

LMR Radio to Verizon Push to Talk



Allan Overcast, President and CEO

About Link Communications

- **Founded in 1989**
- **Exclusive to Verizon Wireless**
- **Main line of business: Radio Interoperability Solutions**
 - **Tactical Communications Bridge**
 - Connects different agencies together when communications is necessary
 - Radio and IP based connectivity solutions
 - **Tactical Dispatch Solution**
 - IP based software dispatch solution
 - Allows software based, IP dispatch control from any PC
- **Verticals:** Public Safety, Transportation, Military, ...any 2-way radio user
- **Sweet Spot:** Public Safety

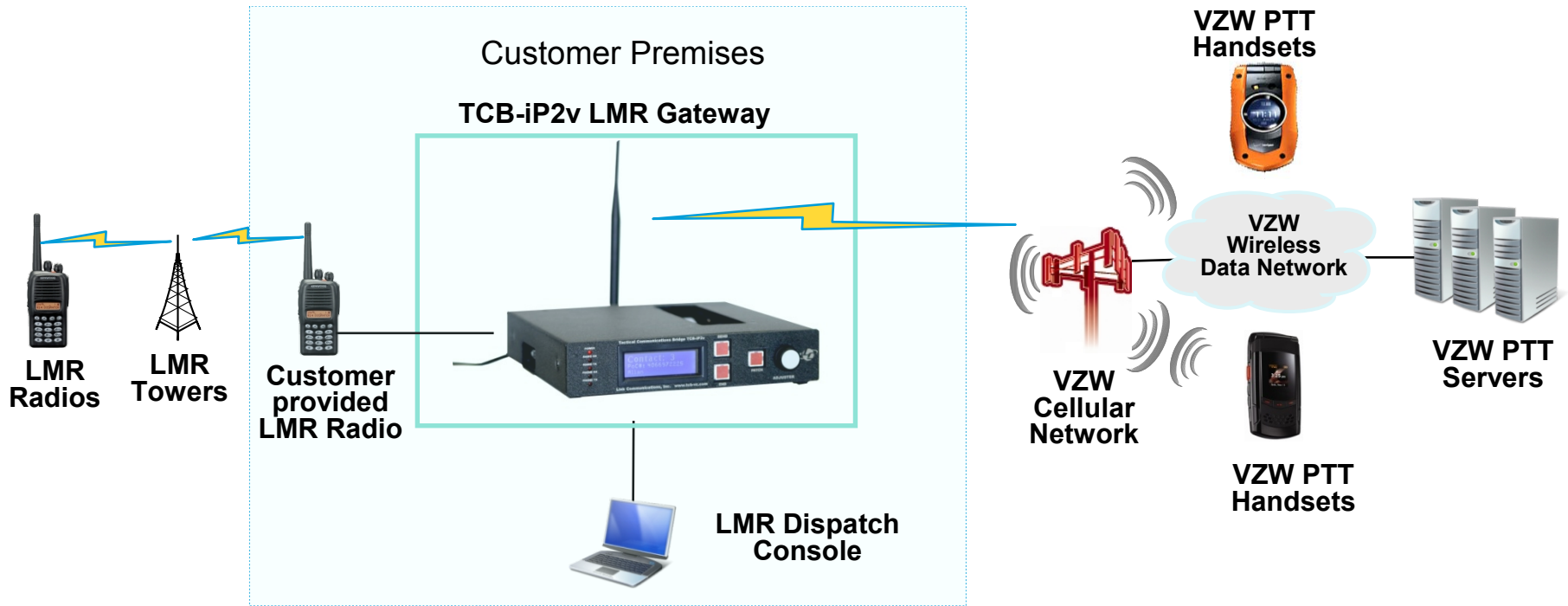
Tactical Communications Bridge TCB-iP2v

1. **Compact Size** – Integrates into any environment, enclosure or standard 19” 1U rack cabinet. Small enough to fit in your briefcase or in a vehicle!
2. **Affordable** – Priced at \$3.5K, which is thousands less than the competition
3. **Computer Requirements** – Does not require a computer to operate
4. **Ease of Use** – Plug a 2-way radio in and apply +12V DC power to operate
5. **Interfacing** – Can be interfaced to radios, dispatch consoles and Nextel™ PTT devices
6. **Expandable** – Additional 2-way radios can be easily added with the Verizon portal with the TCB-iP2; an affordable expansion option.



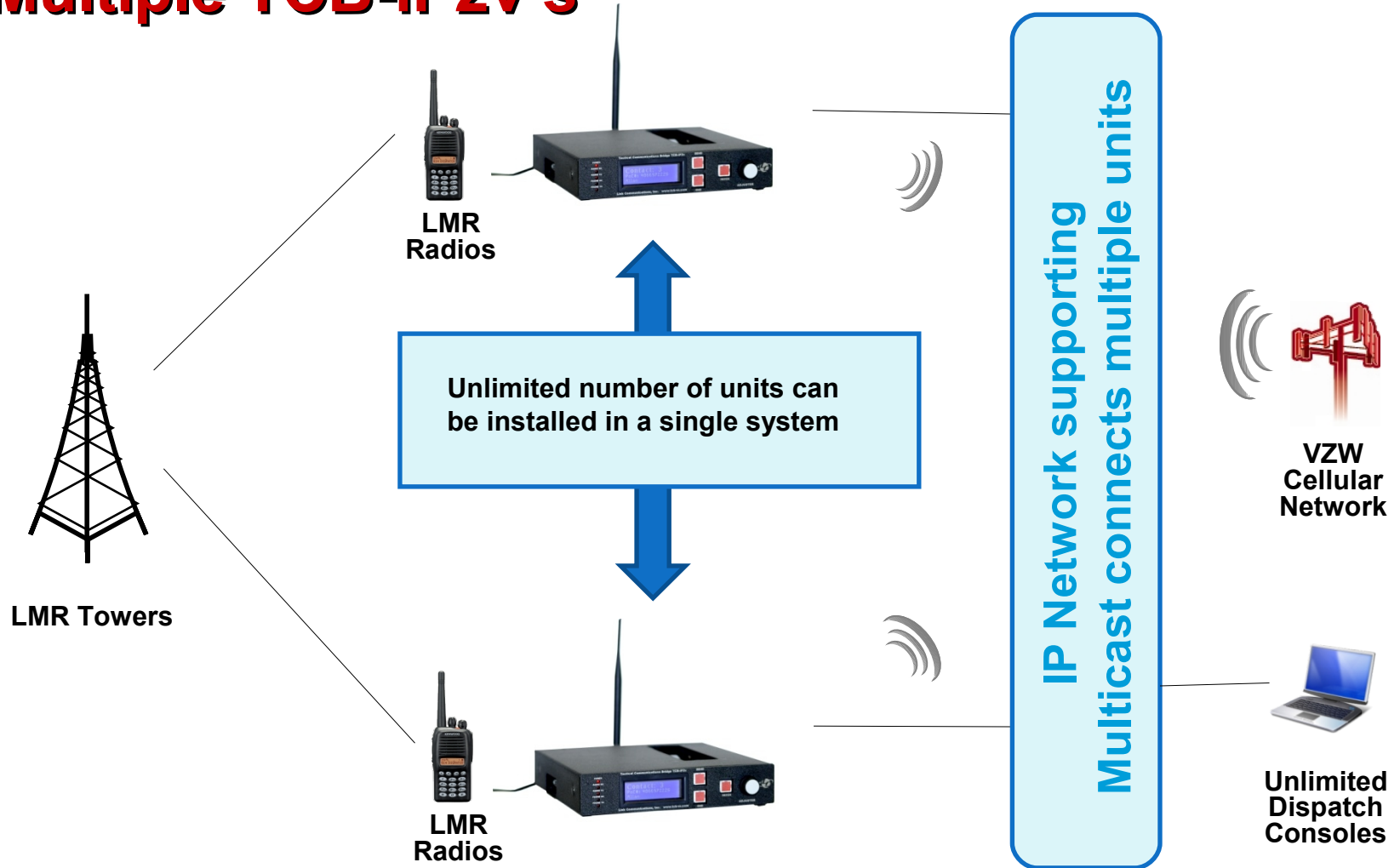
TCB-iP2v Verizon Interface

TCB-iP2v Network Architecture



- ✓ Internally a Verizon provided “PTT donor radio” is integrated inside the TCB-iP2v
- ✓ PTT Donor Radio acts as a communication bridge
- ✓ LMR Gateway has physical connectors and software to control the donor radio
- ✓ TCB-iP2v can optionally connect to your network for extended operation and control

Multiple TCB-iP2v's



Any TCB-iP unit can be Interoperated with on the Multicast Network
Verizon can talk to Nextel™, LMR can talk to over the Skyterra MSAT system ...

Tactical Communications Bridge TCB-iP4

1. **Embedded Radios** - Embeds VHF, UHF and 800 MHz, or three customer radios (XTS size supported)
2. **Cellular Handset** - Includes a cradle for either a Verizon Wireless PTT handset or other carriers handset
3. **Cellular Data** - Includes a port for a Verizon Wireless USB data modem or other carriers USB modem
4. **Computer Terminal** - Includes a touch sensitive industrial grade panel PC with 1024x768 resolution
5. **Secure Wireless** - Includes Wireless router, WAN and LAN ports, 8.5 Amp AC power and +12VDC operation
6. **Easy to Transport** - Housed in a waterproof, rugged Pelican 1490 briefcase



TCB-iP4 System

Tactical Communications Bridge TCB-iP4

Feature Set

**Touch Panel PC
Running LinkTDS™ dispatch
Software installed**

**Verizon USB Data
Modem Port**

**3G/4G Cradlepoint
Wireless router**

**Embedded AC Power
Supply (8.5 Amp)**



Pelican 1490 Briefcase

**Verizon PTT or Nextel™
Handset cradle**

**Embedded VHF APCO P25
With AES256 Encryption**

**Embedded UHF APCO P25
With AES256 Encryption**

**Embedded 800 Mhz APCO P25
With AES256 Encryption**

*Supports most handheld radios
Separate rear panel antenna
Connectors for each radio*

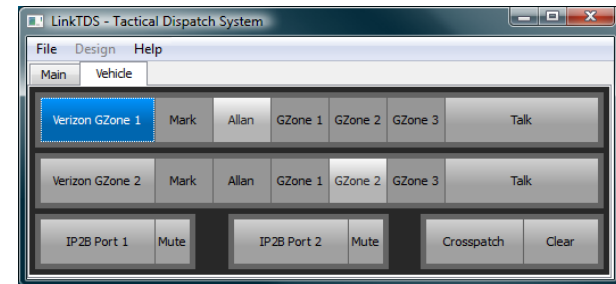
Tactical Dispatch Solution



Flexible GUI interface for the PC

Features:

- Multiple unit/location dispatch control
- TCB-iP2v integration
- Priced to meet any dispatching requirement



User configurable for In-vehicle operation on a compact LCD display

2-way radio and PTT in a flexible dispatch environment

Tactical Dispatch Solution

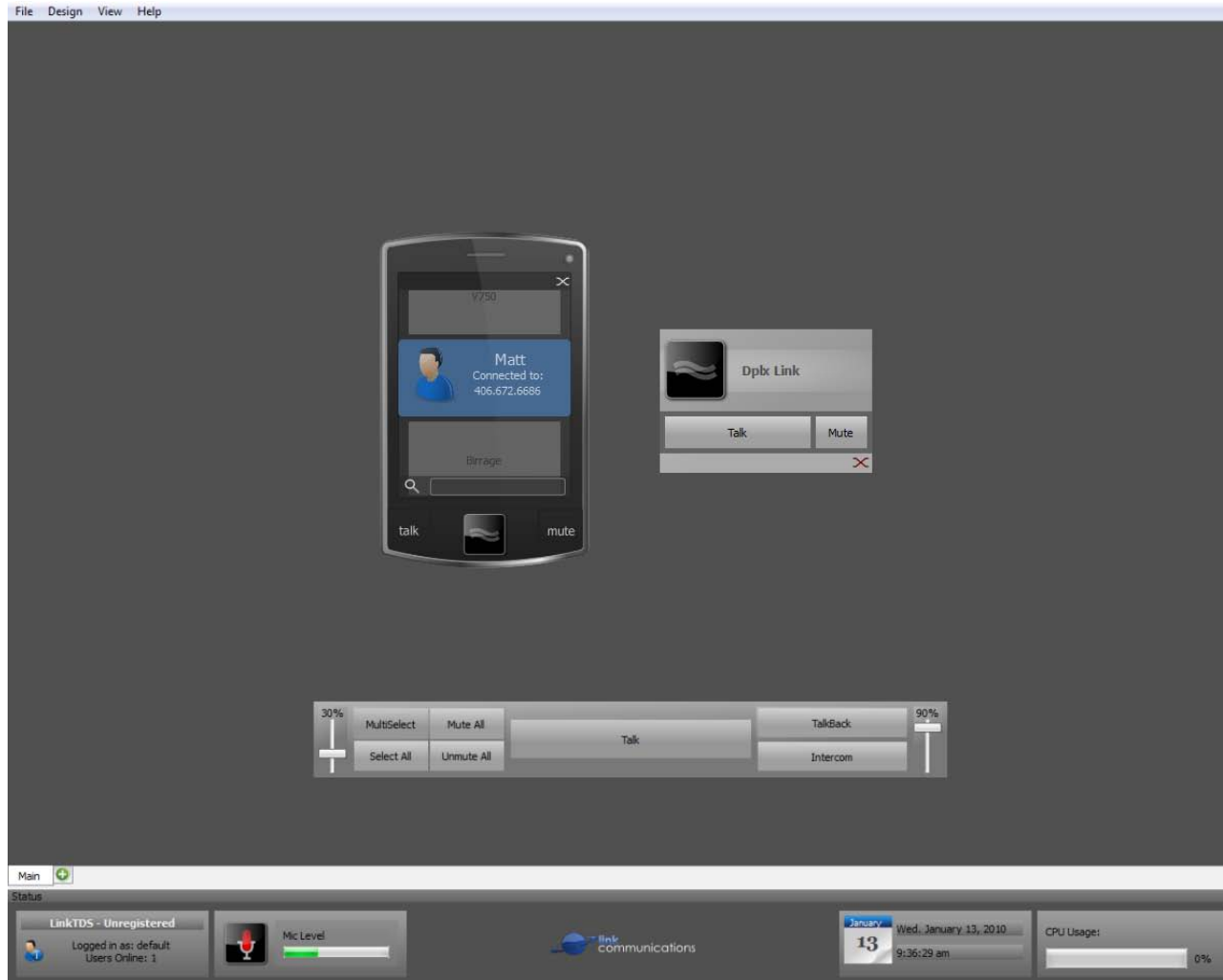
TCB-iP2v Verizon Widget

- Shows a “Virtual” Verizon handset
- Allows screen manipulation and control of the phones contact list
- Can be easily linked with other radios, handsets and consoles
- Can be individually Push to Talked from the screen
- Easy method of operating the embedded handset without actually touching the Verizon PTT device



Tactical Dispatch Solution

TCB-iP2v Single Unit Screen



Tactical Dispatch Solution

TCB-iP2v MSAT Screen

The screenshot displays the LinkTDS software interface. The main window is titled "LinkTDS - Unregistered" and contains a menu bar with "File", "Design", "View", and "Help". The central area features two mobile phone keypad simulations. The left keypad is larger and shows a screen with "PRIV.", "DR", "LAT N 45 48.04'", "LON W 108 27.55'", and "00:0963". Below the screen are buttons for "MENU", "UNLOCK", and "GROUP", and a numeric keypad. The right keypad is smaller and shows the same screen information, with "Talk" and "Mute" buttons below. To the right of the main area is a "Resources" panel with a table listing various resources:

Name	ID
<Verizon>	6023
<XTL-300...	6022
<MSAT-Hand>	6021
MSAT-G2	6020
<Dplx Link>	6019
<Repeater>	6018
<Dplx Link>	6017
<Repeater>	6016
<Dplx Link>	6015
<Repeater>	6014
Patch 10	6013
Patch 9	6012
Patch 8	6011
Patch 7	6010

At the bottom of the window, there is a status bar with the following information:

- LinkTDS - Unregistered
- Logged in as: default
- Users Online: 1
- Mic Level: [Progress bar]
- link communications logo
- November 20, 2009
- Fri, November 20, 2009
- 3:38:13 pm
- CPU Usage: [Progress bar] 0%

Tactical Dispatch Solution

Patched units with available resources on the right

The screenshot displays the Tactical Dispatch Solution software interface. The main window features a mobile device simulation with a screen showing 'PRIV.', 'LAT N 45 48.04'', 'LON W 108 27.55'', and a timer '00:0963'. Below the screen are 'Talk' and 'Mute' buttons. To the right is a 'Resources' panel with a list of units. The 'MSAT-Hand' unit (ID 6017) is highlighted in blue. The status bar at the bottom shows 'LinkTDS - Unregistered', 'Logged in as: default', 'Users Online: 1', 'Mic Level' slider, 'link communications' logo, 'November 20 Fri. November 20, 2009 4:03:08 pm', and 'CPU Usage: 0%'.

Name	ID
<Dplx Link>	6023
<Repeater>	6022
<Dplx Link>	6021
<Repeater>	6020
<Dplx Link>	6019
<Repeater>	6018
MSAT-Hand	6017
MSAT-G2	6016
<Verizon>	6015
<XTL-300...	6014
Patch 10	6013
Patch 9	6012
Patch 8	6011
Patch 7	6010
Patch 6	6009
Patch 5	6007

Other TCB-iP Products

TCB-MSATiP/MSATiP-LMR

1. Supports MSAT-G2 Radio Interface
2. Available with LMR radio support used to remove the radio to satellite delay
3. Compatible with all other 'iP' units enabling Interoperation between units
4. LinkTDS™ enabled



Skyterra MSAT-G2 Satellite Portal



TCB-MSATiP

Other TCB-iP Products

TCB-iP2

1. Supports two LMR radios per unit
2. Small footprint, ten TCB-iP2's can be rack mounted in a 4U 19" enclosure providing 20 ports
3. Compatible with all other 'iP' units enabling Interoperation between units
4. LinkTDS™ enabled



TCB-iP2 Module



TCB-iP2 Module Racked with 10 units

Conclusion:

- 1. Link Communications has been providing Push to Talk Interoperability for 20+ years, we have an excellent reputation for developing quality reliable equipment**
- 2. A single unit to hundreds of units can be installed with full management from one to many PC's**
- 3. Hold a GSA contract for the Tactical Communications Bridge products**
- 4. From mobile installations, to fixed rack mounted to rugged tactical operation, our equipment can be deployed**
- 5. Manufactured in our own facilities which translates into a more reliable solution**

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