

The Evolution of IT and the Mission Critical Support Center

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Abstract:

Technology has driven many things in today's society. Jobs exist today that a short time ago were not even dreamed of and by the same token many jobs have faded away. The Mission-Critical Response Center is one of those new and exciting areas that exist today, and its evolution was driven by technology. A small group of talented engineers formed the core beginning of this group about seven years ago, and today the center has evolved into several departments of more than 400 people with specific jobs that didn't exist a few short years ago.

The changes in HP-UX servers, storage technology, and the applications that customers use have created an environment where problems can be turned into solutions. Technology begets technology in the form of the High Availability Observatory, and applications HP customers use, such as SAP and others, have fostered specialized support strategies. It is interesting to track changes in technology and examine the support techniques that have evolved in response. A true evolutionary environment exists where "survival of the fittest" kinds of support reign. Some types of support have gone by the wayside over time, and other types of support have flourished. One of the examples of this has been the evolution of specialists in specific areas such as business recovery, storage, and specific products like Superdome and an underlying internal support structure to these groups.

The days of one person doing it all have all but vanished. Collaboration has become the watchword in areas such as Superdome support, where an engineer may know everything about the Superdome but still be dependent on teammates that in areas such as "Stress Free Central" to support the attached storage solution. How did the industry get here? By answering that question, this session may help you look into the future for the next response to technology.

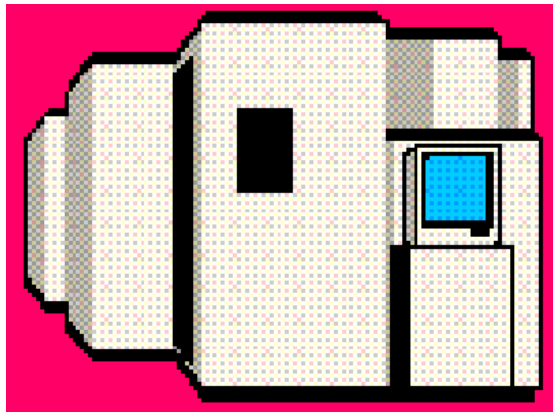
The Evolution of IT and Support

The Mission Critical Support Center has evolved over the last decade paralleling the evolution that has taken place within IT environments. The 1980's and 1990's brought many changes to the IT landscape. Many environments have made huge transitions from

Mainframes to distributed computing while other environments have just started from scratch and created complex distributed environments. Over the last couple of decades the expectations placed on the IT infrastructure have changed dramatically and by the same token so has the expectations of customers supported by the Hewlett-Packard support centers. These changes reflect changes in the businesses many of these IT environments support. These parallel evolutions are interesting to compare. I have seen several examples within my own career. I have seen customers with several token HP/UX servers that were running some supporting applications in the IT infrastructure where a mainframe was predominate. If we fast forward a few years and that same customer is moving an application such as SAP R/2 from the Mainframe to SAP R/3 on a Superdome running the HP/UX operating system. During that same time frame a parallel evolution occurred within the Hewlett-Packard support structure. The result was that same customer required a different type of support and that support had evolved into Critical System Support for SAP with a special team in place to support the complexities of the Super Dome product. When I first supported that customer the applications they were running on the HP/UX servers could be supported almost on a “best effort” basis. They needed to be up but the enterprise kept on going even if these systems were down. The pressure was on the mainframe. This customer was one out of one hundred other customers I supported at the time. The move from SAP R/2 on the mainframe to the SAP R/3 on the Super Dome changed the relationship of this customer with the Hewlett-Packard Support structure. A “best effort” relationship was no longer acceptable! Certain commitments needed to be in place to ensure the smooth running of the customer’s complete enterprise. We were no longer dealing with a few supporting applications instead the whole enterprise was dependant on the availability of SAP R/3 on the Super Dome. My load had changes also as a proactive engineer instead of supporting over 100 customers at a lower support level I was supporting 6 customers with “Critical System Support for SAP” and I had struggled through the SAP Basis certification. I too had evolved!

Critical Systems Support or CSS is an evolutionary link that connects the past Response Center Support with today’s Mission Critical Support Center. CSS was an outgrowth of the needs of a subset of customers that needed features built into higher levels of support but not everything involved in those levels of support. CSS is a good example of how technology has driven the creation of the Mission Critical Support Center. The implementation of technology gradually created the need for Mission Critical services in IT environments such as my customer who migrated SAP from a mainframe to a Super Dome platform.

Critical Systems Support was actually an out growth of an earlier set of support strategies that had arisen from a taking pieces of “Business Continuity Support” or BCS and some of the lessons learned by adding “down” system support with out adding proactive services. The link was proactive services such as patch management, system information gathering, and account information that need to be in place to support these high level accounts.



**Proprietary
Mainframe Technology**



Super Dome

Figure 1 The evolution of IT from Mainframe to Super Dome

Features of Business Continuity Support

- Proactive services (monthly custom patch management, change management, project involvement...)
- Business Recovery Services (4 hour call to Restoration commitment)
- Dedicated onsite HP resources for software and hardware
- Dedicated remote resources
- Repair Parts stocked onsite
- Enhanced escalation procedures with 24x7 lab access for software

Features of Critical System Support

- Proactive services (quarterly patch management, regular operational reviews, and flexible additional services available)
- Business Recovery Services (6 hour call to Restoration commitment)
- Assigned local account resources for hardware and software
- Assigned remote resources
- Enhanced parts stocking in local support office
- Enhanced escalation procedures

In the 1995 Hewlett-Packard began offering its highest level of support in response to the business needs by customers for high availability support. Business Continuity Support or BCS combined Proactive support services with enhanced reactive Business Recovery services to provide a solution for the customer that needed continuous high availability. Technology of the T class and K class servers at that time were being used to implement enterprise level applications on the HPUX platform and the roots of the Mission Critical Support Center were growing. Associated processes were created to ensure the correct resources were engaged when problems occurred. A select group of engineers formed the Business Recovery Specialists. There were also enhanced processes to expedite calls that involved business recovery situations. The focus on software and hardware problems moved towards anything that impacted business continuity rather than just fixing problems. Prior to this time support had been more focused on “break-fix” and at this time the focus went toward proactively avoiding problems.

Patch Management

A software support strategy has always been to get software fixes in the form of patches out to the user community as soon as possible. When an engineer would handle a “break-fix” software call he determined if the system was at the current level of patches to facilitate the process of troubleshooting problems. In the early 1990’s that was an intensely manual process of researching the available patches and comparing that to the system in question. Proactive services evolved in the form of Personalized System Support or PSS and Proactive Account Support or PAS during this time period. Both PSS and PAS were based to a great extent on proactively patching systems to avoid problems. The patching component of these services began by printing out the current patch catalog and manually comparing that to the installed software and patches present on the system. It didn’t take long for tools to evolve to enable a “Patch Analysis” to be done relatively quickly. These early services were the roots of a major component of today’s Mission Critical Support Center, which is the Software Change Center. Over about a 10-year period there has been a steady evolution of tools and strategies centered on patching and the Mission Critical arena. There has been a two-fold evolution in this area. The first evolution was from completely patching the operating system and its components to tools that enable an engineer to isolate major components and subsystems and patch only what is necessary.

The second evolution came in the area of change management and patches. Identifying a system’s tolerance for change created a set of guidelines and tools that enabled an

engineer to tailor a patch bundle with varying degrees of change ranging from restrictive to conservative and all the way to innovative strategies of change. These three strategies each represent varying amounts of change and still enable the reactive engineer to trouble shoot software problems effectively.

- Restrictive – Very little change allowed system is very stable environment changes very little
- Conservative- Some Change and the associated risks are acceptable to proactively address problems
- Innovative- changes in the environment are regularly happening

Tools have evolved to perform a patch analysis in a very short time frame by doing the legwork in advance to segment the patches into groups that are identified on a Data Sheet associated with a particular system. The Software Change Center ensures that these groupings are maintained and kept up to date. Technology became too complex for an engineer to research the applicability of each patch so using this method and tool engineers in the software change center can specialize in areas and select the appropriate patches for a specific area such as LVM, Fiber Channel, San technology or other areas that may require patches. Tools have also evolved to construct Patch Depots for many systems. These tools help to ensure known “fixes are in the IT environment.

Change Management

Change management soon arose as an area that needed to be incorporated in proactive services and formed more roots for the Mission Critical Support Center. The examples of technology driving change are numerous over the last decades. Addressing change management has been a priority within proactive services and has helped put down roots for the Mission Critical Support Center.

I joined the proactive services group about the time HP-UX was transitioning from 9.x to 10.x, which involved some fundamental changes in the way the operating system directory tree and other areas were laid out. The support center provided PSS and PAS customers customized upgrade assistance plans to aid in the transition from 9.x to 10.x. It soon became apparent that there was value in this type of planning. To move to the next revision of an operating system can take a great deal of planning but the same type of planning needs to go into lesser tasks also. Moving to fiber channel, adding new storage options, moving to newer versions of the applications and the list goes on and on are all changes dictated by technology that require change planning. Many reactive calls

to the Mission Critical Support Center are the results of things that occurred in the process of change. Change management is an evolving service in response to technological changes.

Critical Systems Support for SAP

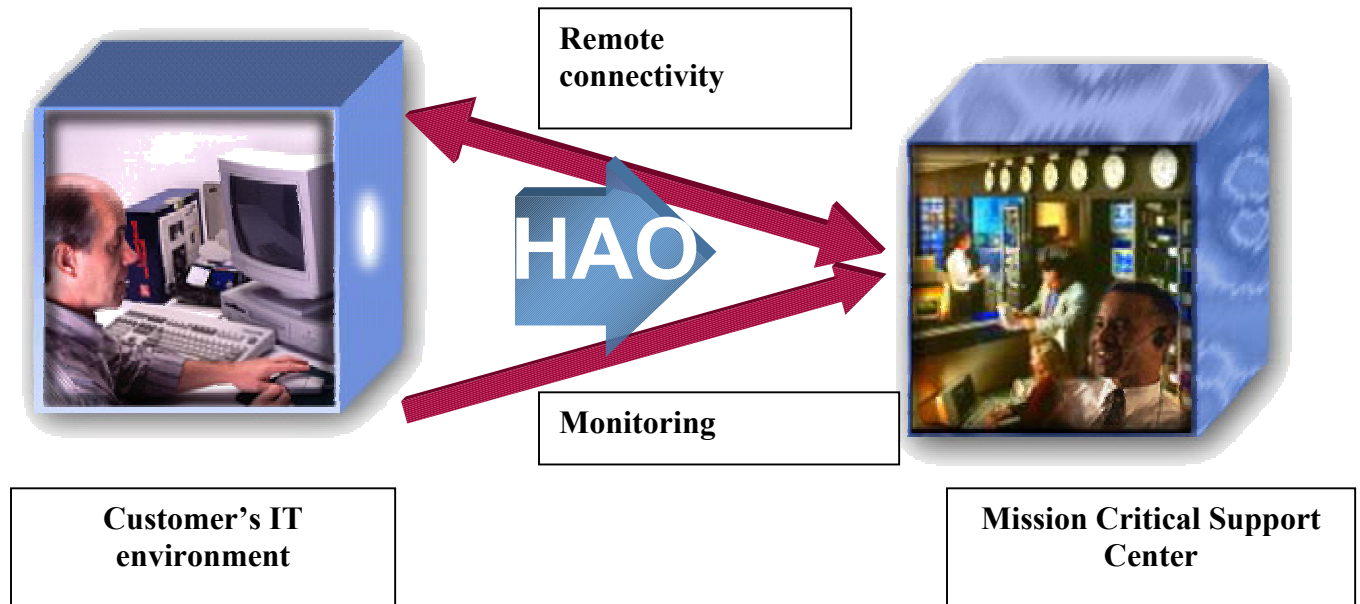
The applications that run on HP-UX have contributed to the evolution of the Mission Critical Support Center. One application that actually has a specialized level of support is SAP. This has evolved out of Hewlett-Packard's close relationship with SAP. The SAP R/3 application is a highly distributed application with unique support requirements. It soon became apparent that support for these environments was different. Hewlett-Packard needed to focus on the whole environment when SAP was involved. SAP has created technology that dictated that customers set their environments up in a very specific landscape of servers in order to facilitate customization and changes to the application. The evolution in support that has occurred as mentioned earlier is the Critical Systems Support for SAP product. The major component in this support offering is that members of the account team locally and remotely are SAP trained and certified in SAP's basis technology. The SAP basis training and understanding help facilitate support in a number of areas. Understanding SAP's change management paradigm enables the operating system support to mirror the change management paradigm of SAP. We can make sure that HP-UX is stable through out the customers SAP landscape as they roll changes through that landscape. I have been involved in a number of instances where collaboration with SAP on behalf of my customers was invaluable. These support relationships have evolved as a response to SAP and Hewlett-Packard's respective technologies. Two notable examples that I have been involved in were troubleshooting problems with the Dazl print spooler and SAP (prior to Dazl being acquired by HP) and implementing the OpenView smart plugin's to monitor SAP with OpenView. In both of these situations I was able to combine my knowledge of SAP and collaborate with other support engineers to achieve a solution for my customer.

Remote Connectivity and monitoring

A major support consideration from both a reactive and a proactive standpoint has been remote connectivity and monitoring of the Mission Critical environment. In the very beginning remote connectivity with a support modem was all that existed with a telnet session to connect to a system. The evolution in this area has had a long history. Technology has played a role also in this evolution. Predictive evolved out of the need to do some sort of monitoring of the environment and is available to any support customer that wants to implement it. Predictive was tied in closely to diagnostics and basically is a "phone home" technology that focuses on the hardware.

It soon became apparent as technology evolved a better connection was needed and a means to monitor the operating system software was needed. Most technologies though involved either a modem connection or if it as network based there was the security risk of bridging two networks. By utilizing ISDN technology and end-to-end encryption of information High Availability Observatory or HAO delivers a secure link between HP and a Mission Critical IT environment.

Figure 2



The High Availability Observatory has obvious reactive benefits for remote connectivity during the trouble shooting process. Engineers in the Mission Critical Support Center can make fast and secure connections to remote systems. The benefits from a change management perspective are also great. I have been able to log into my customers systems during an upgrade or change and track the progress as they implement a change

then engage members of the Mission Critical Support Center as needed to head off problems and manage change.

The monitoring component sends configuration data back to the Mission Critical Support Center on a scheduled basis to track any changes within the environment. The configuration data could be used to rebuild the system in the event of a failure or at least can be used to isolate changes that could cause problems. The tracker component also collects software data and looks for patches that may be missing reports that information to the Remote Account Support Engineer.

Technology drives processes!

The support model or the way calls are handled has undergone quite an evolutionary process. In the beginning before the Response Center existed customers called local systems engineers for their support needs. These local engineers got to know their local customers quite well. The need arose though for specialization and soon a centralized model was necessary and the Response Centers were formed in Atlanta, Ga. and Mountain View, Ca to start with. It soon evolved into a worldwide organization. Customers still liked having a local contact so the local Systems Engineer evolved into the role of the local Account Support Engineer or ASE. The role of the Remote Account Support engineer or RASE soon evolved to make sure the customer had the full suite of account services ranging from Proactive patching and planning to advocacy during reactive situations and to technical support on an ongoing basis. The ASE and RASE roles evolved first in response to the need to understand the software environment and later the hardware role of the Customer Engineer evolved into the role of the Hardware Support Specialist. The three roles all soon became focused on Supporting the HA or High Availability needs of customers in the Mission Critical environment. With the account teams in place it was a logical step to pull together the Mission Critical Support Center that includes the Business Recovery Specialists, the Technical Competency Center engineers, and the Remote Account Support Engineers. Combined with the local team of the Account Support Engineers and the Hardware Support Specialists Mission Critical Support has evolved into a complete suite of services to support the HA environment.

The Mission Critical Support Center has evolved and is continually evolving in response to changing technology. With the offering of Storage Area Networks by Hewlett-Packard it was recognized they required a different means of support so “Stress Free Central” was formed gathering the resources together to support and Monitor SAN technology. SAN technology could be connected to many other platforms other than an HP-UX system so Stress Free Central is equipped to function in that diverse environment yet still provide support for the more traditional HP-UX environment. Stress Free Central

also has it's own monitoring for the SAN environment. With the redundancy built into the SAN environment monitoring becomes the major thrust to avoid problems. Again the model for support is revised by technology.

In response to the Super Dome technology there was a separate team of engineers formed. The Super Dome presented it's own unique set of challenges. Eventually there will be Super Dome environments with HP-UX, Linux, and Microsoft's OS all on the same hardware. Being able to reboot a partition and yet leave the whole system up presents different ways of supporting the operating systems that are installed on the Super Dome. If you incorporate an application such as SAP into a Superdome you begin to move towards a new level of complexity with new considerations regarding high availability. One customer may have the Super Dome as one large system and another customer may have it partitioned into several systems. Changing a configuration on a Superdome is different than any other technology and may involve other operating systems. When that team was formed the engineers have varied background and can be dealing with hardware or software unlike other parts of the Support Center. They pull in resources as needed from the rest of the Mission Critical Support Center but they stay involved to make sure the unique complexities of the Super Dome are addressed. Technology drives the support model again!

Both of these teams work on a collaborative basis with in the Mission Critical Support Center to support these products. Perfecting collaborations skills has allowed the Mission Critical Support Center to handle new technologies and implement solutions to problems much faster then waiting to ramp the whole staff up on a given technology.

The Mission Critical Support Center of today will probably look different in the future because as technology evolves the support methods to support that technology will change to meet the evolving challenges.