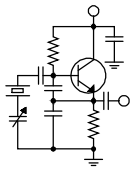
The Local Oscillator



The Newsletter of Crawford Broadcasting Company Corporate Engineering

DECEMBER 2025 • VOLUME 35 • ISSUE 12 • W.C. ALEXANDER, CPBE, AMD, DRB EDITOR

35 Years

It's hard to believe, but here we are, wrapping up 35 years of this publication. It started back in 1990, when we had just six radio stations, most of which were cared for by contract engineers. I started the newsletter as strictly an internal publication for the purpose of information sharing between our engineers. The idea was to avoid having to reinvent the wheel time and again, and it was immediately effective in that regard.

Since then, circulation has gone from U.S. Mail to online, and of course it is without charge. How many people read these pages each month? I really have no idea, but my guess, based on the responses I get from time to time from readers near and far, is that it's in the hundreds. And from time to time, *Radio World* will pick up one of our columns and run it in that great publication, showing in a much broader sense the value that the information in these pages provides to the industry as a whole.

So what's in a name? Why is it called *The Local Oscillator*? In a superheterodyne receiver, the incoming modulated RF signal is mixed with a locally-generated sine wave signal to yield an intermediate frequency modulated RF signal that is either directly demodulated or further mixed to yet a lower intermediate frequency before demodulation. As such, it's the job of the local oscillator in a receiver to convert the incoming signal to one we can do something with and extract the information modulated thereon.

Of course, in this day of DSP, all that is done in software, but since most of our readers are of an age to remember single and double conversion superhet receivers, the name has some significance. And our logo features the familiar Colpitts oscillator circuit found in many receivers.

Next month will begin our 36th year in publication. My thanks to each of our contributors for sharing your ideas and experiences. We are all blessed by your insights.

A Big Sigh of Relief

What a year it has been! Last January, we hit the ground running with Zetta conversions, and that consumed six months. Then we had the antenna burnout at WXJC-FM, followed by the tower collapse at WRDT. My summer was spent dealing with all three of these projects, finishing up and tweaking Zetta, getting WXJC-FM back to full power and getting the WRDT daytime directional array back to normal.

In the middle of all that, the KLTT directional array's day/night mode switching went on the fritz from an underground cable problem. We got that taken care of in October, but it wasn't an easy project.

Then, just as I was catching my breath from all that, we had a guy wire break at WDCX(AM) in Rochester. That tower did not come down, thanks to the speedy remedial action by Northeast Site and Tower. The fix required a whole new anchor, and that work was wrapped up in mid-November.

I mentioned Zetta tweaks above, and those continue. We have experienced a vexing Zetta issue in several of our markets since day one. From time to time, seemingly at random, a program element would simply stop playing. For music, this was an irritation; for long-form paid programs, it was devastating. RCS Support was notified after each such occurrence, but they could not find a cause or provide a cure. They had us trying various things, and the random, infrequent nature of the issue meant it would sometimes take weeks to find that the latest "fix" didn't fix anything.

This all came to a head in mid-November in Denver. A program stopped playing and the client, who had been bitten by the issue before, was livid. I

reached out all the way to the top of the RCS organization and demanded that the issue be diagnosed and fixed by any means necessary. I also emailed Samantha Johnson, who was the installer for Buffalo, Chicago, KBRT/KNSN and KCBC, asking for her thoughts on the issue. She immediately reached out and got permission from the higher-ups to jump in and take a look.

It didn't take her long, maybe a half hour from when I reached out to her, to message back, "I think I found your problem." And indeed she did find and fix it, a configuration error made by the installers in Denver, Birmingham and Detroit. What a relief it was that she found and fixed the issue. And so I take my first easy breaths since we started the Zetta conversions almost a year ago.

I'm almost afraid to say it, but as we enter December, things are pretty much back to normal on the technical front, thank God!

Zetta Thoughts

Almost a year in, I have a few thoughts and observations about Zetta. The comparison is, naturally, to Nexgen, which we (mostly happily) lived with for 22 years.

We love the look and feel of Zetta as well as its modular construction. It is very much like many other Windows applications that we use every day, and in that respect, it's easier to use because things are familiar and make sense.

Zetta has a lot of features and functions that are very useful. Those that have learned to use these tools find that their workflows are much more straightforward and require less effort.

Zetta2Go is an excellent tool that can be used by any of our people to good effect. Many use it regularly for voice tracking and other remote functions, and it serves us well during inclement weather and sick days when it is difficult or impossible for some to get into the studio.

If used to its full capabilities, Zetta makes our radio stations shine. I listen all day every day at the office to our Denver oldies station, which is voice tracked out of Colorado Springs and Dallas. It sounds amazing and "live," not like a juke box or Spotify playlist. Segues are tight and energy is high.

On the negative side of the ledger, there are a few areas where, in my view, Zetta is lacking. First and foremost is in its exports. It's hard not to compare Zetta's exports to Nexgen's. My biggest complaint about Nexgen exports was that Nexgen only provided four, and in some facilities with main/aux analog, main/aux HD, sister station multicast, translators and streaming encoders, we sometimes needed six or more. Zetta does not have that limitation. You can spin up as many exports as you want. But…

My biggest complaint about Zetta's exports is that they do not support Xperi HD Radio. Seriously? In 2025? You have to use a third-party "middleware" program for that, which is an added annual expense and another layer of complexity. How much better it would be if we could export directly to our HD exporters and importers!

And even with the middleware in place, it takes considerable work to get Zetta's exports to work right. Zetta's default "Zetta Full" export is like drinking from a fire hose, pages and pages of metadata that you have to filter downstream to make any use or sense of. We have made good use of Zetta's XSLT transformation feature to do some filtering, and ironically, we have found that the best course of action is to use XSLT code in Zetta to produce an export identical to what Nexgen produced in its XML exports and then configure the middleware filtering for a Nexgen export.

The rest of my complaints really stem from holes in the training our engineers received during the conversion process. Last month, we had all four stations in one market go down during morning drive during a Zetta upgrade that should not have taken anything down. The cause was a Hot Spare configuration issue on which we had no training, and for which the support tech wrongly assumed a correct configuration. Live and learn.

Most everything else is really just learning curve, un-learning Nexgen and learning Zetta. Can Zetta do _____? Yes, it probably can. You just have to figure out the path to make that function happen.

We're still dealing with "network issues" in some markets where sequencers will occasionally stop functioning randomly. I put "network issues" in quotes because that's what RCS support blames for the problem without providing any specifics or guidance.

It's a mystery to me what those issues could be, since our servers were configured to exceed the Zetta spec and we're running gigabit Zetta networks in all our locations. Do we need to replace some switches? Maybe – some are several years old. Servers? We shouldn't, but then again…

And why can't Zetta keep playing the hits if a few packets are lost here and there? Seems like a development issue to me. Zetta has got to work out here in the real world where there are packet collisions, jitter and latency. So, we'll keep trying things to see what helps and what doesn't.

What People Want

There has been a lot of talk in recent months about broadcast radio's place in the car dashboard. It mostly started when Tesla booted AM from its cars as a cheap (in more ways than one) way of solving the noise issue. From there, some other manufacturers, most notably Ford, began talking about removing AM from their automotive entertainment systems. Some in our industry believed that this was just the start and that FM would soon follow, and sure enough, Tesla recently announced that it would not include FM receivers in its base models.

Of course I am strongly biased, but this is a huge mistake for Tesla and any other automakers that may be considering it. A recent nationwide study from Critical Mass Insights finds that 96% of Americans consider AM/FM access important when purchasing a new car, while 98% say it's important that radio be easy to locate on a vehicle's dashboard or infotainment system and not be buried in menus.

Despite its short playlists and low fidelity on many of its niche channels, I'm a fan of SiriusXM satellite radio and have subscriptions for both my cars. I find it a great source of entertainment as I travel back and forth to our mountain home over a route that is not friendly to local broadcast radio reception. But if given a choice, I would ditch satellite radio for local broadcast radio in a heartbeat, and I'm sure I'm not alone in that sentiment.

So auto manufacturers, pay attention. People want broadcast radio front and center in their dashboards.

I would be remiss if I didn't note that some are doing a good job of this. I have two Ford Explorers, one of which is a late model, and AM/FM is right up front, accessible from the home screen. And it has HD Radio! Earlier this year in California, Amanda and I rented a Hyundai Palisade and were pleasantly surprised to find the same thing – broadcast radio on the home screen and HD Radio. I'm certain there are many others. Here's hoping that they stay on that path and keep getting it right.

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

Greetings from Crawford Buffalo!

This past month we accomplished quite a few things.

We replaced the failing 4CX15,000A PA tube in the WLGZ-FM Continental transmitter. This went without a hitch. The tube was a new Eimac.

We wanted to add the capability of doing a remote hard power cycle on some crucial equipment at all of our transmitter sites. There are times that we just can't get out to these sites, which is especially true in the winter. As such, this was important and on my list. Having remote power-cycle capability would mean that we might in many cases be able to restore operations just by logging in. We now have network-enabled power strips at the WDCX-FM and WDCZ sites. We also will be installing one at the WLGZ site.

The Avaya phone system software at the WDCX studio was running on a very old computer that only had 2 GB of RAM installed. Consequently, it was almost impossible to use. With the help of our friends at Convergence Solutions, we were able to move the software to a much better computer.

All the repairs at the WDCX(AM) site in Rochester have been completed. To refresh your memory, a guy cable was snagged by our contractor while he was mowing the antenna field with a tractor and brush hog. The guy wire snapped and the ¾-inch anchor rod was severely damaged. We now have a new guy anchor with the repaired guy cable attached, and the tower has been plumbed and tensioned.

Finally, we had our generators serviced to make sure they were ready for winter.

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

560 Tower 4 Reconstruction Epilogue: Power

Most every part of the WRDT reconstruction project has been completed, and the site is working normally. Well, that's what I'd like to tell you. Now, it's not really a major problem, but it is vexing and yeah, majorly annoying.

What has happened since returning the 500-watt daytime Monroe, Michigan site to air is odd, and so far, inexplicable. At random times during the day or sometimes not at all, the transmitter's output power will change by about 60 watts. Sometimes it will just blip or I'll adjust it and it'll be rock-solid for a period of days, then change by 60 watts in the other direction.

I'm a fan of diagnostics. I love to watch skilled technicians diagnosing problems and fixing them. Thanks to YouTube, many videos demonstrating diagnostics and repair procedures are easy to find. Of course, these presenters always point out their vigorous dislike of intermittent problems. Not only are they hard to reproduce, but they're difficult to catch in the act.

Fortunately, I have caught this transmitter misbehaving. After a manufacturer support call, I decided to create a few custom views on our Burk ARC Plus and start some rolling graphs that follow readings of the suspected variables.

Since the transmitter supports SMNP, I can have the graphs update every two seconds and review them for correlation between associated subsystems. For a better understanding of what's causing this, I'm plotting the AC line voltage, the B+ voltage, and both PAs' voltages and PDM duty cycles against the transmitters power output. I've also set up more than one custom view so I could have long, medium, and short duration views.

So, what do the plots show? A definitive relationship between the PDM duty cycle changing the PA voltage at the time of the power change. I've shared this information with the manufacturer and am hopeful that they'll recognize the issue and be able to point to the cause and provide a solution.

560 Tower 4 Reconstruction Epilogue: Tower Lighting Monitor

The new tower 4 obstruction lighting system operates as it should. Five LED fixtures, along with the tower-mounted control system, photocell, and basic alarm system, are all fully operational. The tower light monitor, however, is not so happy.

It has in its code an expectation of the lights to flash at roughly a 50% duty cycle. The new controller flashes the lights with a short ON, long OFF duty cycle of about 30%. The light monitor was initially counting two flashes per cycle, so it would count about 60 flashes per minute – more on that later.

The FAA requires a flash rate of 30 flashes per minute ± 3 and a dwell no less than 1/2 to 2/3 of flash period if incandescent lighting, and between 100 and 1,333 mS inclusive if other lighting sources. Yes, that's a large window, and the new controller likely complies with the FAA spec, but what to do with the monitor?

I've contacted the controller manufacturer and the monitor manufacturer hoping I can get one or the other to supply a remedy. It could be as simple as replacing the flasher module with one that holds the lights on for the monitor's expected duration. So far, I've not gotten this fixed and am monitoring the lighting through the station's ARC Plus, which gets a contact closure every time the lights flash.

560 Tower 4 Reconstruction Epilogue: Tower Light Control

As stated in last month's *Local Oscillator*, I needed to get the new tower light controller to cooperate with our existing tower light monitor. I suspected this would be a simple matter of relocating the photocell and alas that did cure the monitor's problem determining that the lights were off for the day. This is due to the isolation transformer's no-load current. Relocating the photocell to the tuning house breaks the circuit prior to the isolation transformer, eliminating that current which is also a perpetual loss. This works just dandy as long as one is sure to buy a photocell with an internal relay. Otherwise the inrush

current of the isolation transformer severely shortens the life of the photocell. Ask me how I know…

Other Musings and Goings On

On the grand scale we're still new users of Zetta. The program has been well received, and we've had minimal issues, but one that we did have where recording sessions would mysteriously stop was traced to an incorrect setting we had on one of our studio machines. Thanks to Amanda Hopp and Samantha Johnson for spotting this and figuring it out.

We have also installed a replacement for our backup "Hot Spare" sequencer. In another mystery worthy of a Hardy Boys novel, the machine I had assigned to that task just has problems. Since we bought it, the manufacturer has replaced the motherboard, I've reloaded the operating system (twice) and still it exhibits intermittent odd and unpredictable behavior. I finally decided to can it. There's only so much you can do with a cantankerous computer!

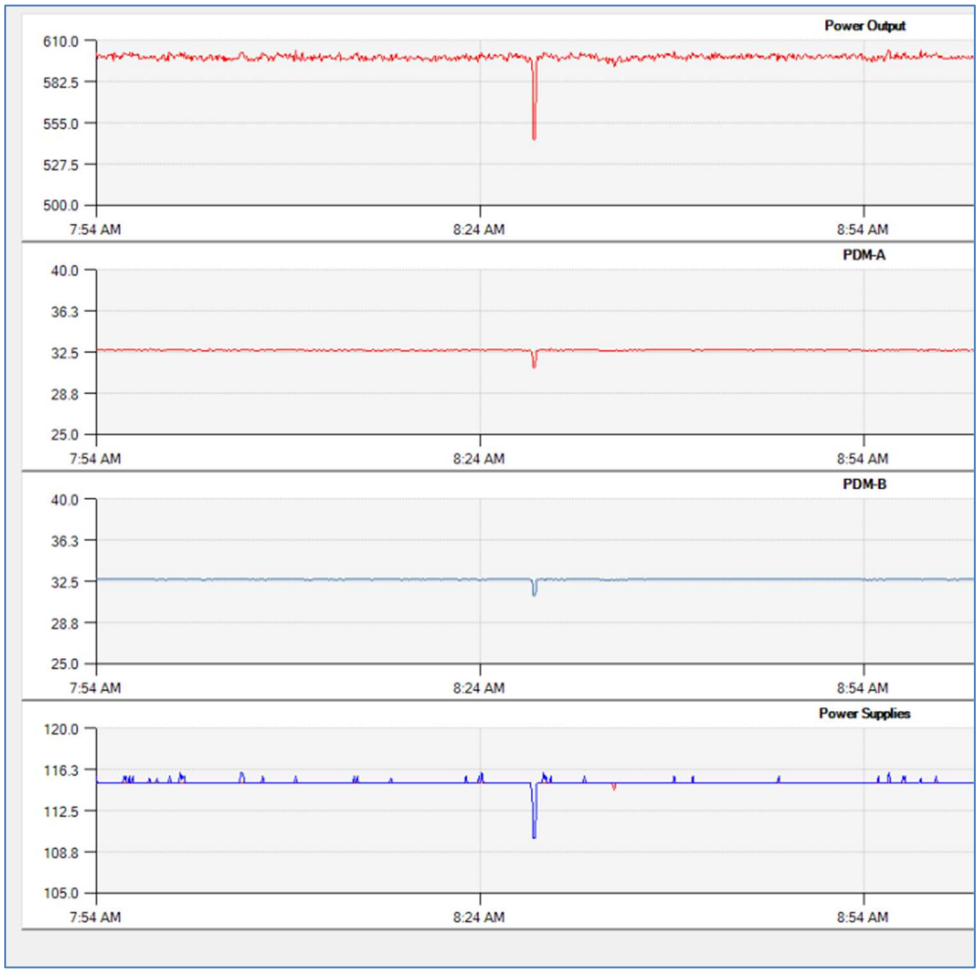


Figure 1 - My custom view showing several transmitter parameters. Note the correlation between the power dip and other parameters.

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

Long time coming…

Well, December is the month and the 23rd is the day. You've probably been hearing a lot about DJI drones and legislation that is coming that will ban the sale of any of their drone products in the United States. I thought I might take my allotted writing time this month to dive into the ban and try to make some sense of it. Of course, the beautiful part of it is that as radio engineers, we can all kind of relate to what is going on in this technology-adjacent industry because the FCC is involved in it and we're familiar with their processes.

The overarching concern with DJI and the United States government is that they are a Chinese-based technology company and most sources confirm that there is little to no air gap between the information that the company collects and the Chinese government. I know it sounds conspiratorial, but every drone flight that occurs gets documented with video, photographs and also carries with it an incredible amount of metadata that could be useful to any government, including our own, as a means to determine vulnerabilities in areas that we might consider trivial, but can be woven together to create a fairly detailed tapestry of information

It reminds me of the time that my wife and I purchased our first robot vacuum. For whatever reason, I thought that the model I purchased was WiFi enabled (it actually wasn't), but in preparation, I downloaded the app from the company so that we could control it. When I registered my address, the app immediately showed the layout of my house. Huh? I had not even received the unit yet and my house layout was already there. How much information could they glean after it was connected to my WiFi and had had a chance to run through the house innocuously cleaning my floors a couple of hundred times?

We live in the information age, and we give so much of it away for free without a thought to how valuable a commodity it really is. To be honest, I generally don't think in terms like this, and I don't think anybody is interested in where my shoes always end up on the floor, but if leaders in our government place a premium on the data, you can bet your bottom dollar that other governments do as well.

Drones can end up giving you so much more data than that robot vacuum ever could. The key is that the drone, via its hyper-accurate GPS and telemetry chips, knows its height and coordinates on the planet down to the fraction of an inch at any given time interval, and that is a lot of extra data attached to the media it produces.

In a process known as "photogrammetry," drones can be programmed to fly in a patterned grid while taking a 4k picture at each location. All the pictures can then be loaded up into services that can stitch together each shot into a super high-definition compilation shot of the entire area that the drone flew over. If you were inclined, you could take that same picture with all the included metadata and begin to pull things like topological surveys using GIS tools (easily available in any municipality or state) and a host of other information. In fact, there are dedicated business models that use this from pre-programmed flights to increase workplace safety and even to check on contractors to make certain they are doing right by their customers.

It isn't that other companies like Autel, Fimi, Hubsan or Parrot can't do the same thing. The issue with DJI, to put it simply, is that they are the absolute best. In the prosumer (professional/ consumer) and commercial spaces they occupy, they have about a 75% market share. They have been doing it longer than most, and their ecosystem is better than any of the manufacturers that are out there.

A parallel company that might bring a clearer picture to mind of what DJI is to the industry is Apple. From top to bottom, their infrastructure allows you to upload your material to their server, use their tools to easily edit videos and pictures, and their product quality always seems to be about 1 year in front of almost every other manufacturer.

So, what happens when this ban takes effect on December 23rd? Unless a cyber security review occurs over DJI's entire infrastructure before that date, and there doesn't seem to be any on the horizon, the FCC will no longer provide signal approval to any new drone models placed before it by DJI. This means no new models will be available to any consumers within the United States and it will be illegal to procure them from other countries as well.

The ban also will allow the FCC to retroactively remove previously approved signals if they determine that they are a cyber security risk. To give an example, DJI's latest drone models in 2025 are the Mavic 4 Pro and the Mini 5 Pro. These products are already on store shelves and have been previously approved by the FCC so they currently wouldn't be banned, but the FCC could come along in the future and begin the process of removing their approved signal status.

Of course, this is where our knowledge of the FCC comes into play. In order for them to do this, they would have to post an NPRM (Notice of Proposed Rule Making) regarding the removal of the status of one or both of these drones. Then, the standard 60-day period for public comments would allow anybody to give arguments for or against the proposed rule changes. If the FCC moved, then, for a retroactive ban to occur on either of those two previously approved products, they would then be pulled from store shelves and would be illegal to fly. Up until that time, both models can continue to be made and imported by DJI in their current form. This obviously puts a clamp on any new drone innovation coming to the United States from DJI.

The ban does not affect your ability to fly any DJI drone that you already have in your possession, as all of them have already received signal approval from the FCC. So fly, fly like the wind. It is hard for me to imagine that retroactively banning any other of DJI's drones will happen, but I'm also not certain that I would risk spending $1,500 to $5,000 dollars on a new model that may not be able to be used a year from now.

So many of their previous models are used by all levels of government for public safety and other uses like search and rescue operations. Private companies (including ours) use them to inspect properties, farmers use them for dusting and verifying their crops. Our company has DJI Phantom 4 Pro Plus and Mavic Air 2S units which are incredible, but the Phantoms are also getting older. What are we to do? My personal DJI Air2S is an absolute hot rod, and I love it, but it is also about three years old. Obviously, both models are probably outside of the FCC's security concerns, but replacement of either of the units with ones that as capable as either of them would be a real stretch.

Generally, we aren't affected by the ban until we want to replace our aging units with new ones or any that we own potentially end up being retroactively removed from the approved signals list. Let's pray for that not to happen because I really do enjoy flying drones, especially when they are the best of the best.

Until next month, may God bless the work of your hands. I'm praying that all of you experience real blessing from family and friends in the Christmas season.

Tales From Cousin IT
by
Stephen Poole, CBRE, AMD
CBC Corporate IT Specialist

Happy holidays, another year come and gone! I hope that you and yours have a blessed Thanksgiving and Christmas!

This time of year, we're encouraged to ponder everything that deserves a "thank you." Of course, we start with the biggest and best: God loves us to death and died to prove it, Jesus lives to intercede for us and the Holy Spirit will guide and direct us (especially if we actually listen).

But let me fling some historical perspective at you. The fact is, we're spoiled rotten. We don't even realize how good things are nowadays, compared to what our ancestors had to put up with. Younger people roll their eyes when Old Folks talk about how easy life is now, but consider:

- Before the 1800's, people had to deal with more pain than you and I can imagine. Opium (highly addictive) or certain herbal remedies might be available, or you could get drunk.
- There are elderly people living today who can remember when a routine infection could kill you. Bayer's Protonsil, the first "sulfa" drug, appeared in 1932. Penicillin wasn't mass-produced until the 1940s.
- When I was a child, a cancer diagnosis was essentially a death sentence. St. Jude Children's Hospital says that when they started, they were only curing about 20% of childhood cancers. Now it's over 80%.
- For that matter, I had classmates in the early 1960s who lived in rural homes without electricity.
- The first open-heart surgery was performed in Oslo in 1895. The procedure succeeded, but the patient died from a post-operative infection. (See above re: Antibiotics, Lack Thereof.)
- Our business (radio) is a bit over 100 years of age. Before then you just had to holler real loud.
- Air conditioned homes didn't become common until the 1960s.
- Passenger trains only reached most major cities in the USA by the late 1800s.
- Commercial airlines existed in the 1920s, but flying was very expensive before deregulation in 1978.
- Before the mid-1800s, you traveled by boat, horse or wagon. (Or feet.) Nowadays, we can hop in a car and drive from coast to coast, with plenty of choices to eat, sleep and buy fuel.

That's enough to get you started; I'm sure you can think of others. We NEED to be grateful and stop whining because that "10 year life" LED bulb burned out in a few months, or because the bathroom sink clogged with hair and goo. (Indoor plumbing also didn't become common until after WWII, by the way. You don't have to take your bucket to the well for washing and cooking, nor use a "two-holer" with a half-moon on the door in 20-degree weather.)

Yes, I'm VERY thankful that I live in the greatest country in human history, and in the best era.

The Mad, Mad, Mad World of the Intertubes™

Figure 1 - Microsoft's uber-creepy android head. (Wikimedia, from Oleg Yunakov)

I covered this last time. The AWS failure on October 20 was indeed caused by a DNS mis-configuration at Amazon's East-1 data center. Microsoft's failure on October 29 (and maybe the one that had killed my McDonald's app?) was caused by a glitch in their own Azure Front Door. There was a good bit

of confusion in the reporting at first, but Microsoft quickly owned up to that one.

As I've said previously, I listen to a LOT of radio; not just our stations, but competitors as well, to keep up with what's going on. Recently, I've noticed that Internet audio delivery has experienced an increase in dropouts and "digi-glitches." The Intertubes have become very busy, and even more data centers are coming online as you read this. These things eat power, cooling and bandwidth like a starving hog in a corn crib.

Figure 2 - DARPA invented the Internet, but soon lost interest and moved to shinier (and more explosive) things. (Wikimedia, from Daderot)

DARPA: Your Data Will Get There. (Eventually.)

The Defense Advanced Research Projects Agency created "DARPAnet" as a way to guarantee communication in the event of a nuclear attack or other wide-spread catastrophe. Data could be re-routed around any breaks in the chain. Even if someone in Seattle had to go through Provo, Utah to reach a command center next door in Portland, Oregon, at least the connection was made.

This principle still underlies the modern Internet. If I connect from Alabama to a web Server in Virginia, that data might follow many different routes while I'm browsing. In theory, even from one packet to the next, packet A might go through Nashville and packet B could go through Charlotte.

Incidentally, if you're curious and want to see this, Windows has the "tracert" program; Linux and MacOS have the equivalent "traceroute." You can enter "tracert/traceroute [URL]" and watch the connection as it wends its way through the Internet to the destination. I ran a trace from my workstation near Hayden, Alabama to our web server in Denver. I've edited it heavily:

```
1  (192.168.59.1)
2  * * *
3  (159.111.164.194)
5  * * *
8  (71.25.198.73)
10 (96.110.43.242)
```

The numbers to the left are the individual "bounces," one after another. I've skipped a few here. The original display included DNS lookups for each bounce and the elapsed time; I cut that out as well. What's interesting for us here is the "* * *" lines, which indicate that the bounce timed out and had to be repeated. But in summary,

Bounce 1 is startup; that's my IP address.
Bounce 2 timed out. Off to a rough start!
Bounce 3 is a reply from local Comcast, my ISP.
Bounce 5 another timeout.
Bounce 8 is in Marietta, GA.

We didn't reach a Comcast node in Colorado until Bounce 10. Here's the thing: I've been using tracert and traceroute for decades. It's normal to get some timeouts over long distances, but in the past, I rarely got them in the local or regional "bounces." This isn't solid proof that the Internet is overloaded nowadays, but it's certainly a clue. Just for the record, by bounce 14, we were at a Comcast node close to the studios in Aurora, CO. The remaining bounces all timed out. Every one of them, out of a total of 30. I never did actually touch our webserver.

Call me a dinosaur, but I honestly think that the Internet "Cloud" makes the Wild West look like an ordinary mid-50s suburban household (complete with Swanson's "TV Dinners") featuring Mom, Dad, 2-1/2 kids, a black-and-white TV that could receive TWO stations and a Chevy Nomad station wagon in the garage. I personally think it's going to get worse in the future, too, so make your plans now.

One final point: just having two ISPs isn't going to solve the problem of a badly overloaded Internet. The ISPs share the same Big Trunk Lines™ between major cities, and if a trunk is overloaded, it's going to affect everyone and everything on that trunk.

Even at the local level, there's a lot of sharing. For example, in Birmingham, if you're on fiber, it's probably AT&T, regardless of who you send the checks to. If it's cable, you're on

Spectrum/Comcast/whatever-they-re-calling-it-this-week.

Again, I hope every one of you has (or had, by the time you read this!) a great Thanksgiving, and I want everyone to have a blessed Christmas. Until next time, keep praying for this nation. God's got this, and He ain't scared of NOTHING! (Not even creepy-looking android heads.)

The Chicago Chronicles
by
Rick Sewell, CSRE, CBNT, AMD
Engineering Manager, CBC–Chicago

Back in January of this year, we installed a Cambium Part 101 microwave link between our Lansing and Beecher towers. With the Cambium link that was installed years ago on the Lansing tower and connecting back to our Hammond studio, we now had a very reliable network from the studios all the way our Beecher transmitter site.

It had been working very well and was the first time our Chicago operations used fiber on any of these types of connections for the run from the Cambium radio on the tower down to the Ethernet switches in the building.

The fiber run on the Beecher tower was fairly long, with the Cambium radio being located 300 feet up the tower and the tower 150 feet from the building. When first installed, it took a bit for the radio and the switch to make the connection.

Earlier this month, we had a situation where our Burk ARC Plus Touch remote control at Beecher was losing and reestablishing connection with other ARC Plus units in our operations. I drove to the site thinking a reboot might take care of the situation.

However, as soon as I got to the site, I saw in the 8 inches of snow we received the day before that there were many footprints, which were most likely due to a tower crew being there recently for the wireless ISP that rents tower space from us.

I didn’t think too much about that until I found that the disconnections were more than just on the remote control but on one of the streams for the audio codec and the computer located there as well.

It appeared that we had an issue with the Cambium link. I rebooted the Ethernet switch and the radio itself with no change, and then checked that we had the proper voltage on the power cable to the radio and found that was good.

Through our VPN, I was able to connect to the Cambium on the Lansing tower and subsequently the Cambium on the Beecher tower. It showed that it had a good radio connection to Lansing but had no Ethernet connection down the tower through the fiber cable. It showed no carrier. I brought another switch down to the site but that didn’t help; it still wasn’t working.

It appeared that that fiber cable was no longer good. There was an outside chance that the radio lost its fiber port, but it was not likely.

My guess is that wireless ISP’s tower crew most likely pinched the fiber cable when climbing the tower. I don’t have proof of that, but it made sense due to the previously working installation and then after they climbed the tower, we suddenly had issues with it.

We have purchased a new cable and at the time of this writing are waiting for a tower crew to get here and diagnose the problem further and install the cable if necessary. The crew we use is involved in some tower building projects, and of course we have issues with weather as well this time of year.

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

Zetta Issues

Where has the month gone? As I write this, we are getting ready to celebrate Thanksgiving and I am having to think about buying Christmas gifts. The year has been a whirlwind.

We started off this year moving on from NexGen. Zetta has proven to be an interesting beast. While it has its advantages and features, we have found plenty of negative issues. We have been dealing with one big issue on and off since the end of January. Zetta would randomly stop playing a show. This has caused us to hand out credits to clients on multiple occasions, something we really don't want and can't afford.

RCS support had, after many months of complaints from us, elevated it to development to try and figure out and fix the issue. In November, after the latest episode, we decided we were going to look into buying a new server, which was due for replacement soon anyway.

One thing I began noticing was that every time this issue would happen, the computer would come to a crawl. After having a lengthy discussion with someone at RCS about it we decided this would be the best next step. My dad emailed Samantha Johnson, who had done several of our installs around the company, to ask her some questions about upgrading the server. This piqued her intertest and she got permission to jump in on the program issue ticket.

Within minutes she was texting me that she figured out the cause. She noticed in the configuration on the sequencer computers that the Audio Assignment for the Audition Stream Group was the sequencer.

The sequencer needs a different audition group, so basically, when someone would log on then off the sequencer, on-air playback would stop because the sequencer took over the audition play group, and when you log out, that Audition Stream Group doesn't keep playing.

I would log in or RCS would log in on an audio server to look at something, and when we would log out, the issue would happen and we would be unaware of it until someone told us or I got a silence alarm, which was sometimes a few minutes later.

I have no clue how I missed that for so long. We ended up changing the Audition Stream Group to "None" since we don't need an audition group. I am happy to say that so far, things seem to be working normally.

In troubleshooting this issue, before Samantha found the fix, we updated Zetta to 5.25.1.354. With Zetta, I have been told we should have Windows updates done periodically on all machines, so I took a day and ran updates. This is always a chore.

I put each station into Hot Spare and worked on the sequencers. This part isn't too bad. I then moved on to the file server. I had been told I would be able to reboot it with no issues. However, when I did, all four stations went down! I called support and was told it should be working.

Thinking what happened was just a fluke, we proceeded with the Zetta update the next morning. The support person asked if this was our first update, and I told him yes. I somewhat expected him to walk me through making sure the stations were ready for the update. Anytime we had done an update with NexGen, RCS support always walked me through everything.

It all went fine until we rebooted the file server. I should have waited until we had a real reason for the stations going off the night before, but we wanted to get the update done in hopes of fixing our other issue.

We started the update at 8 AM, since RCS does not do after hours work anymore for this type of thing. All four stations went down, and it took us over an hour to get the file server back up and operational. That was super stressful and no one, including myself, was happy about it.

After the update, I contacted support and discussed what happened further and found that our

training with our installer fell short. There are extra steps to be taken to put each sequencer into local database mode. I can see where RCS fell short in making sure this was done.

The person doing the update knew this was our first one, and I feel he should have walked me through certain steps to be sure we were good to go instead of assuming. I thought I had done what I was supposed to, and if they would've checked, we could've avoided this costly mistake.

Our installer should have spent more time on training as well, but the whole thing was a rush, so things were skipped or forgotten. Thankfully, I now know and had to even reboot the server at a later time to troubleshoot another issue, and putting the sequencers into local database mode kept us on the air with no problem.

This brings up another oddity I noticed. While we didn't go off air when I rebooted the file server, once it came back up, KLVZ acted a bit weird. I did the reboot in the 4 AM hour. I brought everything back to normal and made sure we were on the air. I could see Zetta playing, and I could see audio in the Wheatnet system. I headed into the office and found out that the system quit playing shortly after I closed down my computer.

Thankfully, my dad was at the office and easily got the station playing again. Then at the top of the 5 AM hour, it played two items at once. After this, it started playing normally again. I haven't noticed any more weird issues.

Our next thing is to get in the new file server and get it set up. I hope that the week of Thanksgiving I can do my part and then schedule with RCS to have them help us get it ready to go with Zetta and the SQL database.

Looking Ahead

Christmas will be here before we know it. It is a time to be with family and celebrate the birth of our Lord. It will be, for me at least, a time of rest before starting the new year.

We need to get the Zetta file server set up and put in place. That is the biggest remaining thing for the year. I will begin to clean out items from 2025 in preparation for 2026. Checking each site at least one last time before the new year to make sure all looks good.

KBRT • Costa Mesa - Los Angeles, CA
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
92.3 MHz, 50 kW/150m AAT
WSRB • Lansing - Chicago, IL
106.3 MHz, 4.1 kW/120m AAT
WYRB • Genoa - Rockford, IL
106.3 MHz, 3.8 kW/126m AAT
WYCA • Crete - Chicago, IL
102.3 MHz, 1.05 kW/150m AAT
WYDE • Birmingham, AL
1260 kHz/95.3 MHz, 5 kW-D/41W-N, ND
WYDE-FM • Cordova-Birmingham, AL
92.5 MHz, 2.2 kW/167m AAT
WXJC • Birmingham, AL
850 kHz/96.9 MHz, 50 kW-D/1 kW-N, DA-2
WXJC-FM • Cullman - Birmingham, AL
101.1 MHz, 100 kW/410m AAT

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