

# BM to XLX via MMDVM\_Bridge

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## **Revision information:**

28 Feb 2019

Initial draft of document

5 MAR 2019

Added in dmrgateway.service file example

4 APR 2019

Changed port numbers in XLX side of DVSwitch.ini - oops!

8 APR 2019

Rewrite of doc for doc version 2.0

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Assumptions made for using this document:

- You have a working Debian 9 installation
  - Raspbian may work, but doc was written for Debian 9
- You have installed the DVSwitch components installed via DVSwitch-System-Builder scripts
- You have a working knowledge of Linux

What this document is:

- A set of steps taken for getting a BM talkgroup onto an XLX reflector

What this document is not:

- How to install Debian 9
- How to install XLX
- How to install the DVSwitch components

If you've gotten this far as to have two separate networks connect using components found in DVSwitch, the assumption is that you already have a working knowledge of Linux.

Help for systems outside the scope of this document is widely available on the Internet. Generally speaking, use Google first to look for answers to your questions.

Even seasoned Systems Administrators use Google when they don't know something.

Make separate copies of MMDVM\_Bridge and DMRGateway. This is important!

```
$ cp -r /opt/MMDVM_Bridge /opt/MMDVM_Bridge_BM
$ cp -r /opt/MMDVM_Bridge /opt/MMDVM_Bridge_XLX
$ cp -r /opt/DMRGateway /opt/DMRGateway_BM
$ cp -r /opt/DMRGateway /opt/DMRGateway_XLX
```

```
$ tree /opt/MMDVM_Bridge_BM
```

```
MMDVM_Bridge_BM/
├── DVSwitch.ini
├── MMDVM_Bridge
└── MMDVM_Bridge.ini
```

```
$ tree /opt/MMDVM_Bridge_XLX
```

```
MMDVM_Bridge_XLX/
├── DVSwitch.ini
├── MMDVM_Bridge
└── MMDVM_Bridge.ini
```

```
$ tree /opt/DMRGateway_BM/
```

```
DMRGateway/
├── Audio
├── DMRGateway
├── DMRGateway.ini
├── README.md
└── XLXHosts.txt
```

```
$ tree /opt/DMRGateway_XLX/
```

```
DMRGateway/
├── Audio
├── DMRGateway
├── DMRGateway.ini
├── README.md
└── XLXHosts.txt
```

The configuration will look like this:

```
XLX***D <-> DMRGateway_XLX <-> MMDVM_Bridge_XLX <-> MMDVM_Bridge_BM <-> DMRGateway_BM <-> BM TG***
```

First, we will configure DMRGateway to connect to XLX. This will take the data from TG6 and put it into MMDVM\_Bridge\_XLX and vice versa.

```
$ cd /opt/DMRGateway_XLX
$ pico DMRGateway.ini
```

Change the information in red for the following stanzas to connect to XLX. `RptPort` is *sending* data to MMDVM\_Bridge, and `LocalPort` is *receiving* data from MMDVM\_Bridge. Make sure to insert the `Module` line and set to the correct module to connect to on the XLX reflector.

*You must make sure you change the `RptPort` and `LocalPort`, since the defaults are close to / in use by the default MMDVM\_Bridge. I chose ports +10 from the defaults.*

```
[General]
Timeout=10
# RFTIMEOUT=10
# NetTimeout=7
RptAddress=127.0.0.1
RptPort=62042
LocalAddress=127.0.0.1
LocalPort=62041
RuleTrace=0
Daemon=0
Debug=0

[XLX Network]
Enabled=1
File=/var/lib/mmdvm/XLXHosts.txt
Port=62030
Password=passw0rd
ReloadTime=60
# Local=3351
Slot=1
TG=6
Base=64000
Startup=123
Relink=10
Debug=0
Module=D
```

Run DMRGateway and be sure it opens the correct ports

```
$ ./DMRGateway DMRGateway.ini
```

```
I: 2019-02-27 19:15:42.532 This software is for use on amateur radio networks only,  
I: 2019-02-27 19:15:42.532 it is to be used for educational purposes only. Its use on  
I: 2019-02-27 19:15:42.532 commercial networks is strictly prohibited.  
I: 2019-02-27 19:15:42.532 Copyright(C) 2017 by Jonathan Naylor, G4KLX and others  
M: 2019-02-27 19:15:42.532 DMRGateway-20180606 is starting  
M: 2019-02-27 19:15:42.532 Built 20:31:28 Feb  3 2019 (GitID #82d011b)  
I: 2019-02-27 19:15:42.532 MMDVM Network Parameters  
I: 2019-02-27 19:15:42.532      Rpt Address: 127.0.0.1  
I: 2019-02-27 19:15:42.532      Rpt Port: 62042  
I: 2019-02-27 19:15:42.532      Local Address: 127.0.0.1  
I: 2019-02-27 19:15:42.532      Local Port: 62041  
M: 2019-02-27 19:15:42.532 MMDVM Network, Opening  
M: 2019-02-27 19:15:42.532 Waiting for MMDVM to connect.....
```

Press Ctrl-C to stop.

DMRGateway won't connect to anything just yet since we haven't set up MMDVM\_Bridge for the XLX side.

```
$ cd /opt/MMDVM_Bridge_XLX
$ pico MMDVM_Bridge.ini
```

Change the information in red for the following stanzas to connect to DMRGateway\_XLX

```
[General]
Callsign=K1XYZ
Id=1234567 # XLX only likes 7 digit IDs!
Timeout=180
Duplex=0
```

```
[DMR]
Enable=1
ColorCode=1
EmbeddedLCOnly=1
DumpTADData=0
```

```
[DMR Network]
Enable=1
Address=127.0.0.1
Port=62041
Jitter=360
Local=62042
Password=passw0rd
Slot1=1
Slot2=1
Debug=0
```

Next, change the ports in DVSwitch.ini to accept and send data to MMDVM\_Bridge on the Brandmeister side.

```
$ pico DVSwitch.ini
```

```
; Configure the DMR Partner
; Audio format is AMBE 72 bit
[DMR]
Address = 127.0.0.1           ; Address to send AMBE TLV frames to (export)
TXPort = 31103               ; Port to send AMBE TLV frames to (export)
RXPort = 31100               ; Port to listen on (import)
Slot = 2                     ; Export slot
```

Now, run MMDVM\_Bridge on the XLX side, and make sure all the ports and settings are correct.

\$ ./MMDVM\_Bridge MMDVM\_Bridge.ini

```
I: 2019-02-27 20:06:12.557 MMDVM_Bridge:
I: 2019-02-27 20:06:12.557 Portions Copyright (C) 2018 DVSwitch, INAD.
I: 2019-02-27 20:06:12.557 Hacks by Mike N4IRR and Steve N4IRS
I: 2019-02-27 20:06:12.557 =====
I: 2019-02-27 20:06:12.557 This software is for use on amateur radio networks only,
I: 2019-02-27 20:06:12.557 it is to be used for educational purposes only. Its use on
I: 2019-02-27 20:06:12.557 commercial networks is strictly prohibited.
I: 2019-02-27 20:06:12.557 Copyright(C) 2015-2018 by Jonathan Naylor, G4KLX and others
M: 2019-02-27 20:06:12.557 MMDVM_Bridge-20180423 is starting
M: 2019-02-27 20:06:12.557 Built 15:47:01 May 30 2018 (GitID #9cdea41)
I: 2019-02-27 20:06:12.557 General Parameters
I: 2019-02-27 20:06:12.557     Callsign: K1XYZ
I: 2019-02-27 20:06:12.557     Id: 1234567
I: 2019-02-27 20:06:12.557     Duplex: no
I: 2019-02-27 20:06:12.557     Timeout: 180s
I: 2019-02-27 20:06:12.557     D-Star: disabled
I: 2019-02-27 20:06:12.558     DMR: enabled
I: 2019-02-27 20:06:12.558     YSF: disabled
I: 2019-02-27 20:06:12.558     P25: disabled
I: 2019-02-27 20:06:12.558     NXDN: disabled
I: 2019-02-27 20:06:12.558 Modem Parameters
I: 2019-02-27 20:06:12.558     Port: /dev/null
I: 2019-02-27 20:06:12.558     RX Invert: no
I: 2019-02-27 20:06:12.558     TX Invert: no
I: 2019-02-27 20:06:12.558     PTT Invert: no
I: 2019-02-27 20:06:12.558     TX Delay: 100ms
I: 2019-02-27 20:06:12.558     RX Offset: 0Hz
I: 2019-02-27 20:06:12.558     TX Offset: 0Hz
I: 2019-02-27 20:06:12.558     RX DC Offset: 0
I: 2019-02-27 20:06:12.558     TX DC Offset: 0
I: 2019-02-27 20:06:12.558     RF Level: 100.0%
I: 2019-02-27 20:06:12.558     DMR Delay: 0 (0.0ms)
I: 2019-02-27 20:06:12.558     RX Level: 50.0%
I: 2019-02-27 20:06:12.558     CW Id TX Level: 50.0%
I: 2019-02-27 20:06:12.558     D-Star TX Level: 50.0%
I: 2019-02-27 20:06:12.558     DMR TX Level: 50.0%
I: 2019-02-27 20:06:12.558     YSF TX Level: 50.0%
I: 2019-02-27 20:06:12.558     P25 TX Level: 50.0%
I: 2019-02-27 20:06:12.558     NXDN TX Level: 50.0%
I: 2019-02-27 20:06:12.558     RX Frequency: 222340000Hz (222340000Hz)
I: 2019-02-27 20:06:12.558     TX Frequency: 224940000Hz (224940000Hz)
M: 2019-02-27 20:06:12.558 Opening the MMDVM
I: 2019-02-27 20:06:12.558 Display Parameters
I: 2019-02-27 20:06:12.558     Type:
I: 2019-02-27 20:06:12.558 DMR Network Parameters
I: 2019-02-27 20:06:12.558     Address: 127.0.0.1
I: 2019-02-27 20:06:12.558     Port: 62041
I: 2019-02-27 20:06:12.558     Local: 62042
```

```
I: 2019-02-27 20:06:12.558      Jitter: 360ms
I: 2019-02-27 20:06:12.558      Slot 1: enabled
I: 2019-02-27 20:06:12.558      Slot 2: enabled
I: 2019-02-27 20:06:12.558      Mode Hang: 3s
I: 2019-02-27 20:06:12.558 Info Parameters
I: 2019-02-27 20:06:12.558      Callsign: K1XYZ
I: 2019-02-27 20:06:12.558      RX Frequency: 222340000Hz
I: 2019-02-27 20:06:12.558      TX Frequency: 224940000Hz
I: 2019-02-27 20:06:12.558      Power: 1W
I: 2019-02-27 20:06:12.558      Latitude: 41.733299deg N
I: 2019-02-27 20:06:12.558      Longitude: -50.399899deg E
I: 2019-02-27 20:06:12.558      Height: 0m
I: 2019-02-27 20:06:12.558      Location: "Iceberg, North Atlantic"
I: 2019-02-27 20:06:12.558      Description: "MMDVM_Bridge"
I: 2019-02-27 20:06:12.558      URL: "https://groups.io/g/DVSwitch"
M: 2019-02-27 20:06:12.558 DMR, Opening DMR Network
I: 2019-02-27 20:06:12.558 RSSI
I: 2019-02-27 20:06:12.558      Mapping File: RSSI.dat
W: 2019-02-27 20:06:12.558 Cannot open the RSSI data file - RSSI.dat
I: 2019-02-27 20:06:12.558 DMR Id Lookups
I: 2019-02-27 20:06:12.558      File: /var/lib/mmdvm/DMRIds.dat
I: 2019-02-27 20:06:12.558      Reload: 24 hours
I: 2019-02-27 20:06:12.632 Loaded 123615 Ids to the DMR callsign lookup table
I: 2019-02-27 20:06:12.632 DMR RF Parameters
I: 2019-02-27 20:06:12.632      Id: 1234567
I: 2019-02-27 20:06:12.632 Started the DMR Id lookup reload thread
I: 2019-02-27 20:06:12.632      Color Code: 1
I: 2019-02-27 20:06:12.632      Self Only: no
I: 2019-02-27 20:06:12.632      Embedded LC Only: yes
I: 2019-02-27 20:06:12.632      Dump Talker Alias Data: no
I: 2019-02-27 20:06:12.632      Prefixes: 0
I: 2019-02-27 20:06:12.632      Call Hang: 3s
I: 2019-02-27 20:06:12.632      TX Hang: 3s
I: 2019-02-27 20:06:12.632      Mode Hang: 10s
M: 2019-02-27 20:06:12.632 DMR, Opening INI file: DVSwitch.ini
M: 2019-02-27 20:06:12.632 DMR, Setting [DMR] Address -> 127.0.0.1
M: 2019-02-27 20:06:12.632 DMR, Setting [DMR] TXPort -> 31103
M: 2019-02-27 20:06:12.632 DMR, Setting [DMR] RXPort -> 31100
M: 2019-02-27 20:06:12.632 DMR, Setting [DMR] Slot -> 2
M: 2019-02-27 20:06:12.632 DMR, Transmitting on 127.0.0.1:31103 and listening on port
31100. Result = 1
M: 2019-02-27 20:06:12.632 MMDVM_Bridge-20180423 is running
```

Press Ctrl-C to stop.



Now, we're going to start the MMDVM\_Bridge\_BM configuration. Pay attention to the ports!

*You must make sure you change the RptPort and LocalPort, since the defaults are close to / in use by the default MMDVM\_Bridge. I chose ports +10 from the XLX config.*

```
$ cd /opt/MMDVM_Bridge_BM
$ pico MMDVM_Bridge.ini
```

Change the information in red for the following stanzas to connect to DMRGateway\_BM

```
[General]
Callsign=K1XYZ
Id=123456710 # Choose an SSID to add to your DMR ID, usually 2
digits.
Timeout=180
Duplex=0

[DMR]
Enable=1
ColorCode=1
EmbeddedLCOnly=1
DumpTADData=0

[DMR Network]
Enable=1
Address=127.0.0.1
Port=62051
Jitter=360
Local=62052
Password=passw0rd
Slot1=1
Slot2=1
Debug=0
```

```
$ ./MMDVM_Bridge MMDVM_Bridge.ini
I: 2019-02-27 18:59:25.770 MMDVM_Bridge:
I: 2019-02-27 18:59:25.770 Portions Copyright (C) 2018 DVSwitch, INAD.
I: 2019-02-27 18:59:25.771 Hacks by Mike N4IRR and Steve N4IRS
I: 2019-02-27 18:59:25.771 =====
I: 2019-02-27 18:59:25.771 This software is for use on amateur radio networks only,
I: 2019-02-27 18:59:25.771 it is to be used for educational purposes only. Its use on
I: 2019-02-27 18:59:25.771 commercial networks is strictly prohibited.
I: 2019-02-27 18:59:25.771 Copyright(C) 2015-2018 by Jonathan Naylor, G4KLX and others
M: 2019-02-27 18:59:25.771 MMDVM_Bridge-20180423 is starting
M: 2019-02-27 18:59:25.771 Built 15:47:01 May 30 2018 (GitID #9cdea41)
I: 2019-02-27 18:59:25.771 General Parameters
I: 2019-02-27 18:59:25.771     Callsign: K1XYZ
I: 2019-02-27 18:59:25.771     Id: 123456710
I: 2019-02-27 18:59:25.771     Duplex: no
I: 2019-02-27 18:59:25.771     Timeout: 180s
I: 2019-02-27 18:59:25.771     D-Star: disabled
I: 2019-02-27 18:59:25.771     DMR: enabled
I: 2019-02-27 18:59:25.771     YSF: disabled
I: 2019-02-27 18:59:25.771     P25: disabled
I: 2019-02-27 18:59:25.771     NXDN: disabled
I: 2019-02-27 18:59:25.771 Modem Parameters
I: 2019-02-27 18:59:25.771     Port: /dev/null
I: 2019-02-27 18:59:25.771     RX Invert: no
I: 2019-02-27 18:59:25.771     TX Invert: no
I: 2019-02-27 18:59:25.771     PTT Invert: no
I: 2019-02-27 18:59:25.771     TX Delay: 100ms
I: 2019-02-27 18:59:25.771     RX Offset: 0Hz
I: 2019-02-27 18:59:25.771     TX Offset: 0Hz
I: 2019-02-27 18:59:25.771     RX DC Offset: 0
I: 2019-02-27 18:59:25.771     TX DC Offset: 0
I: 2019-02-27 18:59:25.771     RF Level: 100.0%
I: 2019-02-27 18:59:25.771     DMR Delay: 0 (0.0ms)
I: 2019-02-27 18:59:25.771     RX Level: 50.0%
I: 2019-02-27 18:59:25.771     CW Id TX Level: 50.0%
I: 2019-02-27 18:59:25.771     D-Star TX Level: 50.0%
I: 2019-02-27 18:59:25.771     DMR TX Level: 50.0%
I: 2019-02-27 18:59:25.771     YSF TX Level: 50.0%
I: 2019-02-27 18:59:25.771     P25 TX Level: 50.0%
I: 2019-02-27 18:59:25.771     NXDN TX Level: 50.0%
I: 2019-02-27 18:59:25.771     RX Frequency: 222340000Hz (222340000Hz)
I: 2019-02-27 18:59:25.771     TX Frequency: 224940000Hz (224940000Hz)
M: 2019-02-27 18:59:25.771 Opening the MMDVM
I: 2019-02-27 18:59:25.771 Display Parameters
I: 2019-02-27 18:59:25.771     Type:
I: 2019-02-27 18:59:25.771 DMR Network Parameters
I: 2019-02-27 18:59:25.771     Address: 127.0.0.1
I: 2019-02-27 18:59:25.771     Port: 62051
I: 2019-02-27 18:59:25.771     Local: 62052
I: 2019-02-27 18:59:25.771     Jitter: 360ms
```

```
I: 2019-02-27 18:59:25.771 Slot 1: enabled
I: 2019-02-27 18:59:25.771 Slot 2: enabled
I: 2019-02-27 18:59:25.771 Mode Hang: 3s
I: 2019-02-27 18:59:25.812 Info Parameters
I: 2019-02-27 18:59:25.812 Callsign: K1XYZ
I: 2019-02-27 18:59:25.812 RX Frequency: 222340000Hz
I: 2019-02-27 18:59:25.812 TX Frequency: 224940000Hz
I: 2019-02-27 18:59:25.812 Power: 1W
I: 2019-02-27 18:59:25.812 Latitude: 41.733299deg N
I: 2019-02-27 18:59:25.812 Longitude: -50.399899deg E
I: 2019-02-27 18:59:25.812 Height: 0m
I: 2019-02-27 18:59:25.812 Location: "Iceberg, North Atlantic"
I: 2019-02-27 18:59:25.812 Description: "MMDVM_Bridge"
I: 2019-02-27 18:59:25.812 URL: "https://groups.io/g/DVSwitch"
M: 2019-02-27 18:59:25.812 DMR, Opening DMR Network
I: 2019-02-27 18:59:25.812 RSSI
I: 2019-02-27 18:59:25.812 Mapping File: RSSI.dat
W: 2019-02-27 18:59:25.812 Cannot open the RSSI data file - RSSI.dat
I: 2019-02-27 18:59:25.812 DMR Id Lookups
I: 2019-02-27 18:59:25.812 File: /var/lib/mmdvm/DMRIds.dat
I: 2019-02-27 18:59:25.812 Reload: 24 hours
I: 2019-02-27 18:59:25.906 Loaded 123615 Ids to the DMR callsign lookup table
I: 2019-02-27 18:59:25.906 DMR RF Parameters
I: 2019-02-27 18:59:25.906 Id: 1234567
I: 2019-02-27 18:59:25.906 Color Code: 1
I: 2019-02-27 18:59:25.906 Self Only: no
I: 2019-02-27 18:59:25.906 Embedded LC Only: yes
I: 2019-02-27 18:59:25.906 Started the DMR Id lookup reload thread
I: 2019-02-27 18:59:25.906 Dump Talker Alias Data: no
I: 2019-02-27 18:59:25.907 Prefixes: 0
I: 2019-02-27 18:59:25.907 Call Hang: 3s
I: 2019-02-27 18:59:25.907 TX Hang: 3s
I: 2019-02-27 18:59:25.907 Mode Hang: 10s
M: 2019-02-27 18:59:25.907 DMR, Opening INI file: DVSwitch.ini
M: 2019-02-27 18:59:25.907 DMR, Setting [DMR] Address -> 127.0.0.1
M: 2019-02-27 18:59:25.907 DMR, Setting [DMR] TXPort -> 31100
M: 2019-02-27 18:59:25.907 DMR, Setting [DMR] RXPort -> 31103
M: 2019-02-27 18:59:25.907 DMR, Setting [DMR] Slot -> 2
M: 2019-02-27 18:59:25.907 DMR, Transmitting on 127.0.0.1:36100 and listening on port
36103. Result = 1
M: 2019-02-27 18:59:25.907 MMDVM_Bridge-20180423 is running
D: 2019-02-27 18:59:35.957 DMR, Sending authorisation
D: 2019-02-27 18:59:36.008 DMR, Sending configuration
```

Press Ctrl-C to stop.

Finally, we need to set up the DMRGateway\_BM configuration to take the data from MMDVM\_Bridge\_BM and send it over to Brandmeister. There is also another step, which translates the Talkgroup from XLX (TG6) to the Talkgroup on Brandmeister.

```
$ cd /opt/DMRGateway_BM
$ pico DMRGateway.ini
```

```
[General]
Timeout=10
# RFTIMEOUT=10
# NetTimeout=7
RptAddress=127.0.0.1
RptPort=62052
LocalAddress=127.0.0.1
LocalPort=62051
RuleTrace=0
Daemon=0
Debug=0

# Brandmeister
[DMR Network 1]
Enabled=1
Name=BM
Address=64.94.238.196 # Change to the address for your Master
Port=62031
# Local=3352
# Local cluster
TGRewrite=1,9,1,9,1
# Reflector TG on to slot 2 TG9
TGRewrite=2,9,2,9,1
# XLX TG 6 on to slot 2 BM TG12345 # Change 12345 to desired BM TG
TGRewrite=2,6,2,12345,1
# Reflector control command slot 2 94000->4000 to 95000->5000
PCRewrite=2,94000,2,4000,1001
# Echo on RF slot 1 TG9990 to network slot 1 9990
TypeRewrite=1,9990,1,9990
SrcRewrite=1,9990,1,9990,1
# Reflector status returns
SrcRewrite=2,4000,2,9,1001
# Pass all of the other private traffic on slot 1 and slot 2
PassAllPC=1
PassAllPC=2
Password="passw0rd" # Make sure the password is passw0rd for BM
Location=1
Debug=0
```

Now, run DMRGateway and make sure the settings are correct.

\$ ./DMRGateway DMRGateway.ini

```
I: 2019-04-08 14:53:13.775 This software is for use on amateur radio networks only,
I: 2019-04-08 14:53:13.775 it is to be used for educational purposes only. Its use on
I: 2019-04-08 14:53:13.775 commercial networks is strictly prohibited.
I: 2019-04-08 14:53:13.775 Copyright(C) 2017 by Jonathan Naylor, G4KLX and others
M: 2019-04-08 14:53:13.775 DMRGateway-20180606 is starting
M: 2019-04-08 14:53:13.775 Built 20:31:28 Feb  3 2019 (GitID #82d011b)
I: 2019-04-08 14:53:13.775 MMDVM Network Parameters
I: 2019-04-08 14:53:13.775     Rpt Address: 127.0.0.1
I: 2019-04-08 14:53:13.775     Rpt Port: 62052
I: 2019-04-08 14:53:13.775     Local Address: 127.0.0.1
I: 2019-04-08 14:53:13.775     Local Port: 62051
M: 2019-04-08 14:53:13.775 MMDVM Network, Opening
M: 2019-04-08 14:53:13.775 Waiting for MMDVM to connect.....
M: 2019-04-08 14:53:20.665 MMDVM has connected
I: 2019-04-08 14:53:20.665 Rule trace: no
I: 2019-04-08 14:53:20.665 DMR Network 1 Parameters
I: 2019-04-08 14:53:20.665     Name: BM
I: 2019-04-08 14:53:20.665     Id: 123456710
I: 2019-04-08 14:53:20.665     Address: 64.94.238.196
I: 2019-04-08 14:53:20.665     Port: 62031
I: 2019-04-08 14:53:20.665     Local: random
I: 2019-04-08 14:53:20.665     Location Data: yes
M: 2019-04-08 14:53:20.665 BM, Opening DMR Network
I: 2019-04-08 14:53:20.665     Rewrite RF: 1:TG9 -> 1:TG9
I: 2019-04-08 14:53:20.665     Rewrite Net: 1:TG9 -> 1:TG9
I: 2019-04-08 14:53:20.665     Rewrite RF: 2:TG9 -> 2:TG9
I: 2019-04-08 14:53:20.665     Rewrite Net: 2:TG9 -> 2:TG9
I: 2019-04-08 14:53:20.665     Rewrite RF: 2:TG6 -> 2:TG12345
I: 2019-04-08 14:53:20.665     Rewrite Net: 2:TG12345 -> 2:TG6
I: 2019-04-08 14:53:20.665     Rewrite RF: 2:94000-95000 -> 2:4000-5000
I: 2019-04-08 14:53:20.665     Rewrite RF: 1:TG9990 -> 1:9990
I: 2019-04-08 14:53:20.665     Rewrite Net: 1:9990 -> 1:TG9990
I: 2019-04-08 14:53:20.665     Rewrite Net: 2:4000-5000 -> 2:TG9
I: 2019-04-08 14:53:20.665     Pass All PC: 1
I: 2019-04-08 14:53:20.665     Pass All PC: 2
M: 2019-04-08 14:53:20.665 DMRGateway-20180606 is running
```

At this point, everything should be configured.

To test before committing to the running of the service scripts, you can either use `screen`, or open four terminals to the machine you're working on. Run each of the four programs in the foreground, in their own working directories, and *pay attention to the output*. Make some test transmissions on both the XLX and Brandmeister side.

If traffic is not passing in or out of the server, **check your firewall**

If all goes well, you can work on getting the service files made up.

First, be sure that the default install of MMDVM\_Bridge doesn't start up and conflict with the others

```
$ systemctl disable mmdvm_bridge.service
```

Create the service file for MMDVM\_Bridge on the Brandmeister side

```
$ cd /lib/systemd/system
$ cp mmdvm_bridge.service mmdvm_bridge-bm.service
$ pico mmdvm_bridge-bm.service
```

Change the information in red for the following section to get the service file to run the instance of MMDVM\_Bridge for Brandmeister

```
[Service]
StandardOutput=null
WorkingDirectory=/opt/MMDVM_Bridge_BM
RestartSec=3
ExecStart=/opt/MMDVM_Bridge_BM/MMDVM_Bridge /opt/MMDVM_Bridge_BM/MMDVM_Bridge.ini
Restart=on-abort
```

Create the service file for MMDVM\_Bridge on the XLX side

```
$ cd /lib/systemd/system
$ cp mmdvm_bridge.service mmdvm_bridge-xlx.service
$ pico mmdvm_bridge-xlx.service
```

Change the information in red for the following section to get the service file to run the instance of MMDVM\_Bridge for XLX

```
[Service]
StandardOutput=null
WorkingDirectory=/opt/MMDVM_Bridge_XLX
RestartSec=3
ExecStart=/opt/MMDVM_Bridge_XLX/MMDVM_Bridge /opt/MMDVM_Bridge_XLX/MMDVM_Bridge.ini
Restart=on-abort
```

## Change the service file for DMRGateway on the XLX side

```
$ cd /lib/systemd/system
$ cp DMRGateway.service DMRGateway-XLX.service
$ pico DMRGateway-XLX.service

[Service]
Type=simple
StandardOutput=null
WorkingDirectory=/opt/DMRGateway_XLX
# Environment=LD_LIBRARY_PATH=$LD_LIBRARY_PATH:/usr/local/lib
Restart=always
RestartSec=3
ExecStart=/opt/DMRGateway_XLX/DMRGateway /opt/DMRGateway_XLX/DMRGateway.ini
ExecReload=/bin/kill -2 $MAINPID
KillMode=process
```

## And finally, change the service file for DMRGateway on the BM side

```
$ cd /lib/systemd/system
$ cp DMRGateway.service DMRGateway-BM.service
$ pico DMRGateway-BM.service

[Service]
Type=simple
StandardOutput=null
WorkingDirectory=/opt/DMRGateway_BM
# Environment=LD_LIBRARY_PATH=$LD_LIBRARY_PATH:/usr/local/lib
Restart=always
RestartSec=3
ExecStart=/opt/DMRGateway_BM/DMRGateway /opt/DMRGateway_BM/DMRGateway.ini
ExecReload=/bin/kill -2 $MAINPID
KillMode=process
```

## Reload the systemd files

```
$ systemctl daemon-reload
```

## Then, enable the four services

```
$ systemctl enable mmdvm_bridge-bm.service
$ systemctl enable mmdvm_bridge-xlx.service
$ systemctl enable DMRGateway-BM.service
$ systemctl enable DMRGateway-XLX.service
```

To be sure any ports and stale services are flushed, and to make sure that the services start up on boot, reboot the server.

# Appendix A

If you do not have a DMRGateway.service file, create a new one.

```
$ pico /lib/systemd/system/DMRGateway.service
```

```
[Unit]
Description=DMRGateway Service
# Description=Place this file in /lib/systemd/system
# Description=KClAWV 30 NOV 2018

# To make the network-online.target available
# systemctl enable systemd-networkd-wait-online.service

After=network-online.target syslog.target netcheck.service
Wants=network-online.target

[Service]
Type=simple
StandardOutput=null
WorkingDirectory=/opt/DMRGateway
Restart=always
RestartSec=3
ExecStart=/opt/DMRGateway/DMRGateway /opt/DMRGateway/DMRGateway.ini
ExecReload=/bin/kill -2 $MAINPID
KillMode=process

[Install]
WantedBy=multi-user.target
```