Improving ARCNET: SH IP-CORE-ARCCTRL Benefits

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Measure	How it Works	Compatibility to Standard ARCNET Protocol	Implemented	Result
Selecting high numbers of Node Ids (NID)	After a reconburst the Node with the highest NID starts sending Tokens. The Timeout is of length (255-NID)*146us Selecting high values decreases the network reconfiguration time	Fully compatible	N/A	Decreases network reconfiguration time after a recon burst
Auto Token Retransmit	If a Token (ITT) is being lost, the transmitting node addresses the next Node in the network. The originally adressed Node sends a Recon Burst after 840ms and causes a complete network reconfiguration. The Auto Token Retransmit functions simply retransits the Token a second time and increases the probability of a successfull Token passing	Fully compatible, but Worst Token Round Trip time it slightly increased.	SMSC2002x: No PM20100: Yes	Avoids Reconfiguration
Decrease Lost Token Timer value(TLT)	The standard TLT value is designed as such that it must be higher than the Worst Case Round Trip Time which is approx. number of nodes * time of max datapacket + overall Token passing time. If there are only a few nodes in the network the TLT may be decreased drastically	Fully compatible if all the nodes in the network have the same timer values	SMSC2002x: No PM20100: Yes	Decreases dramatically the time the „lost“ node takes to trigger a recon burst
Decrease length of Reconburst	The Reconburst has the task to destroy all Tokens in the network. It therefore must be longer than the longest datapacket + Token transmit Time. So if all data packets are shorter than the longest data packet, the length of the burst may be drecreased	Fully compatible, but depends on packet length	SMSC2002x: No PM20100: Yes	Decreases dramatically the time the „lost“ node takes to trigger a recon burst
Attach NID to Reconburst	After a Lost Token and a subsequent Reconburst it is not easy to find out which node caused the trouble. If the NID is attached to the Reconburst each other node in the network can identify the node who causes the Reconburst	Fully compatible	SMSC2002x: No PM20100: not yet, but may be done	Improved diagnostic
Configurable Watchdog	The application stores a predefined data packet into the core and keeps reloading the watchdog. If the application hangs and the watchdog will be not retriggered, the core broadcasts a predefined packet to the network	Fully compatible	SMSC2002x: No PM20100: not yet, but may be done	Improved diagnostic of system state
Shutdown Message	The application stores a predefined data packet that will be broadcasted to the network on a power-fail event.	Fully compatible	SMSC2002x: No PM20100: not yet, but may be done	Improved diagnostic of system state

All time values refer to 2.5 Mbps and Standard Timeouts