% • (C.1.18.1.1, C.1.18.1.6) added to CV X′4696′ a destination MAC address for
% FRPVC

% • (C.1.18.1.3, C.1.18.1.4) updated V.25/V.25bis destination dial address and
% calling identification number information

% • (C.1.18.1.3, C.1.18.1.4, C.1.18.1.5, C.1.18.1.6) changed encodings of Token-Ring
% signalling information from canonical to noncanonical

% • (C.1.18.1.5) retired CV X′4695′ SDLC station role usage for SDLCNS and
% SDLCSW

The following revisions were made based on review comments to Document
Number SV40-1010-01/DLUR-8 (APPN DLUR Architecture Reference Version 1.2).
These changes are indicated by a pound sign (#) throughout the text.

• (5.6.3.2) updated the DLUR REQDISCONT processing to return a
RSP(REQDISCONT) upon receipt of RSP(REQDACTPU)

• (5.7.3.2) clarified the sense code used in -RSP(BIND) or UNBIND for
“surprise” CP-SVR pipe activation

• (6.2, 6.2.1, 6.2.2, new 6.2.4, 6.3, 6.3.1, 6.3.3, 13.1.2, 13.1.7, C.1.3.1, C.1.3.1.1,
C.1.20.1) added the DLUR support for forwarding PU/LU names

• (8.1.2) updated the DLUR processing of CV X′0C′ on +RSP(ACTLU)

• (8.1.4) updated the DLUR processing to unextend an extended BIND

• (8.1.4) updated the DLUR BIND adaptive session pacing processing

• (8.1.5) updated the DLUR +RSP(BIND) processing to include the Route
Selection (X′2B′) control vector

• (8.2.1) updated the DLUS processing for setting the receipt of TDUs support
DLUS capability

• (13.3.1, C.1.8, new C.1.15) added the Route Selection (X′2B′) control vector to
the SESSST format X′03′ RU

• (appendix C) updated formats appendix, removing change bars for format
changes published in SNA Formats edition GA27-3136-15

• (now C.1.19.1.1, now C.1.19.1.5) added an optional subfield for V.25bis desti-
nation dial address and calling identification number

• (now C.1.19.1.3, now C.1.19.1.5) changed FRPVC DSAP and SSAP from
canonical to noncanonical format

• (now C.1.19.1.7, now C.1.19.1.8) corrected the wording of the address length
field in X′46A5′ and X′46A6′ for X.25

6.2 SSCP-PU Session Activation

To support dependent SLUs in or downstream from the DLUR node, the DLUS node must initiate SSCP-PU and SSCP-LU sessions over the CP-SVR pipe to the T2.0 PU image supporting the dependent SLUs.

This begins with the establishment of an SSCP-PU session. Once the DLUS conwinner CPSVRMGR session has been established, an ACTPU message must be sent over the CP-SVR pipe to the T2.0 PU to establish an SSCP-PU session. This can be done in two ways:

1. ***The DLUS node may activate a predefined PU.***

In this case, the SSCP (DLUS node) has a predefined PU image associated with the DLUR node. When the DLUS node explicitly activates the PU, it will know the DLUR name and downstream addressing associated with the PU as defined in 5.4.1, "New PU Definition Parameters" on page 5-6. This enables the DLUS to establish a CP-SVR pipe to the DLUR. Once the CP-SVR pipe has been activated, the SSCP will use the system-defined information and knowledge that the CP-SVR pipe has been activated, to generate an ACTPU and send it to the downstream PU.

2. ***The DLUR node may request dynamic PU activation via a REQACTPU.***

REQACTPU is a new message that identifies to the DLUS node that the DLUR node is requesting an ACTPU be sent for a previously defined or undefined downstream PU. The DLUS node will use infor-
% mation contained in the REQACTPU (see 5.3.1, "DLUR PU Identification" on page 5-2 for more details) to search for a predefined PU definition or use the Configuration Services XID exit support to create an ACTPU and send it to the downstream PU.

In either case, the FID2 Encapsulation GDS variable will be used to transport the REQACTPU|ACTPU messages over the CP-SVR pipe. In order to do this, the FQPCID and FID2 TH, RH, and RU fields must be properly assigned. The flows in this section describe how these fields are assigned and the PU images are activated in both cases.

Data link control (DLC) activation must precede the forwarding of the ACTPU to the PU. In a subarea network, DLC activation may require several RU flows, e.g., ACTLINK, CONNOUT, CONTACT, CONTACTED. The DLUR will perform DLC activation function, but without the receipt of these DLC activation commands. This activation will either be triggered by operator command, external contact from the PU, or by the receipt of an ACTPU from the DLUS. So that the DLUR has the necessary information to perform DLC activation, the REQACTPU and the ACTPU will be encapsulated with XID (X'81') and TG Descriptor (X'46') control vectors (both of which the DLUR will process before passing the ACTPU on to the PU). The XID control vector is identified in the flows as XID, and the TG Descriptor control vector as PU TG.

The DLUS will include the PU name with the ACTPU RU (the name will be defined in a Network Name (X'0E') control vector type X'F1'. This name will be network-qualified if the PU's NETID is different
than the SSCP's NETID. Unless it is indicated in the ACTPU to forward the PU name (for more details
about PU name forwarding, see 6.2.4, "PU/LU Network Name Forwarding" on page 6-24), the DLUR will
strip off this control vector before passing the ACTPU on to the PU; in either case, it will store the PU
name for use in network management.

In a subarea network, activation of an SSCP-PU session may require several RU flows, e.g., Request Network Address Assignment (RNAA), SETCV, and ACTPU. For a DLUR-attached PU, these RUs will be combined into one, ACTPU. Therefore, ACTPU will also be encapsulated with an Extended SDLC Station (X'43') control vector, which the DLUR will process before passing the ACTPU on to the PU. The control vector is identified in the flows as PU CHAR.

6.2.1 Predefined PU Activation

In Figure 6-3 on page 6-9, the DLUS node has a predefined PU definition that it wishes to activate. In Figure 6-4 on page 6-11, the PU definition has been dynamically created and the DLUS operator has issued a command to activate/reactivate the PU. In this case, the PU definition must have the new DLUR and PU TG parameters as described in 5.4.1, “New PU Definition Parameters” on page 5-6.

Notes:

1. These scenarios assume the CP-SVR pipe between DLUS and DLUR is already active and has been activated by a previous SSCP-PU session activation sequence. Reference Figure 5-2 on page 5-15 for flows to describe the CP-SVR pipe activation associated with predefined PU activation.
2. Refer to Table 3-1 on page 3-2 for an explanation of the notation used in the diagrams in this chapter.

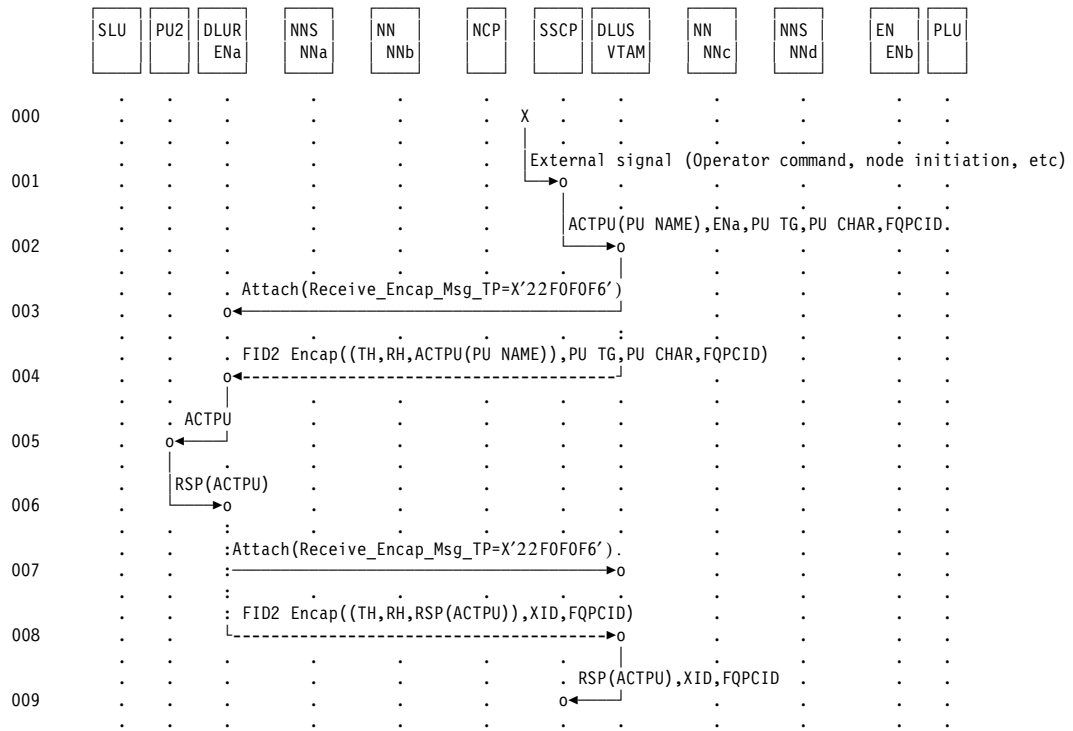

Figure 6-3. Predefined PU activation

1. When an external operator command or internal process signals to the SSCP that a PU should be activated, a signal is sent to the SSCP to generate the associated ACTPU.
2. The ACTPU is sent from the SSCP to DLUS component of the NN. The ACTPU includes the name of the PU, as well as the FQPCID generated by the SSCP to identify and index the PU control block.
3. The DLUS component uses the DLUR node specification in the PU definition to determine which CP-SVR pipe the encapsulated ACTPU should flow on. The DLUS node sends an FMH5 Attach to initiate the Receive_Encap_Msg_TP at the DLUR node.
4. The ACTPU FID2 PIU is sent on the CP-SVR pipe to the DLUR node. The FQPCID generated by the SSCP to identify the PU is included in the FID2 Encapsulation GDS variable. The TH of the FID2 will address both the SSCP and PU in the origin address field (OAF) and destination address field (DAF) respectively. The DLUS node includes the PU CHAR field with the ACTPU; this field carries PU information such as data mode and retry limits. The DLUS node also includes the PU TG identifier with the ACTPU RU; this will be used by the DLUR node to identify which PU is being activated.
5. The DLUR node receives the encapsulated ACTPU command. It must look in the FID2 Encapsulation GDS variable for the PU TG vector to identify the PU being activated. If the PU is downstream, the PU TG will identify a physical link to the downstream node. The DLUR node may have to initiate DLC activation on the link to the PU; the PU TG and PU CHAR fields carry information needed to activate the DLC. If the PU is internal to the DLUR, the PU TG is used as a local correlator to the DLUR to identify the PU image. It must then store the FQPCID associated with this PU so that subsequent data flows on the SSCP-PU session are forwarded to the correct PU. The DLUR strips off the GDS variable, including the PU TG, PU CHAR, and FQPCID fields, removes the
PU name (storing it for network management) unless it is indicated in the ACTPU to forward the PU
name (for more details about PU name forwarding, see 6.2.4, “PU/LU Network Name Forwarding”
on page 6-24), and forwards the ACTPU to the appropriate PU.
6. The PU generates a RSP(ACTPU) and sends it to the DLUR component.
7. The DLUR node sends an FMH5 Attach to initiate the Receive_Encap_Msg_TP at the DLUS node.
8. The DLUR component uses the previously stored FQPCID to return the RSP(ACTPU) in a FID2 Encapsulation GDS variable on the CP-SVR pipe. This FQPCID is supplied to allow the DLUS to quickly access the PU control block.
9. The DLUS node receives the encapsulated RSP(ACTPU) and strips off the GDS variable. The RSP(ACTPU) is forwarded from the DLUS to the SSCP component. The FQPCID is now used on all subsequent SSCP-PU data flows to identify the PU to the DLUR. Both the DLUS and DLUR node will set this field to the same value when referring to the SSCP-PU session for this PU.

6.2.2 Dynamic PU Activation

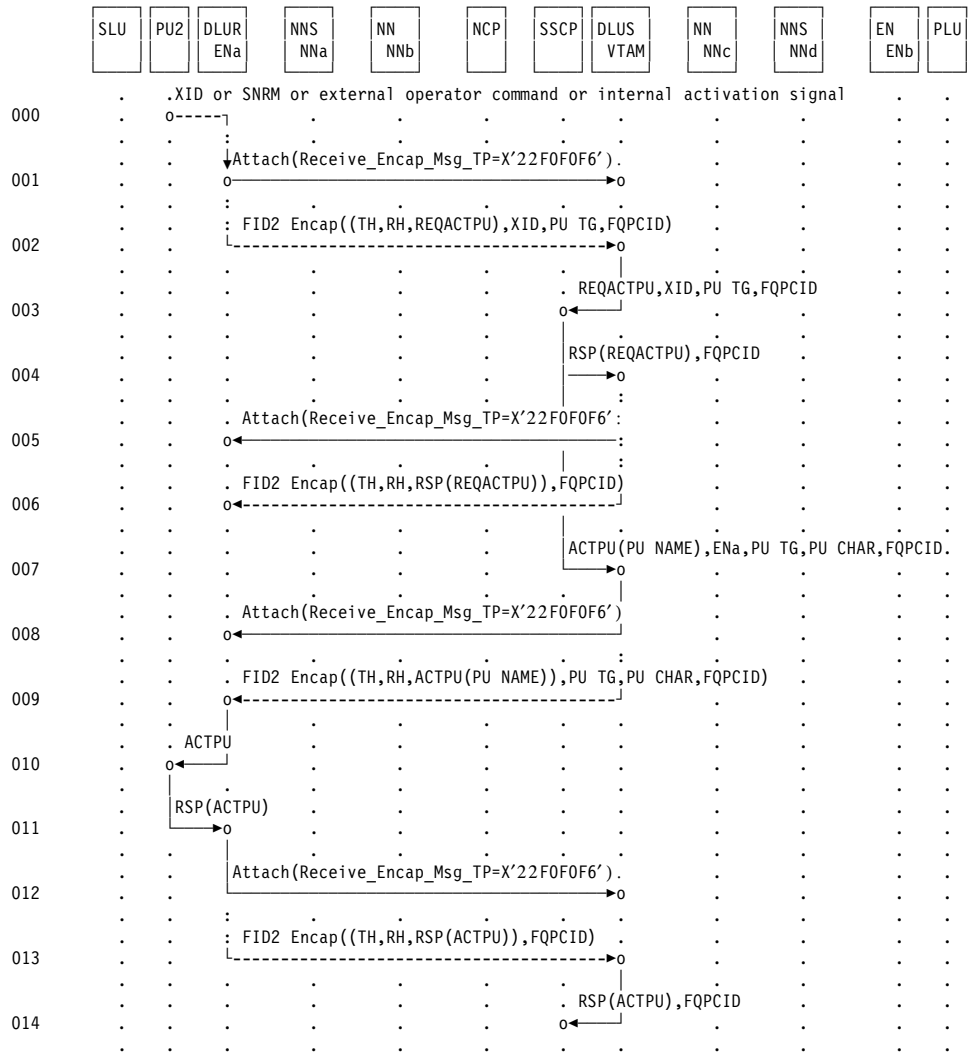

Figure 6-4. Dynamic PU activation

1. Sometime after activation of the CP-SVR pipe between DLUS and DLUR nodes, the DLUR node indicates that it wishes to activate a PU. This could be in response to an operator command, internal signal, or external contact from a downstream PU (for cases where the CP-SVR pipe has not already been established, see Figure 5-1 on page 5-10). The DLUR node sends an FMH5 Attach to initiate the Receive_Encap_Msg_TP at the DLUS node.

2. The DLUR signals the desire to activate a PU by sending an encapsulated REQACTPU on the CP-SVR pipe. The DLUR node will generate an FQPCID to identify the PU to the SSCP. It will also remember this FQPCID to identify the specific PU instance (and associated PU TG information if applicable) to itself. The TH DAF network address field is set to 0 identifying the SSCP, and the OAF address is set to 0 identifying the PU. The FID2 Encapsulation GDS variable carrying the
% REQACTPU may contain an XID0, XID1, or XID3 that will be used by the SSCP to search for a predefined PU image. In the case where a downstream PU has exchanged XID's with the DLUR, this will be the true XID image. In the case where this has not taken place, the DLUR will generate an XID0 image as a means to supply a IDBLK/IDNUM value to the SSCP. The FID2 Encapsulation GDS
% variable carrying the REQACTPU also may carry a PU TG identifier to describe the link attaching the downstream PU to the DLUR.

3. The DLUS component receives the encapsulated REQACTPU and passes it and the DLUR-generated FQPCID to the SSCP after stripping off the FID2 Encapsulation GDS variable.

4. The SSCP must verify that the FQPCID generated by the DLUR is unique and the PU can be activated. A RSP(REQACTPU) is then generated and sent to the DLUR node via the DLUS component. Before sending a positive RSP(REQACTPU), the SSCP must verify that the FQPCID is unique for this node and either find a predefined PU definition or generate a PU definition via the Configuration Services XID Exit support mentioned in 3.2.2, "Configuration Services XID Exit Support" on page 3-5. The SSCP may also chose to reject the REQACTPU regardless of Configuration Services XID Exit support, for local security or other product/customer-specific reasons. If the above conditions are met, the PU can be activated, and a positive response is generated. If the FQPCID is not unique or the PU cannot be activated, a negative response and sense data is generated. The RSP(REQACTPU) is sent along with the FQPCID to the DLUS component of the DLUS node.

5. The DLUS node sends an FMH5 Attach to initiate the Receive_Encap_Msg_TP at the DLUR node.

6. The DLUS component encapsulates the RSP(REQACTPU) PIU and uses the FQPCID generated by the DLUR component to identify the PU to the DLUR node. This encapsulated message is sent over the CP-SVR pipe to the DLUR node.

7. The SSCP follows a positive RSP(REQACTPU) with an ACTPU for the PU. This ACTPU includes the name of the PU.

8. The DLUS node sends an FMH5 Attach to initiate the Receive_Encap_Msg_TP at the DLUR node.

9. The ACTPU PIU is encapsulated along with the FQPCID to identify the PU to the DLUR node. It is sent to the DLUR node.

10. The DLUR node uses the FQPCID field to identify the PU to receive the encapsulated flow. The FID2 Encapsulation GDS variable and its PU TG and PU CHAR fields are stripped by the DLUR.
The DLUR then removes the PU name (storing it for network management) from the ACTPU unless
it is indicated in the ACTPU to forward the PU name (for more details about PU name forwarding,
see 6.2.4, "PU/LU Network Name Forwarding" on page 6-24), and forwards the ACTPU to the appropriate PU.

11. The PU generates a RSP(ACTPU) and sends it to the DLUR node.

12. The DLUR node sends an FMH5 Attach to initiate the Receive_Encap_Msg_TP at the DLUS node.

13. The DLUR component encapsulates the RSP(ACTPU) PIU along with the FQPCID and sends it on the CP-SVR pipe to the DLUS node.
14. The DLUS component removes the FID2 Encapsulation GDS variable and forwards it to the SSCP. Both the DLUS and DLUR nodes use the FQPCID to uniquely identify this SSCP-PU session.

6.2.4 PU/LU Network Name Forwarding

The DLUR BF will usually remove PU and LU names received in ACTPU and ACTLU RUs before forwarding the RUs on to the destination resource. However, a user can indicate to the DLUS that, for a particular PU and its associated LUs, the DLUR should not remove the PU and LU names from the ACTPU and ACTLU RUs when forwarding them.

6.2.4.1 Network Name Forwarding Capability Indicator

At CP-SVR pipe activation, both DLURs and DLUSs will indicate support for this network name forwarding function by setting on the network name forwarding supported indicator in the DLUR/S Capabilities (X′51′) control vector.

6.2.4.2 DLUS Processing

In this section a DLUS or DLUR which supports this function will be considered uplevel, while a DLUS or DLUR which does not support this function will be considered downlevel.

6.2.4.2.1 Uplevel DLUS Sending To Uplevel DLUR When a DLUS which supports the network name forwarding function is about to send an ACTPU for a PU2/2.1 to a DLUR which also supports this function,

- the DLUS will check the PU′s system definition to see whether the user requested the DLUR to strip off the Network Name (X′0E′) control vector or to forward it
- the DLUS will include a PU Capabilities (X′80′) ACTPU control vector along with the Network Name control vector in both format 0 and format 1 ACTPU RUs
- if the Network Name control vector is to be stripped off, the DLUS will reset the network name forwarding request indicator in the PU Capabilities control vector; if the Network Name control vector is to be forwarded, the DLUS will set the indicator

6.2.4.2.2 Uplevel DLUS Sending To Downlevel DLUR In this case the DLUS performs the same processing as a downlevel DLUS would, i.e.,

- for format 0 ACTPU, the DLUS will only include the Network Name control vector
- for format 1 ACTPU, the DLUS will include both the PU Capabilities and Network name control vectors, and it will reset the network name forwarding request indicator in the PU Capabilities control vector

6.2.4.3 DLUR Processing

In this section a DLUS or DLUR which supports this function will be considered uplevel, while a DLUS or DLUR which does not support this function will be considered downlevel.

Whether removing or forwarding a PU or LU name, the DLUR will store the name for network management and other uses.

6.2.4.3.1 Uplevel DLUR Receiving From Uplevel DLUS When the DLUR receives the ACTPU,

- it will check the network name forwarding request indicator in the PU Capabilities control vector:
- if the indicator is off, the DLUR will remove the Network Name and PU Capabilities control vectors from format 0 ACTPUs and remove the Network Name control vector from format 1 ACTPUs

– if the indicator is on, the DLUR will leave the control vectors on the ACTPU

• the DLUR will save the network name forwarding request indicator value so that it can be used when processing ACTLUs for the LUs associated with the PU:

– if the indicator is off, the DLUR will remove the Network Name control vector from the ACTLU

– if the indicator is on, the DLUR will leave the Network Name control vector on the ACTLU

6.2.4.3.2 Uplevel DLUR Receiving From Downlevel DLUS In this case the DLUR performs the same processing as a downlevel DLUR would, i.e., removing the Network Name control vector from ACTPU and ACTLU RUs.

6.3 SSCP-LU Session Activation

Once the ACTPU and RSP(ACTPU) have flowed, the DLUS node will activate the dependent LUs. This is done by sending an ACTLU over the SSCP-PU session from the DLUS to DLUR node. Since dependent LUs may be either predefined or dynamically created, there are two ways in which the ACTLU messages can be sent:

1. ***The DLUS node may activate predefined LUs.***

In this case, the DLUS node will use system-defined information to send ACTLU messages over the SSCP-PU session to the DLUR node.

2. ***The DLUR node may request dynamic activation of its dependent LUs.***

In this case, the DLUR node will use Dynamic Definition of Dependent LUs (DDDLU) support in VTAM to request activation of its dependent LUs (see 3.2.3, “Dynamic Definition of Dependent LUs Support” on page 3-5).

In either case, the DLUR node must also process the ACTLUs it receives to maintain a table associating dependent LU names with their supporting PU and PU connectivity information. This must be done because BINDs for dependent LUs must be routed by SLU name. The Route Selection Control Vector (RSCV) for the extended BIND will terminate in the DLUR node, and if the dependent LU is actually located on a downstream PU, the DLUR node will have to know how to send the BIND to the downstream PU/LU.

The information the DLUR needs to do this is the LU name, included by the DLUS in the ACTLU RU. The LU name will be defined in a Network Name (X′0E′) control vector type X′F3′. This name will be
network-qualified if the PU′s NETID is different than the SSCP′s NETID. Unless it was indicated in the
ACTPU to forward the LU name (for more details about LU name forwarding, see 6.2.4, “PU/LU
Network Name Forwarding” on page 6-24), the DLUR will strip off this control vector before passing the
ACTLU on to the PU; in either case, it will store the LU name for several uses, including PU/LU correlation, BIND routing, and network management.

In a subarea network, activation of an SSCP-LU session may require several RU flows, i.e., RNAA, SETCV, and ACTLU. For a DLUR-attached LU, these RUs will be combined into one, ACTLU. Therefore, ACTLU will now be encapsulated with an Assign LU Characteristics (X′30′) control vector, which the DLUR will process and strip from the RU before passing the ACTLU on to the LU. The control vector is identified in the flows as LU CHAR.

Figure 6-8 on page 6-27 illustrates an example of the activation of predefined dependent LUs.

6.3.1 Activation Of Predefined Dependent LUs

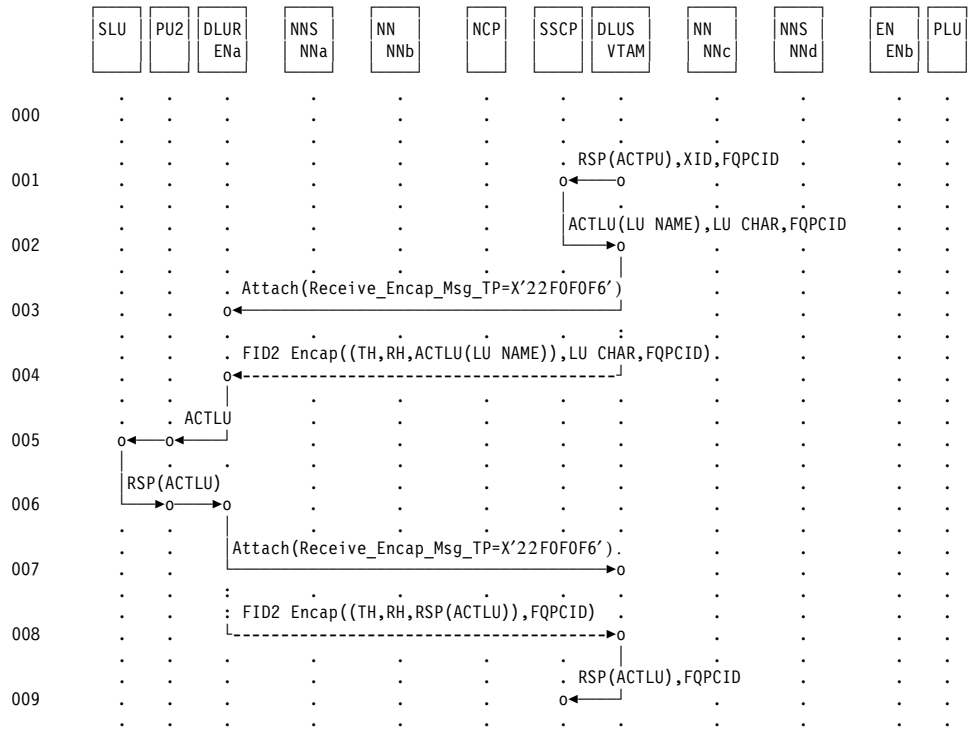

Figure 6-8. Activation of predefined LUs

1. When dependent LUs are predefined at the SSCP, the DLUS node will activate each of the LUs following activation of the SSCP-PU session.
2. The SSCP signals an ACTLU to the DLUS component. The DLUS node encapsulates the LU CHAR field with the ACTLU; this field carries LU information such as pacing parameters.
3. The DLUS node sends an FMH5 Attach to initiate the Receive_Encap_Msg_TP at the DLUR node.
4. The DLUS component will encapsulate the ACTLU PIU with the FQPCID of the PU, and send it over the CP-SVR pipe to the DLUR node.
5. The DLUR node strips off the FID2 Encapsulation GDS variable (including the LU CHAR and FQPCID CVs), strips the Network Name (X'0E') CV (which includes the LU name) from the ACTLU RU
unless it was indicated in the ACTPU to forward the LU name (for more details about LU name
forwarding, see 6.2.4, "PU/LU Network Name Forwarding" on page 6-24), and sends the ACTLU to the PU which forwards it to the LU.
6. The LU generates an RSP(ACTLU), sends it to the PU, which in turn sends the response to the DLUR component.
7. The DLUR node sends an FMH5 Attach to initiate the Receive_Encap_Msg_TP at the DLUS node.
8. The DLUR component then uses the FQPCID of the PU and encapsulates the RSP(ACTLU) PIU. This is sent over the CP-SVR pipe to the DLUS node.
9. The DLUS node strips the FID2 Encapsulation GDS variable and sends the RSP(ACTLU) to the SSCP. Both nodes now use the FQPCID and FID2 TH addressing to reference the SSCP-LU session.

6.3.2 Dynamic Registration Of Dependent LUs

Since VTAM will provide DDDLU support, DLUR nodes will be able to dynamically register and obtain SSCP services for their dependent LUs. This is done by sending an NMVT with Product Set Identifier (PSID) for each dependent LU on the SSCP-PU session from the DLUR to DLUS node (see SNA Networking Update: Dynamic Definition of Dependent Logical Units (published by SNA Networking Vendor Enablement) for further details).

Note: In order to utilize this function, downstream or local PUs supported by DLUR nodes must provide the PSID and DDDLU support required.

Based upon information received in the PSID subvector, the SSCP will use model definitions to dynamically create the necessary resource definitions and control blocks. A subarea address will be assigned and the SSCP will respond with an ACTLU to the DLUR node. The DLUS node will use the FQPCID of the SSCP-PU session and the addressing in the TH of the FID2 to build an appropriate FID2 Encapsulation GDS variable and send the ACTLU to the DLUR node via the CP-SVR pipe. When the DLUR node receives the ACTLU, it will strip the FID2 Encapsulation GDS variable and deliver it to the appropriate LU. The LU will respond with a RSP(ACTLU) which the DLUR node will encapsulate and send to the DLUS node.

Figure 6-9 on page 6-30 illustrates dynamic registration and activation of dependent LUs.

6.3.3 Dynamic Registration And Activation Of Dependent LUs

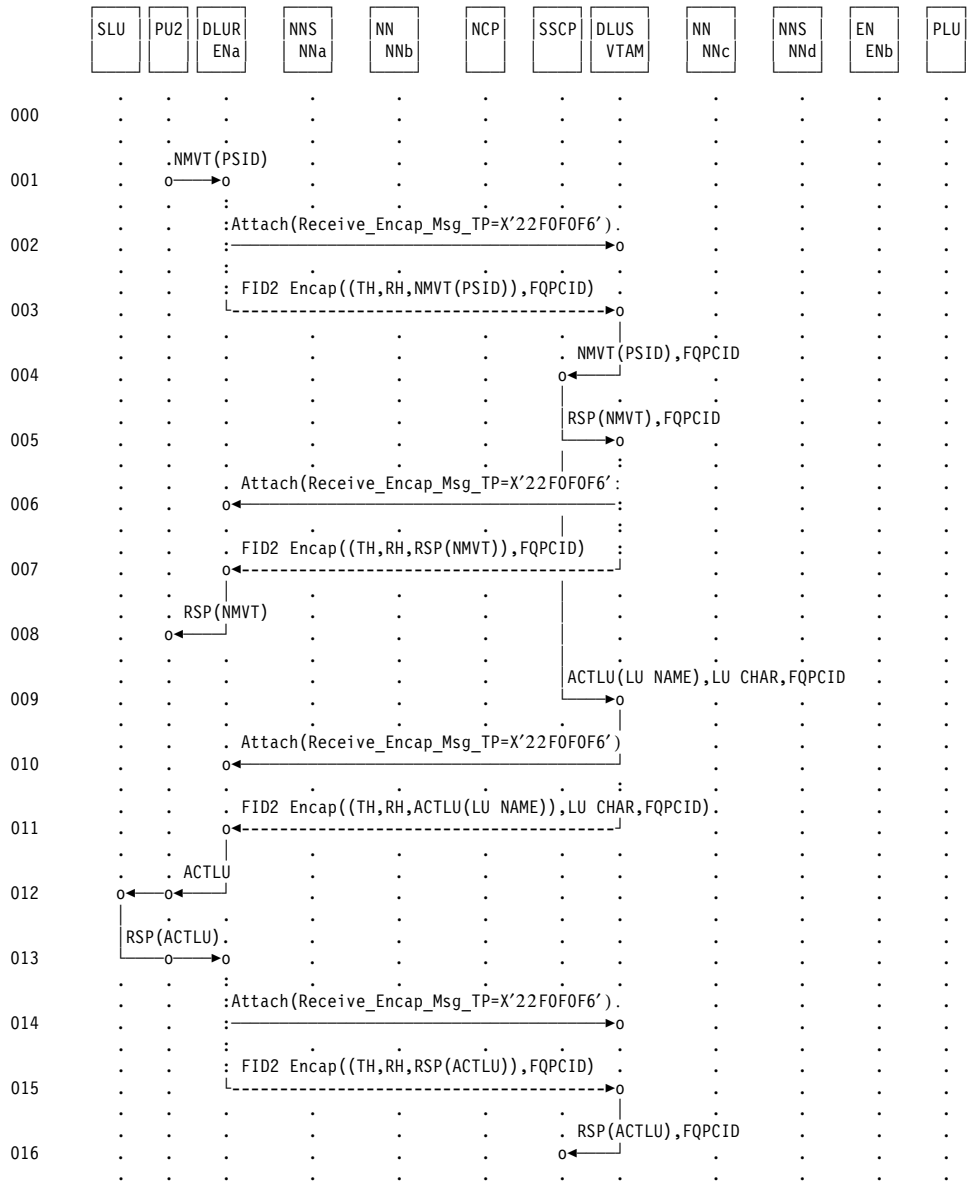

Figure 6-9. Dynamic dependent LU activation

1. PUs that have the necessary Dynamic Definition of Dependent LUs (DDDLU) support will generate an NMVT with the Product Set ID (PSID) information specific to a given LU and send it on the SSCP-PU session to the host. PUs with this support in a DLUR node will send this NMVT to the DLUR component.
2. The DLUR node sends an FMH5 Attach to initiate the Receive_Encap_Msg_TP at the DLUS node.
3. The DLUR component will use the FQPCID of the SSCP-PU session to encapsulate the NMVT on the SSCP-PU session and send it up the CP-SVR pipe to the DLUS node.
4. The DLUS node will strip the FID2 Encapsulation GDS variable and send the NMVT to the SSCP.
5. The SSCP will generate a RSP(NMVT) and pass it to VTAM.
6. The DLUS node sends an FMH5 Attach to initiate the Receive_Encap_Msg_TP at the DLUR node.
7. VTAM encapsulates the RSP(NMVT) and sends it to ENa.
8. ENa de-encapsulates the RSP(NMVT) and passes it on to PU2.
9. The SSCP will use the DDDLU support to generate an LU name, internal control blocks, and an ACTLU.
10. The DLUS node sends an FMH5 Attach to initiate the Receive_Encap_Msg_TP at the DLUR node.
11. The DLUS component will then use FQPCID of the SSCP-PU session to identify the PU to the DLUR node. The LU address will be in the DAF field of the TH of the ACTLU PIU.

    Note: The NVMT carries a SNA Address List Subvector that identifies the local address of the LU to be activated. This, in turn, is included in the DAF field of the ACTLU PIU sent to the PU.
12. The DLUR node removes the FID2 Encapsulation GDS variable (including the LU CHAR and FQPCID CVs) and strips the Network Name (X'0E') CV (which includes the LU name) from the ACTLU RU
unless it was indicated in the ACTPU to forward the LU name (for more details about LU name
forwarding, see 6.2.4, "PU/LU Network Name Forwarding" on page 6-24). The DLUR uses the FQPCID to pass the ACTLU command to the appropriate PU. The DLUR node uses the LU name to build a table associating LUs with PUs. This enables the DLUR to route subsequent BINDs (by SLU name) to the proper PU. The ACTLU is forwarded from PU to LU.
13. The RSP(ACTLU) is generated by the LU, passed to the PU, and forwarded to the DLUR component.
14. The DLUR node sends an FMH5 Attach to initiate the Receive_Encap_Msg_TP at the DLUS node.
15. The DLUR component uses the FQPCID of the PU and encapsulates the RSP(ACTLU) PIU on the CP-SVR pipe to the DLUS node.
16. The DLUS node strips the FID2 Encapsulation GDS variable and passes the RSP(ACTLU) to the SSCP. Both the DLUS and DLUR nodes will now use the FQPCID of SSCP-PU session and the FID2 TH addressing of the PIUs to reference the SSCP-LU session for this LU.

Table 13-1. GDS X'1500' Control Vectors

	term used in flows	RUs CV appears with
% X'0E'	PU TG	REQACTPU
X'25'		RSP(ACTPU), REQACTPU
X'30'	LU CHAR	ACTLU
X'43'	PU CHAR	ACTPU
X'46'	PU TG	ACTPU, REQACTPU
X'51'	DL CAP	ACTPU, RSP(ACTPU), REQACTPU, RSP(REQACTPU)
X'60'	FQPCID	all RUs
X'81'	XID	REQACTPU, RSP(ACTPU)

13.1.1.1 XID Image (X'81') FID2 Encapsulation Control Vector

This is a new control vector, locally defined to this GDS variable, which contains either:

% • the I-field image of the XID0, XID1 or XID3 SDLC response of the external PU attached to the DLUR, or

• a DLUR-generated XID0 image for an internal PU or for an external PU which does not support XID.

13.1.2 ACTPU (Activate Physical Unit)

The Network Name (X'0E') control vector (type X'F1' - PU name) is included with the ACTPU when sent by a DLUS to a DLUR-serviced PU.

There is a network name forwarding request indicator in the PU Capabilities (X'80') ACTPU control
vector which, when set, requests the DLUR to leave the Network Name (X'0E') control vector in the
ACTPU RU when the DLUR forwards the RU to the PU. Also, if the indicator is set, the DLUR is
requested to leave the Network Name (X'0E') control vector in the ACTLU RU for all of the PU's LUs
when the DLUR forwards these RUs to the LUs (for more details about PU/LU network name for-
warding, see 6.2.4, "PU/LU Network Name Forwarding" on page 6-24).

13.1.3 REQACTPU (Request ACTPU)

This is a new RU built by the DLUR and sent to the SSCP in the DLUS requesting that an ACTPU be sent to establish an SSCP-PU session with a DLUR-attached PU. This PU could be predefined or undefined to the SSCP ; it could be internal to the DLUR or downstream of the DLUR.

The REQACTPU has two formats:

- Format X'0' - external PU
- Format X'1' - internal PU

A positive response to REQACTPU indicates that the SSCP will send an ACTPU to the PU specified in the REQACTPU's corresponding FID2 Encapsulation (X'1500') GDS variable. A negative response to REQACTPU indicates that no ACTPU will be sent, and sense data will be included to specify the reason.

13.1.4 REQDACTPU (Request DACTPU)

This is a new RU built by the DLUR and sent to the SSCP in the DLUS requesting that an DACTPU be sent to take down an active SSCP-PU session with a DLUR-attached PU.

The REQDACTPU specifies which PU's SSCP-PU session is to be deactivated as well as the cause for the request, e.g.:

- X'00': loss of connectivity from the DLUR to the downstream PU
- X'01': REQDISCONT(normal) received from the downstream PU
- X'02': REQDISCONT(immediate) received from the downstream PU

A positive response to REQDACTPU indicates that the SSCP will send a DACTPU to the PU specified in the REQDACTPU's corresponding FID2 Encapsulation (X'1500') GDS variable, except for cause X'01', where the DACTPU may be preceded by LU-LU and SSCP-LU session deactivation commands. A negative response to REQDACTPU indicates that no DACTPU will be sent, and sense data will be included to specify the reason.

13.1.5 Network Name (X'0E') Control Vector

The Network Name (X'0E') control vector (type X'F1' - PU name) is optionally network-qualified. The DLUS includes a network-qualified PU name when the PU's NETID is different from the SSCP's NETID.

13.1.6 TG Descriptor (X'46') Control Vector

When this control vector is included in a FID2 Encapsulation (X'1500') GDS variable, the TG Identifier (X'80') subfield is not included since the link being described by the CV in this case is not a TG but a boundary link.

A new subfield (X'91') has been created to identify the DLC or physical interface type of a PU internal to or externally attached to the DLUR. Information carried in this subfield is currently defined for:

- Subfield X'91' - DLC and physical interface types:
  - Internal PU
  - Token-Ring LAN
  - Ethernet (IEEE 802.3) LAN
  - Frame relay PVC
  - SDLC non-switched
  - SDLC switched
  - V.25 switched physical interface
  - V.25bis switched physical interface
% - X.25 PVC
% - X.25 SVC

Additional DLC and physical interface types will be included at a later time.

New subfields in the range X'92'-X'F0' are being defined to carry the signaling information, e.g., addresses and dial digits, that is appropriate for each DLC and physical interface type. At present, subfields X'92' to X'96' have been defined.

13.1.7 DLUR/S Capabilities (X'51') Control Vector

This is a new control vector which describes the capabilities of the DLUS or DLUR to its partner.

For this, the initial level of DLUR/S support, there is:

- a one byte release field indicating Release 1 DLUR/S support (X'01'). Future releases will have their own values to aid in uplevel/downlevel support determination.
- a one byte indicator specifying whether the node is a NN (X'00') or an EN (X'01').
- a one byte indicator specifying whether the node is a DLUR (X'00') or a DLUS (X'01').
- a four byte Flow Reduction Sequence Number (FRSN)
- a one byte support indicator field, including:
  - an indicator for support of the RECEIVE_TDU_TP (X'22F0F0F4') service transaction program - when set, the sending node supports receipt of TDUs on this session
  - an indicator for limited DLUR support of ANS - when set, the DLUR only supports ANS=STOP; when not set, the DLUR supports both ANS=CONT and ANS=STOP
  - an indicator for limited DLUR multi-subnet support - when set, the DLUR responds to dependent LU searches with the OCR bit set; when not set, the DLUR responds to dependent LU searches with the OCR bit set
  - an indicator for network name forwarding support - when set, the DLUR will, if requested by the DLUS, forward Network Name control vectors on ACTPUs and ACTLUs to DLUR-served PUs and their associated LUs; when not set, the DLUR will always remove Network Name control vectors from ACTPUs and ACTLUs for DLUR-served PUs and LUs (for more details about PU/LU network name forwarding, see 6.2.4, "PU/LU Network Name Forwarding" on page 6-24)
- four reserved bytes (for future use)

13.1.8 DLC XID Information Field

A new XID3 bit (byte 15, bit 1) has been defined to be the DLUR ACTPU Indicator. This bit will have significance when the ACTPU Suppression Indicator is reset (signifying an ACTPU is requested of the adjacent node). Setting the new bit will signify that the DLUR would prefer to receive the ACTPU over the CP-SVR pipe; resetting the new bit signifies no preference (received either on the TG dependent flow or encapsulated over the CP-SVR pipe).

A new bit, the DLUS-served LU registration indicator, is defined in format 3 of the XID I-field. This bit is only used by a NN. When it is used, setting the indicator signifies that the NN supports DLUS-served LU registration (option set 1116). Resetting the indicator signifies that NN does not support DLUS-served LU registration.

13.1.9 Register Resource (X'12C3') GDS Variable

13.1.9.1 Command Parameters (X'80') Register Control Vector Subfield

ACTLU (ACTIVATE LOGICAL UNIT)

Byte	Bit	Content
3 – n		Control vector as described in the section "Control Vectors" in -- Heading 'CF' unknown -- *Note:* The following control vector may be included; it is parsed according to subfield parsing rule KL. X'0E' Network Name control vector (contains the LU name, type X'F3'; included if byte 1, bit 0 = 1)

C.1.3 ACTPU

C.1.3.1 ACTPU (ACTIVATE PHYSICAL UNIT)

SSCP|PUCP→PU, Exp; SC

ACTPU is sent by the SSCP to activate a session with the PU, and to obtain certain information about the PU.

ACTPU (ACTIVATE PHYSICAL UNIT)

Byte	Bit	Content
0		X'11' request code
1	0– 3	Format: X'0' Format 0—may include one or more control vectors in bytes 9 – n X'1' Format 1—same as Format 0, except that it always includes one or more control vectors in bytes 9 – n (sent only to type 2.1 nodes that use XID3 with byte 10, bit 3 set to 1) X'3' Format 3—same as Format 0, except that it always includes one or more control vectors in bytes 9 – n (sent only to PU T4|5s that support ERs and VRs)
	4– 7	Type activation requested: X'1' cold (retired) X'2' ERP
2	0– 3	FM profile: X'0' FM profile 0 X'5' FM profile 5
	4– 7	TS profile: X'1' TS profile 1 X'5' TS profile 5
3– 8		A 6-byte field that specifies the ID of the SSCP issuing ACTPU; the first four bits specify the format for the remaining bits:
	0– 3	Format: 0000 (only value defined)
	4– 7	Type of the node containing the SSCP
	8– 47	Implementation and installation-dependent binary identification

ACTPU (ACTIVATE PHYSICAL UNIT)

Byte	Bit	Content
9 – n		Control vectors as described following this RU or in the section "Control Vectors" in -- Heading 'CF' unknown -- *Note:* The following control vectors may be included; they are parsed according to subfield parsing rule KL (see "Substructure Encoding/Parsing Rules" in -- Heading 'CF' unknown --). X'09' Activation Request/Response Sequence Identifier control vector (present when sent to a PU T4|5) X'0B' SSCP-PU Session Capabilities control vector (present when sent to a PU T4|5) X'0E' Network Name control vector (contains the name of the PU, type X'F1'; present for Formats 0 and 1 when sent: (1) by an SSCP to an NCP only when that NCP is then to forward it to a PU T2.0|2.1; or (2) by a DLUS to a DLUR in all instances; or (3) by a DLUR to a PU T2.0|2.1 when asked to forward it by a DLUS) X'0E' Network Name control vector (contains the name of the sending control point, type X'F4'; present when sent to a PU T4|5) X'18' SSCP Name control vector (present when sent to a PU T4|5) X'80' PU Capabilities control vector (always present on Format 1; present on Format 0 when sent: (1) between a DLUS and a DLUR that both support network name forwarding; or (2) by an SSCP requesting network name forwarding; or (3) by an NCP or DLUR forwarding a CV X'0E')

C.1.3.1.1 PU Capabilities (X'80') ACTPU Control Vector

PU Capabilities (X'80') ACTPU Control Vector

Byte	Bit	Content
0– 1		Vector header; Key= X'80'
2		Vector Data
	0	Unsolicited NMVT support: 0 Sending node does not support unsolicited NMVTs for PSID. 1 Sending node supports unsolicited NMVTs for PSID.
	1	Network name forwarding request: 0 Sending node does not request the DLUR or NCP boundary function to include Network Name control vectors on ACTPUs and ACTLUs for this PU and its associated LUs. 1 Sending node requests the DLUR or NCP boundary function to include Network Name control vectors on ACTPUs and ACTLUs for this PU and its associated LUs. *Note:* This bit is reserved except when the sender is an SSCP whose CV X'0B' exchange with the receiving NCP revealed that both support network name forwarding, or when the sender is a DLUS whose CV X'51' exchange with the receiving DLUR revealed that both support network name forwarding.
	2– 7	Reserved

DLC Signaling Information (X′AE′) TG Descriptor Subfield

Byte	Bit	Content
0		Facility code: X′01′ RC/ICRD/FS (Reverse Charging/ICRD Status Selection/Fast Select) facility
1		RC/ICRD/FS parameter field
	0– 1	Fast-select parameter: 00 fast-select not requested 01 fast-select not requested 10 fast-select requested with no restriction 11 fast-select requested with restriction
	2– 3	ICRD parameter: 00 ICRD status not selected 01 ICRD allowance requested 10 ICRD prevention requested 11 reserved
	4– 6	Reserved
	7	Reverse charging parameter: 0 reverse charging not requested 1 reverse charging requested **Note:** Only the reverse charging parameter is expected to be used in APPN.

C.1.19.1.10 DLC Signaling Information (X′CD′) TG Descriptor Subfield

DLC Signaling Information (X′CD′) TG Descriptor Subfield

Byte	Bit	Content
0– 1		Subfield header; Key=X′CD′ (see -- Heading 'RUSPARS' unknown --)
2 – n		Subfield Data
For DLC Type = X25SVC:		
2 – n		X.25 Call User Data Data to be transferred from DTE to DTE in the call user data field of a call request packet immediately following the one-byte protocol identifier defined in subfield X′94′. A maximum of 15 bytes may be defined (n = 16) unless the fast-select facility is used. In that case, 127 bytes may be defined (n = 128). One use of this subfield is to convey a logon identifier.

C.1.20 DLUR/S Capabilities (X′51′) Control Vector

C.1.20.1 DLUR/S Capabilities (X′51′) Control Vector

The DLUR/S Capabilities control vector is exchanged by the dependent LU requester and the dependent LU server to describe their DLUR/S capabilities once a DLUS-DLUR session is activated.

DLUR/S Capabilities (X′51′) Control Vector

Byte	Bit	Content
0–1		Vector header; Key=X′51′ (see -- Heading 'RUSPARS' unknown -- and -- Table 'CV' unknown --)
2 – n		Vector Data
2		Dependent LU support level: X′01′ Release 1
3		Node type: X′00′ APPN network node X′01′ APPN end node
4		DLUR/S node type: X′00′ DLUR X′01′ DLUS
5–8		Flow-reduction sequence number: a value that identifies the latest Topology Database Update GDS variable received by the sender of the DLUR/S Capabilities control vector from the receiver of the DLUR/S Capabilities control vector
9		Support indicators (bit is set to 1 if the sender supports the function):
	0	RECEIVE_TDU_TP (X′22F0F0F4′) service transaction program supported: The sending CP supports receipt of TDUs on this session.
	1	Limited DLUR auto network shutdown (ANS) support: The DLUR terminates all LU-LU sessions immediately when connectivity to the DLUS is lost.
	2	Limited DLUR multisubnet support: The DLUR will not respond to dependent-LU searches when the Owning CP Respond (OCR) bit in the Find is set to 1.
	3	Network name forwarding supported: The sender supports DLUR forwarding of Network Name control vectors on ACTPUs and ACTLUs to DLUR-served PUs and their associated LUs.
	4–7	Reserved
10–13		Reserved

C.1.21 Register Resource (X′12C3′) GDS Variable

C.1.21.1 Register Resource (X′12C3′) GDS Variable

The Register Resource GDS variable is used to request that one or more entries be added to a network node server's directory of network resources. The network node server returns a Register Resource reply GDS variable to report an error; no reply is sent if the registration is completely successful. A network node may send a Register Resource GDS variable on a directed Locate to a central directory server requesting that one or more entries be added to the central directory server's directory. A Register Resource GDS variable is included on the Locate reply from the central directory server to report an error.