The Local Oscillator

The Newsletter of Crawford Broadcasting Company Corporate Engineering

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A Streaming Journey

We made the switch to Wheatstone Streamblades a couple of years ago across most of the company. The Streamblade is a purpose-built stream encoder that has integral audio processing designed specifically for reduced bit rate streams. It also has a powerful metadata processing engine that uses Lua scripting. It would handle four separate programs with four streams each for different encoding, main/backup CDN server destinations, etc. And to top all that off, it lives in the Wheatnet AoIP world, meaning that we can route to and from it within the Wheatstone AoIP architecture.

I was immediately impressed with the Streamblade when we fired the first one up in our Denver market. I had it up and running in just a few minutes, fed with Wheatnet sources and egesting to our CDN's servers. Getting the metadata working right took a bit of work, trial and error as I learned some of the Lua scripting language, but once I figured that out, we were off to the races. And the processing… the sound was great!

We initially equipped our four biggest clusters (in terms of station count) with Streamblades, and that made a lot of sense since each Streamblade could handle up to four programs. Last year, we added Buffalo to the mix with its three programs.

That left us with the west coast markets, where we had just two stations in the KBRT/KNSN cluster and KCBC all by itself up the coast. Considering the cost of the Streamblade, it just didn't make sense to make that investment for those two markets. So we left them running the Rocket Broadcaster encoder software running on a PC.

Rocket is a pretty bare-bones encoder. It gets the job done, but there is no audio processing, and the metadata processing is pretty much fixed. We had a Wheatnet driver on the PC running Rocket in those two markets, so we didn't have to drop back to analog to feed them, and we could route to them with Navigator. We also employed the Wheatstone AuraIP audio processors in our blades to provide some audio processing, so the streams sounded pretty good and consistent.

There was one issue, however, and it was one that really irritated me. As I mentioned above, metadata processing is pretty much fixed in Rocket, and it would interpret certain ASCII characters as field delimiters, whether you wanted it to or not. The dash (-) was one such character, and if a title contained a dash, everything in the title before the dash was interpreted as the title and everything after as the artist. And that was a train wreck, an irritation at best and something that made a lot of work for me as I prepared and submitted our performance reports for stream royalties every month.

In those royalty reports of use (ROIs), we have to screen for music only – we don't want anything that is not a song to appear in the report, both because we don't want to pay a royalty on it and because Sound Exchange will squawk about it and we'll have several rounds of email messages to deal with any non-song entities showing up in the ROI. So in our Zetta export, anything that is not a song has only a title exported and no artist. The filter our CDN uses in generating the ROIs looks for entities with that artist field populated and ignores anything else.

By now, clever reader that you are, you have no doubt figured out where I'm going with this. Those dash and other characters that Rocket would

interpret as a field delimiter were causing the artist field to be incorrectly populated, and those performances were showing up in the ROI. I would have to go in and manually remove them, revise the total performance count, and upload the modified ROI. What a pain! If only we had Streamblades in those west coast markets. We could fix that issue with the Lua metadata processing! But the cost…

The Duo GUI

Last fall, I saw a user report in *Radio World* on a new product, the Wheatstream Duo. The Duo looked to have many if not all the features that the Streamblade did, but it was scaled down and would handle just two programs rather than four. And the cost… the price point was just right for our west coast markets. So I ordered one for KBRT/KNSN and one for KCBC.

We got them installed in mid-December. Once Todd Stickler at KBRT and Steve Minshall at KCBC got the IP addresses set and the devices connected to both networks, I was able to jump in and get everything else set up in just a few minutes.

The Duo differs a bit from the Streamblade in that it is itself a "blade." In a counterintuitive twist, the Streamblade is not a "blade" and must be paired with a host blade to function in the Wheatnet infrastructure. The Duo is a "blade," and in the setup, you give it a blade number and IP address on the Wheatnet system and you're off to the races. You can route directly to and from it without involving any other blade. So in that sense, it was easier to install and configure than the Streamblade.

Beyond that, everything was pretty much the same as the Streamblade. The GUI is a bit different, but the functions are mostly the same, including audio and metadata processing. Performance is, as far as I can tell, identical to the Streamblade. At KBRT/KNSN, we run two programs, each with four streams – one each main and backup AAC and MP3. KCBC runs just one program but also with four streams. The Duo is a perfect fit for those two applications.

As I was doing the December performance reports last month, I immediately noted that I had about half the number of bogus entries in the reports for those two markets, the result of having the Duos running for half the month. This month, when I run the performance reports, I don't expect to see any bogus entries. That will allow me to employ our CDN's automated ROI submission system, which will save me a lot of time and effort.

The New York Minutes
By
Bill Stachowiak
Chief Engineer, CBC – Western New York

Greetings from Crawford Buffalo!

In this issue I would like to share with you some experiences that I had going all the way back to 1996.

American Radio Systems had just purchased WYRK and WJYE. WYRK was on the 5th floor of the Rand Building in downtown Buffalo. WJYE was on the 17th floor.

At the time, I owned S&B Communications, a contract engineering broadcast group. We were contacted and asked if we would be interested in participating in working on a huge project that they wanted to do.

In a nutshell, we would be installing new Continental FM transmitters for both stations and consolidating the studios on the 12th floor of the Rand Building.

Also, we would be installing a new automation system called Master Control from RCS. They called this the paperless studio because you could program in live reads and not need anything on paper anymore.

We were definitely interested, so we met with Ralph Christian, who was the general manager at the time, to start organizing the project. We were told that all of the equipment was already ordered and we would be receiving a list for our perusal.

The new furniture was being locally built by Brian Fransis, a contractor recommended by Ralph.

Our immediate concern was how we were going to get the new transmitters up to the 27th floor. After getting the measurements from Continental, we discovered that the transmitters were too big to fit in to the public elevators that went up to that floor! The freight elevator only went as high as the 20th floor, so we had a serious problem!

When the transmitters were ordered, no consideration had been given to this issue. Continental offered an option to separate the transmitter into sections, but unfortunately the transmitters were not ordered with that option.

We considered our few options, and it was decided that probably the best thing to do was to send the transmitters back and have them reconfigured. The American Radio Systems people didn't like that option, so we went to plan B.

The transmitters were taken to the 12th floor via the frright elevator. We removed all the transformers to reduce the weight.

It was decided to hire a contractor to hoist the transmitters up from the 20th floor and into the transmitter room via a hole in the exterior wall that they opened up to facilitate getting the transmitters into the room.

They had to erect scaffolding up the side of the building from the 20th floor to the 28th floor. They used a pully system with a block and tackle to slowly raise the transmitters up and then literally swing them into the room.

Needless to say, this was a very delicate operation, but it was successful. It cost American Radio Systems an additional $20,000.

Then we had to get the transformers from the 20th floor up to the transmitter room and the 27th floor. Instead of getting them up to the 26th floor and then trying to get them up the stairs, we were able to use a trap door in the elevator room floor, also located on 27.

This was a really fun project, but when I think back, I don't know how I survived it!

Brian Cunningham and I worked the night shift working on the transmitter installations. He would pick me up around 7 PM and we would work until around 5 AM. Then I would catch a few hours of sleep and go to my office to tend to my other clients. Brian would go back during the day and work on the studios.

Brian was amazing in how much he could accomplish in one day. He was great at pigtailing consoles and distribution amplifiers. I would leave the office at around 5 PM. We probably maintained this regiment for at least a few months.

The project turned out great in the end. We had a lot of problems with that early automation software. We had an amazing 45 gigs of storage. That was unheard of at the time.

I hope you enjoyed my reminiscing of the past. I have a lot more experiences that I would like to share with you in upcoming issues.

The Motown Update
by
Mike Kernen, CSRE
Chief Engineer, CBC–Detroit

Cold Power

My most enduring irritation remains with the pervasive uninterruptible power supply, or UPS – faithful in name, less so in practice. What do I mean by this? Well, I've employed UPS systems in every way shape and form throughout my career and have all too frequently experienced their failure. Now, it'd be one thing if they failed 'safe'…

Fail-safe methods are vital in all critical systems design. Each system that requires absolute reliability requires that a redundant system is able to be called online in the event of a primary system fault and that usage of the primary system is barred.

A perfect example of this lies in the design of railroad signal systems. Railroads are full of life safety concerns (naturally) and therefore their electrical and mechanical systems are designed with safety as the primary design goal. Failsafe – stop the trains if safety cannot be guaranteed, lower the gates at grade crossings if the signal bungalow has detected an open circuit to the track.

This leads me back to UPS design. The singular purpose of any UPS is to ensure

clean, uninterrupted power. There are of course many different designs and capacities available, but they all have this one, solitary function.

A few months back I ordered an industrial design UPS to install in one of our antenna tuning units (ATU). This particular ATU has a dedicated 240V circuit coming from the transmitter building, and I considered placing the UPS at the breaker panel, but 240V UPSs are pricy. The previous UPS had endured for many years in the extreme heat and cold out in the ATU, so I bought a replacement that had specific features such as "flexible mounting, low profile, industrial," thinking it'd be perfect for this challenging location.

After about five months, I started getting alarms indicating loss of network at our transmitter building. The outages were random, and once the network came back, I couldn't find any faults. Then I checked the microwave radio again and spotted this: System Uptime: up 5 minutes.

You see, this UPS is there to ensure our tower-mounted microwave radio and the smaller wireless link that bounces the network between the tower and the transmitter building is never without power. But what I discovered was that the UPS was interrupting the power briefly and very intermittently. No other equipment logged any outage. In other words, it was doing the one thing its entire existence was there to prevent.

This is not my first experience with this phenomenon. I recall a time at a former employer where our whole automation system went down. In the TOC, I found the automation system's UPS with an audible alarm and a battery fault LED. Shouldn't its designers, presumably electrical engineers, have considered that a failed battery was no reason to drop the protected circuits?

More to the point, this was an on-line UPS, one that creates the 120V 60Hz output independently to insulate protected gear from powerline irregularities. A high-end unit obviously bought to safeguard a mission-critical component. A UPS of this grand purpose should at the very least have closed a bypass, ensuring connected equipment never lost power and provided a warning.

Sadly, it would appear that designers of UPS systems have not gained a clear enough understanding of the role their backup systems have once they've been unboxed and employed by the final user.

Replacing the UPS solved the problem. Even in this sub-zero weather, it's been up and solid.

Hackers Got In!

A few weeks ago, I noticed that I couldn't log into the Inovonics mod monitor at one of our transmitter sites. I was absolutely certain that I was entering the correct credentials, so I put it in my mind to check it once I got out to that site.

Once I got there, I saw the message on the screen saying, "Front Panel Locked." This is not a shared location, so I never lock the front panel user interface on any of the equipment there. What was going on?

I knew I was going to have to do a factory reset of the unit to regain access, but I couldn't find the method for doing that in the manual. A quick call to Inovonics tech support provided the answer. Power cycle the unit, then immediately upon power up, touch the screen with three fingers. That worked, I reloaded my saved configuration, and all was well once again.

Inovonics support said this issue has become common and is due to hackers finding and accessing their equipment through open router ports. On mine, they only changed the frequency and passwords. While having a modulation monitor hacked is nothing more than a nuisance, it underscores why port forwarding shouldn't be used on mission critical systems. Keeping devices behind a firewall and only accessing using a VPN is safer. My Unifi routers support WireGuard, and I've reduced open ports to only those absolutely necessary.

Selective Hearing

Last month I started writing a few paragraphs titled "selective hearing." For some reason, I never finished it, and it's good that I didn't because more was yet to come.

Every married person has had their spouse accuse them of having this mysterious condition called selective hearing affecting their consciousness or memory (or something… I wasn't really listening). I know my wife swears she's told me something I have absolutely no recollection of – it doesn't even sound familiar; she tells me I knew that we had these plans, or whatever.

I guess I have to admit to selective hearing, but never have I seen a piece of network equipment develop selective data transmission until about forty-seven days ago. I had the misfortune to experience it again just today.

I remember it exactly – I was already at the transmitter site that day to install a new UPS for the issue I mentioned earlier, and it quickly turned into a deeper dive into what I've since started calling "selective data transmission."

From a Layer 2/3 standpoint, everything over the point-to-point microwave STL looked healthy: pings were clean, applications were responsive, VPN tunnels stayed up, and even RealVNC sessions were rock solid. But anything that needed to punch out to the internet just wouldn't pass.

Even more confusing, the Tieline link never flinched and continued passing audio to the far end without so much as a hiccup. There's no intervening router, firewall, or NAT funny business between these nodes, and everything lives on the same subnet, which made the whole failure mode feel especially nonsensical.

When we arrived at the site, I replaced the UPS first. The garage door was blocked by a huge pile of ice, so I drove my truck out to the ATU, swapped the UPS, and as I headed back to the transmitter building, my dash lit up with a call from the site – a clear sign that restarting the Trango and Ubiquiti link radios on the tower had restored internet access. Our remote control's VOIP phone adaptor depends on that connection. I cleared the alarms and realized cycling the power on the link radios had cleared the selective data transmission issue.

Now, I cannot explain why the link radios were all too happy to pass intranet traffic but would not pass internet traffic. The far end was able to ping the gateway and the DNS servers.

FF>> to today and the same symptom appeared. This time my first indication was that the WAN1 on my router was reporting down, and the router alarmed that it had failed over to WAN2. All sorts of snooping and fumbling, a call to Todd Dixon, and an eventual change to the router's verification server seemed to restore the WAN1 port. That was red herring. I needed lunch.

After lunch, I knew I had to restart the link radios. Our STL path uses six radios – two for the long haul and two on each end between the ground and the tower. Back in December, I didn't identify which of the two UPS-protected radios was causing the bottleneck since they shared a single power run up the tower and installing the UPS interrupted them both. This time, I planned to restart them one by one to find the culprit.

Instead of performing a simple reboot, I conducted additional diagnostics and observed that the ground to tower Ubiquiti link (which is really just Wi Fi between two radios) was detecting co-channel interference from two neighboring SSIDs that appeared to be coming from a local cable supplier.

Figure 1 - The new Wheatstone L8 surface in a production room.

That this was allowed to happen indicates either an absence on these radios of dynamic channel selection capability or a failure of their channel negotiation mechanism. I manually issued a reconnect command and within a minute, my phone rang – a call from the remote-control system – problem solved.

At least for now, no more selective data transmission, and I could see that the Ubiquiti radios had now negotiated a connection on an unused frequency.

If this happens again, I'll consider replacing these Ubiquiti link radios. These have been up for years, and I'm willing to bet newer models have more resilient link protections.

Other Musings and Goings On

The new year brings with it some new projects. We have already bought and installed two small Wheatstone control surfaces, completing our "Wheatnetification" of all the studios in the building. Two studios had been stand-alone with Mackie mixers better suited for a small theater or a garage band. One received an AudioArts DMX, and the other a Wheatstone L8 along with attendant microphone processing. Users are over the moon with the improvement in sound and capabilities!

I have also started getting things lined up for spring in Monroe, where contractors and/or weather are factors. We'll finally be attacking the brutal and unforgiving vegetation at the tower bases, lining the fenced-in areas with weed barrier and #57 gravel as they should be.

Additional surveillance cameras are ready for installation in the "front 40" area where the tower 4 collapse happened last spring, and a new network

video recorder (NVR) is already up and running with capacity for the additional cameras.

Lastly, the bridge over the river to tower 4 for the electrical, control wiring, and RF cabling is overdue to be replaced. Its wood is very rotten and its foundations are falling into the water. Incidentally, it may not have been discovered had the #4 tower collapse not happened since the bridge was buried deep in the woods.

News from the South
by
Todd Dixon, CBRE
Chief Engineer, CBC–Alabama

RF Hawkeye

As I mentioned in last month's *Local Oscillator* article, in December of 2025 we had Dielectric's RF Hawkeye installed into our antenna system at the WXJC-FM Cullman tower site. The hardware is essentially a 15 ¾" line section inserted into the main transmission line inside the building with sensors connected to a central monitoring unit (CMU), a processing unit (PU) and remote I/O unit. These rack units, in conjunction with the coupler line section, work to detect, locate and warn of VSWR changes and arcing within the system.

The three rack mounted units are on a small local network not attached to our main transmitter building network. The central monitoring unit is the only piece that also connects via a second RJ45 to our main network.

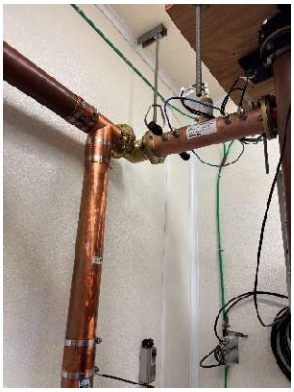

Figure 1 - The RF Hawkeye Line Section

Like so much of most broadcast hardware now, the CMU has a web interface that allows for the configuration of all three devices. There is obviously a lot of initial setup to make sure that the RF sensors are dialed in for the length of the antenna and that baselines are established for the system so that the Hawkeye can then send an alarm to us if things go outside of those initial norms.

The CMU also dials back to Dielectric's home so that they can monitor and see that the system is working as intended and allows them to see what we are seeing if we have any questions or issues.

So really, what problem is this meant to solve that a Bird wattmeter or Nautel's own power/reflected power circuit within the transmitter already handle? In the case of WXJC-FM, we had to replace the antenna and a 200-foot section of line last year, a project that took the better part of 5 months to fully complete. Until the system failed at the power divider in early June of 2025, there were exactly zero indicators from any of our regular telemetry that there was problem. The system was humming along at 27.5 kW with reflected power in the neighborhood of 18 to 20 watts. Then, we were off the air.

The RF Hawkeye is designed to monitor the health of the entire system and notify us of even the smallest change so that we can be more proactive about antenna maintenance and possibly limit both the financial and actual damage that a lightning strike, moisture intrusion or other event creates before it becomes catastrophic.

Figure 2 – Along with the line section, this hardware continuously monitors the transmission system from the transmitter building to the top of the antenna.

The tower site is a giant at nearly 1,375 feet to the top, and the RF Hawkeye will give us a much clearer idea of what is actually going on with the

antenna than just forward and reflected power readings,

Jack and I got some remote training and overview in at the end of last month. Since that time, it hasn't alerted us to any potential issues, but I'm confident that it will in real-time if anything does happen.

Producing a Show

This will be something to stay tuned with as it will likely affect most of our markets in the future. Since around September of last year, several members of the Birmingham market began getting tasked with pulling together a worship type music format that could be played on Sundays in our Crawford markets. The show, titled Word & Worship Then and Now, is hosted by Justin Flores here in Birmingham. It pulls in worship songs throughout a wide era from the 1940s to current ones and also deceased and current preachers and their audio with Justin tying them together with voice tracks. They're packaged in 26-minute, independent

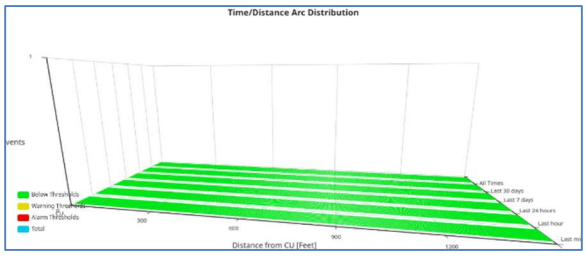

Figure 3 - The RF Hawkeye provides several graphs like this one that include alerts when warning and alarm thresholds have been crossed with distance along the antenna system.

audio segments, and he is creating roughly eight segments per week and placing them on our FTP server for use throughout the company.

Of course, nothing worth doing happens without a struggle, and in this case, the struggle is that the audio being created has music in it and that music metadata has to be generated locally in each market for export to our CDN for the station streams.

As mentioned, Justin is creating a contiguous 26-minute cut of audio. This allows us to not have to have exact copies of each element on every file server in every market. It's one file (or up to eight) that get downloaded and injected into each individual market's server. This isn't a problem in Birmingham – we're creating the audio from files that are on our system, and our local playout does what it always does with metadata by sending it to each place that needs it.

The problem is in the other markets where the metadata doesn't stay within the produced audio. When the audio gets pushed to that single file via Zetta's Publish module (a licensed product), the metadata gets stripped from the audio.

Even though the Publish module also pushes a .log which is essentially an XML file with all of the information and placements for each piece of audio in the segment, there isn't a way to ingest that data back into it in another market with Zetta.

My thoughts exactly… why create an ancillary file with all of the information if you are not able to use it?

Anyway, the show began on January 18th and currently the solution is to locally (at each station) insert cue points into each audio segment at each of the song element locations within the segment and with those, trigger an export of song title and artist information. The cue points are set to fire a Live.MetaData send, which distributes the necessary metadata to the streams, RDS and HD platforms.

We're working on a way to automate that process, which will likely be through creating a MusicMaster scheduling log that is sent to the markets that can use it, but that still requires ingesting audio into systems that will match what MusicMaster says should play.

If anybody wants to knock heads with us on the way to streamline this process, feel free to reach out to me, Mike Kernen, Cris or Amanda with any ideas that you might have. Until next month, I'll be trying to make sure the bricks don't get hurt as I knock my head against them.

May God bless the work of your hands and the meditations of your heart.

Tales From Cousin IT
by
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CBC Corporate IT Specialist

Well, the Ice-pocalypse missed us here in North Central Alabama. I had prepared for the worst with a couple of cans of Vienna sausages, some deviled ham and a small generator, but never needed them. I did eat the deviled ham, though, because I like it. Aside from being bitterly cold (for Alabama), it wasn't bad at all, thank the Lord.

According to Google (which is never wrong, of course), the Weather Channel started naming winter storms back in 2012. It's amusing to me to see which outlets accept this (ex., the New York Post) and which don't (ex., AccuWeather). The National Weather Service turns up its gubbmint-sized nose at the very concept. Hurricanes get names, but not ice and snow! They said so, so there. But you do have to wonder who decided on the name, "Fern." Hurricanes get names like Ivan, Katrina and Camille. But ... Fern? Really?

Husband: "Oh, no, we need to batten down the batten-thingies and buy bread! Fern is coming!"

Wife: "Is he bringin' his momma? I'll make more dumplings."

Web Server

There's really not that much on our corporate webserver in Denver these days. Most of our station-specific sites are hosted at Intertech now. The biggest remaining site is our company website for Crawford Media Group and, of course, our online POR system.

Cris decided to take advantage of current prices and upgrade that aging server, as well as our FTP server, in Denver. Thanks to the AI Madness, the cost of RAM and storage is skyrocketing and isn't expected to level out until 2027.

I've been regularly moving everything from the old server to the new and testing it. So far, it seems to work OK. If you've never moved a WordPress site to a new host, be prepared: you'll need a helmet and a lot of patience.

WordPress wants to store everything in a database and build each page on the fly. That takes extra-heavy-duty hardware, which we've got. The real issue is the way that WordPress stores things – for example, with fixed, hard-coded links. But this time, I was able to do bulk copies from the old to the new and viola! It came up fine.

The real issue with moving servers is minimizing downtime. You can't just kill a server, piddle and tinker until you get the new one happy and then go back online. That just won't work.

Better yet, the First Rule™ of Servers is that the longer they're in existence, the more filled with gibberish they are. People put stuff on a server, forget they ever did it, and you have gigabytes of ... something ... just sitting there, eating drive space. Copying all of that stuff takes a LOT of time.

Back when we were hosting all of our station-specific sites on that server in Denver, I had to carefully create forward proxies from the old server to the new for each site, one at a time. It took weeks; Keith Peterson was still with us at the time, and he and I would work together on each site move. Finally, once all had been done, we killed the proxy and mapped everything directly to the new server.

My little itty-bitty generator. Didn't even need it.

Mail Server

We've had some fun with this over the past month. One of our employees lost her entire mailbox when a script glitched. Another had his account hacked by, of all things, someone at a facility for the disabled in Portland, OR.

As usual, when someone's account is compromised, the quickest and most guaranteed way of dealing with it is to just delete the old account and recreate a new, empty one. To all y'all: backups are essential! Make sure you have a saved, local copy of anything important!

As for the move to the new mail server, I had trouble getting iRedMail to talk to our Barracuda Spam Firewall. Given that we just paid the (expensive!) renewal fee to Barracuda Networks, we want to get at least another year of service out of it, so I poked around for alternatives ... and of all things, discovered that someone was building an open-source version of Zimbra again! I'm current working on that. There are some compatibility issues between our current server version and the newest one, but I'm confident that we can get it worked out.

In preparation, we've been trimming old accounts and old domain names that are rarely used nowadays. I've also re-activated the "auto-clean" function to remove any email that's more than two years old. Our mail store had grown to several hundred gigabytes; when I checked, I discovered that some of our accounts rarely (if ever) clean their mailboxes. This would include advertisements, spam, junk, and you name it. At least the auto-cleanup will help trim this a bit.

(A Rant:) Open Source

Todd and I have many things in common. We're both strikingly handsome, fiendishly clever and love open source software. But the more I work with it, the more I discover that the Neck Beards will just decide to change something when they release a new version. This is especially happy-making because the companies that package the big "distributions," like Red Hat and Ubuntu, are reluctant to simply upgrade to the Latest and Greatest because they don't want to break anything.

What this means to a programmer (like yours truly) is that you might Google for help on, say, a Python program. You try the example ... and get all sorts of errors. This has happened to me too many times to count. I use OpenSuse Linux on my computers and they're also reluctant about upgrading. I figured out how to upgrade to a later version of Python, but had to swim through all sorts of dire warnings about how I could break the entire system if I wasn't careful.

What this means in general is that you may download an open source package and try it, only to discover that it wants version 8.3 of something, while your Linux distribution is running 7.4. It just won't work. Things change, things are added, and things are "deprecated" and then dropped. For example: when I went to install the older version of Zimbra on a new Rocky Linux 9 server, it went through the whole setup ... and clonged when it came time to start the mail transport.

The good news, of course, is that it's open source. In the case of Zimbra that I mentioned earlier, some folks took their open source code and simply rebuilt it in new FOSS ("Free and Open Source Software") packaging. The neck beards will sometimes even take the source and create a new project based on the original, in a process called "forking." It's not unheard of for a fork to eventually replace the original package – one excellent example is LibreOffice (which I use), a fork of the older OpenOffice, itself from a long line of forks going back to something called "Star Office" many years ago.

Life is good, God is great, and until next time, keep praying for this nation!

The Chicago Chronicles
by
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Engineering Manager, CBC–Chicago

Generator Issues

In November, we received a shutdown alarm for our generator located at the Burnham transmitter site. This seemed unusual since this generator was barely over two years old, having been installed in October of 2023.

For the most part, this unit hasn't given much trouble. We did have to have an additional regulator in parallel to the regulator on the output of the tank to provide adequate fuel flow. We purchased a 150 kilowatt unit that ran on propane vapor, and when we had load-bank tests run, it would choke and stall out at about 100 kW because of limitations of the single regulator. Other than that, it ran fine until this past November.

So as stated, I was surprised on that November morning that when the scheduled exercise didn't go as planned and I got the email from the remote control with the shutdown warning. We tried to clear the alarm and get it going again but no success.

We called the Cummins support department, and a tech came to look at the situation. He determined the unit was not getting fuel as it should.

There is a third regulator right at the generator fuel input port that takes fuel pressure to its final level. This had "iced" up a bit in the cold weather as we had an early November snow.

A heat gun got the generator going again, and we put a temporary cover over the regulator in an effort to keep it dry. A few wind events later and the shutdown happened again. This time, we got a five-gallon bucket and made cut-outs for the entrance and exit pipes on the regulator. This seemed to work unit we got the arctic chill.

Near the end of January, even with the five-gallon bucket cover in place, we once again had a shutdown warning. So, we took the next step and decided to add a heat source. We purchased heat tape that is used for water and sewer pipes. We wrapped it around the entrance and exit gas pipes on the regulator and put the five-gallon bucket cover back on. Within ten minutes the generator was starting again.

The good news was that the next Monday when the next exercise was scheduled, the generator fired up and ran without an alarm.

It is interesting that we didn't have this issue the past two winters. I am not sure if anything has changed physically for the regulator in question, I do know we had very mild winters the last two years and they may be the common factor for this issue not cropping up before.

I have never heard of using heat tape with a gas installation before. So, I Googled it and found out that this is a solution that has been used before. Of course, they recommend a lot of caution because you now have a potential ignition source near a potential gas leak. We are going to check this on a regular basis to make sure we are not smelling any leaks.

Rocky Mountain Ramblings
The Denver Report
by
Amanda Hopp, CBRE
Chief Engineer, CBC - Denver

January, although it has flown by, has been slow, at least by way of visiting transmitter sites. I don't think I've ever gone this long without visiting a site. I think that is thanks to the help of Daniel, who has been to at least one of the sites working on some smaller projects as well as for the fact that things are just working.

Much of the United States is dealing with extreme cold, ice and snow as I write this. The Denver area got the cold and some snow. If any of you watched the Broncos game, that snow was about it. Not much at all, just enough to make the roads a mess.

I did learn that if I don't put my split HVAC system at the KLVZ day site into Auto mode, the heat would not run. Oops. I had received a notification from our system at KLTT that it wasn't responding and with that reminder, I checked our system at the KLVZ site. I had it on cool over the summer and forgot to change it to Auto or Heat. Since no one had been there for over a month, we didn't realize it was a whopping 30 degrees inside! I have corrected that issue and the building is now nice and warm again.

Server Upgrades

In late November and December, we received five new Dell servers. The first was a replacement for our Zetta file server. This went smoothly. RCS began copying files over in late November. We were able to get the server swapped within an hour on December 17. Samantha Johnson was our tech for this swap. She did a phenomenal job. We had zero off-air time and were able to bring the stations back up still in sync with what was playing on the old server.

Then we had two servers to replace our Zetta/transmitter network firewall and office firewall. It was amazing how easy this was. I was able to export the settings from the old firewalls and then import them into the new.

The hardest part of the whole thing was getting Rocky Linux to install on both servers. For some reason it took three tries. But once it was on there, I was able to import the settings and quickly swap the servers out of the racks.

Next was the web server. I installed the operating system, got SSH access to it and Stephen has been hard at work getting it all set up.

And finally, we replaced our main Crawford Broadcasting FTP server. I was able to install Rocky Linux, and once again, Stephen worked his magic from all the way down in Birmingham. We brought the server online and only had a couple issues to deal with. We've been using the new FTP server for over a week now with no significant issues.

I am glad to have all the server upgrades for 2026 done. Now I need to clean up my storage room. It's full of old servers. They will soon find a new home at the KLZ site in storage until they are needed elsewhere as sequencers, container servers and other less critical applications.

Bridge-IT II

We purchased two new Bridge-IT II units. We have several legacy Bridge-IT units, and with support for them ending, I knew we needed to prepare.

We have two units that get used nearly every day, one for KLZ and the other for KLTT. So, we purchased two units to replace these. I look forward to having clients use these units. I already replaced the one in the KLZ control room.

I'm currently waiting for a couple of rack mounts. The mounts for the Bridge-IT legacy models have small tabs on the back where they secure the unit. While I am for the moment using that same mount for KLZ, it doesn't sit right. So, I ordered some Middle Atlantic 1RU rackmounts. This should allow the Bridge-IT II units to sit flat.

The hardest part of setting up the new units is that it has more menu options than the Bridge-IT. I did get it figured out and after a few hiccups, we've

already had our morning host use the one in KLZ a couple times.

Society of Broadcast Engineers

As many of you know, I am the chairman of the Denver chapter of the SBE (Chapter 48). I pretty much plan the meetings.

Last year was a struggle. It was a super busy year, so I pretty much planned the meetings a month at a time. I'm happy to say that for 2026 I have all, but two meetings planned out, and I am actively working on getting a couple of presenters lined up.

Our January meeting was all about certification. November marked 50 years of SBE Certification Program. So, in 2026 the SBE has asked all the chapters to do a presentation on certification. I went ahead and did that presentation in January. Certification has so many benefits. I also believe just being a member of the SBE at the Member Plus level holds some great benefits.

I recommend you all find a chapter to join. Join at the Member Plus level. This gives you all the webinars, past, present, and future, as well as the University courses FREE! Just two webinars as a non-member and three at the member price will pay for the Member Plus membership. Once you join, you should look to get certified. While the SBE doesn't guarantee a pay increase from your employer, it can happen. It shows you know your stuff.

Coming Up

February might bring a site visit to one or more of the transmitter sites. Maybe it'll bring the snow Colorado needs. I have nothing planned at the moment. We have no projects on the horizon. The plan is to keep things running at the studio and transmitter sites. I pray you all have stay safe and well.

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740 kHz/100.7 MHz, 50 kW-D/0.2 kW-N, DA-1
KNSN • San Diego, CA
1240 kHz/103.3 MHz, 550W-U
KCBC • Manteca - San Francisco, CA
770 kHz/94.7 MHz, 50 kW-D/4.3 kW-N, DA-2
KLZ • Denver, CO
560 kHz/100.7 MHz, 5 kW-U, DA-1
KLDC • Denver, CO
1220 kHz, 1 kW-D/11 W-N, ND
KLTT • Commerce City - Denver, CO
670 kHz/95.1 MHz, 50 kW-D/1.4 kW-N, DA-2
KLVZ • Brighton-Denver, CO
810 kHz/94.3 MHz/95.3 MHz, 2.2 kW-D/430 W-N, DA-2
WDCX • Rochester, NY
990 kHz/107.1 MHz, 5 kW-D/2.5 kW-N, DA-2
WDCX-FM • Buffalo, NY
99.5 MHz, 110 kW/195m AAT
WDCZ • Buffalo, NY
950 kHz/94.1 MHz, 5 kW-U, DA-1
WDJC-FM • Birmingham, AL
93.7 MHz, 100 kW/307m AAT
WCHB • Royal Oak - Detroit, MI
1340 kHz/96.7 MHz, 1 kW-U, DA-D
WRDT • Monroe - Detroit, MI
560 kHz/107.1 MHz, 500 W-D/14 W-N, DA-D
WMUZ-FM • Detroit, MI
103.5 MHz, 50 kW/150m AAT
WMUZ • Taylor - Detroit, MI
1200 kHz, 50 kW-D/15 kW-N, DA-2
WPWX • Hammond - Chicago, IL
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1260 kHz/95.3 MHz, 5 kW-D/41W-N, ND
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WXJC • Birmingham, AL
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