

# Service Level Management

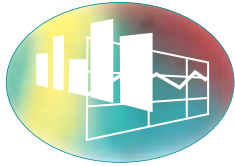
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### Key

Glossary term: [Glossary term](#)

Cross reference: [Cross reference](#)



# Service Level Management

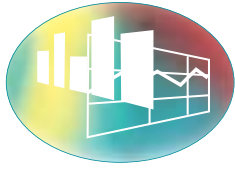
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# Service Level Management

## SLM 1 Introduction to Service Level Management

Do you currently measure the performance of ICT at your school?  
Service Level Management can help you to do this.

### SLM 1.1

#### Aim

The aim of this section is to introduce the topic of Service Level Management and to help you implement the process in your school with a minimum of preparation and training.

### SLM 1.2

#### Objectives

The objectives of this section are to enable you to:

- understand the concept and benefits of Service Level Management
- understand what is involved in the process of Service Level Management
- understand the roles and responsibilities in Service Level Management
- implement a basic Service Level Management process in your school
- continue to operate this Service Level Management process
- identify useful measurements to gain benefit from the Service Level Management process you have implemented
- review your implementation and summarise your progress.

## SLM2 Overview

### SLM 2.1

#### What is Service Level Management?

Service Level Management is the process of ensuring that ICT services are supported to an acceptable level. It involves understanding the ICT requirements of the end-users and working within the constraints of the resources available to agree a level of service that end-users can expect consistently. This agreement is between those responsible for ICT and the end-users, who are usually represented by one or more people from each unique area or department.

When the services themselves and the level of service to be provided have been agreed, the Service Level Management process facilitates the creation of underpinning agreements with other departments or third parties involved in the service provision.

It is important to understand the difference between services and levels of service:

## Services

Services are the ICT facilities themselves, such as printing, bookkeeping, word processing, data storage, internet access, email and so on.

## Levels of service

Levels of service are the availability and maintenance of those services and the speed of response to incidents and requests. You could offer, for example, email availability from 0800 to 1800 Monday to Friday with a four-hour response time to resolve an incident and a two-day response time for a new account set up.

### SLM 2.2

#### Why use Service Level Management?

Service Level Management helps to ensure that ICT services delivered to the end-users meet their needs. Some of the benefits of Service Level Management include that it:

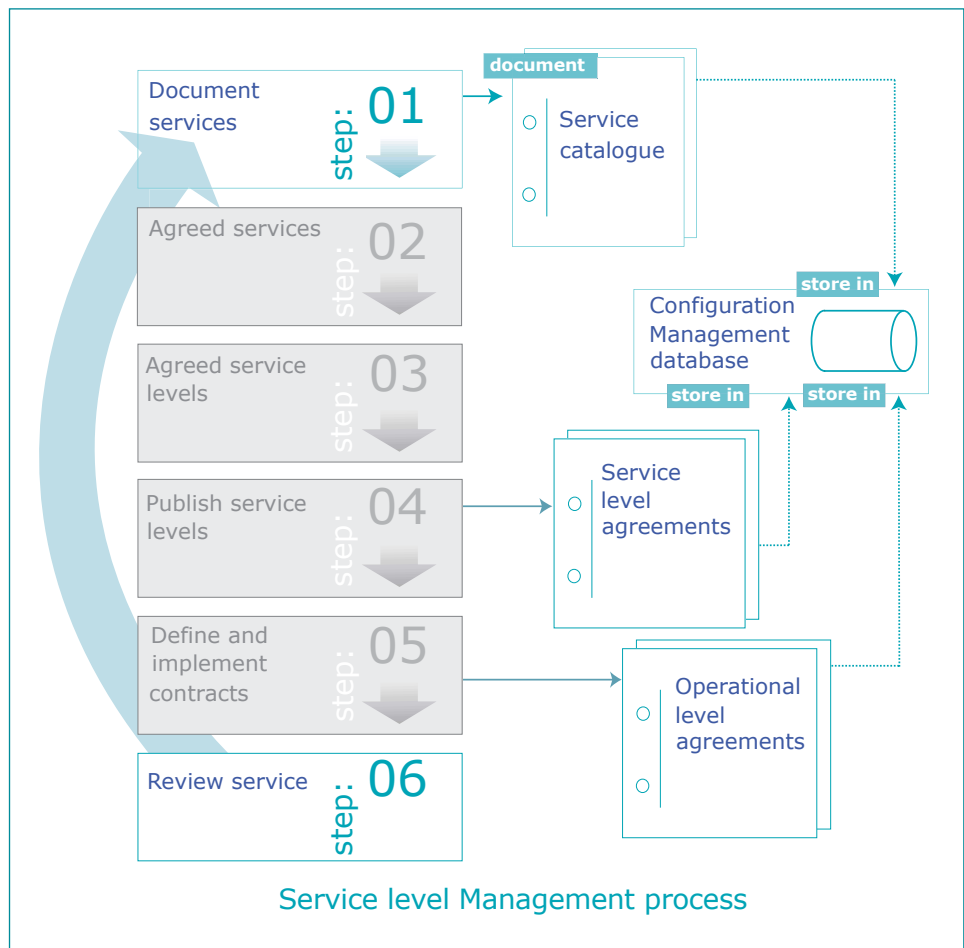
- highlights what services are already in place
- helps to determine priority services
- indicates a clear remit for those providing technical support
- helps to allocate resources appropriately
- determines a minimum level of service that is acceptable
- helps to highlight shortcomings in service provision
- provides a basis for discussion and promotes communication
- provides targets to aim for
- helps to promote continuous improvement.

### SLM 2.3

#### Who uses Service Level Management?

Service level management is the bridge between ICT technical support and end-users. It is the mechanism that facilitates communication between the customer and those responsible for the service.

Service level management is the responsibility of ICT management, but user representatives and suppliers participate in it, too. You should retain control of the ICT service even if a third-party provides it. You can do this by using service level management to monitor and review the level of service your suppliers provide.



SLM 2.4

### How Service Level Management works

Service Level Management works by agreeing with end-users what services will be supported and to what level of service each will be supported. You then monitor these levels to give an indication of the suitability of the service provided and highlight any issues so that they can be resolved.

The steps are:

- document and agree services
- agree and publish service levels
- define and implement underpinning contracts
- monitor and review service level.

The Service Level Management process flowchart (above) illustrates this.

SLM 2.4.1

#### Document and agree services

In order to provide a service the first thing to understand is what that service is. It may seem an obvious statement but it is easy to assume that what is there is what needs to be supported and this can lead to misunderstandings and time not spent effectively.

It is important to understand the distinction between a service and the equipment that makes up that service. A service is a complete facility whereas the equipment is the hardware, software, consumables and other components that are each only a part of a facility. This concept is key to providing good customer-care as it is the service that is of interest to the end-user, not the hardware or software that enables

it, which is why, in Service Level Management, we document services and not hardware and software. Example services are shown at [Appendix A](#).

It is a worthwhile exercise to identify and write down every ICT service that is used and then agree with end-user representatives which of these services are relevant and worthy of support. The document produced is called a service catalogue. Of course this must be updated when new services are introduced but once this [baseline](#) is in place it becomes easier to understand what the potential workload is, how it may fluctuate and whether resources are becoming stretched.

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2.4.2

### Agree and publish service levels

When the services to be supported have been agreed they need to be placed in some kind of order of importance to the school as a whole. This is so that, in the event of a conflict, technical support staff know what must be attended to first.

This should be agreed with the end-users and a document published and circulated to them. This is popularly known as a [service level agreement](#) (SLA), and is a compromise between the level of service that the end-users require and the level that ICT/technical support can undertake to provide based, on resources available and overall cost.

SLM

2.4.3

### Define and implement underpinning contracts

Underpinning contracts are agreements with third parties who may have been procured to contribute to the provision of the service(s). These contracts will be negotiated between ICT/technical support and the third party or parties and will use the levels of service agreed in the [SLA](#) as the input to the requirements.

Sometimes elements of the service may be dependent upon another internal department or division outside the control of ICT/technical support. Similar underpinning agreements may also be required here to ensure that the overall SLA can be met. These are known as operational level agreements, or OLAs.

These underpinning contracts and agreements should be transparent to the end-user and enable the appropriate parts of the SLA to be met.

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2.4.4

### Monitor and review service levels

It is important to monitor the service provided against the agreed levels to identify areas for improvement or renegotiation. The point of [service level agreements](#) is not to apportion blame or criticise targets not met. It is to identify weaknesses and work together to identify a level of service that can be achieved within the budget available and that supports the end-users' requirements adequately. Communication and negotiation are the watchwords.

Review meetings should take place on a scheduled, regular, basis so that representatives of the SLA know they have a forum at which to raise and discuss issues. This also enables new requirements to be highlighted up front and worked in to the service provision.

SLM

2.5

### What does Service Level Management cost?

There are three elements of cost to consider: expenditure, people and time.

The financial outlay for service level management is restricted to any software packages purchased to automate the reporting process. These can be expensive and it can take time to set them up, define meaningful reports and train people to use them. We recommend that you do not purchase software reporting tools at this stage, as we believe that it is better to spend time developing the FITS processes and refining reporting requirements first. You can only automate successfully what you have already defined manually.

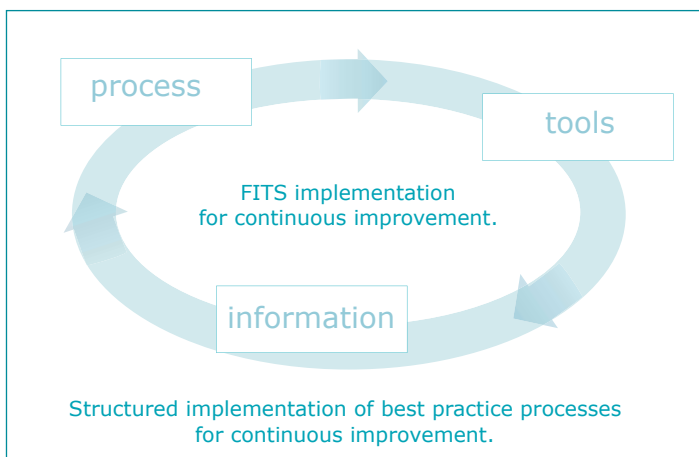
In large organisations the role of service manager may be a full-time position or there may even be more than one service manager. This is because it is a customer-facing role and is often seen as a key aspect of customer service. The role is similar to that of an account manager. In a small organisation or a school the service manager role is likely to be a part-time function allocated to someone responsible for ICT or technical support. Reporting tasks may also be assigned as a part-time function. We describe the roles and responsibilities in service level management in the [SLM 3 Implementation guide](#) and you can find additional information in [SLM 5 Roles and responsibilities](#).

Remember to allow time also for the implementation and for integrating the process into normal day-to-day activities. We have created a table of activities (see below) to help you plan the amount of time required.

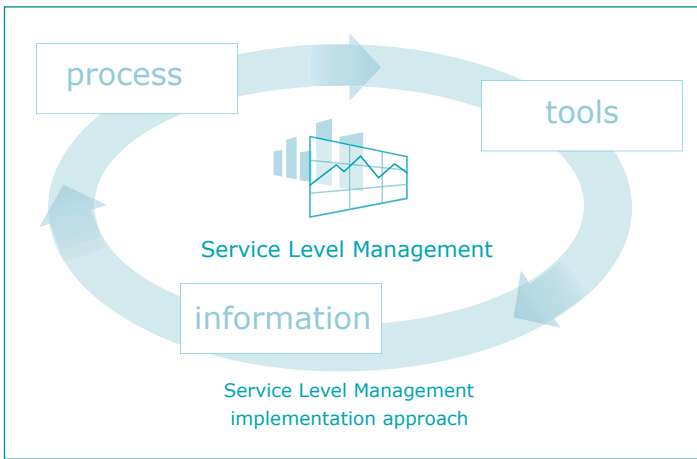
Activity	Examples	Further information
Preparing for implementation	Discussions, planning	<a href="#">SLM 3 Implementation guide</a>
Implementation	Training, pilot, actual implementation	<a href="#">SLM 3 Implementation guide</a>
Review of implementation	Difficulties with process or roles	<a href="#">SLM 3 Implementation guide</a>
Monitoring service levels	Producing reports on the service provided and interpreting them	<a href="#">SLM 4 Operations guide</a>
Reviewing service levels	Meetings with end-users and third-party suppliers, identifying and resolving service issues	<a href="#">SLM 4 Operations guide</a>

## SLM3 Implementation guide

SLM **3.1** Define what needs to be done



As described in the overall FITS implementation approach, we recommend a phased approach to implementing new processes.



FITS Service Level Management is for people with little free time to spend on implementing processes and procedures and whose day-to-day activities are unpredictable and must take priority. Our aim is to help you begin to remove some of the unpredictability by introducing best-practice processes in small steps and so start to realise the benefits as quickly as possible.

### Long-term scope

In the long term, Service Level Management should be an iterative process to ensure that the service provided is what is required. Technology and user requirements change and failure to review service levels repeatedly may result in the service provided becoming outdated and inappropriate.

Ultimately, FITS Service Level Management should enable a simple [service level agreement](#) to be drawn up and maintained, which will help ICT/technical support staff to focus their activities appropriately and ensure that suppliers do the same. This should also be tied to a regular reporting process that enables you to monitor service levels provided by internal technical support and third-party suppliers.

However, as with all of the FITS processes, benefit can be derived from starting small and building on solid foundations. We also recognise that you have limited time to spend on management tasks when operational tasks must come first. Initially, therefore, we will focus on steps leading towards this longer-term aim.

### Short-term scope

In the short term, it is good preparation for full service level management to begin by gathering information about all of the ICT services currently in use and how they are delivered, and listing them. This alone will have benefits, as it will make clear exactly what hardware and software you have and what needs to be supported. Only once you know this is it possible to understand what rationalisation may improve stability or reduce skill requirements. It may also identify equipment that no longer needs to be supported or that is inappropriate or unauthorised. All of these things help technical support staff to see the bigger picture and prioritise their work to best effect. Add to this some simple reporting on the levels of service currently being provided and you have a foundation for review, discussion and agreement on what is possible and what is needed.

Service level management encompasses all aspects of service provision, which means that you must implement all service management processes in order to achieve a full set of data for reporting purposes. In the short term, therefore, you should implement all of the other FITS processes before considering developing Service Level Management further.



## Prepare to implement

Thorough preparation can make the difference between a successful implementation of a process and an unsuccessful one.

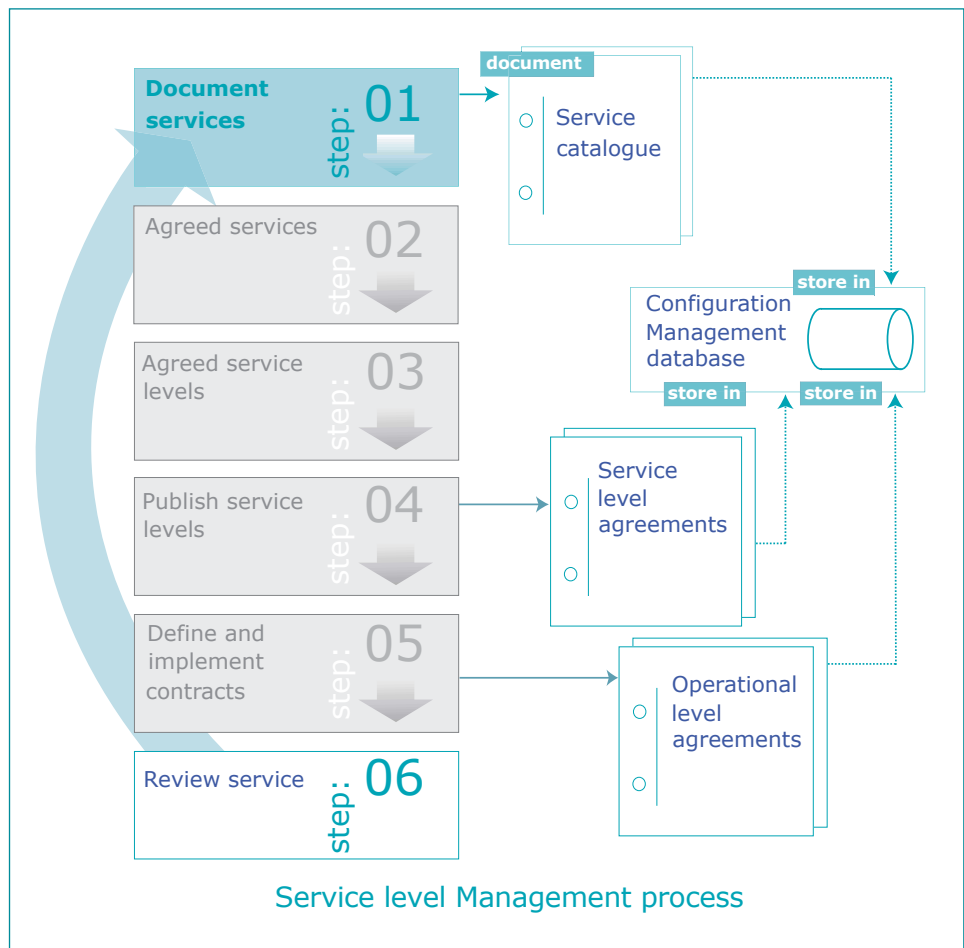
Roles and responsibilities	<p>The first step is to identify the process participants and assign roles and responsibilities. We recommend that, for initial implementation, you involve as few people as possible in the process. This means that it can become familiar with minimum impact on the day-to-day workload of the school. The people you select to fulfil the service level management roles will depend on how you currently provide technical support and who is involved already. <a href="#">SLM 3.2.1 Assign roles and responsibilities</a> offers some suggestions and guidance. Further details can also be found in <a href="#">SLM 5 Roles and responsibilities</a>.</p>
Training	<p>After you have assigned roles and responsibilities, it is important to ensure that those participating in the implementation and subsequent operation of the process understand what is required of them. Use this website as part of your training.</p>
Start date	<p>Set a start date. A 'go-live' date is important in any implementation. Make sure that you allow enough time for all the preparatory tasks to be carried out before your 'go-live' date.</p>
Communication	<p>Of course, communication must take place within the implementation team, to agree plans, scheduled dates and so on. However, it is also important to communicate externally and inform the user community of the new process. The implementation of a process can be seen as being a <a href="#">change</a> just like the upgrading of a <a href="#">server</a> and the impact on the user community should be communicated to them clearly in advance of the change.</p>
Materials	<p>Before you can go ahead with the implementation, prepare all the materials required for the process. Make sure that you have downloaded the templates you need (see <a href="#">Appendices</a>) and that everyone involved has access to them.</p>
Pilot	<p>The first stage of service level management is information gathering and producing basic reports, many of which are already defined and set up in other FITS processes, so it is not strictly necessary to carry out a pilot.</p> <p>Service level management is something that is refined over time. Details of services will change and reports will evolve. At this stage we recommend that you produce reports for internal ICT use only. However, if you do choose to issue them to end-users, we recommend that you pilot them with a small group first to ensure that the information is accurate and that users can interpret them.</p>
Prerequisites	<p>All of the FITS processes contribute to ICT service management and therefore all are relevant to the Service Level Management process. However, this does not necessarily mean that they must all be in place before you embark on service level management. If you have implemented some of the FITS processes already, you should be able to produce some statistical information that can be included in early service level management reporting. But if you have not, you can identify the reporting requirements you need for service level management and implement the processes one by one to produce the required information.</p> <p>The implementation of FITS is an ongoing task that may be constantly reviewed and refined, so it is perfectly appropriate for the development of <a href="#">service level agreements</a> and reports to be carried out by incorporating feedback from users.</p>

Role	Suggested representative(s)	Comments
Service manager	<p>Person with overall responsibility for technical support or ICT in general, for instance:</p> <ul style="list-style-type: none"> <li>• ICT manager</li> <li>• ICT co-ordinator</li> <li>• network manager</li> <li>• technician.</li> </ul>	<p>Although there may be many service managers assigned to separate groups of end-users, it is unlikely that more than one would be needed or appropriate in a school.</p> <p>The service manager should be someone with an overview of the technical support provision, from within the technical support or ICT area.</p> <p>The service manager should not be a user representative but a technical support representative.</p>
End-user representative	<p>Person with good knowledge of end-user requirements of ICT, such as:</p> <ul style="list-style-type: none"> <li>• teacher</li> <li>• teaching assistant</li> <li>• student</li> <li>• administrator.</li> </ul>	<p>A single end-user representative is not expected to know the requirements of all end-users but a team of end-user representatives should together do this.</p> <p>End-user representatives should be willing and able to co-ordinate service issues and attend service review meetings.</p> <p>There should be at least one end-user representative in addition to the service manager.</p>

## SLM 3.3

### Implement

In the first instance we will not implement the full Service Level Management process flow. Instead we will begin by introducing the first and last steps – that is, the gathering and documenting of service information and the steps towards monitoring and reviewing the service provided. This will enable you to create a service catalogue that you will use as the basis for service level management and that you can issue to end-users to outline what technical support is responsible for (and, by definition, what it is not responsible for). The preparation of service level agreements, operational level agreements and other underpinning contracts is not necessary at this stage.



### Document services

Remember that there is a difference between services and the equipment that enables the services – see [Appendix A – Example services](#).

In [FITS Configuration Management](#) we identify and record all the component parts that make up the infrastructure (the pieces of equipment – hardware, software, documentation and so on). In Service Level Management we take a different view, determining what parts of the infrastructure are required to fulfil each particular service. This is a key step in improving communication between technical ICT staff and end-users. If you speak in terms of services and ensure that services are in working order, the end-user is receiving working ICT on their terms. To try to discuss end-user requirements in terms of the availability of file servers, routers, network cabling and so on would be undesirable, as it is unreasonable to expect end-users to understand the implications.

To document the services, you must then identify each service and the technical components of each service. Gathering service information is harder than doing an audit of physical equipment and is more likely to be in terms of what software is installed on computers and file servers. You will need to investigate every computer and file server, and talk to at least one representative of each department to make sure that you don't miss anything – see [SLM 3.2.1 Assign roles and responsibilities](#) for further information on end-user representatives. Don't assume that if you haven't installed something yourself it doesn't exist!

To help you, we have prepared a service catalogue template (see [Appendix B](#)) outlining the kind of information you should gather. Complete the section on service details with your service information: our service details guidance (see below) will help you do this. The section on service details in our service catalogue example ([Appendix B](#)) should also help you understand what is required.

If you have implemented FITS Configuration Management, you should store your baseline service catalogue in the configuration-management database. You should then ensure that the list is controlled and maintained so that it is always accurate and up to date (or you will have to do another audit). FITS Change Management can help you to do this. We have created a service report template to help you get started. See also our example service report (see [Appendix D](#)).

SLM

3.3.1.1

### Service details guidance

Services	Enter every service in this column.
Components	List all the pieces of equipment involved in providing this service.
Component unique ID	Identify each component with its unique ID if it has been assigned – this is dealt with in Configuration Management. If you have not assigned unique IDs yet, leave this blank until you do. The information is to help you identify physical pieces of equipment when trying to diagnose a service failure.
End-users	List the end-users of this service (not the components). List job titles, functions or departments. Avoid using people’s names – if someone leaves and the catalogue is not updated with their replacement’s name, you may not know in future to whom it refers. Be explicit – don’t put ‘most users’ or ‘some users in Humanities’.
Date recorded	Enter the date of recording the service in the service catalogue.

SLM

3.3.2

### Estimate service levels

The purpose of providing an estimate of the service levels currently being provided is to identify what the perceived priorities are in ICT. This is often different from what is in the overall interests of the school – which is what should determine the service levels required.

By estimating current service levels, you have a baseline from which to discuss actual requirements and identify changes in priorities. This helps you to make step-changes to move from current service levels to new ones without having to spend more time starting from a blank sheet of paper.

Before you can estimate the level of service being provided, you must identify what the services are. See [SLM 3.3.1 Document services](#) for details. Once you have done that, return to the service catalogue you have started and complete the next section – Service level details. For assistance in completing this section, see our service level details guidance (below) and the service level details section of service catalogue example ([Appendix B](#)).

### Service level details guidance

<b>Component availability</b>	Estimate the hours each component is available or is required to be available.
<b>Response time</b>	Estimate the speed of response to an incident relating to each component. Be honest. It may vary between services, depending on the perceived criticality of the service or for other reasons.
<b>Fix time</b>	Estimate the speed of resolution of an incident relating to each component. Of course, it will vary depending upon the cause. This just needs to be a best-guess average to start with, based on recent experience.
<b>Supported by</b>	Record the function, department or third party responsible for supporting the components of the service.
<b>Hours of support</b>	List the hours of availability of the support service for the components.
<b>Date last updated</b>	Enter the date the service catalogue record was last updated. It is good practice to indicate when records were changed.

## SLM 3.4

### Review the implementation

In keeping with the FITS approach, the service review at this implementation stage should be confined to the technical support or ICT team. If you limit the participants, those involved can become familiar with concepts of services and service levels and start to measure their own performance before opening discussions with end-users.

Look at the first draft of the service catalogue you have created and consider the following questions.

- Have you identified services you didn't know existed?
- Can you spot any trends in how work is prioritised?
- Are there any clashes in priority or availability in a service that could restrict its overall service level?
- Have you identified any third-party response or fix-time issues?
- Have you identified any other support issues?

The answers to these questions will help you and the team to start to identify the scale of the service you are offering. You will also have some opening questions to ask when you start to discuss levels of service with end-users.

Have a look at our service catalogue example ([Appendix B](#)) and review it using the above questions. See if you can identify some issues, then look at our example review answers ([Appendix C](#)) to check them against our findings.

## SLM 3.5 Implementation resources

For creating a service catalogue, use the template we have prepared for you ([Appendix B](#)).

## SLM 4 Operations guide

### SLM 4.1 What needs to be done?

The day-to-day tasks for FITS Service Level Management link directly into the implementation of the other processes.

In order to build on the 'guesstimate' measurements you added to the service catalogue when working through the Service Level Management implementation guide, you need to capture some real data. A section on measurements is included in each of the other processes to help you to do this.

You will use the data you gather to create a report on the overall service actually being provided. This will form the basis for discussion and review by ICT/technical support and, eventually, end-user representatives.

#### SLM 4.1.1 Implement FITS processes

If you have not already done so, you should implement the rest of the FITS processes.

- Service Desk
- Incident Management
- Problem Management
- Change Management
- Configuration Management
- Release Management
- Availability and Capacity Management (includes Preventative Maintenance and Network Monitoring)
- Service Continuity Management
- Financial Management

#### SLM 4.1.2 Produce service report

Each FITS process has its own recommended measurements. By carrying out the full implementation and operations instructions for each process, you will collect some relevant measurements that you can use to create a service report. It is not necessary to wait until all processes have been implemented to start producing a service report – all information is helpful. The report should include the following types of information: period of report, reactive statistics, proactive statistics and change statistics.

<b>Period of report</b>	State the period of time the report covers. Reports should be regular rather than random – this helps you to interpret trends and fluctuations more easily.
<b>Reactive statistics</b>	Include useful statistics on the handling of incidents and requests that indicate the level of service being provided.
<b>Proactive statistics</b>	Include measurements that indicate that preventative action is being taken.
<b>Change statistics</b>	Include an indication of the number of technical improvements and new services provided in the period.

We have created a service report template to help you get started. See also our example service report (see [Appendix D](#)).

SLM

4.1.3

### Review service levels

To start with, only those responsible for providing technical support should review the service report. Formal review meetings with end-user representatives can come later, when you have developed a greater awareness of the level of service being provided. It also allows the process to become familiar to a small group before it is widened to include more people.

Use the information in the service report to identify potential issues and areas requiring further investigation. Monitor trends over a period of time and look for fluctuations. Remember that it is dangerous to take statistics at face value, as there may be many possible reasons behind them. Here are some examples of the variety of possible answers (the list is not exhaustive).

Trend	Some possible causes	Action required
<b>Increase in incidents</b>	<ul style="list-style-type: none"> <li>• A major incident occurred, affecting a number of users.</li> <li>• A newly introduced service was not rolled out successfully.</li> <li>• All incidents were not previously being logged.</li> </ul>	<ul style="list-style-type: none"> <li>• Check incident logs for unusual occurrences or similarities.</li> <li>• Check recent release and change activities.</li> </ul> <p>See <a href="#">Incident Management</a>, <a href="#">Change Management</a> and <a href="#">Release Management</a> for further guidance.</p>
<b>Increase in number of changes implemented</b>	<ul style="list-style-type: none"> <li>• More underlying problems had been identified, resulting in improvements being made.</li> <li>• Changes carried out were not well planned and had to be re-implemented.</li> <li>• Changes were not previously recorded.</li> </ul>	<ul style="list-style-type: none"> <li>• Check problem records.</li> <li>• Check <a href="#">requests for change</a>.</li> </ul> <p>See <a href="#">Problem Management</a> and <a href="#">Change Management</a> for further guidance.</p>

SLM 4.2

When does it need doing?

Operational task	Frequency
SLM 4.1.1 Implement FITS processes	The implementation of each FITS process is a one-off activity that is subject to individual review and re-implementation as necessary. Consider process enhancements only after each process has been introduced and operated for a period of time.
SLM 4.1.2 Produce service report	Produce service reports regularly, not randomly. Random reports make it hard to identify trends. Choose a frequency and structure and stick to it for a while, then review its suitability and adjust accordingly. Avoid introducing change with every report to allow the 'picture' to build.
SLM 4.1.3 Review service levels	Review all service reports soon after they have been produced. Reports are of no value if they are not acted on and they are hard to follow up if they are old.

SLM 4.3

Who does it?

Operational task	Who does it?
SLM 4.1.1 Implement FITS processes	The person responsible for ICT technical support, with the overt backing of the headteacher, should direct the implementation of the FITS processes.
SLM 4.1.2 Produce service report	The service manager is responsible for producing service reports, but may delegate aspects of this task as appropriate.
SLM 4.1.3 Review service levels	Service levels should be reviewed, in the first instance, by those responsible or involved in ICT technical support, led by the person who is responsible for this function overall. It may be appropriate to involve the headteacher in the early stages to demonstrate the importance of FITS.

SLM 4.4

Operational resources

- Service Desk
- Incident Management
- Problem Management
- Change Management
- Configuration Management
- Release Management
- Availability and Capacity Management
- Service Continuity Management
- Financial Management
- Example service report (Appendix D)
- Service report template (Appendix D)



## SLM 5 Roles and responsibilities

SLM 5.1

### Service manager

- Is responsible for service level management
- Is responsible for leading service and service level negotiations with end-users
- Is responsible for publishing a service catalogue
- Is responsible for publishing service level agreements
- Is responsible for all underpinning contracts with other departments or third parties
- Is responsible for producing service reports
- Is responsible for reviewing service reports, internally in ICT technical support and with end-user representatives
- Convenes and chairs service review meetings

“I will be responsible for technical support or ICT”

SLM 5.2

### End-user representative

- Represents a particular user group or department
- Is one of a number of end-user representatives ensuring full representation
- Is aware of all services used by the group or department they represent
- Has an understanding of the application and importance of the services used in their area
- Receives service reports
- Attends service review meetings or user groups
- Is a point of escalation for ICT issues concerning other members of their group or department

## SLM 6 Review of Service Level Management

The purpose of this section is to help you review your implementation and ongoing operation of service level management, check your understanding of the process, examine what a successful implementation should look like and consider what you have achieved by introducing it into your school. This will help you to assess how successful its introduction has been and point you back to the relevant sections in the Service Level Management process that you should revisit to make improvements, if these are necessary.

Start by reading the sections included in the recap of Service Level Management. When you have refreshed your memory and considered your own implementation alongside these descriptions, work through the checklist to identify any areas that you should revisit and perhaps re-implement or reinforce.

## Recap of Service Level Management

In service level management we described how service levels and performance could be measured and these measurements used to ensure that service levels meet end-user needs. We gave you an overview of the whole Service Level Management process and an implementation guide giving step-by-step instructions to help you implement a service level management process that we believe is appropriate for the needs of schools. An operations guide gave you a list of ongoing activities required by the process in order for you to keep it going and reap the benefits. We described roles and responsibilities and offered guidance on how to assign roles. We removed anything non-essential to give you a lean process requiring the minimum of effort and resource.

Check your understanding of the process by following [SLM 6.1.1](#) to [SLM 6.1.4](#) below.

### Service Level Management summary

Step	Tasks
Document existing services and agree them with end-users.	Create a service catalogue listing all the ICT services your school provides to end-users and that receive technical support. These will be services rather than equipment.
Decide what service levels are required for each service.	Decide on what is the acceptable availability of services, including how quickly incidents and problems should be resolved. Where possible, place services in order of priority to help ensure that you focus resources in the most appropriate way. This may also include defining and publishing service level agreements.
Ensure that agreed services can be supported to the level decided.	Define support requirements and resource them. This may involve using internal technical support staff, third-party suppliers or a mixture of the two. It is important that any underpinning contracts with other groups or suppliers make it possible for those responsible for ICT technical support to meet the agreed service levels.
Monitor the service levels actually provided and compare them to the requirement.	Using the criteria agreed when defining service levels, produce statistical reports to measure the service provided. This may include, for example, the percentage of incidents that were resolved on or inside target, the number and duration of service failures and so on. It will also involve monitoring the performance of third-party suppliers if you use them.
Review the service.	Hold regular meetings with end-users to discuss service reports and identify areas for improvement or to discuss new requirements. Those responsible for ICT technical support should also meet regularly with third-party suppliers to review their service to the school.

SLM

6.1.2

### What you should expect now that you have implemented Service Level Management

- Technical support staff know which services they should focus on and do not waste time supporting unauthorised equipment.
- Technical support staff know what services to give priority to.
- The users are more aware of what the current level of service is.
- Technical support staff have a greater awareness of the impact of third parties on the service they provide.

SLM

6.1.3

### What you should have achieved through Service Level Management

- You have a catalogue of authorised ICT services, which you always keep up to date with changes.
- A clearer picture is forming of the levels of service being provided to ICT users.
- Target service levels are emerging and being aimed at.
- You have implemented all of the other FITS processes.
- You regularly create and review service reports.
- Regular review meetings may take place with end-user representatives.
- Findings from reports and review meetings result in an improved level of service.

SLM

6.1.4

### Benefits of having implemented Service Level Management

- The school does not waste time and money supporting unauthorised ICT equipment.
- You deal with incidents and problems in the order that is most appropriate for the school as a whole.
- The level of service you provide meets the needs of the end-users.
- You can measure technical support activities and performance.
- You can identify shortcomings in service levels and make improvements.
- A culture of customer focus is developing – you deal with ICT needs based on the seriousness of the impact rather than the complexity of the problem.

## Checklist

Use this checklist to identify any areas of service level management that have not been entirely successful. Then reinforce them by revisiting and re-implementing the relevant section of the FITS process.

Characteristics of a successful implementation	FITS section to revisit if implementation has not yet been successful
You have assigned roles and responsibilities.	SLM 3.2.1 Assign roles and responsibilities in Service Level Management
Those involved in service level management understand the process.	SLM 2 Overview of Service Level Management
A service catalogue documents all services in use.	SLM 3.3.1 Document services
You have estimated current service levels and included your findings in the service catalogue.	SLM 3.3.2 Estimate service levels
You produce regular service reports that include consistent and relevant information on all FITS processes.	SLM 4.1.2 Produce service report SLM 4.2 When does it need doing? SLM 4.3 Who does it? SLM 4.1.1 Implement FITS processes
You review service levels regularly.	SLM 4.1.3 Review service levels SLM 4.2 When does it need doing? SLM 4.3 Who does it?

If the checklist of characteristics are all true of your school, congratulations on implementing a successful service level management process! The next steps for you are to continue operating the process as described in the Service Level Management operations guide (SLM 4) and establish the process firmly. Work through this checklist at regular intervals to help you check that everyone concerned continues to carry out all aspects of the process. You can then refer to the relevant sections to address any shortfalls as they arise.

## Appendices

### SLM Appendix A Example services

Service	Equipment required to enable service
Printing	Printer, computer, cable, ink cartridge, paper, printer driver, electrical power
Word processing	Computer, operating system, word processing software, electrical power
Internet access	Computer, operating system, internet-browser software, communications link, internet service provider (ISP), electrical power
Shared data storage	File server, computer, network operating system, computer operating system, routers, switches, hubs, network cabling, communication links, electrical power

Framework for ICT Technical Support (FITS)  
Service Level Management example service catalogue

Service Details		Service level details									
Services	Components	Component unique ID	End-users	Component availability	Response time	Fix time	Supported by	Hours of support	Date recorded	Date last updated	
Email	Email server (hardware)	12	All departments	0800 - 1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03	11-Jul-03	
	Email server (software)	15		0800 - 1800 M-F	4 hours	8 hours	Email software Ltd	1400-2200 M-F	11-Jul-03	12-Jul-03	
	File server O/S	91		0800 - 1800 M-F	30 minutes	1 hour	Internal ICT technical support	0800-1800 M-F	10-Jul-03	11-Jul-03	
	Router	3		0800 - 1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03	11-Jul-03	
	Router	4		0800 - 1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03	11-Jul-03	
	Router	5		0800 - 1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03	11-Jul-03	
	LAN	N/A		0800 - 1800 M-F	30 minutes	1 hour	Internal ICT technical support	0800-1800 M-F	10-Jul-03	11-Jul-03	
	ISDN	22		0800 - 1800 M-F	15 minutes	4 hours	Telecoms Co	0900-1700 M-F	11-Jul-03	12-Jul-03	
	ISP	23		0800 - 1800 M-F	15 minutes	30 minutes	ISP Co	24x7 5-5	11-Jul-03	12-Jul-03	
	Internet	Firewall	11	All departments	0800 - 1800 M-F	1 hour	4 hours	XYZ Hardware Maintenance	0800-1730 M-F	10-Jul-03	11-Jul-03
O/S		91		0800 - 1800 M-F	30 minutes	1 hour	Internal ICT technical support	0800-1800 M-F	10-Jul-03	11-Jul-03	
Router		3		0800 - 1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03	11-Jul-03	
Router		4		0800 - 1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03	11-Jul-03	
Router		5		0800 - 1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03	11-Jul-03	
LAN		N/A		0800 - 1800 M-F	30 minutes	1 hour	Internal ICT technical support	0800-1800 M-F	10-Jul-03	11-Jul-03	
ISDN		21		0800 - 1800 M-F	15 minutes	4 hours	Telecoms Co	0900-1700 M-F	10-Jul-03	11-Jul-03	
ISP		23		0800 - 1800 M-F	15 minutes	30 minutes	ISP Co	24x7 5-5	10-Jul-03	11-Jul-03	
Word processing		Applications file server	1	All departments	0800 - 1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03	11-Jul-03
		File server O/S	91		0800 - 1800 M-F	30 minutes	1 hour	Internal ICT technical support	0800-1800 M-F	10-Jul-03	11-Jul-03
	WP server software	30		0800 - 1800 M-F	4 hours	8 hours	WP Software Ltd	0900-1700 M-F	10-Jul-03	11-Jul-03	
	Router	3		0800 - 1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03	11-Jul-03	
	Router	4		0800 - 1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03	11-Jul-03	
	Router	5		0800 - 1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03	11-Jul-03	
	LAN	N/A		0800 - 1800 M-F	30 minutes	1 hour	Internal ICT technical support	0800-1800 M-F	10-Jul-03	11-Jul-03	
	Interactive Whiteboard	Whiteboard	25		0800 - 1600 M-F	1 hour	4 hours	Internal ICT technical support	0800-1800 M-F	10-Jul-03	11-Jul-03
	Ltd	Applications file server	1	10-Jul-03	11-Jul-03	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03	11-Jul-03
	School Administration	Router	4		0800 - 1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03	11-Jul-03
LAN		N/A		0800 - 1800 M-F	30 minutes	1 hour	Internal ICT technical support	0800-1800 M-F	10-Jul-03	11-Jul-03	
Applications file server		1	Head Teacher	0800 - 1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03	11-Jul-03	
SAS		35	Department Head	0800 - 1800 M-F	30 minutes	2 hours	LEA	0800-1800 M-F	10-Jul-03	11-Jul-03	
Router		3	Admin Assistant	0800 - 1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03	11-Jul-03	
Router		4		0800 - 1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03	11-Jul-03	
Router		5		0800 - 1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03	11-Jul-03	
LAN		N/A		0800 - 1800 M-F	30 minutes	1 hour	Internal ICT technical support	0800-1800 M-F	10-Jul-03	11-Jul-03	
Printing mono		Printer server	15	All departments	0800 - 1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03	11-Jul-03
		File server O/S	91		0800 - 1800 M-F	30 minutes	1 hour	Internal ICT technical support	0800-1800 M-F	10-Jul-03	11-Jul-03
	Laserjet	40		0800 - 1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03	11-Jul-03	
	Laserjet	41		0800 - 1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03	11-Jul-03	
	Inkjet	42		0800 - 1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03	11-Jul-03	

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Framework for ICT Technical Support (FITS)		Becta   ICT Advice					
Service Level Management example service catalogue							
Consumables	N/A	0800 - 1800 M-F	15 minutes	30 minutes	Internal ICT technical support	0800-1800 M-F	10-Jul-03
Router	3	0800 - 1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	11-Jul-03
Router	4	0800 - 1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03
Router	5	0800 - 1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03
LAN	N/A	0800 - 1800 M-F	30 minutes	1 hour	Internal ICT technical support	0800-1800 M-F	10-Jul-03
Printer server	15	0800 - 1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03
Laserjet	42	0800 - 1800 M-F	15 minutes	30 minutes	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03
File server O/S	91	0800 - 1800 M-F	30 minutes	1 hour	Internal ICT technical support	0800-1800 M-F	10-Jul-03
Consumables	N/A	0800 - 1800 M-F	15 minutes	30 minutes	Internal ICT technical support	0800-1800 M-F	10-Jul-03
Router	3	0800 - 1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03
Router	4	0800 - 1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03
Router	5	0800 - 1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03
LAN	N/A	0800 - 1800 M-F	30 minutes	1 hour	Internal ICT technical support	0800-1800 M-F	10-Jul-03
French GCSE	50	0800 - 1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03
Desktop Computer	51	0800 - 1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03
Desktop Computer	50	0800 - 1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03
Laptop	37	0800 - 1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03
French GCSE	38	0800 - 1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03
French GCSE	39	0800 - 1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03

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## SLM Appendix C Example review answers

Questions	Findings	Actions
Have you identified services you didn't know existed?	French GCSE software has been installed locally on two computers and a laptop in Classroom 2. There is no support for this at the moment. We didn't do this so we don't know where the licences are.	<ul style="list-style-type: none"> <li>Identify who has installed this.</li> <li>Locate licences or remove software.</li> <li>Identify supplier.</li> <li>Identify support terms and costs.</li> <li>Review costs with headteacher and head of languages.</li> </ul>
Can you spot any trends in how work is prioritised?	<p>A colour printer has a very fast response and fix time from technical support and XYZ Maintenance, but we can't find out who uses it.</p> <p>We suspect this is because of the initial high cost of the equipment and the need for benefit to be realised, but that the level of service may not be required (or awareness of availability of service needs to be raised).</p>	<ul style="list-style-type: none"> <li>Find colour printer users.</li> <li>Identify cost of fast response and fix.</li> <li>Review actual response and fix needs.</li> <li>Agree way forward with headteacher.</li> <li>Market service or reduce service levels.</li> </ul>
Are there any clashes in priority or availability within a service that could restrict its overall service level?	Response times for standard off-the-shelf software (email and word processing) is slower than for hardware resolution so could potentially extend downtime.	<ul style="list-style-type: none"> <li>Assess risk and impact.</li> <li>Assess cost of faster response.</li> <li>Review suitability of response times.</li> </ul>
Have you identified any third-party response or fix time issues?	<p>Support hours of third-party suppliers do not match availability requirements (with the exception of ISP Co and LEA).</p> <p>ISP hours are excessive and response times are fast. This may not be required and may be costing us more money than we need to pay.</p>	<ul style="list-style-type: none"> <li>Review requirement.</li> <li>Identify cost of extension.</li> <li>Identify potential savings with ISP Co.</li> <li>Discuss implications and way forward with headteacher.</li> <li>Reapportion funds to service providers as agreed.</li> </ul>
Have you identified any other support issues?	Hours of support for interactive whiteboard are not known.	<ul style="list-style-type: none"> <li>Contact Whiteboard Supplier Ltd for details.</li> <li>Review hours for suitability.</li> <li>Update service catalogue.</li> </ul>



## SLM Appendix D Service report – example and template

Framework for ICT Technical Support (FITS)

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### Service Level Management example service report

Enter Monthly figures in the columns below					
Enter months >	v	v	v	v	Totals
	March	April	May	June	
Number of incidents logged >	20	36	30	45	131
Average time to incident resolution >	2	3	3	2	
Number of problem >	4	12	9	17	42
Average time to problem resolution >	4	7	6	3	
Number of incidents resolved by Service Desk >	4	8	11	15	38
Number of incidents referred by Service Desk >	16	28	19	30	93
Number of incidents fixed remotely >	2	4	5	8	19
Number of incidents fixed by visit >	16	30	25	24	95
Number of incidents closed in period >	18	34	30	32	114
Number of problems closed in period >	3	8	11	15	37
Number of incidents still open >	2	4	4	17	27
Number of problems still open >	1	5	3	5	14
Number of computers installed >	3	6	2	1	12
Number of software applications installed >	3	4	12	10	29
Number of printers installed >	0	1	4	0	5
Number of requests for change processed >	3	2	0	4	15
Number of successful changes >	2	1	5	4	12
Used server disk space (gigabytes) >	25	26	27	28	
Available server disk space (gigabytes) >	5	4	3	32	

Save and print

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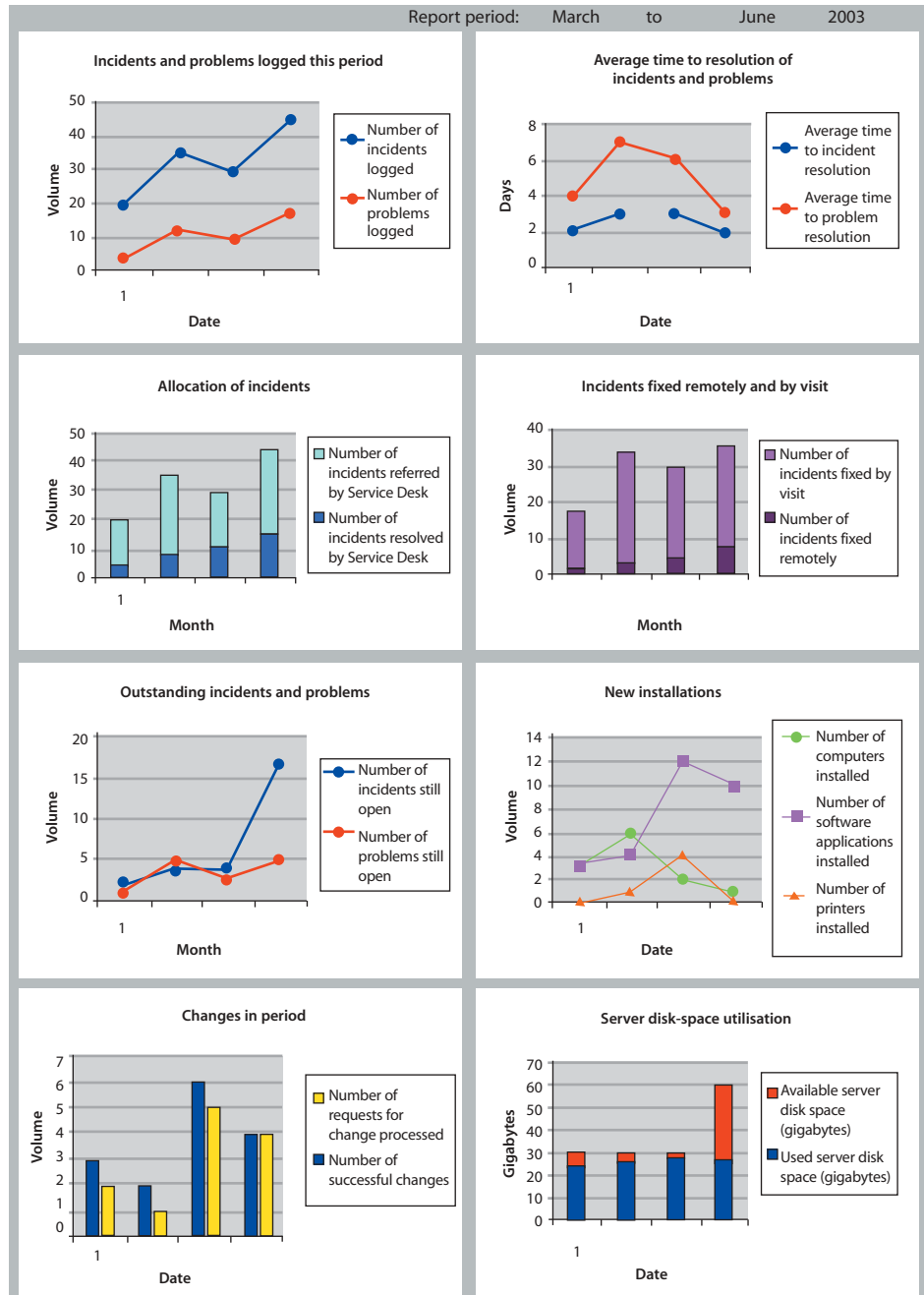
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# SLM Appendix D Service report – example and template

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## Service Level Management example service report



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## Glossary

<b>10Base-T</b>	A networking standard that supports data transfer rates up to 100 Mbps (100 megabits per second). 10Base-T is based on the older Ethernet standard but is 10 times faster than Ethernet; it is often referred to as Fast Ethernet. Officially, the 10Base-T standard is IEEE 802.3u. Like Ethernet, 10Base-T is based on the CSMA/CD LAN access method.
<b>AppleTalk</b>	Inexpensive LAN (local area network) architecture built into all Apple Macintosh computers and laser printers. AppleTalk supports Apple's LocalTalk cabling scheme, as well as Ethernet and IBM Token Ring. It can connect Macintosh computers and printers, and even PCs if they are equipped with special AppleTalk hardware and software.
<b>Asset</b>	Component of a business process. Assets can include people, accommodation, computer systems, networks, paper records, fax machines, etc.
<b>Availability</b>	Ability of a component or service to perform its required function at a stated instant or over a stated period of time. It is usually expressed as the availability ratio: the proportion of time that the service is actually available for use by customers within the agreed service hours.
<b>Availability Management</b>	To ensure that ICT services are available for use consistently as agreed.
<b>Bandwidth</b>	The amount of data that can be transmitted in a fixed amount of time. For digital devices, the bandwidth is usually expressed in bits per second (bps).
<b>Baseline</b>	A snapshot or a position which is recorded. Although the position may be updated later, the baseline remains unchanged and available as a reference of the original state and as a comparison against the current position.
<b>Bridge</b>	A device that connects two LANs (local area networks), or two segments of the same LAN that use the same protocol, such as Ethernet or Token Ring.
<b>Buffer</b>	A temporary storage area, usually in RAM. The purpose of most buffers is to act as a holding area, enabling the CPU to manipulate data before transferring it to a device.
<b>Build</b>	The final stage in producing a usable configuration. The process involves taking one or more input configuration items and processing (building) them to create one or more output configuration items (eg software compile and load).
<b>Capacity</b>	Ability of available supply of processing power to match the demands made on it by the business, both now and in the future.
<b>Capacity Management</b>	To ensure that all ICT processing and storage capacity provision match present and evolving needs.
<b>Category</b>	Classification of a group of configuration items, change documents, incidents or problems.
<b>Change</b>	The addition, modification or removal of approved, supported or baselined hardware, network, software, application, environment, system, desktop build or associated documentation.

<b>Change Management</b>	The managed and recorded introduction of changes to hardware, software, services or documentation to minimise disruption to ICT operation and maintain accurate configuration information.
<b>Client</b>	The client part of a client/server architecture. Typically, a client is an application that runs on a personal computer or workstation and relies on a server to perform some operations. For example, an email client is an application that enables you to send and receive email.
<b>Client/server architecture</b>	A network architecture in which each computer or process on the network is either a client or a server. Servers are powerful computers or processes dedicated to managing disk drives (file servers), printers (print servers) or network traffic (network servers). Clients are PCs or workstations on which users run applications. Clients rely on servers for resources such as files, devices and even processing power.
<b>Configuration management database (CMDB)</b>	A database which contains all relevant details of each ICT asset, otherwise known as a configuration item (CI), and details of the important relationships between CIs.
<b>Configuration Management</b>	Implementing and maintaining up-to-date records of ICT hardware, software, services and documentation, and showing the relationships between them.
<b>Definitive software library (DSL)</b>	<p>The library in which the definitive authorised versions of all software CIs are stored and protected. It is a physical library or storage repository where master copies of software versions are placed. This one logical storage area may in reality consist of one or more physical software libraries or filestores. They should be separate from development and test filestore areas. The DSL may also include a physical store (fire-proof safe, for example) to hold master copies of bought-in software. Only authorised software, strictly controlled by Change Management and Release Management, should be accepted into the DSL.</p> <p>The DSL exists not directly because of the needs of the Configuration Management process, but as a common base for the Release Management and Configuration Management processes.</p>
<b>Device</b>	Any computer or component that attaches to a network.
<b>Error trap</b>	A signal informing a program that an event has occurred. When a program receives an interrupt signal, it takes a specified action (which can be to ignore the signal). Interrupt signals can cause a program to suspend itself temporarily to service the interrupt.
<b>Ethernet</b>	A LAN (local area network) architecture developed in 1976 by Xerox Corporation in co-operation with DEC and Intel. Ethernet uses a bus or star topology and supports data transfer rates of 10 Mbps. The Ethernet specification served as the basis for the IEEE 802.3 standard, which specifies the physical and lower software layers. Ethernet is one of the most widely implemented LAN standards.
<b>FDDI (Fibre Distributed Data Interface)</b>	A set of ANSI protocols for sending digital data over fibre optic cable. FDDI networks are token-passing networks, and support data rates of up to 100 Mbps (100 million bits) per second. FDDI networks are typically used as backbones for wide area networks.
<b>Financial Management</b>	To ensure that the ICT and technical resources are implemented and managed in a cost-effective way.

<b>Firewall</b>	A system designed to prevent unauthorised access to or from a private network. Firewalls can be implemented in both hardware and software, or a combination of both. Firewalls are frequently used to prevent unauthorised internet users from accessing private networks connected to the internet, especially intranets. All messages entering or leaving the intranet pass through the firewall, which examines each message and blocks those that do not meet the specified security criteria.
<b>Gateway</b>	A node on a network that serves as an entrance to another network. In schools, the gateway is the computer that routes the traffic from a workstation to the outside network that is serving web pages. In homes, the gateway is the ISP that connects the user to the internet.
<b>Gigabit</b>	When used to describe data transfer rates, it refers to 10 to the 9th power (1,000,000,000) bits. Gigabit is abbreviated Gb, as opposed to gigabyte, which is abbreviated GB.
<b>HTTP (hypertext transfer protocol)</b>	The underlying protocol used by the World Wide Web. HTTP defines how messages are formatted and transmitted, and what actions web servers and browsers should take in response to various commands. For example, when you enter a URL in your browser, this actually sends an HTTP command to the web server directing it to fetch and transmit the requested web page.
<b>Hub</b>	A connection point for devices in a network. Hubs are commonly used to connect segments of a LAN (local area network). A hub contains multiple ports. When a packet arrives at one port, it is copied to the other ports so that all segments of the LAN can see all packets.
<b>ICT</b>	The convergence of information technology, telecommunications and data networking technologies into a single technology.
<b>Incident</b>	Any event which is not part of the standard operation of a service and which causes, or may cause, an interruption to, or a reduction in, the quality of that service.
<b>Incident Management</b>	To detect, diagnose and resolve ICT incidents as quickly as possible and minimise their adverse impact on normal operation.
<b>ITIL</b>	The OGC IT Infrastructure Library – a set of guides on the management and provision of operational IT services.
<b>LAN</b>	A computer network that spans a relatively small area. Most local area networks (LANs) are confined to a single building or group of buildings.
<b>LocalTalk</b>	The cabling scheme supported by the AppleTalk network protocol for Macintosh computers. Most local area networks that use AppleTalk, such as TOPS, also conform to the LocalTalk cable system. Such networks are sometimes called LocalTalk networks.
<b>Logical topology</b>	The logical topology is the way that the signals act on the network media, or the way that the data passes through the network from one device to the next without regard to the physical interconnection of the devices.
<b>MAC (media access control) address</b>	Each device on a network can be identified by its MAC address, a hardware address that uniquely identifies each node of a network. In IEEE 802 networks, the data link control (DLC) layer of the OSI reference model is divided into two sub-layers: the logical link control (LLC) layer and the MAC layer. The MAC layer interfaces directly with the network media. Consequently, each different type of network media requires a different MAC layer.

<b>Management information base (MIB)</b>	A management information base (MIB) is a database of objects that can be monitored by a network management system. Both SNMP and RMON use standardised MIB formats that allow any SNMP and RMON tools to monitor any device defined by a MIB.
<b>Network</b>	A group of two or more computer systems linked together. The two types of computer networks of interest to schools are LANs (local area networks) and WANs (wide area networks).
<b>Network interface card (NIC)</b>	A network interface card (NIC) is an expansion board inserted or built into a computer so that the computer can be connected to a network. Most NICs are designed for a particular type of network, protocol, although some can serve multiple networks.
<b>Network traffic</b>	The load on a communications device or system.
<b>Node</b>	A processing location. A node can be a workstation or some other device, such as a printer. Every node has a unique network address, sometimes called a data link control (DLC) address or media access control (MAC) address.
<b>OSI reference model</b>	The OSI (open system interconnection) model defines a networking framework for implementing protocols in seven layers. Control is passed from one layer to the next, starting at the application layer in one station, and proceeding to the bottom layer, over the channel to the next station, and back up the hierarchy.
<b>Packet</b>	A piece of a message transmitted over a packet-switching network. One of the key features of a packet is that it contains the destination address in addition to the data.
<b>Packet switching</b>	Refers to protocols in which messages are divided into packets before they are sent. Each packet is then transmitted individually and can even follow different routes to its destination. Once all the packets forming a message arrive at the destination, they are recompiled into the original message.
<b>Peer-to-peer network</b>	A type of network in which each workstation has equivalent capabilities and responsibilities. This differs from client/server architectures, in which some computers are dedicated to serving the others.
<b>Physical topology</b>	The physical layout of devices on a network. Every LAN (local area network) has a topology – the way the devices on a network are arranged and how they communicate with each other.
<b>Port</b>	In TCP/IP and UDP networks, an endpoint to a logical connection. The port number identifies what type of port it is. For example, port 80 is used for HTTP traffic.
<b>Problem</b>	The underlying cause of an incident or incidents.
<b>Problem Management</b>	The detection of the underlying causes of incidents and their resolution and prevention.
<b>Protocol</b>	An agreed format for transmitting data between two devices.
<b>Protocol stack</b>	A set of network protocol layers that work together. The OSI reference model that defines seven protocol layers is often called a stack, as is the set of TCP/IP protocols that define communication over the internet.

<b>Proxy server</b>	A server that sits between a client application, such as a web browser, and a real server. It intercepts all requests to the real server to see if it can fulfil the requests itself. If not, it forwards the request to the real server.
<b>Release Management</b>	To plan, test and manage the successful implementation of software and hardware. To define release policy and to ensure that master copies of all software are secured centrally.
<b>Remote monitoring (RMON)</b>	Remote monitoring (RMON) is a network management protocol that allows network information to be gathered at a single workstation. For RMON to work, network devices such as hubs and switches must be designed to support it.
<b>Request for change</b>	Form or screen used to record details of a request for a change to any CI within an infrastructure, or to procedures and items associated with the infrastructure.
<b>Router</b>	A device that forwards data packets along networks. A router is connected to at least two networks, commonly two LANs (local area networks) or WANs (wide area networks) or a LAN and its ISP's network. Routers are located at gateways, the places where two or more networks connect.
<b>Segment</b>	A section of a network that is bounded by bridges, routers or switches. Dividing an Ethernet into multiple segments is one of the most common ways of increasing available bandwidth on the LAN.
<b>Server</b>	A workstation or device on a network that manages network resources. For example, a file server is a computer and storage device dedicated to storing files. Any user on the network can store files on the server. A print server is a computer that manages one or more printers, and a network server is a computer that manages network traffic. A database server is a computer system that processes database queries.
<b>Service Continuity Management</b>	To minimise the impact on ICT service of an environmental disaster and put in place and communicate a plan for recovery.
<b>Service Desk</b>	The single point of contact within the school for all users of ICT and the services provided by Technical Support.
<b>Service level agreement</b>	Written agreement between a service provider and the customer(s) that documents agreed service levels for a service.
<b>Service Level Management</b>	The process of defining, agreeing and documenting required service levels and ensuring that these levels are met.
<b>Simple network management protocol (SNMP)</b>	A set of protocols for managing complex networks. SNMP works by sending messages, called protocol data units (PDUs), to different parts of a network. SNMP-compliant devices, called agents, store data about themselves in management information bases (MIBs) and return this data to the SNMP requesters.
<b>Star topology</b>	A LAN (local area network) that uses a star topology in which all nodes are connected to a central computer. The main advantages of a star network are that one malfunctioning node does not affect the rest of the network and that it is easy to add and remove nodes.
<b>Switch</b>	A device that filters and forwards packets between segments of a LAN (local area network). Switches operate at the data link layer (layer 2) and sometimes the network layer (layer 3) of the OSI reference model and therefore support any packet protocol.

<b>TCP/IP (Transmission Control Protocol/Internet Protocol)</b>	The suite of communications protocols used to connect hosts on the internet. TCP/IP uses several protocols, the two main ones being TCP and IP.
<b>Token ring</b>	A type of computer network in which all the computers are arranged (schematically) in a circle. A token, which is a special bit pattern, travels around the circle. To send a message, a computer catches the token, attaches a message to it, and then lets it continue to travel around the network.
<b>Topology</b>	The shape of a LAN (local area network) or other communications system. Topologies are either physical or logical.
<b>User datagram protocol (UDP)</b>	A connectionless protocol that, like TCP, runs on top of IP networks. Unlike TCP/IP, UDP/IP provides very few error recovery services, offering instead a direct way to send and receive datagrams over an IP network. It is used primarily for broadcasting messages over a network.
<b>WAN</b>	A computer network that spans a relatively large geographical area. Typically, a wide area network (WAN) consists of two or more LANs (local area networks). Computers connected to a wide area network are often connected through public networks, such as the telephone system. They can also be connected through leased lines or satellites. The largest WAN in existence is the internet.
<b>Workstation</b>	Any computer connected to a LAN (local area network).