



# Broadband Exception Reporting: Simplifying Network Monitoring By Only Addressing Exceptions

By Bruce Bahlmann ■ *Birds-Eye Network Services*

The primary goal of every broadband service provider is to acquire and keep subscribers. Keeping subscribers requires providing a service that delivers consistent quality and reliability. Broadband service providers often equate quality and reliability to enterprise network management, configuration management, and other conventional means of monitoring equipment. The problem with these approaches is that they make a mountain out of a molehill and require you to spend significantly more money than what is required to

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I tend to approach monitoring as I would any problem: a gradual evolution of need. Going out and purchasing a full fledged network management solution can be one of the silliest purchases a broadband service provider can make because of the follow on "expectations" that in having such a solution, the service provider

will attain unprecedented service quality and reliability. Service quality and reliability is nine tenths sweat and one-tenth software. If you look at it that way, you will realize that what you first need is not a management solution but rather just simple reporting. I call this the aliens approach to network management. In the movie *Aliens*, trooper Vasquez says, "I only need to know one thing, where they are!" I would argue knowing where they are in essence represents 90% of what network management is supposed to do. The additional 10% represents 90% of

the cost of more extravagant monitoring solutions yet only 10% of the actual functionality needed.

## **Importance of Delivering a Highly Available Data Service**

Quality/reliability is the number one reason why anyone would change data service providers so long as the price between available options remains reasonably close (give or take \$5/month). However,

as the price difference between options exceeds \$10/month for the same advertised level of service, quality gives way to economy. So, if you're looking for a way to deliver service quality and reliability on a budget, going out and buying an expensive network management solution will not generate increased revenue—thus the importance of not spending a lot of money on a network management solution.

Delivering quality broadband services can be a very inexpensive venture or a very costly one, depending on the sheer amount of information you require to make decisions about service calls and to a lesser extent, equipment upgrades. The more information and functionality required, the higher the price tag—there is virtually no end to the pricing and options.

I am a very big advocate of something called exception reporting. In "pure" exception reporting, the goal is to boil down your entire system into a short list of high risk or troubled devices that need some attention. Broadband service providers armed with such information become exceptional problem resolution detectives because of the decreased complexity overhead required to produce exactly what is needed. Ideally, this exception list is very, very simple and provides only what is needed to find the device and fix the issue. You can definitely get carried away with this approach and begin collecting additional information (all of which becomes increas-

ingly less useful).

One recommended approach to pure exception reporting is using something called a pre-engineered report. In a pre-engineered report, the result is fixed in terms of what it looks like, how it collects information, and the target business sector it addresses. The only required inputs in such a report are what sources and thresholds should be used and how frequently should the report be generated. Pre-fabricated reports provide consistent information regardless of where they are run, so you can easily have a number of systems attain the same level of exception visibility

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without going through extensive configuration comparisons. Interestingly, such a report is significantly less expensive to build and support compared to more traditional network management solutions that must cater to a wider array of service metric needs, configurations, and target businesses.

increasingly difficult to manipulate such software to attain even the most basic need—e.g. where are my high risk or troubled devices? Whether you are a broadband service provider just starting out, or an experienced provider maintaining hundreds, thousands, or even millions of subscribers, your network management needs are still fairly basic. However, the current mentality is that you need a huge sledgehammer to solve this problem when using the nearest solid object will do. I call this mentality the carpenter's approach to network problem resolution: "If all else fails, force prevails". Force, in

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| Account        | Cable Modem |         |         | CMTS     |         |
|----------------|-------------|---------|---------|----------|---------|
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| 000a.7308.0867 | 99.9 dBmV   | 0 dBmV  | 36.2 dB | 9.8 dBmV | 26.3 dB |
| 0050.daf2.7754 | 35.6 dBmV   | 31 dBmV | 34.5 dB | 9.5 dBmV | 27.7 dB |

Figure 1.0 Snap-Shot of Marginal Modems Exception Report

**Sledgehammer vs. Nearest Stone**

Essentially, network management solutions have grown so large, diverse, feature rich, and expensive that it is

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this case, being a full-fledged network management solution.

An example of using a stone (as opposed to a sledgehammer) is a Marginal Modems exception report (see Figure 1.0). A Marginal Modems exception report provides cable operators with only a listing of high risk or troubled subscriber cable modems—those operating outside their normal range. Armed with such a report, cable operators can easily find and repair subscribers with borderline service before they experience sustained service interruptions. When such reports are sufficiently organized, cable operators can further deduce individual cases from more wide spread plant issues. Deriving such functionality from a full-fledged network management solution (if it is even possible) requires significant training, configuration time, perhaps even consultants and can easily cost many more times the price of an exception report.

One of the keys to building a successful monitoring strategy is to approach it in a "just in time" fashion. In other words, add only the level of monitoring your organization needs when you need it and then gradually evolve (build upon) this extent of monitoring from that point carefully, and in tune with your needs. Remember that more network management is never

going to generate more revenue, so excessive monitoring or collecting too much device data only translates into an unnecessary expense. Be penny and operationally wise when it comes to network management rather than pound-foolish and reap the rewards of a cheap but tightly run business. ■

#### **About the Author**

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