

# TROUBLESHOOTING A CAD OUTAGE

Here's what IT wants you to know to effectively communicate the problem.

By Stephen Martini, ENP, RPL

**P**ublic safety communications information technologists (IT) are always on-call, ready to support dispatch operations in our never-ending mission to calm chaos, restore order and bring clarity to confusion. The calls come at all times of day, weekends and holidays, and our IT support team is always there, just like our heroes under the headset.

“One of the first things the technician needs to know is where the problem is located. ... To determine what’s wrong, technicians need to understand where the problem is and what is connected to it.”

Telecommunicators know when to reach out to IT with a concern. Those dreaded moments when CAD drags to a crawl, freezes up or completely stops functioning. When the call comes to IT, it may sound something like “all the positions are down.” They need to ask specific questions—just like telecommunicators when dealing with a caller in panic.

One of the first things the technician needs to know is where the problem is located. Which console position? Which physical location (a primary or backup center)? To determine what’s wrong, technicians need to understand where the problem is and what is connected to it.

Next, they need to understand what “down” means. Think of the last caller who told you, “I’ve been robbed!” You know that a series of things may have actually occurred ranging from “this person was robbed at gunpoint seconds ago on the sidewalk,” to “someone stole the bicycle out of their backyard while they were on vacation.” The details determine whether officers (and maybe medics and firefighters) hurry to the scene to treat a wounded person and catch a fleeing suspect, or an officer calls the complainant in a few hours to take the report over the phone.

The same is true when technicians take that dreaded call, “CAD is down!” It could be a critical emergency affecting all positions in the ECC and all mobile data computers in patrol cars, fire trucks and ambulances. It could also mean one computer in the ECC is not working appropriately, while others are still functioning well. The details will determine the urgency of the technician’s next steps.

Just like callers reaching out to 9-1-1, the information provided to IT techs is not created equal. Think of the last caller who seemed disconnected and confused, unable to string together a sentence or

clearly describe a scene while reporting something that seemed straightforward. You needed to ask questions to make sure what the caller is reporting is actually happening, right? Maybe you even felt better when your partner answered a call from the same area reporting the same thing. Your local technician also wants to ensure the situation is exactly as you say it is—they’re happy when they receive a report from a source they trust. While any call is welcome, a report from a supervisor or tenured employee stating that CAD is down could initiate a faster response than a call from the newest member of the team. Before making the call, think through which person in the room is best suited to report the outage—this simple step could save valuable seconds getting things back to normal.

Once the person who will report the outage is designated, consider what may have caused it. Five possible causes of a CAD outage or performance issue include power, database, software, network connectivity and interfaces.

If the CAD computer loses power, technicians need to know whether the computer is connected to a “clean” source (batteries or generators, protected against commercial power loss) or a “dirty” source (not connected to batteries or generators, immediately impacted by commercial power loss). Often, utility outlets wired to back-up batteries are identified by a specific color or signage. Entire sections of consoles may be attached to a particular side of a back-up power grid (either an “A” side or “B” side). So a pattern may emerge if you can quickly determine if all of the even-numbered or odd-numbered consoles just lost power.

If CAD is running slowly, it could be a database issue. In the hours after the Christmas bombing in Nashville, Tennessee, the single CAD incident created in the downtown area had so many units assigned to

it and was associated to so many premise hazards that CAD started running slowly for all users. Technicians initially isolated associated premise hazards to a smaller radius, with little benefit to CAD performance. Ultimately, the original incident had to be closed and a new incident opened to disconnect all the existing data in the database, allowing the system to return to a more efficient operating status. This wasn’t without some concern, but the reality was clear—if this CAD incident wasn’t closed and the clogged database cleared, CAD would have crashed for everyone. When CAD “freezes up” it also likely reflects a database issue.

Software issues could be predicted with statements like “unit address not allowed,” which hints at a configuration issue identifying a change or corruption to a specific IP address. However, this could also be a networking problem between mobile and desktop computers. How can technicians tell the difference?

Alert language from the CAD may help. Writing down alerts like “do you want to continue offline?” and relaying the wording precisely will help technicians quickly identify a specific problem in hopes of restoring functionality quickly.

Often, network connectivity issues are the suspects in CAD outages. Technicians typically carry laptop computers with them so they can quickly connect remotely with the agency’s network to view configuration, software or database issues. If the technician is not able to access the agency network from their remote location that’s a big clue hinting at a network connectivity problem, which is not a CAD issue but with the highway CAD uses to transport data.

However, if technicians can access the network quickly then they’re inclined to explore issues around CAD functionality, database or power problems specific to a position or facility. They will start

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investigating application servers to determine whether all services are healthy. They will look at CPU usage, available memory and thread count totals. If any of these three are high, they point to database limitations that can slow or stop CAD functionality.

Some CAD outages can be misreported as truly problems with interfaces, which refer to every other piece of software to which your CAD connects—telephony, radio software, records management, the National Criminal Information Center database, fire station alerting and many other solutions relying on data routing to alternate servers. Reported outages with interfaces often sound like “we can’t do this or that in CAD,” rather than a report that CAD is completely down.

If your technician identifies the problem as associated with the database, software, network connectivity or an interface, what do they do next? Once technicians determine a problem truly exists, they are quick to activate a list of support resources standing by to help them, starting with a call to customer support. A ticket is created as soon as possible, which is used to track the specific issue, those assigned to it, and action taken to fix it. That first call is likely answered at a network operations center (NOC) staffed

by general-knowledge technicians with a basic understanding of all products and services offered by the industry partner. While making immediate contact with a specialist intimately aware of the functionality of your product is preferable, having a lot of specialists available around the clock to directly answer occasional calls can be expensive and inefficient. Contacting a NOC staffed by general technicians is more cost-effective and time efficient to initially diagnose a problem and notify the correct specialist to further investigate. However, this alternative can cause delays while the local technician describes the problem to the NOC technician and then waits for call back from a specialist trained to investigate further.

How long should your local technician wait to receive a call from the on-call specialist? That depends on your technician. At Metro Nashville (Tennessee) Department of Emergency Communications, CAD Administrator John Reynolds admits that when it comes to major issues like a CAD outage, he’s not very patient. “I usually allow five minutes for a call-back from the on-call technician,” he said. “If you haven’t received a response by then, you should start calling every number you have.”

While placing a call to customer support, your local technician is likely sending an email to your primary support technician, their regional manager and the overall support manager with a subject heading featuring language like “AGENCY CAD DOWN!”

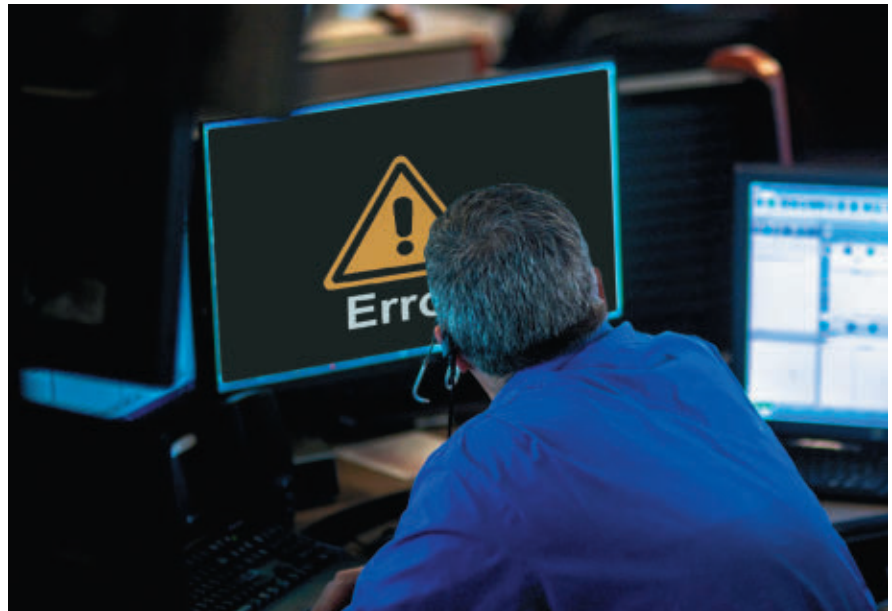
Between receiving initial phone calls, placing phone calls and sending emails, your local technician can quickly become overwhelmed. Pre-planning will help ensure these next critical tasks occur.

The outage must be reported to the division manager, the department or agency leader and other affected department leaders, as well as executive leadership and private contractors. If the outage is expected to impact operations long-term, notification must be made to response agency partners (such as law enforcement, fire and EMS) or even to the public through planned public service announcements. But when?

Making these announcements too quickly when service will be restored soon can lead to more confusion. Just like determining how long to wait for the on-call technician to call you back, knowing when to tell your partner agencies about an outage will vary among jurisdictions. Reynolds said he waits approximately 10 minutes before making the announcement to partner agencies.

At some point your technician needs to determine whether to fail the CAD system to backup (disaster recovery) hardware. This is not an easy or quick task, as shifting from your primary CAD environment to the backup also requires transitioning all interfaces and existing functionality.

As mentioned earlier, interfaces refer to all the solutions that may be receiving data from or sending information to your CAD system. Functionality could be as simple as a function key or combination keystroke configured



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to allow telecommunicators the ability to accomplish certain tasks more quickly. All connections and capabilities must be pre-configured and properly tested when failing to the disaster recovery system to ensure a full restoration to normal operations is possible. Many times, this failover requires assistance from technicians employed by the software provider working remotely to ensure success, though your local technicians should have

confidence they can do this on their own, if required.

Whether identifying the problem and restoring the original service, or successfully migrating to the disaster recovery environment, the time will come when operations are restored to normal. When this happens, it's time to send the update to all users—internal and external—and seek confirmation from those in the ECC

and in the field that the system is running as expected.

Once operations return to normal, the work still isn't done. Now it's time to diagnose the problem with the vendor and attempt to identify a root cause analysis for the problem so it won't happen again. ●

*Stephen Martini, ENP, RPL, is Director at Metro Nashville Emergency Communications Center.*

## CDE EXAM #61706

### QUIZ

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| <ol style="list-style-type: none"> <li>1) Five possible problems when an agency experiences a CAD outage or performance issue include power, database, software, network connectivity and _____.<br/>a. interfaces<br/>b. radio transmissions<br/>c. telephone calls<br/>d. staffing</li> <li>2) Public safety communications information technologists are on-call, ready to support dispatch operations every day of the week.<br/>a. True<br/>b. False</li> <li>3) Which is the most reliable person to report a CAD outage to a technician?<br/>a. Brand new trainee<br/>b. Emergency management volunteer<br/>c. Supervisor or tenured employee<br/>d. Visiting family member</li> </ol> | <ol style="list-style-type: none"> <li>4) What critical piece of information should you tell the technician first?<br/>a. When the outage occurred<br/>b. The physical location of the device experiencing the problem<br/>c. What you were doing when the outage occurred<br/>d. Who you have already told about the outage</li> <li>5) Interface issues often are reported with a statement similar to: "We can't do this or that in CAD!"<br/>a. True<br/>b. False</li> <li>6) Power issues could be related to computers being connected to dirty power rather than clean power.<br/>a. True<br/>b. False</li> <li>7) Software issues could be associated with specific alerts, which should be written down and relayed to the technician word for word.<br/>a. True<br/>b. False</li> </ol> | <ol style="list-style-type: none"> <li>8) This tracking method is used to track a specific issue, those assigned to it and the action taken to fix it.<br/>a. Ticket<br/>b. Process<br/>c. Reference number<br/>d. Gate key</li> <li>9) This is where technicians with general knowledge about a variety of products answer initial calls before referring concerns to on-call specialists.<br/>a. Call center<br/>b. Distribution center<br/>c. Regional transport center<br/>d. Network operations center (NOC)</li> <li>10) Immediately announcing CAD is down to response agency partners can lead to more confusion when service is being restored and messages to enact back-up plans occur simultaneously.<br/>a. True<br/>b. False</li> </ol> |
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