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ABS Tech Note: SNA•ps09 Gateway Performance Tuning (5/92)

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TOPIC -----

This Technical Note details which parameters to modify when connecting a SNA•ps gateway to either an IBM mainframe or an AS/400 computer or to another personal computer running OS/2 Communications Manager. Dramatic improvements in SNA•ps throughput can be made by following these simple steps.

DISCUSSION -----

Introduction

The application "SNA•ps Config", included with the SNA•ps Gateway package, allows changes to be made to SNA•ps gateway configuration files. Changes related to performance are those most commonly made using SNA•ps Config. Corresponding changes must also be made to the IBM partner for the modifications to be effective. The following suggestions allow for the optimum possible performance using SNA•ps. Note that SNA•ps "3270 Manager" can not be used to make performance related changes.

Large I-frame Sizes

The SNA•ps Token Ring default I-frame setting, located in the Line Description, is 265 (256 +9) bytes. Increasing this value can dramatically improve performance. The Apple Token Ring 4/16 NB card is required for this since a minimum of 1 Mb of memory is required on the card. Table 1 lists Token Ring line parameters that need to be modified for SNA•ps, PS/2, AS/400, or host configurations.

SNA•ps: Max I-field: length (Token Ring line definition)
PS/2: Receive: Buffer Size - IEEE 802.2 TR Profile
AS/400: MAXFRAME: Maximum Frame size (Token Ring line description)
(Controller desc: Maxframe size = *LINKTYPE)
Host: MAXDATA: Maximum number of bytes physical unit can receive (PU definition)

Table 1: Token Ring Line Description Performance Tuning Parameters

The value of 2057 (2048 +9) bytes is recommended; however any value greater than 265 will improve performance.

The nine byte overhead, included with both the Apple Serial NB and Token Ring values, is used by SNA•ps for the transmission header (TH) and request header (RH) in the request unit (RU) segments.

The SNA•ps SDLC default I-frame setting, located in the Line Description, is 265 bytes. Increasing this to 521 (512 +9) bytes will provide similar improvements for SDLC communication. A minimum of 1 Mb of memory is required on the Apple Serial NB card. Table 2 lists the SDLC line parameters that need to be modified for SNA•ps, PS/2, AS/400, or host configurations.

SNA•ps: Maximum BTU (SDLC line definition)
PS/2: Maximum RU Size SDLC (DLC) adapter profile
AS/400: MAXFRAME (SDLC line description)
Host: MAXDATA: Maximum number of bytes physical unit can receive (PU definition)

Table 2: SDLC Line Description Performance Tuning Parameters

Force Segmenting (APPC only)

In order to achieve optimal performance, the RU size should be larger than the I-frame size. This forces the RU messages to be broken into multiple frames (that is segmented) boosting throughput. More specifically, the RU should be an even multiple of the I-frame size (that is 2x, 4x, and so on) minus the 9 byte overhead included in the SNA•ps I-frame value. Therefore, to improve APPC performance, increase the Maximum RU Upper value in the APPC Mode definition to 4096. Table 3 lists the parameters that need to be modified for the APPC Mode definitions for SNA•ps, PS/2, AS/400, or host configurations. Note that the OS/2 Communications Manager's "Verify" command will not allow the Maximum RU size on the "Transmission Service Mode Profile" to exceed the Maximum RU size on the "Data Link Control (DLC) profile."

APPC Programming Considerations

The largest possible amount of data should be sent in each "MC Send Data" and received in each "MC Receive and Wait" to ensure the best data transfer rates. The maximum record length supported by SNA•ps APPC is 32763 bytes. Therefore, 32763 should be used as the send length in each "MC Send Data", the receive length in each "MC Receive and Wait" and the map buffer length in "MC Allocate". "MC Receive Immediate" should not be used, since "MC Receive and Wait" has been optimized for performance. A buffer size equal to (or larger than) 18 K bytes should be used in the "Open Gateway Connection" connection request. See "Appendix K" in the SNA•ps APPC Programmers Reference for more details regarding gateway buffer sizes.

SNA•ps: Maximum RU Upper APPC Mode definition
PS/2: Maximum RU size Transmission Service Mode profile (should equal Max RU size in the DLC profile)
AS/400: MAXLENRU: Maximum length request unit (Mode description)
Host: RUSIZE S: Maximum RU Size (MODEENG definition)

Table 3: APPC Mode Description Tuning Parameters
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