SOMs 1191, 1247, 1248 for ADR. Adaptable Dedupe Mode

Objective

Set ADR to be adaptable, and switch between POST, IN-LINE, and OFF to protect Host I/O Performance.

Environment

- G5000
- E1090
- E990
- E590
- E790
- G370
- G700
- G900
- F370
- F700
- F900
- G350
- F350
- G130
- ADR
- Dedupe
- SOM 1191

Definition

SOM 1191 (in conjunction with 1247, and 1248) is used to avoid the impact and overhead of ADR processing when there are a lot of writes to a volume and the array is busy. Without SOM 1191 ADR will stay in whatever mode it is set to for the LDEV. With SOM 1191 = ON, Host I/O Performance is preserved by switching to POST Processing, or disabling ADR while there is resource contention or High Workloads.

This SOM is only available for newer Array Models. Older Arrays such as G800, F800, G400, F600, G200, N800, N400, N600, G1000, G1500, and other older Model Arrays do not support it.

On Older Microcode (< 88-08-02, < 90-05-04, < 93-04-02):
There is no SOM 1247, or SOM 1248. The behavior of SOM 1191 is simple. If MPU are above 50% busy, ADR Volumes that are set to INLINE will switch to POST. The 50% metric is based on the average MPU busy of the whole Array. This will free up MP from processing Deduplication and improve response time when MPU are busy.

On Later Microcode (>= 88-08-02, >= 90-05-04, >=90-06-21, >=93-04-02):
The behaviour of SOM 1191 also depends on newly introduced SOM's 1247, and 1248.

#	SOM 1191	SOM 1247	SOM 1248	What logic is applied
1	OFF	OFF	OFF	(C)
2	ON	N/A	OFF	(A), (B)
3	ON	OFF	ON	(A), (C)
4	ON	ON	ON	(A) : This is same as SOM 1911 = On older Microcode
5	OFF	ON	N/A	— : This is same as SOM 1911 = Off of older microcode.

(A): When MP usage is higher than 50%, INLINE dedupe is switched to POST. When MP usage is higher than 70%, POST dedupe is disabled.

(B): When CWP is higher than 30%, INLINE dedupe is disabled and POST dedupe is disabled.

(C): When rate of duplication is high and CWP is higher than 30%, INLINE dedupe is disabled and POST dedupe is disabled.

SOM 1247 : (C) will be disabled by turning SOM 1247 On.

SOM 1248 : (B) will be disabled by turning SOM 1248 On.

Most Customers will want to set SOM 1191 = ON if the array has sufficient free space in the pool to allow for some POST processing for ADR to avoid any performance impact.

Customers with little/no free space will want SOMs 1191, 1247, and 1248 set to OFF so that deduplication has the highest possible priority in order to keep the pool from filling up.

Additional Notes

Hitachi recommends that customers plan and keep some free space in the pool so that SOM 1191 can be enabled.

Internal Notes