

Tips & Tricks

And tales from the trenches



Making Digital Radio **Work.**

What we'll cover

- Software upgrades... why they're important and how to do them, with a live demo
- Thoughts about LTE interference
- A bit about grounding and lightning protection
- More software – demo conclusion
- Installation considerations - a “from the field” viewpoint



VS Software 2.x to 4.x Upgrade

- 4.0 upgrade, includes OS system upgrade
- Simpler upgrade, no serial port connection
- Requirements:
 - Time: up to 1 hour off air
 - TX: Need to be at the site
 - USB flash drive
 - CAT5 cable
 - Laptop



VS Software 2.x to 4.x Upgrade

- Phone Home
- Omnia Direct (MPX over AES)
- SNMP Traps
- AUI Meter Memory
- Port Forwarding
- Secured SMTP Password
- Icecast Support
- New Scheduler
- NTP
- MER Meter (HD applications)
- AUI Call Sign Display



VS Software 2.x to 4.x Upgrade

Download the OS Recovery .zip file from FTP site



Index of /VS_Series/OS_Recovery/Ver 4.0/

Name	Size	Date Modified
 [parent directory]		
 IS13011 - VS Series 4 0 Recover OS.pdf	165 kB	12/5/13 4:17:00 PM
 VS_CS_osrecovery_v4.0.zip	165 MB	11/28/13 5:17:00 PM

<ftp://www3.nautel.com>



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VS Software 2.x to 4.x Upgrade

Unzip and store the files direct to clean USB.

Name	Type	Compressed size	Password ...	Size	Ratio
<input type="checkbox"/> bootloader_stage2.bin	BIN File	10 KB	No	24 KB	62%
<input type="checkbox"/> bootloader_stage2.version	VERSION File	1 KB	No	1 KB	0%
<input type="checkbox"/> createtags	File	497 KB	No	1,333 KB	63%
<input type="checkbox"/> initrd.version	VERSION File	1 KB	No	1 KB	0%
<input type="checkbox"/> os_install.sh	SH File	2 KB	No	4 KB	66%
<input type="checkbox"/> parsetags	File	494 KB	No	1,327 KB	63%
<input type="checkbox"/> progmsg	File	270 KB	No	592 KB	55%
<input type="checkbox"/> sys_install.sh	SH File	2 KB	No	4 KB	65%
<input type="checkbox"/> topline.sh	SH File	1 KB	No	1 KB	20%
<input type="checkbox"/> VSARM_osrecovery.version	VERSION File	1 KB	No	1 KB	0%
<input type="checkbox"/> VSARMAPP.tgz	TGZ File	36,192 KB	No	36,253 KB	1%
<input type="checkbox"/> VSARMRFS.tgz	TGZ File	129,553 KB	No	130,238 KB	1%
<input type="checkbox"/> zImage_current.version	VERSION File	1 KB	No	1 KB	3%
<input type="checkbox"/> zImage_padded_current	File	2,060 KB	No	3,840 KB	47%



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VS Software 2.x to 4.x Upgrade

- Turn RF Off
- Remove existing USB
Insert new USB
- Use front panel: Main menu>System settings>OS Recovery



OS Recovery:* 0.00kW
Force OS Recovery

Software

Technical Resources

- Nautel Forum
- FREE RF Toolkit
- FAQs Troubleshooting
- VS Quick Start Guides
- Product Documentation
- Nautel Phone Home
- Nautel Updater/Manager
- Support Webinars
- Tips n Tricks
- Latest Software
- Previous Models
- Other Resources

Contact Support

Support Request Form

Telephone:
North America Toll Free: 1.877.628.8353
International: +1.902.823.3900
RMA Request Form

Email:
support@nautel.com
Meet Your Support Team
Live Chat

Latest Software

NV Series 4.2.3
[Download Now >](#)
[Watch the NV/NX Series Release 4 Webinar >](#)
[Read the NV/NX Series Release 4 FAQs >](#)

NV^{LT} Series 4.2
[Download Now >](#)

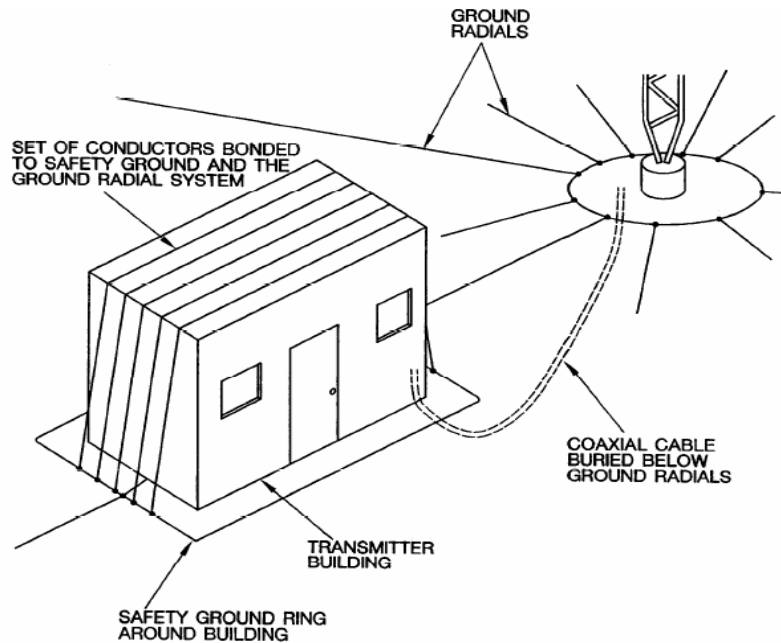
VS Series 4.0
Anyone with software previous to 2.1.3 is recommended to install this software to avoid the possibility of a memory leak error rendering the control PWB inoperable.
[Download Now >](#)
[Watch Webinar: Upgrading VS Series to Release 4.0 Software >](#)

NX Series 4.1.1
[Download Now >](#)
[Watch the NV/NX Series Release 4 Webinar >](#)
[Read the NV/NX Series Release 4 FAQs >](#)



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LTE Interference



In areas with high RF fields (AM sites, typically, but also FM transmitters near LTE sites), a Faraday cage can reduce a lot of issues

-This can be as simple as running copper wire over the roof of the building spaced 3 feet (about a meter) apart

-Install a copper strap around the outside perimeter of the building and bond the copper wires to it

-Ensure there are ground rods driven at appropriate intervals

LTE Interference

- <http://www.lessemf.com/292.html>
- <http://www.lessemf.com/paint.html>
- CE specs are stricter than FCC specs for cabinet radiation.
- LTE receivers typically operate very near noise floor.
- It's a good idea to contact your FCC attorney if you receive any complaints from an LTE provider.



Photo from www.lessemf.com/paint.html

Credit for link for conductive paint goes to Curtis Flick, via www.lists.radiolists.net - Broadcast forum



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LTE Interference

- Note that any screening or conductive paint must be connected to earth ground to be effective.
- Remember to practice single point grounding techniques.

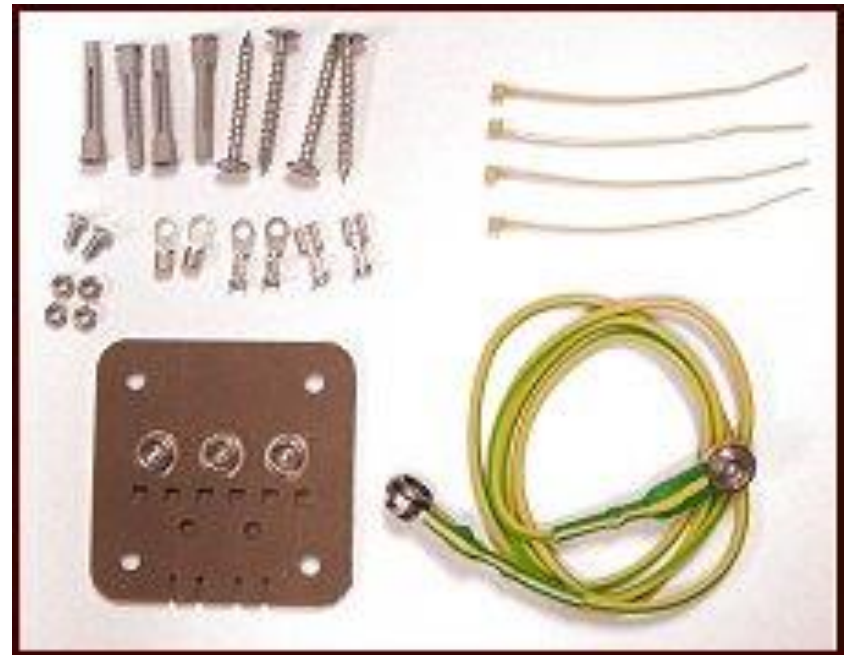
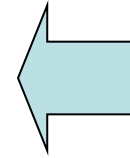


Photo from www.lessemf.com/paint.html

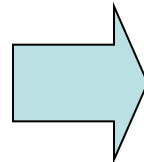
Get Well Grounded...



- Buss bar for AC grounds
- Tied to station reference ground
- All primary equipment connected

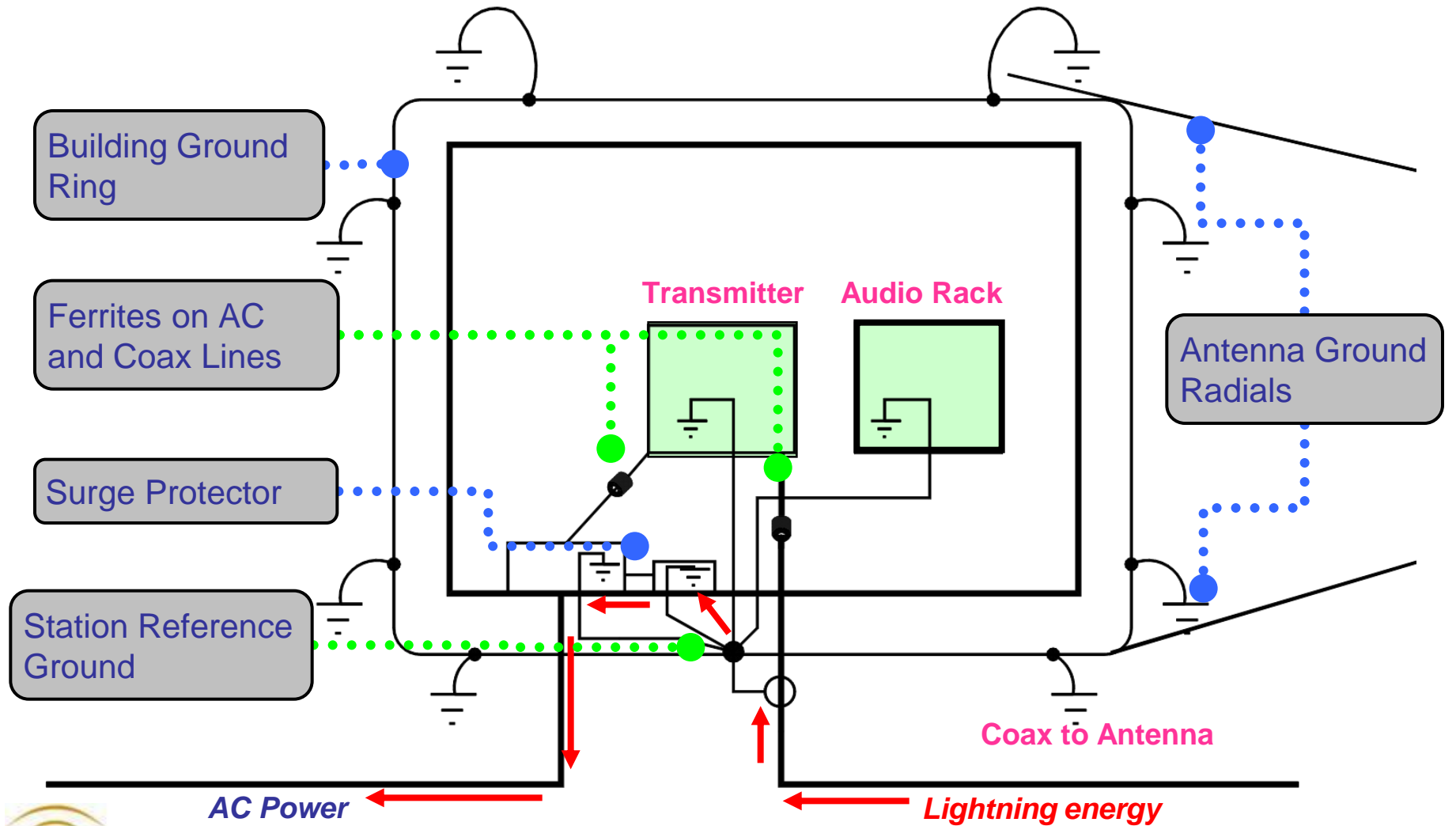
Bulkhead ground for coax cables

- Best done where cables enter building
- Connected to station reference ground
- Keep ground leads as short as possible



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Ideal Transmitter Building



Maintenance

–Grounding is important

- Not just the installation, but the actual type of connection.
- If you do it right, you won't have to redo it at night!



VS Software 2.x to 4.x Upgrade

- Power cycle
- Login to the AUI
 - default login
- System prompts software upgrade



Installation considerations

- Points to Consider:
 - Accessibility (can the delivery truck get there?)
 - Moving (will it fit and do we have the manpower?)
 - Plumbing (where does the coax enter and will it interfere with air handling?)
 - Grounding (too much can be as bad as not enough)
 - Things to remember (the “gotchas”)



Accessibility

- Remember details like:
 - Can a truck get in the driveway without sinking?
 - Is a lift gate required and are there steps/railings in the way?
 - Stairs – if using a stair crawler, vertical clearance needs to be considered
 - Transmitter dimensions (crated and uncrated)
 - Doorways
 - Other equipment in the way



Moving



- Will mechanical assistance be required?
 - Due to either accessibility or site conditions
 - Due to limited manpower
- Are clearances sufficient?
 - Would it fit if uncrated?
 - Are there stairs to consider?
 - Remember that crated size is much bigger than published dimensions

Grounding



- What's wrong with this picture?
 - How can it be fixed?
 - What's missing?

Cable Entry



- Prior to installation confirm:
 - Location of remote interface
 - AC entry point
 - Routing of audio/monitor/IP cabling

Gotchas



- Some systems may have power modules secured for shipping.
- Ensure any packing materials are removed.
- If there are cover plates installed for shipping, these need to be removed.

Wrapping It Up



- More and more, some programming may be required
 - Configure RDS
 - Set up SCAs
 - Program audio loss alarm and actions
 - Set up email alerts
 - **ACTIVATE PHONE HOME!!!**

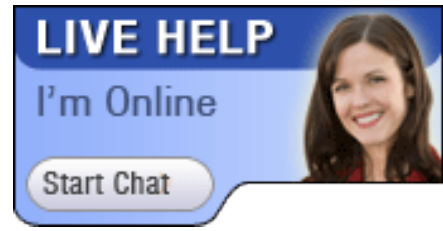
Special Thanks to:

- Christy White, Nautel – for learning how to do field software upgrade (and downgrade... and to run Putty to edit Linux commands!)
- Alex Hartman and Jim Gray, KVSC, for agreeing to become the test station for the first GV series transmitter install.
- Barry Mishkind, for the resource provided by www.radiolists.net



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Thank You



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