

System Software Product Support Update

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ABSTRACT: *In November 1995, a Product Support Section was created within the System Software group. The section was formed to bring focus back to customer problems. This Product Support section supports both UNICOS and UNICOS MAX. The goals of this section are to better reduce the SPR backlog, address major, minor and design SPRs, better inform customers of SPR statuses, get fixes to customers in a more timely manner, and to propose changes to our internal development process. This session will discuss the progress and challenges of each of these goals.*

1 Introduction

This paper explains the rationale for creating separate Product Support groups within the Software Division. The goals, and status of those goals, are discussed. Lastly, long-term support issues are discussed.

2 Rationale

Traditionally, if a customer reported problem escalated to the Software Division, the individual feature developer responsible for that area of the system would be responsible for resolving that problem. Over time, due to conflicts between development and support we found that focus was lost. This was evident in the increase in our SPR backlog and response times.

At the end of 1995, two Product Support groups were formed within the Software Division to bring that focus back to resolving customer problems. One of these Product Support groups is in the Operating Systems area led by Laura Mikrut and one is in the Programming Environment area led by Sylvia Crain. This was a significant organizational experiment for Cray.

This paper focuses on the Product Support group responsible for Operating Systems support. This is the System Software Product Support group.

3 Expertise

The developers chosen for this group were selectively chosen for the following reasons:

- They had a proven track record for being highly successful in fixing problems.

- They consistently look at problems and fixes from a customer's viewpoint.
- They are highly respected developers at Cray.
- Developers were chosen from many areas within the operating system so that problems could be fixed across the system.

If any of these were not true, this group would have failed.

The current make up of this group includes 13 operating system developers averaging 17 years of relevant experience, averaging 9 years of experience at Cray, and averaging 5 years of field support or on-site experience. These developers continue to be involved in design and code reviews, project team meetings, architecture teams, etc.

4 Areas of Coverage

The group was started by taking on support of those areas of the system that the group had clear expertise in and then building from there.

The group currently supports all of UNICOS-MAX with the exception of the Programming Environment. It also supports the following areas of UNICOS:

- Commands
- File Systems
- Kernel, Machine Dependent Code
- Networking: Internet, Communication Media, FTA
- Tapes
- UNICOS under UNICOS

This group does not currently support all of UNICOS. There are still some areas that the original developers are responsible

for supporting. This needs to be resolved and is currently being discussed.

5 Group Mission

"We work together making improvements to the products and processes of the Software Division, increasing system reliability to benefit Cray Customers."

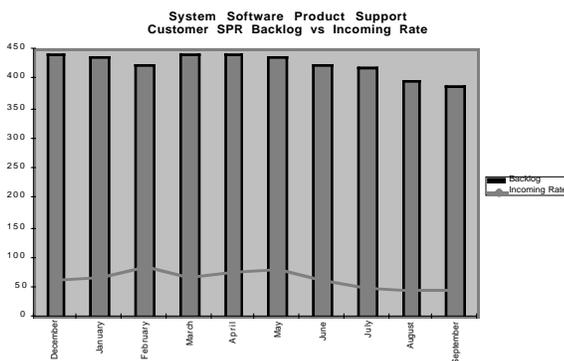
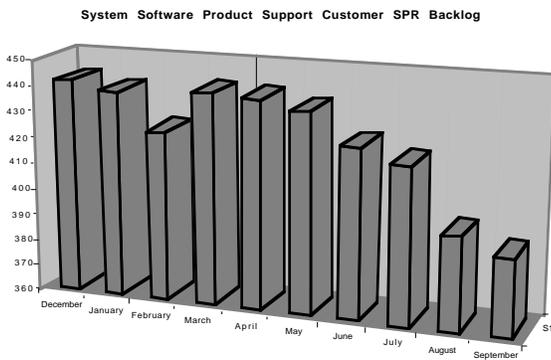
This group was given two very distinct charters. The first obvious one is to resolve customer problems. The second is to work on process improvements, which will be discussed later in this paper.

6 Goals

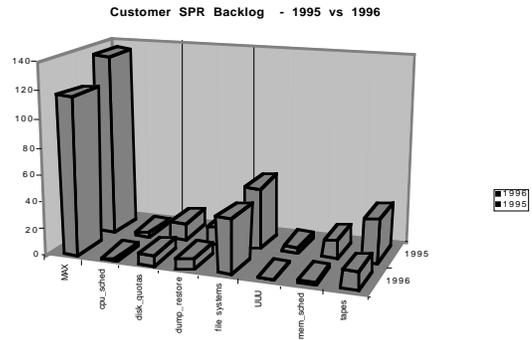
The main goals of this section are listed below. They are not intended to be listed in a priority order.

7 SPR Backlog

One main goal is to reduce the SPR backlog. As you can see from the two charts below, the backlog is slowly, but steadily, decreasing while also addressing the incoming SPRs. Note that these charts only focus on those SPRs that are the responsibility of the System Software Product Support group.



There are some areas of the system where we have really made good progress. Most notably are UNICOS-MAX, UNICOS under UNICOS, file systems and tapes. Tapes are down to 12 open SPRs. The incoming SPR rate for Tapes was 20-30 each month last year. That has improved to 5-15 this year.



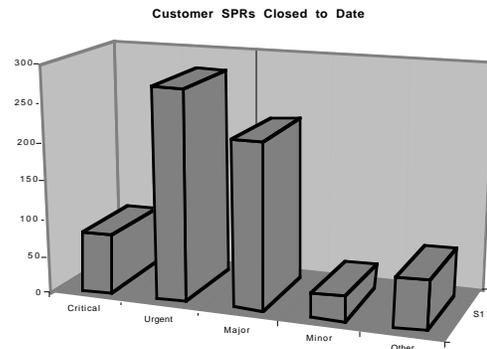
8 SPR Age

The age of an SPR is from the time an SPR is opened until a fix is available to the customer. The goal is to improve the average age of SPRs so that fixes are available to the customer more quickly.

Unfortunately no improvements have been made in this area yet. SPR age will be a focus area going forward.

9 SPR Severities

In the not too distant past, the Operating Systems area almost exclusively focused on fixing critical and urgent SPRs only. That has been changed. As you can see from the chart below, although the main focus continues to be on critical and urgent SPRs, all severity levels are being addressed.



10 Activity History

Cray has not done a very good job in keeping customers up to date with respect to SPR status while an SPR remains in an unresolved state. This has been a real issue for customers since it is not obvious which SPRs are actively being worked on, which are not and if there are any problems or issues.

A change is being worked on so that customers can easily tell if an SPR is currently being worked on. This will be announced once the work is completed and is being used consistently.

Additionally, Cray has made progress in updating the activity history more frequently and with more, and better quality, infor-

mation but this is an area that will need constant attention. We will continue to work on improving this.

11 Process Improvements

As noted earlier, one of the charters of this group is to examine our release and development processes to look for opportunities for improvement. The focus areas to date have been in the following areas:

- Consistency with use of SPR fields; cleanup of database
- Root cause analysis
- Release process

The SPR database was cleaned up. There were SPRs that were stuck in an unresolved state for an invalid reason. These have been closed out. There were programmers assigned to SPRs who were no longer working on that area of the system or, worse, were no longer working at Cray. This was all cleaned up but is an ongoing task. This will help clarify which SPRs are not currently being worked on.

For several months now, we have been doing some root cause analysis work. Every time a problem is fixed, a determination is made as to why the problem existed in the first place. There is still much data collection work and investigation left. If there are any trends that are brought out, suggested improvements to the development process will be made.

A team of people has been identified to examine our entire UNICOS release process. The same underlying release process and infrastructure that was used when UNICOS was a young, immature product is still being used today. If any parts of this process are no longer adding value, they will be eliminated or adjusted accordingly.

12 Major Accomplishments

Some of the major accomplishments of this group are listed here.

- When the group was formed, it was obvious that UNICOS-MAX was understaffed. More resources were added in the middle of 1996. This allowed room for NQS rolling support to be put in as well as more resiliency features added to UNICOS-MAX.
- Due to the developers focusing solely on fixing problems and not being distracted with other responsibilities, we are finding that overall they are more productive.
- As noted earlier, we are making good progress in reducing the SPR backlog.
- Forming this group within the Software Division was really a culture shift. It could have easily failed for any number of reasons, and it was expected to by many, but instead it is succeeding. Most of the success is truly due to the high caliber of developers in the group. There is still much room for improvement, but the group is off to a great start.

13 Future Issues

As UNICOS/mk stabilizes, we need to be careful not to allow focus to be shifted off of our customer's problems as it did with UNICOS. We are currently in discussions regarding this issue so that we can determine long-term support focus for this product.

Also, Cray must be involved in supporting Cellular IRIX on the Cray SN0 (Origin 2000). That role is currently being defined. However, some training activities have begun in anticipation of Cray's first customer shipment.

14 Summary

The formation of this group was a fundamental change in how the Software Division works. Although there is much room for improvement, the group is succeeding and progress is being made in many areas. The group exists to help satisfy our customer needs. Please feel free to contact me if I can be of assistance. (See Attendee List)