

This document defines an LLDP protocol extension and a set of managed objects that provide additional features for neighbor and link information, as defined by HYTEC Geraetebau GmbH.

### TLV frame format

TLV Type	TLV information string length	Hytec OUI	Subtype	Data		
				Group	Identifier	Data
127		0x30b216	0x00 – 0xff	3 bits	5 bits	0-507 octets
7 bits	9 bits	3 octets	1 octet	3 bits	5 bits	0-507 octets

### Subtype 01 – Transceiver

#### Identifier Table

Group	Identifier	Data Length	Description
0	0	-	Reserved
1		1-64 bytes	<b>Transceiver identifier</b> encoded as ASCII string.
	0		Reserved
	1		<b>Transceiver vendor, product and revision.</b> Example: “Hytec FO-3750A”
2		4 bytes data	<b>Transceiver bridgeable distance</b> in meters. Multiple TLV are allowed in a single frame. Example: Value 0x00003a98 is single mode transceiver with bridgeable distance of 15000 meters.
	0		Reserved
	1		<b>Single mode (9/125 um)</b> fibre transceiver, data field is 32 bit unsigned representation of bridgeable distance in meters.
	2		<b>Multi mode (50/125 um)</b> fibre transceiver, data field is 32 bit unsigned representation of bridgeable distance in meters.
	3		<b>Multi mode (62.5/125 um)</b> fibre transceiver, data field is 32 bit unsigned representation of bridgeable distance in meters.

3		4 bytes data	<b>Measurement data</b>
	0		Reserved
	1		<b>Tx current output power</b> in steps of 0.1 uW. Data representation is 32 bit unsigned integer in 0.1uW.
	2		<b>Rx current input power</b> in steps 0.1 uW. Data representation is 32 bit unsigned integer in 0.1 uW.
	3		<b>Rx input SNR</b> in dB encoded as fractional integer.
	4		<b>Line loss</b> in dB encoded according as fractional integer.

## Subtype 02 – Trace

### Identifier Table

Group	Identifier	Data Length	Description
0	0	-	Reserved
1		1-64 bytes data	<b>MAC Trace</b>
	0	-	Reserved
	1	13 bytes data	<b>MAC Trace Request</b> 1-6: Requested <b>Trace MAC address</b> in 48 bit format. 7-12: <b>Requester's MAC address</b> in 48 bit format. 13: <b>Maximum depth</b> as 8 bit unsigned integer.
	2	13 Bytes data	<b>MAC Trace Reply</b> 1-6: Requested <b>Trace MAC address</b> in 48 bit format. 7-12: <b>Answering MAC address</b> in 48 bit format. 13: <b>Actual depth</b> as 8 bit unsigned integer. Copied from Trace Request.
	3	1-64 bytes data	<b>Name of replying device</b> encoded as ASCII string. Device name example: "Station 10"
4	1-64 bytes data	<b>Outgoing port name</b> of replying device encoded as ASCII string. Port name example: "Port1"	

	5	4 bytes data	<b>IPv4 address of replying device</b> encoded as 4 octet unsigned integer. Device IP 10.0.0.1 example: 0x0a000001
	6	1 byte data	<b>End of Trace</b> End Reason encoded as 8 bit unsigned integer. 0x00: Unspecified 0x01: Trace loop 0x02: No entry found 0x03: Entry found is local 0x04-0xff: Reserved
	7	16 bytes data	<b>IPv6 address of replying device</b> encoded as 16 octet unsigned integer. Device IP example: 0x0a0::01
	8	1-64 bytes data	<b>Incoming port name</b> of replying device encoded as ASCII string. Port name example: "Port1"
	9	4 bytes data	<b>Trace identifier</b> encoded as 32 bit unsigned integer. Example: 0x34bc8a05

### Encoding of data types

32 bits unsigned integer	Data representation is 32 bit unsigned integer with defined unit. Example for unit 0.1 uW: Value 1 is 0.1 uW Value 65535 is 6.5535 mW Value 4294967296 is 429.4967296 W
Fractional integer	Higher 24 bits are 2's complement representation of non-fractional SNR value. Lower 8 bits are fractions of SNR value, with most significant bit representing value of 0.5 ( $=0.5^1$ ) and least significant bit representing value of 0.00390625 ( $=0.5^8$ ). Example: Value 0x00007f 80 is 127.5 Value 0x00003a c0 is 58.75 Value 0xffffe7 e0 is -25.875