OBTAIN Connectivity

The OBTAIN software has strived to be the most comprehensive planning/documentation tool for data path connectivity. To understand the full potential of OBTAIN and how it surpasses other tools, we need to start with some definitions.

Data Path - Whenever software executing on one device needs to exchange data with software on a different device, a Data Path is required. Data Paths are composed of both physical and logical components.

OBTAIN Data Path - In OBTAIN, Data Paths are shown on the Paths tab of Device Assets and in many connectivity diagrams. Each OBTAIN Data Path is more than the physical elements on the path. The OSI Model of network connectivity (described below), contains 7 layers. OBTAIN Data Paths encapsulate information on physical and logical elements from the 3 lowest layers: Physical, Data Link, and Network. It is this integration of information that gives OBTAIN its superior ability to document your data center connectivity but it also requires an understanding of other concepts …

Single Path Connector – Physical elements like LC connectors and patch cables have a one-to-one relationship between their Physical Layer functionality and the Data Link Layer that they support. In other words, when you connect/disconnect a Single Path Connector you are also modifying a single Data Link.

MPO Connectors – Multi-fiber Push On connectors break the one-to-one relationship between entities on the physical and data link layers in that actions with a single MPO connector impact 4-6 data links.

MTP – is a registered trademark of US Conec. The more highly engineered nature of MTP connectors has resulted in the widespread use of MTP to the point where the term MTP has become synonymous with MPO. In OBTAIN we use the term MTP in reference to all multi-fiber connectors.

Internal Harness Cable – Harness cables are often thought of as miniature, single-leg trunk cables. They have an MTP connector on one end and fan-out to 4-6 strands on the other end. Each strand terminates with a Single-Path Connector. In OBTAIN, internal harness cables are used to document connectivity between the single-path ports on the cards and an MTP Bracket or Coupling Block also located **inside** the device.

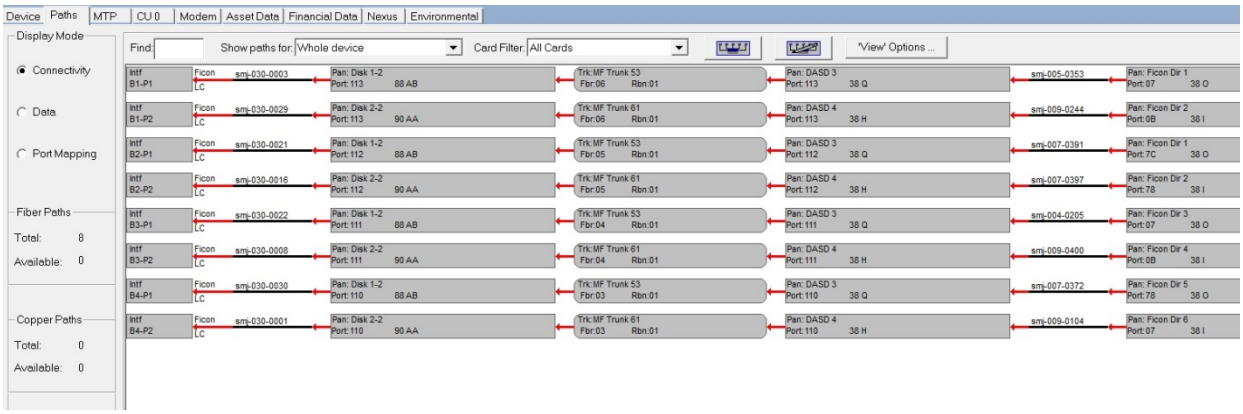
External Harness Cable – miniature trunk cables used to connect the single-path connectors on the cards of a device to **external** patch panels with MTP ports.

MTP Bracket – a miniature patch panel usually with 12 or fewer legs or ports. Its purpose is to connect the MTP connectors of multiple Internal Harness cables to MTP trunk cables.

MTP Trunk Cable – a multi-ribbon cable where each ribbon acts like an External Harness cable in that it has an MTP connector on at least one side and may fan-out to single-path connectors on the other side or may terminate with MTP on both ends of the cable. Trunk Cables are more often used for connectivity between patch panels but are also used for connectivity between MTP Brackets and patch panels.

Now that we have established the terminology used by OBTAIN for the common connectivity objects found in data centers, we will discuss how and where they appear in the OBTAIN user interface and how you can use them to plan and document your connectivity with a higher level of precision and completeness.

Central to connectivity in OBTAIN, is the Paths tab in the Device Assets dialog.



Each OBTAIN path documents a single OSI layer 2 data link and its relationship to the physical elements supporting the data link as well as layer 3 (network layer) information such as IP Address or WWPN. The Paths tab is where information for all 3 layers is available for viewing and update. Under-the-hood the information is available anywhere on a path but OBTAIN users are usually not interested in it when viewing connectivity for patch panels or trunks. As an example, the underlying OBTAIN data is capable of showing every IP address with connectivity through a patch panel … but who cares? So implementing MTP connectivity at patch panels and on trunk ribbons was relatively easy. We only had to deal with the physical layer issues.

But the Paths tab presented a very different challenge. A mixture of single-channel paths, multi-channel paths, layer 2 and 3 data would lead to a very confusing user interface. So the new MTP tab was created.

Before going into the mechanics of using the MTP tab and its 3 different modes, the graphics below will show examples of different physical layer connectivity to device Paths.

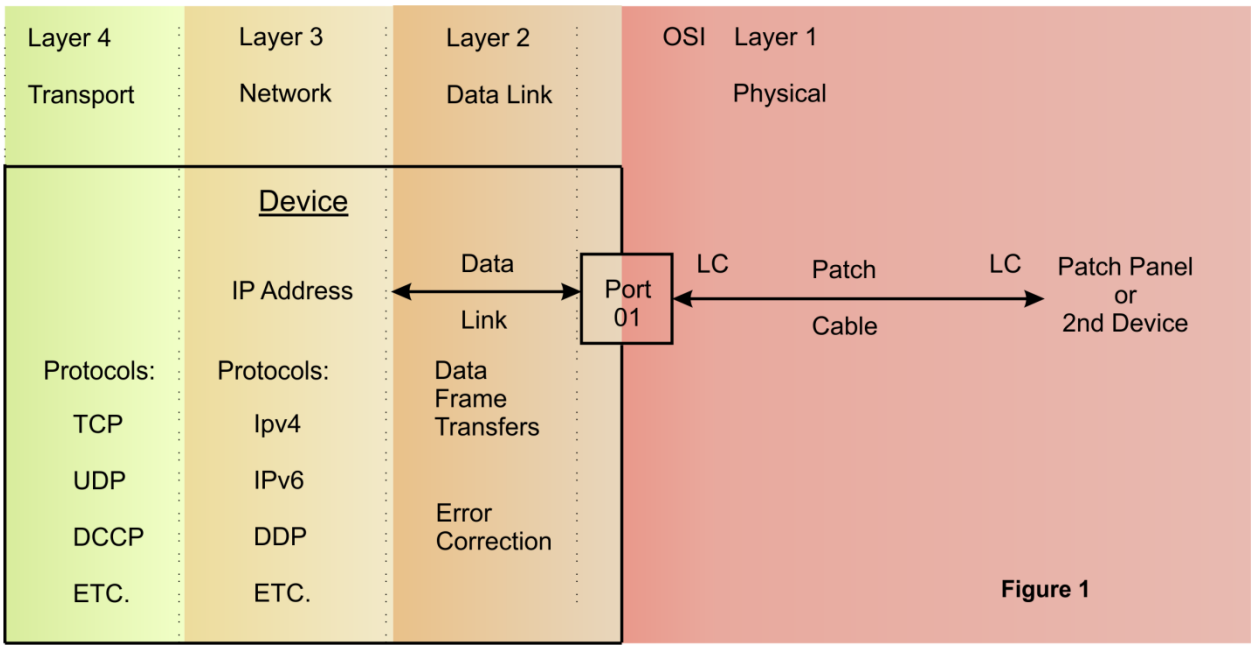


Figure 1 shows the relationships for a simple data path. We use the term "simple" because there is a one-to-one relationship between all the physical items on the path and the associated Layer2-4 items.

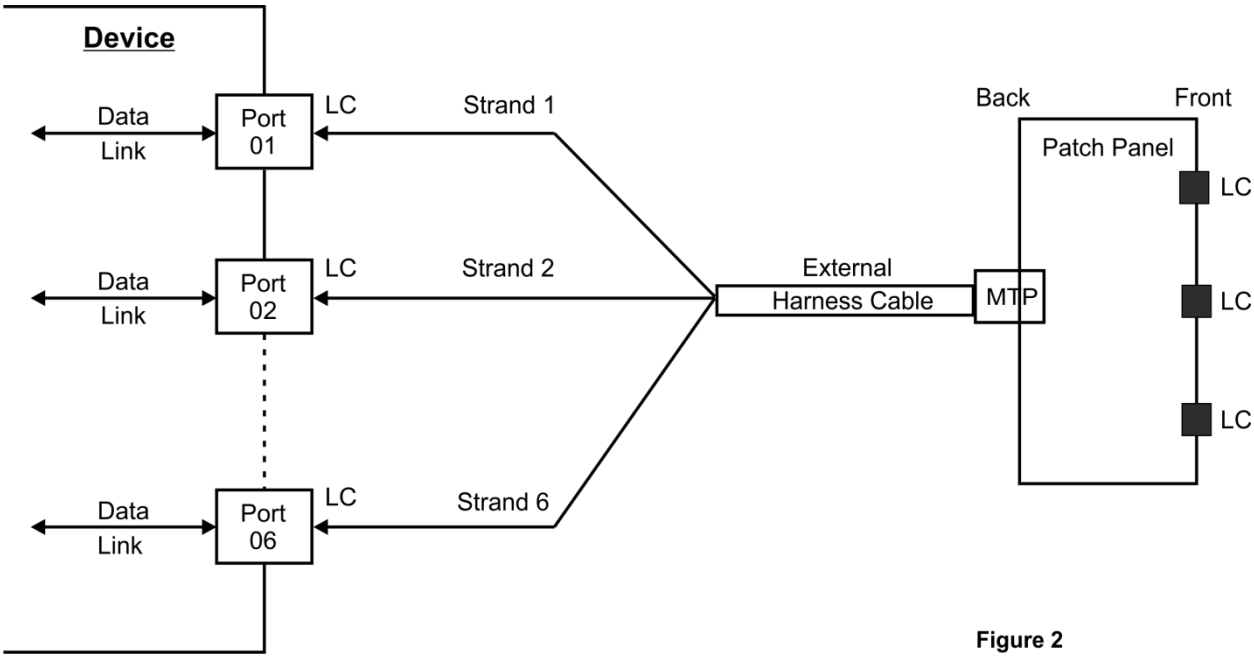


Figure 2 shows a more complex set of connectivity. Some elements on the Data Link paths, such as the External Harness cable and its MTP connector, provide physical media support for more than 1 Data Link.

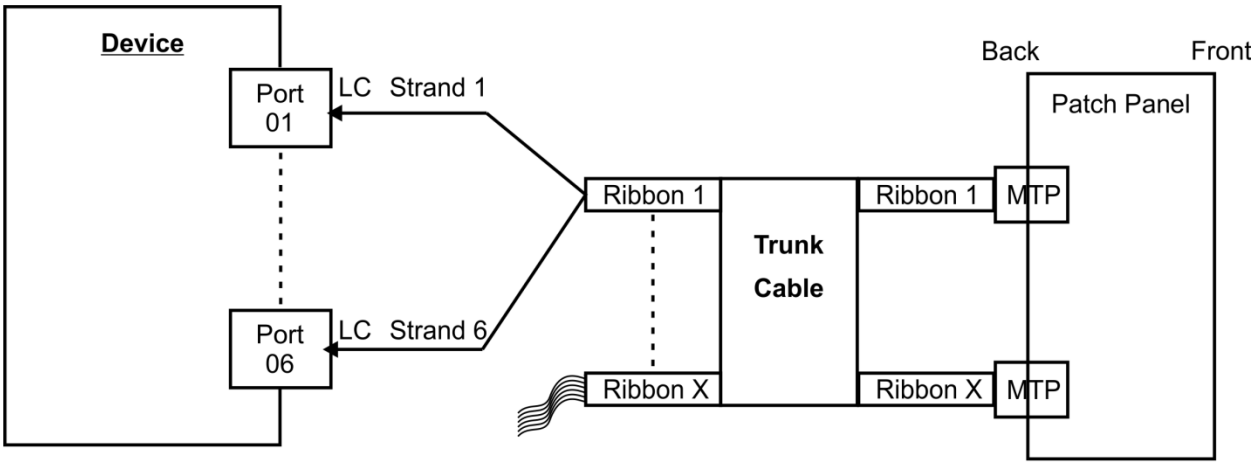


Figure 3

The connectivity in Figure 3 is very similar to that in Figure 2 with the added complexity that a Trunk cable contains multiple Ribbons or Legs, each of which are equivalent to a single External Harness cable.

OBTAIN has supported the connectivity in Figure 2 and 3 for many years with an easy to use connectivity interface. Physical connectivity can be viewed or updated at any point along the path. The device port is the only place in OBTAIN where you will encounter non-physical data items for the other OSI layers because users seem to only want to view/update this data when considering issues internal to the device.

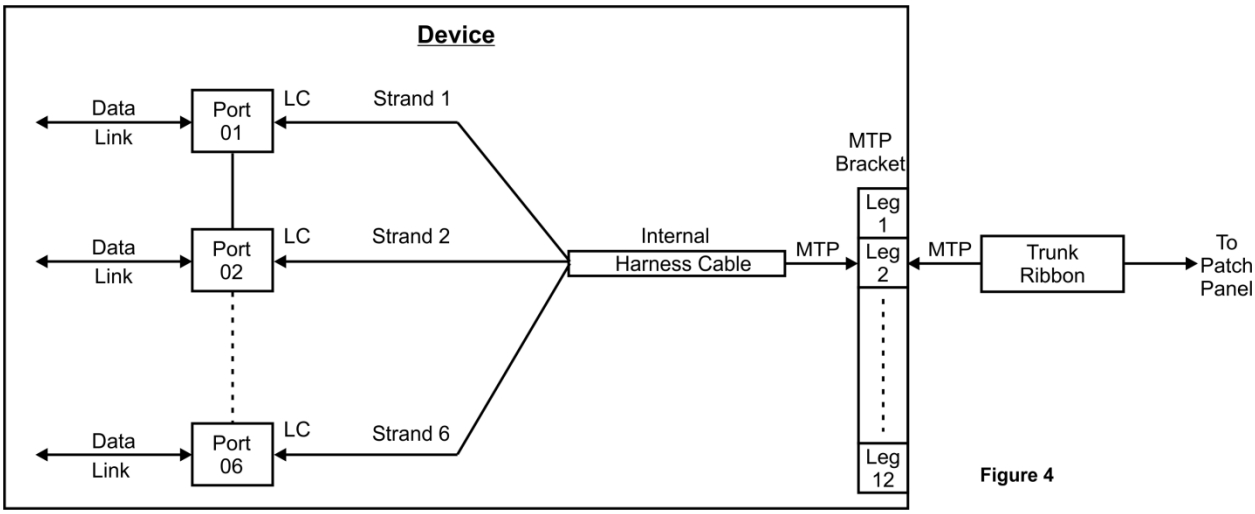


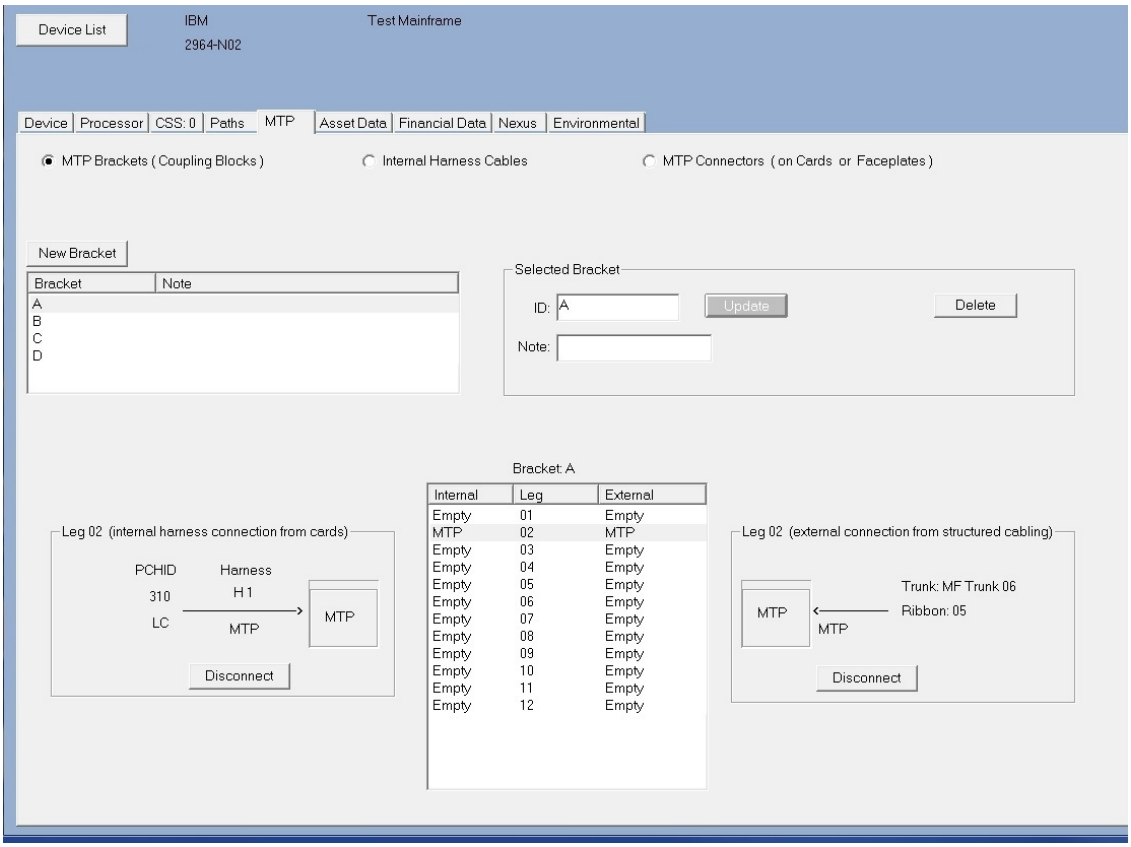
Figure 4

MTP brackets and Internal Harness cables posed a challenge. They are inside of their device and they physically support multiple Data Link paths. They are purchased with the device and decommissioned with it. Often a completely different set of people install/change the Internal Harness connectivity than those who manage the external connectivity for the device.

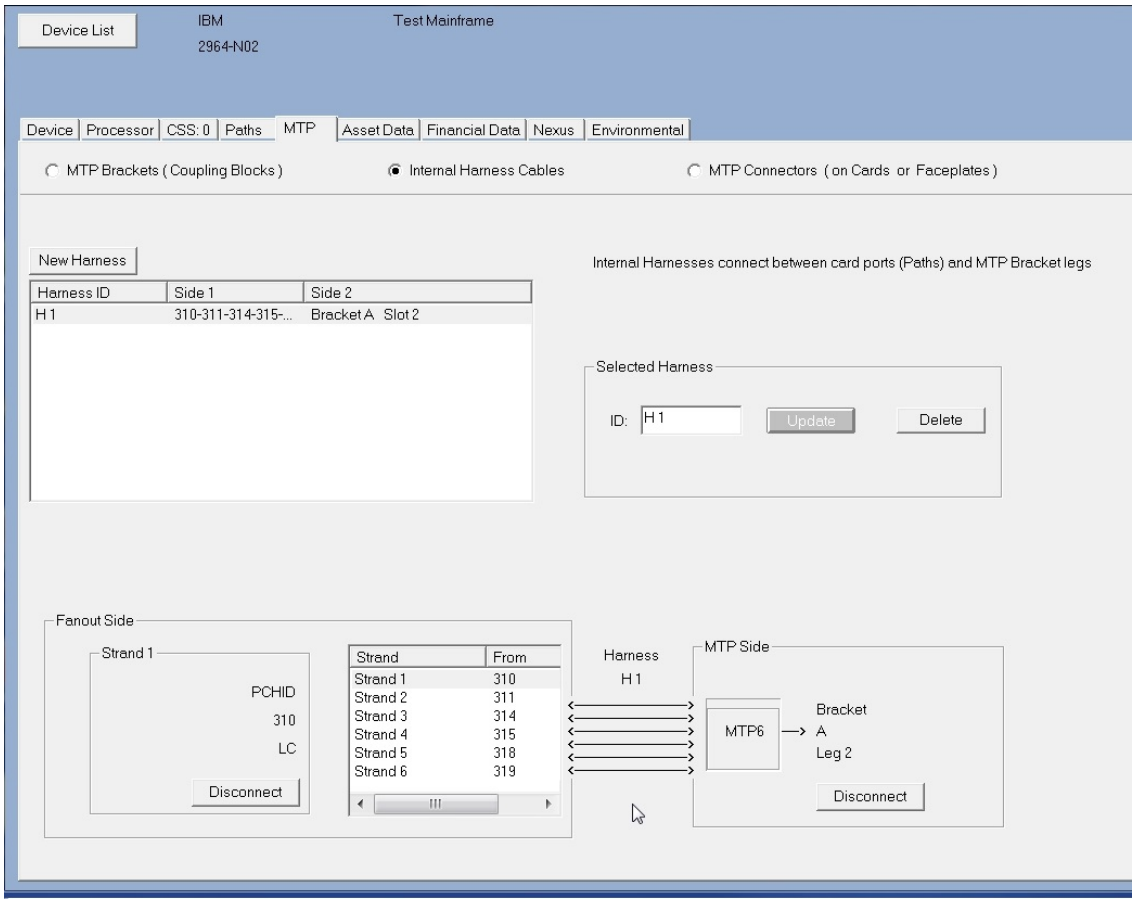
OBTAIN provides view/update of data for all physical and logical items inside of a device via tabs in the Device Assets dialog. To keep the Paths tab complexity reasonable, we created a new MTP tab for the creation of Internal Harnesses, MTP brackets, MTP ports on cards and the definition of relationships between these items and OBTAIN paths.

The MTP tab has 3 modes:

- MTP Brackets – for creation/deletion of MTP Brackets and connection to each leg internally (inside the device) via Internal Harness cables and externally via Trunks and External Harness cables.
- Internal Harness Cables – for creation/deletion of Internal Harness cables and connection of their fan-out strands to OBTAIN Paths and connection of their MTP side to MTP Bracket legs.
- MTP Ports – for creation/deletion of MTP ports on the cards of the device and for the association of each MTP port to 4 or 6 OBTAIN paths. This mode is also used to connect external MTP connectors on Trunks or External Harness cables to the MTP ports. (see Figure 5)



In this view of the MTP Brackets mode we see the Mainframe Server has 4 MTP Brackets inside of it. The internal side of the bracket, Leg 02, has an Internal Harness cable, H1, plugged into it. The external side of Leg 02 has Ribbon 05 of MF Trunk 06 plugged into it.



If we switch to the Internal Harness cable mode of the tab page, we see that the Mainframe Server has 1 Internal Harness cable inside of it. Cable H1 has 6 strands and they have been associated with individual OBTAIN Paths that can be seen on the Paths tab in the usual manner long part of the OBTAIN user interface. Once an Internal Harness cable has been associated with OBTAIN Paths, further connectivity to each path is altered here on the MTP tab.

In this example, the MTP side of the Internal Harness cable is plugged into Leg 02 of MTP bracket “A” also found inside the Server.

The previous screenshot shows that the External side of the MTP bracket “A” is connected to an external Trunk cable: MF Trunk 06, Ribbon 05.

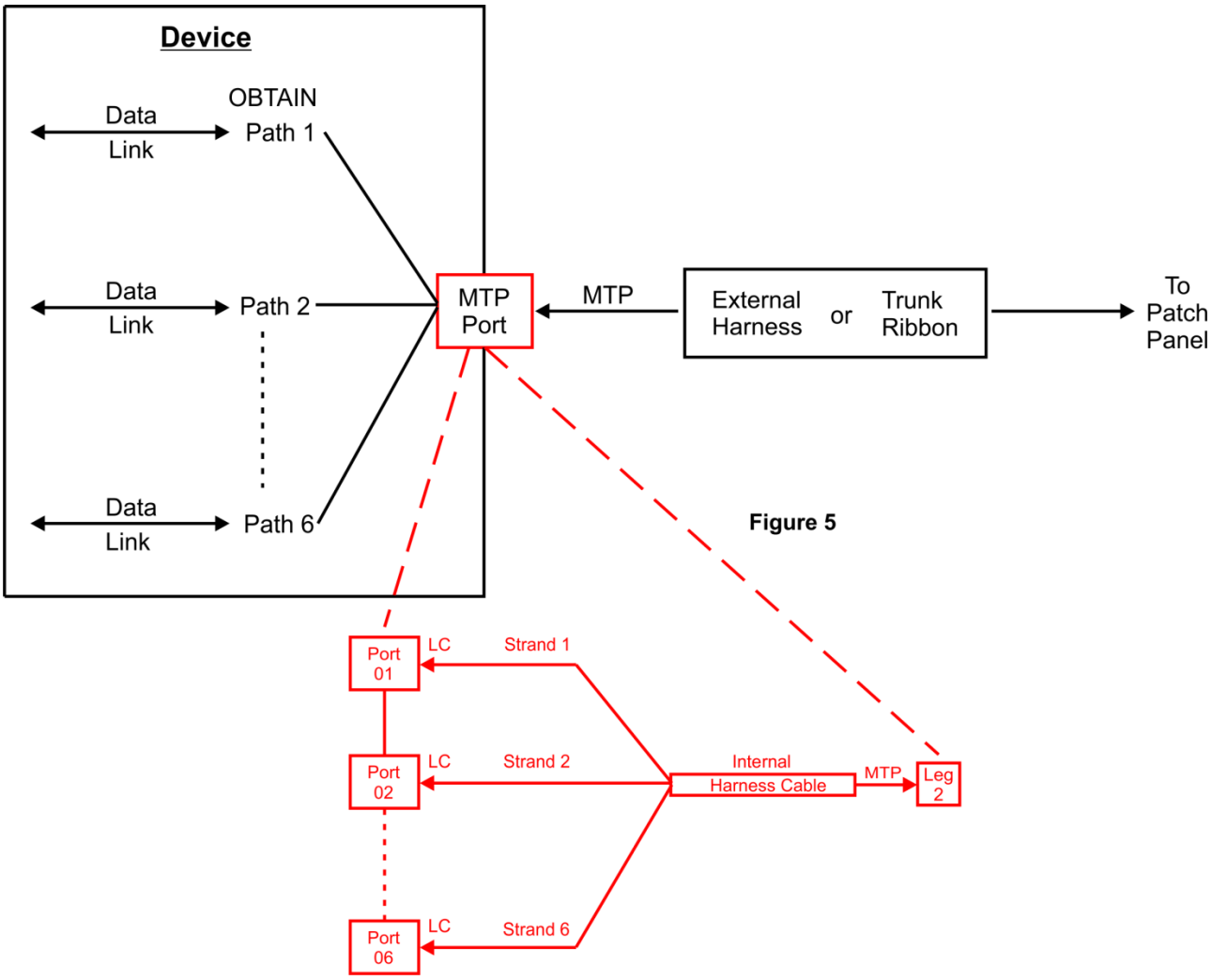


Figure 5

MTP ports on cards are not very common and are usually found only in large storage device or switches. If you examine Figure 4 and Figure 5, you can see that an MTP port effectively performs the same function as several Single Path ports + an Internal Harness cable + 1 leg of an MTP bracket … just squeezed into a much smaller form factor.

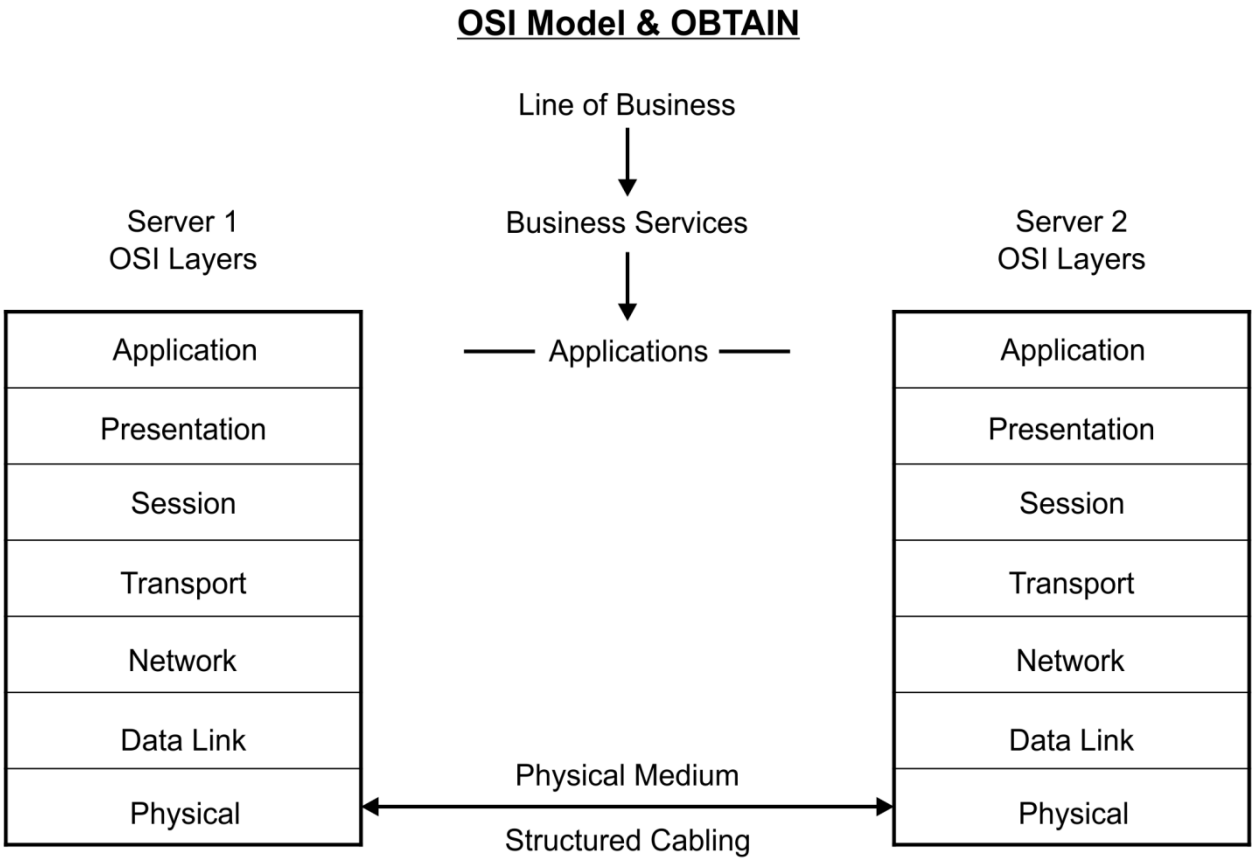


Figure 6

The OBTAIN database enables you to plan and document the lower 3 layers of the OSI model but it also extends to important relationships above and beyond the networking issues and protocol stack of the OSI model. Your senior management are concerned not with how Applications use the network and protocol stacks to pass data back and forth. They are concerned with how Applications support Business Services and how the services support Lines of Business.

With the OBTAIN database, you can integrate data from other tools and databases to literally know which Line of Business and the C-level executive who may be impacted when you unplug a patch cable.

Your cable connectivity has an important impact throughout your organization. As stated at the start of this document … "The OBTAIN software has strived to be the most comprehensive planning/documentation tool for data path connectivity." If you require further help in getting the most from this tool, please contact our customer support at support@obtain.com.