timeouts are counted whenever IO transactions are not observed within 2.5 seconds from the time the IO command was issued.
write_io_timeouts	wIOTo	Metric	Count	No	Number of **write** command timeouts observed in the context of an initiator-IT-flow record.
read_io _scsi_check _condition_count	rIOSchcoct	Metric	Count	No	Number of **read** command check conditions seen in the context of an initiator-IT-flow record.
write_io _scsi_check _condition_count	wIOSchcoct	Metric	Count	No	Number of **write** command check conditions seen in the context of an initiator-IT-flow record.
read_io _scsi_busy_count	rIOsbc	Metric	Count	No	Number of **read** command busy status seen in the context of an initiator-IT-flow record.
write_io _scsi_busy_count	wIOsbc	Metric	Count	No	Number of **write** command busy status seen in the context of an initiator-IT-flow record.
read_io _scsi_reservation _conflict_count	rIOSrecct	Metric	Count	No	Number of **read** command reservation conflicts seen in the context of an initiator-IT-flow record.
write_io _scsi_reservation _conflict_count	wIOSrecct	Metric	Count	No	Number of **write** command reservation conflicts seen in the context of an initiator-IT-flow record.
read_io _scsi_queue _full_count	rIOSQfct	Metric	Count	No	Number of **read** command queue full status seen in the context of an initiator-IT-flow record.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
write_io _scsi_queue _full_count	wIOSQfct	Metric	Count	No	Number of **write** command queue full status seen in the context of an initiator-IT-flow record.
sampling _start_time	samStm	Metric	UNIX time	No	Start of the sampling time interval.
sampling _end_time	samEtm	Metric	UNIX time	No	End of the sampling time interval.

Target TL Flow View Instance

Table 10: Flow Metrics for Target TL Flow View Instance

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
port	port	Key	Text	No	A switch's port where the SAN Analytics feature is enabled.
vsan	vsan	Key	Count	No	VSAN configured on a switch's port where IO transactions are observed.
target_id	did	Key	Text	No	Target Fibre Channel ID that is deployed behind a switch's port where IO transactions are observed.
lun	lun	Key	Unit	No	Logical-unit-number (LUN) that is associated with a target where IOs are performed.
scsi_target _entity_itl _flow_count	stITLfc	Metadata	Count	No	Number of ITL flows associated with a LUN on a target that is behind a switch's port.
active_io _read_count	raIO	Metadata	Count	Yes	Number of outstanding **read** command counts associated with a LUN on a target that is behind a switch's port.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
active_io _write_count	waIO	Metadata	Count	Yes	Number of outstanding **write** command counts associated with a LUN on a target that is behind a switch's port.
total_read _io_count	rtIO	Metric	Count	Yes	Total **read** command data observed in the context of a LUN on a target that is behind a switch's port.
total_write _io_count	wtIO	Metric	Count	Yes	Total **write** command data observed in the context of a LUN on a target that is behind a switch's port.
total_seq _read_io_count	rstIOc	Metric	Count	No	Total sequential **read** command data observed in the context of a LUN on a target that is behind a switch's port.
total_seq _write_io_count	wrstIOc	Metric	Count	No	Total sequential **write** command data observed in the context of a LUN on a target that is behind a switch's port.
total_read _io_time	rtIOt	Metric	Microseconds	No	Accumulated total **read** command completion time observed in the context of a LUN on a target that is behind a switch's port. You can use this information to compute the average read IO completion time.
total_write _io_time	wtIOt	Metric	Microseconds	No	Accumulated total **write** command completion time observed in the context of a LUN on a target that is behind a switch's port. You can use this information to compute the average **write** command completion time.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
total_read _io_initiation_time	rtIOint	Metric	Microseconds	No	Accumulated total **read** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ commands or the first txfr_rdy for WRITE commands) observed in the context of a LUN on a target that is behind a switch's port. The initiation time is sometimes referred to as **data access latency**. You can use this information to compute the average read IO initiation time.
total_write _io_initiation_time	wtIOint	Metric	Microseconds	No	Accumulated total **write** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ or txfer_rdy for WRITE) observed in the context of a LUN on a target that is behind a switch's port. The initiation time is sometimes referred to as **data access latency**. You can use this information to compute the average **write** command initiation time.
total_read _io_bytes	rtIOb	Metric	Bytes	Yes	Total **read** command data that is observed in the context of a LUN on a target that is behind a switch's port.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
total_write _io_bytes	wtIOb	Metric	Bytes	Yes	Total **write** command data observed in the context of a LUN on a target that is behind a switch's port.
total_read _io_inter_gap_time	rtIOigt	Metric	Microsecond	No	Accumulated total **read** command intergap time observed in the context of a LUN on a target that is behind a switch's port. You can use this information to compute the average read IO intergap time.
total_write _io_inter_gap_time	wtIOigt	Metric	Microseconds	No	Accumulated total **write** command intergap time data observed in the context of a LUN on a target that is behind a switch's port. You can use this information to compute the average **write** command intergap time.
total_time _metric_based _read_io_count	tmrtIOc	Metric	Count	No	Total completed **read** command data observed in the context of a LUN on a target that is behind a switch's port.
total_time _metric_based _write_io_count	tmwtIOc	Metric	Count	No	Total completed **write** command data observed in the context of a LUN on a target that is behind a switch's port.
total_time _metric_based _read_io_bytes	tmrtIOb	Metric	Count	No	Total completed **read** command data observed in the context of a LUN on a target that is behind a switch's port, in bytes.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	Short Name				
total_time _metric_based _write_io_bytes	tmwtIOb	Metric	Count	No	Total completed **write** command data observed in the context of a LUN on a target that is behind a switch's port, in bytes.
read_io_rate	rIOr	Metric	IOs per second	Yes	The **read** command data observed in the context of a LUN on a target that is behind a switch's port.
peak_read _io_rate	prIOr	Metric	IOs per second	No	Peak **read** command data observed in the context of a LUN on a target that is behind a switch's port.
write_io_rate	wIOr	Metric	IOs per second	Yes	The **write** command data observed in the context of a LUN on a target that is behind a switch's port.
peak_write _io_rate	pwIOr	Metric	IOs per second	No	Peak **write** command data observed in the context of a LUN on a target that is behind a switch's port.
read_io_bandwidth	rIObw	Metric	Bytes per second	Yes	The **read** command bandwidth observed in the context of a LUN on a target that is behind a switch's port.
peak_read _io_bandwidth	prIObw	Metric	Bytes per second	No	Peak **read** command bandwidth observed in the context of a LUN on a target that is behind a switch's port.
write_io_bandwidth	wIObw	Metric	Bytes per second	Yes	The **write** command bandwidth observed in the context of a LUN on a target that is behind a switch's port.
peak_write _io_bandwidth	pwIObw	Metric	Bytes per second	No	Peak **write** command bandwidth observed in the context of a LUN on a target that is behind a switch's port.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
read_io _size_min	rIOsMi	Metric	Bytes	Yes	Minimum **read** command size observed in the context of a LUN on a target that is behind a switch's port.
read_io _size_max	rIOsMa	Metric	Bytes	Yes	Maximum **read** command size observed in the context of a LUN on a target that is behind a switch's port.
write_io _size_min	wIOsMi	Metric	Bytes	Yes	Minimum **write** command size observed in the context of a LUN on a target that is behind a switch's port.
write_io _size_max	wIOsMa	Metric	Bytes	Yes	Maximum **write** command size observed in the context of a LUN on a target that is behind a switch's port.
read_io _completion _time_min	rIOctMi	Metric	Microseconds	Yes	Minimum **read** command completion time observed in the context of a LUN on a target that is behind a switch's port.
read_io _completion _time_max	rIOctMa	Metric	Microseconds	Yes	Maximum **read** command completion time observed in the context of a LUN on a target that is behind a switch's port.
write_io _completion _time_min	wIOctMi	Metric	Microseconds	Yes	Minimum **write** command completion time observed in the context of a LUN on a target that is behind a switch's port.
write_io _completion _time_max	wIOctMa	Metric	Microseconds	Yes	Maximum **write** command completion time observed in the context of a LUN on a target that is behind a switch's port.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
read_io _initiation _time_min	rIOitMi	Metric	Microseconds	Yes	Minimum **read** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ or txfer_rdy for WRITE) observed in the context of a LUN on a target that is behind a switch's port. The initiation time is sometimes referred to as **data access latency**.
read_io _initiation _time_max	rIOitMa	Metric	Microseconds	Yes	Maximum **read** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ or txfer_rdy for WRITE) observed in the context of a LUN on a target that is behind a switch's port. The initiation time is sometimes referred to as **data access latency**.
write_io _initiation _time_min	wIOitMi	Metric	Microseconds	Yes	Minimum **write** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ or txfer_rdy for WRITE) observed in the context of a LUN on a target that is behind a switch's port. The initiation time is sometimes referred to as **data access latency**.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
write_io _initiation _time_max	wIOitMa	Metric	Microseconds	Yes	Maximum **write** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ or txfer_rdy for WRITE) observed in the context of a LUN on a target that is behind a switch's port. The initiation time is sometimes referred to as **data access latency**.
read_io _inter_gap _time_min	rIOigtMi	Metric	Microsecond	Yes	Minimum **read** command intergap time observed in the context of a LUN on a target that is behind a switch's port. read_io_inter_gap_time_min is the duration between successive IO commands and is measured in 1/256th of a microsecond.
read_io _inter_gap _time_max	rIOigtMa	Metric	Microsecond	Yes	Maximum **read** command intergap time observed in the context of a LUN on a target that is behind a switch's port. read_io_inter_gap_time_max is the duration between successive IO commands and is measured in 1/256th of a microsecond.
write_io _inter_gap _time_min	wIOigtMi	Metric	Microseconds	Yes	Minimum **write** command intergap time observed in the context of a LUN on a target that is behind a switch's port. write_io_inter_gap_time_min is the duration between successive IO commands and is measured in 1/256th of a microsecond.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
write_io _inter_gap _time_max	wIOigtMa	Metric	Microseconds	Yes	Maximum **write** command intergap time observed in the context of a LUN on a target that is behind a switch's port. write_io_inter_gap_time_max is the duration between successive IO commands and is measured in 1/256th of a microsecond.
read_io_aborts	rIOa	Metric	Count	Yes	Number of **read** command aborts observed in the context of a LUN on a target that is behind a switch's port.
write_io_aborts	wIOa	Metric	Count	Yes	Number of **write** command aborts observed in the context of a LUN on a target that is behind a switch's port.
read_io_failures	rIOf	Metric	Count	Yes	Number of **read** command failures observed in the context of a LUN on a target that is behind a switch's port.
write_io_failures	wIOf	Metric	Count	Yes	Number of **write** command failures observed in the context of a LUN on a target that is behind a switch's port.
read_io_timeouts	rIOTo	Metric	Count	No	Number of **read** command timeouts observed in the context of a LUN on a target that is behind a switch's port. read_io_timeouts are counted whenever IO transactions are not observed within 2.5 seconds from the time the IO command was issued.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
write_io_timeouts	wIOTo	Metric	Count	No	Number of **write** command timeouts observed in the context of a LUN on a target that is behind a switch's port.
read_io _scsi_check _condition_count	rIOSchcoct	Metric	Count	No	Number of **read** command check conditions seen in the context of a LUN on a target that is behind a switch's port.
write_io _scsi_check _condition_count	wIOSchcoct	Metric	Count	No	Number of **write** command check conditions seen in the context of a LUN on a target that is behind a switch's port.
read_io _scsi_busy_count	rIOsbc	Metric	Count	No	Number of **read** command busy status seen in the context of a LUN on a target that is behind a switch's port.
write_io _scsi_busy_count	wIOsbc	Metric	Count	No	Number of **write** command busy status seen in the context of a LUN on a target that is behind a switch's port.
read_io _scsi_reservation _conflict_count	rIOSrecct	Metric	Count	No	Number of **read** command reservation conflicts seen in the context of a LUN on a target that is behind a switch's port.
write_io _scsi_reservation _conflict_count	wIOSrecct	Metric	Count	No	Number of **write** command reservation conflicts seen in the context of a LUN on a target that is behind a switch's port.
read_io _scsi_queue _full_count	rIOSQfct	Metric	Count	No	Number of **read** command queue full status seen in the context of a LUN on a target that is behind a switch's port.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
write_io _scsi_queue _full_count	wIOSQfct	Metric	Count	No	Number of **write** command queue full status seen in the context of a LUN on a target that is behind a switch's port.
sampling _start_time	samStm	Metric	UNIX time	No	Start of the sampling time interval.
sampling _end_time	samEtm	Metric	UNIX time	No	End of the sampling time interval.

Initiator ITL Flow View Instance

Table 11: Flow Metrics for Initiator ITL Flow View Instance

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
port	port	Key	Text	No	A switch's port where the SAN Analytics feature is enabled.
vsan	vsan	Key	Count	No	VSAN configured on a switch's port where IO transactions are observed.
app_id	app_id	Key	Count	No	Application identifier for an application that is hosted behind a switch's port.
initiator_id	sid	Key	Text	No	Initiator Fibre Channel ID that is deployed behind a switch's port where the IO transactions are observed.
target_id	did	Key	Text	No	Target Fibre Channel ID that is executing IO transactions initiated by an initiator behind a switch's port.
lun	lun	Key	Count	No	Logical-unit-number (LUN) that is associated with an initiator where IOs are performed.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
active_io _read_count	raIO	Metadata	Count	Yes	Number of outstanding **read** command counts associated with an initiator-ITL-flow record.
active_io _write_count	waIO	Metadata	Count	Yes	Number of outstanding **write** command counts associated with an initiator-ITL-flow record.
total_read _io_count	rtIO	Metric	Count	Yes	Total **read** command data observed in the context of an initiator-ITL-flow record.
total_write _io_count	wtIO	Metric	Count	Yes	Total **write** command data observed in the context of an initiator-ITL-flow record.
total_seq _read_io_count	rstIOc	Metric	Count	No	Total sequential **read** command data observed in the context of an initiator-ITL-flow record.
total_seq _write_io_count	wrstIOc	Metric	Count	No	Total sequential **write** command data observed in the context of an initiator-ITL-flow record.
total_read _io_time	rtIOt	Metric	Microseconds	No	Accumulated total **read** command completion time observed in the context of an initiator-ITL-flow record. You can use this information to compute the average read IO completion time.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	Short Name				
total_write _io_time	wtIOt	Metric	Microseconds	No	Accumulated total **write** command completion time observed in the context of an initiator-ITL-flow record. You can use this information to compute the average **write** command completion time.
total_read _io_initiation_time	rtIOint	Metric	Microseconds	No	Accumulated total **read** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ commands or the first txfr_rdy for WRITE commands) observed in the context of an initiator-ITL-flow record. The initiation time is sometimes referred to as **data access latency**. You can use this information to compute the average read IO initiation time.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	Short Name				
total_write _io_initiation_time	wtIOint	Metric	Microseconds	No	Accumulated total **write** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ or txfer_rdy for WRITE) observed in the context of an initiator-ITL-flow record. The initiation time is sometimes referred to as **data access latency**. You can use this information to compute the average **write** command initiation time.
total_read _io_bytes	rtIOb	Metric	Bytes	Yes	Total **read** command data that is observed in the context of an initiator-ITL-flow record.
total_write _io_bytes	wtIOb	Metric	Bytes	Yes	Total **write** command data observed in the context of an initiator-ITL-flow record.
total_read _io_inter _gap_time	rtIOigt	Metric	Microsecond	No	Accumulated total **read** command intergap time observed in the context of an initiator-ITL-flow record. You can use this information to compute the average read IO intergap time.
total_write _io_inter _gap_time	wtIOigt	Metric	Microseconds	No	Accumulated total **write** command intergap time data observed in the context of an initiator-ITL-flow record. You can use this information to compute the average **write** command intergap time.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
total_time _metric_based _read_io_count	tmrtIOc	Metric	Count	No	Total completed **read** command data observed in the context of an initiator-ITL-flow record.
total_time _metric_based _write_io_count	tmwtIOc	Metric	Count	No	Total completed **write** command data observed in the context of an initiator-ITL-flow record.
total_time _metric_based _read_io_bytes	tmrtIOb	Metric	Count	No	Total completed **read** command data observed in the context of an initiator-ITL-flow record, in bytes.
total_time _metric_based _write_io_bytes	tmwtIOb	Metric	Count	No	Total completed **write** command data observed in the context of an initiator-ITL-flow record, in bytes.
read_io_rate	rIOr	Metric	IOs per second	Yes	The **read** command data observed in the context of an initiator-ITL-flow record.
peak_read _io_rate	prIOr	Metric	IOs per second	No	Peak **read** command data observed in the context of an initiator-ITL-flow record.
write_io_rate	wIOr	Metric	IOs per second	Yes	The **write** command data observed in the context of an initiator-ITL-flow record.
peak_write _io_rate	pwIOr	Metric	IOs per second	No	Peak **write** command data observed in the context of an initiator-ITL-flow record.
read_io_bandwidth	rIObw	Metric	Bytes per second	Yes	The **read** command bandwidth observed in the context of an initiator-ITL-flow record.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
peak_read _io_bandwidth	prIObw	Metric	Bytes per second	No	Peak **read** command bandwidth observed in the context of an initiator-ITL-flow record.
write_io_bandwidth	wIObw	Metric	Bytes per second	Yes	The **write** command bandwidth observed in the context of an initiator-ITL-flow record.
peak_write _io_bandwidth	pwIObw	Metric	Bytes per second	No	Peak **write** command bandwidth observed in the context of an initiator-ITL-flow record.
read_io _size_min	rIOsMi	Metric	Bytes	Yes	Minimum **read** command size observed in the context of an initiator-ITL-flow record.
read_io _size_max	rIOsMa	Metric	Bytes	Yes	Maximum **read** command size observed in the context of an initiator-ITL-flow record.
write_io _size_min	wIOsMi	Metric	Bytes	Yes	Minimum **write** command size observed in the context of an initiator-ITL-flow record.
write_io _size_max	wIOsMa	Metric	Bytes	Yes	Maximum **write** command size observed in the context of an initiator-ITL-flow record.
read_io _completion _time_min	rIOctMi	Metric	Microseconds	Yes	Minimum **read** command completion time observed in the context of an initiator-ITL-flow record.
read_io _completion _time_max	rIOctMa	Metric	Microseconds	Yes	Maximum **read** command completion time observed in the context of an initiator-ITL-flow record.
write_io _completion _time_min	wIOctMi	Metric	Microseconds	Yes	Minimum **write** command completion time observed in the context of an initiator-ITL-flow record.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
write_io _completion _time_max	wIOctMa	Metric	Microseconds	Yes	Maximum **write** command completion time observed in the context of an initiator-ITL-flow record.
read_io _initiation _time_min	rIOitMi	Metric	Microseconds	Yes	Minimum **read** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ or txfer_rdy for WRITE) observed in the context of an initiator-ITL-flow record. The initiation time is sometimes referred to as **data access latency**.
read_io _initiation _time_max	rIOitMa	Metric	Microseconds	Yes	Maximum **read** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ or txfer_rdy for WRITE) observed in the context of an initiator-ITL-flow record. The initiation time is sometimes referred to as **data access latency**.
write_io _initiation _time_min	wIOitMi	Metric	Microseconds	Yes	Minimum **write** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ or txfer_rdy for WRITE) observed in the context of an initiator-ITL-flow record. The initiation time is sometimes referred to as **data access latency**.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
write_io _initiation _time_max	wIOitMa	Metric	Microseconds	Yes	Maximum **write** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ or txfer_rdy for WRITE) observed in the context of an initiator-ITL-flow record. The initiation time is sometimes referred to as **data access latency**.
read_io _inter_gap _time_min	rIOigtMi	Metric	Microsecond	Yes	Minimum **read** command intergap time observed in the context of an initiator-ITL-flow record. read_io_inter_gap_time_min is the duration between successive IO commands and is measured in 1/256th of a microsecond.
read_io _inter_gap _time_max	rIOigtMa	Metric	Microsecond	Yes	Maximum **read** command intergap time observed in the context of an initiator-ITL-flow record. read_io_inter_gap_time_max is the duration between successive IO commands and is measured in 1/256th of a microsecond.
write_io _inter_gap _time_min	wIOigtMi	Metric	Microseconds	Yes	Minimum **write** command intergap time observed in the context of an initiator-ITL-flow record. write_io_inter_gap_time_min is the duration between successive IO commands and is measured in 1/256th of a microsecond.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
write_io _inter_gap _time_max	wIOigtMa	Metric	Microseconds	Yes	Maximum **write** command intergap time observed in the context of an initiator-ITL-flow record. write_io_inter_gap_time_max is the duration between successive IO commands and is measured in 1/256th of a microsecond.
read_io_aborts	rIOa	Metric	Count	Yes	Number of **read** command aborts observed in the context of an initiator-ITL-flow record.
write_io_aborts	wIOa	Metric	Count	Yes	Number of **write** command aborts observed in the context of an initiator-ITL-flow record.
read_io_failures	rIOf	Metric	Count	Yes	Number of **read** command failures observed in the context of an initiator-ITL-flow record.
write_io_failures	wIOf	Metric	Count	Yes	Number of **write** command failures observed in the context of an initiator-ITL-flow record.
read_io_timeouts	rIOTo	Metric	Count	No	Number of **read** command timeouts observed in the context of an initiator-ITL-flow record.
write_io_timeouts	wIOTo	Metric	Count	No	Number of **write** command timeouts observed in the context of an initiator-ITL-flow record.
read_io _scsi_check _condition_count	rIOSchcoct	Metric	Count	No	Number of **read** command check conditions seen in the context of an initiator-ITL-flow record.
write_io _scsi_check _condition_count	wIOSchcoct	Metric	Count	No	Number of **write** command check conditions seen in the context of an initiator-ITL-flow record.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
read_io _scsi_busy_count	rIOsbc	Metric	Count	No	Number of **read** command busy status seen in the context of an initiator-ITL-flow record.
write_io _scsi_busy_count	wIOsbc	Metric	Count	No	Number of **write** command busy status seen in the context of an initiator-ITL-flow record.
read_io _scsi_reservation _conflict_count	rIOSrecct	Metric	Count	No	Number of **read** command reservation conflicts seen in the context of an initiator-ITL-flow record.
write_io _scsi_reservation _conflict_count	wIOSrecct	Metric	Count	No	Number of **write** command reservation conflicts seen in the context of an initiator-ITL-flow record.
read_io _scsi_queue _full_count	rIOSQfct	Metric	Count	No	Number of **read** command queue full status seen in the context of an initiator-ITL-flow record.
write_io _scsi_queue _full_count	wIOSQfct	Metric	Count	No	Number of **write** command queue full status seen in the context of an initiator-ITL-flow record.
sampling _start_time	samStm	Metric	UNIX time	No	Start of the sampling time interval.
sampling _end_time	samEtm	Metric	UNIX time	No	End of the sampling time interval.

Target ITL Flow View Instance

Table 12: Flow Metrics for Target ITL Flow View Instance

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
port	port	Key	Text	No	A switch's port where the SAN Analytics feature is enabled.
vsan	vsan	Key	Count	No	VSAN configured on a switch's port where IO transactions are observed.
app_id	app_id	Key	Count	No	Application identifier for an application that is hosted behind a switch's port.
target_id	did	Key	Text	No	Target Fibre Channel ID that is deployed behind a switch's port where IO transactions are observed.
initiator_id	sid	Key	Text	No	Initiator Fibre Channel ID where the IO transactions are being performed on a target that is deployed behind a switch's port.
lun	lun	Key	Unit	No	Logical-unit-number (LUN) that is associated with a target where IOs are performed.
active_io _read_count	raIO	Metadata	Count	Yes	Number of outstanding **read** command counts associated with a target-ITL-flow record.
active_io _write_count	waIO	Metadata	Count	Yes	Number of outstanding **write** command counts associated with a target-ITL-flow record.
total_read _io_count	rtIO	Metric	Count	Yes	Total **read** command data observed in the context of a target-ITL-flow record.
total_write _io_count	wtIO	Metric	Count	Yes	Total **write** command data observed in the context of a target-ITL-flow record.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
total_seq _read_io_count	rstIOc	Metric	Count	No	Total sequential **read** command data observed in the context of a target-ITL-flow record.
total_seq _write_io_count	wrstIOc	Metric	Count	No	Total sequential **write** command data observed in the context of a target-ITL-flow record.
total_read _io_time	rtIOt	Metric	Microseconds	No	Accumulated total **read** command completion time observed in the context of a target-ITL-flow record. You can use this information to compute the average read IO completion time.
total_write _io_time	wtIOt	Metric	Microseconds	No	Accumulated total **write** command completion time observed in the context of a target-ITL-flow record. You can use this information to compute the average **write** command completion time.
total_read _io_initiation_time	rtIOint	Metric	Microseconds	no	Accumulated total **read** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ commands or the first txfr_rdy for WRITE commands) observed in the context of a target-ITL-flow record. The initiation time is sometimes referred to as **data access latency**. You can use this information to compute the average read IO initiation time.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
total_write _io_initiation_time	wtIOint	Metric	Microseconds	No	Accumulated total **write** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ or txfer_rdy for WRITE) observed in the context of a target-ITL-flow record. The initiation time is sometimes referred to as **data access latency**. You can use this information to compute the average **write** command initiation time.
total_read _io_bytes	rtIOb	Metric	Bytes	Yes	Total **read** command data that is observed in the context of a target-ITL-flow record.
total_write _io_bytes	wtIOb	Metric	Bytes	Yes	Total **write** command data observed in the context of a target-ITL-flow record.
total_read _io_inter_gap_time	rtIOigt	Metric	Microsecond	No	Accumulated total **read** command intergap time observed in the context of a target-ITL-flow record. You can use this information to compute the average read IO intergap time.
total_write _io_inter_gap_time	wtIOigt	Metric	Microseconds	No	Accumulated total **write** command intergap time data observed in the context of a target-ITL-flow record. You can use this information to compute the average **write** command intergap time.
total_time _metric_based _read_io_count	tmrtIOc	Metric	Count	No	Total completed **read** command data observed in the context of a target-ITL-flow record.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
total_time _metric_based _write_io_count	tmwtIOc	Metric	Count	No	Total completed **write** command data observed in the context of a target-ITL-flow record.
total_time _metric_based _read_io_bytes	tmrtIOb	Metric	Count	No	Total completed **read** command data observed in the context of a target-ITL-flow record, in bytes.
total_time _metric_based _write_io_bytes	tmwtIOb	Metric	Count	No	Total completed **write** command data observed in the context of a target-ITL-flow record, in bytes.
read_io_rate	rIOr	Metric	IOs per second	Yes	The **read** command data observed in the context of a LUN on a target-ITL-flow record.
peak_read _io_rate	prIOr	Metric	IOs per second	No	Peak **read** command data observed in the context of a target-ITL-flow record.
write_io_rate	wIOr	Metric	IOs per second	Yes	The **write** command data observed in the context of a target-ITL-flow record.
peak_write _io_rate	pwIOr	Metric	IOs per second	No	Peak **write** command data observed in the context of a target-ITL-flow record.
read_io_bandwidth	rIObw	Metric	Bytes per second	Yes	Read command bandwidth observed in the context of a target-ITL-flow record.
peak_read _io_bandwidth	prIObw	Metric	Bytes per second	No	Peak **read** command bandwidth observed in the context of a target-ITL-flow record.
write_io_bandwidth	wIObw	Metric	Bytes per second	Yes	The **write** command bandwidth observed in the context of a target-ITL-flow record.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
peak_write _io_bandwidth	pwIObw	Metric	Bytes per second	No	Peak **write** command bandwidth observed in the context of a target-ITL-flow record.
read_io _size_min	rIOsMi	Metric	Bytes	Yes	Minimum **read** command size observed in the context of a target-ITL-flow record.
read_io _size_max	rIOsMa	Metric	Bytes	Yes	Maximum **read** command size observed in the context of a target-ITL-flow record.
write_io _size_min	wIOsMi	Metric	Bytes	Yes	Minimum **write** command size observed in the context of a target-ITL-flow record.
write_io _size_max	wIOsMa	Metric	Bytes	Yes	Maximum **write** command size observed in the context of a target-ITL-flow record.
read_io _completion _time_min	rIOctMi	Metric	Microseconds	Yes	Minimum **read** command completion time observed in the context of a target-ITL-flow record.
read_io _completion _time_max	rIOctMa	Metric	Microseconds	Yes	Maximum **read** command completion time observed in the context of a target-ITL-flow record.
write_io _completion _time_min	wIOctMi	Metric	Microseconds	Yes	Minimum **write** command completion time observed in the context of a target-ITL-flow record.
write_io _completion _time_max	wIOctMa	Metric	Microseconds	Yes	Maximum **write** command completion time observed in the context of a target-ITL-flow record.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
read_io _initiation _time_min	rIOitMi	Metric	Microseconds	Yes	Minimum **read** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ or txfer_rdy for WRITE) observed in the context of a target-ITL-flow record. The initiation time is sometimes referred to as **data access latency**.
read_io _initiation _time_max	rIOitMa	Metric	Microseconds	Yes	Maximum **read** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ or txfer_rdy for WRITE) observed in the context of a target-ITL-flow record. The initiation time is sometimes referred to as **data access latency**.
write_io _initiation _time_min	wIOitMi	Metric	Microseconds	Yes	Minimum **write** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ or txfer_rdy for WRITE) observed in the context of a target-ITL-flow record. The initiation time is sometimes referred to as **data access latency**.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
write_io _initiation _time_max	wIOitMa	Metric	Microseconds	Yes	Maximum **write** command initiation time (time gap between the IO command and the first response from the storage; the first response can be the first data frame for READ or txfer_rdy for WRITE) observed in the context of a target-ITL-flow record. The initiation time is sometimes referred to as **data access latency**.
read_io _inter_gap _time_min	rIOigtMi	Metric	Microsecond	Yes	Minimum **read** command intergap time observed in the context of a target-ITL-flow record. read_io_inter_gap_time_min is the duration between successive IO commands and is measured in 1/256th of a microsecond.
read_io _inter_gap _time_max	rIOigtMa	Metric	Microsecond	Yes	Maximum **read** command intergap time observed in the context of a target-ITL-flow record. read_io_inter_gap_time_max is the duration between successive IO commands and is measured in 1/256th of a microsecond.
write_io _inter_gap _time_min	wIOigtMi	Metric	Microseconds	Yes	Minimum **write** command intergap time observed in the context of a target-ITL-flow record. write_io_inter_gap_time_min is the duration between successive IO commands and is measured in 1/256th of a microsecond.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
write_io _inter_gap _time_max	wIOigtMa	Metric	Microseconds	Yes	Maximum **write** command intergap time observed in the context of a target-ITL-flow record. write_io_inter_gap_time_max is the duration between successive IO commands and is measured in 1/256th of a microsecond.
read_io_aborts	rIOa	Metric	Count	Yes	Number of **read** command aborts observed in the context of a target-ITL-flow record.
write_io_aborts	wIOa	Metric	Count	Yes	Number of **write** command aborts observed in the context of a target-ITL-flow record.
read_io_failures	rIOf	Metric	Count	Yes	Number of **read** command failures observed in the context of a target-ITL-flow record.
write_io_failures	wIOf	Metric	Count	Yes	Number of **write** command failures observed in the context of a target-ITL-flow record.
read_io_timeouts	rIOTo	Metric	Count	No	Number of **read** command timeouts observed in the context of a target-ITL-flow record.
write_io_timeouts	wIOTo	Metric	Count	No	Number of **write** command timeouts observed in the context of a target-ITL-flow record.
read_io _scsi_check _condition_count	rIOSchccct	Metric	Count	No	Number of **read** command check conditions seen in the context of a target-ITL-flow record.
write_io _scsi_check _condition_count	wIOSchccct	Metric	Count	No	Number of **write** command check conditions seen in the context of a target-ITL-flow record.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
read_io _scsi_busy_count	rIOsbc	Metric	Count	No	Number of **read** command busy status seen in the context of a target-ITL-flow record.
write_io _scsi_busy_count	wIOsbc	Metric	Count	No	Number of **write** command busy status seen in the context of a target-ITL-flow record.
read_io _scsi_reservation _conflict_count	rIOSrecct	Metric	Count	No	Number of **read** command reservation conflicts seen in the context of a target-ITL-flow record.
write_io _scsi_reservation _conflict_count	wIOSrecct	Metric	Count	No	Number of **write** command reservation conflicts seen in the context of a target-ITL-flow record.
read_io _scsi_queue _full_count	rIOSQfct	Metric	Count	No	Number of **read** command queue full status seen in the context of a target-ITL-flow record.
write_io _scsi_queue _full_count	wIOSQfct	Metric	Count	No	Number of **write** command queue full status seen in the context of a target-ITL-flow record.
sampling _start_time	samStm	Metric	UNIX time	No	Start of the sampling time interval.
sampling _end_time	samEtm	Metric	UNIX time	No	End of the sampling time interval.

Initiator IO Flow View Instance

Table 13: Flow Metrics for Initiator IO Flow View Instance

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
port	port	Key	Text	No	A switch's port where the SAN Analytics feature is enabled.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
vsan	vsan	Key	Count	No	VSAN configured on a switch's port where IO transactions are observed.
app_id	app_id	Key	Count	No	Application identifier for an application that is hosted behind a switch's port.
initiator_id	sid	Key	Text	No	Initiator Fibre Channel ID where the IO transactions are being performed on an initiator that is deployed behind a switch's port.
target_id	did	Key	Text	No	Initiator Fibre Channel ID that is deployed behind a switch's port where IO transactions are observed.
lun	lun	Key	Count	No	Logical-unit-number (LUN) that is associated with an initiator where IOs are performed.
exchange_id	oxid	Key	Count	No	Exchange ID, assigned by the originator, that is associated with an IO transaction.
extended_exchange_id	exXID	Metadata	Count	No	Extended exchange ID, assigned by the responder, that is associated with an IO transaction.
io_lba	iolba	Metadata	Count	No	Logical block address (LBA) where IO is performed.
io_size	iosize	Metadata	Count	No	Size of the IO, that is, the number of bytes of data involved in the IO.
io_start_time	iost	Metric	Count	Yes	Time stamp at which IO started.
sampling _start_time	samStm	Metric	UNIX time	No	Start of the sampling time interval.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	Short Name				
sampling _end_time	samEtm	Metric	UNIX time	No	End of the sampling time interval.

Target IO Flow View Instance

Table 14: Flow Metrics for Target IO Flow View Instance

Flow Metric		Type	Unit	Sortable?	Description
Long Name	Short Name				
port	port	Key	Text	No	A switch's port where the SAN Analytics feature is enabled.
vsan	vsan	Key	Count	No	VSAN configured on a switch's port where IO transactions are observed.
app_id	app_id	Key	Count	No	Application identifier for an application that is hosted behind a switch's port.
target_id	did	Key	Text	No	Target Fibre Channel ID that is deployed behind a switch's port where IO transactions are observed.
initiator_id	sid	Key	Text	No	Initiator Fibre Channel ID where the IO transactions are being performed on a target that is deployed behind a switch's port.
lun	lun	Key	Count	No	Logical-unit-number (LUN) that is associated with a target where IOs are performed.
exchange_id	oxid	Key	Count	No	Exchange ID, assigned by the originator, that is associated with an IO transaction.

Flow Metric		Type	Unit	Sortable?	Description
Long Name	**Short Name**				
extended _exchange_id	exXID	Metadata	Count	No	Extended exchange ID, assigned by the responder, that is associated with an IO transaction.
io_lba	iolba	Metadata	Count	No	Logical block address (LBA) where IO is performed.
io_size	iosize	Metadata	Count	No	Size of the IO, that is, the number of bytes of data involved in the IO.
io_start_time	iost	Metric	Count	Yes	Time stamp at which IO started.

Flow Metrics Calculation

> ✎
>
> **Note** T1 and T2 used in calculations are time interval 1 and time interval 2 respectively.

The following information is used to calculate metrics that are streamed to STS receiver:

- **Normalized READ Exchange Completion Time (ECT) in milliseconds per byte:**

  (total_read_io_time_t2 - total_read_io_time_t1)/(total_time_metric_based_read_io_bytes_t2 - total_time_metric_based_read_io_bytes_t1)

- **Normalized WRITE ECT in milliseconds per byte:**

  (total_write_io_time_t2 - total_write_io_time_t1)/

  (total_time_metric_based_write_io_bytes_t2 - total_time_metric_based_write_io_bytes_t1)

- **Normalized Read Data Access Latency (DAL) in milliseconds per byte:**

  (total_read_io_initiation_time_t2 - total_read_io_initiation_time_t1)/(total_time_metric_based_read_io_bytes_t2 - total_time_metric_based_read_io_bytes_t1)

- **Normalized Write DAL in milliseconds per byte:**

  (total_write_io_initiation_time_t2 - total_write_io_initiation_time_t1)/(total_time_metric_based_write_io_bytes_t2 - total_time_metric_based_write_io_bytes_t1)

- **Average READ ECT per IO:**

  (total_read_io_time_t2 - total_read_io_time_t1)/(total_time_metric_based_read_io_count_t2 - total_time_metric_based_read_io_count_t1)

- **Average WRITE ECT per IO:**

  (total_write_io_time_t2 - total_write_io_time_t1)/(total_time_metric_based_write_io_count_t2 - total_time_metric_based_write_io_count_t1)

- **Average READ DAL per IO:**

  (total_read_io_initiation_time_t2 - total_read_io_initiation_time_t1)/(total_time_metric_based_read_io_count_t2 - total_time_metric_based_read_io_count_t1)

- **Average WRITE DAL per IO:**

  (total_write_io_initiation_time_t2 - total_write_io_initiation_time_t1)/(total_time_metric_based_write_io_count_t2 - total_time_metric_based_write_io_count_t1)

- **Average Read IOs per second:**

  (total_read_io_count_t2 - total_read_io_count_t1)/(sampling_end_time - sampling_start_time)

- **Average Write IOs per second:**

  (total_write_io_count_t2 - total_write_io_count_t1)/(sampling_end_time - sampling_start_time)

- **Average Read IO Size:**

  total_read_io_bytes/total_read_io_count

- **Average Write IO Size:**

  total_write_io_bytes/total_write_io_count

For more information on the supported flow metrics and metrics long name to short name mapping, see the