

# **Vanguard Managed Solutions**

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**Vanguard Applications Ware  
Multi-Service Feature Protocols**

**Internal Digital Sharing Device**

# Notice

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## Introduction

### Overview

This manual describes the Internal Digital Sharing Device (DSD) software option for Vanguard products. It assumes that you are familiar with the basic concepts of data communications and that you will be operating and configuring Vanguard products. Refer to the relevant documentation for additional information.

The manual provides an overview of the Internal DSD option and illustrates specific application and how to access this option.

It additionally covers how to configure your device to use Internal DSD. Before you configure your device, fill out the DSD Record Configuration Worksheet. An explanation of how to use the Boot Command and a description of Reports and Statistics available for Internal DSD are provided.

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## About the Internal Digital Sharing Device Option

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### Overview

The Internal Digital Sharing Device (DSD) software option provides more efficient networking capability by allowing one host line to connect to several devices.

#### ■ Note

Internal Digital Sharing Device is not supported on the Vanguard 7300 Series.

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### Related Documentation

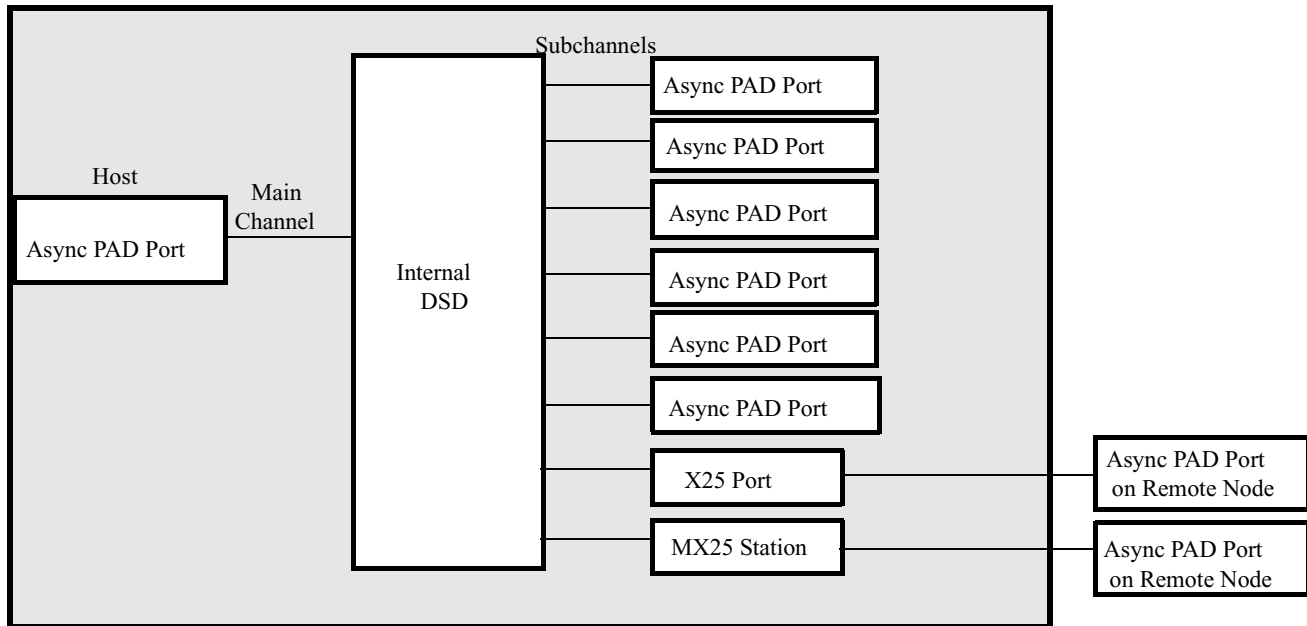
For details on basic configuration of Vanguard, refer to the *Vanguard Configuration Basics Manual*.

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## Internal DSD Functionality

### Overview

Vanguard Products device can function as a Digital Sharing Device (DSD) with the addition of an internal port type, Internal DSD. Figure 1 shows a simple network using Internal DSD. The data originates at the Host PAD and is transmitted through a DSD Main channel. Data is then sent to Transparent Polled Async Remote Pads or MX25 stations through DSD Subchannels. Messages coming in to any Subchannel from the Async PAD Port are sent through the Main channel to the Host PAD. The PADs can either be local to the node containing the DSD or in the remote nodes.



**Figure 1. Internal DSD Used in a Simple Network**

### Subchannels

Each DSD has a limit of eight subchannels. DSDs can also be cascaded by connecting one DSD Subchannel to another DSD Main channel in a single node as shown in Figure 2.

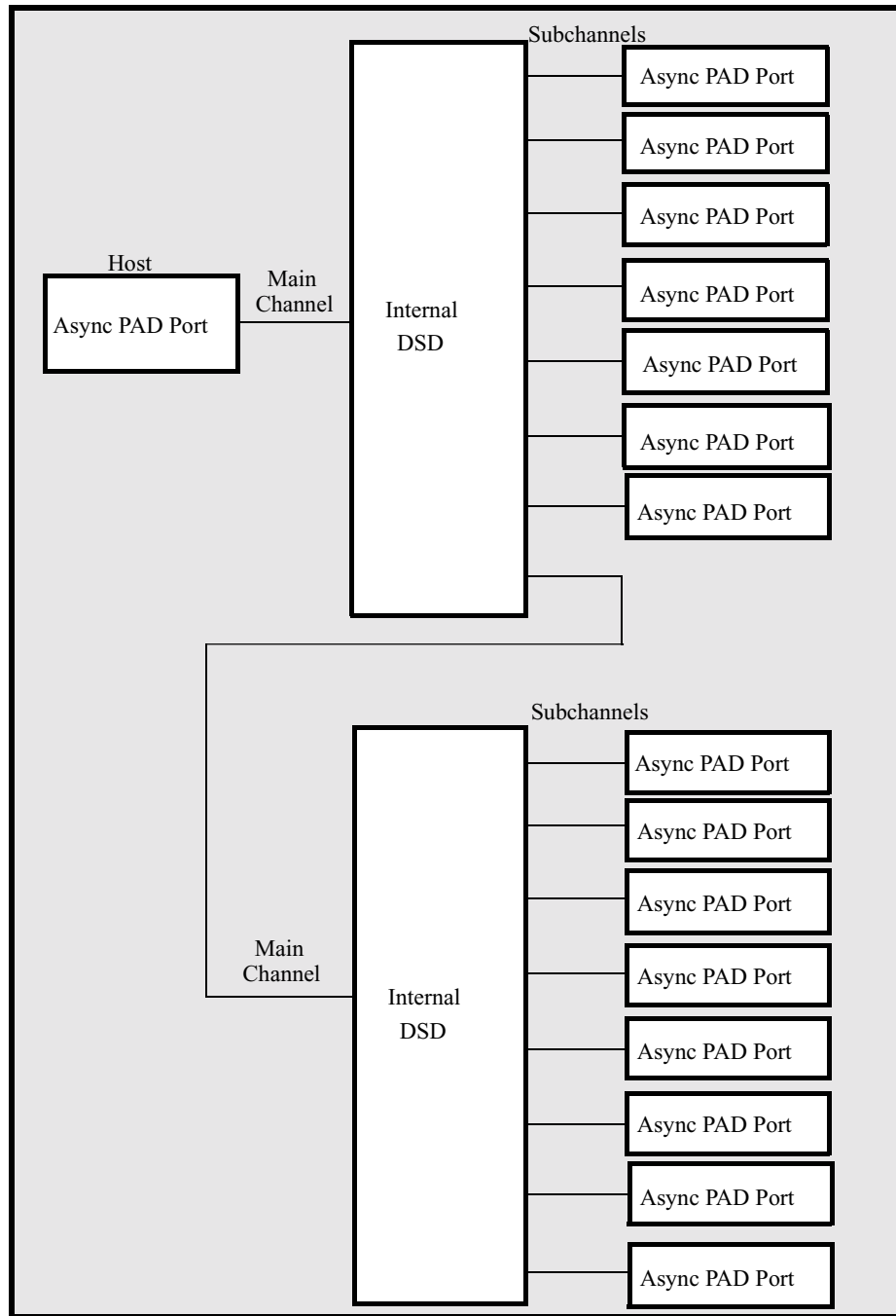
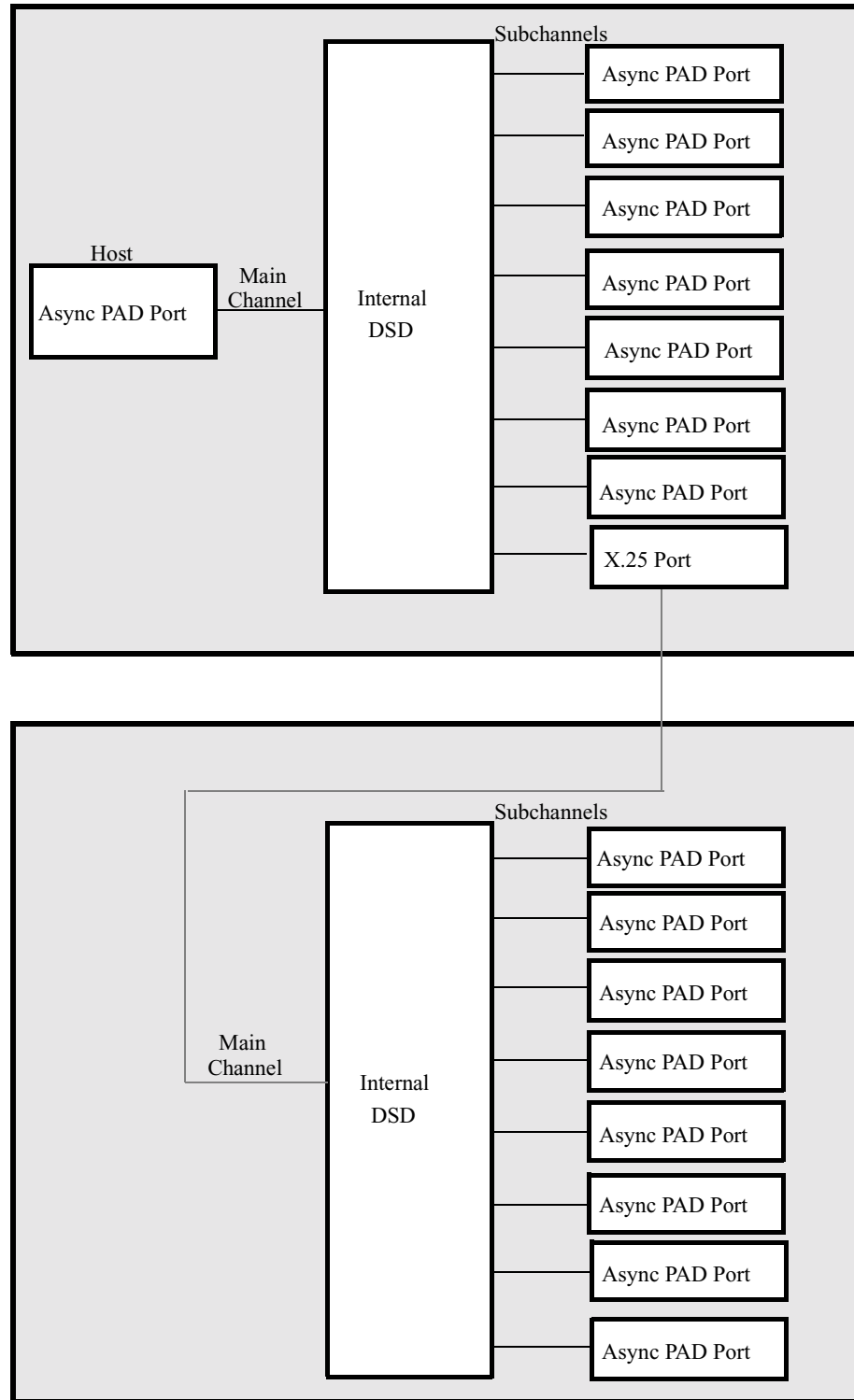


Figure 2. Multi-DSD, Single Node (DSD Cascading)



**Nesting Multi-Nodes**

In addition to cascading multi-DSD single nodes, it is also possible to cascade multi-DSDs in multi-nodes as shown in Figure 3.



**Figure 3. Multi-DSD, Multi-Node (DSD Cascading)**

## Configuration

### Introduction

This section describes how to configure Internal DSD parameters in Vanguard Applications Wares. Copy the DSD Table Configuration Worksheet included in this manual and fill it in before configuring any node. Refer to the *Vanguard Configuration Basics Manual* for further configuration instructions.

### How to Configure Internal DSD Configuration

Up to 100 DSDs can be configured in a node. Follow these steps to configure IDSD in your Vanguard device:

<b>Step</b>	<b>Action</b>
<b>1</b>	Select <b>Configure</b> from the Main menu.
<b>2</b>	Select <b>Internal DSD Table</b> from the Configure menu.
<b>3</b>	At the prompt, assign an Entry Number (1–100).
<b>4</b>	Press Return and begin configuring DSD parameters for the DSD.
<b>5</b>	Perform a Node boot after configuring all required parameters.

### Parameter

These parameters make up the IDSD Table:

#### Entry Number

Range:	1 to 100
Default:	1
Description:	Not a configurable parameter. This number identifies the particular Internal DSD Table record being configured.

#### Main Channel Subaddress

Range:	0 to 3 decimal digits
Default:	60
Description:	Subaddress of the DSD's single Main channel; used in the address to call the Host side of the DSD.

**Call Control**

Range:	NONE, AUTO
Default:	NONE
Description:	<p>Specifies the calling activity for the Main channel of this Internal DSD.</p> <ul style="list-style-type: none"> <li>• NONE: The Internal DSD will not make a call request on its own.</li> <li>• AUTO: The Main channel Autocall Mnemonic is used to initiate a call.</li> </ul>

**Main Channel Autocall Mnemonic**

Range:	0 to 8 alphanumeric characters.
Default:	(blank)
Description:	Allows the DSD to initiate a call on its main channel. Used if Call Control is configured for autocalling.

**Autocall Timeout**

Range:	5 to 255
Default:	10
Description:	Time interval in seconds between failed call attempts when autocalling is enabled.

**Maximum Number of Autocall Attempts**

Range:	0 to 255
Default:	4
Description:	Specifies the maximum number of times that the DSD Main channel attempts to call when autocalling is enabled. A value of zero allows unlimited attempts.

**Subchannel Subaddress**

Range:	0 to 3 decimal digits
Default:	70
Description:	A group subaddress for all subchannels of the DSD. A call to this subaddress from a Remote PAD or MX25 Station is accepted if there is a free subchannel.

**\*Number of Subchannels**

Range:	1 to 8
Default:	8
Description:	The number of configurable subchannels. <b>■ Note</b> You must perform a node boot for changes to this parameter to take affect.

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## Call Setup

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**How to Setup Calls** You can configure calls to Internal DSD channels (Main or Subchannel) by using DSD channel permanent mnemonic strings. The permanent mnemonic strings must be used for the PVC Setup Table, and no entries are required in the Routing Table. If PVC connections are needed, use the following format:

DSD – #M — for Main channel

DSD – #S — for Subchannel

Example: DSD – 4M

DSD – 2S

Remote PAD ports *must* make calls to DSD Subchannels. Host PADs can either call the Main channel or have the Main channel call them.

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## Administration

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### Introduction

This section describes the functions you can use to monitor your node by viewing information displayed on the screens. To implement configuration changes, you must boot the DSD. Instructions for booting Internal DSD appear later in this section.

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### Statistics and Controls

Statistics unique to Internal DSD are also described in this section. All other statistics are described in the *Vanguard Configuration Basics Manual*.

The following CTP commands support Internal DSD and are accessed from the Main menu:

- List
  - Configure
  - Examine
  - Statistics
  - Reset Statistics
  - Boot
  - Copy
  - Delete
  - Print
-

## IDSD Boot Command

### Introduction

Booting updates operational parameters of a node using the parameters stored in configuration memory (CMEM). There are two types of Boot commands: Node and Internal DSD. An Internal DSD boot terminates all calls to the DSD. For complete instructions regarding the Boot command, refer to the Configuration and Administration chapter in the *Vanguard Configuration Basics Manual*.

#### ■ Note

Parameters with an asterisk (\*) next to them require a node boot for the change to take effect.

### How to Boot IDS

To boot an IDS:

<b>Step</b>	<b>Action</b>	<b>Result</b>
<b>1</b>	Select <b>Internal DSD</b> from the Boot menu.	A DSD entry number prompt will be displayed.
<b>2</b>	Enter the number of the DSD you want to boot.	All calls to the Internal DSD being booted will be terminated. When the boot has been completed, the new configurations takes effect. Figure 3 illustrates the Warning message displayed for the Internal DSD boot screen. You will be prompted (Figure 4) for a response asking whether you wish to proceed.
<b>3</b>	<b><i>If you...</i></b>	<b><i>Then you will...</i></b>
	Enter <b>Y</b> .	Receive report indicating that your selected DSD has been booted.
	Enter <b>N</b> .	Terminate the process.

```
Entry Number: 1/1

WARNING: Booting the DSD will cause all current calls through the DSD
to be abnormally disconnected. This operation may result in lost data
and disruption of network user sessions.

Proceed y/n: y

(1) New York                                DSD-1 - DSD BOOT COMPLETE

Internal DSD #1 booted

Press any key to continue (ESC to exit)...
```

**Figure 4. Internal DSD Boot Complete**

If you select a DSD number that has not been configured, the report shown in Figure 5 appears on the screen.

```
Entry Number: 1/1

WARNING: Booting the DSD will cause all current calls through the DSD
to be abnormally disconnected. This operation may result in lost data
and disruption of network user sessions.

Proceed y/n: y

(1) New York                                DSD-1 BOOT FAILURE - NO CONFIGURATION

Internal DSD #1 booted

Press any key to continue (ESC to exit)...
```

**Figure 5. Internal DSD Boot Failure**



## Examine Internal DSD Command

### Introduction

You can verify configured DSD parameters by using the Examine command.

### How to...

To examine an Internal DSD Table:

Step	Action
1	Select <b>Examine</b> from the Main menu.
2	Select <b>Internal DSD Table</b> from the Examine menu.
3	At the prompt, enter the entry number of the DSD record you want to examine.

Figure 6 shows the display that appears on the screen.

```

Entry Number: 1/1
Node:                Address:                Date:                Time:
Table Entry Examination                               Page 1 of 1

[1]. Main Channel Subaddress: 60
[1]. Call Control: None
[1]. Main Channel Autocall Mnemonic (blank)
[1]. Autocall Timeout (sec): 10
[1]. Maximum Number of Autocall Attempts: 4
[1]. Subchannel Subaddress: 70
[1]. *Number of Subchannels: 8

Press any key to continue (ESC to exit)...

```

**Figure 6. Internal DSD Table Entry Examination**

## Internal DSD Statistics

**Viewing Statistics** To view the Internal DSD Statistics:

<b>Step</b>	<b>Action</b>
<b>1</b>	Select <b>Status/Statistics</b> from the Main menu.
<b>2</b>	Select <b>Internal DSD Stats</b> from the Status/Statistics menu.

Figure 7 shows the information available on the screen. A maximum of eight subchannels can be shown on the screen at one time.

```

Node:                Address:                Date:                Time:
Detailed DSD Statistics Entry 1                Page 1 of 1

Main Channel

  Type  State  Remote Addr  Characters  Packets
          In    Out          In    Out
-----
  SVC   CONN   1010070     113034    668806    18839    9419

Subchannels

  Type  State  Remote Addr  Characters  Packets
          In    Out          In    Out
-----
  SVC   CONN   102002     602880    113034     4710    18839
  SVC   CONN   102003     65926     113040     4709    18840
    
```

**Figure 7. Internal DSD Statistics**

Although the information under the heading Remote Address in Figure 1-6 shows an address number, this information can vary if the Main channel is configured for Autocall and errors occur. Refer to Table 1 for a listing of other terms that may appear. Table 1 describes all the terms used in Internal DSD statistics screens.

**Screen Terms**

This table describes screen terms in Figure 7.

<b><i>Term</i></b>	<b><i>Description</i></b>
Type	<ul style="list-style-type: none"> <li>• Switched Virtual Circuit (SVC)</li> <li>• Permanent Virtual Circuit (PVC)</li> </ul>
State	<ul style="list-style-type: none"> <li>• CONN: Call is connected</li> <li>• CLRG: Clearing (in process of bringing call down)</li> <li>• FREE: No connection is present and none is being attempted</li> <li>• CALL: A call is being attempted</li> </ul>
Remote Address	<ul style="list-style-type: none"> <li>• Address Number: Address of the remote PAD</li> <li>• No Mnemonic: Mnemonic cannot be found</li> <li>• Max Attempts: Maximum number of Autocall attempts has been made</li> </ul>
Characters	<ul style="list-style-type: none"> <li>• In: Number of characters received since last boot or statistics reset</li> <li>• Out: Number of characters transmitted since last boot or statistics reset</li> </ul>
Packets	<ul style="list-style-type: none"> <li>• In: Number of packets received since last boot or statistics reset</li> <li>• Out: Number of packets transmitted since last boot or statistics reset</li> </ul>

# DSD Record Configuration Worksheet

<i>Entry Number</i>	<i>Main Channel Subaddress</i>	<i>Call Control</i>	<i>Main Channel Autocall Mnemonic</i>	<i>Autocall Timeout</i>	<i>Maximum Number of Autocall Attempts</i>	<i>Subchannel Subaddress</i>	<i>Number of Subchannels</i>



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Subchannel Subaddress 7

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