

ARMER Interop MotoBridge Dispatch Workstations

There are three ways MotoBridge dispatch workstation access can be implemented to gain access to the interop equipment connected to the ARMER Interop MotoBridge System:

1) Add a MotoBridge Dispatch Workstation directly connected to the ARMER MotoBridge network.

Network connection needed:

The existing MotoBridge network needs to be extended to the location for the workstation. The MotoBridge network is available at any one of the existing ARMER interop tower sites.

This network needs to be extended by getting a T1 from an ARMER interop site to the workstation location. This can be a leased T1 or a microwave/radio link T1. With this connection a router and switch will also be needed at the workstation location.

OR

The network can also be extended from an ARMER interop site by an Ethernet enabled microwave/radio link/Fiber.

Approvals:

The proposed workstation and connection plan need to be approved by the SECB Operations and Technical Committee.

The user account for dispatch login is planned to give access to the shared ARMER resources in your region / adjacent areas. If shared ARMER resources are required beyond this the requested access needs to be approved by the SRB OTC. Access to private resources on the MotoBridge network will require approval of the resource owner.

If you are adding a new link to an ARMER tower you will need to submit a User Request Form (URF) to Shane Chatleain at MnDOT to obtain or modify your existing site lease.

Equipment needed:

Motorola MotoBridge Workstation

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| • Workstation gateway unit | Est equip cost: \$ 12,835.00 |
| • Power Supply for WSGU | Est equip cost: \$ 85.00 |
| • Dispatch work position/dispatch application | Est equip cost: \$ 5,614.00 |

Router at Workstation location if connected by T1

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|----------------------------------|-----------------------------|
| • Cisco 2911 Router | Est equip cost: \$ 2,436.38 |
| • T1 Interface Module for Router | Est equip cost: \$ 1,150.00 |

Microwave link/lease link

- Your choice Est Cost: ????

Setup:

- The workstation setup is performed by Vendor.
- The user account for dispatch login is created by John Anderson at MnDOT.
- The configuration and programming of your workstation located router is performed by John Anderson at MnDOT. (This assumes you purchase the router recommended, if you select a different model router, configuration and setup is your responsibility.)
- Cross connect of your T1 at the ARMER site to the MotoBridge network will be performed by MnDOT technical staff.

Training:

The operational plans and training plans for the ARMER interop system are available from DECN website. Look under ARMER studies/ reports to find:

- MN Cross Spectrum Interoperability System Training Plan
- MN Cross Spectrum Interoperability System Operations Plan
- MN Cross Spectrum Interoperability System Operations Training Manual

MotoBridge dispatch position training is available online from Alexandria VoTech.

2) Use the software only dispatch application on a PC connected to the ARMER MotoBridge Network

Network connection needed:

The existing MotoBridge network needs to be extended to the location planned for the Software only PC. The MotoBridge network is available at any one of the existing ARMER interop tower sites.

This network needs to be extended by a getting a T1 from an ARMER interop site to the workstation location. This can be a leased T1 or a microwave/radio link T1. With this connection a router and switch will also be needed at the workstation location.

OR

The network can also be extended from an ARMER interop site by an Ethernet enabled microwave/radio link.

Approvals:

The proposed workstation and connection plan need to be approved by the SECB Operations and Technical Committee.

The user account for dispatch login is planned to give access to the shared ARMER resources in your region / adjacent areas. If shared ARMER resources are required beyond this the requested

access needs to be approved by the SRB OTC. Access to private resources on the MotoBridge network will require approval of the resource owner.

If you are adding a new link to an ARMER tower you will need to submit a User Request Form (URF) to Shane Chatleain at MnDOT to obtain a site lease or modify your existing site lease.

Equipment needed:

Motorola MotoBridge Workstation

- PC – user responsibility Est equip cost: xxxxx
PC minimum requirements in appendix A:
- Motorola Software only dispatch application Est equip cost: \$ 2,125.00

Router at Workstation location if connected by T1

- Cisco 2911 Router Est equip cost: \$ 2,436.38
- T1 Interface Module for Router Est equip cost: \$ 1,150.00

Microwave link/lease link

- Your choice Est Cost: ????

Setup:

- Dispatch Software load on PC – user responsibility.
- The user account for dispatch login is created by John Anderson at MnDOT.
- The configuration and programming of your workstation located router is performed by John Anderson at MnDOT. (This assumes you purchase the router recommended, if you select a different model router, configuration and setup is your responsibility.)
- Cross connect of your T1 at the ARMER site to the MotoBridge network will be performed by MnDOT technical staff.

Training:

The operational plans and training plans for the ARMER interop system are available from the DECN website. Look under ARMER studies/ reports to find:

- MN Cross Spectrum Interoperability System Training Plan
- MN Cross Spectrum Interoperability System Operations Plan
- MN Cross Spectrum Interoperability System Operations Training Manual

MotoBridge dispatch position training is available online from Alexandria VoTech.

3) Using the software only dispatch application on a PC that connects to the MotoBridge network by VPN access.

Network connection needed:

Access is by way of a VPN connection through the internet.

Approvals:

The proposed workstation and connection plan need to be approved by the SECB Operations and Technical Committee.

The user account for dispatch login is planned to give access to the shared ARMER resources in your region / adjacent areas. If shared ARMER resources are required beyond this the requested access needs to be approved by the SRB OTC. Access to private resources on the MotoBridge network will require approval of the resource owner.

Equipment needed:

Motorola MotoBridge Workstation

- PC – user responsibility Est equip cost: xxxxx
PC minimum requirements in appendix A:
- Motorola Software only dispatch application Est equip cost: \$ 2,125.00

Setup:

- Dispatch Software load on PC – user responsibility.
- The user account for dispatch login is created by John Anderson at MnDOT.
- VPN Access – submit request to John Anderson at MnDOT. He then forwards the request to MnIT to get the VPN account created.

The VPN creation process is slow, please factor the time in for planning.

Training:

The operational plans and training plans for the ARMER interop system are available from the DECN website. Look under ARMER studies/ reports to find:

- MN Cross Spectrum Interoperability System Training Plan
- MN Cross Spectrum Interoperability System Operations Plan
- MN Cross Spectrum Interoperability System Operations Training Manual

MotoBridge dispatch position training is available online from Alexandria VoTech.

MotoBridge system equipment additions

Agencies or regions can add to the ARMER MotoBridge Interop system if they need resources beyond what the State has built.

Example: DNR Forestry decides they would like their DNR Forestry VHF repeaters that are co-located at many of the ARMER sites to be available to a MotoBridge dispatch location. They can submit a plan to OTC and once approved they can plug their stations into unused Radio Gateway Unit ports at the site or add an additional Radio Gateway Unit at the site to add additional ports.

To add additional base stations into MotoBridge:

Network connection needed:

If additional equipment additions are at an existing ARMER interop site no new network connections are needed.

Approvals:

MotoBridge equipment addition plans need to be approved by the SECB Operations and Technical Committee.

If you are adding a new base or antenna to an ARMER tower you will need to submit a User Request Form (URF) to Shane Chatleain at MnDOT to obtain a site lease or modify your existing site lease.

Equipment needed:

If RGU ports are available at the planned ARMER interop site no additional RGU is needed.

If no RGU ports are available a 4 or 8 port RGU will need to be added at the site:

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| • Motorola MotoBridge RGU (4port) | Est Equip cost: \$ 7,650.00 |
| • Motorola MotoBridge RGU (8port) | Est Equip cost \$ 12,835.00 |
| • Motorola MotoBridge Power Supply for RGU | Est Equip cost \$ 85.00 |
| • Cables to interface station to RGU | Est Equip cost \$ 90.00 |
| • Base radio/Antenna system etc. | Est cost ???? |

Setup:

- MnDOT technical staff will assist the requestor's vendor at time of install.

To add additional control stations into MotoBridge:

Network connection needed:

If additional equipment additions are at an existing ARMER interop site no new network connections is needed.

Approvals:

MotoBridge equipment addition plans need to be approved by the SECB Operations and Technical Committee.

If control station is located at an ARMER site a plan for the control station antenna system needs to be approved by MnDOT.

The control station needs to be properly FCC licensed. If operating as an FX1 under an existing license approval of the license holder is required.

If you are adding a new base or antenna to an ARMER tower you will need to submit a User Request Form (URF) to Shane Chatleain at MnDOT to obtain a site lease or modify your existing site lease.

Equipment needed:

If RGU ports are available at the planned ARMER interop site no additional RGU is needed.

If no RGU ports are available a 4 or 8 port RGU will need to be added at the site:

- Motorola MotoBridge RGU (4port) Est Equip cost: \$ 7,650.00
- Motorola MotoBridge RGU (8port) Est Equip cost \$ 12,835.00
- Motorola MotoBridge Power Supply for RGU Est Equip cost \$ 85.00
- Cables to interface station to RGU Est Equip cost \$ 90.00
- Control station radio/antenna system, etc Est cost ????

Setup:

- MnDOT technical staff will assist the requestor's vendor at time of install.

To add additional frequencies into the existing ARMER VHF Control Station:

If you wish to add additional frequencies or channels into the existing ARMER variable frequency radio the addition needs to be approved and it needs to be a frequency that is FCC eligible to be licensed at the site.

Approvals:

Frequency or channel addition plans need to be approved by the SECB Operations and Technical Committee.

Setup:

- MnDOT will license the new frequency once approved by SRB.
- MnDOT technical staff will assist the requestor's vendor at time of install.

To add additional sites into MotoBridge:

Network connection needed:

If a new MotoBridge site is needed the MotoBridge network needs to be extended to that site.

This network needs to be extended by a getting a T1 from an ARMER interop site to the workstation location. This can be a leased T1 or a microwave/radio link T1. With this connection a router and switch will also be needed at the workstation location.

The network can also be extended from an ARMER interop site by an Ethernet enabled microwave/radio link.

If the site addition is an existing MnDOT site that currently does not have MotoBridge you need to work with MnDOT engineering to determine equipment needed to add the site into MotoBridge.

Approvals:

MotoBridge equipment addition plans need to be approved by the SECB Operations and Technical Committee.

If you are adding a new base or antenna to an ARMER tower you will need to submit a User Request Form (URF) to Shane Chatleain at MnDOT to obtain a site lease or modify your existing site lease.

Equipment needed:

If RGU ports are available at the planned ARMER interop site no additional RGU is needed.

If no RGU ports are available a 4 or 8 port RGU will need to be added at the site:

- | | |
|--|-----------------------------|
| • Motorola MotoBridge RGU (4port) | Est Equip cost: \$ 7,650.00 |
| • Motorola MotoBridge RGU (8port) | Est Equip cost \$ 12,835.00 |
| • Motorola MotoBridge Power Supply for RGU | Est Equip cost \$ 85.00 |
| • Cables to interface station to RGU | Est Equip cost \$ 90.00 |

Router at Workstation location if connected by T1

- Cisco 2911 Router Est equip cost: \$ 2,436.38
- T1 Interface Module for Router Est equip cost: \$ 1,150.00

Microwave link/lease link

- Your choice Est Cost: ????

Setup:

- MnDOT technical staff will assist the requestor's vendor at time of install.

Appendix A:

The following are the minimum PC requirements for installing the MOTOBRIDGE Dispatch Application:

- CPU: Core 2 Duo or Athlon X2 at 2.4 GHz
- RAM: 3 GB
- Free space on hard disk: minimum 2 GB
- Network adapter with LAN: 10/100 Mbps
- 8x Speed DVD-ROM or CD-ROM
- DirectX 9.0c compatible sound card
- DirectX 9.0c compatible video card
- 3D Hardware Accelerator - 256MB of memory minimum
- Screen resolution: minimum 1024x768
- Operating system: Windows XP SP3/Windows 7 64 bit
- Input/Output device: USB headset (Recommended Stereo "Plantronics" headsets SHS 2362, USB Push-to-talk Adapter Stereo SHS 2371) or regular PC headset or PC speakers + Microphone