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User Manual

Basic Configuration

Dragon PTN Bandwidth Overview



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1. INTRODUCTION

1.1 General

This document is valid as of Dragon PTN Release 4.3DR.

This document shows the bandwidth information for a specific interface module (=IFM). It means the following, and this per IFM:

- ▶ **Maximum Front Bandwidth:** The maximum bandwidth that an application can [inject into/extract from] the IFM via its front panel;
- ▶ **Maximum Back End (=Network) Bandwidth (or slot speed):** The maximum bandwidth that the IFM can [inject into/extract from] the Dragon PTN network via the CSM and node backplane. This bandwidth depends on the following:
 - ▶ The used node type;
 - ▶ The used CSM type in the node;
 - ▶ The used IFM slot in the node in which the IFM has been plugged;
 - ▶ The current release;

1.2 Manual References

Table 1 is an overview of the manuals referred to in this manual. '&' refers to the language code, '*' refers to the manual issue. All these manuals can be found in the HiProvision (=Dragon PTN Management System) Help function.

Table 1 Manual References

Ref.	Number	Title
[1]	DRA-DRM801-&-*	Dragon PTN Installation and Operation
[2Mgt]	DRA-DRM830-&-*	HiProvision Management Operation
[3]	DRB-DRM802-&-*	Dragon PTN Aggregation Nodes: PTN2210, PTN2206, PTN1104, PTN2209
[3b]	DRB-DRM840-&-*	Dragon PTN Core Nodes: PTN2215
[4]	DRD-DRM803-&-*	Dragon PTN Central Switching Module: PTN-CSM310-A/PTN-CSM540-A
[5]	DRA-DRM810-&-*	Dragon PTN General Specifications

2. IFM (=INTERFACE MODULE) SLOTS

All peripherals are connected to the Dragon PTN Network via IFMs, which are available for a wide range of applications in the areas of data and LAN.

Each IFM has its own manual, which can be found on the Portal <https://hiprovision.hirschmann.com> via Shortcuts → Manuals.

Different Dragon PTN node types are available to provide a minimum of 4 IFM slots up to a maximum of 15 IFM slots:

- ▶ Aggregation Nodes (see Ref.[3] in Table 1):
 - ▶ Node PTN1104: 4 IFM slots;
 - ▶ Node PTN2206: 6 IFM slots;
 - ▶ Node PTN2209: 9 IFM slots;
 - ▶ Node PTN2210: 10 IFM slots;

- ▶ Core Nodes (see Ref.[3b] in Table 1):
 - ▶ Node PTN2215: 15 IFM slots;

Depending on the used CSM, different IFM slot speeds are available per node type. The slot speed is the result of how the CSM processes the node backplane lines and back end ports that terminate in this slot. A slot speed is the maximum bandwidth that an IFM can [inject into/extract from] the Dragon PTN network via that slot.

Table 2 Available IFM Slot Speeds per Node Type per CSM

IFM Slot Speed (G = Gbps)	With CSM310-A				With CSM540-A
	PTN1104	PTN2206	PTN2209	PTN2210	PTN2215
√ = Available; --- = Not Available;					
1G	√	√	√	√	√
3G (=3x1G)	---	---	√	√	---
4G (=4x1G)	√	√	√	√	√
10G	---	√	√	√	---
14G (= 4x1G + 10G)	---	---	√ (*)	---	√ (*)
40G (= 1x40G or 4x10G)	---	---	---	---	√
(*) : optimized for L3 IFMs					

Each individual IFM slot provides a mix of these speeds. In the figures below, find which speeds are available per IFM slot per node type. The slot speed that is finally used depends on the used CSM, the IFM in that slot and the current release. See figures and tables below.

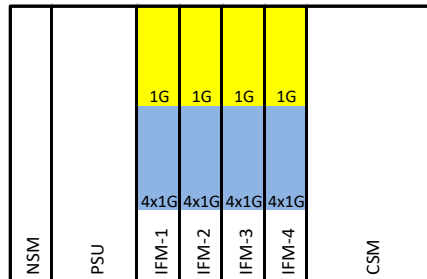


Figure 1 PTN1104: Node Slot Speeds with CSM310-A

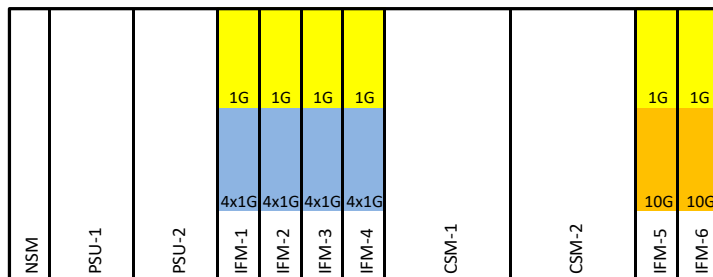


Figure 2 PTN2206: Node Slot Speeds with CSM310-A

NSM	PSU-1	PSU-2	IFM-1	IFM-2	IFM-3	CSM-1	CSM-2	IFM-5	IFM-6	IFM-7	IFM-8	IFM-9	IFM-10
			1G	1G	1G			1G	1G	1G	1G	1G	1G
			4x1G	4x1G	4x1G			10G	10G	10G	4x1G	4x1G	3x1G

Figure 3 PTN2209: Node Slot Speeds with CSM310-A (14G in IFM-3 only for 9-L3A-L)

NSM	PSU-1	PSU-2	IFM-1	IFM-2	IFM-3	IFM-4	CSM-1	CSM-2	IFM-5	IFM-6	IFM-7	IFM-8	IFM-9	IFM-10
			1G	1G	1G	1G			1G	1G	1G	1G	1G	1G
			4x1G	4x1G	4x1G	4x1G			10G	10G	10G	10G	4x1G	3x1G

Figure 4 PTN2210: Node Slot Speeds with CSM310-A

IFM-1	1G	4x1G		4x10G	FAN1	NSM				
IFM-2	1G	4x1G		4x10G		IFM-3	1G	4x1G		4x10G
IFM-4	1G	4x1G	14G	4x10G	FAN2	IFM-5	1G	4x1G	14G	4x10G
IFM-6				1x40G		IFM-7				1x40G
CSM-1					FAN3					
CSM-2										
IFM-8				1x40G	FAN4	IFM-9				1x40G
IFM-10	1G	4x1G		4x10G		IFM-11	1G	4x1G		4x10G
IFM-12	1G	4x1G		4x10G	FAN5	IFM-13	1G	4x1G		4x10G
IFM-14	1G	4x1G		4x10G		IFM-15	1G	4x1G		4x10G
PSU-1					PSU-2					

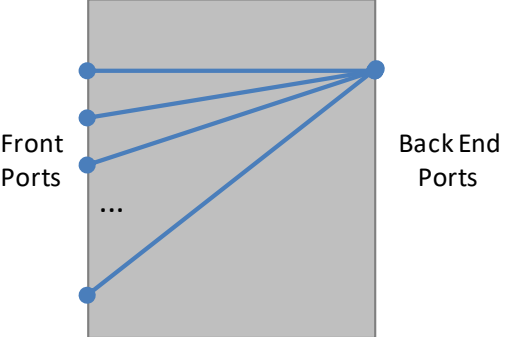
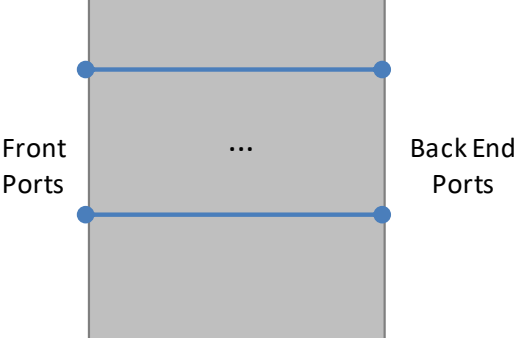
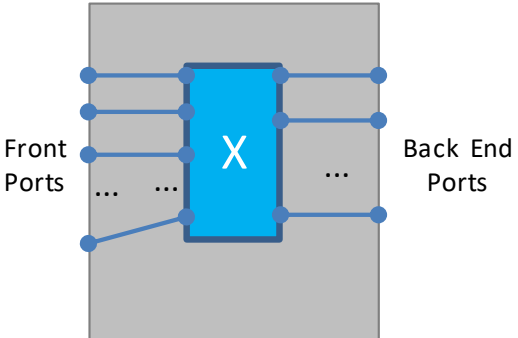
Figure 5 PTN2215: Node Slot Speeds with CSM540-A (14G in IFM-4/5 only for 9-L3A-L)

For the correct programming of the IFMs, see the module manuals and HiProvision (see Ref.[2Mgt] in Table 1).

3. MAPPING/ IFM FRONT PORT ← → IFM BACK END PORTS

The table and figures below show how the IFM front ports are mapped to the IFM back end ports towards the CSM.

Table 3 Mapping Front/Backend Ports

IFM Type	Mapping Front Ports ← → Back End Ports
Low Bandwidth	
Ethernet LAN/WAN	
Ethernet Advanced L2 Ethernet L3	
<p>Note: the amount of back end ports (and speed) depends on the used IFM, CSM type, node type and slot position in which the IFM has been plugged. These values can be found in the tables in the next chapters.</p>	

4. IFM BANDWIDTH VIA CSM310-A (NODE PTN1104/PTN2206/PTN2209/PTN2210)

Table 4 IFM Bandwidth Via CSM310-A

IFM	Maximum Front Bandwidth (G=Gbps/M=Mbps)	Maximum Back End (=Network) Bandwidth (G=Gbps)																															
		Node PTN1104				Node PTN2206						Node PTN2210										Node PTN2209 (optimized for L3 IFMs)											
		S1	S2	S3	S4	S1	S2	S3	S4	S5	S6	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10		
Low Bandwidth IFMs																																	
4-E1-L	4x2M	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G
4-T1-T	4x1.5M	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G
16-E1-L	16x2M	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G
16-T1-L	16x1.5M	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G
2-C37.94	4x2M	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G
7-SERIAL	4x1.92M (Sync) / 3x0.115M (Async)	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G
4-2/4WEM	analogue: 3400Hz	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G
2-OLS	4x2M	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G
4-CODIR	4x64K	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G
8-FXS	analogue: 3400Hz	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G	1G
Ethernet LAN/WAN IFMs																																	
4-GC-LW	4x1G	4G	4G	4G	4G	4G	4G	4G	4G	1G(c)	1G(c)	4G	4G	4G	4G	1G(c)	1G(c)	1G(c)	1G(c)	4G	3G(b)	4G	4G	4G	0	1G(c)	1G(c)	1G(c)	4G	4G	3G(b)	4G	
4-GCB-LW	4x1G	4G	4G	4G	4G	4G	4G	4G	4G	1G(c)	1G(c)	4G	4G	4G	4G	1G(c)	1G(c)	1G(c)	1G(c)	4G	3G(b)	4G	4G	4G	0	1G(c)	1G(c)	1G(c)	4G	4G	3G(b)	4G	
4-GO-LW	4x1G	4G	4G	4G	4G	4G	4G	4G	4G	1G(c)	1G(c)	4G	4G	4G	4G	1G(c)	1G(c)	1G(c)	1G(c)	4G	3G(b)	4G	4G	4G	0	1G(c)	1G(c)	1G(c)	4G	4G	3G(b)	4G	
4-DSL-LW	20M	4G	4G	4G	4G	4G	4G	4G	4G	1G(c)	1G(c)	4G	4G	4G	4G	1G(c)	1G(c)	1G(c)	1G(c)	4G	3G(a)	4G	4G	4G	0	1G(c)	1G(c)	1G(c)	4G	4G	3G(a)	4G	
1-10G-LW	1x10G	0	0	0	0	0	0	0	0	10G	10G	0	0	0	0	10G	10G	10G	10G	0	0	0	0	0	0	10G	10G	10G	0	0	0	0	
Ethernet Advanced L2 IFMs																																	
6-GE-L	6x1G	4G	4G	4G	4G	4G	4G	4G	4G	1G(z)	1G(z)	4G	4G	4G	4G	1G(z)	1G(z)	1G(z)	1G(z)	4G	3G(z)	4G	4G	4G	0	1G(z)	1G(z)	1G(z)	4G	4G	3G(z)	4G	
Ethernet L3 IFMs																																	
9-L3A-L (=Main) (*)	8x1G+1x10G	4G	4G	4G	---	4G	4G	4G	---	1G(z)	---	4G	4G	4G	---	1G(z)	1G(z)	1G(z)	1G(z)	4G	---	---	---	14G	---	1G(z)	1G(z)	1G(z)	4G	4G	---	---	
9-L3EA-L (=Ext.)	8x1G+1x10G	0	0	0	---	0	0	0	---	0	---	0	0	0	---	0	0	0	0	0	---	(e)	0	0	---	0	0	0	0	0	---	---	
0 = No bandwidth in this IFM slot. / --- = not possible, does not fit mechanically in this slot.																																	
Note (a): front port1,2,3 operational; front port4 only when bonded with port1, 2 or 3.																																	
Note (b): front port1,2,3 operational; front port4 not operational.																																	
Note (c): only front port 1 operational.																																	
Note (e): only bandwidth when 9-L3A-L (=Main) has been plugged into S3. The combined network bandwidth of both IFMs is 14G.																																	
Note (z): all front ports operational.																																	
Note (*): this IFM is 2 slots wide and only uses the slot bandwidth of the left-hand slot. E.g. if this IFM is plugged in slot[3-4] of the PTN2210 node, it has 4G available and not 8G (=4G+4G).																																	

5. IFM BANDWIDTH VIA CSM540-A (NODE PTN2215)

Table 5 IFM Bandwidth Via CSM540-A

IFM	Maximum Front Bandwidth	Maximum Backend (=Network) Bandwidth														
		Node PTN2215														
		S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	S15
Low Bandwidth IFMs																
4-E1-L	4x2M	1G	1G	1G	1G	1G	0	0	0	0	1G	1G	1G	1G	1G	1G
4-T1-T	4x1.5M	1G	1G	1G	1G	1G	0	0	0	0	1G	1G	1G	1G	1G	1G
16-E1-L	16x2M	1G	1G	1G	1G	1G	0	0	0	0	1G	1G	1G	1G	1G	1G
16-T1-L	16x1.5M	1G	1G	1G	1G	1G	0	0	0	0	1G	1G	1G	1G	1G	1G
2-C37.94	4x2M	1G	1G	1G	1G	1G	0	0	0	0	1G	1G	1G	1G	1G	1G
7-SERIAL	4x1.92M (Sync) / 3x0.115M (Async)	1G	1G	1G	1G	1G	0	0	0	0	1G	1G	1G	1G	1G	1G
4-2/4WEM	analogue: 3400Hz	1G	1G	1G	1G	1G	0	0	0	0	1G	1G	1G	1G	1G	1G
2-OLS	4x2M	1G	1G	1G	1G	1G	0	0	0	0	1G	1G	1G	1G	1G	1G
4-CODIR	4x64K	1G	1G	1G	1G	1G	0	0	0	0	1G	1G	1G	1G	1G	1G
8-FXS	analogue: 3400Hz	1G	1G	1G	1G	1G	0	0	0	0	1G	1G	1G	1G	1G	1G
Ethernet LAN/WAN IFMs																
4-GC-LW	4x1G	4G	4G	4G	4G	4G	0	0	0	0	4G	4G	4G	4G	4G	4G
4-GCB-LW	4x1G	4G	4G	4G	4G	4G	0	0	0	0	4G	4G	4G	4G	4G	4G
4-GO-LW	4x1G	4G	4G	4G	4G	4G	0	0	0	0	4G	4G	4G	4G	4G	4G
4-DSL-LW	20M	4G	4G	4G	4G	4G	0	0	0	0	4G	4G	4G	4G	4G	4G
1-10G-LW (future support)	1x10G	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1-40G-LW (PTN2215)	1x40G	0	0	0	0	0	40G	40G	40G	40G	0	0	0	0	0	0
4-10G-LW (PTN2215)	4x10G	40G	40G	40G	40G	40G	0	0	0	0	40G	40G	40G	40G	40G	40G
Ethernet Advanced L2 IFMs																
6-GE-L	6x1G	4G	4G	4G	4G	4G	0	0	0	0	4G	4G	4G	4G	4G	4G
Ethernet L3 IFMs																
9-L3A-L (=Main) (PTN2215)	8x1G+1x10G	4G	---	---	14G	14G	0	0	0	0	4G	4G	4G	4G	4G	4G
9-L3EA-L (=Ext.) (PTN2215)	8x1G+1x10G	0	(a)	(b)	0	0	0	0	0	0	0	0	0	0	0	0

0 = No bandwidth in this IFM slot. / --- = not possible, does not fit mechanically in this slot.
 Note (a): only bandwidth when 9-L3A-L (=Main) has been plugged into S4. The combined network bandwidth of both IFMs is 14G.
 Note (b): only bandwidth when 9-L3A-L (=Main) has been plugged into S5. The combined network bandwidth of both IFMs is 14G.

6. WEEE GUIDELINES

The Dragon PTN nodes are compliant with the European guidelines 2002/96/EG (WEEE = Waste of Electrical and Electronic Equipment). This compliancy is indicated at the back of the node by a crossed-bin symbol in Figure 6.



Figure 6 Crossed-Bin Symbol

The equipment that you bought required the extraction and use of natural resources for its production. It may contain substances that are hazardous to human health and the environment.

In order to avoid the dissemination of those substances in our environment and to reduce the pressure on the natural resources, we encourage you to use the appropriate take-back systems. These systems will reuse or recycle most of the materials of your end-of-life equipment in a sound way.

The crossed-bin symbol invites you to use those systems.

If you need more information on the collection, reuse and recycling systems, please contact your local or regional waste administration. You can also contact us for more information on the environmental performances of our product.

7. ABBREVIATIONS

CSM	Central Switching Module
EMC	Electromagnetic Compatibility
EMI	Electromagnetic Interference
IEEE	Institute of Electrical and Electronics Engineers
IFM	InterFace Module
LAN	Local Area Network
MPLS-TP	Multiprotocol Label Switching – Transport Profile
MTBF	Mean Time Between Failures
NSM	Node Support Module
PTN	Packet Transport Network
SHDSL	Symmetrical High Bitrate Digital Subscriber Line
U	Rack Unit
WAN	Wide Area Network
WEEE	Waste of Electrical and Electronic Equipment