NETWORK AND SYSTEMS DOCUMENTATION AT COMPAQ COMPUTER CORP.

An Internship Report

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Chapter One: Introduction

I performed my internship at Digital Equipment Corporation (DEC)/Compaq Computer Systems starting December 12, 1998. At the beginning of my internship, my immediate supervisor was Sheila Frank, the technical manager in charge of several of DEC/Compaq’s technical groups. My services were loaned out to Flint Cornett, the technical manager in charge of computer support for General Electric Financial Assurance (GEFA), a new area of responsibility for Compaq at the time. My role in DEC, and later in Compaq, was to provide documentation support to whichever group I was assigned to at that given time. Boundary spanning between groups, whether these groups were internal or external, was my normal role within the company, and so I felt well suited to the working environment. At the time I began my internship, I had been working at DEC for nearly 18 months.

The following paragraphs briefly describe the history of DEC and Compaq, the Lakehurst Drive branch where I worked, and my own personal history at the Lakehurst Drive branch.

About DEC/Compaq

At the time I was assigned to work with the GEFA group, Digital Equipment Corporation had become a wholly-owned subsidiary of the Compaq Computer Corporation. Although the purchase of DEC had been finalized nearly six months earlier, the Lakehurst Drive branch was still in an adjustment period and had not been totally integrated into the Compaq corporate environment. As a result, my internship was marked with an undertone of the merging of the two companies and their corporate identities. The following paragraphs contain a short history of both of those companies, then a description of the Lakehurst Drive branch, where I worked.

Digital Equipment Corporation (DEC) was founded in 1957 and produced large mainframe computers from the 1960’s into the early 1990’s. DEC was an early technological pioneer and was working with 16 bit technology (the types of chips found in home computers until the introduction of the Pentium about five years ago) as early as 1970. These computers included the early PDP mainframe series and were replaced by the VAX mainframe series in 1977. DEC also created a number of smaller home computers...
and workstations, though they were primarily oriented toward business use. Until the merger, DEC was based in Boston, Massachusetts. The merger was announced in January 1998 and closed in June 1998.

Compaq Computer Corporation was founded in February 1982 by Rod Canion, Jim Harris and Bill Murto, three senior managers who left Texas Instruments to form their own company. Their first product was a portable personal computer able to run all the software then being developed for the IBM personal computer. Based in Houston, Texas, Compaq Computer Corporation today sells and supports its products in more than 100 countries, with more than 38,000 marketing partners. Compaq’s financial strength is partly based on this diversity; more than half the Company’s revenues come from sales outside North America. Compaq is one of the three largest computer companies in the world¹.

The Lakehurst Drive branch of DEC was started in September, 1993 in Blue Ash, OH. In 1998, The Lakehurst staff was approximately 160 people at the Blue Ash facility and another 40+ at client sites. The Lakehurst Drive branch provides technical support for a variety of large corporations, including General Electric Aircraft Engines (GEAE), General Electric Motors, Proctor & Gamble, Reynolds & Reynolds, and General Electric Financial Assurance (GEFA). Over 90% of the branch’s work goes toward providing technical support to the various branches of General Electric. That support includes computer network support for Windows NT, UNIX, and VMS operating systems; desktop and network troubleshooting support; database administration; security and technical administration of accounts; monitoring GE computer networks for hardware and software problems; administration and storage of e-mail accounts; and a variety of other related duties.

My own role at the Lakehurst facility is described below. I have outlined some of my projects before the internship period as well as during the internship period to illustrate my internship setting and my place as a contractor working for Compaq. I will also give a short description of the indirect client for my project, General Electric Financial Assurance (GEFA), and the direct client, Compaq’s GEFA technical support team.

¹ Source: www.compaq.ca/English/atcompaq/whychoose/history/WhyHistory.htm
About My Role

My Pre-Internship Roles

My primary role before the internship began was to write, update, and maintain a documentation system for the Operations team. The Operations team was one of two teams that provided "level one support;" they would be the first people to try to address a user’s problems when the user called technical support for help. The operators – Operations team members – specifically addressed the problems occurring on mainframe computers, whether the problem was one with hardware or software. The mainframe computers ran a myriad of programs on a variety of machines. As a result, no one could be an expert on all areas of the mainframes, so I decided that the documentation should be written for users with only a basic knowledge of how these systems worked. The mainframe systems already had some documentation, but the existing documentation was difficult to access and hard to read.

After interviewing the operators, I created and tested a centralized HTML document file system. The HTML documents resembled the older documentation system in appearance so that the Operators, who had been using the older system for over 15 years, would not have to make difficult adjustments to a new system. However, the language in the new documents was clearer: multi-step instructions had been broken up into individual steps and re-organized for clarity, and several other changes were made for ease of maintenance and updating. Shortly after my new system was implemented, the Operations team enjoyed a 13% reduction in response time² to incoming calls related to my documentation. Overall, the changes made me popular with the operators and with my manager.

My secondary role was to provide editing and writing support for the other teams on a case-by-case basis. For example, I co-authored and later edited a web page interface between GEAE users and the Compaq Productivity Center, the other "level-one support" team. This web page would notify users of system problems and provide instructions on how to fix straightforward technical problems. I was in charge of ensuring that the page looked professional and that the information was comprehensible. My partner, a member of the Productivity Team, was responsible for ensuring that accurate, up-to-date information was posted to the web site.

² Sheila, my manager at the time, told me about the 13% reduction in response time.
**My Internship Roles**

At the time of my internship, I was an established member of the DEC/Compaq community, and the task that I had been hired to do was finished. My work at that point consisted of maintaining my previous work and supporting in-house projects.

My primary role for the first half of my internship was to work with Flint Cornett, the manager of the General Electric Financial Assurance (GEFA) technical support team, to complete two projects: the first was creating diagrams of the hardware and software layouts of the GEFA computer network, and the second was to help Flint write pieces of the service agreement between GEFA and Compaq. I worked closely with Flint on the first item, and I worked with the whole GEFA team on the second. Flint served as my supervisor for the GEFA projects, and my overall introduction to GEFA came through him.

General Electric Financial Assurance (GEFA) itself was a new division within GE which offered capital management services to GE employees and certain clients. My role was to support Compaq employees who provided computer network support for GEFA, so my interaction with those employees will be the focus of my discussion. My duties included authoring network diagrams of GEFA computer network and assisting Flint Cornett in drafting the service level agreements between Compaq’s GEFA support group and GEFA.

For the last part of my internship, I worked exclusively on a business-to-business report describing the support Compaq provided for General Electric Aircraft Engines for 1998. Because the material for this report covered a year, it was referred to as the “Annual Report,” although it was not an annual report in the traditional business-to-investor sense. For that part of the project, I reported to Sheila Frank, my supervisor, and Peter Jansen, the branch supervisor. I was in charge of most aspects of this project, including coordinating information and communication from eighteen different people. The eighteen people included my two clients plus twelve group leaders and four other managers. Once the information was complied, I was responsible for the formatting, editing, images, and content of all aspects of the report.

The remainder of this report will describe my experiences working at Compaq and their affects on my professional development. In particular, I will discuss creating the drawings of the GEFA computer systems, and writing and editing the service agreements. I also worked on the Lakehurst Drive branch annual report, which I saw through to completion after my internship period expired.
Chapter Two: Overview of the Internship

I had a wide breadth of experiences during my internship period. At the beginning of my internship, I was mostly familiar with two or three departments at the Lakehurst Drive facility; by the end, I had worked with nearly all of them. My workload was on a feast-or-famine schedule – either I had too little or too much of it. I had straightforward and difficult technical projects to see through, subtle and overt political issues to deal with, simple and complex language to write. My experiences during my internship are difficult to encapsulate because they were so varied, but it was this variety that stretched my skills and made me look closely at how I write.

Although I worked with many people in the course of my internship, I was essentially working alone on writing, editing, and designing my projects. I had subject matter experts and clients available to work with so that I knew if my projects were useful and on the right track, but the development of these projects was largely left to me. I had enough room to be creative with the material, but if I needed help or ideas, I was on my own.

I kept a journal of my work throughout my internship to provide me with notes on the projects as I worked on them. I logged journal entries anywhere from once to three times a week, depending on what I was doing and what I felt I needed to comment on.

Below is an overview of my work on the internship. I will only discuss the GEFA projects in Chapter 3, as these were my primary projects. However, I will comment briefly on the Annual Report project in Chapter 4 because some of my experiences from that project are relevant to my discussion.

Overview 1: Creating Images of Computer Technical Specifications in Visio Pro 4.5

I had not even heard of the General Electric Financial Assurance (GEFA) technical team when I was first assigned to support their project. In fact, I got my introduction to the Compaq GEFA support team when I was told that I had to be at a conference call in two minutes by the Technical Manager, Flint Cornett. I had no idea that I had been called to do anything when I was suddenly asked to jump into the middle of this project. Apparently, I had been assigned to the team by my supervisor without warning.
Over the next two days, I was told that our facility had successfully won a bid to provide technical
support for GEFA, which was a division of General Electric that was currently being created. The
computer network for GEFA would be spread across the country, from Seattle, WA to Richmond, VA.
However, the overall technical support for this network would come from Compaq’s GEFA support team
based in Cincinnati. Since our technicians could not fly from coast to coast every time the GEFA network
had technical problems, the team would need schematic diagrams of how the computer systems at each site
were built and interconnected. My task was to create those diagrams.

Initially, Flint discussed the prospect of sending me to each of the sites to become familiar with
the computer layouts of each site. However, the department was running on a tight budget and Flint
decided that he would draw the layouts while he was at the sites rather than spend the department’s budget
on flying me to the sites.

I was to diagram the sites using Visio Pro 4.5, but I had to learn the program first. Visio Pro is a
program used to draw many types of organizational structures, from the physical and virtual layouts of
computer networks, to business organizational charts, to floor maps. The program includes stencils of
drawings of existing computer products, office furniture, etc. to facilitate drawing out a plan. I understand
that it is similar to a CAD program.

After a few days of self training and practice, I had enough basic familiarity with Visio Pro to
approach the project, which is described in Chapter 3. About seven weeks was spent on this project, or
44% of my internship.

Overview 2: Writing Contract Service Agreement Information

Aside from sketching out racks of computers, I assisted Flint Cornett in preparing descriptions of
his departments’ services for the contract agreement between Compaq and GEFA. Flint was responsible in
describing what types of service his group would provide to GEFA. However, as he was occupied with
setting up the computer networks at the various GEFA sites across the country, he did not have long
periods of time available for writing and editing. I volunteered to draft these agreements, after which he
would review their accuracy before sending the information to the legal department. He was doubtful that I
could write the sections, but he let me try. Any time I could save Flint would be helpful.
Flint’s description of what he wanted was vague. He had an outline of areas in the contract which required service agreement descriptions, but not much else. I made an attempt at writing based on the outline and his description. When that turned out to be unsatisfactory, I asked him for some examples of contract language that I could use as boilerplate for writing the sort of language that he wanted to see in the agreement. He handed me a copy of a previous Compaq/GE agreement and the work he had done so far in writing his portion of the agreement. I used that material and interviews with his staff to write the sections he needed. Flint was quite pleased with the results, which are described in Chapter 3.

About 5 weeks, or 31% of my internship was spent working with the GEFA team on this project.

Overview 3: Writing the Lakehurst Drive Branch’s Annual Report

During the second week of February, I was assigned to organize and write an annual report for the work being performed for General Electric Aircraft Engines at the Lakehurst Branch. GEAE had been considering creating their own help desk services division to replace Compaq’s help desk, so this report intended to persuade GEAE not to take this course of action. After a fashion, this report was meant as a highly persuasive unsolicited recommendation report.

I was responsible for researching the Annual Report by interviewing team leaders from each department and gathering certain kinds of information. This information consisted of each team’s roles in supporting GEAE, their workload growth, special projects these groups undertook to support GEAE in 1998, quality improvements that benefited GEAE, and so on. As for the tone of the report, my boss, Sheila Frank, told me to describe it to the managers as a chance to sell their services to a client.

This project had a variety of difficulties facing it from the start. The first difficulty was that the people ordering the report, Peter Jansen (the branch manager) and Sheila Frank, had unrealistic expectations of how long the project would take. I estimated it would take eight to ten weeks, but they thought that the report could be done in five weeks. When I replied that they should expect it to take considerably longer, and they responded with a non-committal “we’ll see.”

The second difficulty was that most of the sixteen team leaders I needed to interview were running understaffed and overworked departments. The team leaders were worn out from keeping their departments running while trying to find replacement staff. Nearly all of these teams were technical teams
which supported computer systems of various kinds, so they had the additional responsibility of making their systems year 2000 complaint on top of their already busy schedules. And finally, Peter had asked all of these teams for data on their teams’ work record and number of tickets closed (i.e. the number of problems addressed), etc. without explaining what this information was for. When they heard that I was asking them for similar information, they were annoyed to be bothered with “busy work” a second time.

Finally, the description of what my clients wanted in the report was “something like what GEAE put out in their annual report at the end of last year.” When I pursued this question, I was given a vague instruction to go speak the branch secretary to obtain a copy from the secretary. In fact, it was some weeks before I got a copy of the GEAE annual report, in spite of my efforts. By then it was not particularly useful to me.

In essence, my task was to collect redundant information from tired people for an ill-defined task on a short deadline.

Throughout the project, I found that I was acting as a boundary spanner in a variety of ways. I was part researcher, part technical specialist, part writer, and a full time ambassador. As a researcher, I worked with team leaders in order to refine their knowledge into useable information. Coaxing information from frustrated and overworked leaders was quite a challenge. As a technical specialist, I acted as a liaison between management and the team leaders while gathering and organizing information. As an ambassador, I could use the information that both sides gave me to refine my questions to the other group, which was sometimes a huge help in writing the report. And as a writer, I needed to close the boundaries between them all so that the final audience of the report, GEAE managers, would come to the conclusions that the Compaq managers desired. Writing persuasively was the easiest part for me, for by the time I had done my research and acted as an ambassador for weeks, I had a reasonably strong grasp on my material and how it might be presented in a persuasive manner.

About 4 weeks, or 25% of my internship was spent working on this project before my internship period expired.
Chapter Three: Major Projects

Over the course of my internship, I had three major projects; for this discussion, I will only be looking at the two GEFA projects, though I will base some of my discussion in Chapter 4 on my third project as well. I outlined these projects in Chapter Two, but I will discuss the details of how these projects played out below in the order in which they occurred.

Discussion 1: Creating Images of Computer Technical Specifications in Visio Pro 4.5

Introduction

After a few days of working with the Visio Pro manual and tutorials, I was ready to work on my first diagram. At this point, however, I decided to do some planning so that I could approach creating this series of diagrams in an organized manner.

Audience

First, I recognized that these documents were going to be used primarily by a half dozen subject matter experts (SMEs) in Cincinnati for guiding technicians at the various GEFA sites throughout the country through emergency and non-emergency repairs to computer systems. So usability and good visual hierarchy were a top priority; I did not want the SMEs hunting to find information.

Second, I realized after talking with Flint and a few of the GEFA team members that each technician had his own approach to performing repairs. The documents had to have enough specific information to be technically useful, but still be general enough to apply to the different approaches each technician would take.

Third, I knew that the documents had to look as much like the physical computer system set up as possible. If they did not look like what an on-site technician would see, the on-site technician and the Compaq technician would have difficulty communicating. Therefore, the on-site technicians also had an indirect stake in the documents being correct.

Flint gathered all of the network information for me, which had the benefit of having a trained technician gather the information, but the cost was that I was not directly familiar with the material. Because he was the one gathering the data for the technical diagrams and he was the technical manager, he
was my primary contact for this project. Some of my work was also checked my other technicians, but Flint had the final word.

**Project/Relationship Development**

Flint gave me my first diagram to draw: a set of 3 racks at the Reynoldsburg, VA site. We discussed the diagram in terms of what he needed and his expectations were – what the final product should look like, what sort of information he needed in the diagrams. He needed the following elements:

- All equipment needed to be arranged on each drawing as it appeared on each rack.
- Each piece of equipment needed tags describing its various relevant properties (product name, serial number, inventory number, IP addresses, phone numbers for modems, other miscellaneous information).
- The images of the items needed to be scaled and positioned such that they could easily be distinguished on the page.

In designing the rack drawings, I found I focused a great deal on visual hierarchy, white space, and parallel drawing structures. After some work, I found that using Visio is not unlike using PageMaker, Photoshop, or Power Point, all of which are programs that I have strong skills in. I organized the elements of each network rack in parallel by copying and pasting the same basic structures for each network. I used the background grid and guides for setting up and measuring the drawings to help visibility by maintaining white space and keeping a consistent distance between the network elements and their labels. Over time, I adjusted the drawing and labels to fit what I felt was a reasonable scale. My usability objectives for this scale were

- Ensuring that the hand-drawn pieces of the technical equipment were large enough to be distinct;
- Checking to see that the equipment labels were large enough to read but not so large as to become cumbersome;
- Using Visio Pro 4.5’s stencil drawings of technical equipment whenever I could to make equipment easy to identify.
Balancing the space the computer racks took up on the page was simply a matter of hard work and perseverance, though it was maddening at times. Once finished, I had my first draft evaluated and I ran into two problems.

**Problem 1:** Flint was unhappy with the equipment labels. He thought that the boxes I was using for encapsulating the information made the page look too busy. I agreed that the boxes did make the page look busy, but the boxes might be a necessary evil because the labels would look disorganized without the blocks to provide visual separation between the elements. However, I was willing to look for another way to organize the labels and began work on another draft.

Not using boxes looked worse. The labels were long enough that they needed some visual separation, otherwise they ran together and became indistinct. Flint agreed that we would probably have to put boxes around the labels, but he would prefer it if the entire page looked less busy. I spent some time picking through fonts and font sizes and eventually came up with using Arial 8 point, which is small enough to allow for a lot of text in a label yet is still quite legible at that size. Flint wanted me to use Arial 6 point, since he could read it, but after trying Arial 6, I advised against it as I felt that the text would be illegible to users with bad eyesight or in a dark room. Flint was unsure that this was the case, but deferred to my judgement. Eventually, we agreed on that the label text would be in lightly shadowed text boxes with pointers. In the end, this format seemed to work the best.

I noticed that Flint had not made titles for the individual computer racks, so when I went to save the files, I simply named them in the order I got them. I pointed out to him that titling each of the racks then naming the files after the titles would provide a natural way for both the Cincinnati technicians and the on-site technicians to have a common frame of reference. He laughed and said that the idea had not even crossed his mind, but that it would be a huge help. After he decided on what the names should be, I titled the Visio file names to reflect which racks were in which files while he had the on-site technicians label all the computer racks.

This point was crucial to this part of my project, because it changed my position in Flint’s mind. I had been little more than a drudge artist/secretary to Flint who had some technical knowledge that he needed to rely on. His revelation made him realize that I was not being picky about usability for my own
artistic sense but to make this job easier, he became much more cooperative and responsive in our editing sessions. Booking time with him became less of a problem.

**Problem 2:** I found that the types of information that were needed from computer rack to computer rack varied somewhat, which made prioritizing information and creating parallel structures for that information difficult. This problem became especially difficult when I was asked to create a graphic of the overall structure of the GEFA network. Many of the network elements had similar kinds of information – phone numbers, IP addresses, serial numbers, etc. – but the order of importance of that information varied somewhat for different pieces of equipment.

The drawing included seventeen networks of varying complexity. Some of those variations were small but significant enough to need to clarification. I did my best to create consistent visual structures for the elements of the diagrams, so that even a casual observer might identify that a branch of the Cincinnati network must be related to a similar looking branch on the Seattle network. Some sites had four to five relevant pieces of information from their network, some had more. To organize these elements, I did the following:

- Grouped sites by order of complexity; simpler sites were grouped together and more complex sites were grouped together;
- Arranged parallel structures within each network to improve legibility and mapping of information. For example, IP addresses or modem connections were always found off the same sorts of visual structures and in the same place;
- Organized the drawings so that the most similar networks were closest together to evoke the parallel structures in the readers’ minds.

The result of this network diagram is included in Appendix 1c as the Alpharetta-Lynchburg Network (left and right halves).

Flint’s only feedback after checking the overall network diagram was ‘how else would you organize it? It looks fine.’ Nevertheless, I had several other technicians check the diagram, all of whom reported having no difficulty using it.
Testing and Conclusions

Even after working with Flint to edit and hone the drawings, I was still uncertain that they would prove to be useful. The drawings had not been tested and did not look terribly technical to me, even though the drawings were representative of Flint’s drawings. There was no time for any formal testing, nor was Flint interested in testing the documents. Observing the documents in use was impractical since, in theory, they would mainly be used as emergencies came up and not in any pattern that would lend itself to easy, unobtrusive observation. So early on, I decided to collect more user feedback by introducing the drawings to the GEFA team technicians and asking them to try them out then give me any feedback they might have. Direct observation would be difficult since none of us could predict when they would need to make reference to the drawings – at best I could meet with the technicians and ask them for their reviews.

The team’s response was very positive. After my initial introduction, the GEFA team technicians often asked me for my latest site drawings because they found having a technical map of the computer layouts to be a big time saver when communicating with the on-site technicians. As a result, soon after I had finished polishing up one set of documents with Flint’s oversight, they would be distributed to the larger for immediate feedback. Some small changes resulted from this response, but the overwhelming response was that the diagrams were useful and easy to use.

Discussion 2: Writing Contract Service Agreement Information

Introduction

The GEFA network was coming on line in bits and pieces, and an official launch date had been set. Flint had accelerated his pace to finish all of his work. With the network drawings complete, I had a lull my work, so I asked him if I could help him in any way. He found writing the service agreement information time consuming, and so he asked me to draft the GEFA service level agreements in the hopes that I could save him the time and effort of writing them himself.

Audience

The primary stakeholders for the service agreement were Flint and the managers at GEFA receiving Flint’s teams support. However, I realized that there was another primary stakeholders: Flint’s team.
Project/Relationship Development

In hindsight, I realize that I did not have enough information, but I tried to write a few paragraphs of the service agreement with this scant information. My results were not good and Flint was frustrated with me. Flint’s response was to tell me that he needed me to “be creative” and that since I was a writer, I had to be creative, right? But he doubted I had the expertise to do it.

I took this response as a challenge. I found that I had slid back into the role of artistic “go-fer” with a vocabulary in Flint’s eyes and that deeply annoyed me, though I knew I had made a mistake. I told him I could do it, no question, and asked for a copy of his current work on the project. He sent me a Microsoft Word® file with his work to date on the service agreement.

I knew that my main problem was that I was unqualified to describe or comment on the duties in the half dozen areas that I could approach on the outline. However, I also knew that I had people who were qualified to talk about the service level agreements on hand: the GEFA team. I immediately asked Bret DiMuzio, who also worked with the GEFA team, which team members were responsible for each area described in the service agreement. He told me and I set up interviews.

This series of interviews was my favorite part of my internship. I felt like I was using many of the skills I had acquired in the MTSC program at once: writing unbiased interview questions that would still suggest the sort of information I needed, talking with Subject Matter Experts to gather information, and reading the technical language of the service agreement to understand what the agreement called for and how I should present the information I had been given. Over the course of a week I interviewed five of the six GEFA team members about their jobs and scheduled follow-up interviews to cover sections I did not understand from the first pass.

I based my interview questions on the concerns raised in (a) the portions of the service agreement Flint had already written and (b) concerns suggested by the outline of the areas of the agreement. I was concerned that I might miss some subtleties of the issues that were not suggested by either (a) or (b), so I spoke more with Bret to prime me for any concerns he could think of for the sections. He described how information passes through a network and at what point in the network our service team would be responsible for that information. This issue was relevant to some database management details and
important in that the service agreement should not claim responsibility for data in an area beyond the control of the Cincinnati GEFA technical team.

The interviews went better than I had expected. The GEFA technicians responded eagerly when they understood that I was asking them to define what their responsibilities and duties would be in the service agreement. Charles, a network specialist, summarized the feeling by saying “Is that what you want? Man! Cool. No one has ever asked me what my job should be before.”

The team members were even-handed in describing their responsibilities. I got several laughs followed by “I shouldn’t tell you this ‘cause I hate doing it, but…” followed by detailed descriptions of their more onerous chores, mostly descriptions of their duties during an emergency. The team members knew that Flint would be reviewing the results of their comments, so they were careful to illustrate all aspects of their responsibilities, but were grateful to know what the agreement said about where those responsibilities ended.

Bret’s point about what areas were in the team’s ability to control and which were beyond their control turned out to be helpful. I had an idea of when to press for more information about a particular subject and when a different responsibility might be ‘out of bounds’ for the team.

Once I collected my answers, I used Flint’s existing text as boilerplate for shaping the answers I had collected into the language of the agreement. Boiler plating his own words, I was likely to get a result close to what he wanted.

Flint’s existing service agreement materials focused primarily on four points, which acted as the thrust for most of my questions:

- who will monitor what kinds of hardware and software;
- what will happen if a change in the hardware or software occurs and who will document that change;
- how requests for changes and problems will be handled; and
- what sorts of services or repairs will be done or not done.

An example of how I adapted Flint’s language: I asked Charles how a service call for Network Support would be handled – see 11.7.1.3 bullet point 3 in the Service Agreement, Appendix 2b, page 38. He told me the call would go to the Productivity Center (the help desk) and then be logged and forwarded to either
him or Tom. This function was comparable to how calls were handled in 11.3.1.3 bullet point 1, also in Appendix 2a, page 34. I understood from Charles and Tom that the concerns were the same, so I simply used the same language. Shaping the interview questions to highlight similarities between the sections paid off more and more as I continued with the interviews. Charles and Tom in particular enjoyed coming back to me to verify that I understood all the details of each area of responsibility, so I felt confident that I had not missed anything.

**Testing and Conclusions**

Flint was very surprised and pleased by the sections I wrote. He had no idea that I could tailor the items so closely to his needs. He commented that nearly every point that needed discussion had been discussed and that only a few minor managerial points needed to be added, and that there was no way I could have added those in any case.

Again, no formal test was possible in this case, for two reasons. The first was that the essential test of this kind of document is how it effected the relationship between Compaq and GE, which is difficult to measure objectively. Much like a recommendation letter, either the people you seek to influence will agree with what you have said or they will not. In this case, they did. The second reason for the absence of a test was that my duties abruptly shifted again, and so I was off working with another project and had no time for follow-up.
Chapter Four: Discussion

Reviewing my journal and reflecting on my internship has been very valuable to me. My review has given me a chance to reflect on past mistakes and accomplishments and allowed me to make choices about my future approaches to working as a technical communicator as a result. Over time I have learned to see my situation more clearly and in a more even-handed light, which has given me a sense of the history of my choices and a feeling of empowerment for making future choices. In my reflections, I have mostly been interested in reflecting on how day-to-day and project-to-project issues of technical writers play out, how modes of thought in clients and technical communicators affect those issues, and what overarching lessons I might take from these insights. My thoughts are more oriented toward the practical than the academic, though I expect the most valuable insights would apply in both areas.

I have organized my thoughts on these lessons into five major areas:

- Client Expectations
- Morale & Discipline
- Understanding & Organization
- Ambassadorial Roles
- Downtime

**Client Expectations**

A major pitfall I encountered during my internship is that my clients did not understand what technical communicators do. My clients at Compaq seemed to have an unconscious belief that writers are magicians who pull paragraphs out of their hats, even though they knew that writing takes a lot of scut work and organization from having to do it themselves. Technical people have developed an image of writers as creative people who magically generate text who lack an understanding of technology. This image may stem from those peoples ideas of what writing is from reading fiction, looking at polished written works without seeing the process of their creation, an absolute doubt in their own writing ability because they are not “creative” people, or that writers lack the daily exposure to technology which would keep them in the know. This creative versus logical dichotomy that my clients had meant that they were
taken aback when they witnessed the writing process; they had been expecting “magic” and they got interviews, questions, revisions, paperwork, more interviews, more revisions, testing, more questions, etc.

My first attempt to write the GEFA service level agreements is a good example of how this phenomenon can affect a working relationship. Although Flint originally doubted that I could write his service level agreements for him, he was disappointed in me after my first attempt failed. He hoped for magic, but got nothing. Flint’s reaction reflected his disappointment in my image as a creative person: he said something about me needing to get creative and that writers were supposed to be creative people. He had these reaction even though he had low expectations because he knew I was unfamiliar with the technical aspects of what GEFA does. Because of his expectation, he had hoped for more out of me.

However, after I completed my interviews and my drafts of the service level agreements, my writing became “magical” again because I surpassed his needs and expectations. Flint then told me that he did not believe how accurate the sections I had written for him were, and that the only things he needed to add to my service level agreement drafts were managerial notes which I could not provide. My lack of knowledge put me under doubt the first pass when my image was tarnished, but my image was restored when I produced the service level agreements to his surprise and disbelief.

I think this dichotomy is an important one to be aware of because of the consequences that can result from clients whose expectations may not be realistic. In my later project working on the Annual report, my clients had incorrect expectations as to the difficulty of the project and how long it would take. As a result, I was unnecessarily overworked and frustrated, as were many other people I worked with in that project.

One good solution is to educate clients in what to expect from a technical communicator and the normal flow of various kinds of projects. Of course, I will not always know what to expect, and I will not always be able to dispel clients’ preconceptions of writers and the writing process. However, I can defend myself from poor assumptions if I make a point of inquiring into my clients expectations, discussing expectations with them, and watching their behavior to get further indications of their preconceptions. Another way to address this issue is to be as professional as possible to promote trust and faith in the client. I find that this latter course is more reliable.
On the other side of the coin, the special status given to creative people does assist me in boundary spanning. SME’s are often more co-operative to me because of the expectation that I am both special, because they believe that I can do something they cannot, and that I am ignorant, because they believe creative people do not use their left brains. Sometimes clients are more patient or cooperative because of this image as well. On the whole, I mistrust the “creative vs. technical” image, but I see this image as one that will fade, at least for technical communicators, as we become more mainstream in the workplace. Creating trust by presenting a professional demeanor is the best way to close this gap between expectations and reality during the meantime.

The Ambassadorial Role

One way to promote the professional image necessary for a good working relationship in technical communication is knowing what I can and cannot do for my client. What I can do is to understand their needs (not only for the project, but the institutional needs as well), organize their projects to make them useful, and be persuasive in my writing and my interactions with subject matter experts in creating the end product. I am working on.

I have noticed that my work as a technical communicator is much more ambassadorial than I had imagined it to be when I left school. Ambassadors have to know not only what message they are trying to convey, but who that message is for, why those stakeholders want or need that message, and how that message should be presented. Understanding the politics and the concrete elements of a project clarifies a project’s direction and use.

Naturally, some projects are more political than others, but all are political on some level. In the GEFA network project, the project was not political within the Compaq group, but good support to the customer is highly political, especially since the GEFA contract was new and Compaq was working to impress the client. Hence, ease of use and well-defined details for the network diagrams were essential priorities; the less time the Compaq support team spent struggling to communicate, the swifter a repair is completed, and the more comfortable GEFA felt with their contract and support. As technical
communicators, we have the benefit of having actual products to show for our work, unlike help desk support or computer programmers. The other side to this benefit is that our projects are continuously visible and subject to scrutiny.

Coming to a political understanding of a project is difficult to define. Clients have stated concerns and unstated concerns, each client needs to be handled differently on a personal level, and office politics can shift during a project, causing different priorities to take precedent or even a shift in audience. “Who has to review this project before it is released” is a question I have learned to ask when I am assessing a projects’ stakeholders.

**Organization and Persuasion**

Authoring products which make a group more organized and efficient is possibly the essence of what a technical communicator does, because even in presenting information that is not new, good organization can make a group more efficient and effective. While working with the GEFA team, I found that I was working as a thought organizer rather than as an author of new information. The GEFA employees understood the computer network and their roles on the team; I did not write anything they did not know already. However, although the team members had an individual understanding of the GEFA network, that understanding was neither outwardly expressed nor was it in a common frame of reference. By organizing their thoughts for them, I provided a general standard for them to work from. I defined and isolated elements of their knowledge of the network, organized details they might not remember into formats familiar to them, and then created a concrete reference for their use in communicating with each other and with on-site technicians whom they may never have worked with before. The results were such things as parallel labeling of the networked computers, naming of the computer racks for easier reference, and employee definition of their own jobs in the policies and procedures. The GEFA team had not thought of organizing their knowledge this way before, but now that they had organized information, they were glad for the improvements.

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3 When I say product, I mean any sort of communication produced by technical communicators, from web sites to power point presentations to manuals, reports, memos, brochures, posters, technical drawings, on-line help, etc.
Until I re-examined my internship period, I did not understand how much persuasion and relationship building is needed to make a project work. The process of working with SMEs and clients to get them to accept, support, and even promote about a project is essential for co-operation and success of any project. Eighty-five percent of projects that lack high level support fail.4 This area is where my idea of the technical communicator as an ambassador fits in: projects are negotiated as much as they are written because a project is a result of a relationship between people. This is where I had my greatest success and greatest failure: I built bridges to the GEFA team to make those projects work, but I did not do so with the Compaq/GEAE business-to-business report. Part of my failure I can attribute to being on pins and needles when faced with muddled thoughts and a tough political situation, but the truth is, I should have stood my ground as a professional and shown my clients how long the project was going to take if they wanted it done right.

Once I have negotiated the project, though, my job is only half finished, because I must write persuasively so that readers may accept the presented ideas as their own and the SMEs can see the ideas as the ones they agreed upon5. All of the work we do with mapping, usability, testing, presentation (such as white space, titles, etc.) are a part of the process of making information easy to accept and digest. The magic I described earlier comes out of this agreement – the audiences see the writing as order out of a chaotic process in a palatable manner. The highest praise I have gotten in writing is having an outside reader test a piece and respond “how else would you say it?”

Testing is our main way of finding out if we got it right. In my internship, however, conventional testing was not available to me. The network diagrams I made were a reference for emergency and non-emergency use. Since network emergencies arise once or twice a year at unexpected times, testing the documents in that circumstance would have been nearly impossible. Even if I had permission to observe the GEFA network team work through an emergency, simply getting me to an emergency would be a practical barrier. Also, the computer network was so spread out across the nation that I could not observe all of the users in the field, nor could I know which documents they would need. The best I could do to test

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4 Cited from the American Management Association Magazine, a magazine for firms which assist business improve their processes.
the documents was to provide them to the technicians and ask them to look them over closely to see if the information was correct and easy to use. I sat with the technicians through this process to observe their reactions, made corrections based on their comments, and from there, had to hope for the best.

Similarly, in the Annual Report project, I could not test the effectiveness of the report on the intended audience (the GEAE management) because the report was effectively an unsolicited recommendation report by Compaq. The best I could do is to ensure that the Compaq managers were happy with the report. In some ways, I simply do not know how well I succeeded in this endeavor; I can only say that the client was reasonably satisfied with it.

Problems in Understanding and Cooperation

As important as it is to know what I can do for a group, I also need to know what I cannot do for a group. Two things I cannot do are (1) provide clarity in the face of insufficient or muddled communications and (2) provide cooperation from those who are unable to cooperate or just resistant to cooperation.

In the Annual Report project, I served primarily as a thought organizer, but my clients had not fully developed their ideas. I made the mistake of not assisting them in further developing them. Instead, I tried to achieve clarity as I progressed, which resulted in a struggle to understand my clients’ objectives and needs, and that problem snowballed into a further exacerbation of the communications problem between the team leaders and the managers. The silver lining of this cloud is that my mistake drew my attention to the human elements in writing and organizing documentation. Sheila and Peter, my clients, had difficulty telling me how to approach each section on an objective level in part because each group operated differently from the others (for example, running a UNIX network is strikingly different from running a Help Desk). I could not expect them to provide me a cookie cutter outline of how to approach each group, and yet I needed more to work with.

In retrospect, I understand that I needed to organize interviews with each of the managers and the

5 Naturally, any writer can only do so much to bring a project together. In an organization where territorial battles are common or the participants are not cooperating, I cannot provide the discipline to make a project move forward.
team leaders at the same time. The managers could have more easily prompted the team leaders about what might be useful information for the report than I could. In turn, the team leaders could then make their needs known to their managers, and I could take those needs into account. The primary difficulty with this approach is the time it would take, which would have made my clients uncomfortable. However, although this approach would have taken longer, they probably would have been happier with the results. During my internship, I still felt shy about approaching a client in this way; that is a mistake I cannot afford to make.

To be fair, I was the source of some of my own problems. I was still fairly inexperienced in writing large scale reports or dealing with management groups when I worked on the Annual Report project, so I let myself get pushed around more than I ought to have. When I pushed Sheila about the sort of specific information I should be getting from the team leaders, she gave me a frustrated “I don’t know!” which I should have taken as a bad sign and pursued that issue.

My work with GEFA and my work on the annual report stand in contrast of one another, and in doing so, drive the point home; understanding, organization, and a forthright approach are everything. The lesson I can apply to future projects is to understand more of what the client needs, both in terms of the project, business’ needs, and the political environment, then work to maintain and develop that understanding throughout the process. When I interviewed the GEFA team to understand their duties, I got clear information, constant communications, and a product my client was happy with; when I assumed that clients would develop their thinking on what they needed in the Annual Report project, the result was strained relationships, frustration, and chaos.

As for problems with cooperation, any number of difficulties can prevent cooperation with subject matter experts, managers, and clients. Difficulties might be anything from the SME’s having no time, such as in Flint’s case during the service level agreement project, to poor morale, bad timing, or even political difficulties. For example, Compaq’s teams were regularly understaffed, which caused problems in all of my projects. This shortage in personnel was particularly harsh at the beginning of 1999, as the leaders had the additional burdens of working on Y2K compliance for all of GEAE’s computer systems. Any slack in the workload had to be picked up by the team leaders, so most of them were exhausted and overworked, and some of them were regularly putting in 10 to 12 hour days. In the Annual Report project, Peter, the branch manager, had asked the team leaders for statistics on how their teams grew in 1998 shortly before I did,
which made my questions for them seem like they were being asked for redundant information. Fortunately for me, the team leaders knew enough not to blame the messenger. But as it was, I could only ask them for information that they had little time or inclination to give. I took some heat from my client because of this lack of cooperation, but ultimately, Peter and Sheila directed their displeasure at the team leaders, which only worsened morale.

I also had some personal cooperation problems with the clients. At one point, Peter started refer to a technical writer who was hired to review my writing as “the writer,” which naturally insulted me a great deal. Apparently, he was unaware of my role in the company, which only added to my frustration. I could comment on this matter at length, but suffice it to say that I had hard feelings deep enough to make writing this internship report an emotional strain on me for months to come.

Worst of all, I learned during this period from Ritch Longworth, one of the technical managers, that the true purpose of the report was that GEAE was considering creating an internal service department to replace Compaq because GEAE thought they could provide the same services more cheaply themselves. I was frustrated by this news. If I had been able to tell the team leaders that the report was being written to help preserve everyone’s jobs, I might have been able to give them a better idea of what management wanted in the first place and focus what I was writing to meet those needs more exactly. But the official time of the internship ended about the point I sent the report out for editing.

As I learned in during my internship, taking the initiative can help quite a bit in working out writer/client issues, but there is a limit to the amount of initiative one can take with people who are overworked, unavailable, or plagued by other priorities. Ideally, these people should have an idea of how technical communicators can help their situation, allowing us to jump in and help them along the way. Reality never matches that ideal, and our ability to educate people to what technical communicators can do is always limited by their availability, interest, and sometimes political pressure. I have found that I have to do what I can to reach out to clients and SMEs, but I need to be met part way.

**Down Time**

One of the pitfalls of being the “documentation specialist” at Compaq was that there were times when I had nothing to do. There were a number of reasons that that might happen: the staff was often
unavailable, my managers were unable to think of things for me to do, or SME’s were slow to move on their own projects. For example, the service agreement material in this project took me about eight to ten work days of work, including one day spent rewriting several sections because of a server crash. Some of my time was spent waiting for Flint or various technicians to become available for interview. But this eight to ten day project took about twenty-three business days to complete because I could not get into contact with Flint while he was abroad.

This lack of work leads to two problems. The first is boredom, which needs no elaboration. The second is a public relations problem. When people see that I am unoccupied a lot, it simply looks bad, especially to people who do not know what I should be doing but who have a preconception of what I should be doing. Imagine their chagrin when they expect me to busy and preoccupied, only to find that I am passing the time waiting for work to become available. I have had this problem arise from time to time since my internship, and I have found that the only way to address it is to ask for more work, to look for more work, and failing that, to point out to my clients that these down times happen. These methods work reasonably well, but for a person who primarily works as a contractor, these down times are dangerous because it makes me look less valuable. My most important role as an ambassador is to reinforce the value of my work whenever possible so that I am not forgotten or neglected during these down times.

Conclusion

In conclusion, I believe that my internship was both a wonderful and frustrating experience for me, and a great learning experience as a result of the high and low points of the experience. I was embarrassed to realize that I had fallen for many of the pitfalls I had been warned about in the MTSC program, particularly regarding testing ideas and follow through with clients. However, I do not think I could have learned from some of these mistakes without the benefit of having gone through them and the retrospective insight I obtained by reading through my diaries and reflecting back on the experience. These elements made this report a great challenge and very rewarding to write, and in the end, worth the effort.
Appendix 1: General Electric Financial Assurance (GEFA) Network Diagrams

Contents

- **Appendix 1a**: Examples of Flint Cornett’s notes on network diagrams.
  These scanned notes are typical of the ones Flint Cornett gave me for creating network drawings. I used Photoshop 5.5 to wipe out the IP addresses, which are proprietary.

- **Appendix 1b**: Lynchburg and Seattle Computer Stack Diagrams.
  The Lynchburg and Seattle site drawings were typical of the site drawings I did for the GEFA team. Each of the drawings is labeled with names that match the computer racks with which they were associated.

- **Appendix 1c**: The Alpharetta-Lynchburg Computer Network
  This network has 17 hubs in various cities (New York, Cincinnati, etc.) but is called the Alpharetta-Lynchburg Network because the main servers were located at the Lynchburg and Alpharetta sites. The network diagram was originally in a 17”x11” Visio Drawing; I split it into two halves to make inserting it into the report easier. I also brought some of the elements closer together so that they would fit on the page.
Appendix 1a. Examples of Flint Cornett’s notes on network diagrams.
Appendix 1a. Examples of Flint Cornett’s notes on network diagrams.
Appendix 1b. Examples of Flint Cornett’s notes on network diagrams.
Appendix 1b. Examples of Flint Cornett’s notes on network diagrams.
Appendix 1c: The Alpharetta-Lynchburg Computer Network (left half)
Appendix 1c: The Alpharetta-Lynchburg Computer Network (right half)
Appendix 2: The General Electric Financial Assurance (GEFA) Service Agreements

Contents

- **Appendix 2a. Flint’s Sample Service Agreements**
  
  This page was one of the example pages Flint Cornett gave me to work from for writing the GEFA service level agreements.

- **Appendix 2b: My Service Agreements**
  
  These pages are my drafts of service level agreements after my interviews with the GEFA team.
Appendix 2a: Flint’s Sample Service Level Agreements

Network Address Management
11.2.1.3- During the transition process GEFA will provide COMPAQ with the most current addressing information for each site.

- If no information exists, COMPAQ will utilize the tools at their disposal to document all network devices that have been assigned static addresses.

- Devices that are assigned addresses dynamically will not be documented. Instead, the ranges of addresses used in dynamic assignment will be documented.

When completed, COMPAQ will become the primary focal point for all addressing at that site. COMPAQ will maintain addressing information for each site in Excel spreadsheets and store that information on a server accessible to both COMPAQ and GEFA.

- When the need arises to assign one or more addresses for a transitioned site, a GEFA site contact will call the Productivity Center and make the request.
  (a) The Productivity Center will log and forward the ticket to the COMPAQ network team.
  (b) The network team will validate the request with the site contact, gather additional info such as node name, contact, location then provide the site contact with the appropriate address and update the spreadsheet.
  (c) If the device requires an entry in DNS, COMPAQ will register name and address in DNS.

Network Mapping
11.2.3.3- During the transition process, GEFA will provide COMPAQ with the most current network documentation and mapping information for each site. COMPAQ will use VISIO to create maps and documents. COMPAQ will store maps and documentation on a server accessible to both COMPAQ and GEFA.

- If no information exists, COMPAQ will utilize the tools at their disposal to document and map that site. At that time COMPAQ will become responsible for updating, maintaining and improving on the network mapping information for that site.

- If a change is made at a transitioned site, COMPAQ will then update the appropriate document.

- If a change is made by a GEFA person, that person will notify COMPAQ (e-mail is an appropriate notification tool), will provide the change information, and then COMPAQ will update the documentation.

Liaison with External Connections
11.2.3.4- During the transition process GEFA will provide COMPAQ with the most current information regarding all external connections and the responsible contacts. COMPAQ will document the connections and contacts, script detailed procedures on how to handle problems, and store that info on a server accessible to both COMPAQ and GEFA.

- If a problem occurs for an external connection, a call will be placed to the Productivity Center and a ticket logged. The Productivity Center will then follow the scripted procedure on that particular connection.
Appendix 2a: Flint’s Sample Service Level Agreements

- If GEFA requests assistance with the specifications or connection schemes regarding a new external connection, a call will be placed to the Productivity Center, a ticket logged, with the information regarding the request and the ticket will be forwarded to the COMPAQ network team for appropriate responses.

Predictive Maintenance
11.3.1.3- During the transition process, COMPAQ will attend to all predictive maintenance needs required by GEFA, and GEFA will provide COMPAQ with the most current information regarding predictive maintenance updates for both hardware and software. COMPAQ will either perform the duties required or recommend the necessary work at an appropriate time.

- If no process for performing the maintenance exists, COMPAQ will utilize the tools at their disposal to document and map the maintenance process. At that time COMPAQ will become responsible for the predictive maintenance for that area.

- When a change is made during predictive maintenance, COMPAQ will then update the appropriate documents and notify the appropriate groups.

- If the change is made by a GEFA person, that person will notify COMPAQ (e-mail is an appropriate notification tool) and will provide the change information. After notification of the change information, COMPAQ will update the documentation.

- If GEFA requests predictive maintenance (either hardware or software), a call will be placed to the Productivity Center, a ticket logged, with the information regarding the request and the ticket will be forwarded to the COMPAQ network team for appropriate responses.
**Appendix 2b: My Service Agreements**

**LAN Connectivity Support**

11.3.5.3- During the transition process, COMPAQ will provide LAN connectivity support (such as repairing interconnecting cables, patch cords, and transceivers) for the computer networks required by GEFA. COMPAQ will also provide GEFA with the most current information regarding hardware maintenance.

- When a change is made in LAN connectivity, COMPAQ will update the appropriate documents and will periodically notify the appropriate groups of changes as necessary.

- If a change is made to LAN connectivity by a GEFA person, that person will notify COMPAQ (e-mail is an appropriate notification tool) and will provide the change information. After notification of the change information, COMPAQ will update the documentation.

- If no information exists about a LAN connection, COMPAQ will utilize the tools at their disposal to document these LAN connections.

**Network Monitoring**

**Break/Fix and Abnormal Operations**

11.4.1.3- During the transition process, COMPAQ will monitor all network components for breaks or deviations from normal operations on a 24/7 basis. All break/fix situations and abnormal operations will be dealt with appropriately as they are discovered.

- If no information exists about an area which requires repairs or in which operations are abnormal, COMPAQ will utilize the tools at their disposal to document the problems and notify GEFA of the situation as appropriate.

- When a change or repair is made, COMPAQ will update the appropriate documents and will notify the appropriate GEFA groups of the changes as necessary.

**Network Support**

**DNS, DHCP, and WINS**

11.5.1.3- During the transition process, COMPAQ will provide network support for DNS, DHCP, and WINS in such forms as assigning addresses for DHCP, modifying DHCP scope, scheduled maintenance, ad hoc maintenance, database maintenance, manipulation of replication scheduling, etc.

- If GEFA requests assistance with DNS, DHCP, or WINS, a call will be placed to the Productivity Center and a ticket logged with the information regarding the request. The ticket will be forwarded to the COMPAQ network team for appropriate responses.

- If no process for performing a set of tasks exists, COMPAQ will utilize the tools at their disposal to document and map the maintenance process. At that time COMPAQ will become responsible for the DNS, DHCP, and WINS support for that area.

- When a change is made to DNS, DHCP, or WINS, COMPAQ will then update the appropriate documents and notify the appropriate groups as necessary.
Appendix 2b: My Service Agreements

SNA Controllers, FEP devices

11.5.2.3- During the transition process, COMPAQ will provide support for SNA gateways & controllers, and FEP devices. COMPAQ is responsible for the information passing through the gateways, but not before.

- If no process for performing a set of tasks exists, COMPAQ will utilize the tools at their disposal to document the process. At that time COMPAQ will become responsible for the DNS, DHCP, and WINS support for that area.

- When a change is made to DNS, DHCP, or WINS, COMPAQ will then update the appropriate documents and notify the appropriate groups as necessary.

Problem Management

Networking Problems

11.6.1.3- During the transition process, COMPAQ will support and maintain GEFA network equipment, both hardware and software, as the various sites come on-line.

- If no or little information exists about a site, COMPAQ will utilize the tools at their disposal to document and map that site and to document all network devices that have been assigned static addresses. At that time COMPAQ will become responsible for updating, maintaining and improving on the network mapping information for that site.

- When a change is made to a network, COMPAQ will then update the appropriate documents and notify the appropriate groups as necessary.

  - Devices that are assigned addresses dynamically will not be documented. Instead, the ranges of addresses used in dynamic assignment will be documented.

  - If GEFA requests help on a networking problem, a call will be placed to the Productivity Center, a ticket logged, with the information regarding the request and the ticket will be forwarded to the COMPAQ network team for appropriate responses.

  - If the change is made by a GEFA person, that person will notify COMPAQ (e-mail is an appropriate notification tool) and will provide the change information. After notification of the change information, COMPAQ will update the documentation.

Network Protocol Problems

11.6.2.3- During the transition process, COMPAQ will provide support for network protocol problems, such as SNA issues, Token Rings, IPX, and other protocol issues, except routers.

- If no process for performing a set of tasks exists, COMPAQ will utilize the tools at their disposal to document the process. At that time COMPAQ will become responsible for the network protocol support for that area.

- When a change is made in network protocol, COMPAQ will then update the appropriate documents and notify the appropriate groups as necessary.
Appendix 2b: My Service Agreements

External Connection Problems

11.6.3.3- During the transition process GEFA will provide COMPAQ with the most current information regarding all external connections problems and the responsible contacts. COMPAQ will document the connections, script detailed procedures on how to handle problems, and store that information on a server accessible to both COMPAQ and GEFA.

• If a problem occurs for an external connection, a call will be placed to the Productivity Center and a ticket logged. The Productivity Center will then follow the scripted procedure on that particular connection.

• If no information exists to address a particular problem, COMPAQ will use the tools at their disposal to document a process for handling the problem. At that time COMPAQ will become responsible for updating, maintaining and improving on the external connections issues for that site.

• If GEFA requests assistance with the specifications or connection schemes regarding a new external connection, a call will be placed to the Productivity Center, a ticket logged, with the information regarding the request and the ticket will be forwarded to the COMPAQ network team for appropriate responses.

Database Management

Router Configuration

11.7.1.3- During the transition process, COMPAQ will attend to all maintaining current router configurations and adding new router configurations for the GEFA network.

• If GEFA requests a change of (or assistance with) routers or router configurations, a call will be placed to the Productivity Center, a ticket logged, with the information regarding the request and the ticket will be forwarded to the COMPAQ network team for appropriate responses.

• When a change is made to a network, COMPAQ will then update the appropriate documents and notify the appropriate groups as necessary.

• If no or little information exists about a site, such as in the case of a new site being added, COMPAQ will utilize the tools at their disposal to document all network devices that have been assigned static addresses. At that time COMPAQ will become responsible for updating, maintaining and improving on the router configurations for that site.

Network Database

11.7.2.3- During the transition process, COMPAQ will maintain the information within the network database and will reflect changes to the network through updates.

• When a change is made to a network, COMPAQ will then update the appropriate documents and notify the appropriate groups as necessary.

• If GEFA requests changes or assistance with the network database, a call will be placed to the Productivity Center, a ticket logged, with the information regarding the request and the ticket will be forwarded to the COMPAQ network team for appropriate responses.
Appendix 3: The Compaq Business Annual Report to General Electric

Contents

- **Appendix 3a**: Reproduction of the Compaq Business Annual Report Table of Contents.
  
  The Table of Contents for the report were provided for me in an e-mail file, so this section is a reproduction of the TOC, not the TOC itself.

- **Appendix 3b**: Program Overview describing the accomplishments of the team.
  
  The Program Overview was intended as a preview of the accomplishments of the team on the basis that the clients believed that most readers would not do a team-by-team evaluation.

- **Appendix 3c**: The Work Load Summary
  
  The Work Load Summary is similar in purpose to the Program Overview, only it provides its information as visuals rather than in text.

- **Appendix 3d**: Example of a Main Report Section
  
  Each of the twelve teams had its own priorities and so none of the teams was typical of the whole report. I chose the Midrange team because their work is not as sensitive or proprietary as other teams’ work.
**Appendix 3a: Reproduction of the Compaq Business Annual Report Table of Contents**

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Appendix 3b: Compaq Annual Report: Program Overview

Program Overview

Responsibilities
Compaq is responsible for the following IT activities at GEAE:

- Backups/Restores of Data
- Client/Server Management
- End User Support from the Productivity Center
- Network Monitoring
- OS Installations/Patches/Upgrades on Selected Systems
- Security Administration
- System Management

Scope of Performance
The Compaq Evendale team monitors, supports, and maintains an immense IT infrastructure for GEAE. More than 1,000 systems are monitored, and technical support is provided for more than xxx users. The team closed xxx tickets in 1998 alone.

Below is a description of the general scope of operations under Compaq’s purview:

- Management of xxx Microsoft Windows NT Systems and xxx NT accounts
- Management of xxx Unix systems and xxx Unix accounts
- Management of xxx terabytes of Engineering Meeting and Business Data
- Management and monitoring of xxx Network Printers
- Support for xxx Oracle Applications, xxx Ingres Applications, and more than xxx terabytes of related data
- Management and monitoring of xxx mission-critical midrange systems
- Management of a Cray Engineering supercomputer with xxx CPUs, xxx users, and xxx terabytes of archival storage
- Support for an e-mail system with a total message volume greater than xxx messages per month

Support Teams
Compaq support teams are organized by the types of systems and tasks they handle for GEAE. Below is a list of the breakdown of those teams:

- Productivity Center
- UNIX
- Desktop
- NT Server
- E-Mail
- Midrange
- Network
- Problem Management Center
- Database
- Security/Administration
- Engineering Reprographics
Work Load Summary

Invoice reductions are only part of the price performance improvements GEAE experienced in 1998. The major component of the productivity savings came from incremental work loads via performance enhancements. The reduction in total invoices and growth in workload, as defined in this section, provided GEAE with significant price/performance improvements in 1998. The following graphs depict a few of the service areas that experienced growth from 1997 to 1998.
Appendix 3d: Compaq Annual Report: Example of a Main Report Section

Midrange Systems

(Kevin Clark)

Introduction to the Midrange Team
The Midrange team supports the VAX/VMS and PRIME platforms. These environments include xxx VAX/VMS and xxx PRIME systems. Most of these systems are mission critical manufacturing servers that require minimum downtime and immediate responses when problems arise. To keep up with such critical needs, our team is made up of dedicated, efficient, committed individuals who work quickly and with a high degree of efficiency. Our primary resource for monitoring the Midrange environment is the CA Polycrcenter Watchdog tool.

Work Growth
Our group always has a certain number of upgrade projects to maintain, but in the past year, the Y2K compliance projects have been our major concern. In spite of the resource problems caused by such a demanding task, we remain on schedule to meet the deadlines, due to many weekends and off-hours spent planning and upgrading. On many of these tasks, we are not only upgrading the operating system, but many first and third party layered products as well. These upgrades extend to TCP/IP networking software, various compilers, and tools.
Mid-VAX Tickets Closed
Mid-VAX tickets have remained at a consistent level. Many nodes, primarily single user workstations, have been removed and replaced by new Alpha machines. The Alpha machines are capable of handling hundreds of users instead of one, which has caused an increase in effectiveness for GEAE as well as affecting the number of tickets and projects for the Midrange team.

Mid-VAX: Tickets Closed, '97-'99

<table>
<thead>
<tr>
<th></th>
<th>1997</th>
<th>1998</th>
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<tbody>
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<td></td>
</tr>
<tr>
<td>Total</td>
<td>1621</td>
<td>1650</td>
<td>172</td>
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</tbody>
</table>
Appendix 3d: Compaq Annual Report: Example of a Main Report Section

Major Projects

The Midrange Team undertakes a number of upgrade projects each given year. In 1998, the number of projects has increased because of the need to have all systems Y2K-compliant before the end of the year. This has made 1998 a particularly busy year, although the team is on course to meet all of its Y2K and other deadlines. Midrange also performed a number of migrations, system eliminations, upgrades, and patch roll outs.

Below is a summary of the projects completed in 1998:

- Eliminated the HYPER cluster
- Y2K cluster created for Y2K testing. This included the migration of users and data to this cluster for testing, as well as installing layered products
- Y2K upgrade of Hooksett cluster.
- Y2K upgrade of Albuquerque cluster.
- Migrated user applications from Lynn Gear plant in Schenectady to Lynn’s AELDEV.
- Upgraded hardware for node PSC01 from a VAX 8530 to VAX 6000-520 in Springdale. This upgrade was required to handle an increased workload of SITA traffic.
- Condensed cluster in Strother from 3 nodes to 1 standalone (STRCM1).
- Installed new Alpha 4100 systems (ALPVAX/ALPGLD) to replace the CPS cluster (VAXSVR/VAXGLD). This will increase performance for the CPSD group in Springdale.
- Added a standalone VAX ECAMV1 into development cluster (Requested via Change Notice).
- Implemented Foreign National account restrictions (Requested via Change Notice).
- UIS Archive data retrieval/conversion (Requested via Change Notice).
- Memory upgrades for AEE078 and AEE079 in Evendale PEAR cluster. This has enabled the Evendale PEAR system to handle an increased load from 200 to 400 users on the cluster.
- Coordinated and implemented VMS Delta-Time Patch rollout.
- Eliminated 30 VAX nodes, 3 PRIME nodes and 2 WANG nodes.
- Maintained Watchdog profiles with 626 changes requiring documentation updates.
- Maintained and create new documentation.
- Spearheaded performance management and tuning on all systems.

Quality Improvement

Y2K upgrades alone could be seen as a major quality improvement performed by the Midrange Team. Other quality improvement projects for GEAE included:

- Evendale shop printing — Many hours of testing new printer hardware with existing applications. The objective was to replace older printers with more reliable hardware that is cheaper to maintain.
- KICS process enhancements — Created and implemented scripts to monitor communications between VAX and IBM systems, and take corrective action as appropriate.