ifsStretch Ideas

R0-3
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Overview

- **ifsStretching was added to Clause 4 during Project 802.3ae**

- **Original need was for WAN Rate Adaptation**

- **Current need is for FEC Rate Adaptation**

- **Future projects may have different needs**

- **Clause 4 should be extended generically**

ifsStretch for WAN

- **Rate adaptation for WAN PHYs requires a single byte of IFS for every 104 bytes of packet data – including IPG & Preamble**

- **Packet lengths other than an integer multiple of 104 have the modulo 104 length carried into the equations for the next packet if that packet is immediately pending, otherwise it is dropped**

ifsStretch for FEC

```
/K/D/K/D/K/D/S/D/…/D/T/R/K/D/K/D/K/…/D/K/D/K/D/K/D/K/D/

/K/D/D/R/K/D/S/D/…/D/T/R/K/D/T/R/D/…/D/T/R/K/D/T/R/K/D/
```
        /S_FEC/ packet /T_FEC_1/   parity /T_FEC_2/

- **Rate adaptation for FEC PHYs requires 14 bytes of IFS for each packet to replace the /S/ with /S_FEC/, the /T/ with /T_FEC/ and for the additional /T_FEC/ after the parity bytes**

- **Rate adaptation for FEC PHYs also requires 16 bytes of IFS for every 239 bytes of packet data – including Preamble but not IPG – to add the FEC parity bytes**

- **Packet lengths other than an integer multiple of 239 must always have an additional 16 bytes of IFS to add the FEC parity bytes required for this last partial FEC frame**

Rate Adaptation
Mode Specific Constants

	Typical Rate	WAN Rate	FEC Rate
ifsStretchConstant	**0 bits**	**0 bits**	**112 bits**
ifsStretchNoCarryMode	**0**	**0**	**1**
ifsStretchIncludeIFSMode	**0**	**1**	**0**
ifsStretchMultiplier	**n/a**	**1**	**16**
ifsStretchRatio	**n/a**	**104**	**239**

Generic Equations

- **Modify existing equations in the following processes in 4.2.8**

- **Deference Process**

  Wait(interFrameSpacing + ifsStretchConstant + (ifsStretchSize*ifsStretchMultiplier*8) + (ifsStretchNoCarryMode*(ifsStretchCount>0)*ifsStretchMultiplier*8))

  If (not frameWaiting or ifsStretchNoCarryMode) – clear ifsStretchCount

- **BitTransmitter Process**

  ifsStretchSize := (ifsStretchCount + headerSize + frameSize + (ifsStretchIncludeIFSMode*interFrameSpacing)) div ifsStretchRatio

  ifsStretchCount := (ifsStretchCount + headerSize + frameSize + (ifsStretchIncludeIFSMode*interFrameSpacing)) mod ifsStretchRatio