

IP LaunchPad RELEASE 10

SOFTWARE REQUIREMENTS SPECIFICATION

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1. Introduction

The Software Requirements Specification is Engineering’s response to the formal request of features or enhancements from the Product Management organization. It is the first step in the system design process, and is necessary to implement the requirements requested of the product.

1.1. PURPOSE

The purpose of this document is to clarify, in engineering terms, the requirements of the product as set forth in the MRD. This is not a design document. It is not intended to provide the specific engineering details required to implement the features requested, but to show that the engineering team has understood the PRD, and to provide information on how the Engineering group plans to meet its requirements.

1.2. SCOPE

This document will attempt to provide descriptions of all work that must be done to implement all Features specified for System Release 10:

In addition, this SRS will attempt to document all concomitant changes to existing components.

Not covered in this document: details about how this new feature will be documented in material produced by OPT’s Documentation and Training Development groups. This information will be published in separate Specifications.

1.3. REFERENCES

This section provides a complete list of all documents referenced in this SRS.

Document	Revision	Author
MRD - Project Plan	XXX	Product Management Team
Doc Spec		Documentation Group

1.4. OVERVIEW

The remainder of this SRS will capture the software requirements of this feature of the IP LaunchPad System. This SRS separated into sections. The first sections present requirements for one feature at a time; later sections detail the less sweeping changes in IP LaunchPad’s major components:

2. System Overview

This section will take IP LaunchPad component by component, and provide an overview of the changes that will be made to each component in System 10.

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3. Halt Message

Design complete by: 6/26/00

Code complete by: 9/20/00

The System 10 release of IP LaunchPad will allow an Administrator or end user to cancel a message job after it has been submitted to the IP LaunchPad system. This capability can be a convenience for the end user, but will also allow the Administrator to quickly remove message jobs that are causing system errors.

3.1. Feature Details

3.1.1. Activity

The Administrator or end-user can issue a Halt Message command for any message job in the system, up until the time that message job leaves IP LaunchPad (is offloaded to an IP LaunchPad connector (such as a RAS connector or Peer Connector). If the Halt command is executed in time, IP LaunchPad will stop processing of the entire message job. Some specifics:

- The Halt Message command will stop processing of an message directed to an individual destination.
- If the message job includes more than one destination address, one Halt Message command can be issued to halt delivery to all destinations.
- If the message job includes more than one destination address, the ability to halt some destinations and not others depends on the interface used to issue the command. (See the Interfaces section below.)
- If the destination halted is a broadcast List ID, the Halt Message command will stop delivery to ALL destinations in the list.
- It is NOT possible for an end user to issue a Halt Message command that affects some Broadcast List destinations but not others. This is only possible using the Command Line interface. (See the Interfaces section below.)

3.1.2. Interfaces

The Halt Message command can be issued via the various IP LaunchPad interfaces as follows:

3.1.2.1. Command Line

- From the command line, the Halt command can be issued using the following syntax:
h5 haltmessage <mid> [<smid> | <start smid>
<stop smid>
Where <mid> is a message ID, <smid> is a sub-message ID, and <start mid> and <stop mid> are the first and last smids (respectively) in a range of smids.
- If the System Administrator enters h5 haltmessage followed by a valid mid and no other arguments, IP LaunchPad will halt delivery to all smids associated with the specified mid.

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- If the System Administrator enters h5 haltmessage, followed by a valid mid, followed by a single valid smid, IP LaunchPad will halt delivery to that smid only.
- If the System Administrator enters h5 haltmessage, followed by a valid mid, followed by a valid smid, followed by a second valid smid, IP LaunchPad will halt delivery to all smids between the two specified smids (as well as the two smids themselves).
- It is possible to enter two different commands that specify the same mid and two overlapping ranges of smids. The system will process these requests without generating an error message.
- The Administrator issuing the Halt command from the command line will be able to halt ANY message job with a unique mid, or smid—regardless of whether the smid represents a destination derived from a broadcast list. (The Administrator can use the h5 showqueue command to get a list of mids and smids.)

3.1.2.2. Fax Client

3.1.2.2.1. Basic Procedure

- Using the Fax Client, the end user can halt a delivery by:
 - Selecting one or more entries in the Outbox
 - Clicking the “Halt Message” button.

3.1.2.2.2. Multiple Destinations

The Fax Client user can direct a message to more than one recipient in any of the following ways:

- Entering two or more destinations in the “To:” line.
- Specifying a locally stored Phonebook.
- Entering the ID of a server-based Broadcast list.

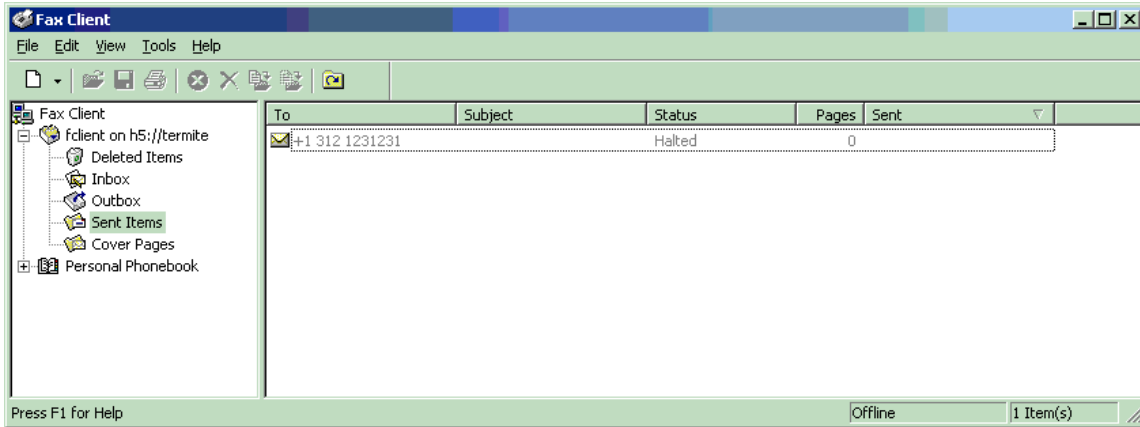
No matter how the multiple-destination message was created, the Fax Client represents the entire multiple-message job as one entry in the Sent Items panel. If the end-user double-clicks on the entry, a Detail window appears. In this window, there is a separate entry for each individual destination.

- The Fax Client user will be able to Halt delivery to all destinations by highlighting the line representing this message job in the Sent Items panel and clicking the “Halt” button (or selecting Halt from the Edit menu).
- The Fax Client user will be able to Halt delivery to some destinations but not others by opening the Detail window, highlighting one or more destinations, and clicking the Halt button (or selecting Halt from the Edit menu).

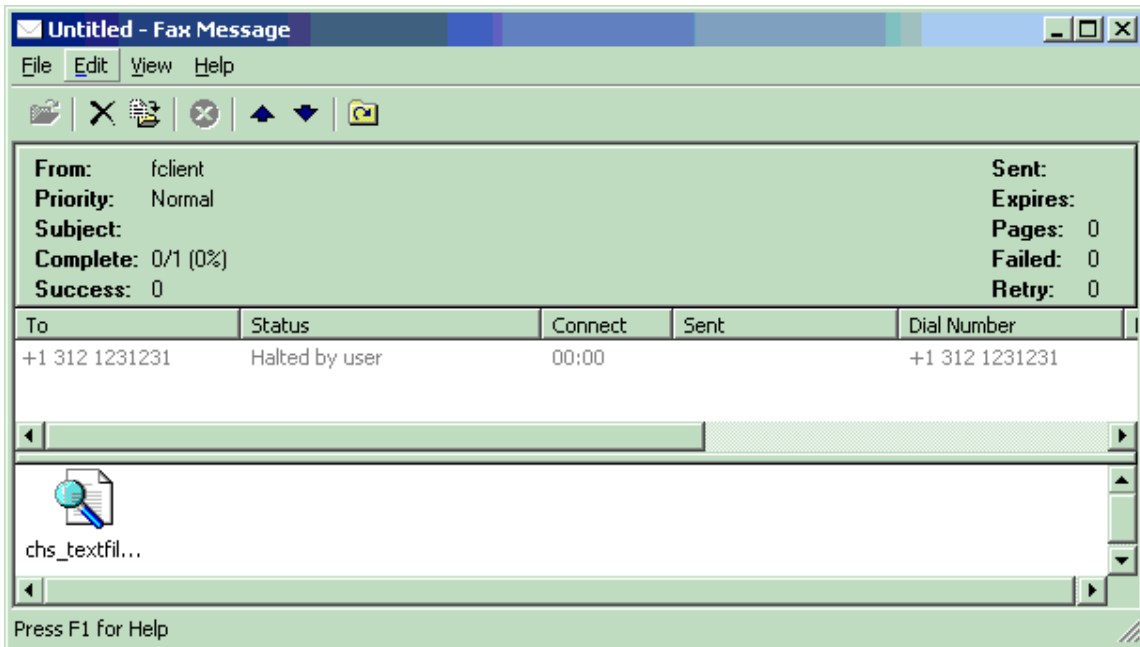
3.1.2.2.3. Status of Halted message

- Immediately after the end-user clicks the “Halt” button, the Fax Client will display a message box informing the end user that the halt request has been sent, but that the status will not be updated immediately.
- After the IP LaunchPad core system has successfully halted the message job or individual destination, the Fax Client displays its status as “Halted” in the Sent items panel. (See graphic below)
- After the message job or individual destination has been halted, the Fax Client Outbox displays its status as “Halted by user” in the Details window. (See graphic below)

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halted message status display



halted recipient status display

3.1.2.2.4.Offline Mode

- The Fax Client’s Halt button will NOT work if the Fax Client is being used in “offline” mode.

3.1.2.3. IP LaunchPad Web

3.1.2.3.1.How to halt a message in IP LaunchPad Web

- Using IP LaunchPad Web, the end user can halt a delivery by:
 - Selecting one or more entries in the Outbox
 - Clicking the “Halt Message” button.
- After the end user clicks the “Halt Message” button, IP LaunchPad Web will display a message acknowledging that the request to halt the message(s) has been sent.

3.1.2.3.2. Message with more than one destination (IP LaunchPad Web)

- If the IP LaunchPad Web user generates a message with more than one destination in the “To:” line, IP LaunchPad Web represents this message as a single line in the Outbox—it does NOT represent each destinations on a separate line. This means that the IP LaunchPad Web user must halt delivery to ALL of these destinations, or none.

3.1.2.3.3. Status of halted message (IP LaunchPad Web)

- After the delivery to a destination has been halted, the IP LaunchPad Web Message Detail window displays its status as “Failed” with a message indicating that the message was halted.

3.1.2.3.4. If Halt Message fails...

- If the Halt Message request sent from IP LaunchPad Web fails, IP LaunchPad Web will NOT display an error message.
The end-user will have to watch the message statuses to make sure the command went through.

3.1.2.4. API

- The writer of IGAPI-enabled code will be able to halt the sending of a submitted message using IGAPI’s existing “IGAPI KillMessage” functions.

3.1.3. Logging

3.1.3.1. In Log file(s)

- The IP LaunchPad core system will log halt requests into the harmonyd log file at the INFO level. The log message syntax will be:
Received halt request for mid: {GUID} start smid: X
stop smid: Y

3.1.3.2. MDR

3.1.3.2.1. MDR contents

- After IP LaunchPad has successfully halted a message, an MDR cut will have a failure reason of “Destination Halted”.

3.1.3.3. Via SNMP

- There will be NO SNMP trap generated when a message is halted.

3.1.4. Hardware/Software Requirements

- The Halt Message feature will be part of IP LaunchPad’s core functionality. It will be fully supported by any complete installation of IP LaunchPad.

3.1.5. Configuration

- There are no hive settings or other configuration parameters that control the operation of the Halt Message feature.

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3.1.6. Permissions support

3.1.7. Backward Compatibility

3.1.7.1. Earlier Version of the Server

- If System 10 versions of client applications (Fax Client, IPLPWeb, etc) are used with an earlier version of the IP LaunchPad core system, clicking the “Halt” button will generate an error message, and will NOT halt the delivery to the specified destination(s).

3.1.7.2. Earlier versions of Client applications

- If the System 10 version of the IP LaunchPad core system is used with earlier versions of the client applications, Halt Message will NOT be available to the end-user through these applications.
- If the System 10 version of the IP LaunchPad core system is used with earlier versions of the client applications, the System Administrator will still be able to halt messages from the command line.

3.2. Special Conditions

When Halt Message is implemented and running, the IP LaunchPad System 10 system will respond to error conditions, or other special conditions, as follows:

3.2.1. MID does not exist

- If a request comes in to halt a message ID that does not exist, the command will fail.

This is the condition that will exist after the IP LaunchPad core system has already successfully halted the message, or after the message has been dispatched to an IP LaunchPad connector.

3.2.2. Halt Command in a Peering relationship

- Once a message has been dispatched to the LM-PEER for offloading to another message system, neither the end-use nor the System Administrator will be able to halt the message.

(If the Peer connector is unable to deliver the message to the terminating system, it will send the message back to the originating system to be resent. If this happens, the message could be halted.)

(In this situation, the message will be marked as “Finished” in the user’s Outbox, the same as it would be in a non-Peering situation).

3.2.3. Halt Message with delayed send

- If the end-user acts to halt delivery to one or more destinations in a job that was submitted with a delayed send time, the deliveries will be halted, but not until the time scheduled for the send.

3.2.4. Halt non-existent MID or MID/SMID

- If the system receives a Halt Message command accompanied by a MID that does not exist, the command will fail immediately.

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3.2.5. Halt non-existent SMID

- If the system receives a Halt Message command accompanied by a MID that does exist but a SMID that does not exist, no action will be taken.

3.3. Operation

This section provides a high-level overview of how a message job is halted in IP LaunchPad.

3.3.1. FIRST PASS

In the first pass, the QM will immediately halt all messages currently in the QM. All of these messages will be sent to the PS which will make a decision regarding the next action.

While the first pass could potentially be merged into the second pass detailed below, it offers the advantage of minimizing the drain halted messages will place on system resources.

3.3.2. SECOND PASS

For the second pass, the QM will maintain a map of all mids/smids to be halted. All messages as they proceed through the system will eventually be dispatched to the DM. Before being dispatched to the DM, the QM will compare the mid/smid/psmid of the message against this map. If there is a match it will send the job to the PS instead of the DM. This map will be called the QMHaltMessageTrap.

The second pass will catch all messages that were missed by the first pass. Common causes of falling through the first pass include:

1. The message was in the DM or a line manager at the time the halt command was received.
2. The message was an expanded destination of a broadcast list that was being expanded at or after the time the halt command was received.
3. The message was a member of a delayed send job and had not yet been expanded out at the time the halt command was received.

3.3.3. CLEANUP

After the PS processes an individual halted message, the message will be removed entirely from the QM.

3.3.4. HALT MESSAGE WIRE PROTOCOL:

Any invocation of the Halt Message command will be translated into a wire protocol command in the following form:

```
message subcmd="halt" mid=&{...} start_smid=#1 stop_smid=#4
```

Where start_smid and stop_smid express an inclusive range (0 to n)

Other characteristics of the Halt Message wire protocol command:

3.3.4.1. Examples

Contiguous blocks of sub messages (smids) can be halted individually:

```
message subcmd="halt" mid=&{E41442BC-592E-11D4-09C9-8000A0C15FC4} start_smid=7 stop_smid=7
```

```
message subcmd="halt" mid=&{E41442BC-592E-11D4-09C9-8000A0C15FC4} start_smid=8 stop_smid=8
```

```
message subcmd="halt" mid=&{E41442BC-592E-11D4-09C9-8000A0C15FC4} start_smid=9 stop_smid=9
```

or the start_smid and stop_smid arguments can be used to specify an inclusive range:

```
message subcmd="halt" mid=&{E41442BC-592E-11D4-09C9-8000A0C15FC4} start_smid=7 stop_smid=9
```

Also, the entire message (mid) can be halted with the following command:

```
message subcmd="halt" mid=&{E41442BC-592E-11D4-09C9-8000A0C15FC4} start_smid=0 stop_smid=0
```

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3.3.4.2. Multiple commands per message job

The IP LaunchPad core system permits more than one Halt Message command per MID.

3.3.4.3. Limitations

The following actions will cause problems on the IP LaunchPad core system:

- Halting the entire message then halting individual SMIDs within that message.

3.3.5. For More Details...

See the QM Halt design document posted on the Architecture web page.

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4. Performance Analysis/Enhancement

System Release 10 of IP LaunchPad will include several changes introduced for the purposed of enhancing performance.

4.1. Queue Manager Redesign

Design complete by: 8/22/00

Code complete by: 9/5/00

The Design for this feature has not been completed.

4.2. Distributed Velocis Configuration Support

This feature is being developed for System Release 1.7.3 of the IP LaunchPad IP LaunchPad core system, a special project for GDTPA. See the SRS for that project for specifics about Distributed Velocis Configuration Support.

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5. DID Support

Design complete by: 7/18/00

Code complete by: 7/26/00

In the System 10 release of IP LaunchPad, Direct Inward Dial is implemented as a separate service that can be controlled by Policy settings and billed for.

5.1. Feature Details

As implemented in System Release 10, Direct Inward Dial has the following new features:

5.1.1. Activity

5.1.1.1. DID controlled by Policy

- IP LaunchPad will receive faxes and deliver them directly to a Subscriber's mailbox ONLY IF all of the following are true:
 - the Subscriber's profile includes a fax number that is mapped to an IP LaunchPad RAS device.
 - the fax number is provisioned with DID service by the telephone company.
 - the RAS device has been included in the RAS device's configuration.
 - that particular Subscriber's service contract includes a Services policy that allows DID.

5.1.1.1.1.If DID is enabled for the Subscriber:

- If a "System 10" IP LaunchPad system receives an inbound fax at a DID number assigned to a Subscriber, AND that Subscriber's service contract includes a Services policy that allows DID, IP LaunchPad will accept the inbound fax and process it as earlier versions of IP LaunchPad have.

Exception:

- If the Subscriber's Inbox is full, the inbound message will not be accepted.

5.1.1.1.2.If DID is NOT enabled for the Subscriber:

- If a "System 10" IP LaunchPad system receives a DID fax for a Subscriber whose service contract does NOT permit DID, the system will terminate the incoming call without accepting the fax.
- The RAS Connector that rejects an inbound DID fax will generate an SNMP trap documenting the event.

5.1.1.2. New Policy Type

- The IP LaunchPad System Administrator will be able to create Service Policies that specifically permit or forbid the acceptance of DID faxes.

5.1.1.3. Billing for DID services

- The acceptance of a DID fax for an IP LaunchPad Subscriber will trigger the creation of an MRD that allows the Service Provider's billing system to charge the receiver for each DID fax.
- The Service Provider can also use the IP LaunchPad system of Policies and Contracts to set up a billing model that charges for DID on a time-period basis (per week or per quarter, for example), as opposed to a "per-use" basis.

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5.1.2. Interfaces

The following are the requirements related to DID service enhancement for the various interfaces to IP LaunchPad:

The changes in DID support will not affect the operation of the Fax Client, IP LaunchPad Web, the CMA, the BLM, or any IP LaunchPad-related APIs.

5.1.2.1. BLM

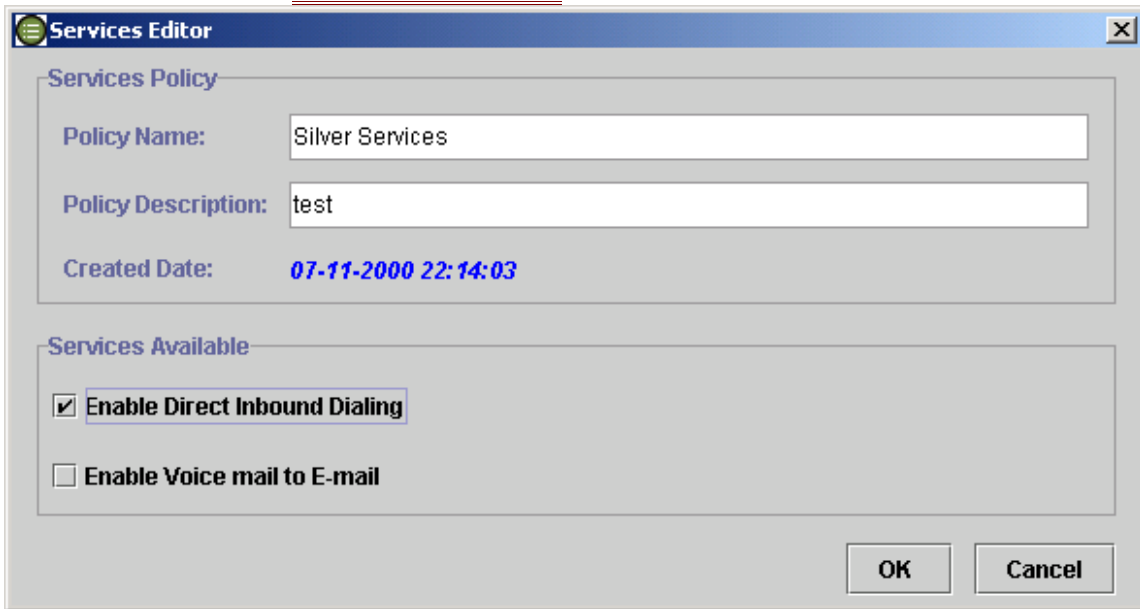
- The DID Service enhancement will not affect the operation of the BLM.

5.1.2.2. PMA

The following new PMA features will expose the DID service enhancement to the IP LaunchPad System Administrator:

5.1.2.2.1. Services Editor window

- The System Administrator will be able to create Services policies in the PMA's Services Editor window.



5.1.2.2.2. Controls in the Services Editor window

5.1.2.2.2.1. Policy Name/Description/Date

- The Policy Name field in the Services Editor window will allow the System Administrator to view/change the policy name.
- The Policy Description field in the Services Editor window will allow the System Administrator to view/change a brief description of the policy being created.
- The (non-editable) Created Date field in the Service Editor window will display the date and time at which the Services policy was created.

5.1.2.2.2.2. Enable Direct Inbound Dialing

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- In the Services Editor's Direct Inbound Dialing box, the System Administrator enable or disable Direct Inbound Dialing within the Policy by checking or unchecking the check box.

5.1.3. Policy/Contract Support

Direct Inbound Dialing in System 10 release of IP LaunchPad will be controlled by a Services Policy, as described in section 5.1.1.2 above.

5.1.4. Script support

- If the RAS is not configured with normalized DID numbers, the System Administrator will be able to modify the IP LaunchPad normalization script to normalize inbound destination numbers before passing them on into IP LaunchPad for authentication.

5.1.5. Logging

5.1.5.1. In Log file(s)

5.1.5.1.1. Log message for acceptance of DID delivery

- The acceptance of a message submitted to an IP LaunchPad RAS device for delivery via DID will cause a message to be written to the log file.

5.1.5.1.2. Log message for refusal of DID delivery

- The refusal of a message submitted to an IP LaunchPad RAS device for delivery via DID will cause a message to be written to the log file.

5.1.5.2. MDR

5.1.5.2.1. MDR for acceptance of DID delivery

- The acceptance of a message submitted to an IP LaunchPad RAS device for delivery via DID will generate an MDR.

5.1.5.2.2. Log message for refusal of DID delivery

- The refusal of a message submitted to an IP LaunchPad RAS device for delivery via DID will generate an MDR.

5.1.5.3. SNMP

- The refusal of a message submitted to an IP LaunchPad RAS device for delivery via DID will generate an SNMP trap.

5.1.6. Hardware/Software Requirements

5.1.6.1. Specific requirements

5.1.6.1.1. Hardware

- DID service will only be available on IP LaunchPad systems using DID-capable RAS devices.

The RAS devices used must be configured to recognize the Subscribers' fax numbers as DID numbers.

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5.1.6.1.2. Software

5.1.6.1.2.1. DID refusal notification via SNMP

- If an IP LaunchPad system refuses to accept a message submitted for delivery via DID, an SNMP trap will be generated ONLY IF that IP LaunchPad system has SNMP enabled.

5.1.7. Backward compatibility

5.1.7.1.1. Earlier versions of the IP LaunchPad core system

- The policy settings that permit or refuse DID transmissions will NOT work if the System 10 Policy database is used with a version of the IP LaunchPad core system earlier than the one included with the System 10 release.

5.1.8. Configuration

5.1.8.1. Configuration for DID service

- In order to support DID service in IP LaunchPad, the following configuration requirements must be fulfilled:
 - the Service Provider must have reserved certain phone numbers for DID delivery.
 - the RAS device(s) connected to the IP LaunchPad system must be properly configured for DID.
 - The RAS device(s) must have the proper pool definitions within the IP LaunchPad hive.
 - The profiles of those Subscriber(s) whose Services Policies permit DID must use the reserved numbers as their fax numbers.

5.1.8.1.1. Configuration for multiple span lines into one RAS

- A setup in which one RAS accepts traffic from multiple span lines, and is associated with a single IP LaunchPad Pool, will work properly IF:
 - all DID numbers from all span lines are provisioned with enough digits to completely specify a local phone number (7 digit in North America, for example), OR
 - the DID numbers associated with each span line are in different numeric ranges, AND the IP LaunchPad Normalization script is modified to recognize these ranges and normalize each DID numbers with the appropriate country code and area code for its range.

5.2. Error Conditions

When this feature is fully implemented and running, the IP LaunchPad System 10 system will respond to error conditions, or other special conditions, as follows:

5.2.1. DID service enabled, but no DID fax number

- If the Subscriber's contract permits DID, but the Subscriber profile does not include a fax number, the Subscriber will not receive faxes via DID.

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5.2.2. DID service enabled, but wrong fax number

- If the Subscriber's contract permits DID, but the Subscriber's fax number is not one of those reserved for DID via the IP LaunchPad system, the Subscriber will not receive faxes via DID.

5.2.3. DID service enabled, but RAS not configured for DID

- If the Subscriber's contract permits DID, and the Subscriber's fax number is one of those reserved for DID, but transmissions to that number are picked up by a RAS device that is not configured to receive faxes via DID, any DID transmissions to that RAS will fail, and the appropriate log messages/MDRs/SNMP traps will be generated.

5.3. Implementation

5.3.1. Core Server Implementation

In System 10 release of IP LaunchPad, the LM that controls the RAS connector that has received a message for delivery via DID will check with the Policy Manager before proceeding with the transaction. The PM will check the receiving Subscriber's Services policy to see whether this Subscriber is permitted to receive DID transmissions.

5.3.2. Database Support

The Policy database definition will require a new attribute that stores the DID setting.

5.3.3. Client Support

The PMA will be modified as described above to expose the DID setting.

No other IP LaunchPad client requires modification in order to support this feature.

5.3.4. API Support

No changes are required in any IGAPI function or related data structure in order to support this feature.

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