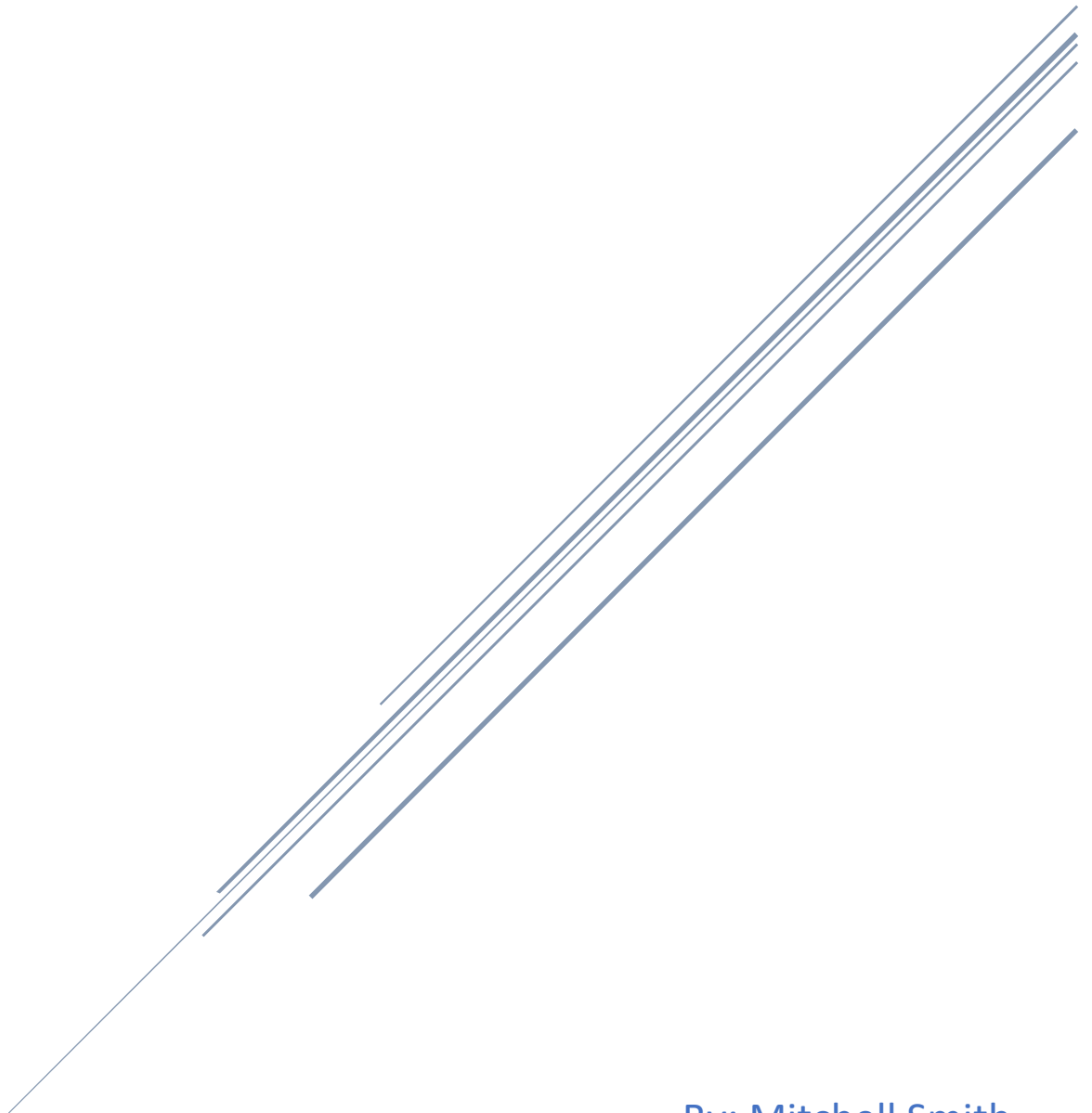# ASSIGNMENT #2

DBAS3080 – Backup Strategies (American Tower Corp)

By: Mitchell Smith

W0440925

Table of Contents

Introduction

In this document, I am going to review and reflect on the scenario of the company "American Tower Corp" that was provided to me for this assignment. I am then going to create a hot and cold backup strategy for American Tower Corp, create a data backup plan for each country they operate in that includes measurement and monitoring plans, and create a data flow diagram of the strategy.

Task 1: Hot and Cold Backup Strategy

Assignment Questions and/or Required Screenshots Provided Below.

OBJECTIVE- Create a hot and cold backup strategy for American Tower Corp.

Cold Backup Strategy

The steps that I would take to create/conduct an effective cold backup strategy that backs up data while the servers/systems of the company are offline are as follows:

Step 1. Schedule time periods after business hours when the server(s)/system(s) are offline to conduct backup operations. This will help determine how often cold backup procedures should be conducted.

Step 2. Perform full backup procedures while the server(s)/system(s) are offline to create replicas of all company data.

Step 3. Follow the 3-2-1 backup rule and store two additional copies of the data on two different types of media devices (ex. hard drive, backup server, hard disk, cloud-based storage) and have one of those copies stored away from the workplace.

Step 4. Consistently review and document the backup plan to ensure that up-to-date versions of company data are consistently being copied and stored. This will allow for possible improvements to be made to the plan in the future if needed.

Hot Backup Strategy

The steps that I would take to create/conduct an effective hot backup strategy that consistently backs up data while the servers/systems of the company remain active are as follows:

Step 1. Schedule time periods for different types of backup procedures to be conducted while the server(s)/system(s) remain active. This will help to determine how often each backup procedure should be conducted.

Step 2. Implement load balancing software to allow backup operations to be efficiently conducted while the server(s) remain active.

Step 3. Utilize automated incremental backup procedures daily to an external environment (cloud-based storage) to ensure that crucial data is consistently updated.

Step 4. Implement data replication software as an additional daily method to ensure that there is an additional set of data being stored in an external environment (cloud-based storage) that is consistently updated and accurate.

Step 5. Utilize automated differential backups twice a week to store updated versions of the data since the last full backup occurred to an external environment (cloud-based storage).

Step 6. Consistently review and document the backup plan to ensure that up-to-date versions of company data is efficiently being copied without disrupting server/system operations. This will allow for possible improvements to be made to the plan in the future if needed.

Task 2: Data Backup Plan

Assignment Questions and/or Required Screenshots Provided Below.

OBJECTIVE - Create a data backup plan for each country they operate in, including measurement and monitoring plans. These need to comply with local storage laws for regulatory compliance.

United States

Storage Laws:

in the United States, the data protection / storage laws are heavily regulated by the states and can vary from one state to another, however, there are some data protection/storage laws that are regulated by the federal government for certain industries. The following list depicts the Federal data storage / protection laws that apply to the telecommunications industry / sector, as well as an example of some state data storage / protection laws that would apply to the telecommunications industry:

Federal Communications Commission "FCC" Regulations (Federal) – The FCC is a federal agency that regulates all forms of media services that are offered throughout the United States, including telecommunications services. There are a large number of regulations for telecommunications services that are established by the FCC, which includes the storage, handling, and protection of data. These regulations are found under title 47 on the official FCC website.

New York Stop Hacks and Improve Electronic Data Security "SHIELD" Act (State) – The New York "SHIELD" Act is a state law that regulates the storage, protection, and handling of an individual's personal data for businesses across all industries in the state of New York, including the telecommunications industry.

Backup Plan:

Whereas I have created a comprehensive backup plan for American Tower Corp for both hot backups and cold backups in Task 1 of this document, the next step would be to review the FCC regulations, as well as any additional state regulations (ex. New York) to identify the proper adjustments that must be made to fully comply with the regulations and potentially increase the efficiency / effectiveness of the backup plan itself in doing so.

Measurement / Monitoring Plan:

The elements that I would implement into a measurement and monitoring plan for my comprehensive backup plan that was created for both hot and cold backups in Task 1 of this document are as follows:

Step 1. Regularly Oversee and review the functionality of the load balancing software that was implemented to prevent disruption in the company servers / systems during hot backup procedures.

Step 2. Implement backup monitoring and backup report software that will automatically monitor the performance of the backup procedures and create reports of the results.

Step 3. Regularly review the rate at which successful backups occur and the rate at which backups fail. This will help to identify any potential issues that are preventing backups from consistently completing successfully.

Step 4. Regularly Review the average amount of time that it takes to complete each backup process. This will help to develop solutions that will decrease the amount of time it takes to perform the backups if needed.

Step 5. Regularly conduct disaster recovery tests to ensure that in the event of crucial data needing to be restored, the data can be quickly recovered from the backup procedures and integrated back into the servers / systems and avoid a disruption in company operations.

Step 6. Regularly Document all results of the backup monitoring procedures for the purpose of allowing in-depth reviews to be conducted when needed.

Mexico

Storage Laws:

the country of Mexico primarily regulates their telecommunications services, companies, and their data through federal legislation. The federal legislation that provides regulations for the telecommunications services in Mexico are as follows:

Ley Federal de Telecomunicaciones y Radiodifusión (Federal) – A federal law that provides various regulations for all activities pertaining to telecommunications services / companies' and their infrastructure across the country of Mexico, which could have an impact pertaining to the handling, storage, and protection of telecommunications data.

Ley Federal de Protección de Datos Personales en Posesión de Particulares (Federal) – A federal law that regulates the handling, protection, and storage of an individual's personal data that is possessed by companies across all industries in the country of Mexico.

Backup Plan:

Whereas I have created a comprehensive backup plan for American Tower Corp for both hot backups and cold backups in Task 1 of this document, the next step would be to review the federal legislation that details the regulations pertaining to the telecommunications industry and the personal data of individuals to identify the proper adjustments that must be made to fully comply with the regulations of the country of Mexico and potentially increase the efficiency / effectiveness of the backup plan itself in doing so.

Measurement / Monitoring Plan:

The elements that I would implement into a measurement and monitoring plan for my comprehensive backup plan that was created for both hot and cold backups in Task 1 of this document are as follows:

Step 1. Regularly Oversee and review the functionality of the load balancing software that was implemented to prevent disruption in the company servers / systems during hot backup procedures.

Step 2. Implement backup monitoring and backup report software that will automatically monitor the performance of the backup procedures and create reports of the results.

Step 3. Regularly review the rate at which successful backups occur and the rate at which backups fail. This will help to identify any potential issues that are preventing backups from consistently completing successfully.

Step 4. Regularly Review the average amount of time that it takes to complete each backup process. This will help to develop solutions that will decrease the amount of time it takes to perform the backups if needed.

Step 5. Regularly conduct disaster recovery tests to ensure that in the event of crucial data needing to be restored, the data can be quickly recovered from the backup procedures and integrated back into the servers / systems and avoid a disruption in company operations.

Step 6. Regularly Document all results of the backup monitoring procedures for the purpose of allowing in-depth reviews to be conducted when needed.

Brazil

Storage Laws:

Much like the country of Mexico, the telecommunications industry and its data are primarily regulated by the federal government of Brazil, and the laws that regulate the industry and its data, as well as the personal data of individuals, are very similar to the federal laws of Mexico. The federal legislation that provides regulations for the telecommunications services in Brazil are as follows:

Lei Geral de Telecomunicações (Federal) – Similarly to the "Ley Federal de Telecomunicaciones y Radiodifusión" federal law in Mexico, this is a federal law that provides various regulations for all activities pertaining to telecommunications services / companies' and their infrastructure across the country of Brazil, which could have an impact pertaining to the handling, storage, and protection of telecommunications data.

Lei Geral de Proteção de Dados "LGPD" (Federal) – Similarly to the "Ley Federal de Protección de Datos Personales en Posesión de Particulares" federal law in Mexico, this is a federal law that regulates the handling, protection, and storage of an individual's personal data that is possessed by companies across all industries in the country of Brazil.

Backup Plan:

Whereas I have created a comprehensive backup plan for American Tower Corp for both hot backups and cold backups in Task 1 of this document, the next step would be to review the federal legislation that details the regulations pertaining to the telecommunications industry and the personal data of individuals to identify the proper adjustments that must be made to fully comply with the regulations of the country of Brazil and potentially increase the efficiency / effectiveness of the backup plan itself in doing so.

Measurement / Monitoring Plan:

The elements that I would implement into a measurement and monitoring plan for my comprehensive backup plan that was created for both hot and cold backups in Task 1 of this document are as follows:

Step 1. Regularly Oversee and review the functionality of the load balancing software that was implemented to prevent disruption in the company servers / systems during hot backup procedures.

Step 2. Implement backup monitoring and backup report software that will automatically monitor the performance of the backup procedures and create reports of the results.

Step 3. Regularly review the rate at which successful backups occur and the rate at which backups fail. This will help to identify any potential issues that are preventing backups from consistently completing successfully.

Step 4. Regularly Review the average amount of time that it takes to complete each backup process. This will help to develop solutions that will decrease the amount of time it takes to perform the backups if needed.

Step 5. Regularly conduct disaster recovery tests to ensure that in the event of crucial data needing to be restored, the data can be quickly recovered from the backup procedures and integrated back into the servers / systems and avoid a disruption in company operations.

Step 6. Regularly Document all results of the backup monitoring procedures for the purpose of allowing in-depth reviews to be conducted when needed.

Task 3: Data Flow Diagram

Assignment Questions and/or Required Screenshots Provided Below.

OBJECTIVE- Create a data flow diagram of the strategy.

The following diagram demonstrates the backup strategies for hot and cold backup procedures:
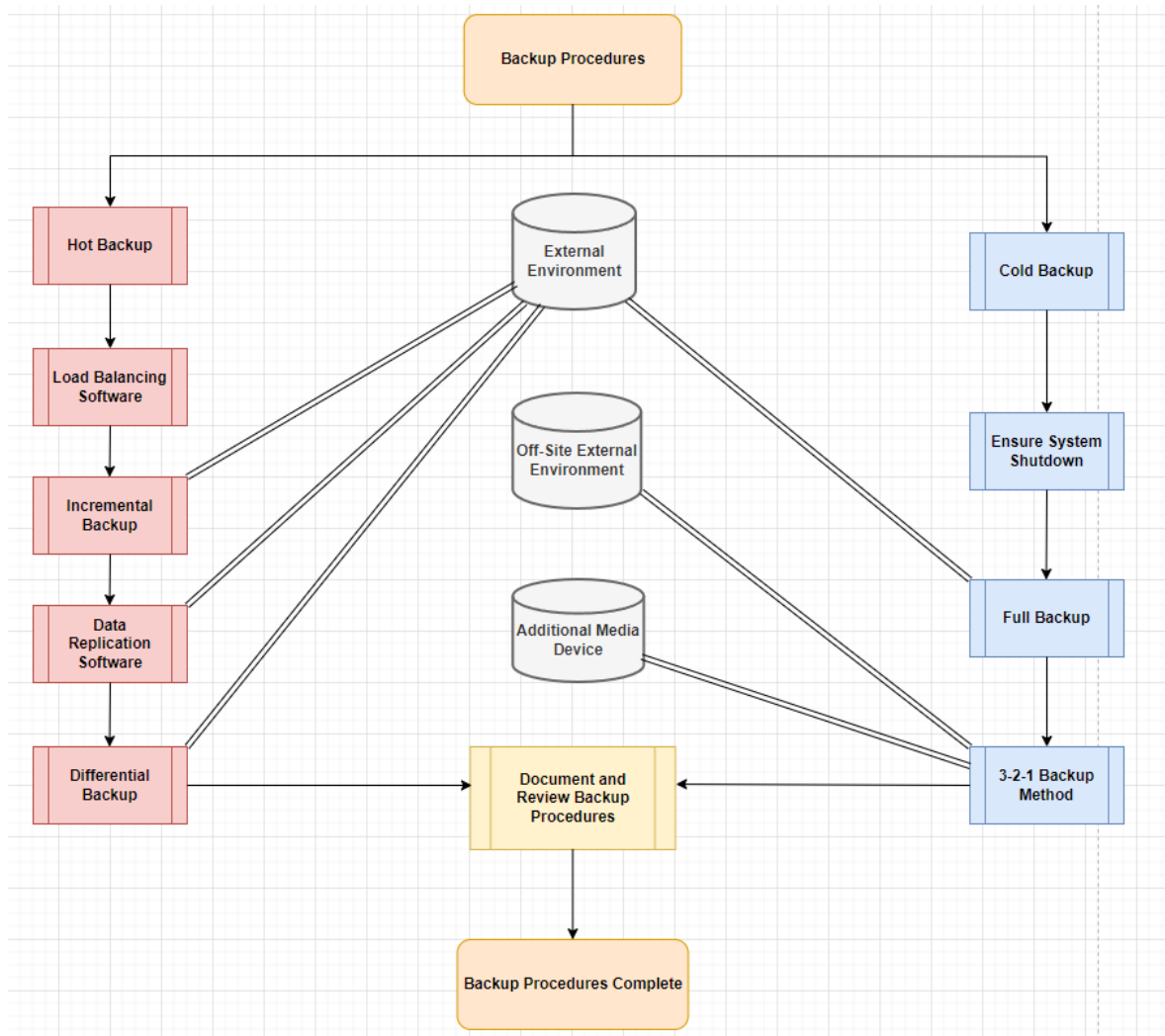
Conclusion

In this document, I reviewed and reflected on the scenario of the company "American Tower Corp" that was provided to me for this assignment. After my review and reflection of the scenario, I then created a hot and cold backup strategy for American Tower Corp, created a data backup plan for each country they operate in that includes measurement and monitoring plans, and created a data flow diagram of the strategy.

References

Website Names, Titles, Authors, Dates, and Links of Articles Used Provided Below.

Website Name: Storware

Title: Pros and Cons of Cold Backup and Hot Backup. Comparison

Author: Pawel Maczka

Date: N/A

Link: Pros and Cons of Cold Backup and Hot Backup. Comparison | Storware BLOG

Website Name: Amazon

Title: What is Load Balancing?

Author: N/A

Date: N/A

Link: What is Load Balancing? - Load Balancing Algorithm Explained - AWS (amazon.com)

Website Name: Redis

Title: Data Replication Explained: Examples, Types, and Use Cases

Author: Paula Dallabetta

Date: February 22nd, 2022

Link: What is Data Replication? Examples, Types, and Use Cases | Redis

Website Name: Manage Engine

Title: What is data replication?

Author: N/A

Date: N/A

Link: Data Replication Types - Benefits - Schemes in DBMS - ManageEngine Device Control Plus

Website Name: Acronis

Title: What is the difference between incremental, differential, and full backup?

Author: N/A

Date: September 28th, 2023

Link: Incremental vs. Differential vs. Full Backup - A Comparison Guide (acronis.com)

Website Name: Quest

Title: Understanding continuous data protection: What you need to know

Author: Aaron Newsome

Date: December 14th, 2022

Link: Continuous Data Protection (CDP): What you need to know (quest.com)

Website Name: Easy Tech Junkie

Title: What is a Cold Backup?

Author: Malcolm Tatum

Date: December 8th, 2023

Link: What is a Cold Backup? (with picture) (easytechjunkie.com)

Website Name: Veeam

Title: What is the 3-2-1 backup rule?

Author: Rick Vanover

Date: February 5th, 2024

Link: What is the 3-2-1 backup rule? (veeam.com)

Website Name: Federal Communications Commission

Title: About the FCC

Author: N/A

Date: N/A

Link: About the FCC | Federal Communications Commission

Website Name: Federal Communications Commission

Title: Rules & Regulations for Title 47

Author: N/A

Date: N/A

Link: [Rules & Regulations for Title 47 | Federal Communications Commission (fcc.gov)](#)

Website Name: Code of Federal Regulations

Title: Title 47

Author: N/A

Date: February 8th, 2024 (Amendment Date)

Link: [eCFR :: Title 47 of the CFR -- Telecommunication](#)

Website Name: New York State Attorney General

Title: SHIELD Act

Author: N/A

Date: N/A

Link: [SHIELD Act | New York State Attorney General (ny.gov)](#)

Website Name: Diputados.GOB.MX

Title: LEY FEDERAL DE TELECOMUNICACIONES Y RADIODIFUSIÓN

Author: N/A

Date: July 14th, 2014

Link: [Ley Federal de Telecomunicaciones y Radiodifusión (diputados.gob.mx)](#)

Website Name: Diputados.GOB.MX

Title: LEY FEDERAL DE PROTECCIÓN DE DATOS PERSONALES EN POSESIÓN DE LOS PARTICULARES

Author: N/A

Date: July 5th, 2010

Link: [Ley Federal de Protección de Datos Personales en Posesión de los Particulares (diputados.gob.mx)](#)

Website Name: Gov.BR

Title: Lei Geral de Proteção de Dados Pessoais (LGPD)

Author: N/A

Date: N/A

Link: [Lei Geral de Proteção de Dados Pessoais (LGPD) — Ministério do Esporte (www.gov.br)](#)

Website Name: Gov.BR

Title: Lei Geral de Telecomunicações, que regulamentou o serviço no Brasil, completa 25 anos

Author: N/A

Date: July 13th, 2022

Link: [Lei Geral de Telecomunicações, que regulamentou o serviço no Brasil, completa 25 anos — Ministério das Comunicações (www.gov.br)](#)

Website Name: Nova Backup

Title: Measuring Backup Performance - Essential KPIs to Track

Author: Adam Sufflick

Date: November 14th, 2023

Link: [Measuring Backup Performance - Essential KPIs to Track (novabackup.com)](#)

Website Name: LinkedIn

Title: How to Measure and Improve Backup Performance

Author: N/A

Date: February 6th, 2024

Link: [How to Measure and Improve Backup Performance (linkedin.com)](#)

Website Name: LinkedIn

Title: How to Measure Your Data Storage and Backup Strategy

Author: N/A

Date: October 31st, 2023

Link: How to Measure Your Data Storage and Backup Strategy (linkedin.com)