ITIL – A guide to problem management

What is problem management?

The goal of problem management is to minimise both the number and severity of incidents and potential problems to the business/organisation.

Problem management should aim to reduce the adverse impact of incidents and problems that are caused by errors within the IT infrastructure, and to prevent recurrence of incidents related to these errors.

Problems should be addressed in priority order with higher priority given to the resolution of problems that can cause serious disruption to critical IT services.

Problem management's responsibility is to ensure that incident information is documented in such a way that it is readily available to support all problem management activities.

Problem management has reactive and proactive aspects:

reactive – problem solving when one or more incidents occur

proactive – identifying and solving problems and known errors before incidents occur in the first place

Difference between incident and problem management

The aim of incident management is to restore the service to the user as quickly as possible, often through a workaround, rather than through trying to find a permanent solution which is the aim of problem management.

Incident vs problem

An incident is where an error occurs or something doesn't work the way it is expected to. This is often referred to as:

- a fault
- an error
- it doesn't work!
- a problem
- but the term used is **incident**.

A problem can be:

- the occurrence of the same incident many times
- an incident that impacts many users
- the result of network diagnostics revealing systems not operating in the expected way

Therefore, a problem can exist without having an immediate impact on the users.

Incidents are usually more visible and the impact on the user is more immediate.

Examples of problems

Technical problems can exist without impacting the user. However, if they are not spotted and dealt with before an incident occurs they can have a big impact on the availability of IT Services.

Problems experienced by users

- The printer won't form feed paper through the printer. The user has to advance the paper by using the form feed button.
- Each time a new user logs onto a computer, they have to reinstall the printer driver.
- Windows applications crash intermittently without an error message. The computer will restart and work properly afterwards.

Technical problems

- Disk space usage is erratic. Sometimes a considerable amount of disk space is available, but at other times little is available. There is no obvious reason and no impact to the users – yet.

- A network card is creating lots of unnecessary traffic on the network, which could eventually reduce the bandwidth available, leading to a slow response from network requests.

Benefits of problem management

The benefits of taking a formal approach to problem management include the following:

- **Improved quality of the IT service.** A high quality, reliable service is good for the business/organisation.

- **Incident volume reduction.** Problem management is instrumental in reducing the number of incidents that interrupt the business/organisation every day.

- **Permanent solutions.** There will be a gradual reduction in the number and impact of problems and known errors as those that are resolved stay resolved.

- **Improved organisational learning.** The problem management process is based on the concept of learning from past experience. The process provides the historical data to identify trends, and the means of preventing failures and of reducing the impact of failures, resulting in improved productivity.

- **A better first time fix rate at the Service Desk.** Problem management enables the Service Desk to know how to deal with problems and incidents that have previously been resolved and documented.

What could affect the benefits of problem management?

The benefits of problem management can be weakened by:

- the absence of a good incident control process, and, therefore, the absence of detailed data on incidents (necessary for the correct identification of problems).

- the failure to link incident records with problem/error records.

- a lack of management or leadership commitment, so that support staff (usually also involved with reactive incident control activities) cannot allocate sufficient time to structural problem solving activities.

- the role of the Service Desk (all incident reports must come through the Service Desk and difficulties may arise if the Service Desk is dealing with multiple reports of incidents and the technician is not fully aware of the extent of the problem).

- a failure to set aside time to build and update the call log or incident sheets which will restrict the delivery of benefits.

- an inability to determine accurately the impact on the business/organisation of incidents and problems; consequently the critical incidents and problems are not given the correct priority.

How problem management works

Problem management works by using analysis techniques to identify the cause of the problem. incident management is not usually concerned with the cause, only the *cure*: restoration of service. Problem management, therefore, takes longer and should be done once the *urgency* of the incident has been dealt with: for example, removing a faulty computer and replacing it with a working computer, takes the urgency away and leaves the faulty computer ready for diagnostics.

Problem management can take time. It is important to set time limits or the cost of resolution can become expensive.

To achieve its goal, problem management aims to:

- identify the root cause – problem control

- initiate actions to improve and correct the situation – error control

Error control

Error control covers the processes involved in successful correction of known errors. The objective is to remove equipment with known errors that affects the IT infrastructure to prevent the recurrence of incidents.

Error control activities can be reactive and proactive.

Reactive activities include:

- identification of known errors through incident management
- implementing a workaround

Proactive activities include:

- finding a solution to a recurring problem
- creating a solution
- including the solution in the known errors' database

Inputs to problem management

Inputs to the problem management process are:

- incident details from incident management
- configuration details from the configuration management database
- details about changes made to the affected equipment
- any defined workarounds (from incident management)

Outputs from problem management

Outputs from the problem management process are:

- known errors
- requests for change (through change management)
- an updated problem record (including a solution and/or any available workarounds)
- closed problem records for resolved problems
- knowledge base content to use in incident management
- management information through reports

The process activities of problem management

The major activities of problem management are:

- problem control
- error control
- the proactive prevention of problems
- identifying trends
- obtaining management information from Problem Management data
- the completion of major incident or problem reviews

Roles and responsibilities in the problem management process

- Service Desk to indicate that the problem has been passed to problem management
- Problem management to log, monitor and track the progress of the problem
- Service Desk or technical staff or the problem manager/process owner to spot trends in incidents
- Problem management to action problems raised from incident management
- Problem management to progress unresolved incidents through the problem management process
- Problem management to assist with the handling of major incidents and identifying the root cause
- Technical staff to actively prevent the replication of problems across multiple systems
- Configuration management or change management specialists to be consulted
- Second line and third line support groups, including specialist support groups and external suppliers, to provide expertise

Additional activities that form part of the problem management process

- Developing and maintaining the problem control process
- Reviewing the efficiency and effectiveness of the problem control process
- Producing management information
- Allocating resources for the support effort
- Monitoring the effectiveness of error control and making recommendations for improving it
- Developing and maintaining problem and error control systems
- Reviewing the efficiency and effectiveness of proactive problem management activities

Considerations in implementing problem management

- Good problem management relies to a great extent on an implemented and efficient incident management process. So it is sensible to implement problem management after incident management has been implemented, is considered mature, and has established measures.
- If resources are scarce, it is advisable to concentrate on the implementation of problem and error control (reactive problem management). When these activities reach maturity, resources can be directed to proactive problem management which depends largely on the successful implementation of network monitoring and preventative maintenance.
- Reactive problem management can be introduced by focusing initially on the *top ten* incidents of the previous week. This can prove to be effective, since experience shows that 20% of problems cause 80% of service degradation.

Implementing problem management

- An effective system to log both incidents and problems, and their relationship, is fundamental for the success of problem management.
- Setting achievable objectives and making use of the problem solving talents of existing staff is a key activity. Consider *part-time* problem management, whereby staff set aside periods when they will look at problems away from the daily *fire-fighting* pressures.
- In view of the potentially conflicting interests between incident management and problem management, incident management, restoring service, prevails.

Identify who will staff problem management

Problem management is a specialised process requiring a good understanding of the IT services being delivered and the tools and technology which support these services. It is expected that technical staff will carry out problem management with input from other specialists where possible, without a dedicated team in place. Specialist input or subscription to a support service may form part of the business/organisation contract with a supplier.

Plan the problem management training

The training plan for problem management should concentrate on the Service Desk and all levels of technical staff.

■ Ensure the incident management process is understood as this is paramount to the success of the problem management process.

■ Train the Service Desk staff on how to progress a call from an incident to a problem.

■ Train the Service Desk staff and technical staff to identify patterns of incidents to indicate a problem.

■ Train the Service Desk staff to record incident details in a way that will help technical staff carry out root cause analysis. This will be evident from feedback from the technical staff after the first few problems have been passed through the problem management process.

■ Produce process information for the technical staff on the amount of time to allocate to resolving a problem to ensure cost control of problem resolution.

Activities for the problem management implementation plan

Ensure that a mature and measurable incident management process is in place.
Decide who will be the problem manager/problem process owner.
Decide which staff will be involved as subject matter contacts for problem resolution.
Decide which training the technical staff require on the problem management process.
Decide which training the service desk staff will require.
Arrange and implement the required training.
Establish the required analysis techniques and document.
Decide how calls will be passed to the problem management process from the Service Desk.
Decide which documentation will be used for the problem management process.
Decide if a knowledge base will be used.
Decide on the format of the knowledge base.
Decide how to populate the knowledge base from resolved problems.
Ensure the problem management process is documented.
Feed back any changes to the process identified from testing of the process.
Decide how resolutions will be written up and recorded.
Decide who carries out follow up actions and how that will be done.
Decide on the activities to review the problem management process.
Decide how to keep staff informed on all current problems/problem resolutions, and changes to the problem management process.
Decide if you need to run a pilot of the problem management process.
Carry out the pilot and pilot review.
Feedback changes into the system from the pilot review.
Plan the launch date of problem management.
Check that all training has occurred and any required changes have been implemented.
Launch the process of problem management.

Problem management reports

- Problem management reports should identify where isolating problems from incidents has provided benefit.
- Show the average time spent on problems per week.
- Show how many problems are solved per week.
- Show how many problems are deemed not cost effective to resolve.
- Once implementation is complete, compare the incident levels to the previous weeks to see if problem solving reduces incidents.
- Show the number of identified known errors and their associated workarounds produced from problem management.
- Over time, see if problem management reduces the incident management *Top 10*.
- Finally, if you implement problem management with incident management, show the number of incidents and problems each week. Over time it will become easier to identify the difference, so persevere with the reports.

The process of problem management

Problem detection

Trend analysis is the key to spotting problems. It is a proactive approach to problem management by which you can avoid the occurrence of the problem earlier.

Problem logging

Problem logging is critical as all the necessary information from the incidents has to be captured while creating the problem. Create a problem from the Incidents, maintaining the link to the incident(s). Avoid duplicates by searching for similar existing problems before the creation of a new problem.

Categorisation

Problem categorisation is essential to avoid ambiguities. The categorisation makes it simpler to search incidents and associated problem records.

Prioritisation

Problem prioritisation helps technical staff to identify critical problems that need to be addressed. impact and urgency associated with a problem decides which problems need to be addressed first. When a problem is created from an incident, the impact, urgency and priority values get assigned from it automatically and reduce the task of prioritising the problem for technical staff.

Investigation and diagnosis

Problem investigation results in getting to the root cause of the problem and initiating actions to resume the failed service. Analyze the impact, root cause and symptoms of the problem to provide a problem resolution.

Solution

The successful diagnosis of a root cause results in changing the problem to a known error and suggests a workaround. The Service Desk browsing through these known error records/workarounds helps in resolving incidents and in lowering the incident resolution time.

Problem/error closure

Once a workaround, permanent or temporary, has been established, either by logging a temporary workaround/known error in the known error database or a permanent solution via a request for change, a problem can been closed. In the case of a permanent solution to a problem, the problem record is not usually closed until the request for change has been implemented. If the request for change is refused the problem record is updated with the reasons why and the problem record is closed.