A VIDEO DATA VOICE Co.

MultiSite Dispatch Hub
MODEL: MSD-3200

FEATURES:

- **Up to 32 sites network**
- **Transmission Trunk**
- **Fast Access time < 600ms typical**
- **Wide area coverage**
- **Digital Radio migration path**
- **Multi-Bands**
- **Multi Protocols**
- **Cost effective Solution**

APPLICATIONS:

- **Multi Site Dispatch**
- **GSP/Data wide area network**
- **Utility and Power Company**
- **Transportation voice data**
- **Oil Service**
- **SMR operator**

INTRODUCTION:

The Multi-Site Dispatch (MSD) Hub provides the capability to send half-duplex group calls to groups of radios, which are distributed, across several sites within the network. MSD calls originating at a DT-2000 switch will be directed to the hub and on to the appropriate switches. MSD operation requires audio and data connections between the hub and all switches that are part of the MSD network. Utilizing the "Call Linking" capability inherent in all DT-2000 subscriber units, mobiles and portables radios roaming through the network can receive and initiate calls on their programmed MSD group, without prior specification of which cell sites they may be operating in.

The MSD will support up to 32 sites. MSD Groups and corresponding GIDs may be defined at the MSD hub. A total of 1000 MSD groups will be available for network communication. Each MSD group requires a dedicated GID at each cell. The hub will be limited to 96 audio connections, which can be any configuration of Audio links such as POTS and 2W/4W E&M interfaces are supported. For fast access time, static audio connections (IP, microwave, or PSTN) will be required. Multisite dispatch calls are transmission trunked, which maximizes the channel efficiency of the entire system. The MSD as well as the DT2000 employ a digital matrix switching technique which means that any radio group on any channel can be dispatched across the network to any other group. This allows networked dispatch radios to co-exist with non-networked radios.

VDV Media Corp. 17736 Preston Rd Suite 250 Dallas, TX 75252
Tel: 1-972-248-4142, Fax: 972-248-2012 info@vdvmedia.com

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HARDWARE AND SOFTWARE REQUIREMENTS:

DT-2000

The MSD capability can be added to any DT-2000 by simply using the necessary link hardware. The DT-2000 is delivered with 2 internal modems. The MSD capability will require one of the modems to be dedicated for its purpose with a typical modem speed of 9600 or greater. Lower modem speeds may effect system performance. All DT-2000 software versions support the MSD hub. An operator must simply designate that dispatch group which is part of a multisite dispatch call and the MSD will take care of the rest.

MSD Hub Switch

The MSD hub is mounted on a standard 19" rack and is made up various components.

1. The MSD Controller- the 19" rack mounted rugged computer. System resources will support audio interface card driver software, modem driver software, and MSD application software.

2. Data Hub- Modem Pool with 1 modem or serial interface per supported site.

3. Monitor, keyboard and mouse.

4. Uninterrupted Power Source (UPS) backup. (110VAC or 220VAC).

A Graphical User Interface (GUI) is used to support enabling/disabling of outbound MSD calls between switches. Each of the network switches (1-32) has an alphanumeric ID. The GUI allows a system operator to enable/disable up to 32 switches to be a part of a network dispatch call. The operator will do this by defining the necessary voice and data path(s) for each defined networked dispatch call.

MULTI-SITE DISPATCH OPERATION EXAMPLE

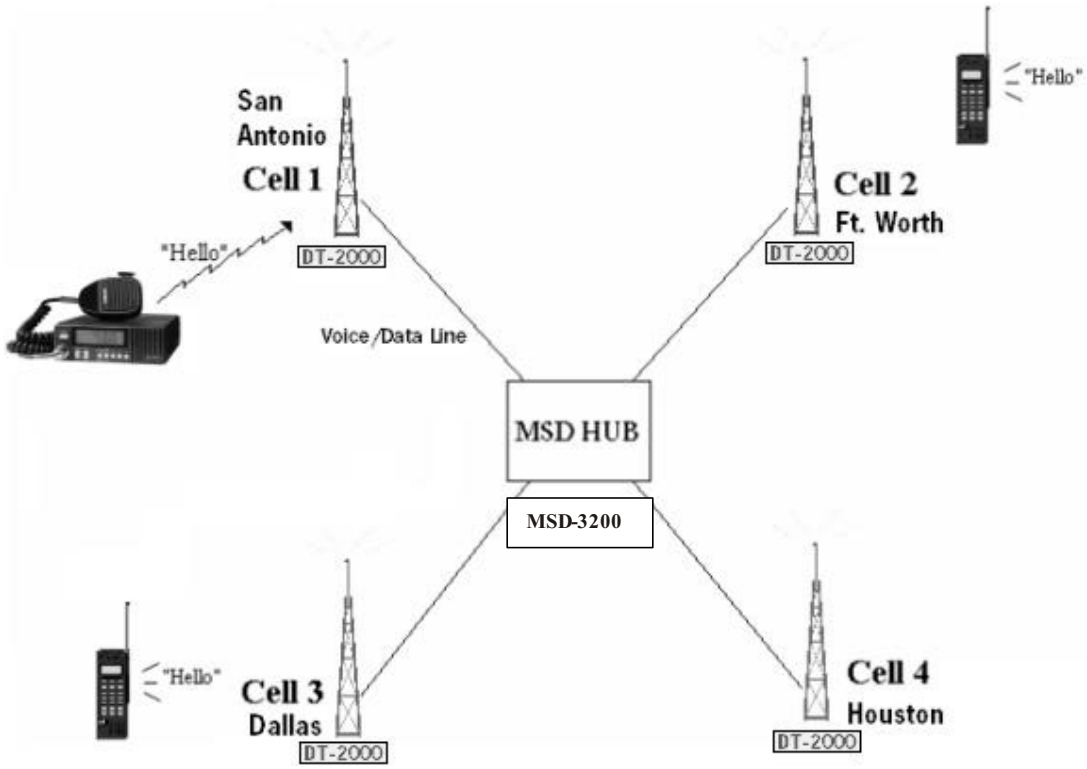

Figure 1: Multi-Site Dispatch Network HUB with 4 Sites

OPERATION SEQUENCE:

A MSD call is initiated from a radio. The radio communicates with a switch, using a repeater, broadcasting a GID (Group ID) to the switch. The switch received the GID and determines whether the call is intended for MultiSite Dispatch. If so, the call is routed to the hub. The hub then determines which switches in the network will receive the dispatch call. The system then connects the incoming dispatch call to the appropriate switches. The switch receiving the initial MSD call from the radio will also direct the call to appropriate radios within its own service range. See the operational example in Figure 1.

The MSD hub is pre-configured to support multiple GIDs (Group IDs). In the example shown in Figure 1, let's say the Texas Energy Company encompasses a group of mobile vehicles and stations in San Antonio, Houston, Ft. Worth and Dallas. All their radios are then programmed with a set of MSD GIDs including combinations of the cities that they might want to call. In Figure 1, a division of the Texas Energy Company in San Antonio wants to send a dispatch to members of the divisions at Ft. Worth and Dallas. He selects the call group that is defined to talk to radios in cells 1, 2 & 3 (San Antonio, Fort Worth and Dallas) and presses the Push-To-Talk PTT) on his radio. The pre-programmed GID is sent to the San Antonio Cell Site #1, which transmits the GID to the MSD Hub (which could be located in any of the four cities or in some other location). The MSD Hub receives the MSD GID and bridges pre-established voice lines from the San Antonio cell to cells #2 and #3 in Ft. Worth and Dallas. When the bridge activity is complete, the MSD Hub sends an acknowledgment back to the initiating cell #1 in San Antonio. Cell #1 in turn signals the initiating radio with a proceed tone, alerting the user that all radios are collected and the user can now talk to all radios in San Antonio, Ft. Worth and Dallas. The elapsed time from initial key-up to the time the user can talk to the networked sites is typically on the order of 600 ms. Users in the Ft. Worth and Dallas sites as well as in the San Antonio cell area will receive the dispatch call as they would any other call.

MULTI-SITE DISPATCH SPECIFICATION SUMMARY:

MSD Call Type:	Half Duplex, Transmission trunk
Maximum Linked Sites:	Up to 32
Maximum Voice Channels	Up to 96
Maximum GIDs (MSD Groups):	1000
Access Time typical:	600mS
Interfaces Supported options:	POTS, VoIP, 2 Wire E&M, 4 Wire E&M, ISDN, T1, E1, RF/Microwave
Roaming Capability:	With subscriber unit Call Linking programmed

HARDWARE REQUIREMENTS	*SOFTWARE REQUIREMENTS*	*AUDIO CONNECTIONS*
MSD Hub: Modem Pool with 1 modem or serial interface per supported site. Rugged Industrial Computer with audio and Data Network Resources.	**MSD Hub:** MSD Application Software	Static microwave or Telephone Interface lines to each supported site
DT-2000 Site Switches: With necessary link hardware	**DT-2000 Site Switches:** DT-2000 Application Software	

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