



VIOP Addendum
to
***TLS Installation &
Operation Manuals***

Introduction

This addendum describes a product enhancement that has been added to all Qualstar TLS tape libraries. The new feature is called Variable I/O Port or VIOP. The feature is implemented solely in firmware and can be incorporated into any TLS model library with the following Executive board and firmware:

- Executive-II board utilizes firmware 700105
- Executive-III board utilizes firmware 700105
- Executive-IV board utilizes firmware 700115

The VIOP feature was introduced in TLS firmware sets 700105 and 700115 Revision 2.16A in April 2002.

Purpose

Most TLS libraries are equipped with an I/O Port that allows insertion or removal of a single-tape at a time, under host computer control. The VIOP feature extends this concept to allow bulk insertion or removal of many cartridges at a time – even entire magazines may be changed at once.

How it Works

The VIOP feature allows the user to specify a portion of a logical library's storage capacity as a dedicated I/O Port. By way of example, let's assume we have a TLS-46120 with 6 tape drives, 120 magazine based storage slots, 6 fixed storage slots and an I/O port – all dedicated to a single host server.

Backup is the primary function of our example and 8 tapes are created each night for storage off-premises. With the standard I/O Port, these 8 tapes must be ejected one-at-a-time by the host computer. Then each tape must be replaced with a fresh cartridge. The TLS remains online and ready during this entire process. This process may cost you 10-minutes.

With the VIOP feature enabled, the physical I/O port would be disabled. In its place we would allocate the last magazine in our TLS-46120 as a bulk I/O port or VIOP. The host would place the 8 off-site cartridges into the VIOP magazine. You would open the door of the TLS and remove the VIOP magazine, replacing it with one containing 8 scratch tape cartridges. Exchanging the magazines takes you just 30 seconds but the TLS will remain busy for up to 2 minutes while it rescans the inventory.

In this example, the TLS reported the following resources (in the order shown) to the host server:

- 110 storage slots (1A01...6A10)
- 10 I/O Port slots (6B01...6B10)
- 6 Fixed slots (1F...6F)

Any commands from the host server to extend or retract the I/O port would have resulted in immediate completion with *good* status.

How to Configure VIOP

All TLS libraries default to a single library with all of the storage capacity being available to a single host system. It is possible to sub-divide any TLS into as many as four logical libraries. A logical library has a set of resources (tape drives and storage slots) dedicated to its exclusive use. All storage within a logical library must be contiguous. Additional options allow for some or all of the storage capacity of the TLS to be dedicated to sequential use. For further details on this subject, refer to the Resource Management chapter in your TLS Installation & Operation Manual.

The physical I/O Port of a TLS is only available to a single logical library. No physical element of a TLS, except for the handler (Medium changer) can be allocated to more than a single logical library or sequential drive.

All I/O Port configuration takes place in the `Configuration\Advanced\Library ?` sub-menus where the “?” is a lower-case letter (a..d) indicating the logical library being configured. There is one of these sub-menus for each enabled logical library.

Prior to the introduction of the VIOP feature, there was a single I/O port item: `Configuration\Advanced\Library ?\I/O Port: <YES/NO>`. This item could be set to Yes in only one logical library (or it would have violated the cardinal rule that no physical resource can belong to more than one logical library).

With the introduction of the VIOP feature, the `I/O Port:` item has been replaced the following three items:

```
VIOP First:    111111
VIOP Last:    111111
VIOPs:        ddd
```

The value for the first two items is a Location Designator (see the Menu System chapter of your TLS manual for further information). There are three types of these editable values:

“p.....” means there is no I/O Port configured for this logical library

“p..I..” means the physical I/O Port is configured for this logical library

<location designator> means a VIOP has been configured for this logical library

The value for the VIOPs item is a decimal quantity indicating the number of storage slot allocated to the VIOP or I/O Port (1 for a physical I/O Port) and is not editable. This value is not displayed when neither a physical I/O Port nor VIOP is configured.

Decide on how many magazine slots you want to dedicate to the VIOP feature. We recommend that the VIOP be allocated in increments of magazines storage slots (10 for TLS-4000 & TLS-6000 models and 11 for TLS-8000 models). Refer to the Cartridge Locator Designator diagram for your particular model at the end of the Product Description chapter of your TLS Installation & Operation Manual. Note the Locator Designator of the last slot of your model and then determine the Locator Designator for the first slot to be allocated to the VIOP feature.

Open the TLS door to defeat the configuration security lock. Press the MENU key once and the ENTER key twice. Then press the ▼ key to point to `Library` followed by twice pressing the ENTER key. You should now be at the `Configuration\Advanced\Library ?` sub menu.

Now to configure the VIOP, move the cursor the `VIOP First:` item and press the ENTER key twice. Press the ▲ until a Location Designator is displayed (ex. "p.1A01"). Now press the ENTER key to move the cursor over the first character of the Location Designator. Press the ▲ or ▼ keys to set the character value and then press the ENTER key to move to the next character. Continue this process until you have entered the desired first location of the VIOP. Press the EXIT key once.

You must now set the `VIOP Last:` value just as you did the `VIOP First:` value. When set, you will see the VIOPs value indicate the total slots dedicated to the VIOP. Press the EXIT key once.

Since no physical entity can be allocated more than once, you must now reduce the number of slots allocated for normal cartridge storage by the number of slots allocated to VIOP use. Edit the `Slots Last:` item and set its value to the slot prior to the first VIOP slot. Press the exit key once.

Edit the `Enable:` value and set it to ON. This is the top item in the `Configuration\Advanced\Library ?` sub menu. If it is not possible to set this item to ON, then an allocation violation has occurred. Check to see that there are no slots allocated to both `Slots` and the VIOP. Correct any errors in the `Slots First:`, `Slots Last:`, `VIOP First:` or `VIOP Last:` items and then return to the `Enable:` item and set it to ON.

The `Configuration\Advanced\Library ?\Elements\VIOPs:` menu item lets you pare back the number of slots that you just allocated in the above procedure. This seldom-used feature is described in the Configuration chapter of your TLS Installation & Operation Manual.

You may need to reconfigure your application to take advantage of the newly allocated VIOP.

Using the VIOP

The VIOP is always accessed by opening the TLS door. Opening the door will cause the TLS to abort any active command and breaking the Inventory Sentry beam will cause the TLS to rescan its entire inventory. To access the VIOP, you should therefore wait until the handler is at rest before opening the TLS door.

When accessing the VIOP, be certain that you do not disturb any storage locations other than those allocated to the VIOP. It is strictly between you and your application as to which cartridges and/or magazines get inserted or removed when accessing the VIOP.

Always close the door after you have finished accessing the VIOP. Do not close it in the midst of changing cartridges as this will needless start a new inventory scanning process.