

MultiChannel TLV

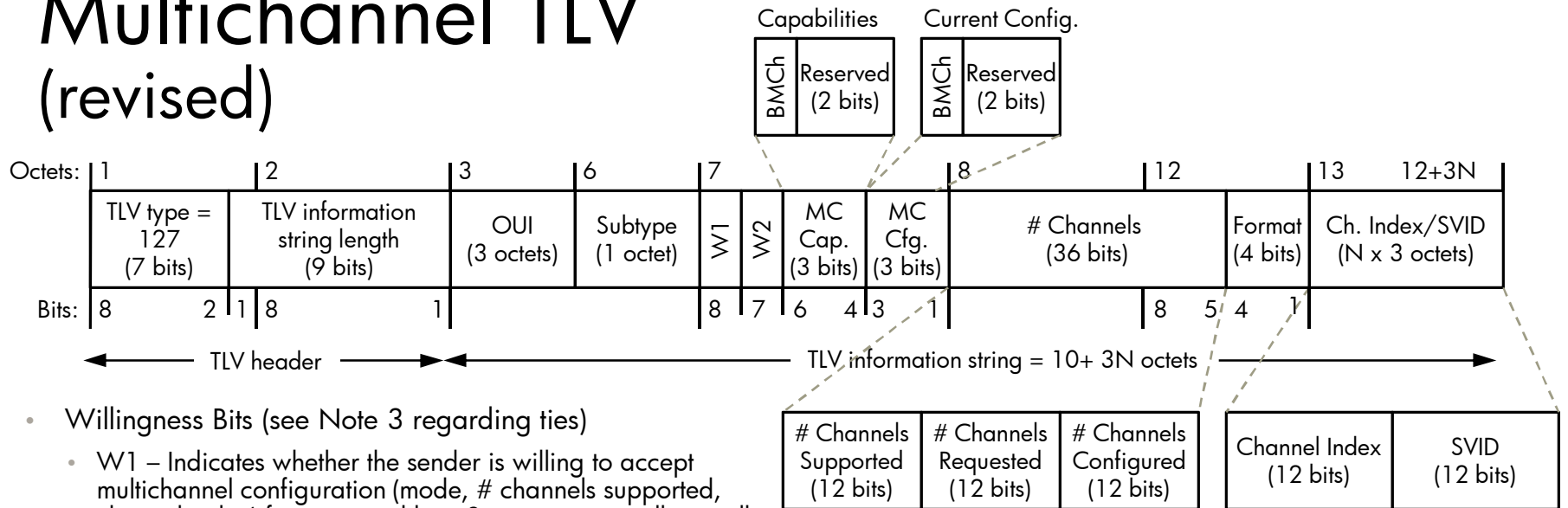
v16

Chuck Hudson

With some fairly radical revisions on format and exchanges.

February 2, 2010

Multichannel TLV (revised)



- Willingness Bits (see Note 3 regarding ties)
 - W1 – Indicates whether the sender is willing to accept multichannel configuration (mode, # channels supported, channel index) from its neighbor. Stations are usually unwilling.
 - W2 – Indicates whether the sender is willing to accept SVID channel assignments from its neighbor. Stations usually are willing.
- Multichannel Capabilities/Mode– Describes multichannel capabilities that can be supported by the sender.
 - Basic MultiChannel – (definition needed).
- Multichannel Current Configuration – Identifies the capabilities that are currently enabled by the sender.
- # Channels
 - Supported – Identifies the number of SVID channels that are supported by the sender.
 - Requested – The number of SVID channels that requested by the sender.
 - Configured – The number of SVID channels that are currently configured by the sender.

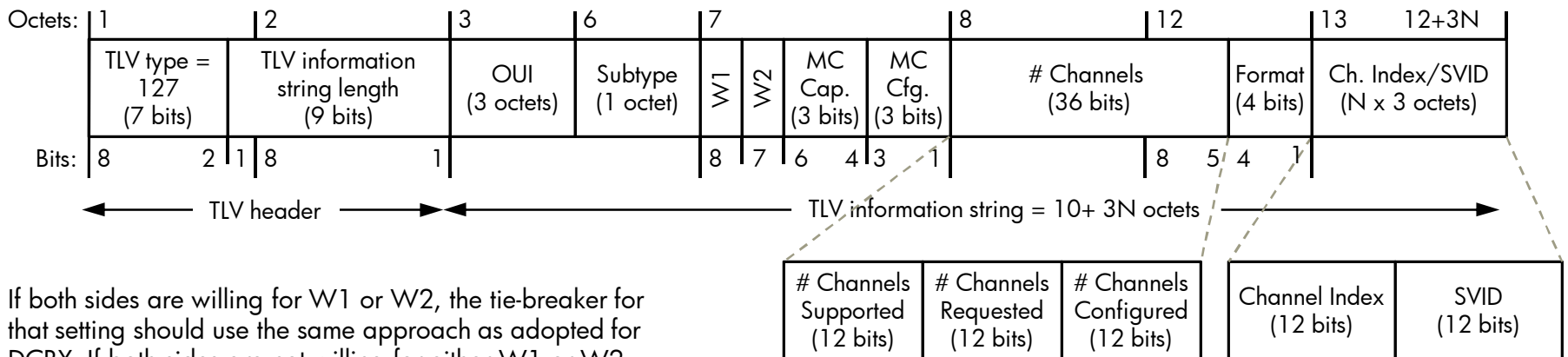
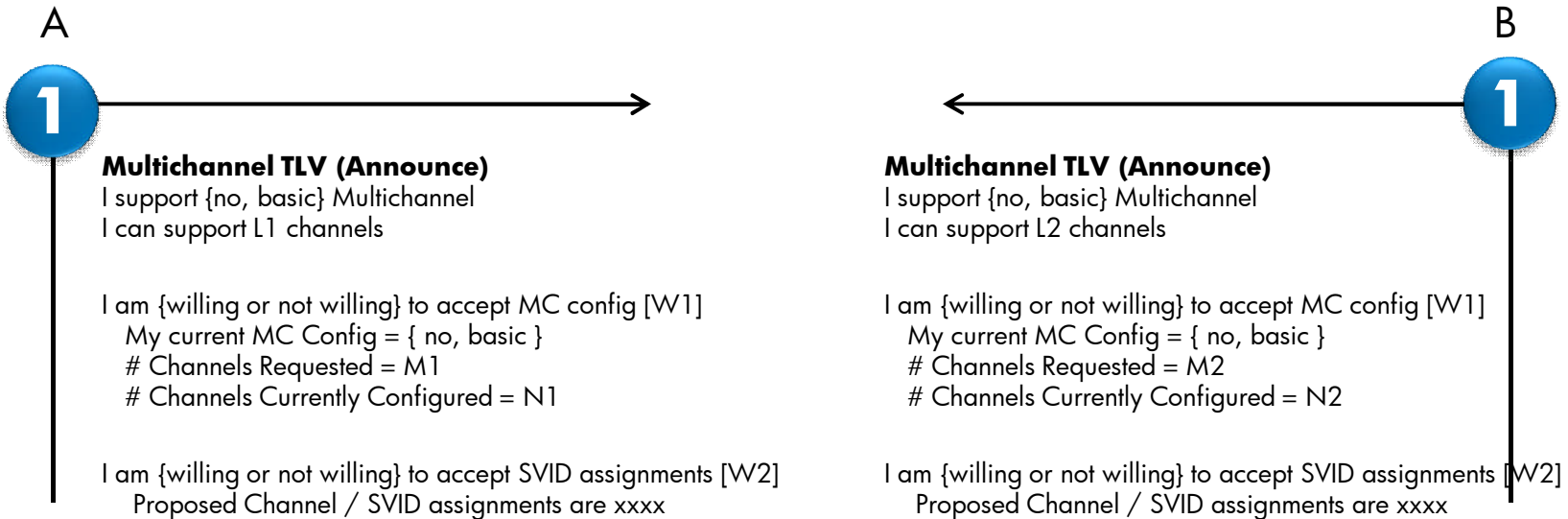
- Format – The format of the channel & SVID information.
- Ch#/SVID Pairs (for format – 0000b)
 - Channel # - indicates the index number of the channel. Allows insertion or deletion of specific channels while only listing the currently configured channels. The channel index should be between 1 and the maximum number of channels supported by the port.
 - SVID – The S-Tag VLAN ID assigned to the channel. This is identified by the bridge. SVID of 0xFFF means that no VLAN ID has been assigned

Note1: A maximum of 167 channels can be supported using format 0000b. Other formats (assuming sequential SVIDs) could be defined to allow support for 2K+ channels.

Note2: This listing could be sparse (in order to indicate arrival and removal of channels). The channel going away is recognized by that channel index/SVID pair is removed.

Note3: If both sides are willing for W1 or W2, the tie-breaker for that setting should use the same approach as adopted for DCBX. If both sides are not willing for either W1 or W2, then multi-channel mode is not configured.

Multichannel TLV Initial Exchange



If both sides are willing for W1 or W2, the tie-breaker for that setting should use the same approach as adopted for DCBX. If both sides are not willing for either W1 or W2, then multi-channel mode is not configured.

Basic Success Scenario

Station

Bridge

1

Multichannel TLV (Blind Propose)

MC Cap = {no, **basic**}
Channels Supported = 6
W1 = {**Not Willing**, Willing} to accept MC Config
Current MC Config = { no, **basic** }
Channels Requested = 4
Channels Currently Configured = 4
W2 = {Not Willing, **Willing**} to accept SVID assignment
Channel / SVID assignments: {(1, 1), (2, 2), (3, 3), (4, 4)}

3

Multichannel TLV (Accept SVID assignments)

MC Cap = {no, **basic**}
Channels Supported = 6
W1 = {**Not Willing**, Willing} to accept MC Config
Current MC Config = { no, **basic** }
Channels Requested = 4
Channels Currently Configured = 4
W2 = {Not Willing, **Willing**} to accept SVID assignment
Channel / SVID assignments: {(1, 29), (2, 7), (3, 345), (4, 10)}

1

Multichannel TLV (Announce)

MC Cap = {no, **basic**}
Channels Supported = 8
W1 = {Not Willing, **Willing**} to accept MC Config
Current MC Config = { no, **basic** }
Channels Requested = 0
Channels Currently Configured = 0
W2 = {**Not Willing**, Willing} to accept SVID assignment
Channel / SVID assignments: {}

2

Multichannel TLV (Match Config, Assign SVIDs)

MC Cap = {no, **basic**}
Channels Supported = 8
W1 = {Not Willing, **Willing**} to accept MC Config
Current MC Config = { no, **basic** }
Channels Requested = 0
Channels Currently Configured = 4
W2 = {**Not Willing**, Willing} to accept SVID assignment
Channel / SVID assignments: {(1, 29), (2, 7), (3, 345), (4, 10)}

Station adds a channel

continues from basic success scenario

Station

Bridge

4

Multichannel TLV (Add 5th channel)

MC Cap = {no, **basic**}
Channels Supported = 6
W1 = {**Not Willing**, Willing} to accept MC Config
Current MC Config = { no, **basic** }
Channels Requested = 5
Channels Currently Configured = 5
W2 = {Not Willing, **Willing**} to accept SVID assignment
Channel / SVID assignments: {(1,29), (2,7), (3,345), (4,10), (5, **5 ? 0xfff**) }

5

Multichannel TLV (Match Config, Assign SVID)

MC Cap = {no, **basic**}
Channels Supported = 8
W1 = {Not Willing, **Willing**} to accept MC Config
Current MC Config = { no, **basic** }
Channels Requested = 0
Channels Currently Configured = 5
W2 = {**Not Willing**, Willing} to accept SVID assignment
Channel / SVID assignments: {(1,29), (2,7), (3,345), (4,10), (5, **31**)}

6

Multichannel TLV (Accept SVID assignment)

MC Cap = {no, **basic**}
Channels Supported = 6
W1 = {**Not Willing**, Willing} to accept MC Config
Current MC Config = { no, **basic** }
Channels Requested = 5
Channels Currently Configured = 5
W2 = {Not Willing, **Willing**} to accept SVID assignment
Channel / SVID assignments: {(1,29), (2,7), (3,345), (4,10), (5,31) }

Station Removes a channel

continues from station
adds a channel scenario

Station

Bridge

7

Multichannel TLV (Remove 2nd Channel)

MC Cap = {no, **basic**}
Channels Supported = 6
W1 = {**Not Willing**, Willing} to accept MC Config
Current MC Config = { no, **basic** }
Channels Requested = 4
Channels Currently Configured = 4
W2 = {Not Willing, **Willing**} to accept SVID assignment
Channel / SVID assignments: {(1,29), (3,345), (4,10), (5,31)}

8

Multichannel TLV (Match Config)

MC Cap = {no, **basic**}
Channels Supported = 8
W1 = {Not Willing, **Willing**} to accept MC Config
Current MC Config = { no, **basic** }
Channels Requested = 0
Channels Currently Configured = 4
W2 = {**Not Willing**, Willing} to accept SVID assignment
Channel / SVID assignments: {(1,29), (3,345), (4,10), (5,31)}

Drop #channels supported

continues from basic success scenario

Station

Bridge

6a

Multichannel TLV (Matches dropped channel)

MC Cap = {no, **basic**}
Channels Supported = 6
W1 = {**Not Willing**, Willing} to accept MC Config
Current MC Config = { no, **basic** }
Channels Requested = 4
Channels Currently Configured = 3
W2 = {Not Willing, **Willing**} to accept SVID assignment
Channel / SVID assignments: {(1,29), (2,7), (3,345)}

6b

Multichannel TLV (Chooses to drop different channel)

MC Cap = {no, **basic**}
Channels Supported = 6
W1 = {**Not Willing**, Willing} to accept MC Config
Current MC Config = { no, **basic** }
Channels Requested = 4
Channels Currently Configured = 3
W2 = {Not Willing, **Willing**} to accept SVID assignment
Channel / SVID assignments: {(1,29), (3,345), (4,10) }

5

Multichannel TLV (Drops # channels supported)

MC Cap = {no, **basic**}
Channels Supported = 3
W1 = {Not Willing, **Willing**} to accept MC Config
Current MC Config = { no, **basic** }
Channels Requested = 0
Channels Currently Configured = 3
W2 = {**Not Willing**, Willing} to accept SVID assignment
Channel / SVID assignments: {(1,29), (2,7), (3,345)}

Note: Best practice would be for the station to have the requested channels in rough priority order based on channel index (most important is channel index 1, etc.). This will smoother handling of situations when the bridge can not supply the full number of requested channels.

Insufficient channels on bridge

Station

Bridge

1

Multichannel TLV (Blind Propose)

MC Cap = {no, **basic**}
Channels Supported = 6
W1 = {**Not Willing**, Willing} to accept MC Config
Current MC Config = { no, **basic** }
Channels Requested = 4
Channels Currently Configured = 4
W2 = {Not Willing, **Willing**} to accept SVID assignment
Channel / SVID assignments: {(1, 1), (2, 2), (3, 3), (4, 4)}

3

Multichannel TLV (Accept SVID assignments)

MC Cap = {no, **basic**}
Channels Supported = 6
W1 = {**Not Willing**, Willing} to accept MC Config
Current MC Config = { no, **basic** }
Channels Requested = 4
Channels Currently Configured = 3
W2 = {Not Willing, **Willing**} to accept SVID assignment
Channel / SVID assignments: {(1, 29), (2, 7), (3, 345)}

1

Multichannel TLV (Announce)

MC Cap = {no, **basic**}
Channels Supported = 3
W1 = {Not Willing, **Willing**} to accept MC Config
Current MC Config = { no, **basic** }
Channels Requested = 0
Channels Currently Configured = 0
W2 = {**Not Willing**, Willing} to accept SVID assignment
Channel / SVID assignments: {}

2

Multichannel TLV (Match Config, Assign SVIDs)

MC Cap = {no, **basic**}
Channels Supported = 3
W1 = {Not Willing, **Willing**} to accept MC Config
Current MC Config = { no, **basic** }
Channels Requested = 0
Channels Currently Configured = 3
W2 = {**Not Willing**, Willing} to accept SVID assignment
Channel / SVID assignments: {(1, 29), (2, 7), (3, 345)}

Note: Best practice would be for the station to have the requested channels in rough priority order based on channel index (most important is channel index 1, etc.). This will smoothen handling of situations when the bridge can not supply the full number of requested channels.

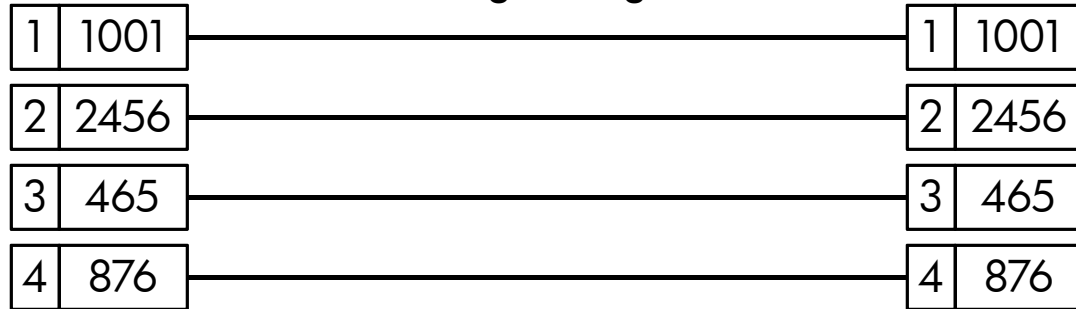
Possible formats for sending SVID information.

phys_port.index uses SVID

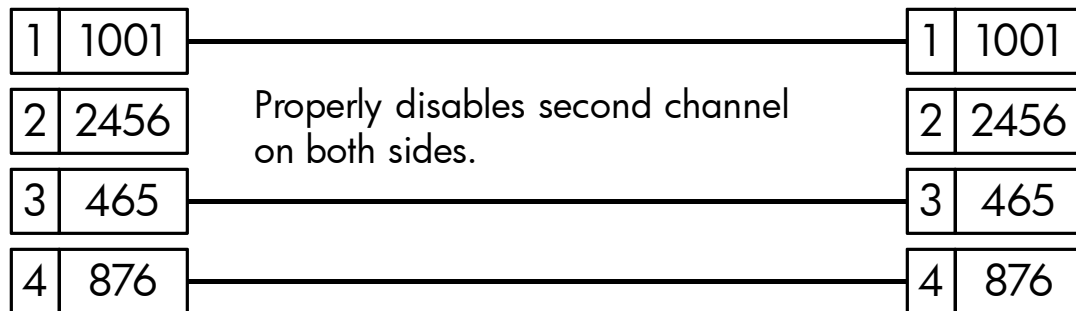
Index+SVID SVID only

1	1001	1001
2	2456	465
3	465	465
4	876	876

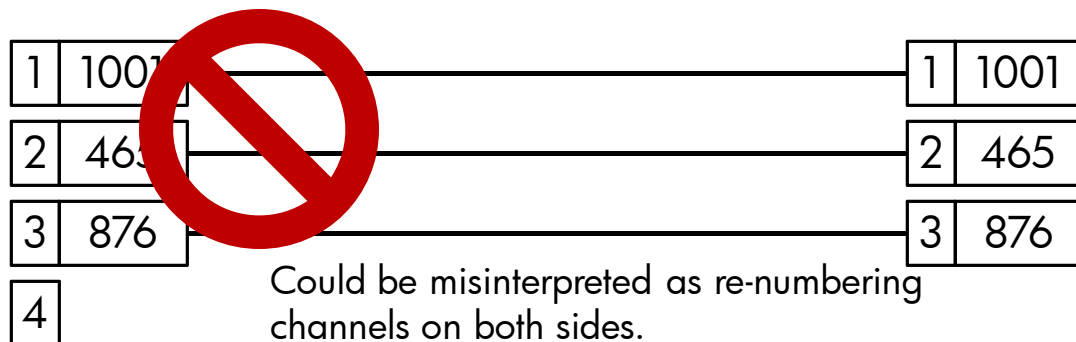
Resulting Configuration



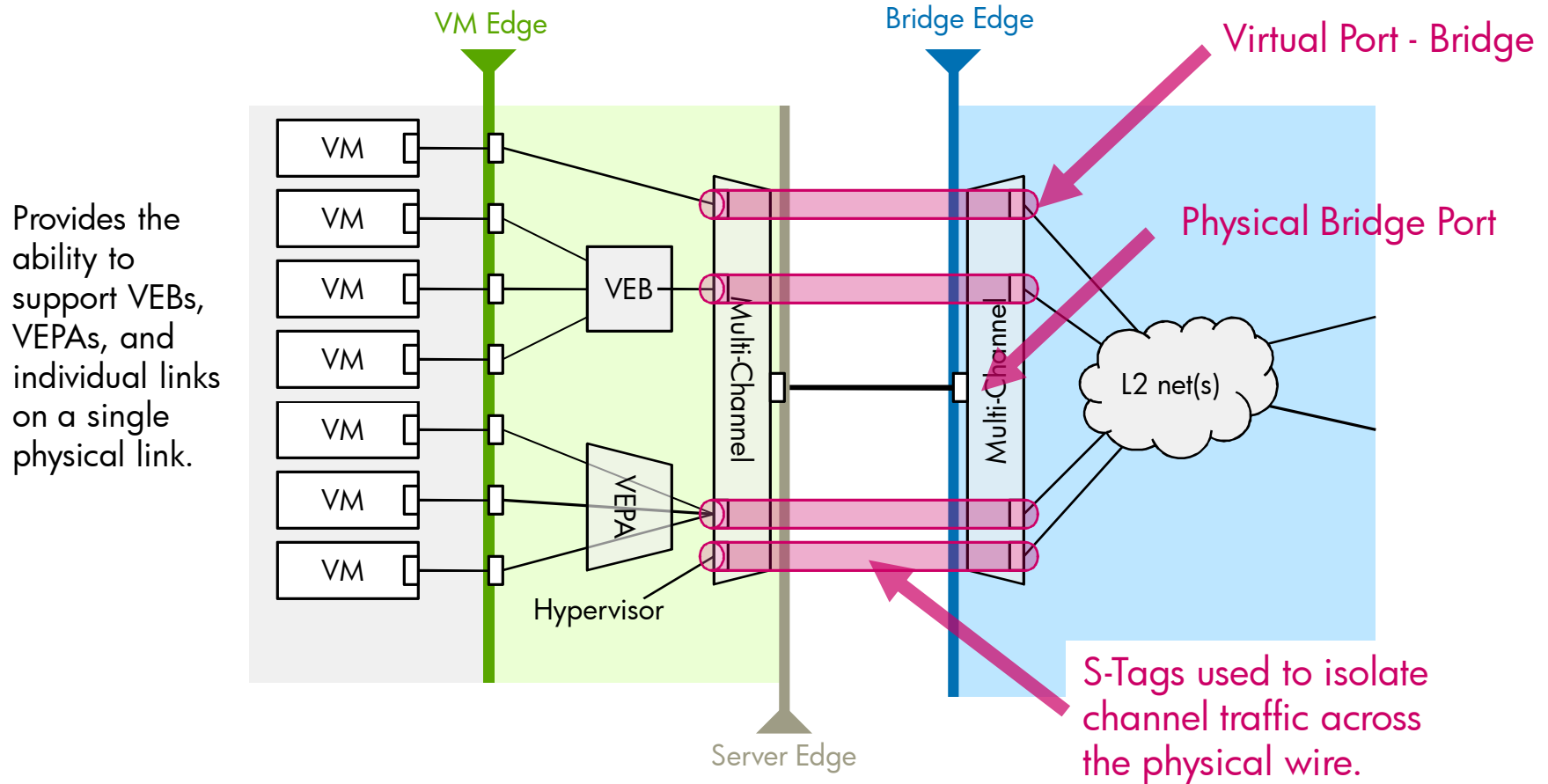
1	1001
3	465
4	876



1001
465
876



Multi-Channel: Multiple isolated channels sharing a single physical link.



Multi-channel TLV establishes the basic channels.

The specific configuration of individual channels is handled by the EVB and VSI TLVs.