Max Transmit Burst
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A cable **interface** command exists in the latest IOS called "*cable default-phy-burst x*". The default value for x is 2000 bytes to meet VoIP application requirements. The "cable default-phy-burst" value will show up when you change it from its default and do a "show run".

This command has been added to allow 1.0 modems with no setting (blank or 0) in their Max Traffic field to register without getting a Reject(c). This happens when US concatenation is configured (default) and running DOCSIS 1.1 code on the CMTS.

If concatenation is disabled on the upstream interface, then there is no problem, but then modems would never be able to concatenate small Ethernet frames such as US acks for DS TCP frames.

Note: There is an upstream command to disable concatenation on 1.0 CMs only (no cab upstream n concatenation docsis10), but the CMTS doesn't know the modem version until it registers. So, the 1.0 CM will still get Reject(c).

This default-phy-burst command behaves like a normal IOS config command. If you set it to 2000, it will not show up in the config, but any other value will. The range is 0-4096. We saw pings stop with anything below 1510. The current code interprets "no" as go back to the default of 2000. Setting it to 0 disables this command. Keep in mind that this command is for the entire DS interface, so it affects all US ports in that mac domain.

The lower number between the two commands (1. "phy burst" interface command and 2. DOCSIS config file "Max US Tx Burst or Max Concat" setting) takes precedence unless the modem's number is 0 or blank. The "phy burst" command will force a value on the "Max US Tx Burst" field in case the modem's field is left at zero or blank.

For example: If you set the CM config file to 3100 to attempt concatenation of 3 packets of 1024 each and the "phy burst" is defaulted to 2000, it won't work. The lower number of 2000 will take precedence and the CM wouldn't be able to concatenate any 1024-byte packets.

In a mixed environment between 1.0 and 1.1 or 2.0 DOCSIS CMs, DOCSIS 1.0 CMs should have their Max Traffic burst limited to 2000 bytes since they can't do fragmentation. DOCSIS 1.1 CMs can fragment big packets to allow smaller voice packets, which are delay sensitive, to be transmitted between fragmented big packets. Therefore, DOCSIS 1.1 CMs are allowed to have a very big max burst. In the actual DOCSIS config file the field is called "Max Concat Burst".

Note: Always be sure the Max Traffic field is > or = to the Max Concat field in 1.1 config files. The Max Traffic field affects rate shaping while the Max Concat field affects the amount of frames that can be concatenated. Setting the Max Traffic field extremely high allows an US "Powerboost" to occur.

If 1.1, 2.0 & 3.0 CMs are allowed to concatenate many Ethernet frames together because they have a huge Max Concat field configured and the user configured cable-default-phy-burst 0, then be sure to configure "cab upstream x minislot 2" or 4 depending on channel width. DOCSIS does not allow a CM to request more than 255 minislots. The default minislot is based on channel width and typically equates to about 16B per minislot when the math is done for channel width and modulation. For example, 3.2 MHz channel width will default to a 2 tick minislot and using 16-QAM will lead to 16B per minislot; 16x255 = 4080 bytes of total bytes allowed to be requested. This also includes physical layer overhead, so a good rule-of-thumb would be to subtract approximately 10% to get an idea of actual max concat burst bytes, which are at layer 2 and above and includes DOCSIS headers. 4080*.9 = 3672 bytes. Doubling the minislot from its default will allow many more Ethernet frames to be concatenated and get faster per-CM speed.

Note: The specific CMTS linecard will determine how many bytes it can handle and will be fragmented accordingly. The default setting is, "cab up n fragment-force 2000". Because of limitations on the 5x20S card, its default is 1600.

It has been observed that D3.0, 4x4 CMs based on the TI Puma5 chipset seem to ignore, or bypass, the default phy burst field and minislot setting limitation and concatenate many frames to achieve very fast per-CM US speed. The Broadcom–based D3.0, 8x4 CMs seem to resemble D2.0 CMs in regards to the phy burst commands.