

## STANDARDS CHANGES CATALOG (SCC)

SCC NUMBER: SCC #124

CHANGE PROPOSAL TITLE: "Clarification of S/R and UDP Port Numbers" for 47001DC

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ORIGINATOR'S INTERNAL NUMBER: NA

AFFECTED DOCUMENT: MIL-STD-2045-47001C

PRECEDENCE: Routine

RECOMMENDATIONS: Implement this change for "47001DC"

### RECORD OF PROCESSING

<u>DATE</u> :	<u>ACTION</u> :
9 Apr 02	Proposal
26 Apr 02	Rev 1 w/ Alternate Proposal
1 May 02	Rev 2 w/ Alternate Proposal
7 May 02	Rev 3 w/ Alternate Proposal
<u>14 May 02</u>	<u>Work Item</u>
<u>15 May 02</u>	<u>Rev 4 w/ Alternate Proposal</u>
<u>15 May 02</u>	<u>Approved for "C"</u>

1. STATEMENT OF THE PROBLEM: Paragraph C.3.3.1 in the standard provides a confusing description on how to assign ~~Use UDP source and destination~~ port numbers when using the Segmentation and Reassembly (S/R) protocol for both IP datagrams and n-layer pass through data exchanges. ~~It does seem to indicate, however, that the UDP source port numbers should always be assigned the ALP port number such as 1581 for “47001” data exchanges. All Fire Support COMM servers, however, do not use the procedures described in C.3.3.1 when assigning port numbers for data exchanges.~~

2. PROBLEM ANALYSIS: ~~Revision 3 included changes to paragraph C.3.3.1 and the addition of paragraph C.3.3.2 in both solutions. The changes to these paragraphs included the addition of port numbers for non-data type messages. For revision 4 the alternative solution became the preferred solution.~~

3. PROPOSED SOLUTION:

C.3.3.1 IP Datagram exchanges.

The parameters exchanged in the service interface between S/R and upper layer protocols that utilize S/R, are the same as the parameters exchanged in the service interface between UDP and the upper layer protocols that utilize UDP without S/R. Two of the interface parameters that the S/R service interface has in common with UDP are the source and destination ports. The source and destination port parameters provided in the S/R service interface shall be placed in ~~the~~ corresponding source and destination port fields of the S/R header. Moreover, the port named “udp-sr-port” has been registered with the Internet Assigned Number Authority and assigned port number 1624 (decimal) to indicate the S/R protocol as defined by this standard. ~~Table s NN and MM illustrates the use of the port numbers for in a both data and non data messages, such as acknowledgment requests, exchange respectively, using the “47001” ALP.~~

Table NN Port Numbers without S/R and with S/R

<b>Small “47001” messages sent directly via UDP/IP</b>	
UDP Destination Port Number	UDP Source Port Number
1581 or the dynamically assigned source port number	1581 or a dynamically assigned source port number
<b>Any “47001” messages sent via S/R/UDP/IP</b>	
UDP Destination Port Number	UDP Source Port Number
1624 or the dynamically assigned source port number.	1624 or a dynamically assigned source port number
S/R Destination Port Number	S/R Source Port Number
1581 or the dynamically assigned source port number	1581 or a dynamically assigned source port number

Table MM Assigned Port Numbers for S/R Non-data Type Messages

<u>S/R Destination Port Number</u>	<u>S/R Source Port Number</u>
<u>1624</u>	<u>1624</u>
<u>UDP Destination Port Number</u>	<u>UDP Source Port Number</u>
<u>1624</u>	<u>1624</u>

Note that in Table NN an initial exchange with small “47001” messages sent directly via UDP/IP shall use the UDP destination port number of 1581. The UDP source number in this case shall be either 1581 or dynamically assigned from the range of available port numbers above 1023. For an initial exchange with any “47001” message sent via S/R, UDP and IP, the UDP destination port number shall be 1624 and the S/R destination port number shall be 1581. The UDP source port number shall be 1624 or dynamically assigned from the range of available port numbers above 1023. The S/R source number shall be 1581 or dynamically assigned from the range of available port numbers above 1023. Subsequent exchanges may be affected by using the dynamically assigned source port numbers in the received message as the destination port numbers in the outgoing response.

#### 5.8.3.7 Destination port number.

The destination-destination port named “mil-2045-4700” has been registered with the Internet Assigned Number Authority and has been assigned port number 1581 (decimal) to indicate the MIL-STD-2045-47001 ALP as defined by this standard. This “mil-2045-47001” port shall be passed as the destination port parameter to the lower layer protocol (e.g., UDP, TCP, or S/R) when exchanging UMF defined in TABLE IV (see C.3.3.1 for a discussion on exchanging IP datagrams). If n-layer pass through is invoked without S/R, the next lower layer is the intranet layer and destination port number is not required.

#### C.3.3.2 N-layer pass through exchanges

The parameters exchanged in the service interface between S/R and the upper layer protocols that utilize S/R are the same as the parameters that would have been exchanged if UDP and IP were utilized. The source and destination port parameters provided in the S/R service interface from the upper layer protocol shall be placed in the corresponding Source Port and Destination Port fields of the S/R header. Port 1581 as defined in paragraph 5.8.3.7 of this standard shall be used to indicate MIL-STD-2045-47001 as an ALP when S/R is used with n-layer pass through. If N-1 Layer pass through with S/R is used with an ALP other than MIL-STD-2045-47001, use the respective port number for the ALP. Moreover, for non-data type messages such as acknowledgment requests the S/R destination and source ports shall be 1624. The service parameters and values associated with the interface between S/R and the Intranet Header are

described in MIL-STD-188-220C and include the ~~Unitdata Request primitive parameters and the Unitdata Indications primitive parameters.~~

4. ALTERNATIVE SOLUTIONS: For paragraph C.3.3.1 with the [addition of paragraph C.3.3.2. There is no change to 5.8.3.7 Destination port number.](#)

Background: There are problems with port numbers within the Army Fire Support Systems because of inability to interoperate between command and control; and weapon systems/sensors. Misinterpretation of the standard in a major player in this problem.

SCC #124 is attempting to clarify the standard. The proposed solution has tried to eliminate a concern with one to many transactions using dynamic allocation. It does this by severely limiting the use of dynamic allocation. This is a complicated solution that could work or be made to work.

Army Fire Support has no need for dynamic allocation. The additional wording to try to make it work creates additional confusion. Unless there is a remarkable capability coming from dynamic allocation, recommend consider dropping it and using only fixed values as presently defined. If there are reasons that this added functionality is required, the proposed solution of SCC #124 should be considered. The preference is simplicity and not dynamic allocation.

[Although the data in Tables NN and MM; and Tables OO and PP are the same it is felt for clarity that the distinction between data and non-data S/R messages should be specified separately in the document.](#)

C.3.3.1 UDP/IP Datagram exchanges.

The parameters exchanged in the service interface between S/R and upper layer protocols that utilize S/R, are the same as the parameters exchanged in the service interface between UDP and the upper layer protocols that utilize UDP without S/R. Two of the interface parameters that the S/R service interface has in common with UDP are the source and destination ports. The source and destination port parameters provided in the S/R service interface shall be placed in corresponding source and destination port fields of the S/R header. Moreover, the port named “udp-sr-port” has been registered with the Internet Assigned Number Authority and assigned port number 1624 (decimal) to indicate the S/R protocol as defined by this standard. For stations ~~exchanging using S/R data segment PDUs and non-data S/R PDUs (e.g. acknowledgment request, partial acknowledgment, etc.)- data using the~~ to exchange the “47001” ALP, ~~S/R~~ the port numbers shown in Tables NN and MM ~~and in Table MM~~ shall be ~~used for all message exchanges,-~~ used, respectively.

Table NN ~~Assigned~~ Port Numbers ~~without S/R and with or S/R~~ Data Segment PDUs related to the exchange of 47001 ALP

<b><u>“47001” messages or “47001” responses sent via as S/R Data PDUs /UDP/IP</u></b>	
<u>S/R Destination Port Number</u>	<u>S/R Source Port Number</u>
1581	<del>1581</del> <u>Any value</u>
<u>UDP Destination Port Number</u>	<u>UDP Source Port Number</u>
1624	<del>1624</del> <u>Any value</u>

Table MM Port Numbers for S/R Non-data PDUs related to the exchange of 47001 ALP

<u>S/R Destination Port Number</u>	<u>S/R Source Port Number</u>
1581	<del>ny value</del> <u>Any value</u>
<u>UDP Destination Port Number</u>	<u>UDP Source Port Number</u>
1624	<u>Any value</u>

### C.3.3.2 -N-layer pass through exchanges

The parameters exchanged in the service interface between S/R and the upper layer protocols that utilize S/R are the same as the parameters that would have been exchanged if UDP and IP were utilized. The source and destination port parameters provided in the S/R service interface from the upper layer protocol shall be placed in the corresponding Source Port and Destination Port fields of the S/R header. For stations using S/R data segment PDUs and non-data PDUs (e.g. acknowledgment request, partial acknowledgment, etc.) to exchange the “47001” ALP, the port numbers shown in Tables OO and PP and in Table MM shall be used, respectively. ~~For stations exchanging S/R data using the “47001” ALP and for stations exchanging non-data S/R type messages such as acknowledgment requests the port numbers shown in Table NM shall be used.~~ ~~When using the S/R n-H layer pass through with S/R is used with an ALP other than MIL-STD-2045-47001, use the respective port number for the ALP. Moreover, for non-data type messages such as acknowledgment requests the S/R destination and source ports shall be 1624.~~ The service parameters and values associated with the interface between S/R and the Intranet Header are described in MIL-STD-188-220C and include the Unitdata Request primitive parameters and the Unitdata Indications primitive parameters.-

Table MM Assigned Port Numbers for S/R Non-data Type Messages  
Table OO Port Numbers for S/R Data Segment PDUs related to the exchange of 47001 ALP

<b><u>“47001”message or “47001” responses sent as S/R Data PDUs</u></b>	
<u>S/R Destination Port Number</u>	<u>S/R Source Port Number</u>
1581	<u>Any value</u>

Table PP Port Numbers for S/R Non-data PDUs related to the exchange of 47001 ALP

<u>S/R Destination Port Number</u>	<u>S/R Source Port Number</u>
<u>1581</u>	<u>Any value</u>

5.8.3.7 Destination port number.

The destination port named “mil-2045-4700” has been registered with the Internet Assigned Number Authority and has been assigned port number 1581 (decimal) to indicate the MIL-STD-2045-47001 ALP as defined by this standard. This “mil-2045-47001” port shall be passed as the destination port parameter to the lower layer protocol (e.g., UDP, TCP, or S/R) when exchanging UMF defined in TABLE IV (see **C.3.3.1 for a discussion on exchanging IP datagrams**). If n-layer pass through is invoked without S/R, the next lower layer is the Intranet layer and destination port number is not required.

5. SYSTEM CHANGES REQUIRED: None

6. CONFIGURATION ITEM DOCUMENTATION CHANGES: MIL-STD-2045-47001C

7. IMPACT ON INTEROPERABILITY: None

8. IMPACT ON RELATED DOCUMENTS: None

9. IMPLEMENTATION DATES: TBD

10. OTHER CONSIDERATIONS: None

11. REFERENCES: None

12. Trouble Reports (TRs) ADDRESSED IN THIS SCC: None

## STANDARDS CHANGES CATALOG (SCC)

SCC NUMBER: SCC #124

CHANGE PROPOSAL TITLE: "Clarification of S/R and UDP Port Numbers" for 47001C

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ORIGINATOR'S INTERNAL NUMBER: NA

AFFECTED DOCUMENT: MIL-STD-2045-47001C

PRECEDENCE: Routine

RECOMMENDATIONS: Implement this change for "47001C"

### RECORD OF PROCESSING

<u>DATE</u> :	<u>ACTION</u> :
9 Apr 02	Proposal
26 Apr 02	Rev 1 w/ Alternate Proposal
1 May 02	Rev 2 w/ Alternate Proposal
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15 May 02	Rev 4 w/ Alternate Proposal
15 May 02	Approved for "C"

1. STATEMENT OF THE PROBLEM: Paragraph C.3.3.1 in the standard provides a confusing description on how to assign source port numbers when using the Segmentation and Reassembly (S/R) protocol for both IP datagrams and n-layer pass through data exchanges.

2. PROBLEM ANALYSIS: Revision 3 included changes to paragraph C.3.3.1 and the addition of paragraph C.3.3.2 in both solutions. The changes to these paragraphs included the addition of port numbers for non-data type messages. For revision 4 the alternative solution became the preferred solution.

3. PROPOSED SOLUTION: Deleted.

4. ALTERNATIVE SOLUTIONS: For paragraph C.3.3.1 with the addition of paragraph C.3.3.2. There is no change to 5.8.3.7 Destination port number.

Background: There are problems with port numbers within the Army Fire Support Systems because of inability to interoperate between command and control; and weapon systems/sensors. Misinterpretation of the standard in a major player in this problem.

SCC #124 is attempting to clarify the standard. The proposed solution has tried to eliminate a concern with one to many transactions using dynamic allocation. It does this by severely limiting the use of dynamic allocation. This is a complicated solution that could work or be made to work.

Army Fire Support has no need for dynamic allocation. The additional wording to try to make it work creates additional confusion. Unless there is a remarkable capability coming from dynamic allocation, recommend consider dropping it and using only fixed values as presently defined. If there are reasons that this added functionality is required, the proposed solution of SCC #124 should be considered. The preference is simplicity and not dynamic allocation.

Although the data in Tables NN and MM; and Tables OO and PP are the same it is felt for clarity that the distinction between data and non-data S/R messages should be specified separately in the document.

### C.3.3.1 UDP/IP Datagram exchanges.

The parameters exchanged in the service interface between S/R and upper layer protocols that utilize S/R, are the same as the parameters exchanged in the service interface between UDP and the upper layer protocols that utilize UDP without S/R. Two of the interface parameters that the S/R service interface has in common with UDP are the source and destination ports. The source and destination port parameters provided in the S/R service interface shall be placed in corresponding source and destination port fields of the S/R header. Moreover, the port named "udp-sr-port" has been registered with the Internet Assigned Number Authority and assigned port number 1624 (decimal) to indicate the S/R protocol as defined by this standard. For stations using S/R data segment PDUs and non-data PDUs (e.g. acknowledgment request, partial

acknowledgment, etc.) to exchange the “47001” ALP, the port numbers shown in Tables NN and MM shall be used, respectively.

Table NN Port Numbers for S/R Data Segment PDUs related to the exchange of 47001 ALP

<b>“47001”message or “47001” responses sent as S/R Data PDUs</b>	
S/R Destination Port Number	S/R Source Port Number
1581	Any value
UDP Destination Port Number	UDP Source Port Number
1624	Any value

Table MM Port Numbers for S/R Non-data PDUs related to the exchange of 47001 ALP

S/R Destination Port Number	S/R Source Port Number
1581	Any value
UDP Destination Port Number	UDP Source Port Number
1624	Any value

### C.3.3.2 N-layer pass through exchanges

The parameters exchanged in the service interface between S/R and the upper layer protocols that utilize S/R are the same as the parameters that would have been exchanged if UDP and IP were utilized. The source and destination port parameters provided in the S/R service interface from the upper layer protocol shall be placed in the corresponding Source Port and Destination Port fields of the S/R header. For stations using S/R data segment PDUs and non-data PDUs (e.g. acknowledgment request, partial acknowledgment, etc.) to exchange the “47001” ALP, the port numbers shown in Tables OO and PP shall be used, respectively.

**When** using the S/R n-layer pass through with an ALP other than MIL-STD-2045-47001, use the respective port number for the ALP. The service parameters and values associated with the interface between S/R and the Intranet Header are described in MIL-STD-188-220C and include the Unitdata Request primitive parameters and the Unitdata Indications primitive parameters.

Table OO Port Numbers for S/R Data Segment PDUs related to the exchange of 47001 ALP

<b>“47001”message or “47001” responses sent as S/R Data PDUs</b>	
S/R Destination Port Number	S/R Source Port Number
1581	Any value

Table PP Port Numbers for S/R Non-data PDUs related to the exchange of 47001 ALP

S/R Destination Port Number	S/R Source Port Number
1581	Any value

5.8.3.7 Destination port number.

The destination port named “mil-2045-4700” has been registered with the Internet Assigned Number Authority and has been assigned port number 1581 (decimal) to indicate the MIL-STD-2045-47001 ALP as defined by this standard. This “mil-2045-47001” port shall be passed as the destination port parameter to the lower layer protocol (e.g., UDP, TCP, or S/R) when exchanging UMF defined in TABLE IV (**see C.3.3.1 for a discussion on exchanging IP datagrams**). If n-layer pass through is invoked without S/R, the next lower layer is the Intranet layer and destination port number is not required.

5. SYSTEM CHANGES REQUIRED: None

6. CONFIGURATION ITEM DOCUMENTATION CHANGES: MIL-STD-2045-47001C

7. IMPACT ON INTEROPERABILITY: None

8. IMPACT ON RELATED DOCUMENTS: None

9. IMPLEMENTATION DATES: TBD

10. OTHER CONSIDERATIONS: None

11. REFERENCES: None

12. Trouble Reports (TRs) ADDRESSED IN THIS SCC: None