

Information Security Management System MS ISO/IEC 27001:2007

BACKUP AND RESTORATION PLAN

RANCANGAN SOKONGAN/SANDARAN/PENDUAAN DAN PEMULIHAN



UniMAP

UNIVERSITI MALAYSIA PERLIS

Written By: En. Mohd Nasri Mat Isa	Verified By: Pn. Rohazna Wahab Deputy Director ICT	Approved By: En. Nasrudin Abd. Shukor Director ICT Division ISMR
--	---	--

For Dept Use Only

Date: 22 March 2013

Version 1.1

**BACKUP AND RESTORATION PLAN****RANCANGAN
SOKONGAN/SANDARAN/PENDUAAN
DAN PEMULIHAN**

Doc No: Version 1.1

Effective Date: 22 March 2013

Index No: UniMAP/ISMS/SP-005

**BACKUP AND RESTORATION PLAN
RANCANGAN SOKONGAN/SANDARAN/PENDUAAN DAN PEMULIHAN**

Revision History

No	Date of Change	Description	Page	Version	Approved By
1	22/03/2013	Item No 5.3(version 1.0) are deleted/removed because there is no such a backup type implemented by Pusat Data	4-5	1.1	Nasrudin Abd. Shukor

	<p align="center">BACKUP AND RESTORATION PLAN</p> <p align="center">RANCANGAN SOKONGAN/SANDARAN/PENDUAAN DAN PEMULIHAN</p>	<p>Doc No: Version 1.1</p> <p>Effective Date: 22 March 2013</p> <p>Index No: UniMAP/ISMS/SP-005</p>
<p align="center">BACKUP AND RESTORATION PLAN</p> <p align="center">RANCANGAN SOKONGAN/SANDARAN/PENDUAAN DAN PEMULIHAN</p>		

1.0 INTRODUCTION

1.0 PENGENALAN

UniMAP is a leading university in Malaysia and as such all its data becomes critical to the users. It is the responsibility of UniMAP ICT Center to ensure continuity of the university's business in case of system failure and continue to provide acceptable levels of service to the university. As such this plan assists the employees of UniMAP ICT Center to discover, plan, implement and monitor the data back-up, its confidentiality, integrity and availability.

UniMAP ialah sebuah universiti terkemuka di Malaysia dan oleh itu semua datanya menjadi kritikal bagi pengguna. Ianya merupakan tanggungjawab Pusat ICT UniMAP bagi memastikan kesinambungan pengurusan universiti sekiranya berlaku kegagalan sistem dan terus menyediakan tahap perkhidmatan yang boleh diterima kepada universiti. Oleh itu rancangan ini membantu staf Pusat ICT UniMAP untuk penemuan, perancangan, pelaksanaan dan pemantauan sokongan/sandaran/penduaan data, dan kerahsiaan, integriti dan ketersediaan data tersebut.

2.0 PURPOSE

2.0 TUJUAN


The purpose of this plan is to act as a guide to the staff and officers of ICT division. The Backup and Restoration plan describes how and when backups of the system will be performed and how those backups will be recovered in case of system failure.

Tujuan rancangan ini ialah sebagai satu panduan bagi staf dan pegawai Pusat ICT. Rancangan sokongan/sandaran/penduaan dan pemulihan menggambarkan bagaimana dan bila sokongan/sandaran/penduaan sistem akan dijalankan dan bagaimana sokongan/sandaran/penduaan tersebut akan dipulihkan jika berlaku kegagalan sistem.

3.0 RESPONSIBILITIES

3.0 TANGGUNGJAWAB

The responsibility to ensure that critical data produced by their department staff lies with the head of each department and as such, they shall identify the nature of data, create a

	BACKUP AND RESTORATION PLAN RANCANGAN SOKONGAN/SANDARAN/PENDUAAN DAN PEMULIHAN	Doc No: Version 1.1 Effective Date: 22 March 2013 Index No: UniMAP/ISMS/SP-005
BACKUP AND RESTORATION PLAN RANCANGAN SOKONGAN/SANDARAN/PENDUAAN DAN PEMULIHAN		

back-up method including the frequency and media and monitor periodically that the back-up is current and available.

Tanggungjawab untuk memastikan bahawa data kritikal yang dihasilkan oleh staf jabatan terletak di tangan ketua setiap bahagian dan oleh itu, mereka akan mengenalpasti sifat data, mewujudkan satu kaedah sokongan/sandaran/penduaan termasuk kekerapan dan media dan pengawasan secara berkala untuk memastikan bahawa sokongan/sandaran/penduaan adalah terkini dan tersedia.


4.0 INPUTS

4.0 INPUT-INPUT

In creating this plan, the following has been taken into consideration:

Dalam mewujudkan rancangan ini, perkara berikut telah diambil kira:

- * What data needs to be backed up,
 - * How often the data should be backed up,
 - * How important is the data on your systems?
 - * When and how it should be backed up?
 - * How often does the data change?
 - * How quickly do you need to recover the data?
 - * Do you have the equipment to perform backups?
 - * Who will be responsible for the backup and recovery plan?
 - * What is the best time to schedule backups?
 - * Do you need to store backups off-site?
-
- ❖ *Apakah data yang memerlukan sokongan/sandaran/penduaan,*
 - ❖ *Berapa kerap data seharusnya di buat sokongan/sandaran/penduaan,*
 - ❖ *Apakah kepentingan data kepada sistem anda?*
 - ❖ *Bila dan bagaimana ianya di buat sokongan/sandaran/penduaan?*
 - ❖ *Berapa kerap perubahan data berlaku?*
 - ❖ *Berapa singkat masa yang anda perlukan untuk memulihkan data?*
 - ❖ *Adakah anda mempunyai peralatan untuk melakukan sokongan / sandaran / penduaan?*
 - ❖ *Siapakah yang bertanggungjawab untuk rancangan sokongan/sandaran/penduaan dan pemulihan?*
 - ❖ *Bilakah masa yang terbaik untuk menjadualkan sokongan/sandaran/penduaan?*

	<p style="text-align: center;">BACKUP AND RESTORATION PLAN</p> <p style="text-align: center;">RANCANGAN SOKONGAN/SANDARAN/PENDUAAN DAN PEMULIHAN</p>	<p>Doc No: Version 1.1</p> <p>Effective Date: 22 March 2013</p> <p>Index No: UniMAP/ISMS/SP-005</p>
<p>BACKUP AND RESTORATION PLAN</p> <p>RANCANGAN SOKONGAN/SANDARAN/PENDUAAN DAN PEMULIHAN</p>		

❖ *Adakah anda perlu menyimpan sokongan/sandaran/penduaan di luar kawasan?*

5.0 TYPES OF BACKUPS

5.0 **JENIS-JENIS SOKONGAN/SANDARAN/PENDUAAN**

There are many techniques for backing up files. The techniques you use will depend on the type of data you're backing up, how convenient you want the recovery process to be, and more.

Terdapat banyak teknik untuk membuat sokongan/sandaran/penduaan fail-fail. Teknik-teknik yang anda gunakan akan bergantung kepada jenis data yang anda mahu lakukan sokongan/sandaran/penduaan, bagaimana mudah anda mahu proses pemulihan terjadi, dan selebihnya.


5.1 Full Backup: All files that have been selected are backed up, regardless of the setting of the archive attribute. When a file is backed up, the archive attribute is cleared. If the file is later modified, this attribute is set, which indicates that the file needs to be backed up.

5.1 Sokongan/Sandaran/Penduaan Penuh: *Semua fail yang telah dipilih dibuat sokongan/sandaran/penduaan, tanpa mengira persekitaran atribut arkib. Apabila sesebuah fail dibuat sokongan/sandaran/penduaan, atribut arkib dihapuskan. Jika fail kemudiannya diubah suai, atribut ini ditetapkan, yang menunjukkan bahawa fail perlu untuk dibuat sokongan/sandaran/penduaan.*

5.2 Copy backups: All files that have been selected are backed up, regardless of the setting of the archive attribute. Unlike a normal backup, the archive attribute on files isn't modified. This allows you to perform other types of backups on the files at a later date.

5.2 Sokongan/Sandaran/Penduaan salinan: *Semua fail yang telah dipilih untuk dibuat sokongan/sandaran/penduaan, tanpa mengira persekitaran atribut arkib. Tidak seperti sokongan/sandaran/penduaan biasa, sifat atribut di fail-fail tidak diubah suai. Ini membenarkan anda membuat lain-lain jenis sokongan/sandaran/penduaan di fail-fail di satu tarikh kelak.*

5.3 Incremental backups: Designed to create backups of files that have changed since the most recent normal or incremental backup. The presence of the archive attribute indicates that the file has been modified and only files with this attribute

	<p style="text-align: center;">BACKUP AND RESTORATION PLAN</p> <p style="text-align: center;">RANCANGAN SOKONGAN/SANDARAN/PENDUAAN DAN PEMULIHAN</p>	<p>Doc No: Version 1.1</p> <p>Effective Date: 22 March 2013</p> <p>Index No: UniMAP/ISMS/SP-005</p>
<p>BACKUP AND RESTORATION PLAN</p> <p>RANCANGAN SOKONGAN/SANDARAN/PENDUAAN DAN PEMULIHAN</p>		

are backed up. When a file is backed up, the archive attribute is cleared. If the file is later modified, this attribute is set, which indicates that the file needs to be backed up.

5.3 Tokokan Sokongan/sandaran/penduaan: *Direka untuk mewujudkan sokongan/sandaran/penduaan fail-fail yang telah berubah sejak sokongan/sandaran/penduaan biasa atau tokokan paling mutakhir. Kehadiran atribut arkib menunjukkan bahawa fail telah diubah suai dan hanya fail dengan atribut ini dibuat sokongan/sandaran/penduaan. Apabila sebuah fail dibuat sokongan/sandaran/penduaan, atribut arkib dihapuskan. Jika fail kemudiannya diubah suai, atribut ini ditetapkan, yang menunjukkan bahawa fail perlu untuk dibuat sokongan/sandaran/penduaan.*

5.4 Daily backups: Designed to back up files using the modification date on the file itself. If a file has been modified on the same day as the backup, the file will be backed up. This technique doesn't change the archive attributes of files.

The user may also want to create an extended backup set for monthly and quarterly backups that includes additional files that aren't being backed up regularly.

5.4 Sokongan/Sandaran/Penduaan Harian: *Direka untuk sokongan/sandaran/penduaan fail-fail yang menggunakan tarikh pengubahsuaian di fail tersebut. Jika sebuah fail telah diubahsuai di hari sokongan/sandaran/penduaan yang sama, fail tersebut akan dibuat sokongan/sandaran/penduaan. Teknik ini tidak mengubah atribut arkib fail-fail.*

Pengguna mungkin juga hendak mewujudkan sokongan/sandaran/penduaan lanjutan yang tersedia untuk sokongan/sandaran/penduaan bulanan dan suku tahunan yang termasuk fail-fail tambahan yang sering dibuat sokongan/sandaran/penduaan.

6.0 BACKUP DEVICES USED

6.0 ALAT-ALAT SOKONGAN/SANDARAN/PENDUAAN YANG DIGUNAKAN

Some of the most commonly used backup solutions include;

	<p style="text-align: center;">BACKUP AND RESTORATION PLAN</p> <p style="text-align: center;">RANCANGAN SOKONGAN/SANDARAN/PENDUAAN DAN PEMULIHAN</p>	<p>Doc No: Version 1.1</p> <p>Effective Date: 22 March 2013</p> <p>Index No: UniMAP/ISMS/SP-005</p>
<p>BACKUP AND RESTORATION PLAN</p> <p>RANCANGAN SOKONGAN/SANDARAN/PENDUAAN DAN PEMULIHAN</p>		

Beberapa penyelesaian-penyelesaian sokongan/sandaran/penduaan yang paling biasa digunakan termasuk;

Tape drives: Tape drives are the most common backup devices. Tape drives use magnetic tape cartridges to store data. Tapes can break or stretch. They can also lose information over time. The average capacity of tape cartridges ranges from 100 MB to 2 GB. Compared with other backup solutions, tape drives are fairly slow.


***Pita Pemacu:** Pita pemacu ialah alat-alat sokongan/sandaran/penduaan yang paling biasa. Pita pemacu menggunakan katrij pita magnet untuk menyimpan data. Pita-pita boleh dipecahkan atau direnggangkan. Ianya juga boleh hilang maklumat berikutan masa. Kapasiti purata katrij pita adalah dari 100 MB ke 2 GB. Dibandingkan dengan penyelesaian sokongan/sandaran/penduaan lain, pita pemacu adalah agak perlahan.*

Auto-loader tape systems: Auto-loader tape systems use a magazine of tapes to create extended backup volumes capable of meeting the high-capacity needs of the enterprise. With an auto-loader system, tapes within the magazine are automatically changed as needed during the backup or recovery process. Most auto-loader tape systems use DAT tapes. The typical system uses magazines with between 4 and 12 tapes.

***Sistem pita auto-pemuat:** Sistem pita Auto- pemuat menggunakan sebuah majalah pita-pita untuk mewujudkan jilid-jilid sokongan/sandaran/penduaan lanjutan yang mampu mencapai keperluan kapasiti yang tinggi untuk perusahaan. Dengan satu sistem pemuat-auto, pita-pita dalam majalah secara automatik diubah seperti yang diperlukan semasa proses sokongan/sandaran/penduaan atau pemulihan. Kebanyakan sistem pita auto-pemuat menggunakan pita DAT. Sistem tipikal menggunakan magazines di antara 4 dan 12 pita.*

Magnetic optical drives: Magnetic optical drives combine magnetic tape technology with optical lasers to create a more reliable backup solution than DAT. Magnetic optical drives use 3.5-inch and 5.25-inch disks that look similar to floppies but are much thicker. Typically, magnetic optical disks have capacities of between 1 GB and 4 GB.

***Pemacu optic magnetik:** Pemacu optic magnetik menggabungkan teknologi pita magnet dengan laser optik untuk mewujudkan penyelesaian sokongan/sandaran/penduaan yang lebih dipercayai daripada DAT. Pemacu optic magnetik menggunakan cakera 3.5 inci dan 5.25 inci yang nampak serupa seperti floppies tetapi lebih tebal. Lazimnya, cakera optic magnetik mempunyai keupayaan di antara 1 GB dan 4 GB.*

	<p style="text-align: center;">BACKUP AND RESTORATION PLAN</p> <p style="text-align: center;">RANCANGAN SOKONGAN/SANDARAN/PENDUAAN DAN PEMULIHAN</p>	<p>Doc No: Version 1.1</p> <p>Effective Date: 22 March 2013</p> <p>Index No: UniMAP/ISMS/SP-005</p>
<p>BACKUP AND RESTORATION PLAN</p> <p>RANCANGAN SOKONGAN/SANDARAN/PENDUAAN DAN PEMULIHAN</p>		

Removable disks: Removable disks, such as Iomega Jaz, are increasingly being used as backup devices. Removable disks offer good speed and ease of use for a single drive or single system backup.

Cakera-cakera mudah alih: Cakera-cakera mudah alih, seperti Iomega Jaz, semakin sering digunakan sebagai alat-alat sokongan/sandaran/penduaan. Cakera mudah alih menawarkan kelajuan yang lebih bagus dan mengurangkan penggunaan untuk pemacu tunggal atau sokongan/sandaran/penduaan sistem tunggal.

Disk drives: Disk drives provide the fastest way to back up and restore files. With disk drives, you can often accomplish in minutes what takes a tape drive hours.

Pemacu cakera: Pemacu cakera menyediakan cara terpantas untuk melakukan sokongan/sandaran/penduaan dan memulihkan fail-fail. Dengan pemacu cakera, anda boleh sentiasa menyempurnakan sokongan/sandaran/penduaan dalam masa beberapa minit dibandingkan dengan pita pemacu yang mengambil masa berjam.


7.0 STRATEGY

7.0 STRATEGI

Systems or data can be destroyed or corrupted in some cases due to errors, outages, or intentional disruptions. Sometimes only a specific file or file system must be recovered or restored from backups after an outage. Major outages or disruptions may require restoration of most or all of the files from backups. The following sections of this document describe procedures for both minor and major restorations of files from backups.

Dalam sesetengah kes sistem atau data boleh musnah atau rosak disebabkan kesilapan, kebocoran, atau gangguan yang disengajakan. Kadang-kadang hanya sebuah fail khusus atau sistem fail mesti dipulihkan atau dikembalikan dari sokongan/sandaran/penduaan selepas kebocoran. Kebocoran utama atau gangguan-gangguan mungkin memerlukan pemulihan kebanyakan atau semua fail-fail dari sokongan/sandaran/penduaan. Bahagian berikut dokumen ini menghuraikan prosedur-prosedur untuk kedua-dua pengembalian minor dan major fail-fail dari sokongan/sandaran/penduaan.

7.1 Recovery or Restoration of a Particular File or File System

	<p style="text-align: center;">BACKUP AND RESTORATION PLAN</p> <p style="text-align: center;">RANCANGAN SOKONGAN/SANDARAN/PENDUAAN DAN PEMULIHAN</p>	<p>Doc No: Version 1.1</p> <p>Effective Date: 22 March 2013</p> <p>Index No: UniMAP/ISMS/SP-005</p>
<p>BACKUP AND RESTORATION PLAN</p> <p>RANCANGAN SOKONGAN/SANDARAN/PENDUAAN DAN PEMULIHAN</p>		

7.1 Pemulihan atau Pengembalian Fail atau Sistem Fail Tertentu

In most cases, if a particular file or file system is corrupted or destroyed, only that file or file system needs to be restored from the backups. One of the Recovery Procedures that follow can be used to recover or restore a particular file or file system.

Dalam kebanyakan kes, jika fail atau sistem fail tertentu telah tercemar atau dimusnahkan, hanya fail atau sistem fail tersebut perlu untuk dikembalikan dari sokongan/sandaran/penduaan. Satu daripada Prosedur-prosedur Pemulihan yang berikut boleh digunakan untuk memulihkan atau mengembalikan fail atau sistem fail tertentu.

Recovery or Restoration after a Major Outage

Pemulihan atau Pengembalian selepas Kebocoran Minor

If a major outage, such an outage caused by a natural or manmade disaster, has occurred, you may need to restore many or all of the files and file systems. Such major restorations require proper timing and sequencing due to business priorities and file dependencies. The following is a plan for restoration or recovery of all files from regularly scheduled backups after a major outage has occurred. Please pay close attention to sequencing noted in the Schedule for Recovery/Restoration after a Major Outage and predecessors or dependencies listed in each individual recovery procedure.

The following table lists the recovery procedures that are included in the plan for restoration of files after a major outage. It also indicates the timeframe within which each restoration should occur, the priority or sequence of restorations, and who is responsible for each restoration.

Jika kebocoran major telah berlaku, kebocoran yang sedemikian disebabkan oleh bencana semula jadi atau perbuatan manusia, anda mungkin perlu untuk mengembalikan kebanyakan atau kesemua fail dan sistem fail. Pengembalian major sedemikian memerlukan masa dan tatacara yang sesuai disebabkan oleh keutamaan perniagaan dan tanggungan-tanggungan fail. Berikut ialah rancangan untuk pengembalian atau pemulihan semua fail dari sokongan/sandaran/penduaan yang sering dijadualkan selepas kebocoran major berlaku. Sila beri perhatian penuh kepada tatacara yang dinyatakan dalam Jadual untuk Pemulihan / Pengembalian



BACKUP AND RESTORATION PLAN
RANCANGAN
SOKONGAN/SANDARAN/PENDUAAN
DAN PEMULIHAN

Doc No: Version 1.1
 Effective Date: 22 March 2013
 Index No: UniMAP/ISMS/SP-005

BACKUP AND RESTORATION PLAN
RANCANGAN SOKONGAN/SANDARAN/PENDUAAN DAN PEMULIHAN

selepas dan sebelum kebocoran Major atau tanggungan-tanggungan yang disenaraikan dalam setiap prosedur pemulihan masing-masing.

Jadual berikut menyenaraikan prosedur-prosedur pemulihan yang termasuk dalam rancangan untuk pengembalian fail selepas kebocoran major. Ia juga menunjukkan jangka waktu di mana setiap pengembalian akan berlaku, keutamaan atau tatacara pengembalian, dan siapa yang bertanggungjawab untuk setiap pemulihan.

THE TABLES BELOW MUST BE FILLED UP BY EACH DEPARTMENT IN UniMAP ICT DIVISION

JADUAL DI BAWAH MESTI DIISI OLEH SETIAP JABATAN DALAM BAHAGIAN ICT UniMAP

Backup Schedule

Name/ID	File System(s)	Level	Frequency	Schedule	Responsible Individual/Org.
<< Name or identifier associated with the backup procedure >>	<< Name(s) of the file system(s) included in this backup >>	<< Such as "Full" or "Incremental" >>	<< Such as "Daily" or "Weekly" or "When modified" >>	<< Such as "Last Friday of the month" or "Monday" or "As required" >>	<< Organization or individual responsible for performing this backup procedure >>

Backup Procedures/Prosedur-prosedur

The Backup Log is used to track the executions of the following backup procedures.

Name/ID	<< Name or identifier associated with this backup procedure >>
---------	--



BACKUP AND RESTORATION PLAN
RANCANGAN
SOKONGAN/SANDARAN/PENDUAAN
DAN PEMULIHAN

Doc No: Version 1.1
 Effective Date: 22 March 2013
 Index No: UniMAP/ISMS/SP-005

BACKUP AND RESTORATION PLAN
RANCANGAN SOKONGAN/SANDARAN/PENDUAAN DAN PEMULIHAN

Description /Purpose	<< Description or purpose of this backup, such as "Daily incremental backup of modified partitions" >>
File System(s)	<< Name(s) of the file system(s) included in this backup >>
Level	<i>Circle one:</i> Full Incremental Other (<i>explain</i>):
Frequency (Cycle)	<i>Circle one:</i> Daily (Sunday through Saturday) Weekdays (Monday through Friday) Weekly Monthly Quarterly Annually When files are modified Other (<i>explain</i>):
Retention	<i>Circle one:</i> _____ backup cycles (<i>enter the number of cycles to retain</i>) Forever Other (<i>explain</i>):
Storage Location/ID	<i>Circle one:</i> Onsite Offsite Notes (<i>describe storage identifier, storage location, storage vendor</i>):
Backup Medium	<i>Circle one:</i> Tape CD Other (<i>describe</i>):
Procedures	<< Detailed steps for executing the backup procedure, including login, file locations, executables to run, parameters to use, expected messages or results, verification of backup results >>



BACKUP AND RESTORATION PLAN
RANCANGAN
SOKONGAN/SANDARAN/PENDUAAN
DAN PEMULIHAN

Doc No: Version 1.1
 Effective Date: 22 March 2013
 Index No: UniMAP/ISMS/SP-005

BACKUP AND RESTORATION PLAN
RANCANGAN SOKONGAN/SANDARAN/PENDUAAN DAN PEMULIHAN

--	--

Schedule for Recovery/Restoration after a Major Outage

Restoration Timeframe	Restoration Sequence/ Priority	Recovery Procedure Name/ID	File System(s)	Responsible Individual/ Organization
<< Such as "Within 24 hours" or "Within 30 days" >>	<< Sequence or priority of this restoration >>	<< Name or identifier associated with the recovery procedure >>	<< Name(s) of the file system(s) included in this backup >>	<< Organization or individual responsible for performing this recovery procedure >>

Recovery Procedures

The Recovery Log is used to track the actual executions of the following recovery procedures.

Name/ID	<< Name or identifier associated with this recovery procedure >>
Conditions for Use	<< Description of the conditions or circumstances under which this recovery procedure should be used >>
Purpose/Results	<< Description of the purpose or expected results of using this recovery procedure >>
File System(s)	



BACKUP AND RESTORATION PLAN
RANCANGAN
SOKONGAN/SANDARAN/PENDUAAN
DAN PEMULIHAN

Doc No: Version 1.1
 Effective Date: 22 March 2013
 Index No: UniMAP/ISMS/SP-005

BACKUP AND RESTORATION PLAN
RANCANGAN SOKONGAN/SANDARAN/PENDUAAN DAN PEMULIHAN

	<< Name(s) of the file system(s) that will be restored >>
Responsible Individual or Organization	<< Name(s) and emergency contact information such as phone, pager, and cell phone >>
Prerequisites/ Dependencies	<< Description of any prerequisites that must be performed before this procedure is executed and/or any dependencies related to this procedure >>
Associated Backup Procedure(s)	<< Name(s) or identifier(s) of the procedure(s) that create the backup(s) that will be used by this recovery procedure >>
ID(s) of Backup(s) Used	<< Such as tape ID and storage vendor name associated with the backup tape used for this recovery >>
Procedures	<< Detailed steps for executing the recovery procedures, including login, file locations, executables to run, parameters to use, expected messages or results, verification of results >>