D-STAR Repeater Operation & Maintenance

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Intended Audience

This information is targeted for

- Gateway Administrators - those that have root access

- Those that have overall responsibility for the operational status

  of a D-STAR repeater system

Comfort with Linux is assumed

Now that you have a working D-STAR Repeater,

how do you keep it working PROPERLY?

Fundamentals

- **Listen to the users**
  - From the user's view point, the system admin is assumed to be the expert
  - Help the users as much as possible to promote D-STAR

- **Stay current with user registration requests**

- **Monitor the health of the system daily**
  - Take action as necessary based on current status

- **Make system backups and keep them off site**

- **Make software updates VERY cautiously**

Listen to the users !

- Pay attention to comments from users and filter as necessary
  - Some expect bullet proof infrastructure
  - Some do not understand that this is new technology and we are all learning and growing together
  - Encourage users to provide you with dates and times (as close as possible) when specific "issues" occur

- Constantly work to manage users expectations

- Keep notes on "significant" issues and prioritize
  - Keep a record of your findings and actions (if any) taken

Stay current with user registrations

- Recommend registrations be allowed only on a single system when multiple repeaters that are in a close geographic area

- Email notification when a user requests registration
  - Some systems have successfully configured the gateway for outbound email notification when user requests registration approval
  - The configuration is HIGHLY dependent on the ISP and the provisioning of the Internet connection for the gateway

- Many do not depend on email notification and manually check the registration site for requests
  - Get help and delegate this function to a FEW trusted individuals in the area

Monitor the health of the system

- Use http://dsyncg2.dstarusers.org for a quick check to see if system is online and reporting every 15 minutes.
  - Also indicates if gateway clock is out of tolerance ('ntpd' is not running properly)
  - Gateway software is or is not running current versions
  - Do this daily – teach a few others how to help you watch this

- Service like 'pingability.com' is a good way to get alerts if the gateway drops off the network
  - Can check if the gateway is communicating with the Internet on a periodic basis (e.g. every 30 minutes) and then send you a text message if connection is lost.

- Following system changes (e.g. software updates) monitor very carefully for a period of time

Make system backups

- **Database Backup**
  - You do not want to re-register all your local users!!
  - ICOM provided utility for database backup on the Gateway CD
  - Consider using a USB Flash Drive that stays with the gateway (/mnt/usb)
  - Set up a script to do the backup and execute it via 'cron' on a daily basis
    - For example:
      ```
      # Script to backup DSTAR postgres database.
      #   Backup files are placed in /mnt/usb/postgres directory for
      #   download to offsite storage.
      #
      # Version 1.0  (5-8-08)
      #

      cd /ICOM_CD
      ./dstar_db-backup ALL read
      cd /home/postgres
      mkdir /mnt/usb/postgres > /dev/null 2>&1
      mv sync* /mnt/usb/postgres
      mv unsync* /mnt/usb/postgres
      ```
  - Periodically copy the database backup files to an offsite system (e.g. use WinSCP)

Make system backups

- **Full System Images**

  - There are many imaging software tools available

  - Mondoarchive works well for remotely handling imaging

  - Consider using a USB Flash Drive that stays with the gateway (/mnt/usb)
    - 16GB Flash Drive is more than adequate
  - Set up a script to do the full system images and to do differential system images to the USB drive
    - I have mondoarchive write CD sized ISO files to the USB drive
      - Full system image generally takes 4-5 ISO files
      - Differential takes no more than a single ISO file

  - Execute these manually as needed
    - Always do a full image before AND after significant changes
    - Then do differential backups periodically
      - Once a month or as you are comfortable based on your system and environment

  - Copy the backup files to an offsite system (e.g. use WinSCP)
    - Just do not do the offsite copy during periods of high bandwidth use by the system (i.e. while lined to a Reflector for a net)

Make system backups

- **SAMPLE Mondoarchive scripts**
  - Full Backup

```
# Script to do full system image
#    Version 1.0  (7-9-08)
 DSTARGW=/opt/products/dstar/dstar_gw
 DSIPSVD=$DSTARGW/dsipsvd/dsipsvd.conf
 GW_CALL=`egrep -e '^ZR_CALLSIGN' $DSIPSVD | sed -e 's/ //g' | awk -F"=" '{print $2}' | sed -e 's/\r//'`
 MONDO_DIR=/mnt/usb/`date +%Y-%m-%d`-full
 mkdir -p $MONDO_DIR
 /usr/sbin/mondoarchive -Oi -d $MONDO_DIR -E "/mnt/usb" -p $GW_CALL-`date +%Y-%m-%d`-f -9
 mv /var/cache/mindi/mondorescue.iso $MONDO_DIR/$GW_CALL-rescue.iso
 /usr/sbin/mondoarchive -Vi -d $MONDO_DIR -E "/mnt/usb" -p $GW_CALL-`date +%Y-%m-%d`-f
```

  - Differential Backup

```
# Script to do differential system image
#    Version 1.0  (7-9-08)
 DSTARGW=/opt/products/dstar/dstar_gw
 DSIPSVD=$DSTARGW/dsipsvd/dsipsvd.conf
 GW_CALL=`egrep -e '^ZR_CALLSIGN' $DSIPSVD | sed -e 's/ //g' | awk -F"=" '{print $2}' | sed -e 's/\r//'`
 MONDO_DIR=/mnt/usb/`date +%Y-%m-%d`-diff
 mkdir -p $MONDO_DIR
 /usr/sbin/mondoarchive -Oi –D -d $MONDO_DIR -E "/mnt/usb" -p $GW_CALL-`date +%Y-%m-%d`-d -9
 mv /var/cache/mindi/mondorescue.iso $MONDO_DIR/$GW_CALL-rescue.iso
 /usr/sbin/mondoarchive -Vi -d $MONDO_DIR -E "/mnt/usb" -p $GW_CALL-`date +%Y-%m-%d`-d
```

Make software updates carefully

- Linux Software Updates
  - Let others go first
  - Watch D-STAR user groups for any problems
  - Are you currently having problems that a fix MIGHT correct ?
  - What is the risk to the system of not doing the update ?
  - Proceed carefully!!
  - If you have access to another gateway, try update there first
  - Do full system backup (disk image) before updating
  - Update -- (`yum update ....`)
  - Carefully check system for full D-STAR functionality
    - Is 'named' still running?
    - Is access to the web server functional?
    - Are all processes running?
      - 'service dstar_gw status'; 'service dsm status';   'service dplus status';   etc...

Make software updates carefully

- D-STAR Software Updates
  - Let others go first
  - Watch D-STAR user groups for any problems
  - Are you currently having problems that a fix MIGHT correct ?
  - Is the D-STAR Trustserver Team recommending the update ?
  - What is the risk to the system of not doing the update ?
  - Proceed carefully!!
  - If you have access to another gateway, try update there first
  - Do full system backup (disk image) before updating
  - Update as necessary
  - Carefully check system for full D-STAR functionality
    - Is 'named' still running?
    - Is access to the web server functional?
    - Are all processes running?
      - 'service dstar_gw status'; 'service dsm status'; 'service dplus status'; etc…

Contact information and links

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Useful links:

http://dsyncg2.dstarusers.org

http://opendstar.org/tools

http://wb4fay.com/util

Questions ?