

Letter to an MSO

Part One

Sweep Fixes Everything Right?

Dear MSO,

Define sweep. Seriously. I make this request all the time. It's one of the many reasons people find me so annoying. Not sure? Okay. Let's put the question to Google. Of course the word "sweep" alone is a bit too broad so we shall try "sweep cable TV".

Here is part of a result from <http://www.freepatentsonline.com/5473361.html>

"A test and measurement system for a cable television (CATV) system measures parameters of a broadband video signal at the headend of the CATV system. Characteristic data is generated from the measured parameters and combined with the broadband video signal for transmission over the distribution system of the CATV system..."

Taken from description United States Patent 5473361

Yikes! That's just the first two sentences. It goes on for a while thereafter. Technically accurate I suppose and obviously written by a very intelligent person or persons but how do we use this definition to fix a cable system and help our company make money?

Let's try another one taken from a lighter piece entitled **As the Lasher Turns** at <http://www.line-man.com/cable-tv-lineman.html>

"Basically, sweeping is the process of injecting a signal across the entire frequency spectrum of the cable plant (at) the headend and then using a sweep meter to balance the actives to design specifications and to measure the frequency response throughout the entire system. The sweep technicians will start at the node and then move to next active in line and continue until they reach the end of line. In addition to checking and documenting frequency response, sweepers will also check system voltage, operating voltages of the actives and document any design variations. Most of the systems will require the sweep technician to repair any problem they may find".

Written by: Slack Span, Lookinatmyfeet, Princess, and Wood Pecker

Putting the author's apparent screen names aside, I do think this second definition for sweep is more useful to a project manager tasked with funding a given project.

Before moving on to my definitions for sweep please make note of the last sentence from the definition above:

"Most of the systems will require the sweep technician to repair any problem they may find".

I have multiple definitions for sweep but my two favorites can be reduced to the following:

- 1) Sweep **optimizes** the network, **isolates** problems within the network, and documents all of the above.
- 2) Sweep helps the MSO increase profits.

Now I'm a technician at heart so naturally I love definition one and honestly think I could go on for a hundred pages expanding on the deeper meaning of "optimize" and "isolate" but I would likely be the only human being alive interested in reading the document. Nevertheless, one way or another "sweep" needs to be defined and that definition should be written by the MSO (multi system operator), optimally prior to any request for bid. After all, it's your network. If your organization can't define what you are trying to accomplish, who can?

Let's Break it Down

The term "**optimize**" is fairly easy in most cases because cable systems typically are drafted onto maps and those maps are wonders to behold. I could also go on for another one hundred pages talking about cable maps as well. Seriously, I'm that crazy about maps but will try holding this to a few lines.

Most of the info on cable maps is derived from two basic sources: Geographical data typically provided by the folks who built the power and phone networks and your system's Design Criteria, AKA Design Engineering Notebook. Equipment vendors and system designers typically work together to load criteria into the design software based on performance minimums your engineer's want to see at the last tap. In a nut shell if your sweep techs are not adhering to the design criteria, that's a problem because doing so is your best bet for getting the most out of your network. Assuming you cannot lay your hands on a copy of the criteria for your network it's not the end of the world. Most of the info one needs to optimize a cable system can be derived from the map data alone but typically there's a gem or two in the criteria that can't be pulled from most maps so it's nice to have both.

Finally, proper padding and equalization, alignment for overall sweep response, and thorough documentation, complete the picture for optimization.

The term "**isolate**" is also fairly simple to define. Believe it or not there are only a handful of issues we typically run into in the field. Bad cable, poor splicing, poor balancing, malfunctioning equipment, design errors, water in devices and cable, and locations not built to the map. Of course all of the above can be expanded on for pages on end but suffice it to say these are the basic problems, often occurring in combinations between two given locations. When someone hands in a poor sweep trace, or low inputs to a given active, or low outputs at a given end of line tap, it should be accompanied by documentation as to the cause.

Having laid out the basics for my definition number one, it's time to move on to my definition number two involving your networks profits, which in turn leads me back to the last sentence in the definition provided by Slack Span, Wood Pecker, and friends: **"Most of the systems will require the sweep technician to repair any problem they may find"**.

A truer statement was never spoken but there is a definite difference between **requiring** something and actually **receiving** that something you require. For the record I don't know Slack Span and Wood Pecker, at least not by those names, but will take it on faith that they actually do fix everything they find. In this conversation I'm more interested in examining the actual concept of *fixing everything* so allow me to begin with a couple examples:

- 1) Let's pretend that you own a company that builds roads and you receive a call from the head of the Louisiana Department of Transportation that goes something like this: "Hi, my name is Willy Robedeaux. I'm the head of the highway department here in the great state of Louisiana and I need a bid to build three hundred miles of interstate. How much are you going to charge me per mile?" Do you suppose, before answering, that at a minimum, you might want to know if the proposed highway would be built on hard ground or whether Willy needed this road to cross a swamp? Or reversing the scenario, if you're Willy Robedeaux, you might be a tad concerned if the contractor you call quotes a price per mile with no questions asked because you, Willy Robedeaux, are ultimately responsible for building a road that people can actually drive on. Your job depends on actually getting this road up and running.
- 2) Assume you call a lawn care professional to ask how much they will charge to cut your lawn. Would you be insulted if that individual asked how big your yard was prior to providing a price?

What does any of this have to do with **requiring the sweep technician to repair any problem they may find**? Consider the following two extremes.

- 1) One problem per mile.
- 2) One hundred problems per mile.

I think we will both agree there is a big difference between the two. The only way the contractor is going to know how many problems are in a given mile of plant is to sweep that mile. Given this basic reality, how does a prime contractor offer a composite rate for sweep and repairs when they cannot know with certainty how many issues exist in the average mile or for that matter what those issues are?

Historical averages are part of the answer but any casino boss will affirm that although the house always wins in the end, a lot of players beat the odds on any given day. So basically the prime contractor bidding based on averages, in the dark, so to speak, is shooting craps. Sooner or later he's going to get nailed and like it or not it won't just be his problem. It'll be yours as well.

Of course there are other factors that help a savvy prime improve the odds. For example the age of the network, prior knowledge of the network, percentage of underground cable vs. aerial, etc. Is this maintenance sweep or some type of upgrade? Are the specifications for the sweep process rigid, or loose?

Even in light of the above, there are still a lot of unknowns. For example systemic splicing issues such as center conductors consistently cut too long during the last upgrade, or having no DC-8s in stock during the upgrade which forced the splicing contractor to install two ways in their place, or the splicing contractor suffers a basic misunderstanding regarding amplifier configurations, or a lot of direct bury underground cable in the system as opposed to cable in conduit. If the TDR work is also included in the sweep price, direct bury can be a real wildcard as well. Given all of the above, two things seem logical to me:

- 1) Rates for sweep operations that broadly include repairing any and all problems found will be higher than they need to be for sweep alone because it is impossible to accurately quantify the total amount of work needed.
- 2) If the point of sweep is to identify issues degrading the performance of your network, then asking for a composite rate to include all repairs that basically amounts to a crap shoot, is providing an incentive to the contractor in the field to do the opposite because the tech who fails to find a problem earns more than the tech who succeeds in finding and fixing one.

For the moment forget about why the contractor should want to avoid a composite price to “fix everything” without actually knowing what “everything” might be. Instead, consider why *you* should want to avoid it.

First understand the following: The sweep and splicing business is primarily staffed by small contractors organized as S Corps, LLC’s, or sole proprietors. One or two techs make up the company in many cases. Every now and then there will be more. In 2007 GoDirect employed approximately one hundred people. Sixty of them were small contractors. These folks travel around the country for us, and others, often living in hotels and cooking in microwaves. By and large they are ethical and hard working, they operate in a professional manner, and I am proud to know them. It is also useful to understand that similar to the road contractor and the lawn care professional mentioned above, the CATV contractor is also paid based on units. In other words they are paid by the mile, or the splice, or the power supply upgrade, etc.

Do prime contractors employ any in-house sweep techs? Sure we do. At GoDirect we use our in-house techs for production when we need numbers but we also employ them for clean up, quality control, and special projects. But we don’t have enough employees to fully staff every project. Why? The same reason the MSO doesn’t; uneven workflow. Sometimes it’s there. Sometimes it’s not. Using contractors is good business provided you ensure that they are fully insured and operate in a competent and safe manner. None of this is a state secret. Using small to medium size contractors is a fairly common practice among prime contractors and in many cases all of the primes pull from the same labor pool. Often times it’s based on geography. For example a small contractor in the north east might not want to go to California for a three month project but you will likely find that same contractor on a project in New Jersey regardless of who the prime is because he or she lives in New Jersey and wants to be close to home and family whenever possible. When you hire a prime, for the most part you are hiring management and quality control.

I've been in the cable business for thirty good years. In my experience the overwhelming majority of people I have worked for, and with, be they contractor or individual employed by an MSO, wants to be good at their job. Most are ethical and they want to do the right thing. Nevertheless the folks who work for your prime contractors are also contractors, meaning they are in business, which of course means they have expenses. Speaking for myself, if I am pushed into a scenario where I'm losing money due to unrealistic expectations I have three choices: starve, cheat, or quit. It's difficult to accept that setting up choices like these can be good for any MSO's bottom line.

Let's be reasonable. No one is going to work in a system indefinitely for no pay. The irony here is that often times these are the systems most in need of help.

Capital budgets are finite so the appeal of composite pricing is obvious. Nevertheless the MSO does not fund the project in order for project managers to fill up spread sheets. The MSO is funding the project because a group of intelligent people has determined that something needs to be accomplished within the network for the good of the MSO. Pretending it's done on paper does not help the MSO make money. In fact, on many occasions, the opposite is true. In the immortal words of Milton Friedman; "there's no such thing as a free lunch".

Finite Budgets and the MSO's Goals in the Field

In my view successful project managers achieve an optimal balance between **three** goals, not just **two**: Budget, schedule, and quality. Try and guess which of the three is often left out. Assuming you agree on the three goals, why not create a realistic scope of work that fits your budget. Why starve the family by insisting on caviar? When nutrition's the goal and money is tight, I say buy beans and bread.

One Possible Solution

Limit the scope of work for sweep to **optimize** and **isolate** and expect to see significantly lower bids as a result. For those of you who continue to dream of a free lunch take consolation in the knowledge that the contractor is still out on a limb to some extent because it takes a considerable amount of time to stop and isolate issues.

Don't include the TDR in the scope of work for sweep. Make TDR a separate line item. Removing TDR from the scope of work for sweep should result in a lower sweep rate. Assuming the network has very little bad cable the MSO wins. In the event the opposite is true, then the MSO has provided an incentive, in the form of a generous rate for TDR, to identify and isolate bad cable as opposed to an incentive to gloss over bad cable.

If the MSO wants system repairs to occur alongside the sweep as issues are found, develop realistic unit based pricing for those repairs or better yet a reasonable, meaning generous, hourly rate. Remember, you are trying to engineer incentives to fix your plant.

You don't like to pay hours? Why not? An hour after all, is also a unit. Descriptions are typically provided for each repair accomplished on hours so you can judge if you are being gouged, or simply set your own reasonable guidelines for basic tasks, but allow for review of exceptions because the exceptions are going to be repairs of intractable problems that may have been hurting system performance for years.

In the scenario outlined above the MSO has plenty of dollars to accomplish the **optimization** of the network and the **isolation** of the issues throughout the network. That's two out of three. Now all that remains is the one that really counts. **Repairs**. Depending on the condition of the plant all necessary repairs may be accomplished within the initial budget as well however if the budget only gets you half way home on goal three at least you have a **quantifiable** list of issues to document your request for additional funding. If additional funding is denied, the well has run dry so to speak, you have a list for your in-house team to peck away at moving forward.

Regarding the potential list for clean up mentioned above, I have listened to plenty of threats and complaints over the years from a few managers that basically boil down to ..."I won't allow you to drop a list of clean up on my desk on your way out of town. My response to this statement is – consider the alternative. When there are more issues in the network than there are dollars in the budget, at the end of the day you are still going to have the same number of remaining issues in the field because no one is going to fix them for free. You just won't have the list. You'll have no idea where the bodies are buried in your network. Besides, MSO's hire highly competent managers. Surely they can manage to manage a list until the list is complete. At GoDirect we call this living within your realities and making the most of your resources.

In case you're still not sure how sweep will drive profits I'll break it down for you. Even in today's short cascades an authentic and competent sweep program is the first step in resolving your issues in the field. Resolving your issues in the field will result in happy and **loyal** customers and also lower your day to day operational cost.

Thanks for your time.

Sincerely

Michael Simpkins

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The author is President of GoDirect Telecom, Inc. This article is intended to illustrate the author's point of view. Names, dates, people, and places within are fictitious unless otherwise noted within. References to actual people, events, or locales are unintended unless otherwise noted within.