



Problem Management – Why and how?

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Intended Audience

This White Paper is for anyone intending to implement a Problem Management Process, based on ITIL® principles, or seeking an introduction to Problem Management.

About this White Paper

By offering ideas and practical suggestions, it is hoped this White Paper will be useful for anyone setting up a new Problem Management Process based on ITIL® principles. The suggestions and observations contained in this article are taken from personal experience obtained over a number of ITIL® implementations.

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The Goal of Problem Management

This definition of the goal of Problem Management is taken from the ITIL® Service Support publication:

The goal of Problem Management is to minimise the adverse impact of Incidents and Problems on the business that are caused by errors within the IT Infrastructure, and to prevent recurrence of Incidents related to these errors. In order to achieve this goal, Problem Management seeks to get to the root cause of Incidents and then initiate actions to improve or correct the situation

What is a Problem?

This may seem like an obvious question, but too often the person who has been given the task of getting the Problem Management Process off the ground doesn't really understand what a "Problem" in ITIL® terms is.

The most common mistake I have seen is a tendency to treat a Problem like a "big Incident". You need to clearly understand and communicate where the Incident ends and the Problem begins.

In ITIL® terms a Problem is “the unknown underlying cause of one or more Incidents”. The Incident ends when the customer is able to carry on with their job, regardless of whether or not the underlying cause of the Incident has been resolved.

Here’s an example:

A customer phones to say that he is unable to print a PDF document to the printer in his office. He needs the document urgently for a meeting in 10 minutes time, he tells you that he has been able to print word and excel documents to this printer with no Problems. The Service Desk Agent has a look and notes that the document has caused an error on the print queue. With the limited time available the agent decides to set the customer up with a connection to the printer in the adjoining office. The document is printed successfully and the customer is able to attend his meeting.

The Incident should now be closed – the customer is now able to work, if he has this issue again, he has a workaround to print his document to the printer you have set up for him in the adjoining office. The solution is not perfect, but it has kept him working.

At this time the agent will raise a Problem record so that the underlying cause of the customer’s inability to print PDF documents to this printer.

A common error in this scenario is for the Incident to be left open until the cause of the Incident has been found and resolved and for all the investigation of the underlying error to take place as part of the Incident record. This will negatively impact on your Incident statistics even though the customer is quite happy with the workaround he has been given.

The key question to ask yourself is “Can my customer now work?” If the answer is yes, then close the Incident and if appropriate, raise a Problem.

An Incident does not *become* a Problem. An Incident raises the possibility of an underlying Problem, which needs then to be investigated independently of the Incident. Incident Management is involved with the speedy restoration of IT services, while Problem Management concentrates on preventing the initial occurrence of those Incidents.

Where do we start?

The first thing I would suggest is that you appoint a Problem Manager and ensure that they are trained in ITIL® Problem Management.

You need to ensure that you can get good cause analysis reporting from your Service Desk tool (download our *White Paper* on Service Desk Metrics). These reports will be used by the Problem Manager to pinpoint areas of concern.

As with all ITIL® processes you need to have good management support, without this you are unlikely to reap the benefits of this process. Management support is needed to ensure that you have the resources you need to develop and support the process. These resources may include training, consultancy and additional staff hours to cover the normal work done by the process manager.

Get the Service Desk Team onboard with the concept of Problem Management, you need their support and cooperation if this is going to work. Service Desk agents need to be on the look-out for possible Problems and alert the Problem Manager to these.

Problem Management is a reasonably easy process to sell to the Service Desk as it is the process which has the most likelihood of making their lives a bit easier. A good Problem Management Process has the potential to greatly reduce, or even eliminate Incidents caused by infrastructure errors.

Reactive Problem Management

The areas discussed above concentrate on reactive Problem Management. This involves looking at Incidents that have happened and how we can prevent recurrences of those Incidents.

This is the best place to start with your Problem Management process. You should be able to get some quick wins, which will be readily noticed by the business.

The information you need for reactive Problem Management is readily available from your Service Desk reporting. You will need to look at call similarities and cause analysis to identify your repeat Incidents. By examining the level of pain associated with these Incidents

- How often do they happen?
- How many people do they affect?
- What is the cost to the business.

You prioritise the Problems accordingly.

There are two distinct parts in the Reactive Problem Management process – Problem control and Error control.

Problem control is concerned with identification of the underlying cause of Incidents. The activities that are associated with this part of the Problem Management process are:

Analysis - During this stage you will be gathering information from other ITIL® processes such as Incident Management, Capacity Management and Availability Management. You will want to look at an analysis of Incident causes – looking for areas where there are obvious difficulties. Look at your availability statistics and take a closer look at

services where the availability has been lower than others. Looking at the data produced by Capacity Management will give you data showing where you are currently having issues with capacity, or where capacity may become an issue in the future.

Problem Identification and Recording – This involves identifying the Problems using the information gathered during the analysis phase; recording these Problems in the Problem Management module of your IT Service Management system, thereby entering them into a “known Problem” database.

Classification and Allocation - Problems should be classified by category, impact, urgency, priority and status.

Classification is important because it makes the burden of management and reporting easier. In particular, think carefully about status. This should be able to tell you (at a glance) where you are in the Problem resolution process. In Serio, Agent Status A and B are typically used to hold this data. Values for status might include ‘To be investigated’, ‘Under investigation’, ‘Known Error’, ‘Defining Solution’ and so on.

You need to be keenly aware of the impact and urgency of Problems to allow you to correctly allocate resources. A Problem which impact two users of a particular module of a program will have a far lower urgency than a Problem that impacts 100 users. The status of the Problem will also affect the urgency – a Problem with a usable workaround will probably be less urgent than one where no workaround exists, regardless of the number of users affected.

Investigation and Diagnosis – The main activity in this phase is Root Cause Analysis. This may include recreating the Problem to help find the actual root cause. Once the root cause has been established, a workaround should be devised and documented, where possible, and the Problem converted to a Known Error which is then passed to the Error Control phase of Reactive Problem Management.

Error control is the process of monitoring and providing solutions for Known Errors. During the error control phase of Problem Management you will be carrying out the following activities:

Known Error Identification and Recording - Once the root cause has been determined, the Problem status will change to “Known Error”. A workaround is developed (if possible) to feed back to Incident Management so they can resolve future Incidents resulting from this error quickly and with less effort. The Known Error definition can also be entered into the Known Error database to be used in the matching process that takes during the Incident process.

Many ITSM tools, including Serio, have features and repositories for Known Errors – which I’ve referred to above as the Known Error

database. However, if your tool doesn't have one you can still use the idea, which is the important thing. What you need to do is create a document or web page that carries the following data, and make it available to your colleagues on the Service Desk or Helpdesk.

- Reference number
- Date of discovery
- Business services/users affected
- Impact
- Estimate date of resolution (if known)

This document then becomes the place where they can go to get information on errors that exist in the IT infrastructure which may affect users.

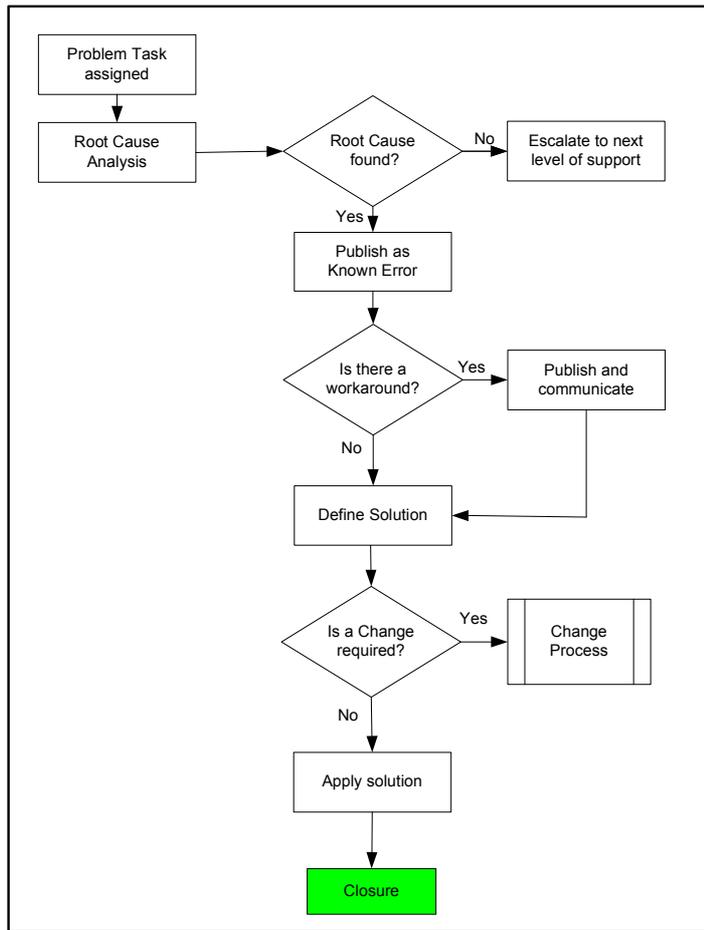
Solution Investigated – During this phase you will look at all possible solutions to the Known Error. These will be analysed, looking at the Cost/Benefit of each.

Defining Solution - A final solution will be developed and a Request for Change (RFC) is made via the Change Management Process.

Problem Evaluation and Review - After the change has been implemented, a Post Implementation Review (PIR) is performed to evaluate the success of the solution.

Closure – Once the Problem Review has confirmed that the implemented has resolved the underlying error, the Problem will be closed and affected customers notified.

Shown below is a suggested workflow for reactive Problem Management.



Proactive Problem Management

Implementing Proactive Problem Management is a far more difficult task.

The goal of Proactive Problem Management is to prevent Incidents by identifying weaknesses in the IT infrastructure, before any issues have been caused.

Proactive Problem Management will involve trend analysis and targeted preventative action.

Proactive Problem Management can be made easier by the use of a Network Monitoring system (such as the Serio Command Centre). The use of one of these tools will alert you to possible Problems, such as repeated low memory conditions or lack of disk space before these have caused Incidents for your customers.

Proactive Problem Management is also involved with getting information out to your customers to allow them to solve issues without the need to log an Incident with the Service Desk. This would be achieved by the establishment of a searchable Knowledgebase of resolved Incidents, available to your customers over the intranet or internet, or the provision of a useable Frequently Asked Question page that is easily accessible from the home page of the Intranet, or emailed regularly (for instance monthly – 'IT support self help – August edition').

Many organisations are performing Reactive Problem Management to some degree; very few are successfully undertaking the proactive part of the process simply because of the difficulties involved in implementation. However, continuous monitoring tools such as the Serio Command Center are enabling more and more companies to initiate proactive improvement based on sound data.

Frequently Asked Questions

Q: How can we justify the cost of implementing Problem Management?

A: As with all ITIL® processes, getting the management buy-in to implement is often the hardest step. *Problem Management has possibly the highest probability of payback on investment of any ITIL® process.*

Identifying the number of repeat Incidents you have had over a period of time is a good place to start. Analyse the cost of resolving each of these repeat Incidents – downtime for the customer, time spent by Service desk staff – turn this into a dollar amount for each call. By doing this you will be able to show management the possible financial gains they can achieve by eliminating these repeat calls.

Q: At what stage of our ITIL® implementation should we look at Problem Management?

A: You will get the best results from your Reactive Problem Management process if you wait until your Incident Management process is well established and providing reliable reporting. Reactive Problem Management is almost totally reliant on the inputs from the Incident Management process.

Proactive Problem Management cannot be contemplated until you have Configuration Management, Availability Management and Capacity Management well established as the outputs of these processes will give you the information that is required to pinpoint weaknesses in the IT infrastructure that may cause future Incidents.

Q: Who should we appoint as our Problem Manager?

A: Your Problem Manager should have excellent analytical skills, they will need to be able to review the data obtained from Incident Management and pinpoint the Problems which will give the best results once resolved.

The Problem Manager is not necessarily responsible for finding the solutions to Problems, but is responsible for making sure that this is done. Therefore they do not require particular technical skills. However if you are concentrating on the implementation of Proactive Problem Management, technical prowess will become far more important.

If you are planning on using a current member of the IT department to undertake this role, I would suggest that you take someone from 2nd or 3rd level support. The time involved to undertake this role effectively makes it very difficult for someone working on 1st level to successfully take on the position.

Diary of a Real World Reactive Problem

The Service Desk is responsible for (amongst other things) for supporting a telesales sales system. This system has 30 users taking customer orders. If the system is unavailable, no orders are taken from customers, and no goods can be shipped. The system is called *Boxersales*, and it's version is 4.2.

Date time	Event (in the business)	Response or Action
Mon 1 st 11:00	Sales staff start to report that the system <i>Boxersales</i> is running very slowly – transaction times rise from 2 seconds to 5 minutes.	Incident logged (ref I2000), Service Desk technicians begin investigation.
Mon 1 st 11:30	Sales staff report that <i>Boxersales</i> is back to normal.	Incident I1000 resolved (system back to normal). Technicians suspect a problem with a network router.
Mon 1 st 11:40		A new Problem P100 is raised, due to the unknown cause and the severity of the Incident. It is linked to the Incident I2000. Technicians note their suspicions on P100.
Mon 1 st 11:50		Problem Manager assigns P100 to a senior technician who works in Problem Management.
Tue 2 nd 9:30		Senior technician handling P100 also suspects the network router, based on his review of past Problems.
Tue 2 nd 19:00		Senior technician swaps suspected router, and wishes to monitor <i>Boxersales</i> for a week. Status of P100 is updated to show this.
Wed 3 rd 14:00	Sales staff report that <i>Boxersales</i> is down and not responding.	Incident I2200 logged.
Wed 3 rd 14:10	Problem Manager notes the Incident I2200.	Problem Manager observes that <i>Boxersales</i> is not down, but just responding very slowly. Problem Manager links I2200 to P100, as she think that the cause of both Incidents may be the same.
Wed 3 rd 14:30	Sales staff report that <i>Boxersales</i> is back to normal.	Problem Manager increases the Priority of P100, and notifies the responsible technician accordingly. I2200 is resolved.

Wed 3 rd 15:00		Technician updates P100, concluding that his assessment of the source of the Problem was incorrect.
Wed 3 rd 16:00		Technician searches the web site of the <i>Boxersales</i> system vendor and finds this article. 'Users running Boxersales 4.2 on database [vendor omitted] may experience severe performance issues when running sales report RC22.'
Wed 3 rd 16:30	Technician speaks to call center administrator. She ran report RC22 on Monday morning, and Wednesday afternoon.	Technician updates P100 to record this.
Wed 3 rd 19:00	Known Error	Technician runs RC22 on <i>Boxersales</i> after call center is closed. Performance of <i>Boxersales</i> is degraded for about 30 minutes. Technician sets P100 as a <i>Known Error</i> .
Th 4 th 9:00	Workaround Published	Problem Manager creates a <i>Workaround</i> by setting-up a batch job to run report RC22 when the Call Center is closed. Staff informed accordingly.
Th 4 th 10:00		Problem Manager creates a Change C3000 and links it to P100. The Change is for the application of a patch to <i>Boxersales</i> .
Th 4 th 12:00	Problem Review	Problem Manager notes that <i>Boxersales</i> vendor should have been consulted much earlier in the Problem investigation process, so as to avoid unnecessary costs and downtime. Technician agrees.
Fri 5 th 9:00	Results of Problem Review Published	Recommendation: to make better use of vendor resources request that vendor is informed of such Known Errors automatically

About Serio

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