iQIOs

Total QIO rate on device.

This statistic contains the rate (number per seconds) of all I/Os processed by the OpenVMS QIO interface for a particular device. Thus, this statistic provides the I/O rate for a particular device initiated by all processes running on a system.

iRqs

Total device IO request rate.

This statistic is very similar to the *iQIOs* statistic except that it counts only for I/Os that complete within a certain time. By default I/Os have to complete within 500 ms to be counted in this statistic. Thus, this statistic does not contain any long running I/Os (i.e. like tape rewind or tape positioning). If you analyze disk devices and the *iQIOs* and the *iRqs* statistic differs significantly this is an indicator that you are facing latency problems accessing the storage sub-system (i.e. EVA, XP).

iIOs

Total service IO (passing START_IO routine) rate.

This statistic shows the physical device I/O rate. It contains all I/Os that are written to or read from the physical device. If there is a device cache in use (i.e. XFC for disk devices) the values of this statistic are typically smaller than the values of the *iQIOs* and *iRqs* statistics except the cache hit rate is very small and/or user I/Os had to be split up into smaller packets either because the data size of the user I/Os exceed the maximum port driver data size (i.e. FG driver can process I/Os with a maximum size of 128 kB) or because the user I/Os request data that is not contiguous (i.e. XQP has to split disk I/Os if the requested VBN range is stored in different LBN areas).

If the split I/O rate is high and the cache hit rate is low (or no I/O cache is in use) the values of the *iIOs* statistic can be higher than the values of the *iQIOs* and *iRqs* statistics.

iIOSp

Total split service IO (passing START_IO routine) rate.

This statistic contains the split I/O rate of a device. A split I/O occurs whenever OpenVMS has to split up a user I/O into smaller packets when requesting data from a physical device. OpenVMS splits up a user I/O into smaller packets whenever:

- the data size of a user I/O exceeds the maximum port driver data size (i.e. FG driver can process I/Os with a maximum size of 128 kB)
- the user I/O requests data that is not contiguous (i.e. XQP has to split disk I/Os if the requested VBN range is stored in different LBN areas).

iIOSizeAvg

Average I/O size (read & write)

This statistic contains the average I/O size of all (read & write) I/Os on a particular device during the last sample interval in kB.

iAbs

Total Aborted.

I/O abort rate. The value should be zero or very low. Otherwise you are facing massive problems accessing the physical device.

iMbs

Total Throughput.

I/O throughput on a particular device in MB/seconds (read & writes).

iRQtime

IO Request time.

Average processing time of the I/Os counted in the *iRqs* statistic. The average I/O request time contains the I/O processing time on OpenVMS and the response time of the physical device if the data has to be fetched from or written to the physical device. The *iRqs* statistic contains all I/Os that complete within a certain time period (default 500 ms) regardless if the data is fetched from the device cache (i.e. XFC) or the physical device. Thus, if a data cache is in use for a particular device and the cache hit rate is high the values of this statistic can be significantly smaller than the values of the *iIOTime* statistic because the cache response time is typically much smaller than the physical device response time.

iRQTimeMax

MAX I/O Request time during last sample interval (all I/Os).

This statistic shows the highest I/O response time measured during a sample interval for a particular class device.

iRQrespAcc

Accuracy of IO Request time.

This statistic provides information about the accuracy of the values of the *iRQTime* statistic. The smaller the *iRQTime* values the higher are the *iRQrespAcc* values and vice versa.

Device I/O latency measurements depend on the time resolution of the OpenVMS system (is HW specific). Thus, if the I/O response time is close to or smaller than the time resolution of the OpenVMS system the accuracy of the I/O measurement becomes very low. Thus, if the *iRQrespAcc* values are very high the average I/O request time is close to or smaller than the time resolution of the OpenVMS system which indicates that the I/O request latency is very low.

iIOtime

IO Service Time.

Average response time of the I/Os counted in the *iIO* statistic. This statistic represents the physical device response time. Thus, the values of this statistic are typically greater than the values of the *iRQTime* statistic except there is nodevice data cache in use or if the device data cache hit rate is very low.

iIOTimeMax

MAX I/O Service time during last sample interval (all I/Os).

This statistic shows the highest physical I/O response time (= time to transfer the data to the physical disk plus the physical disk processing time) measured during a sample interval

for a particular device.

iIOrspAcc

Accuracy of IO Service time.

This statistic provides information about the accuracy of the values of the *iIOTime* statistic. The smaller the *iIOTime* values the higher are the *iIOrespAcc* values and vice versa.

See also the description of the *iRQrspAcc* statistic.

iRdQIOs

Read QIO rate on device.

This statistic contains the rate (number per seconds) of all read I/Os processed by the OpenVMS QIO interface of for a particular device. Thus, this statistic provides the read I/O rate for a particular device initiated by all processes running on a system.

iRdRqs

Read device IO request rate.

This statistic is very similar to the *iRdQIOs* statistics except that it counts only for read I/Os that complete within a certain time. By default read I/Os have to complete within 500 ms to be counted in this statistic. If you analyze disk device and the *iRdQIOs* and the *iRdRqs* statistics differ significantly this is an indicator that you are facing read latency problems accessing the storage sub-system (i.e. EVA, XP).

iRdIOs

Read service IO (passing START_IO routine) rate

This statistic shows the physical device read I/O rate. If there is a device cache in use (i.e. XFC for disk devices) the values of this statistic is typically smaller than the values of the *iRdQIOs* and *iRdRqs* statistics except the cache hit rate is very small and/or user read I/O requests had to be split up into smaller packets either because the data size of the user read I/Os exceed the maximum port driver data size (i.e. FG driver can process I/Os with a maximum size of 128 kB) or because user read I/Os request data that is not contiguous (i.e. XQP has to split disk I/Os if the requested VBN range is stored in different LBN areas).

If the read split I/O rate is high and the cache hit rate is low (or no I/O cache is in use) the values of the *iRdIOs* statistic can be higher than the values of the *iRdQIOs* and *iRdRqs* statistics.

iRdIOSp

Read split service IO (passing START_IO routine) rate.

This statistic contains the read split I/O rate of a device. A read split I/O occurs whenever OpenVMS has to split up a user read I/O into smaller packets when requesting data from a physical device. OpenVMS splits up a user read I/O into smaller packets whenever:

- the data size of a user read I/O exceeds the maximum port driver data size (i.e. FG driver can process I/Os with a maximum size of 128 kB)
- the user read I/O requests data that is not contiguous (i.e. XQP has to split disk read I/Os if the requested VBN range is stored in different LBN areas).

iRdIOSizeAvg

Average read I/O size

This statistic contains the average I/O size of all read I/Os fetched from a particular device during the last sample interval in kB.

iRdAbs

Read Aborted.

Read I/O abort rate. The value should be zero or very low. Otherwise you are facing massive problems accessing the physical device.

iRdMbs

Read Throughput.

Read I/O throughput on a particular device in MB/seconds.

iRdRQtime

Read IO Request time.

Average processing time of the read I/Os counted in the *iRdRqs* statistic. The average read I/O request time contains the I/O processing time on OpenVMS and the read response time of the physical device if the data has to be fetched from the physical device. The *iRdRqs* statistic contain all read I/Os that complete within a certain time period (default 500 ms) regardless if the data is fetched from the device cache (i.e. XFC) or the physical device. Thus, if a data cache is in use for a particular device and the cache hit rate is high the values of this statistic can be significantly smaller than the values of the *iRdIOTime* statistic because the cache response time is typically much smaller than the physical device response time.

iRdRQTimeMax

Read MAX I/O Request time during last sample interval.

This statistics shows the highest read I/O response time measured during a sample interval for a particular class device.

iRdRQrespAcc

Accuracy of Read IO Request time.

This statistic provides information about the accuracy of the value of the *iRdRQTime* statistic. The smaller the *iRdRQTime* value the higher is the *iRdRQrespAcc* value and vice versa.

Device I/O latency measurements depend on the time resolution of the OpenVMS system (is HW specific). Thus, if the I/O response time is close to or smaller than the time resolution of the OpenVMS system the accuracy of the I/O measurement becomes very low. Thus, if the *iRdRQrespAcc* values are very high the average read I/O response time is close to or smaller than the time resolution of the OpenVMS system which indicates that the read I/O latency is low.

iRdIOtime

Read IO Service Time.

Average response time of the read I/Os counted in the *iRdIO* statistic. This statistic represents the physical device read response time. Thus, the value of this statistic istypically

greater than the value of the *iRdRQTime* statistic except there is no device data cache in use or if the device data cache hit rate is very low.

iIOTimeMax

Read MAX I/O Service time during last sample interval.

This statistic shows the highest physical read I/O response time (= time to transfer the data to the physical disk plus the physical disk read processing time) measured during a sample interval for a particular device.

iRdIOrspAcc

Accuracy of Read IO Service time.

This statistic provides information about the accuracy of the value of the *iRdIOTime* statistic. The smaller the *iRdIOTime* value the higher is the *iRdIOrespAcc* values and vice versa.

See also the description of the *iRdRQrspAcc* statistic.

iWrQIOs

Write QIO rate on device.

This statistic contains the rate (number per seconds) of all write I/Os processed by the OpenVMS QIO interface for a particular device. Thus, this statistic provides the write I/O rate for a particular device initiated by all processes running on a system.

iWrRqs

Write device IO request rate.

This statistic is very similar to the *iWrQIOs* statistic except that it counts only for write I/Os that complete within a certain time. By default, write I/Os have to complete within 500 ms in order to be counted in this statistic. If you analyze disk device and the *iWrQIOs* and the *iWrRqs* statistic differ significantly then this is an indicator that you are facing write latency problems when accessing the storage sub-system (i.e. EVA, XP).

iWrIOs

Write service IO (passing START_IO routine) rate.

This statistic shows the physical device write I/O rate. The value of this statistic differs from the *iWrQIOs* and *iWrRqs* statistics only if user write I/Os had to be split up into smaller packets either because the data size of a user write I/Os exceed s the maximum port driver data size (i.e. FG driver can process I/Os with a maximum size of 128 kB) or because the user write I/Os are not contiguous (i.e. XQP has to split disk write I/Os if the VBN range defined by the user write I/O has to be stored in different LBN areas).

If the write split I/O rate is high the values of the *iRdIOs* statistic can be higher than the values of the *iRdQIOs* and *iRdRqs* statistics.

iWrIOSp

Write split service IO (passing START_IO routine) rate.

This statistic contains the write split I/O rate of a device. A write split I/O occurs whenever OpenVMS has to split up a user write I/O into smaller packets when writing data to a physical device. OpenVMS splits up a user write I/O into smaller packets whenever:

- the data size of a user write I/O exceeds the maximum port driver data size (i.e. FG driver can process I/Os with a maximum size of 128 kB)

- the user write I/O is not contiguous (i.e. XQP has to split disk write I/Os if the VBN range defined by the user write I/O has to be stored in different LBN areas).

iWrIOSizeAvg

Average write I/O size

This statistic contains the average I/O size of all write I/Os sent to a particular device during the last sample interval in kB.

iWrAbs

Write Aborted.

Write I/O abort rate. The value should be zero or very low. Otherwise you are facing massive problems accessing the physical device.

iWrMbs

Write Throughput.

Write I/O throughput on a particular device in MB/seconds.

iWrRQtime

Write IO Request time.

Average processing time of the write I/Os counted in the *iWrRqs* statistics. The average write I/O response time contains the OpenVMS I/O processing time on and the write response time of the physical device.

iRQTimeMax

Write MAX I/O Request time during last sample interval).

This statistic shows the highest write I/O response time measured during a sample interval for a particular class device.

iWrRQrespAcc

Accuracy of Write IO Request time.

This statistic provides information about the accuracy of the values of the *iWrRQTime* statistic. The smaller the *iWrRQTime* value the higher the *iWrRQrespAcc* value is and vice versa.

Device I/O latency measurements depend on the time resolution of the OpenVMS system (is HW specific). Thus, if the I/O response time is close to or smaller than the time resolution of the OpenVMS system the accuracy of the I/O measurement becomes very low. Thus, if the *iWrRQrespAcc* value is very high the average write I/O response time is close to or smaller than the time resolution of the OpenVMS system which indicates that the write I/O latency is low.

iWrIOtime

Write IO Service Time,

Average response time of the write I/Os counted in the *iWrIO* statistics. This statistic represents the physical device write response time. Since OpenVMS does not cache write I/Os the value of this statistic is typically less than the value of the *iWrRQTime* statistic because it does not include the OpenVMS write I/O processing time. If the value of this statistic is higher than the *iWrRQTime* value the write I/O split rate is high.

iWrIOTimeMax

Write MAX I/O Service time during last sample interval.

This statistic shows the highest physical write I/O response time (= time to transfer the data to the physical disk plus the physical disk write processing time) measured during a sample interval for a particular device.

iWrIOrspAcc

Accuracy of Write IO Service time.

This statistic provides information about the accuracy of the value of the *iWrIOTime* statistic. The smaller the *iWrIOTime* value the higher is the *iWrIOrespAcc* value and vice versa.

See also the description of the *iWrRQrspAcc* statistics.

iCtlQIOs

Ctrl QIO rate on device.

This statistic shows the non-data transfer I/O rate. A non-data transfer I/O does not mean that no data is transferred to the device, but that it contains no user content. With other words non-data transfer I/Os read, write or modify file or file system meta data like 'fileopen', 'file close', 'file extend' or 'erase' requests.

iCtlRqs

Ctrl device IO request rate.

This statistic shows the non-data transfer I/O rate that complete within a certain time. By default non-data transfer I/Os have to complete within 500 ms to be counted in this statistic.

iCtlAbs

Ctrl Aborted.

Non-data transfer I/O abort rate. The value should be zero or very low. Otherwise you are facing massive problems accessing the physical device.

iCtlRQtime

Ctrl IO Request time.

Average processing time of the non-data transfer I/Os counted in the *iCtlRqs* statistic. The average non-data transfer I/O response time contains the OpenVMS I/O processing time and the response time of the physical device.

iRQTimeMax

Ctrl MAX I/O Request time during last sample interval.

This statistic shows the highest non-data transfer I/O response time measured during a sample interval for a particular class device.

iCtlRQrespAcc

Accuracy of Ctrl IO Request time.

This statistic provides information about the accuracy of the value of the *iCtlRQTime* statistic. The smaller the *iCtlRQTime* value the higher the *iCtlRQrespAcc* value is and

viceversa.

Device I/O latency measurements depend on the time resolution of the OpenVMS system (is HW specific). Thus, if the I/O response time is close to or smaller than the time resolution of the OpenVMS system the accuracy of the I/O measurement becomes very low. Thus, if the *iCtlRQrespAcc* value is very high the average non-data transfer I/O response time is close to or smaller than the time resolution of the OpenVMS system, which indicates that the non-data transfer I/O latency is low.

iQlen

Device IO queue length.

Average device I/O queue length during the sample interval.

iIOthres

IO request threshold.

I/O request threshold configuration value. For detailed information about this configuration threshold please see the ADD PROFILE command description in the HP PERFDAT – PERFDAT_MGR reference manual or the online help of the PERFDAT_MGR utility.

iElementCnt

Element count.

This data column is for HP PERFDAT internal use only and the value of this statistic is always 1.