LUMINEX™

DLM REPLACEMENT WITH LUMINEX CGX

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Contents

Introduction

The Luminex Channel Gateway (CGX) has the capability to replace Dell Virtual Tape Engines (VTEs) in a DLm configuration with the minimum of effort while preserving the asset value of the existing storage component : -

- Re-using the existing DLm storage
- Working with existing data reduction technologies
- Supporting existing data protection methodologies
- Multi-Site data replication
- RansomWare protection services
- Hostless tape migration service
- Presenting the same virtual tape ranges and formats

And with the potential to be swapped in without any mainframe reconfiguration

Plus the mainframe tape service can then be enhanced at a future date with any of the additional features available with Luminex CGX including the opportunity to refresh the storage from the broad array of vendors supported by CGX.

Purpose of this paper

This paper outlines several options for swapping Luminex CGX into a DLm based mainframe virtual tape solution.

Swap in options are not limited to those presented in this document, the flexibility of the Luminex CGX platform means that there are a wide array of options and features available.

This document attempts to provide the core baseline considerations that can be used to evaluate the best practice approach for a potential DLm replacement within any mainframe tape service.

Statements and Assumptions

This paper assumes that the reader is familiar with mainframe virtual tape and data protection principles.

Some knowledge of Luminex Channel Gateway (CGX) and Dell DLm for virtual tape is also assumed.

Luminex CGX

Like the Dell VTE, the Luminex Channel Gateway (CGX) control unit software emulates 3490 and 3590 mainframe tape drives presented to the mainframe host(s) over 2 or 4 – 32GB FICON connections per CGX.

A CGX presents almost exactly the same data center footprint as a VTE with a 2U, 19" rack profile and equivalent power and cooling requirements.

CGX are typically deployed in multi-node configurations in a similar way to VTE presentation for DLm but without limitations on the number of CGX that can be built into a configuration, the number of virtual tape drives, the number of virtual volumes supported or the size of the storage required.

CGX can be deployed to replace VTEs in a DLm configuration, connecting to the existing storage and virtual volumes – presenting exactly the same tape ranges and formats back to the mainframe hosts.

CGX swap in

Multiple approaches are available for swapping CGX into a DLm configuration.

Luminex typically provides expert engineering resource to assist with any CGX deployment and consultancy around the best -practice options linked to customer objectives would be provided.

Considerations for CGX Swap in

There are a few considerations when swapping CGX into a DLm configuration.

CGX can READ existing DLm format tapes and perform a hostless conversion to CGX format.

CGX written virtual tapes have a slightly different format to the AWS (AMDD) format used by DLm and this can affect the level of data-reduction in a tape service, with some improvements and some degradations depending on data type. Some slight variance can be expected.

The conversion process does require some 'headroom' (swing capacity) on the storage if re-using the DLm storage but CGX capacity can be extended with object storage for transparent tape data archive. And with multi-vendor object storage support this gives many options to a migration for introducing temporary headroom or permanent additional storage capacity.

Lastly, CGX have the capability to be swapped into a DLm configuration, adopting all existing storage, storage capabilities and data protection methodologies but also introduces the Luminex CGX software suite for virtual tape and mainframe data integration. Additionally, CGX removes the limit on the maximum number of VTEs (8) in a DLm configuration. A CGX swap -in can be used as an

opportunity to select from the best options available and enhance the mainframe virtual tape service as required.

Swing capacity on the storage

Swapping CGX into a DLm configuration with a hostless migration means that the CGX will read the tape data in the existing MTLs into CGX MTLs.

The maximum amount of swing capacity required in the DLm storage is the size of the largest MTL presented to the hosts +/- some variance for slight changes in data reduction ratios.

Luminex CGX also have the capability to use one or more object stores (cloud) for additional data copies or to archive tape data transparently to the mainframe hosts.

If swing capacity is low, additional options are available when using CGX.

CGX Format tape and DeDup

CGX uses a different format to DLm when writing tape to storage, but similar principles are applied to the data stream to maximize the efficiency of data reduction technologies.

The CGX format is very similar save for a variation of AMDD that could introduce slight dedupe variation + or -.

CGX Software suite

CGX can be swapped in for VTE, adopting the capability of the existing storage (DeDup, data replication etc.) but making the additional features of Luminex CGX software suite available to all or subsets of the mainframe tape service.

Elements of the software suite can be incorporated into a configuration without compromising certain storage delivered functions – for example a configuration could be modified to use Luminex synchronous or asynchronous data protection while still using storage based DeDeup.

Additionally, these elements can be introduced granularly, at MTL level. So for example, synchronous tape matrix (STM) could be introduced for a production workload, test/dev could remain on storage based replication – both keeping existing data reduction technology (DeDup)

Introducing CGX based encryption and/or compression would move the data reduction from the storage to the CGX, the changes to capacity needed would very much depend on the data types.

The primary elements of the Luminex CGX software suite are as follows :-

- CGX Asynchronous replication suite
- CGX Synchronous Tape Matrix (STM)
- CGX Compression
- CGX Encryption
- CGX CloudTape
- CGX RansomProtect
- CGX Mainframe Data Integration (MDI)

Principles of CGX Swap in

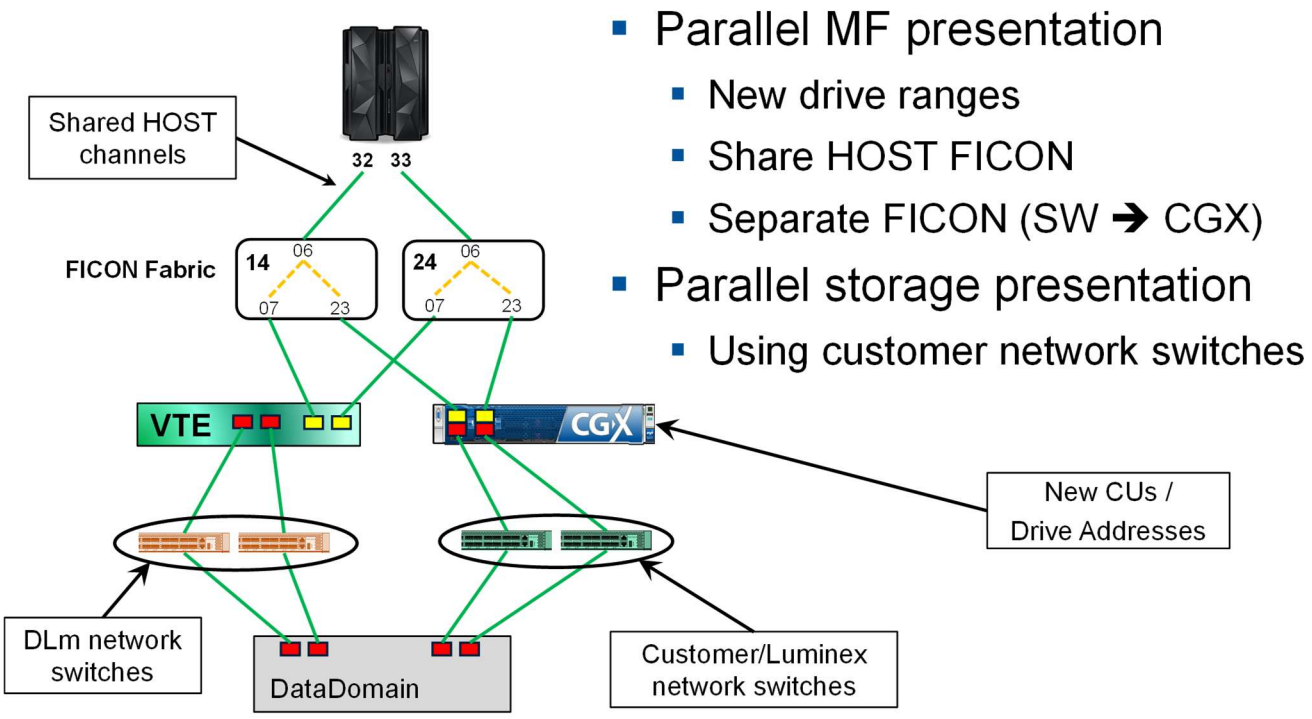
There are three primary elements to swapping CGX into a DLm based tape service

- Reroute data writes from VTE to CGX
- Convert the underlying data
- Maintain host access to all data

The following sections discuss various approaches to this and various combinations of these methodologies can be used that best suits the existing tape solution.

Physical installation

Whichever approach is selected for the transfer of tape services from VTE to CGX, the CGX need to be installed in parallel with the DLm. For a switched environment Luminex would recommend defining additional drive addresses to the CGX on the existing host channels for the VTEs.



Additional options are available and Luminex consulting will assist as necessary.

CGX swap in with extended MTL and hostless migration

This option delivers the capability to install and validate a full parallel CGX based tape service without any host impact, re-using the existing DLm storage components.

- Full parallel installation
- No disruption to existing tape services
- Minimal host configuration
- Granular cut-over at MTL level
- Hostless data migration

Install the CGX as above with additional drive ranges.

Gen the drives to the host as if adding additional VTEs – extending the DLm MTLs across the CGX.

Luminex will configure connectivity to the DLm storage as part of setting up the service.

Workloads can be swung over to the CGX MTL at a time.

There is an option to extend this process to further reduce impact that can be applied on an MTL level, it just requires slightly more consideration when preparing this configuration.

CGX swap in with no host reconfiguration and hostless migration

This option delivers the capability to install and validate a full parallel CGX based tape service without any host reconfiguration, re-using the existing DLm storage components. It is a practical approach for smaller DLm installations.

- Full parallel installation
- No host configuration changes
- Granular cut-over at MTL level
- Hostless data migration

A slightly different approach to the physical installation is required.

Luminex consulting can assist with identifying the ideal approach for installation

CGX Swap in and storage refresh with hostless migration

This follows the same process for physical installation but with a parallel installation of new storage as well as the CGX. The data migration would still be a CGX based, hostless data migration from the DLm storage to the new storage.

CGX Swap in with traditional Luminex virtual tape migration

This is included as a reference that CGX can be swapped into a configuration, re-using the DLm storage with a standard tape migration from one filesystem to another using the migration tool of choice.

If using Luminex tape migration (TMIG), it would be a host based data migration with TMIG cloning the existing virtual tapes, retaining the existing VOLSER formats and VOLSER information in the tape catalog.

This is included for reference only, the recommended approach is to consider a hostless migration.

For more information email SE@Luminex.com
or visit our website at www.luminex.com