ACCESS 2

TIGRIS®

MASTERKEYING FOR HOSPITALS

Tigris® Best Practice Guide

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The UK's most popular cylinder

Tigris® is the most popular masterkey cylinder system in the UK today. This product has been installed in over 140 hospitals in the last 6 years.

This guide is written specifically for hospital projects drawing upon our experience in creating modern systems and our proposals are offered on a 'best practice' basis.

Specifically, the guide will demonstrate how our modern approach will:

- Demonstrate how a masterkey system can be harmonised with an electronic access control system
- Match the key access permissions exactly with the needs of a user group
- Reduce the number of keys required by an individual; typically only one is required
- Reduce the initial cost of the system and thereafter running costs by eliminating unnecessary keys
- Simplify the masterkeying planning process
- Create a system that is easy to understand and administer and is flexible to accommodate the changing needs of the user

Tigris® are proud to be associated with the following hospital projects:

Belfast City Hospital
Colchester General Hospital
Cork Maternity Hospital
Gloucester Royal Hospital
Hope Hospital, Manchester
Kings College Hospital, London
Nottingham City Hospital
Queen Elizabeth Hospital, Birmingham
Royal Alexandra Children's Hospital, Brighton
Royal Free Hospital, London
Royal Hospital Chelsea, London
Sheffield Children's Hospital
St Bart's Hospital, London
Stoke Mandeville Hospital
University Hospital of North Staffs, Stoke on Trent

Traditional systems too cumbersome

Traditional systems

Twenty years ago, a masterkey system for a hospital would normally be hierarchical as the diagram below shows. All of the doors would be operable by a Grand Masterkey.

At the next level, doors would be arranged into area zones and zone sub masterkeys (masterkey for a group of locks) would be allocated to control that particular area of the hospital. It would be normal to add a further level that could for example cover floors within the building or departments.

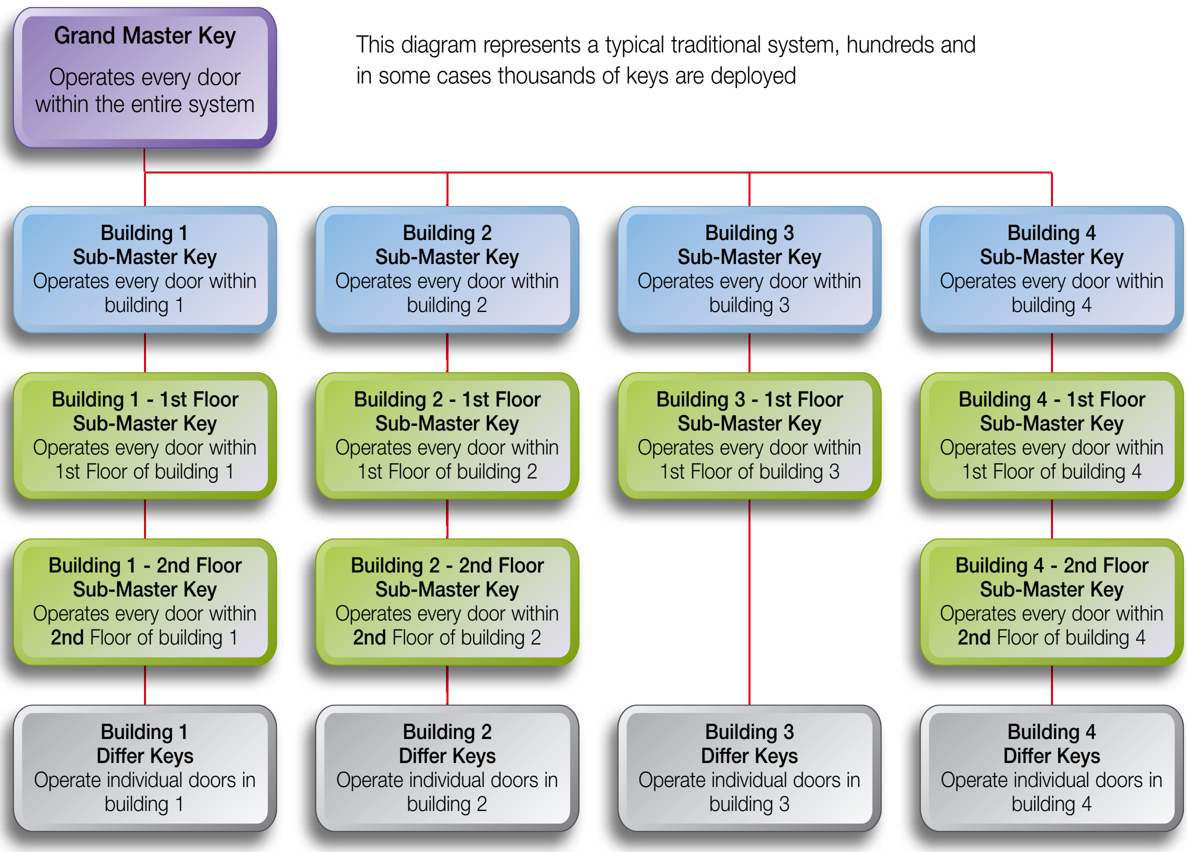
Individual keys that operate an individual cylinder lock would then be allocated.

Major drawbacks of this method are that the system cannot accommodate the requirements of multiple departments requiring access to the same doors/areas.

In a traditional hospital masterkey system, the deficiency is typically overcome by issuing multiple keys to each individual. In some systems, individuals have been issued with multiple zone sub masterkeys, thus weakening the integrity of the system as the individual has access to an entire zone(s) irrespective of the fact that they only require access to minimal doors within the zone.

Summary of drawbacks

- Individuals carry multiple keys (Jailor Key Syndrome)
- An immense number of keys are required in the system as individual keys are created for each door. This leads to issues of cost and storage
- The number of keys in the system soon exhausts the capacity of the cylinder system and thus reduces the capability of future system extensions
- The system becomes so complex that it is difficult to decide what keys are required and to whom they have been issued
- If the needs of the hospital change, if for example a nurse on ward 22 is seconded to ward 36 which happens to be in a different building or on a different floor, additional keys would need to be allocated
- Difficult to arrange and plan the masterkey system



This diagram represents a typical traditional system, hundreds and in some cases thousands of keys are deployed

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Modern key control systems

Modern key control systems in summary

Modern key control systems have the following benefits for the system planner

- As the electronic system will be installed at the entrances to zones or departments, the masterkey system can be simplified whilst remaining secure. This is due to the fact that the keyholder must first have a valid access control credential such as a card or fob to enter the zone/department
- Individuals are issued with minimal keys. Usually only 1 is required
- The total number of keys required is kept to a minimum, so if you have 200 Nurses & Midwives you need only 200 identical 'clinical keys'
- Masterkey planning is significantly easier
- The system is easy to understand (see sample on pages 7-8)
- The arrangements are easily communicated to staff
- Stocks of keys can be held for immediate issue (made possible as there are typically less than 40 - 60 different key types to run the entire system)
- Flexible to accommodate changing needs. If, for example, a nurse is seconded to a different ward there is no need to re-issue additional keys

The diagram below illustrates part of a typical set-up showing how a number of different keys are allocated in a modern hospital master keyed system.

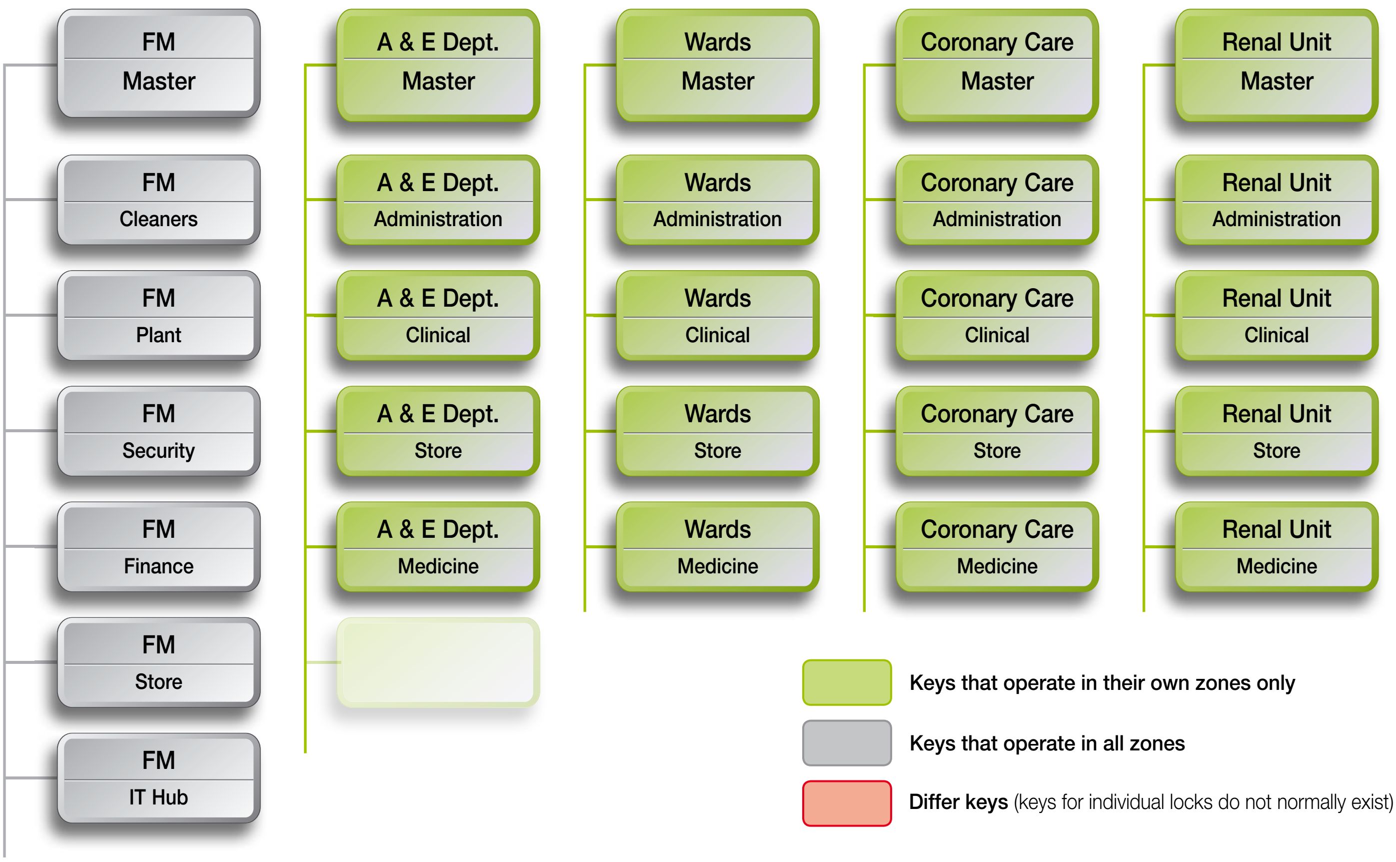
Each key is specific to a department and so, for example, the Clinical Control Key for the A&E department will only operate the 'clinical' doors within A&E and no other department.

As it is possible for doors to be operated by more than one key i.e. a staff room could be operated by both 'clinical' and 'admin' keys it is therefore possible to eliminate most if not all differ keys (keys that operate one lock only).

Cross keying

An exception to the rule that keys span one department only is usually made for FM keys. These keys operate all FM type doors across the entire hospital, allowing the electronic access control system to control the access to zones/buildings.

A modern key control system



The following pages will cover in detail:

- The elimination of the grand master key (the key in a traditional system that controls every door in the hospital)
- How the mechanical key and electronic access control system can be harmonised
- Matching keys to groups of users
- Differ keys for special rooms
- How to document the plan of the masterkeyed system
- Design and supply process

Convenient or secure? - elimination of the grand masterkey

In traditional systems the grand masterkey (the key that operates every lock in the Hospital) exists. This means that the system is designed to be more convenient than secure.

Whilst these systems are convenient for the grand masterkey holder, the system is made vulnerable in its design. This is due to the effect of a lost grand masterkey being so great.

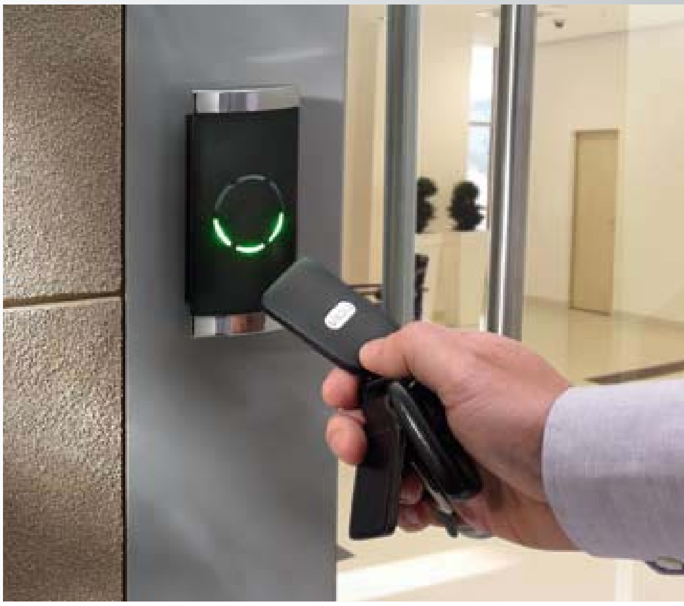
In the system's life, we see the issuance of grand masterkeys being disproportionate to what would be considered as normal. Again this proves that either they are replacements for lost keys or that for convenience's sake, more and more individuals are using the key.

We therefore consider the creation and issuance of the grand master will result in it being issued beyond what was initially intended, either for convenience or to replace lost keys. With this in mind, we strongly recommend that it does not exist.

Harmonising the mechanical key and electronic access control

Most modern hospitals use mechanical masterkey systems in conjunction with electronic access control. As the electronic system will be installed at the entrances to zones or departments, the key system remains secure as the keyholder must first have a valid access control credential such as a card or fob to enter the department.

This means for example, that a nurse who normally works on ward 23 can be seconded to ward 5. Only the access control credential needs to be updated. A single clinical key is all that is required, negating the need to create separate keys for each ward.



Matching control keys with user groups

The fundamental difference between a modern approach to masterkeyed systems is that the keys within the system are linked to groups of users who have identical access requirements, rather than through their geographic location within the building.

The first step is to consider the users that will use each department/building. The users could be organised into groups such as:

- *Ancillary Staff*
- *Admin & Clerical*
- *Senior Managers*
- *Doctors & Consultants*
- *Health Care Assistants*
- *Nurses & Midwives*
- *Theatre Staff*
- *Scientific*
- *Technical*
- *Pharmacy*
- *Engineering*
- *FM - Cleaner*
- *FM - Catering*
- *FM - Maintenance*
- *FM - Security*

Nurses & Midwives

Admin & Clerical Staff

FM - Cleaners

Planning your masterkey system

There may be occassions where a number of user groups are allocated the same 'control key'. For example, doctors, consultants, nurses, physiotherapists etc may all be allocated the 'Clinical control key'.

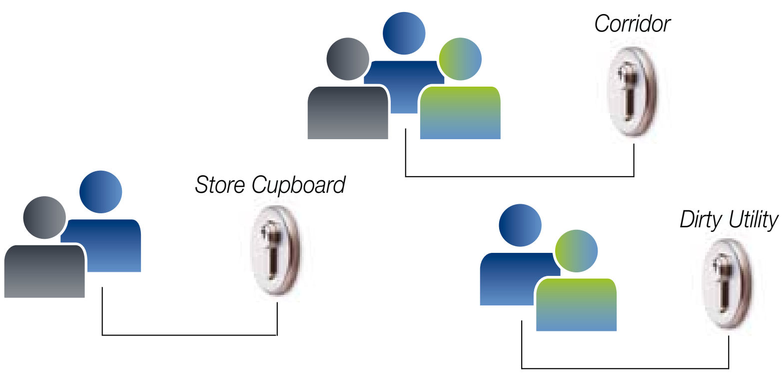
Matching control keys with user groups

Each of the user groups identified is allocated a 'Control Key'. These could be as follows:

- *Clinical control key*
- *Medicine control key*
- *Theatres control key*
- *Administration control key*
- *Senior managers control key*
- *Pharmacy control key*
- *Store control key*
- *Clean procedures control key*
- *Mortuary services control key*
- *Soft FM – cleaning control key*
- *Soft FM – catering control key*
- *Hard FM – security control key*
- *Hard FM – services control key*
- *Hard FM – IT Hub control key*

Each door within the building is then assessed in relation to which of the control keys requires access and the masterkeyed cylinders are built to suit these requirements.
Using a lockchart (your supplier can supply you with a blank spreadsheet that is already populated with each individual door) you can plan which control keys should operate which mechanically controlled doors. Where an X intersects the control key and the door, that key will operate (see example on pages 7 - 8)

In this example you can see that each door can be allocated access to different combinations of control keys/user groups.



Differ keys for special rooms

It is recommended that keys to operate one lock only should be kept to a minimum to allow sophisticated control keying as shown above. Differ keys should be limited to 'Special Rooms'. Areas that are candidates for these are typically cash rooms and medical records. These doors are usually issued with a key that operates that door alone (and no other) and the issuing of keys should be limited. These doors are not usually operable by any master key or control keys.

Masterkey
No overall Grand Masterkey is provided to limit the effect of its loss (see page 4). A master key is provided to control the doors within each department.

Control keys
Staff have been arranged into groups and it is these keys that are ultimately issued (see page 6).

Differ keys for special rooms
Where a key quantity is shown the door is only controlled by its own differ key. This key operates no other locks in the system and this door is not controlled by any master or functional key (see page 6).

Master Key Schedule | **Project:** Queen Mary Hospital, Accident and Emergency | **Version 1.2** | **Client:** ABC Architectural Ironmongery

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SENIOR / CONTROL KEYS | CYLINDERS & FINISHES | CYLS & FINISH

CHART REF	SERIAL NO	DOOR NR.	ROOM	ROOM DESCRIPTION	GM AE Grand Master - A&E	AE CL A&E Clinical	AE AD A&E Admin	AE MED A&E Medication	AE PH A&E Pharmacy	AE ST A&E Store	FMS 1 Soft FM Cleaning	FM SER Hard FM Services	FM SEC Hard FM Security		Individual Keys Per Cylinder (-) Indicates no differ key allowance required)	Hardware Set	Fire Rating	Euro Standard Single & Turn EK3030T SC	Euro Standard Single & Turn EK3535T SC	Euro Double ED3030 SC	Euro Double ED3535 SC	Euro Single ES40 SC	Euro Single ES45 SC	No Cylinder Required	Cylinder Finish
34	1278	201118/01	201118/01	Examination/ treatment bay 1	X	X									(-)	C1p	FD30s		1						SNP
35	1275	201201/01	201201/01	Equipment store 1	X	X									(-)	C3	None		1						SNP
36	1276	201201/02	201201/02	Equipment store 2	X	X									(-)	C3	None		1						SNP
37	1273	201212/01	201212/01	Dirty utility	X	X									(-)	C31p	None		1						SNP
38	1274	201212/02	201212/02	Dirty utility	X	X									(-)	C1p	FD30s		1						SNP
39	1304	201410_1	201410	Reception office /Home accident	X		X								(-)	C1p	FD30s		1						SNP
40	1305	201410_2	201410	Reception office /Home accident	X		X								(-)	C1p	FD30s		1						SNP
41	1258	201415/01	201415/01	A&E Consultant office (two person)	X		X								(-)	A2	FD30s		1						SNP
42	1271	201426/01	201426/01	Co-ordinators office / A&E consultants office	X	X									(-)	A9	None		1						SNP
43	1269	201426/02_1	201426/02	Co-ordinator	X		X								(-)	A9	None		1						SNP
44	1270	201426/02_2	201426/02	Co-ordinator	X		X								(-)	A5	None		1						SNP
45	1332	201515_1	201515	Visiting room/ viewing room	X	X									(-)	A8	FD30s		1						SNP
46	1210	301208	301208	Medication room	X			X							(-)	PR	None		1						SNP
47	1205	301301	301301	Interview/ sitting room 2	X	X									(-)	PR	None		1						SNP
48	1222	301303	301303	Printer/IT	X		X								(-)	A9	None		1						SNP
49	1250	301401	301401	Ward management office 1	X		X								(-)	PR	None		1						SNP
50	1218	301403	301403	Office (one person) and meeting area	X		X								(-)	A5	None		1						SNP
51	1242	301405	301405	Staff Office	X		X								(-)	PR	None		1						SNP
52	1181	302108	302108	Consulting /examination/ procedure room 1	X	X									(-)	PR	None		1						SNP
53	1186	302202	302202	Dirty utility	X	X									(-)	A9	None		1						SNP
54	1206	302301	302301	Interview/sitting room 1	X	X									(-)	A9	None		1						SNP
55	1219	302302	302302	Pantry/ beverage	X	X									(-)	PR	None		1						SNP
56	1176	302304	302304	Additional Store (Trust)	X	X									(-)	PR	None		1						SNP
57	1248	302307	302307	Switchgear cupboard								X			(-)	C19p	None		1						SNP
58	1251	302401	302401	Ward management office 2	X	X									(-)	A15	FD30s		1						SNP
59	1301	201102	201102	Plaster Room & Store	X	X									(-)	A8	FD30s		1						SNP
60	1317	201113	201113	Special purpose room - Gynaecology	X	X									(-)	A2	FD30s		1						SNP
61	1316	201114	201114	Special purpose room - ENT/ ophthalmology	X	X									(-)	PR	FD60s				1				SNP
62	1318	201115	201115	Special purpose room - Paediatric	X	X									(-)	B8	None		1						SNP
63	1291	201207	201207	Medical Records											2	A19	None		1						SNP
64	1272	201208	201208	Security Office									X		(-)	C3	None		1						SNP
65	1290	201213	201213	Switchgear cupboard								X			(-)	C3	None		1						SNP
66	1265	399601/02_1	399601/02	Cleaners' room 2							X				(-)	C3	None		1						SNP
67	1296	201217	201217	Medication room	X			X							(-)	A5	None		1						SNP

Cylinders and finishes
This section covers the types of cylinder that will be provided for each door. This is completed by your ironmongery provider.

Multiple turn options
A choice of turn options are available. Please ask your architectural ironmonger for further details.

Control keys that have access
Illustrated where an 'X' intersects the key and door.

Blank lockcharts
Blank Microsoft™ Excel lockcharts are available. Please email your requirements to **sales@access2.com.**

Further information
The Tigris® Accessible Secure brochure which includes full details of our cylinder range is available upon request.

Please email your request to **sales@access2.com.**

System design and supply process

The design process will result in the creation of a masterkey system for a Hospital. The key system will ultimately determine how the building users interact within the Hospital. The process does therefore require a high level of participation from the building user group.

It is important that the design process is started early enough in the project to allow a reasonable time for consultation, manufacture and installation. Each of the process times can be reduced in special circumstances yet may incur additional cost.

Beyond the initial supply maintenance of records

Once your cylinders have been supplied, Tigris® issue the build lockchart which will contain the serial numbers of all keys and cylinders supplied to your project. This will ensure that you are furnished with a document that will assist you in ordering spares and subsequent system extensions from your supplier.

Your supplier will assist you in obtaining an up-to-date lockchart at any time that will contain a running total of every cylinder and key that has ever been supplied to your system.

For full details of all Access^2 Accessible Solutions please contact our sales office for further brochures

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