

EMC Official Support Stance regarding Symmetrix Director Bits:

EMC is committed to customer satisfaction and ensuring the highest product availability and reliability. As part of that commitment, EMC will make recommendations regarding configuration settings. The purpose of this document is to provide Citi with EMC's recommendations and position regarding the setting of Symmetrix Director Bits

- 1) Where Citi is prepared to accept the risk of running older driver versions which do not contain known fixes, EMC does not require an upgrade to the latest EMC approved versions of Emulex driver or Microsoft hotfix. EMC and Emulex only require minimum Microsoft hotfix 932755 as a functional minimum. EMC strongly recommends running the latest EMC approved versions of both Emulex drivers and Microsoft hotfixes as numerous fixes have been included that improve the stability and reliability of Windows and connectivity to storage.
- 2) For over three years Microsoft and EMC have tested and required the SPC-2, SC3 and OS2007 bits to be enabled to comply with Microsoft certification requirements. EMC at a best effort basis will support Citi running without these bits enabled in their existing configurations with the awareness that EMC does not test nor recommend this approach and should any support issues arise may require Citi to update to the enabled bit settings at that time.
- 3) These bit settings are used by EMC and non-EMC products (Veritas, MS Clustering, etc.), and EMC cannot predict when these bits may be referenced by new products. Any changes or upgrades to hosts in the Citi environment not running the required bit settings may lead to unexpected results.
- 4) EMC recommends Citi develop a remediation plan to enable the bits on the affected hosts at their earliest opportunity. EMC recommends initiator-based bit settings to isolate such changes to only the required hosts. **“All paths from a host/cluster to a specific Logical Device or Group of Logical Devices used together need to have consistent approved settings. A host/cluster can further access additional Logical Devices (or Groups of Logical Devices used together) with different approved settings. Settings can be applied at the FA or device level where applicable to achieve the necessary isolation of settings. Any SRDF, linked devices across arrays or devices used for data replication/protection (backup, cluster failover, etc.) should use the same settings as the source device unless otherwise noted.”**

Citigroup Defined Remediation Scope:

Remediation Scope:

1. Box is crashed due to issue of bit settings
 - a. Apply appropriate settings for FA's for host that don't have the proper settings.
2. Tech Refresh
 - a. Apply appropriate settings for:
 - i. Target FA's for migration if they are not set at the FA level
 - ii. Extent FA's of those hosts that are not migrated and are not set at the FA level
3. New hosts
 - a. Apply appropriate settings for host for all FA's that are not set at the FA level.
4. Existing hosts where the bits are required.
 - a. VMAX
 - i. If adding storage on the same array do not make any changes
 - ii. If adding storage on a different array and the bits are not set for all of the FA, set the bits at the IG.
 - iii. If adding storage on a different array and the bits are set at the FA level for all FA's - do not set the bits.
 - b. DMX
 - i. If adding storage on the same array and same segment, make no changes
 - ii. If adding storage on the same array and different segment(s) where the bits are not set at the FA level or host level, set the bits on the new FA.
 - iii. If adding storage on the same array and different segment(s) where the bits are set at the FA level or host level, do not set the bits.
 - iv. If adding storage on a different array and the bits are not set at on any FA level/subset of FA's – set it on the all the FA's
 - v. If adding storage on a different array and the bits are set for FA level – do set the bits.
5. Remediation Project
 - a. We will need to define the scope of hosts that need to be addressed.
 - b. We will need to request a changer record to remediate all the hosts
6. SAN Stack Upgrades
 - a. Send notification that for SAN stack upgrades, they should coordinate with us so we can properly set the bits.
7. New Arrays/Segments
 - a. All new arrays/segments will have the bits set at the FA level.
8. Existing Segments
 - a. If we get to the point where we have an FA where ***all*** hosts have the bits set, we should target to set it a the FA level for future use.