ingrasys

NAStorage

Administrator Guide

Hot Swap
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Prepared by:

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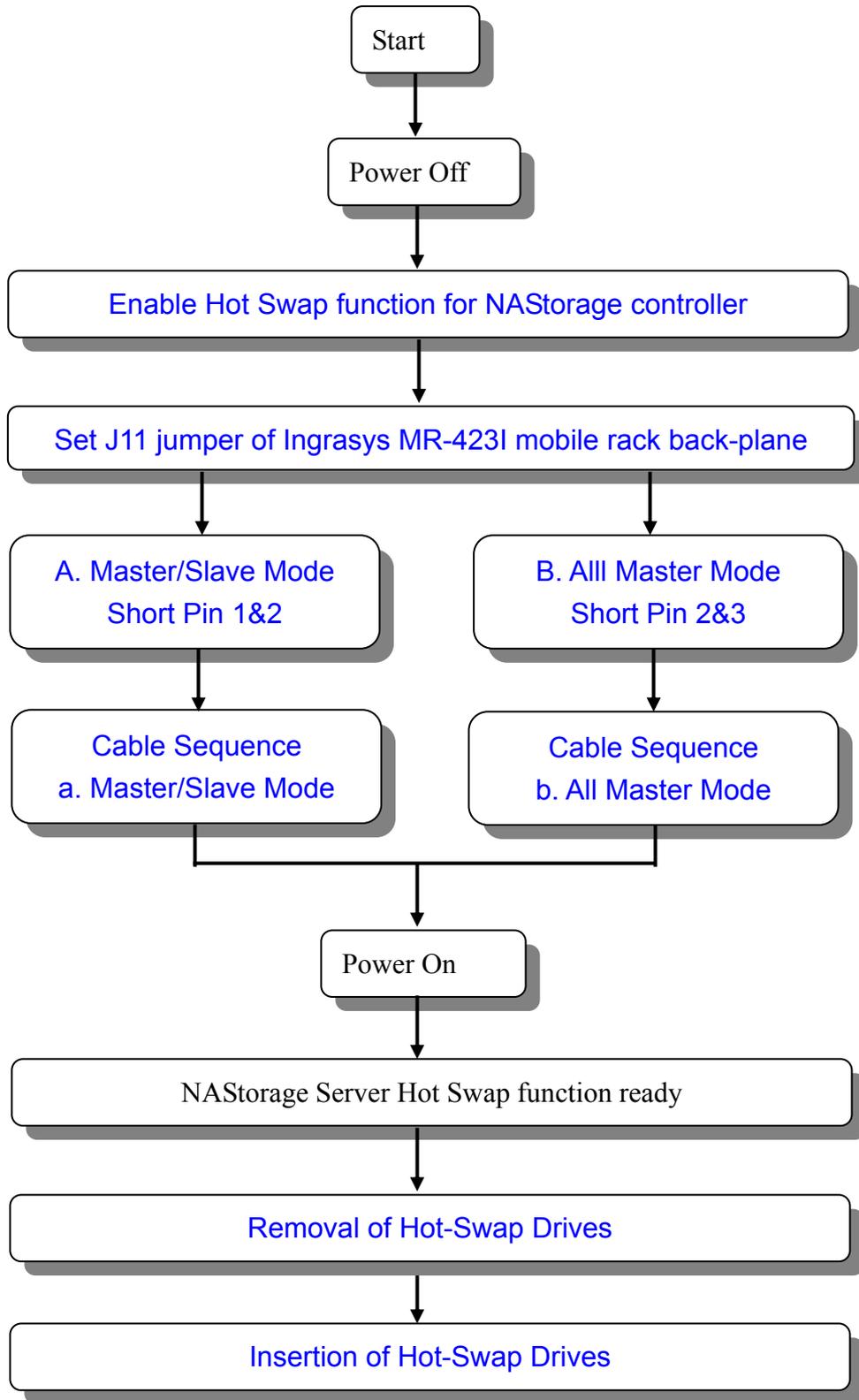**TS Engineer**
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Hot Swap

In NAStorage systems, where a Hot-Swap drive is available, NAStorage allows you to "hot swap" a failed disk for a replacement while the disk array continues operating. A hot swap is the replacement of a hard drive while the computer system using it remains in operation. Hot swapping works by providing a rack or enclosure for the device that provides an appearance to the computer's bus or I/O controller that the device is still there while it's being removed and replaced with another device.

A hot swap arrangement is sometimes provided where multiple devices are shared on a local area network. Hot swap versions of a redundant array of independent devices (RAID) are also available.

NAStorage cooperates with Ingrasys MR-423I mobile racks to provide the hot swap and other related functions for all hard disk drives. The Ingrasys MR-423I mobile rack is an option accessory, if you don't pick out and buy Ingrasys MR-423I mobile racks for NAStorage; the hot swap function won't available. As you know, the 'Hot Swap' feature is sensitive and complex. If storage server want support hot swap function, it must consider many conditions of system, like Software\Kernel、Hardware\controller、Hot Swap IDE Cradles. These components are necessary for storage server with hot swap function, can't lack anyone.

Start

↓

Power Off

↓

Enable Hot Swap function for NAStorage controller

↓

Set J11 jumper of Ingrasys MR-423I mobile rack back-plane

↓

A. Master/Slave Mode	**B. Alll Master Mode**
Short Pin 1&2	**Short Pin 2&3**

↓

Cable Sequence	**Cable Sequence**
a. Master/Slave Mode	**b. All Master Mode**

↓

Power On

↓

NAStorage Server Hot Swap function ready

↓

**Removal of Hot-Swap Drives**

↓

Insertion of Hot-Swap Drives

1. Enable Hot Swap function for NAStorage controller.

You can get the benefits from the full-range data protection such as hot-swappable hard disks and RAID hot-expansion only by installing the MR-423I with the NAStorage server controller.

The following conditions are required for the NAStorage server controller to your server chassis.

● Using the provide IDE tubular cables to connect to the mobile rack from controller is required.

● NAStorage IDE controller has design special circuitry for hot swap function, if you use Ingrasys MR-423I mobile racks, you need configure the DIP switches at the rear of your NAStorage server main board to **1: OFF 2: OFF 3: OFF.**

Configuration flow: "Power down" → Set DIP switch position (on NAStorage controller): **DIP 1: OFF 2: OFF 3: OFF.**
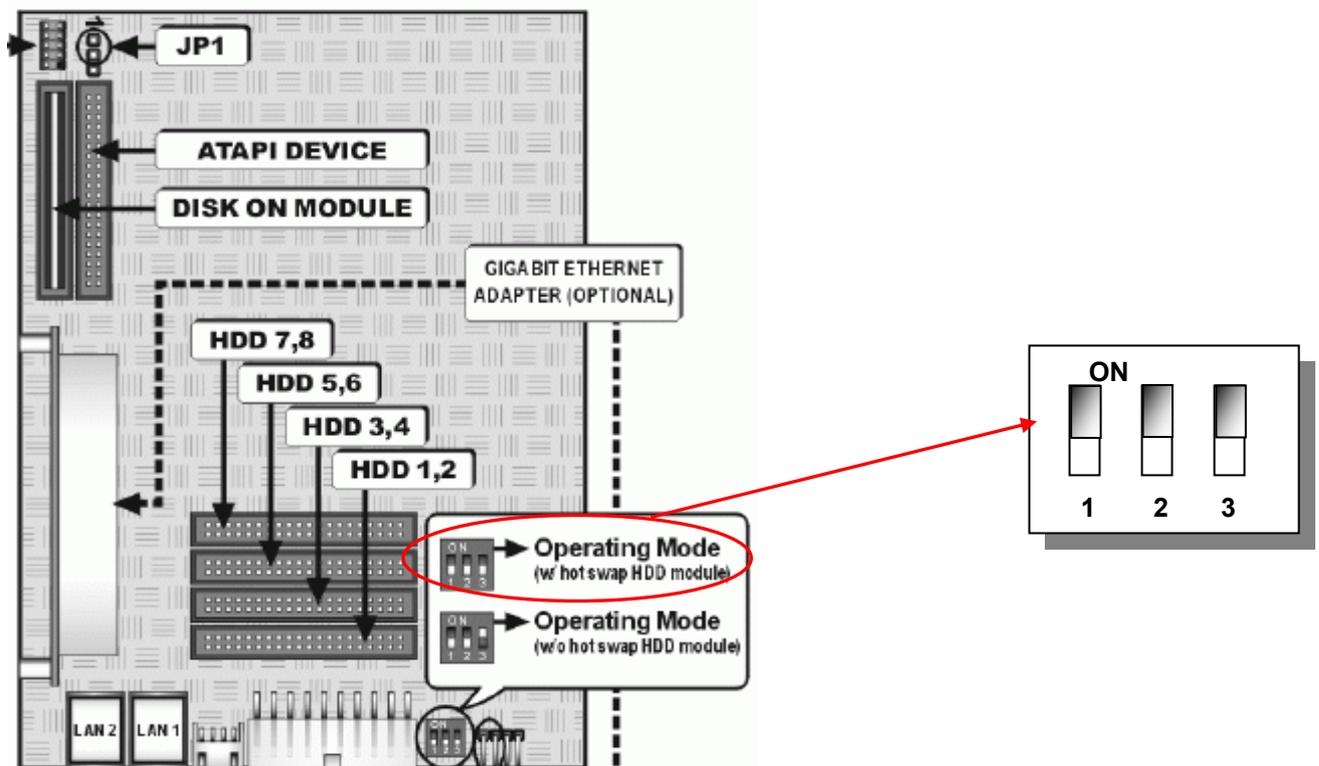
● Configuring the jumper on your hard disk using Cable Select (CS) before install to the hard disk tray of MR-423I mobile rack. (Refer to your hard disk's user manual for the instruction)

2. Set J11 jumper of Ingrasys MR-423I mobile rack back-plane

Ingrasys MR-423I mobile rack back-plane has design special circuitry for hot swap function. When you use this back-plane, you need set the J11 jumper on the back-plane first. The J11 jumper setting has two modes, Master/Slave and All Master.

J11	1-2	2-3
Master and Slave Mode	Short	Open
All Master Mode	Open	Short

a. Master/Slave Mode: Short J11 Pin 1&2

Support only two IDE channels with four HDDs(base on 2 Master / 2 Slave, four HDDs). NAStorage controller support four IDE channels that mean you can connect 8 HDDs on the NAStorage controller. In this case, if you have 8 HDDs and a couple Ingrasys MR-423I mobile racks, you have to set the J11 jumper into Master/Slave mode for each back-plane.

J11	1-2	2-3
Master and Slave Mode	Short	Open
All Master Mode	Open	Short

Configuration flow: **"Power down"** → Set J11 jumper **Short J11 Pin 1&2**
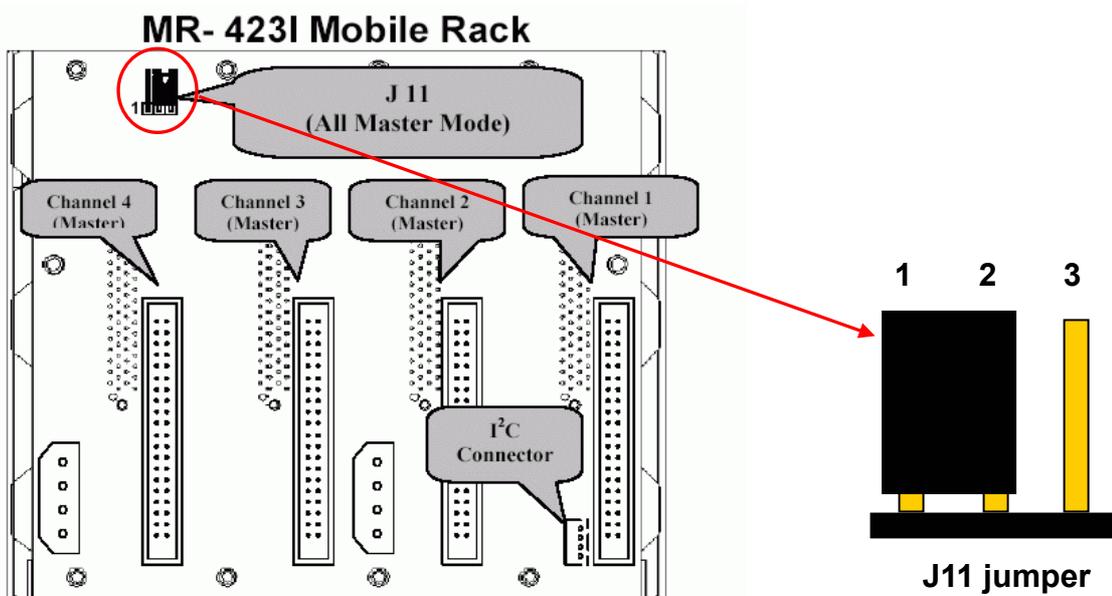
b. All Master Mode: Short J11 Pin 2&3

In this mode, each IDE channel connector on the mobile rack can support only one hard disk and that become the All Master drives. It is recommended that configure the MR-423I to All Master Mode only when you only have one MR-423I on the system, you have to set the J11 jumper into All Master mode for each back-plane.

Configuration flow: **"Power down"** → Set J11 jumper **Short J11 Pin 2&3**

J11	1-2	2-3
Master and Slave Mode	Short	Open
All Master Mode	Open	Short
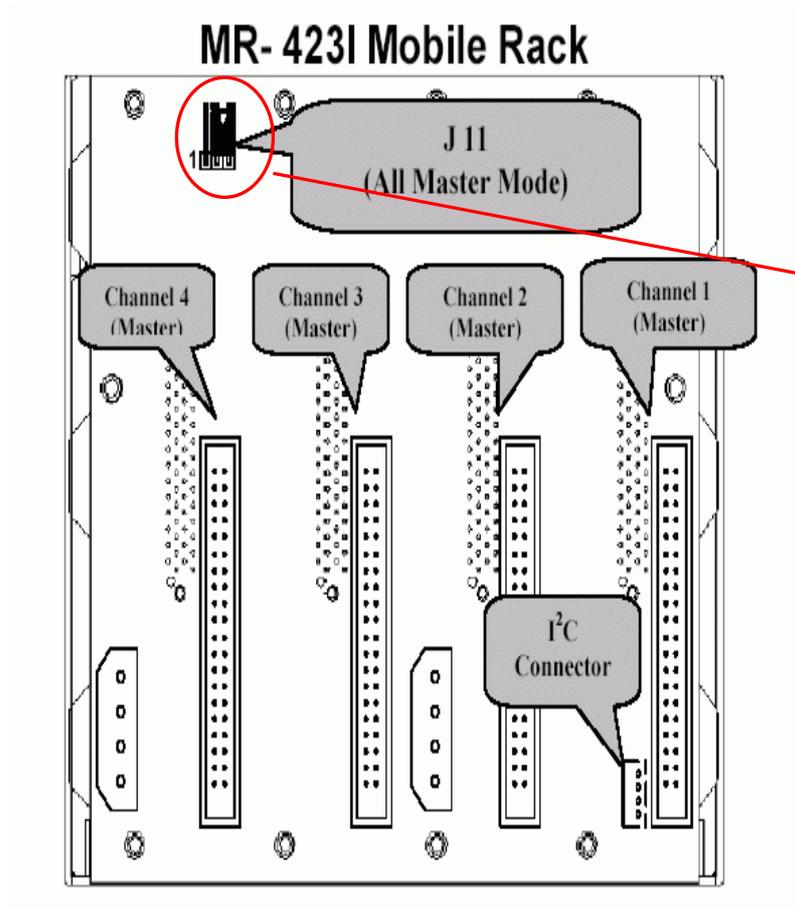
# 3. Cable Sequence in Ingrasys MR-423I mobile rack.

NAStorage doesn't support standard PC IDE cable, you have to use the bundle round cable. This cable is design for Ingrasys MR-423I mobile rack back-plane. Depending on the J11 jumper setting mode, the cable sequence will be different.

Note:
The hard disk drives must set to "Cable Select Mode"; the Ingrasys MR-423I mobile rack back-plane will switch to the Master/Slave mode automatically. If you set Master/Slave mode for hard disk drives by yourself, when you plug in them into the NAStorage server will force the system can't detect the Master/Slave mode correctly.
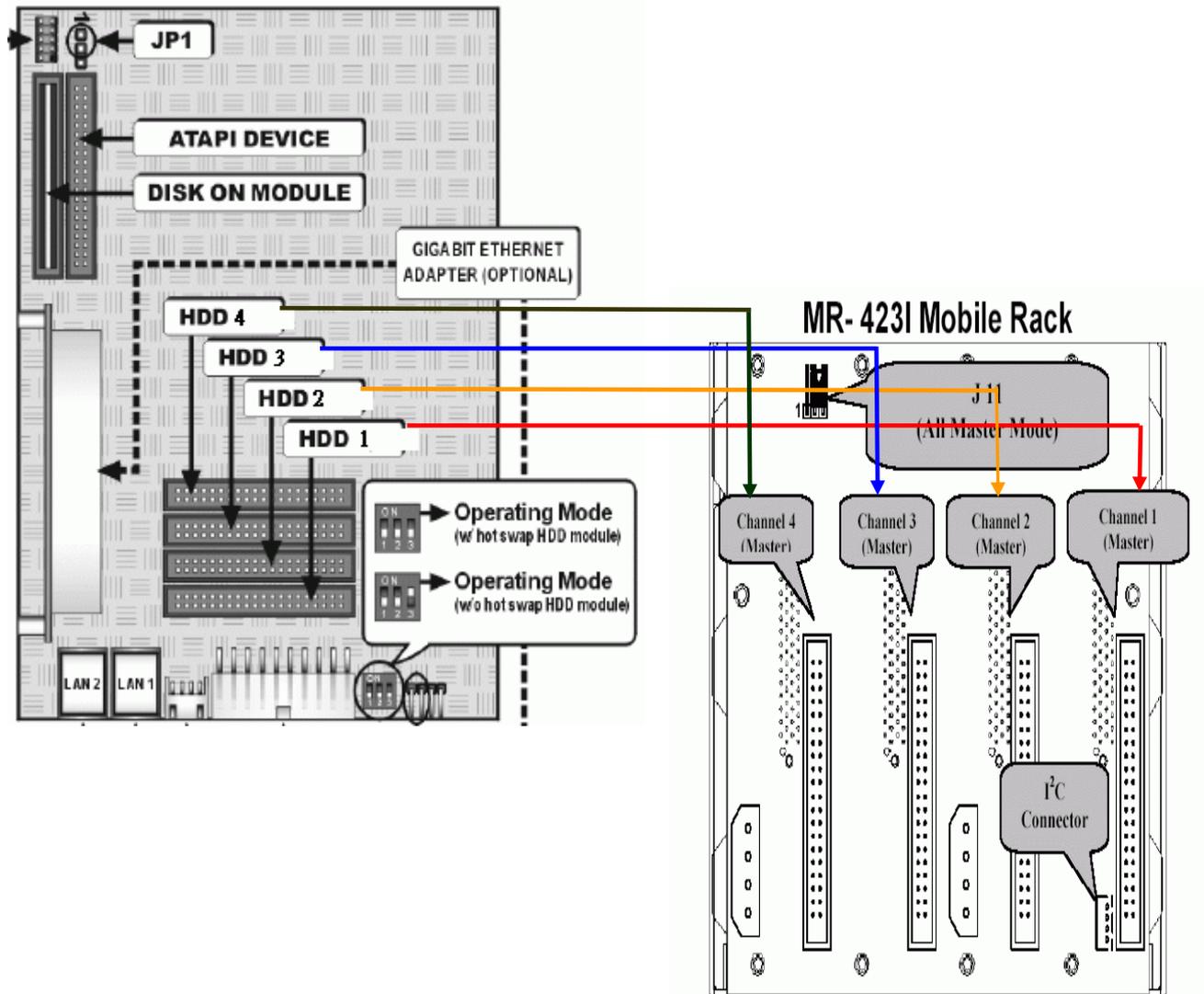
a. Master/Slave mode: Short J11 Pin 1&2

Below is 8 HDDs and a couple Ingrasys MR-423I mobile racks connect mode.
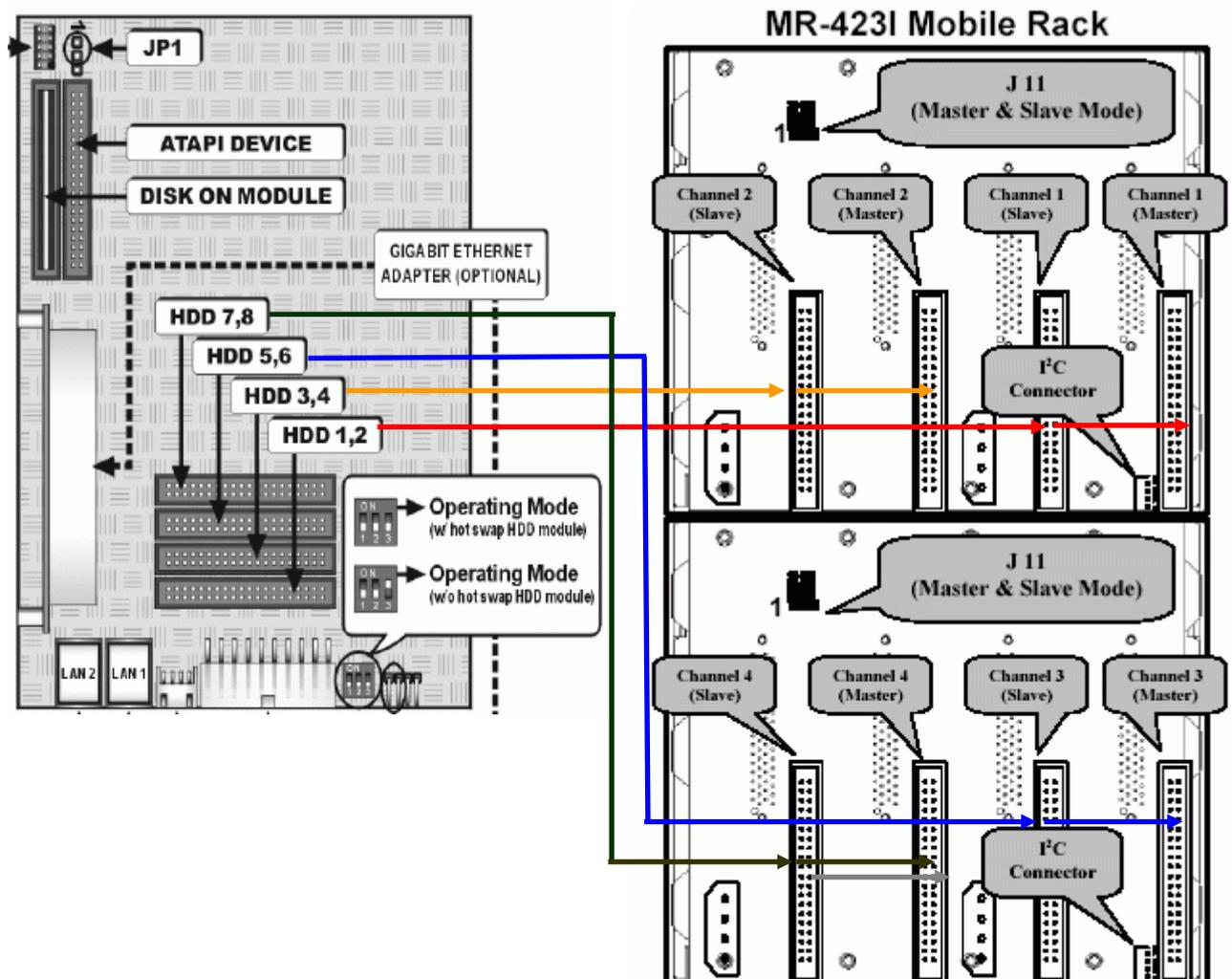
b. All Master mode: Short J11 Pin 2&3

Below is 4 HDDs and one Ingrasys MR-423I mobile rack connect mode.

The following conditions are required for the NAStorage server controller to your server chassis.

● The Make sure that all mobile racks and the NAStorage server controller are linked by the I-C cable provided.

● Two power connectors are required for each MR-423I mobile rack.

4. **Removal/Insertion of Hot-Swap Drives**

Steps for Removal of Hot-Swap Drives:

You may have to change hard disk in some situations, such as hard disk failure, degraded RAID volume. Below are the instructions of replacing hard disks when using the HDD modules.

1. Turn off the failed HDD by pressing the red button on HDD tray.
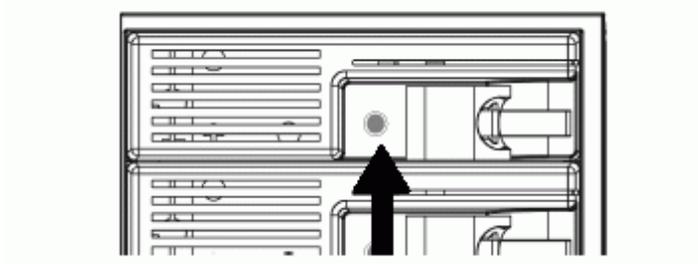
2. When the amber LED is steady on, it is ready for being unplugged.

3. Unlatch the drive and gently unseat the drive from the Ingrasys MR-423I mobile rack. Carefully remove the drive from the hot-swap bay.

Steps for Insertion of Hot-Swap Drives:

1. Carefully insert the drive into this hot-swap bay.

2. Gently seat the drive completely in the back-plane connector and latch the drive into the bay.

3. Wait until the Green LED is steady on. Then you are done.