NEVER CRY WOLF: THE CHALLENGE OF THE REMOTE TROUBLESHOOTER
OR
"THE CALL OF THE WILD"

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Summary

In "Never Cry Wolf: The Challenge of the Remote Troubleshooter", we describe the thrill of hardware troubleshooting in an international computer network. Following a detailed description of the network itself, we discuss our approach - past, present and future. How we help our users today will most certainly influence our future effectiveness, and the effectiveness of the network. Our solutions to problems - current and anticipated - can be extrapolated to the industry in general.

I. Preface

I was the newcomer to the company. I arrived with great expectations of doing "a little bit of everything": some troubleshooting, some equipment installation and configuration, and user training. Bright eyed and eager to learn, I was told that the network would eventually span the globe and consist of approximately 60 HP3000's, 3500 CRT's, 1500 character printers, loads of multiplexers and modems, plus miles of cable - all installed and maintained by Martin Marietta Data Systems (MMDS). The network was to be used for data capture, database maintenance and update, and, of course, remote data transmission. For now, there were 11 CPU's, with 2 more coming fast. The office was buzzing with activity. My first assignment was in the Maintenance Service Center (MSC). In the MSC, we serve as the intermediary between system operators or users and the vendors (the network uses HP and 2 additional vendors). We screen the trouble calls and try to resolve them before involving the vendors' field engineers. Around the clock, we attempt to catch and correct user errors, mysteriously changed configurations, disconnected keyboards, etc.

I could tell that this challenge would be different from any I had had before. How, with 2 telephones and a bookshelf of technical manuals (mercifully up to date), could we provide service to an international network of HP 3000 users? It seemed a formidable, if not impossible, task.

This paper presents our solutions and ongoing creativity in meeting the technical, analytical, and interpersonal challenges presented by remote troubleshooting; we describe our approach today and our future plans for this network which requires support well into the 21st Century.

II. Overview of the Network

A. Introduction

MMDS supports a worldwide field reporting network for pay and personnel data. This network was conceived in 1976 when our client decided to modernize their employee pay and personnel system. Lengthy turnaround times and increasing errors in their manual system had become unacceptable. The modernization was to occur in 2 phases - functional consolidation and automated support.

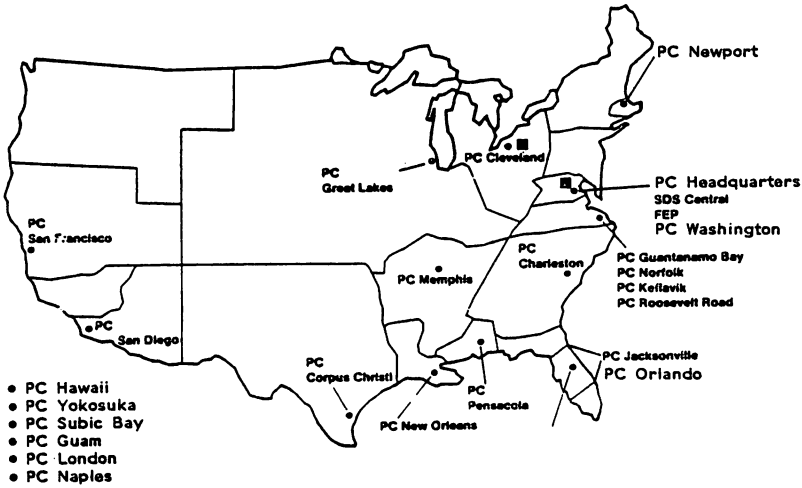
In the first phase, approximately 3,500 separate pay, personnel and transportation offices were consolidated into 350 field sites. These field sites were organized into 25 geographic regions. The field site offices maintain employee records and provide all pay, personnel, transportation, and local information services to individual employees. The field sites also prepare transactions to notify headquarters of pay and personnel changes, audit transactions, and receive confirmation from headquarters. Processing Centers (PC's) are the physical locations of CPU's, where processing for a personnel region takes place. Most processing centers use more than 1 system (CPU and associated peripherals). All systems have the ability to communicate in a DS Distributed Systems Network environment.

The map below shows the personnel regions in the network (regions outside the continental US are indicated on the lower left).

PERSONNEL REGIONS:

The Processing Centers that serve the regions are located in the following cities:

PROCESSING CENTERS

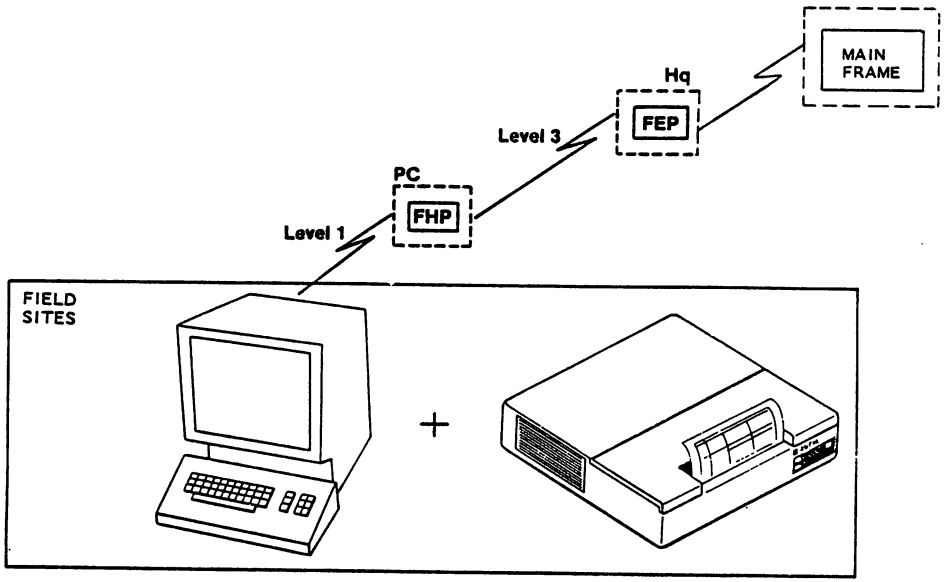


The second phase of modernization began in 1984. Applications software was developed to automate data collection and transmission procedures, hardware installations began, key personnel were trained, and the Maintenance Service Center started up.

B. The Network

What, Why and Where: This world-wide, online network integrates the automated field reporting and management information system to support the newly consolidated personnel offices. The network aims to improve pay, personnel, and transportation support services to the 400,000 employees. The benefits of setting up such an automated system to streamline these functions in a large organization cannot be overstated - accurate and timely collection of personnel and pay information, improved service to employees, automated input procedures, accountability, information support, and 2-way telecommunications. The network's 400 sites will ultimately reside in 50 states and 18 foreign countries.

The people at the field sites collect data on terminals connected to a host CPU (HP 3000) at the processing center; concurrently, supporting reports are printed out. The data then travels to one of two front end processors which exchange information (HP 3000/68's) and then on to the headquarters mainframes where the two master data bases reside.



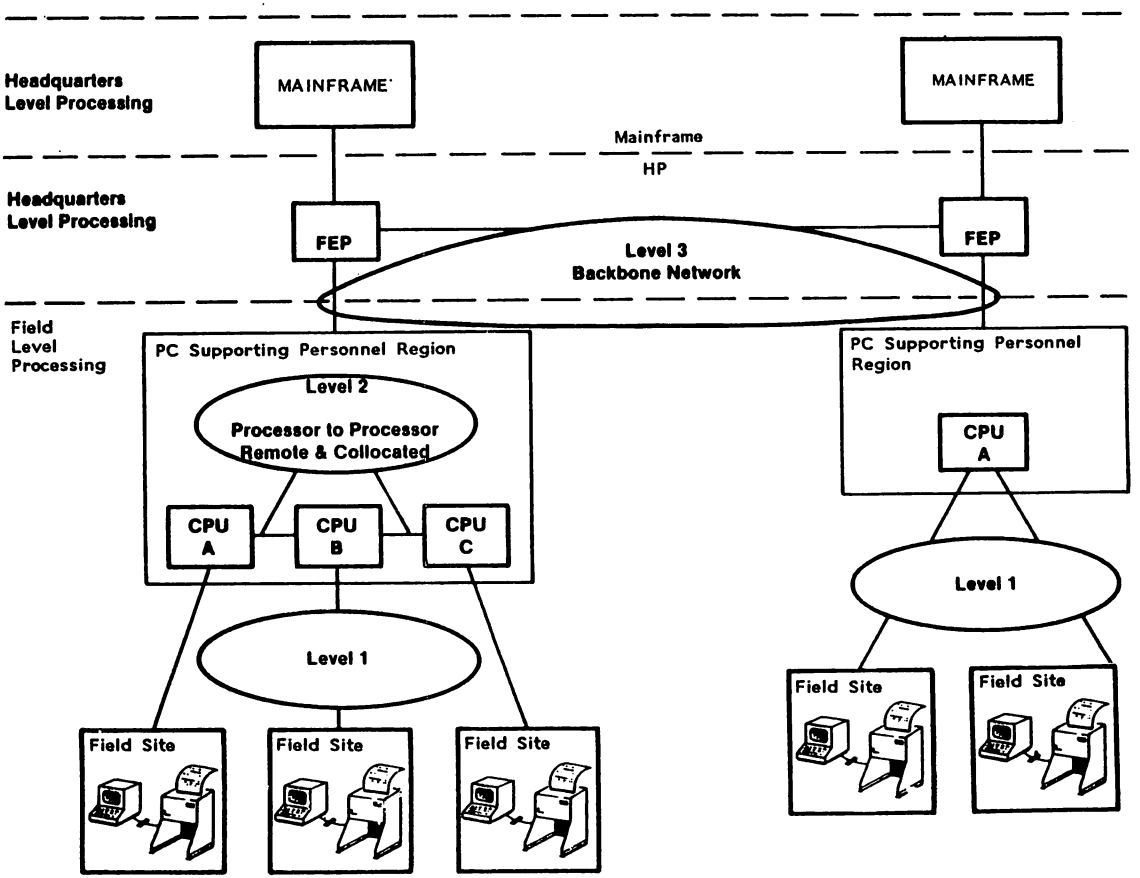
Each field site (with the exception of sub-sites) has a site manager, a system supervisor, and the appropriate complement of terminal end users. Each processing center "centralizes" hardware trouble calls for all its field sites. The significance of this will be revealed shortly.

Each processing center has system operators and a system manager in direct support of the equipment installed. Furthermore, each processing center has a technical control center where the local multiplexers, modems and telephone line interfaces are located. The integration of CPU power and network communication interfacing at a single site is of prime importance to MSC staff in diagnosing a problem at the processing center or remote field site. Thus, the major players in support of the network are 1) the system manager and technical control center staff at the processing center; 2) the site manager at each field site, and, of course, 3) the MSC staff. Each player in this triad is a central source of information during any troubleshooting episode.

How:

Hardware. To better understand the hardware configuration of this network, it might help to see the levels of communication in a diagram. Remote users communicate to processing centers. Processing centers communicate to front end processors which in turn communicate to headquarters' mainframes. We are concerned with the processing center and the field site level almost exclusively.

COMMUNICATION LEVELS



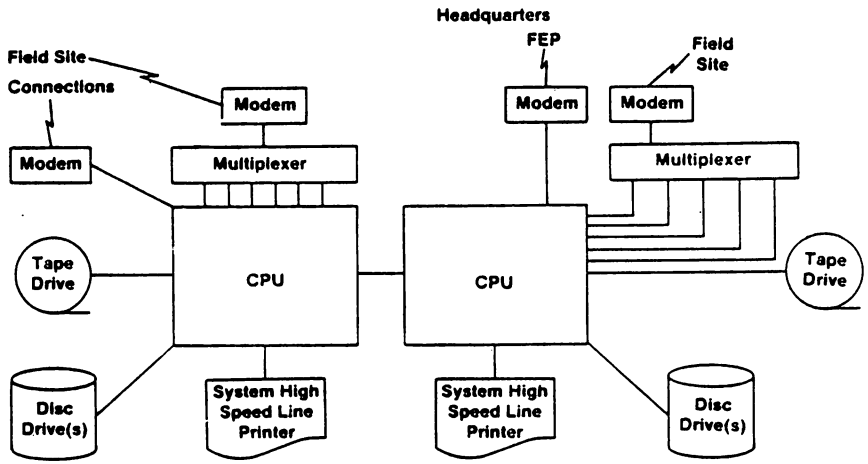
Processing centers are the operational data processing facilities in the network. Processing center equipment typically includes an HP 3000, tape and disc drives, high speed line printers, operator consoles with associated printers, and communications equipment. Processing centers often contain more than one CPU and associated peripherals.

Processing Center Equipment:

HP	3000/68	CPU (8 Meg)
	/48	(4 Meg)
	/42	(2 Meg)
HP	7933H	Disc (404 Meg; Fixed)
	7935H	(404 Meg; Removable)
HP	7976A	Mag Tape (1600/6250 bpi; auto-load)
	7978A	(1600/6250 bpi)
HP	2647F; HP150	System Console (/68)
	2392A	(/48, /42)
HP	2671A	Console Printer(/68)
HP	2608S; 2563A	Line Printer(400,300 lpm)
RM	OMNIMODE 96	Modem
RM	OMNIMODE 48	Modem
BE	Bell	Dialup/Autodial Modem
RM	OMNIMUX 320	Multiplexer
AR	Atlantic Research	Patch Panels
		Datascope

The processing environment for a typical processing center is shown below.

PROCESSING ENVIRONMENT FOR TYPICAL PC

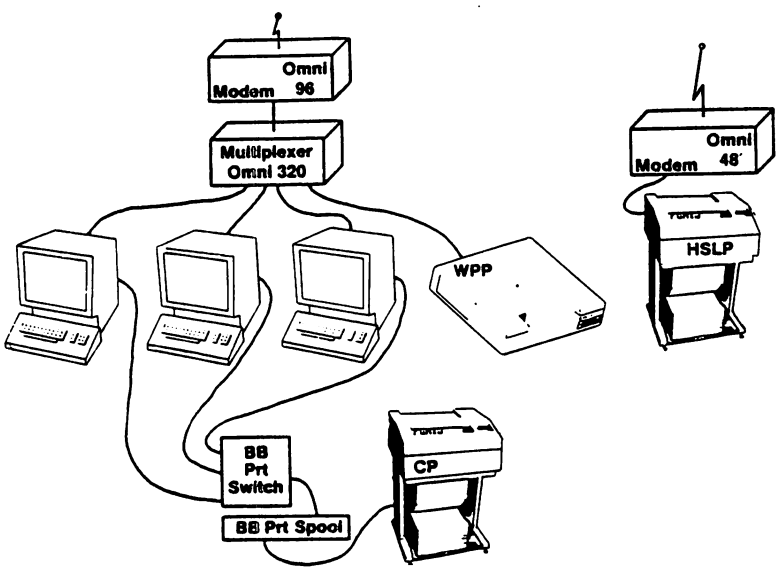


The processing environment for all field sites is essentially the same. There are significant differences, however, in the volume of work at various sites. Field sites have terminals, character printers, and high speed line printers and, of course, the requisite data communications equipment. Most field sites are supported by modems and multiplexers in a point-to-point configuration. Sub-sites are supported by MTS software and 4800 or 9600 baud modems in a multipoint/multidrop configuration.

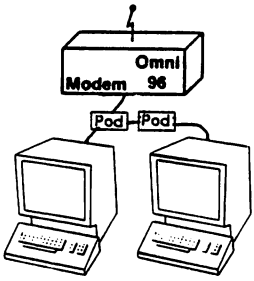
FIELD SITE EQUIPMENT:

HP	2624B	CRT
BB	PSI-4A	Print Switch
BB	PIA-60	Print Spooler
HP	2934A	CP (Companion Printer)
HP	2934A	WPP (Word Processing Printer)
HP	2563A	HSLP (Line Printer)
RM	OMNIMODE 96	Modem
RM	OMNIMODE 48	Modem
RM	OMNIMUX 320	Multiplexer
HP	2333A	Cluster Controller

TYPICAL FIELD SITE LAYOUT - POINT TO POINT:



TYPICAL FIELD SITE LAYOUT - MULTIPOINT



Databases. The network we are describing is essentially a data capture system for payroll and personnel data. After collection, the data is transmitted to the headquarters level where one of two front end processors (HP 3000/68) submits the data to the mainframe and also passes the data to the other front end processor, as you've already seen on the "Levels of Communication" diagram. The two data bases are geographically distant.

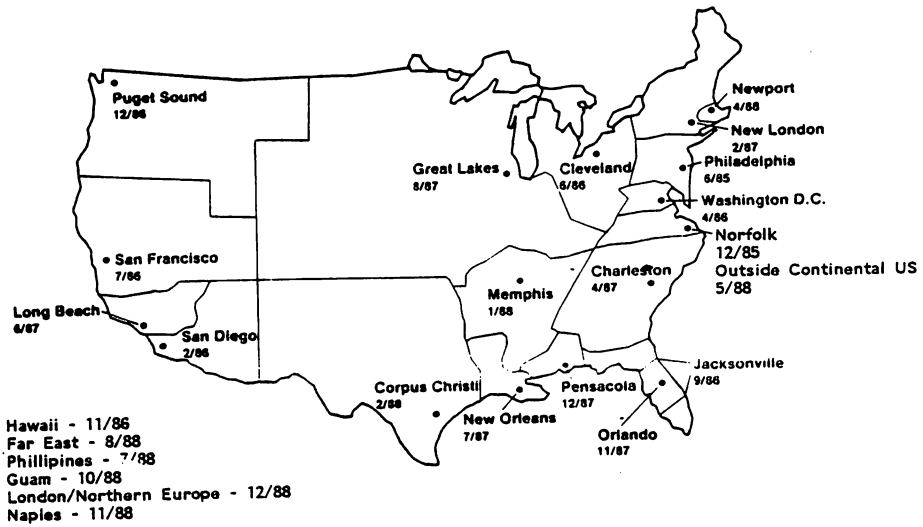
Communications Software. The systems in the network "talk" to each other via DS/DSN and a communications software system which uses a store/forward methodology to accommodate the different time zones. Data is transmitted from the processing centers to the front end processors using this customized networking software.

Systems Software. All HP 3000's in the network use HP FOS (MPE, FCOPY, EDIT/3000, Sort/Merge, IMAGE, QUERY and VPLUS). Other tools include TDP, MTS, DS/DSN, and special utilities designed to provide user logging and monitoring. Other than development personnel at headquarters, there are no programmers in the field. Compilers are not standard on the processing center CPU's.

When: The system was conceived in 1976. Equipment installation at processing centers and field sites began in July 1984. The Maintenance Service Center began operations in 1984 and will continue for 10 years. Prior to the first installation, key personnel attended training courses. Additional training is conducted at each field site following installation.

The current system implementation schedule is shown below.

IMPLEMENTATION SCHEDULE



III. MMDS' Role in the Network

We perform 3 main functions for the client's network: 1) hardware and systems software installation and activation (bringing a new system up); 2) user training; and 3) systems software/hardware maintenance. We coordinate and provide these services from our main office in Greenbelt, Maryland. Installation, while coordinated in Greenbelt, occurs (naturally) at the processing centers and field sites. We provide 3 phases of training: 1) for headquarters' staff personnel (given at MMDS' offices), 2) on-site training at each newly-installed processing center, and 3) follow-on training at MMDS in years 4-10 of the project.

The staff at MMDS rotates in and out of the varied tasks - a trainer one week, a cable layer the next, a troubleshooter the next. Installation typically is divided into 2 phases of 3 weeks duration each. Phase 1 is the DCE installation; phase 2 is the DTE. Training occurs 3 to 5 weeks after the installation and lasts for 2 weeks. Troubleshooting in the Maintenance Service Center continues 24 hours a day, 7 days a week.

Terminals, data communications equipment, CPU's and peripherals are installed by teams of MMDS employees. Each team consists of 3 people. One of the three is a designated team leader responsible for signing off on a site after verifying that all equipment is installed, working, and that all serial numbers have been recorded. After installation, training is conducted at that site for key personnel. We follow this routine for each installation. As of February 1986, we have installed 11 systems, representing 5 personnel regions with a total of 33 field sites.

During installation and activation of a site, maintenance is immediately available. We have noticed a number of distinct maintenance stages emerging in the process: 1) an install/burn-in time of approximately 1 month, followed by 2) startup/coming live when the users really begin processing, followed by 3) the ongoing, day-to-day use of the system, and 4) occasions when hardware and systems software are upgraded.

The focus of this paper is, of course, the maintenance function.

IV. THE MAINTENANCE FUNCTION

After rounds of negotiations, a centralized Maintenance Service Center (MSC) was selected as the approach. This MSC would be staffed by MMDS people who could remotely diagnose problems and call in vendors as needed. The Center provides 24-hour a day hot-line support to the network. Calls are placed by a designated person for each personnel region. Thus, the MSC serves as the central repository of all trouble calls reported by on-site users, and coordinated through the client's technical control center. This was preferred over having an alarming number of troubled users calling either MMDS or the vendors.

A. The Maintenance Service Center

Introduction. The Maintenance Service Center (MSC) was designed to provide maintenance in a centralized, controlled way. Lines of communication between the client and our staff are set up in the following manner: the user reports any problems encountered to the region's technical control center, located at that region's processing center. The person receiving the call contacts our troubleshooter on the MMDS hot line. We, in turn, call the "troubled" user and try to determine the exact nature of the problem. When necessary, we dispatch the vendor to the site. Upon successful resolution of the problem, all parties involved are notified as to the time and nature of the resolution.

Initially, for a period of 4 months, we provided service through the MSC 5 days a week, from 8 am to 5 pm; then, for 6 months, from 7 am to 11 pm. In November of 1985, we expanded service to 24-hours, 7 days a week and began an earnest search for more troubleshooters.

Staffing, Schedules, and Shifts. The expansion to 24 hours was dictated by an increase in equipment and contractual requirements. To accommodate the staffing needs of the project and the specific needs of the MSC, a schedule of 12-hour shifts was devised. This allows MSC staff a consistent schedule for 8-week periods while also permitting people to rotate in and out of various other project functions. One advantage to this kind of schedule is predictability: for 8 weeks at a time, we work the same shift. In addition, 3-4 days off every week (inherent in this approach) is compensation for the disruption to a "normal" work week.

The person on graveyard shift (8 pm to 8 am) has one disadvantage in that he/she works alone. Phone traffic is currently very low during this shift and boredom could become a factor. However, with the installation of a major site in San Diego and other planned installations, this is expected to change due to time zones and extended work hours.

Our scheduling (2 12-hour shifts per day) grew out of necessity more than anything else but has proven nonetheless to be quite workable. The people involved think so, and they seem to enjoy the usable chunks of time off every week.

One very important challenge we face is the problem of isolation. For 2 months at a time, 2 staff members work virtually alone - somewhat analogous to the bored shepherd boy on the hilltop who cried wolf. For some people, this is desirable; for others, it can be quite tedious. In any case, it requires self-motivation and determination.

How do we attract and keep good people? Routine rotation to other areas of the project provides a needed change of pace, and the added value of gaining professional experience. Our troubleshooters have installed, configured, and used all the equipment we maintain. Many of them have met and worked with the users at the field sites during installation, and some have instructed the "troubled" user in an on-site training phase. These factors contribute to a high level of technical expertise and staff morale. Our troubleshooters are kept aware of activities of the local HP users' group, data communications conferences, vendor tutorials, and a variety of professional activities. On a regular basis, staff members attend HP training courses in different subjects (System Manager, Programmer's Introduction, Query, Data Communications, etc.).

The people who staff our MSC represent a variety of disciplines - hardware specialists, software people, data communications people, and people with training experience. This mix of disciplines has proven very useful, and the resulting exchange of information and experience has broadened everyone's awareness.

How Effective Are We? To date, our success rate has been very good. A system of penalties is in effect (can you think of any better way to say that?) and our client rates us in a number of different categories including component down time, system down time, site down time, and excess response time. We are also motivated by some immediate requirements. For example, our vendors are given the same amount of time to have the engineer on site as we are (usually 4 hours; at some major sites, 2 hours). However, our clock begins to run after we receive the initial trouble call, while theirs begins after we have contacted the site, done our own troubleshooting, and then called them. Therefore, our own troubleshooting must be completed in a minimal amount of time. We are thus compelled to think and act quickly - and with good judgement.

Depending on our past experience with a particular caller and our own assessment of a situation, we will occasionally place a call to the vendor immediately, then contact the user. There are advantages and disadvantages to this. If we cry wolf too many times, eventually no one will listen. But taking a half-hour or so to diagnose a problem first could indeed save the vendor an unnecessary trip to the site. But then again, this could cause a "late" response time. This is the crux of our dilemma - and the core of the challenge we face. In spite of our good intentions and expertise, we sometimes place a wrong call to a vendor. More than once, we have mis-diagnosed a modem or multiplexer when the communications line was faulty. We have learned since then to harbor a healthy suspicion of phone lines "reputed" to be good.

Our effectiveness depends to a large extent on that delicate mix of technical, analytical, and interpersonal skills.

The Resources. The Maintenance Service Center was developed, literally, from scratch. Starting with nothing has certain advantages. The usefulness of resources can be tested and determined empirically. In the course of our experience, we have established a very reliable set of tools for use during a troubleshooting episode.

The mainstay of our toolset is the Troubleshooting Guide, developed by the staff of the MSC. It provides a step-by-step diagnostic procedure for each piece of equipment, with cross-references to other connected hardware and manuals where appropriate. This guide leads the user through a series of questions and specific tests for verifying problems. The guide was set up as a complete "How To" manual. Due to the longevity of the project, we felt it was necessary to address the issue that new employees would be joining the MSC. Also, periods of time would elapse when an employee doesn't work the hot-line but is expected to be up to par following a prolonged absence. This guide assumes only a minimal familiarity with our equipment and configurations. It makes use of the Socratic method to determine the exact nature of the problem. In many cases, the dialogue between user and troubleshooter elucidates and even resolves the problem. Tests are done during this dialogue, such as hard and soft resets, data communication loopback tests, swapping out suspect equipment, etc. This method has resolved many trouble calls since the MSC began.

One important factor in keeping vendors in line with our objectives is to minimize false alarms. This ensures that when a vendor receives a call from MMDS, he can be reasonably assured that a failure exists and requires repair. Furthermore, we often can give them a clue as to the exact nature of the problem. They therefore arrive at the site better prepared. Never crying wolf further increases the probability that our needs are met when contention for a vendor's resources occurs. Naturally, a higher level of priority exists when we sound the alarm to our maintenance vendors than would exist if we habitually dispatched without due cause.

Equipment lists are another essential component of our library. It has proven absolutely necessary to keep accurate records of equipment by location and serial number. Since all of our vendors perform maintenance by serial number, these lists must be kept up to date at all times. Periods of warranty, renewed maintenance contract dates, terms of maintenance, points of contact, phone numbers - all this information must be accurate and accessible to our inveterate troubleshooters.

The maintenance function, as well as the installation function, makes use of the MMDS Installation Manual. This manual provides a complete snapshot of an installation. It contains a chapter on each piece of equipment, including procedures for installing, configuration parameters where applicable, cabling diagrams, user points of contact, site addresses and phone numbers.

Keeping accurate records to the extent necessary has proven to be a formidable administrative chore. To alleviate the tediousness, and to increase our overall effectiveness in troubleshooting, we ordered an in-house system. This system is comprised of an HP 3000/42, terminals (HP 2392A), a printer (HP 2934), and a modem (VA 212). We plan to use this system to tap into our users' systems when diagnosing certain problems. Our in-house system will also be used to provide the staff with hands-on experience. Eventually, we plan to do all our record keeping and forms processing on this system using IMAGE, VPLUS, TDP, etc.

Prior to and during an installation, data terminal and data communications equipment diagrams are created. For each installation we create a full set of diagrams by processing center and field site. Serial numbers, model numbers, and connectivity are illustrated.

In addition to the reference tools listed above, all of which are created and updated by MMDS, the MSC maintains a library of technical reference manuals provided by our vendors. Complete manuals for each piece of equipment are kept, as well as manuals of general interest (HP software products, AdvanceNet, Communications Handbook, etc.). Our troubleshooters are encouraged to delve into topics of interest on a particular piece of equipment or software product.

In order to provide around-the-clock coverage, we had a toll free number installed. Users can call any time of the day or night. If our troubleshooter has stepped out for a minute (calls of nature and the like), an answering machine records the caller's message. We also carry a beeper whenever we are to be out of the office for more than a few minutes.

Crucial to our dealing with specific trouble calls, a "Malfunction Report" was developed. This report provides a framework for the collection of pertinent information and the appropriate and timely response to problems. When a call comes in, a case number is assigned to it. The first 6 digits of the case number identify the site; the remaining digits refer to the year, month, and a sequential number that resets to 001 at the beginning of each month. This form becomes our official report for a specific call. At each crucial step in the process of resolution, detailed notes are made (e.g., called HP; HP arrived on site; HP cleaned end of tape sensor, etc.).

Frequently a trouble call remains "open" from one shift to the next. This occurs most often if a problem develops late in the day, and vendor maintenance coverage doesn't begin until 8 the next morning. To ensure that all open calls are followed up during the next shift, we devised a turnover log. The simple ritual of signing the turnover log guarantees that nothing falls through the cracks.

At monthly intervals, all calls are summarized and sorted by type of equipment and site. Interpreting the monthly summaries can be useful to track recurring problems or to spot emerging trends. Summary sheets also maintain crucial information as to down time and response time over the course of the month. This information has proven useful in certain geographic areas, for example, where vendors are underrepresented or where parts are in low supply.

Who Are We Helping? A profile of our users is helpful in understanding our approach to troubleshooting. Our client has a policy of hiring from within. As a result, many of our users, while proficient in the functional aspect of the network, are novices in the area of HP computer systems and often computers in general. They understand what the system is to be used for, but are learning how the pieces of the system work. We developed training courses to train our users in a variety of disciplines. Training encompasses a general orientation to the project, down to the level of detailed networking concepts and procedural software products (VPLUS, TDP, COBOL, etc.). In short, training was devised to be specific to the customers' uses of the product in this network. This kept the training courses of particular interest to the user and minimized questions of how this "fit" a user's specific needs. Better students make better end users who are more qualified to assist us when a problem arises. As you can see, doing a good job in one area can also help in another.

Our users are organized into the following categories: site managers, responsible for system operations; supervisors, responsible for supervision of operations; operators, responsible for data entry/retrieval and printing of hardcopy; and associate data base administrators, points of contact responsible for administrative support of field sites.

B. The Vendors

The vendors are, in effect, sub-contractors to MMDS. We maintain contracts with them to provide maintenance, and it is vital to our success to promote and maintain good relations with them. In the MSC, we not only deal regularly with users but also with vendors. We are the ones who send them to the far reaches of the globe; we are the ones who describe the problem at hand; we are the ones who are penalized if they don't meet the agreed-upon response time; we are the ones responsible for coordinating and following up calls; we are the ones who pass the on-site contact information on to the vendor. It is crucial to our effectiveness to maintain a good rapport -- to never cry wolf and only cry out when they fail to meet the customers' needs.

A specific example of our need for good rapport with the vendor occurred when a part flown in to repair a CPU arrived at the airport of a major U.S. city. The customer engineer drove to the airport late that night to pick it up, only to discover that the airport was closed. This could have been a very sticky situation; luckily for us it wasn't.

In addition to maintaining good professional rapport, we have found it necessary to keep our own accurate records of serial numbers, response times, maintenance terms, warranty periods, etc. The better our substantiating documentation is, the more weight our word carries with the local dispatcher. It has happened more than once that a piece of equipment - newly installed - required service before the vendor had entered the data in the warranty data base. With a response time of 2 hours, our facts must be correct. And in some cases, our facts are the only ones in town.

It has been to our advantage to get to know the dispatchers, supervisors, and customer engineers. In the same way that getting to know our users has proved helpful, knowing our vendors has smoothed the way to better service more than once.

C. How Are We Doing Now?

In the cold light of statistical evidence, we seem to be doing superbly well. Over the last 6 months, 250 trouble calls have made their way to the MSC. All of these have been successfully resolved either by MMDS on the phone or by vendor on-site support. System down-time has been kept to a minimum and many times exceeds the requirements of the customer. Vendor response to the customer has met customer expectations and is directly related to our ability to resolve a problem quickly. Even with new, large installations being performed every 2-3 months, we have maintained our success rate. As our troubleshooters gain experience, we are hiring and training new ones, and our MSC is functioning smoothly around the clock.

D. Where Are We Going?

As mentioned earlier, we are installing a system in-house. This will give us the resources to further automate our internal record-keeping processes. It will also provide our troubleshooters with continuous hands-on experience.

Beginning in 1987, we will commence overseas installations. Maintenance for overseas sites creates a new opportunity for us. In areas of the world where no HP customer engineers reside, we will train and relocate our own technicians.

Eventually, the MSC prime and graveyard shifts will be staffed by 2 troubleshooters. This will require further hiring and training of new people.

The physical environment of the MSC gained importance when the increase to 24-hour coverage took place. With people inhabiting one physical space around the clock, unique requirements surfaced. Security, kitchen facilities, and a "comfortable" environment are currently being addressed.

We previously touched on the unique scheduling requirements of running a 24-hour service. There is a human element we continually face in the process of shifting people from day to night, from the beginning to the end of the week, the loss of holidays, and the general disruption to personal lives. All of these things require a flexibility by staff and managers so that all needs are met - the needs of the people and the needs of the network.

The future will inevitably bring vendor hardware and software upgrades. This is a fact of the industry. Our resources (manuals, equipment lists, installation procedures, etc.) must be as easily upgraded as the hardware and software they represent. Areas of potential upgrade include Spectrum, new multiplexer models, new fixed disc drives, etc. And as technology moves hardware networking into the realms of the 21st Century, we expect to continue upgrading our basic procedures and techniques, so that we are well prepared to handle the new challenges that this technology will bring to the end-user and ultimately to us.

V. In Conclusion

Our experience troubleshooting this network has led us to make some brazen generalizations. We have distilled into a few pertinent commandments, if you will, what we think works best.

1. As in all things, a healthy dose of common sense works wonders.

2. Analytical ability is at least as important as technical expertise and ranks as high as attitude in performing well.

3. Use everything that happens as a learning experience. This attitude has proven invaluable. Learning can take many different forms.

4. Maintain an even temper. Grace under pressure cannot be overrated.

5. Don't be afraid to get other people involved. Ask questions. Brainstorm. Use HP's Response Center.

6. Accept the fact that you will make mistakes. Don't take things too personally. (See #3 above.)

7. Try to understand the big picture. Why does this network exist? Who uses it? What does it do?

8. Keep good notes. This is extremely important during a trouble call. Times, names, significant events - keeping records of these helps clear up questions later on if there is a problem or discrepancy. Also, there can be historical significance to specific trouble calls that may only surface much later, when memories fade.

9. Practice your Socratic method on the user. (What did you do? What do you think you did? What happened next? What does the screen _say_? Practice asking questions in a non-judgemental way, without insulting anyone's intelligence.

10. Remain flexible in your thinking. The ability to change direction can be very useful. As in software debugging, you have to know when to relinquish a certain avenue of investigation in favor of a new one. There is always an element of gambling involved.

11. Trust your instincts. Sometimes split second decisions must be made. The best private detectives trust their instincts. There is, however, no substitute for _clear_ thinking.)

12. Finally, Never Cry Wolf!

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