Layer Rates

Introduction

Telecommunications information conveyed in a transport network is a signal with a technology-dependent format, and, optionally, a specific transmission rate (bandwidth), which is transmitted or received on network connections or in a connectionless way. ITU-T Rec. G.805 (Generic Functional Architecture of Transport Networks) considers each specific signal to be bound to a connection-oriented transmission layer and introduces the term characteristic information (CI) for the signal. It decomposes the transport network into a number of single layer networks with a client/server association between adjacent layer networks. A single layer network describes the generation, transport, and termination of a particular characteristic information. ITU-T Rec. G.852.2 (Enterprise Viewpoint Description of Transport Network Resource Model, March 1999) defines corresponding enterprise-wide network resource concepts that are management abstractions of G.805 transport network architectural components.

The functional modelling concepts of MTNM according to the supporting document *SD1-18_layers.pdf* are strongly based on ITU-T Recs. G.805 and G.852.2 but extend the layering concepts set out there by using multi-layer encapsulations identified from real network element behaviour to provide high modelling and performance advantages for information transfer between the NML and EML. In MTNM terms the characteristic information of a transmission layer is called **Layer Rate**. There is a standardised list of Layer Rates, the full list is covered in this document. Layer Rates from this standard list should be used wherever possible. The standardised list represents the transport technologies currently incorporated in the MTNM model. It will be augmented in subsequent releases through the normal approval process.

A Layer Rate in the range 0 to 9999 is considered as a ”standardised Layer Rate”.

In addition to the range of standardised defined layers there is also a range of numbers (10.000 and above) allocated for proprietary usage. A Layer Rate in this range is considered a “proprietary Layer Rate”. The use of a number in this range is up to an individual EML vendor.

It is recommended that an EML vendor:

- Administer the range to ensure that each number is used once and only once and for all occasions of usage for all time this number carries the same meaning for all of that vendor’s products.
- Ensure that a number in this range is used only when the Layer Rate concerned is not already supported in the range of standard Layer Rates (numbers below 10.000) of the latest published release of the interface.
- Endeavours to have the Layer Rate standardised via appropriate contributions.
- Endeavours to migrate to the standard Layer Rate number if and when it is standardised.

It is the responsibility of the vendor to police the above.

It is recommended that an NML vendor:

- Allow proprietary Layer Rate usage when the latest version of the standard does not support the Layer Rate that is required to be described.
- Endeavours to support the EML vendor migration to the standard Layer Rate number if and when the Layer Rate is standardised.

An interface is considered as “not fully conformant” if a proprietary Layer Rate is used where a standard Layer Rate is available.

The EML vendor should publish a list of proprietary Layer Rates that are used along with their definition. When a Layer Rate has been subsumed into the standard this list should be augmented with the equivalence and obsolescence statement.

The proprietary layerRate should be used where:

- A transport technology within a product is as yet to be incorporated in the MTNM model.
  - This Layer Rate should be marked as “being standardized” in its definition in the conformance statement.
  - When the transport technology is incorporated the vendor should identify the equivalence and obsolescence in their conformance statement.
- A proprietary transport technology has been used which is necessary to expose over the interface for monitoring and/or configuration purposes.
  - This Layer Rate should be marked as “proprietary” in its definition in the conformance statement.
- An NE only provides partial information on the Layer Rate.
  - This Layer Rate should be marked as “partial” in its definition and should where possible be related to Layer Rates that it covers.

Where a proprietary Layer Rate is used it may be necessary to name a TP (CTP or FTP) from that Layer Rate. In this case a name-string similar in structure to that used for a standardised Layer Rate (in the layerRate list) should be allocated by the vendor and recorded in the conformance statement. To conform to the specification this name-string will start with “PROP” (e.g. “PROP_sts_291c”).

Specification of Standardised Layer Rates

Layer rates that have been added in Version 3.2 are in blue.

ID	Layer Identifier	Object Naming String	Description
0			not used
1	LR_Not_Applicable		the layer is not relevant
29-39			not used
51	LR_Async_FOTS_150M		150 Mbit/s legacy async optical signal
52	LR_Async_FOTS_417M		417 Mbit/s legacy async optical signal
53	LR_Async_FOTS_560M		560 Mbit/s legacy async optical signal
54	LR_Async_FOTS_565M		565 Mbit/s legacy async optical signal
55	LR_Async_FOTS_1130M		1130 Mbit/s legacy async optical signal
56	LR_Async_FOTS_1G7		1,7 Gbit/s legacy async optical signal
57	LR_Async_FOTS_1G8		1,8 Gbit/s legacy async optical signal
43	LR_ATM_NI	atmnetworkinterface	for ATM Network Interfaces (UNI and NNI)

ID	Layer Identifier	Object Naming String	Description
45	LR_ATM_VC	vci	for ATM Virtual Channels
44	LR_ATM_VP	vpi	for ATM Virtual Paths
58	LR_D1_Video		video capable port
50	LR_DIGITAL_SIGNAL_RATE	dsr	raw binary electrical signal of unspecified rate
69	LR_DS0_64K	ds0	DS0 CTP layer rate
299	LR_DSL		includes the optional Physical Media Specific TC sublayer (PMS-TC) and the upper part of the Physical Media Dependent sublayer (PMD), the lower part being composed of LR_DIGITAL_SIGNAL_RATE and LR_PHYSICAL_ELECTRICAL.
79	LR_DSR_1_5M	dsr_1_5M	1,5 Mbit/s digital signal rate
80	LR_DSR_2M	dsr_2M	2 Mbit/s digital signal rate
300	LR_DSR_4M	dsr_4M	4 Mbit/s digital signal rate
81	LR_DSR_6M	dsr_6M	6 Mbit/s digital signal rate
82	LR_DSR_8M	dsr_8M	8 Mbit/s digital signal rate
301	LR_DSR_16M	dsr_16M	16 Mbit/s digital signal rate
83	LR_DSR_34M	dsr_34M	34 Mbit/s digital signal rate
84	LR_DSR_45M	dsr_45M	45 Mbit/s digital signal rate
85	LR_DSR_140M	dsr_140M	140 Mbit/s digital signal rate
86	LR_DSR_565M	dsr_565M	565 Mbit/s digital signal rate
302	LR_DSR_DVB	dsr_dvb	270 Mbits/s DVB-ASI digital signal rate
97	LR_DSR_Fast_Ethernet	dsr_fast_ethernet	10/100 Mbit/s Ethernet
87	LR_DSR_Gigabit_Ethernet	dsr_Gb	Gigabit_Ethernet digital signal rate
113	LR_DSR_10Gigabit_Ethernet	dsr_10Gb_ethernet	10 Gbit/s Ethernet
72	LR_DSR_OC1_STM0	dsr_0	STM-0 digital signal rate

ID	Layer Identifier	Object Naming String	Description
73	LR_DSR_OC3_STM1	dsr_1	STM-1 digital signal rate
93	LR_DSR_2xSTM1	dsr_2x1	2 times STM-1 radio multiplexing
74	LR_DSR_OC12_STM4	dsr_4	STM-4 digital signal rate
75	LR_DSR_OC24_STM8	dsr_8	STM-8 digital signal rate
76	LR_DSR_OC48_and_STM16	dsr_16	STM-16 digital signal rate
77	LR_DSR_OC192_and_STM64	dsr_64	STM-64 digital signal rate
78	LR_DSR_OC768_and_STM256	dsr_256	STM-256 digital signal rate
110	LR_DSR_OTU1	dsr_otu1	DSR of Optical channel Transport Unit 1
111	LR_DSR_OTU2	dsr_otu2	DSR of Optical channel Transport Unit 2
112	LR_DSR_OTU3	dsr_otu3	DSR of Optical channel Transport Unit 3
303	LR_DVB	dvb	Digital Video Broadcast (ASI)
5	LR_E1_2M	e1	2Mbit/s PDH signal
6	LR_E2_8M	e2	8Mbit/s PDH signal
94	LR_E20_2x2M	e20	2 times 2 Mbit/s PDH signal
95	LR_E30_8x2M	e30	8 times 2 Mbit/s PDH signal
7	LR_E3_34M	e3	34 Mbit/s PDH signal
8	LR_E4_140M	e4	140 Mbit/s PDH signal
9	LR_E5_565M	e5	565 Mbit/s PDH signal
98	LR_Encapsulation	encapsulation	for Ethernet, the following encapsulation protocols apply: HDLC/PPP, HDLC/LAPS, ML/PPP, and GFP Transparent or Frame Mapped types
59	LR_ESCON		IBM protocol for mainframes
96	LR_Ethernet	ethernet	all Ethernet rates
60	LR_ETR		IBM protocol for mainframes
~~61~~	~~LR_Fast_Ethernet~~		~~Fast Ethernet (legacy)~~deprecated
62	LR_FC_12_133M		133 Mbit/s Fibre Channel protocol

ID	Layer Identifier	Object Naming String	Description
63	LR_FC_25_266M		266 Mbit/s Fibre Channel protocol
64	LR_FC_50_531M		531 Mbit/s Fibre Channel protocol
65	LR_FC_100_1063M		1063 Mbit/s Fibre Channel protocol
66	LR_FDDI		
67	LR_FICON		IBM Protocol for mainframes
297	LR_FR_IF	frif	Frame Relay Interface
298	LR_FR_PVC	dlci	The FR PVC identified by a unique DLCI per Frame Relay interface
99	LR_Fragment	not used for naming; its purpose is solely to indicate the existence of a server layer containment relationship	used for inverse multiplexing modeling (Virtual Concatenation for SONET/SDH and IMA)
~~68~~	~~LR_Gigabit_Ethernet~~		~~Gigabit ethernet~~ **Deprecated**
306	LR_IPTV	iptv	Television over Internet Protocol
70	LR_ISDN_BRI		ISDN Basic Rate Interface PTP layer rate
305	LR_LAG_Fragment	not used for naming; its purpose is solely to indicate the existence of a server layer containment relationship	Link Aggregation
24	LR_Line_OC1_STS1_and_MS_STM0	line1_ms0	STM-0 multiplex section
25	LR_Line_OC3_STS3_and_MS_STM1	line3_ms1	STM-1 multiplex section
26	LR_Line_OC12_STS12_and_MS_STM4	line12_ms4	STM-4 multiplex section
89	LR_Line_OC24_STS24_and_MS_STM8	line24_ms8	STM-8 multiplex section
27	LR_Line_OC48_STS48_and_MS_STM16	line48_ms16	STM-16 multiplex section
28	LR_Line_OC192_STS192_and_MS_STM64	line192_ms64	STM-64 multiplex section
91	LR_Line_OC768_STS768_and_MS_STM256	line768_ms256	STM-256 multiplex section
13	LR_Low_Order_TU3_VC3	tu3_vc3	VC3 SONET/SDH path signal

ID	Layer Identifier	Object Naming String	Description
104	LR_OCH_Data_Unit_1	odu1	Optical channel Data Unit 1 (trail and tandem connection monitoring/termination)
105	LR_OCH_Data_Unit_2	odu2	Optical channel Data Unit 2 (trail and tandem connection monitoring/termination)
106	LR_OCH_Data_Unit_3	odu3	Optical channel Data Unit 3 (trail and tandem connection monitoring/termination)
107	LR_OCH_Transport_Unit_1	otu1	Optical channel Transport Unit 1 (trail termination)
108	LR_OCH_Transport_Unit_2	otu2	Optical channel Transport Unit 2 (trail termination)
109	LR_OCH_Transport_Unit_3	otu3	Optical channel Transport Unit 3 (trail termination)
40	LR_Optical_Channel	frequency	for WDM wavelength
41	LR_Optical_Multiplex_Section	oms	for WDM wavelength bands
49	LR_OPTICAL_SECTION		represents the wavelength termination for a non DWDM system, i.e. used for all kinds of single-lambda ports
42	LR_Optical_Transmission_Section		for WDM entire optical signal, i.e. used for OTS and OMS layers of OTM-n.m (n≥1)
46	LR_PHYSICAL_ELECTRICAL		analogue signal on electrical physical media
48	LR_PHYSICAL_MEDIALESS		specifies physical media for technologies such as radio
47	LR_PHYSICAL_OPTICAL		analogue signal on optical physical media
71	LR_POTS		POTS PTP layer rate
304	LR_RPR	rpr	Resilient Packet Ring
19	LR_Section_OC1_STS1_and_RS_STM0	section1_rs0	STM-0 regenerator section
20	LR_Section_OC3_STS3_and_RS_STM1	section3_rs1	STM-1 regenerator section
21	LR_Section_OC12_STS12_and_RS_STM4	section12_rs4	STM-4 regenerator section

ID	Layer Identifier	Object Naming String	Description
88	LR_Section_OC24_STS24_and_RS_STM8	section24_rs8	STM-8 regenerator section
22	LR_Section_OC48_STS48_and_RS_STM16	section48_rs16	STM-16 regenerator section
23	LR_Section_OC192_STS192_and_RS_STM64	section192_rs64	STM-64 regenerator section
90	LR_Section_OC768_STS768_and_RS_STM256	section768_rs256	STM-256 regenerator section
14	LR_STS1_and_AU3_High_Order_VC3	sts1_au3	AU3 SONET/SDH path signal
114	LR_STS2c_and_VC3_2c	sts2c_vc3_2c	2xSTS-1/2xVC3 Contiguous Concatenation
15	LR_STS3c_and_AU4_VC4	sts3c_au4	SONET/SDH path signal
115	LR_STS4c_and_VC3_4c	sts4c_vc3_4c	4xSTS-1/4xVC3 Contiguous Concatenation
116	LR_STS5c_and_VC3_5c	sts5c_vc3_5c	5xSTS-1/5xVC3 Contiguous Concatenation
100	LR_STS6c_and_VC4_2c	sts6c_vc4_2c	6xSTS-1/2xVC4 Contiguous Concatenation
117	LR_STS7c_and_VC3_7c	sts7c_vc3_7c	7xSTS-1/7xVC3 Contiguous Concatenation
118	LR_STS8c_and_VC3_8c	sts8c_vc3_8c	8xSTS-1/8xVC3 Contiguous Concatenation
101	LR_STS9c_and_VC4_3c	sts9c_vc4_3c	9xSTS-1/3xVC4 Contiguous Concatenation
119	LR_STS10c_and_VC3_10c	sts10c_vc3_10c	10xSTS-1/10xVC3 Contiguous Concatenation
120	LR_STS11c_and_VC3_11c	sts11c_vc3_11c	11xSTS-1/11xVC3 Contiguous Concatenation
16	LR_STS12c_and_VC4_4c	sts12c_vc4_4c	12xSTS-1/4xVC4 Contiguous Concatenation
121	LR_STS13c_and_VC3_13c	sts13c_vc3_13c	13xSTS-1/13xVC3 Contiguous Concatenation
122	LR_STS14c_and_VC3_14c	sts14c_vc3_14c	14xSTS-1/14xVC3 Contiguous Concatenation
123	LR_STS15c_and_VC4_5c	sts15c_vc4_5c	15xSTS-1/5xVC4 Contiguous Concatenation

ID	Layer Identifier	Object Naming String	Description
124	LR_STS16c_and_VC3_16c	sts16c_vc3_16c	16xSTS-1/16xVC3 Contiguous Concatenation
125	LR_STS17c_and_VC3_17c	sts17c_vc3_17c	17xSTS-1/17xVC3 Contiguous Concatenation
126	LR_STS18c_and_VC4_6c	sts18c_vc4_6c	18xSTS-1/6xVC4 Contiguous Concatenation
127	LR_STS19c_and_VC3_19c	sts19c_vc3_19c	19xSTS-1/19xVC3 Contiguous Concatenation
128	LR_STS20c_and_VC3_20c	sts20c_vc3_20c	20xSTS-1/20xVC3 Contiguous Concatenation
102	LR_STS21c_and_VC4_7c	sts21_vc4_7c	21xSTS-1/7xVC4 Contiguous Concatenation
129	LR_STS22c_and_VC3_22c	sts22c_vc3_22c	22xSTS-1/22xVC3 Contiguous Concatenation
130	LR_STS23c_and_VC3_23c	sts23c_vc3_23c	23xSTS-1/23xVC3 Contiguous Concatenation
103	LR_STS24c_and_VC4_8c	sts24c_vc4_8c	24xSTS-1/8xVC4 Contiguous Concatenation
131	LR_STS25c_and_VC3_25c	sts25c_vc3_25c	25xSTS-1/25xVC3 Contiguous Concatenation
132	LR_STS26c_and_VC3_26c	sts26c_vc3_26c	26xSTS-1/26xVC3 Contiguous Concatenation
133	LR_STS27c_and_VC4_9c	sts27c_vc4_9c	27xSTS-1/9xVC4 Contiguous Concatenation
134	LR_STS28c_and_VC3_28c	sts28c_vc3_28c	28xSTS-1/28xVC3 Contiguous Concatenation
135	LR_STS29c_and_VC3_29c	sts29c_vc3_29c	29xSTS-1/29xVC3 Contiguous Concatenation
136	LR_STS30c_and_VC4_10c	sts30c_vc4_10c	30xSTS-1/10xVC4 Contiguous Concatenation
137	LR_STS31c_and_VC3_31c	sts31c_vc3_31c	31xSTS-1/31xVC3 Contiguous Concatenation
138	LR_STS32c_and_VC3_32c	sts32c_vc3_32c	32xSTS-1/32xVC3 Contiguous Concatenation
139	LR_STS33c_and_VC4_11c	sts33c_vc4_11c	33xSTS-1/11xVC4 Contiguous

ID	Layer Identifier	Object Naming String	Description
			Concatenation
140	LR_STS34c_and_VC3_34c	sts34c_vc3_34c	34xSTS-1/34xVC3 Contiguous Concatenation
141	LR_STS35c_and_VC3_35c	sts35c_vc3_35c	35xSTS-1/35xVC3 Contiguous Concatenation
142	LR_STS36c_and_VC4_12c	sts36c_vc4_12c	36xSTS-1/12xVC4 Contiguous Concatenation
143	LR_STS37c_and_VC3_37c	sts37c_vc3_37c	37xSTS-1/37xVC3 Contiguous Concatenation
144	LR_STS38c_and_VC3_38c	sts38c_vc3_38c	38xSTS-1/38xVC3 Contiguous Concatenation
145	LR_STS39c_and_VC4_13c	sts39c_vc4_13c	39xSTS-1/13xVC4 Contiguous Concatenation
146	LR_STS40c_and_VC3_40c	sts40c_vc3_40c	40xSTS-1/40xVC3 Contiguous Concatenation
147	LR_STS41c_and_VC3_41c	sts41c_vc3_41c	41xSTS-1/41xVC3 Contiguous Concatenation
148	LR_STS42c_and_VC4_14c	sts42c_vc4_14c	42xSTS-1/14xVC4 Contiguous Concatenation
149	LR_STS43c_and_VC3_43c	sts43c_vc3_43c	43xSTS-1/43xVC3 Contiguous Concatenation
150	LR_STS44c_and_VC3_44c	sts44c_vc3_44c	44xSTS-1/44xVC3 Contiguous Concatenation
151	LR_STS45c_and_VC4_15c	sts45c_vc4_15c	45xSTS-1/15xVC4 Contiguous Concatenation
152	LR_STS46c_and_VC3_46c	sts46c_vc3_46c	46xSTS-1/46xVC3 Contiguous Concatenation
153	LR_STS47c_and_VC3_47c	sts47c_vc3_47c	47xSTS-1/47xVC3 Contiguous Concatenation
17	LR_STS48c_and_VC4_16c	sts48c_vc4_16c	48xSTS-1/16xVC4 Contiguous Concatenation
154	LR_STS49c_and_VC3_49c	sts49c_vc3_49c	49xSTS-1/49xVC3 Contiguous Concatenation
155	LR_STS50c_and_VC3_50c	sts50c_vc3_50c	50xSTS-1/50xVC3 Contiguous

ID	Layer Identifier	Object Naming String	Description
			Concatenation
156	LR_STS51c_and_VC4_17c	sts51c_vc4_17c	51xSTS-1/17xVC4 Contiguous Concatenation
157	LR_STS52c_and_VC3_52c	sts52c_vc3_52c	52xSTS-1/52xVC3 Contiguous Concatenation
158	LR_STS53c_and_VC3_53c	sts53c_vc3_53c	53xSTS-1/53xVC3 Contiguous Concatenation
159	LR_STS54c_and_VC4_18c	sts54c_vc4_18c	54xSTS-1/18xVC4 Contiguous Concatenation
160	LR_STS55c_and_VC3_55c	sts55c_vc3_55c	55xSTS-1/55xVC3 Contiguous Concatenation
161	LR_STS56c_and_VC3_56c	sts56c_vc3_56c	56xSTS-1/56xVC3 Contiguous Concatenation
162	LR_STS57c_and_VC4_19c	sts57c_vc4_19c	57xSTS-1/19xVC4 Contiguous Concatenation
163	LR_STS58c_and_VC3_58c	sts58c_vc3_58c	58xSTS-1/58xVC3 Contiguous Concatenation
164	LR_STS59c_and_VC3_59c	sts59c_vc3_59c	59xSTS-1/59xVC3 Contiguous Concatenation
165	LR_STS60c_and_VC4_20c	sts60c_vc4_20c	60xSTS-1/20xVC4 Contiguous Concatenation
166	LR_STS61c_and_VC3_61c	sts61c_vc3_61c	61xSTS-1/61xVC3 Contiguous Concatenation
167	LR_STS62c_and_VC3_62c	sts62c_vc3_62c	62xSTS-1/62xVC3 Contiguous Concatenation
168	LR_STS63c_and_VC4_21c	sts63c_vc4_21c	63xSTS-1/21xVC4 Contiguous Concatenation
169	LR_STS64c_and_VC3_64c	sts64c_vc3_64c	64xSTS-1/64xVC3 Contiguous Concatenation
170	LR_STS65c_and_VC3_65c	sts65c_vc3_65c	65xSTS-1/65xVC3 Contiguous Concatenation
171	LR_STS66c_and_VC4_22c	sts66c_vc4_22c	66xSTS-1/22xVC4 Contiguous Concatenation
172	LR_STS67c_and_VC3_67c	sts67c_vc3_67c	67xSTS-1/67xVC3 Contiguous Concatenation

ID	Layer Identifier	Object Naming String	Description
173	LR_STS68c_and_VC3_68c	sts68c_vc3_68c	68xSTS-1/68xVC3 Contiguous Concatenation
174	LR_STS69c_and_VC4_23c	sts69c_vc4_23c	69xSTS-1/23xVC4 Contiguous Concatenation
175	LR_STS70c_and_VC3_70c	sts70c_vc3_70c	70xSTS-1/70xVC3 Contiguous Concatenation
176	LR_STS71c_and_VC3_71c	sts71c_vc3_71c	71xSTS-1/71xVC3 Contiguous Concatenation
177	LR_STS72c_and_VC4_24c	sts72c_vc4_24c	72xSTS-1/24xVC4 Contiguous Concatenation
178	LR_STS73c_and_VC3_73c	sts73c_vc3_73c	73xSTS-1/73xVC3 Contiguous Concatenation
179	LR_STS74c_and_VC3_74c	sts74c_vc3_74c	74xSTS-1/74xVC3 Contiguous Concatenation
180	LR_STS75c_and_VC4_25c	sts75c_vc4_25c	75xSTS-1/25xVC4 Contiguous Concatenation
181	LR_STS76c_and_VC3_76c	sts76c_vc3_76c	76xSTS-1/76xVC3 Contiguous Concatenation
182	LR_STS77c_and_VC3_77c	sts77c_vc3_77c	77xSTS-1/77xVC3 Contiguous Concatenation
183	LR_STS78c_and_VC4_26c	sts78c_vc4_26c	78xSTS-1/26xVC4 Contiguous Concatenation
184	LR_STS79c_and_VC3_79c	sts79c_vc3_79c	79xSTS-1/79xVC3 Contiguous Concatenation
185	LR_STS80c_and_VC3_80c	sts80c_vc3_80c	80xSTS-1/80xVC3 Contiguous Concatenation
186	LR_STS81c_and_VC4_27c	sts81c_vc4_27c	81xSTS-1/27xVC4 Contiguous Concatenation
187	LR_STS82c_and_VC3_82c	sts82c_vc3_82c	82xSTS-1/82xVC3 Contiguous Concatenation
188	LR_STS83c_and_VC3_83c	sts83c_vc3_83c	83xSTS-1/83xVC3 Contiguous Concatenation
189	LR_STS84c_and_VC4_28c	sts84c_vc4_28c	84xSTS-1/28xVC4 Contiguous Concatenation

ID	Layer Identifier	Object Naming String	Description
190	LR_STS85c_and_VC3_85c	sts85c_vc3_85c	85xSTS-1/85xVC3 Contiguous Concatenation
191	LR_STS86c_and_VC3_86c	sts86c_vc3_86c	86xSTS-1/86xVC3 Contiguous Concatenation
192	LR_STS87c_and_VC4_29c	sts87c_vc4_29c	87xSTS-1/29xVC4 Contiguous Concatenation
193	LR_STS88c_and_VC3_88c	sts88c_vc3_88c	88xSTS-1/88xVC3 Contiguous Concatenation
194	LR_STS89c_and_VC3_89c	sts89c_vc3_89c	89xSTS-1/89xVC3 Contiguous Concatenation
195	LR_STS90c_and_VC4_30c	sts90c_vc4_30c	90xSTS-1/30xVC4 Contiguous Concatenation
196	LR_STS91c_and_VC3_91c	sts91c_vc3_91c	91xSTS-1/91xVC3 Contiguous Concatenation
197	LR_STS92c_and_VC3_92c	sts92c_vc3_92c	92xSTS-1/92xVC3 Contiguous Concatenation
198	LR_STS93c_and_VC4_31c	sts93c_vc4_31c	93xSTS-1/31xVC4 Contiguous Concatenation
199	LR_STS94c_and_VC3_94c	sts94c_vc3_94c	94xSTS-1/94xVC3 Contiguous Concatenation
200	LR_STS95c_and_VC3_95c	sts95c_vc3_95c	95xSTS-1/95xVC3 Contiguous Concatenation
201	LR_STS96c_and_VC4_32c	sts96c_vc4_32c	96xSTS-1/32xVC4 Contiguous Concatenation
202	LR_STS97c_and_VC3_97c	sts97c_vc3_97c	97xSTS-1/97xVC3 Contiguous Concatenation
203	LR_STS98c_and_VC3_98c	sts98c_vc3_98c	98xSTS-1/98xVC3 Contiguous Concatenation
204	LR_STS99c_and_VC4_33c	sts99c_vc4_33c	99xSTS-1/33xVC4 Contiguous Concatenation
205	LR_STS100c_and_VC3_100c	sts100c_vc3_100c	100xSTS-1/100xVC3 Contiguous Concatenation
206	LR_STS101c_and_VC3_101c	sts101c_vc3_101c	101xSTS-1/101xVC3 Contiguous Concatenation
207	LR_STS102c_and_VC4_34c	sts102c_vc4_34c	102xSTS-1/34xVC4 Contiguous

ID	Layer Identifier	Object Naming String	Description
			Concatenation
208	LR_STS103c_and_VC3_103c	sts103c_vc3_103c	103xSTS-1/103xVC3 Contiguous Concatenation
209	LR_STS104c_and_VC3_104c	sts104c_vc3_104c	104xSTS-1/104xVC3 Contiguous Concatenation
210	LR_STS105c_and_VC4_35c	sts105c_vc4_35c	105xSTS-1/35xVC4 Contiguous Concatenation
211	LR_STS106c_and_VC3_106c	sts106c_vc3_106c	106xSTS-1/106xVC3 Contiguous Concatenation
212	LR_STS107c_and_VC3_107c	sts107c_vc3_107c	107xSTS-1/107xVC3 Contiguous Concatenation
213	LR_STS108c_and_VC4_36c	sts108c_vc4_36c	108xSTS-1/36xVC4 Contiguous Concatenation
214	LR_STS109c_and_VC3_109c	sts109c_vc3_109c	109xSTS-1/109xVC3 Contiguous Concatenation
215	LR_STS110c_and_VC3_110c	sts110c_vc3_110c	110xSTS-1/110xVC3 Contiguous Concatenation
216	LR_STS111c_and_VC4_37c	sts111c_vc4_37c	111xSTS-1/37xVC4 Contiguous Concatenation
217	LR_STS112c_and_VC3_112c	sts112c_vc3_112c	112xSTS-1/112xVC3 Contiguous Concatenation
218	LR_STS113c_and_VC3_113c	sts113c_vc3_113c	113xSTS-1/113xVC3 Contiguous Concatenation
219	LR_STS114c_and_VC4_38c	sts114c_vc4_38c	114xSTS-1/38xVC4 Contiguous Concatenation
220	LR_STS115c_and_VC3_115c	sts115c_vc3_115c	115xSTS-1/115xVC3 Contiguous Concatenation
221	LR_STS116c_and_VC3_116c	sts116c_vc3_116c	116xSTS-1/116xVC3 Contiguous Concatenation
222	LR_STS117c_and_VC4_39c	sts117c_vc4_39c	117xSTS-1/39xVC4 Contiguous Concatenation
223	LR_STS118c_and_VC3_118c	sts118c_vc3_118c	118xSTS-1/118xVC3 Contiguous Concatenation
224	LR_STS119c_and_VC3_119c	sts119c_vc3_119c	119xSTS-1/119xVC3 Contiguous

ID	Layer Identifier	Object Naming String	Description
			Concatenation
225	LR_STS120c_and_VC4_40c	sts120c_vc4_40c	120xSTS-1/40xVC4 Contiguous Concatenation
226	LR_STS121c_and_VC3_121c	sts121c_vc3_121c	121xSTS-1/121xVC3 Contiguous Concatenation
227	LR_STS122c_and_VC3_122c	sts122c_vc3_122c	122xSTS-1/122xVC3 Contiguous Concatenation
228	LR_STS123c_and_VC4_41c	sts123c_vc4_41c	123xSTS-1/41xVC4 Contiguous Concatenation
229	LR_STS124c_and_VC3_124c	sts124c_vc3_124c	124xSTS-1/124xVC3 Contiguous Concatenation
230	LR_STS125c_and_VC3_125c	sts125c_vc3_125c	125xSTS-1/125xVC3 Contiguous Concatenation
231	LR_STS126c_and_VC4_42c	sts126c_vc4_42c	126xSTS-1/42xVC4 Contiguous Concatenation
232	LR_STS127c_and_VC3_127c	sts127c_vc3_127c	127xSTS-1/127xVC3 Contiguous Concatenation
233	LR_STS128c_and_VC3_128c	sts128c_vc3_128c	128xSTS-1/128xVC3 Contiguous Concatenation
234	LR_STS129c_and_VC4_43c	sts129c_vc4_43c	129xSTS-1/43xVC4 Contiguous Concatenation
235	LR_STS130c_and_VC3_130c	sts130c_vc3_130c	130xSTS-1/130xVC3 Contiguous Concatenation
236	LR_STS131c_and_VC3_131c	sts131c_vc3_131c	131xSTS-1/131xVC3 Contiguous Concatenation
237	LR_STS132c_and_VC4_44c	sts132c_vc4_44c	132xSTS-1/44xVC4 Contiguous Concatenation
238	LR_STS133c_and_VC3_133c	sts133c_vc3_133c	133xSTS-1/133xVC3 Contiguous Concatenation
239	LR_STS134c_and_VC3_134c	sts134c_vc3_134c	134xSTS-1/134xVC3 Contiguous Concatenation
240	LR_STS135c_and_VC4_45c	sts135c_vc4_45c	135xSTS-1/45xVC4 Contiguous Concatenation
241	LR_STS136c_and_VC3_136c	sts136c_vc3_136c	136xSTS-1/136xVC3 Contiguous Concatenation

ID	Layer Identifier	Object Naming String	Description
242	LR_STS137c_and_VC3_137c	sts137c_vc3_137c	137xSTS-1/137xVC3 Contiguous Concatenation
243	LR_STS138c_and_VC4_46c	sts138c_vc4_46c	138xSTS-1/46xVC4 Contiguous Concatenation
244	LR_STS139c_and_VC3_139c	sts139c_vc3_139c	139xSTS-1/139xVC3 Contiguous Concatenation
245	LR_STS140c_and_VC3_140c	sts140c_vc3_140c	140xSTS-1/140xVC3 Contiguous Concatenation
246	LR_STS141c_and_VC4_47c	sts141c_vc4_47c	141xSTS-1/47xVC4 Contiguous Concatenation
247	LR_STS142c_and_VC3_142c	sts142c_vc3_142c	142xSTS-1/142xVC3 Contiguous Concatenation
248	LR_STS143c_and_VC3_143c	sts143c_vc3_143c	143xSTS-1/143xVC3 Contiguous Concatenation
249	LR_STS144c_and_VC4_48c	sts144c_vc4_48c	144xSTS-1/48xVC4 Contiguous Concatenation
250	LR_STS145c_and_VC3_145c	sts145c_vc3_145c	145xSTS-1/145xVC3 Contiguous Concatenation
251	LR_STS146c_and_VC3_146c	sts146c_vc3_146c	146xSTS-1/146xVC3 Contiguous Concatenation
252	LR_STS147c_and_VC4_49c	sts147c_vc4_49c	147xSTS-1/49xVC4 Contiguous Concatenation
253	LR_STS148c_and_VC3_148c	sts148c_vc3_148c	148xSTS-1/148xVC3 Contiguous Concatenation
254	LR_STS149c_and_VC3_149c	sts149c_vc3_149c	149xSTS-1/149xVC3 Contiguous Concatenation
255	LR_STS150c_and_VC4_50c	sts150c_vc4_50c	150xSTS-1/50xVC4 Contiguous Concatenation
256	LR_STS151c_and_VC3_151c	sts151c_vc3_151c	151xSTS-1/151xVC3 Contiguous Concatenation
257	LR_STS152c_and_VC3_152c	sts152c_vc3_152c	152xSTS-1/152xVC3 Contiguous Concatenation
258	LR_STS153c_and_VC4_51c	sts153c_vc4_51c	153xSTS-1/51xVC4 Contiguous Concatenation

ID	Layer Identifier	Object Naming String	Description
259	LR_STS154c_and_VC3_154c	sts154c_vc3_154c	154xSTS-1/154xVC3 Contiguous Concatenation
260	LR_STS155c_and_VC3_155c	sts155c_vc3_155c	155xSTS-1/155xVC3 Contiguous Concatenation
261	LR_STS156c_and_VC4_52c	sts156c_vc4_52c	156xSTS-1/52xVC4 Contiguous Concatenation
262	LR_STS157c_and_VC3_157c	sts157c_vc3_157c	157xSTS-1/157xVC3 Contiguous Concatenation
263	LR_STS158c_and_VC3_158c	sts158c_vc3_158c	158xSTS-1/158xVC3 Contiguous Concatenation
264	LR_STS159c_and_VC4_53c	sts159c_vc4_53c	159xSTS-1/53xVC4 Contiguous Concatenation
265	LR_STS160c_and_VC3_160c	sts160c_vc3_160c	160xSTS-1/160xVC3 Contiguous Concatenation
266	LR_STS161c_and_VC3_161c	sts161c_vc3_161c	161xSTS-1/161xVC3 Contiguous Concatenation
267	LR_STS162c_and_VC4_54c	sts162c_vc4_54c	162xSTS-1/54xVC4 Contiguous Concatenation
268	LR_STS163c_and_VC3_163c	sts163c_vc3_163c	163xSTS-1/163xVC3 Contiguous Concatenation
269	LR_STS164c_and_VC3_164c	sts164c_vc3_164c	164xSTS-1/164xVC3 Contiguous Concatenation
270	LR_STS165c_and_VC4_55c	sts165c_vc4_55c	165xSTS-1/55xVC4 Contiguous Concatenation
271	LR_STS166c_and_VC3_166c	sts166c_vc3_166c	166xSTS-1/166xVC3 Contiguous Concatenation
272	LR_STS167c_and_VC3_167c	sts167c_vc3_167c	167xSTS-1/167xVC3 Contiguous Concatenation
273	LR_STS168c_and_VC4_56c	sts168c_vc4_56c	168xSTS-1/56xVC4 Contiguous Concatenation
274	LR_STS169c_and_VC3_169c	sts169c_vc3_169c	169xSTS-1/169xVC3 Contiguous Concatenation
275	LR_STS170c_and_VC3_170c	sts170c_vc3_170c	170xSTS-1/170xVC3 Contiguous Concatenation
276	LR_STS171c_and_VC4_57c	sts171c_vc4_57c	171xSTS-1/57xVC4 Contiguous

ID	Layer Identifier	Object Naming String	Description
			Concatenation
277	LR_STS172c_and_VC3_172c	sts172c_vc3_172c	172xSTS-1/172xVC3 Contiguous Concatenation
278	LR_STS173c_and_VC3_173c	sts173c_vc3_173c	173xSTS-1/173xVC3 Contiguous Concatenation
279	LR_STS174c_and_VC4_58c	sts174c_vc4_58c	174xSTS-1/58xVC4 Contiguous Concatenation
280	LR_STS175c_and_VC3_175c	sts175c_vc3_175c	175xSTS-1/175xVC3 Contiguous Concatenation
281	LR_STS176c_and_VC3_176c	sts176c_vc3_176c	176xSTS-1/176xVC3 Contiguous Concatenation
282	LR_STS177c_and_VC4_59c	sts177c_vc4_59c	177xSTS-1/59xVC4 Contiguous Concatenation
283	LR_STS178c_and_VC3_178c	sts178c_vc3_178c	178xSTS-1/178xVC3 Contiguous Concatenation
284	LR_STS179c_and_VC3_179c	sts179c_vc3_179c	179xSTS-1/179xVC3 Contiguous Concatenation
285	LR_STS180c_and_VC4_60c	sts180c_vc4_60c	180xSTS-1/60xVC4 Contiguous Concatenation
286	LR_STS181c_and_VC3_181c	sts181c_vc3_181c	181xSTS-1/181xVC3 Contiguous Concatenation
287	LR_STS182c_and_VC3_182c	sts182c_vc3_182c	182xSTS-1/182xVC3 Contiguous Concatenation
288	LR_STS183c_and_VC4_61c	sts183c_vc4_61c	183xSTS-1/61xVC4 Contiguous Concatenation
289	LR_STS184c_and_VC3_184c	sts184c_vc3_184c	184xSTS-1/184xVC3 Contiguous Concatenation
290	LR_STS185c_and_VC3_185c	sts185c_vc3_185c	185xSTS-1/185xVC3 Contiguous Concatenation
291	LR_STS186c_and_VC4_62c	sts186c_vc4_62c	186xSTS-1/62xVC4 Contiguous Concatenation
292	LR_STS187c_and_VC3_187c	sts187c_vc3_187c	187xSTS-1/187xVC3 Contiguous Concatenation
293	LR_STS188c_and_VC3_188c	sts188c_vc3_188c	188xSTS-1/188xVC3 Contiguous

ID	Layer Identifier	Object Naming String	Description
			Concatenation
294	LR_STS189c_and_VC4_63c	sts189c_vc4_63c	189xSTS-1/63xVC4 Contiguous Concatenation
295	LR_STS190c_and_VC3_190c	sts190c_vc3_190c	190xSTS-1/190xVC3 Contiguous Concatenation
296	LR_STS191c_and_VC3_191c	sts191c_vc3_191c	191xSTS-1/191xVC3 Contiguous Concatenation
18	LR_STS192c_and_VC4_64c	sts192c_vc4_64c	192xSTS-1/64xVC4 Contiguous Concatenation
92	LR_STS768c_and_VC4_256c	sts768c_vc4_256c	768xSTS-1/256xVC4 Contiguous Concatenation
2	LR_T1_and_DS1_1_5M	ds1	1.5 Mbit/s async/PDH signal
3	LR_T2_and_DS2_6M	ds2	6 Mbit/s async/PDH signal,
4	LR_T3_and_DS3_45M,	ds3	45 Mbit/s async/PDH signal
10	LR_VT1_5_and_TU11_VC11	vt15_tu11*)	VC11 SONET/SDH path signal
11	LR_VT2_and_TU12_VC12	vt2_tu12*)	VC12 SONET/SDH path signal
12	LR_VT6_and_TU2_VC2	vt6_tu2	VC2 SONET/SDH path signal

*) ds1_vt15_vc11: u*sed for 2-layer CTPs (PDH adaptation of VC-11 into TU-12)*

Layer rates used for PTPs only (i.e. not used for CTP naming)

Revision History

Version	Date	Description of Change
3.0	April 2005	
3.0	June 2005	Reference updated
3.1	December 2005	Version in names of referenced supporting documents deleted.
3.2	October 2006	New layers added: - 304 LR_RPR - 305 LR_LAG_Fragment - 306 LR_IPTV.

Acknowledgements

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How to comment on the document

Comments and requests for information must be in written form and addressed to the contact identified below:

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Please be specific, since your comments will be dealt with by the team evaluating numerous inputs and trying to produce a single text. Thus we appreciate significant specific input. We are looking for more input than wordsmith" items, however editing and structural help are greatly appreciated where better clarity is the result.