



# DETAILED APPLICATION MIGRATION PROCESS

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## Overview

Any migration project can turn out to be a disaster if it is not planned properly in a structured manner. Hence, it becomes essential to clearly identify the requirement, what needs to be captured, plan in a structured way, follow the best practices, processes and then execute it.

This Knowledge Sharing article discusses migration of infrastructure and associated applications from three existing data centres to three new data centres involving a stack of 4000 servers and 3 PB of storage across two data centres with the third data centre being lowest, around 500 servers and 600 TB of data. Processes and best practices followed are same across the 3 Geo's and have yielded positive results.

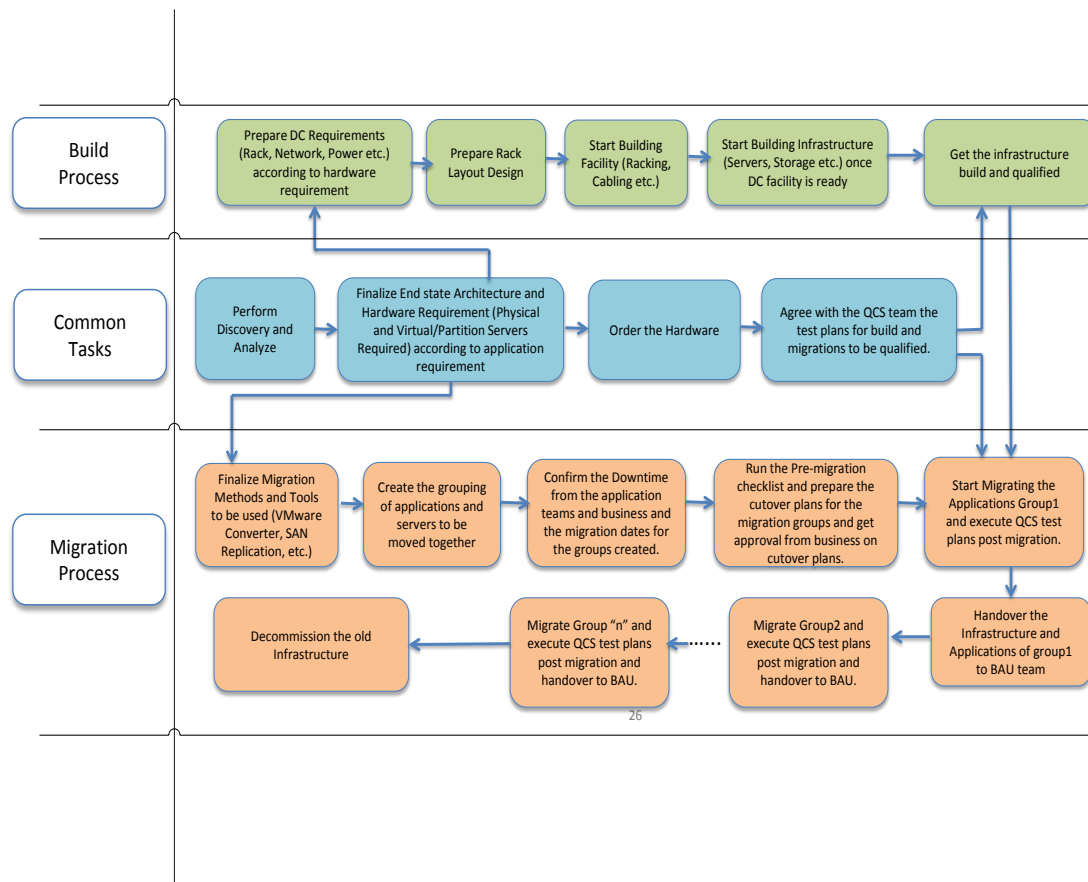
This article focuses on:

1. Application Migration Process Flow.
2. Application Information Discovery
3. Application Migration Planning Templates
4. Applications Complexity
5. Migration Methods
6. Downtime Agreement
7. Pre-migration and Cutover Templates
8. Communication
9. Execution Layer

## Application Migration Process Flow

This section focuses on the process flow that is going to be used during the migration process. It is important to give customers visibility to it from the start. The customer will gain a comfort level with the migration by seeing the process flow as early as possible and making required tweaks required on the basis of feedback. Keep in mind that 10-20% of this process flow will vary depending upon customer domain (Pharmaceutical, Financial services, Manufacturing, etc.).

The diagram below depicts the application migration process flow, detailing phases such as base build, architecture design, migration methods, migration planning, and execution. All the blocks are linked in sense or another. While these are high level tasks and need to be detailed further, it provides visibility to the customer of what process and steps are going to be followed during the project.



## Application Information Discovery

Capturing inaccurate information can increase cost and time. Hence, it is very important to be clear on what needs to be captured from the start of the project to make it successful.

Enterprise customers often face situations where a large amount of information needs to be collected. For such customers, it makes sense to further break down the information collection into steps or stages. For example:

**Step/Stage 1:** Collect high-level information of current applications and infrastructure. For example, what's out there? What does it run on? How important is it to the business? Does it need to be migrated? This stage helps to achieve a high level view of the current and future state and do some partial hardware ordering at earlier stages to reduce timelines. Example: If the target state is going to be virtualized, some of the hardware, i.e. ESX, could be ordered using high level information of the estate in Stage1.

**Step/Stage 2:** Collect detailed information on relevant applications and servers that need to be migrated. This stage helps when doing detailed planning.

This flexible approach enables completion of a quick initial information gathering exercise, which then lead to a detailed discovery. This also ensures that subject matter experts are not overwhelmed with requests for information at a single point in time, minimizing the impact on regular business activities.

Application migration projects are complex and there is a lot at stake. It can take a great deal of time to migrate an application from one data centre to a new data centre. Hence, it is necessary to first carefully identify the key elements or information necessary to be captured for making a project successful. Some of the key elements for achieving it are:

- a. Existing environment details in terms of configuration for Application and Server (CPU, RAM, etc.), Storage, Network, Backup, and Security.
- b. Key interdependencies between Systems, Application, and Network.
- c. Critical nature of the systems according to business requirements.
- d. GxP, SOX, or other compliance-related requirements.
- e. Downtime associated with each application.

- f. Performance-specific Application requirements.
- g. Application to application and Application to middleware or database and application to server mapping. This is a vital step for creating move groups.
- h. Cluster details.

One must take a cautious approach to determine the level of detail needed when collecting information. Asking for too much detail/information could significantly slow migration planning at earlier stages. On the other hand, asking for too little detail/information may not yield enough information to plan the migration. The examples below show the kind of information related to server and application that are required. However, the precise details will depend on the organization and the nature of the project.

| Server Information                                         |
|------------------------------------------------------------|
| Memory, disk and processor specifications                  |
| Operating systems                                          |
| Services                                                   |
| Serial numbers (e.g., for hardware and operating system)   |
| Host names and IP addresses                                |
| Maintenance agreements                                     |
| Age of the machine and any service level agreements (SLAs) |
| Physical dimensions — size, weight                         |
| Rack location/blades                                       |
| Peripherals: monitors, keyboards or other equipment        |
| Heating and ventilation requirements                       |
| Security requirements                                      |
| Power supply requirements                                  |
| Number of available ports/slots                            |

| Application Information                                                                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Application purpose/function                                                                                                                                |
| Service Level Agreements (SLAs)                                                                                                                             |
| Business criticality measures                                                                                                                               |
| Business services/products and processes supported                                                                                                          |
| Maintenance windows, change freezes and backup times                                                                                                        |
| Users and customers supported                                                                                                                               |
| Application sponsors, subject matter experts, commercial owners and delivery owners                                                                         |
| Application architecture and network topology                                                                                                               |
| Upstream and downstream applications connected to this application                                                                                          |
| Ports and firewalls                                                                                                                                         |
| Application interfaces                                                                                                                                      |
| Hosting arrangements: such as production, disaster recovery, test and development environments, their IP addresses and whether they are physical or virtual |
| Location (data centre/country where installed)                                                                                                              |
| Licence details – Type, serial numbers                                                                                                                      |
| Any planned changes/upgrades                                                                                                                                |
| Operating systems, databases and versions                                                                                                                   |
| Messaging (e.g., FTP)                                                                                                                                       |
| Data storage and archiving requirements                                                                                                                     |
| Supported batch processes and work flows                                                                                                                    |

It is equally important to identify a system owner and business owner for each application. The next step is to have clear definition/roles of these people as everyone performs different roles. The SPOC provides information. The system owner must have decision-making ability, be accountable for the decisions made, and specify what testing will be needed. The business owner is the sponsor who represents the business or client. Often they do not know the technical details of the application. All roles are equally important.

It is also important to prioritize the information to be collected to distinguish mandatory information from that which is merely good to have. Key application information includes:

- Application owner

- Criticality of the application

- Maintenance windows

- Service level agreements (SLAs)

- Application linkages to other applications and external clients

Let's consider an example. If Application 1 connects to business-critical applications 2, 3, and 4, the plan will be to move all these applications at the same time with some exceptions. Available maintenance windows determine the right time for these to be moved. SLAs determine how much system downtime is expected to execute migration and who can approve exceptions, if any. The business owner is required to confirm any migration decisions made.

The last step of this section is to have a mechanism to validate that the information collected is up to date. Chances of having conflicting data is very high since there are different/multiple sources providing information. This is where data validation and sign-off from the customer must be made before starting to use the data collected for planning. In multiple projects we have seen that by the time one starts using information, it has already become outdated. One reason is that discovery takes several months to complete. To avoid this, it is a best practice to ensure that tools are in place that capture the information collected and smartly update the information with delta that has changed, without having an impact on the data integrity that has already been captured and validated. This is where baseline comes into the picture. To minimize risk, get an agreement from the customer that the baseline data is good before proceeding with migration planning and execution. One way of doing this is to have a change freeze around migration time.

## Application Migration Planning Templates

These templates are the key that will be used throughout the project and will capture the key inter-dependencies between applications, servers, storage, network, etc.

Once the information that needs to be captured has been identified, the next step is to finalize which templates are going to be used to capture this information and to utilize this information in an efficient way to make the programme successful. It is crucial to store the collected information in a format that is easily updateable and retrievable by relevant areas of the suppliers and business. Entering this information into a database or tool or templates makes it easier to generate reports and retrieve the data, as well as providing version control and tracking.

Based on my experience, I have captured some details required into certain templates as mentioned below. These templates will help in capturing:

- Source Environment Configuration Details.
- Application running on these servers.
- Dependencies between application, server, storage, and middleware/database environment.
- Target Environment Configuration Details.
- Classification of application environments which will decide application environment move priority. Example: Test, development will be moved first, pre-production, next and, at a later stage, production will be moved.
- Groups in which applications will be moved.
- Downtime associated with each group.
- Estimate number of migrations happening on a particular day. This is important to make sure limits are not exceeded according to resources aligned and bandwidth available should not be choked thereby failing migrations.
- Business/System owner of the applications to make sure they are informed when business downtime and approval communication has to be sent to them.
- Migration Execution Duration.
- Application Migration Testing Time.

One of the templates is the snapshot of an application which covers the details associated with an application, such as:

- the server it is running on
- all the environments associated with it
- source configuration
- proposed target configuration
- data associated
- downtime associated
- execution time
- testing time required.

This template is used to get the application and middleware suppliers to validate the captured information. Some of the details that should be covered as part of this template are highlighted below.

| Application Name | Host Name | Application Version | Environment | DC Current Location | DC Target Location | Business Area | SOX | GXP | System Owner |
|------------------|-----------|---------------------|-------------|---------------------|--------------------|---------------|-----|-----|--------------|
|                  |           |                     |             |                     |                    |               |     |     |              |

| Existing Configuration |         |         |            |    |                     | New Configuration |         |         |    |                |
|------------------------|---------|---------|------------|----|---------------------|-------------------|---------|---------|----|----------------|
| Logical CPU            | RAM(GB) | HDD(GB) | IP Address | OS | Current Utilization | Logical CPU       | RAM(GB) | HDD(GB) | OS | New IP Address |

|                             |                           |
|-----------------------------|---------------------------|
| <b>Migration Start Date</b> | <b>Migration End Date</b> |
|-----------------------------|---------------------------|

This should be prepared for each application and be validated by the application owner before migration to help compare the target state with the existing state and identify gaps, if any, post-migration. There are additional things which could be covered as part of this template, i.e. backup frequency, dependency on other application, databases, etc.

However, at a minimum, the details above should be captured for snapshot of an application.

## **Application Complexity**

To make any project successful, it is vital to acknowledge the amount of time, effort, and support business users put in. Users must be assured that the following things in target state are there post-migration as well:

- Post-migration application performance should be the same and target environment should also be able to meet the future performance requirements.
- Identify key members who will own the application testing as they are the ones who will provide resources for doing testing and ultimately the sign off on testing.
- Input for acceptable amount of downtime and approval of same should come from business only.
- There are a number of queries that can be used to determine if the application is complex/ critical or not. For example, customers may ask:
  - o Revenue being generated by this particular application
  - o Volume of transactions
  - o How long can the business survive/manage without it?
  - o What type of application is it?
  - o Is an alternate application available to provide the required service to business?

Thus, it is critical to place the applications into some groups. A group can be referred to as interdependent applications and components that must move together to avoid disruption to business or latency/delays by operating in different data centers. A sound migration plan capturing all the interdependencies will help mitigate the risk of migration.

Performance has always been of utmost importance to business and it cannot be compromised. Distance between end users and a new data center must also be taken into account as increasing distance will cause increased network latency. It should be addressed up front and care must be taken either by locating a new data centre at minimal distance or by increasing the network bandwidth. Such performance-dependent applications should be identified in advance and a proof-of-concept (POC) must be conducted to make end users aware of the experience they are going to get in new

environment. This builds confidence by knowing in advance rather than at later stages and also helps them to make necessary tweaks with mutual discussion.

Some of the critical components required for depth analysis are:

- Criticality of the application from business perspective.
- Downtime impact to business
- SLA's Impact
- Risk Tolerance
- Schedule of Changes
- Dependencies between applications and middleware and infrastructure

It is very important to categorize applications into two categories:

1. Simple
2. Complex

Simple applications are applications which can be easily virtualized, easily migrated, do not have dependencies on middleware, can bear downtime in days, does not require much governance, and has dedicated management focus.

Meanwhile, complex applications fall into a category which requires dedicated focus and tracking, a lot of dependencies on other applications and middleware, requires careful planning, requires minimum downtime, and is business-critical.

Once an exercise of grouping is completed and everyone is aware of the groups that need to move, the next step is the sequencing of those groups, i.e. which group shall be moved first and which will be moved later. Based on my experience and consultation with business, in one of the customer accounts we have created groups based on following the factors. However, these might vary customer to customer:

- a. Applications having high business impacts shall be spread out. A strategy such as further splitting the group into subgroups must be taken to migrate such groups; this will help reduce the amount of risk involved.
- b. Number of migrations on a particular day must be done by taking into account the amount of downtime available, network bandwidth available, and number of resources available to execute.

- c. Business priority for moving some applications on a particular date. Example: In one scenario, I have seen where business wanted to move some applications only on service weekend as moving them on other dates would have a negative impact.
- d. Prioritization of groups shall be done based on business and technical challenges in current environment.

## Migration Methods

It is important to finalize migration methods (P2V, V2V, new build physical). This is essential for ordering hardware kit to avoid delay in build activities and ultimately migration timelines. An early closure reduces time.

In my experience, this is a grey area that consumes the majority of time and results in delay. However, this is the first step in a migration project, running in parallel with planning. Nothing can be started even if we finished planning and created migration groups if migration methods have not been finalized for a particular application and server. Finalizing a migration method is a key exercise that is done with discussion between different suppliers and inputs from every area, i.e. application teams, middleware suppliers, and infrastructure suppliers. Key points to follow while finalizing migration methods include:

- Understand the current state of servers, specifically type of OS, i.e. if it is virtual or physical.
- Capture the current configuration of servers in terms of CPU, RAM, and other hardware details to determine if the physical state can be virtualized from an infrastructure perspective.
- Run the required tools to capture utilization and performance data, etc. to determine if virtualization is achievable for identified candidates. Example: VMware Capacity Planner Tool for identifying P2V candidates.
- Get input from the application and middleware suppliers for the identified candidates which can be virtualized. This is a critical step as some applications can be virtualized while others cannot. As well, some databases are supported on virtualized environment while others are not.
- There are other dependencies such as dependency of some applications to run on a particular set of hardware or CPU defined as hardware-bound apps.

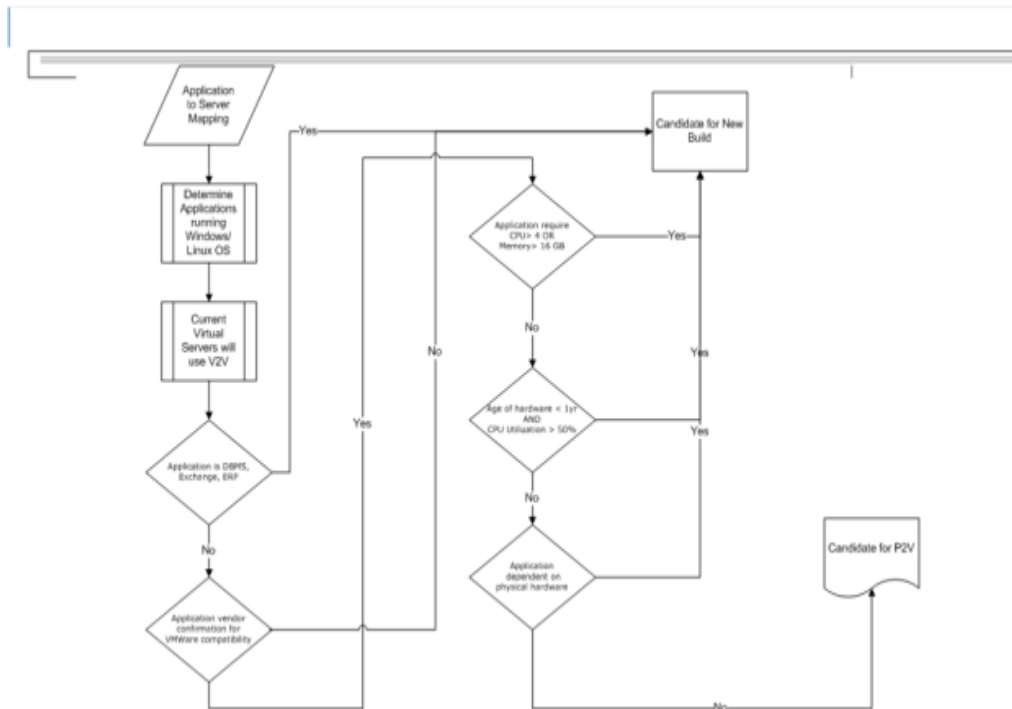
These need to be identified and discussed at the early stages to mutually decide what migration method to finalize for such apps.

- Once the migration methods are finalized, hardware must be ordered as early as possible. The hardware approval and ordering process takes time, followed by the build of hardware once the kit arrives at the data center and eventually, migration.

Some of the methods we followed during migration and key reasons for choosing such candidates are shown below:

| Term                                         | Description                                                                                                                                                                                                                          | Potential Candidate                                                    |
|----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| <b>V2V (Virtual to Virtual/LPAR to LPAR)</b> | Migrating an operating system and its applications from a virtual machine or partition hosted in one virtual infrastructure to a virtual machine or partition hosted in a different virtual infrastructure, without modification     | All application in virtual infrastructure                              |
| <b>P2V (Physical to Virtual)</b>             | Physical to virtual (P2V) is a term that refers to the migration of an operating system (OS), application programs and data from a computer's main hard disk to a virtual machine or a disk partition without reinstalling anything. | All standard packaged, less complex & low resource hungry applications |
| <b>New Build</b>                             | A mirror image of the existing environment is built new at the new target data centre and runs in parallel (simulated environment) with that existing environment duplicating all data and processes                                 | End of Life application infrastructure & resource heavy applications   |
| <b>Forklift / Lift and Shift</b>             | In a forklift migration, application hardware is physically packed up and moved from one data center to another                                                                                                                      | Legacy & Complex Applications                                          |

The decision tree flow below shows high level migration method finalization process for virtualization or new build:



## Downtime Agreement

Downtime Agreements help finalize the previous step and appropriate tools and technologies to be used for migration.

After the migration methods identified in the previous step have been finalized, identify the tools that will be used to achieve the agreed methods. An important factor in making this decision is downtime associated with applications and their business impact as this is a major cause of budget overruns.

Risk of planned downtime, extended downtime, and ultimately its impact to business have always been a primary concern for any organization during migration.

Let me walk through strategies that we used based on different scenarios:

| Application Category | Applications    | Downtime Allowed | Business Impact Risk Hours |
|----------------------|-----------------|------------------|----------------------------|
| 1                    | Less Critical   | 24 hours         | 72 hours                   |
| 2                    | Medium Critical | 12-14 hours      | 24-48 hours                |
| 3                    | High Critical   | 1-6 hours        | 0-12 hours                 |

As seen in the table above, applications are broken down into three categories based on the amount of downtime allowed for each and associated risks to business.

- a. Less critical applications are those where downtime is acceptable and some period can be tolerated for extended downtime. Usually such applications have less impact to the business.
- b. Although I have classified Category 2 as medium critical, I have seen customer scenarios where such applications are much less since it is very difficult from a customer perspective to categorize such applications. Most of the time, such cases are in range of 10-20% with the remaining 80-90% divided into less and high critical.
- c. High critical applications are mission-critical apps that contain critical business data. Their impact on business is high. Any impact on same directly relates to profit and loss from a business perspective.

Depending on the downtime categorization, it is always advisable to use appropriate migration tools which will help successfully migrate in the allocated downtime and minimally impact the business.

In the table below, three factors are considered while defining downtime.

1. Migration Execution Time, which covers actual conversion like P2V or V2V
2. Application Testing Time post migration
3. Business user testing time

| Migration Execution Time | Application Testing Time | Business User Testing Time |
|--------------------------|--------------------------|----------------------------|
|                          |                          |                            |
|                          |                          |                            |

## Pre-migration and Cutover Templates

Creating Pre-migration templates is an important step when preparing for a migration. These templates include activities to be completed before migration execution. The following template is based on my experience where we executed a pre-migration checklist covering a six-week period from T-6 week to T-1 week. Meetings were held weekly to ensure all the activities under each week were completed successfully and to eliminate problem areas associated with any task within that week. Below is the list of activities that should be covered as part of pre-migration checklist.

| Check point / Task ID | This set of pre-requisites must be confirmed completed as we move closer to the migration windows.                                                                                                               | Dependency | Team | Action Owner | Overall Status | Completion Date | CR | Notes |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------|--------------|----------------|-----------------|----|-------|
| Check point 0         | T-6                                                                                                                                                                                                              |            |      |              |                |                 |    |       |
| C0 / 01               | Architecture document approved for each technology track( Unix, Windows, VMware SAN, Network)                                                                                                                    |            | MIG  |              |                |                 |    |       |
| C0 / 02               | Cookbook approved for each technology track( Unix, Windows, SAN, Network)                                                                                                                                        |            | MIG  |              |                |                 |    |       |
| C0 / 03               | Raise CRs for cutover event                                                                                                                                                                                      |            | MIG  |              |                |                 |    |       |
| C0 / 04               | Confirm that all Middleware changes (on new HW potentially) that can be made <b>pre-migration</b> have been analyzed, documented, actioned and <b>Change Requests</b> raised as required                         |            | MW   |              |                |                 |    |       |
| C0 / 05               | Confirm that all Middleware changes (on new HW potentially) that need to be made during migration have been analyzed, documented, and included in the cutover plan and <b>Change Requests</b> raised as required |            | MW   |              |                |                 |    |       |
| C0 / 06               | Identify any application changes are required, they have been analyzed, documented, actioned, including raising any CRs                                                                                          |            | AM   |              |                |                 |    |       |
| C0 / 07               | Confirm compatibility check completed between different platform and DB                                                                                                                                          |            | MW   |              |                |                 |    |       |
| C0 / 08               | Confirm Point to Point link is established and QOS is setup                                                                                                                                                      |            | MIG  |              |                |                 |    |       |
| C0 / 09               | Confirm access to the Datacenters                                                                                                                                                                                |            | MIG  |              |                |                 |    |       |

|                      |                                                                                                                                                                                                                       |  |              |  |  |  |  |  |  |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--------------|--|--|--|--|--|--|
| C0 / 10              | Confirm access to Servers                                                                                                                                                                                             |  | MIG          |  |  |  |  |  |  |
| C0 / 11              | Application team contact list                                                                                                                                                                                         |  | AM           |  |  |  |  |  |  |
| C0 / 12              | Identify <b>IF</b> firewall configuration changes required and implemented                                                                                                                                            |  | AM           |  |  |  |  |  |  |
| C0 / 13              | Execute pre-migration testing and record actual and expected results                                                                                                                                                  |  | Testing Team |  |  |  |  |  |  |
| C0 / 14              | Confirm that all servers in scope can be discovered by Migration Factory tooling <b>and</b> should be performed on a bi-weekly basis                                                                                  |  | MIG          |  |  |  |  |  |  |
| C0 / 15              | Confirm OS and software media kit available                                                                                                                                                                           |  | MIG          |  |  |  |  |  |  |
| C0 / 16              | Confirm Application -> host -> Storage mapping sheet is available                                                                                                                                                     |  | MIG          |  |  |  |  |  |  |
| C0 / 17              | Confirm DB backup activities are understood and documented                                                                                                                                                            |  | MW           |  |  |  |  |  |  |
| C0 / 18              | Confirm whether a dry run for this migration group is required                                                                                                                                                        |  | MIG          |  |  |  |  |  |  |
| C0 / 19              | Confirm middleware support organization(s)                                                                                                                                                                            |  | MW           |  |  |  |  |  |  |
| C0 / 20              | Confirm application support organization(s)                                                                                                                                                                           |  | AM           |  |  |  |  |  |  |
| C0 / 21              | Confirm that servers have been transitioned to infrastructure supplier if applicable                                                                                                                                  |  | MIG          |  |  |  |  |  |  |
| C0 / 22              | Confirm the business user availability to perform UAT(user acceptance testing)                                                                                                                                        |  | AM           |  |  |  |  |  |  |
| C0 / 23              | Confirm third party vendor support is available during migration                                                                                                                                                      |  | Business     |  |  |  |  |  |  |
| C0 / 25              | Infrastructure resources confirmed                                                                                                                                                                                    |  | MIG          |  |  |  |  |  |  |
| C0 / 26              | Middleware resources confirmed                                                                                                                                                                                        |  | MW           |  |  |  |  |  |  |
| C0 / 27              | DB resources confirmed                                                                                                                                                                                                |  | MW           |  |  |  |  |  |  |
| C0 / 28              | ASM resources confirmed                                                                                                                                                                                               |  | AM           |  |  |  |  |  |  |
| C0 / 29              | Key users (Customer) confirmed                                                                                                                                                                                        |  | Customer     |  |  |  |  |  |  |
| C0 / 30              | Identify who needs to be included on all migration communications                                                                                                                                                     |  | MIG          |  |  |  |  |  |  |
| C0 / 31              | Confirm that cutover plans drafted are in line with the network characteristics observed                                                                                                                              |  | MIG          |  |  |  |  |  |  |
| C0 / 32              | Infrastructure (incl. core) required for cutover documented in GCD and agreed                                                                                                                                         |  | MIG          |  |  |  |  |  |  |
| C0 / 33              | Confirm the name and IP address of the target database server                                                                                                                                                         |  | MIG          |  |  |  |  |  |  |
| C0 / 34              | Confirm infrastructure available as required (Application and DB infrastructure)                                                                                                                                      |  | MIG          |  |  |  |  |  |  |
| C0 / 35              | Share the new server names with application support team                                                                                                                                                              |  | INF          |  |  |  |  |  |  |
| C0 / 36              | Ensure the application support team have the same level of access in Migrated servers                                                                                                                                 |  | INF          |  |  |  |  |  |  |
| C0 / 37              | Confirmation / Installation of mount points and patches                                                                                                                                                               |  | MW           |  |  |  |  |  |  |
| C0 / 38              | Confirm that all licenses required in target location have been identified and procure necessary licenses as required. And <b>IF</b> licensed servers have mac address restrictions; reach out to 3rd party suppliers |  | AM           |  |  |  |  |  |  |
| C0 / 39              | Review cutover plan with key stakeholders                                                                                                                                                                             |  | MIG          |  |  |  |  |  |  |
| <b>Check point 1</b> | <b>T-5</b>                                                                                                                                                                                                            |  |              |  |  |  |  |  |  |
| C1 / 01              | Confirm and document duration of pre-migration testing                                                                                                                                                                |  | Testing team |  |  |  |  |  |  |
| C1 / 02              | File shares identified and captured in file share log                                                                                                                                                                 |  | MIG          |  |  |  |  |  |  |
| C1 / 03              | Confirm process to migrate DBs understood                                                                                                                                                                             |  | MW           |  |  |  |  |  |  |
| C1 / 04              | Document infrastructure availability as required (Application and DB infrastructure)                                                                                                                                  |  | MIG          |  |  |  |  |  |  |

|                      |                                                                                                                                                                  |         |                         |  |  |  |  |  |  |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-------------------------|--|--|--|--|--|--|
| C1 / 05              | If applicable, confirm that Customer has accepted the difference in patch level during migration and that it is acceptable to the target.                        |         | Cust<br>omer            |  |  |  |  |  |  |
| C1 / 06              | Confirm GSR reports are running and available on source                                                                                                          |         | MIG                     |  |  |  |  |  |  |
| C1 / 07              | Execute pre-migration backup activities                                                                                                                          |         | MIG                     |  |  |  |  |  |  |
| C1 / 08              | Confirm if additional support contracts should be put in place                                                                                                   |         | MIG                     |  |  |  |  |  |  |
| C1 / 09              | Confirm Data migration setup in place                                                                                                                            |         | MIG                     |  |  |  |  |  |  |
| C1 / 10              | Confirm lift and shift pre migration activities completed                                                                                                        |         | MIG                     |  |  |  |  |  |  |
| C1 / 11              | Confirm <b>any new</b> access requirements <b>documented and implemented</b> for Middleware Team                                                                 |         | MW                      |  |  |  |  |  |  |
| C1 / 12              | Confirm any new access requirements documented and implemented for OS team                                                                                       |         | MIG                     |  |  |  |  |  |  |
| C1 / 13              | Confirm resources for each application - i.e. who will start/shut down each individual application                                                               |         | MIG                     |  |  |  |  |  |  |
| <b>Check point 2</b> | <b>T-4</b>                                                                                                                                                       |         |                         |  |  |  |  |  |  |
| C2 / 01              | Obtain DB binaries for each database instance                                                                                                                    |         | MW                      |  |  |  |  |  |  |
| C2 / 02              | Obtain DB patches from source server and load into target server                                                                                                 |         | MW                      |  |  |  |  |  |  |
| C2 / 03              | Identify any other applications not in scope on the server that are set to migrate and plan to mitigate these                                                    |         | MIG                     |  |  |  |  |  |  |
| C2 / 04              | Ensure that Customer testing team has attempted to log onto source servers to ensure they have sufficient access                                                 |         | Testi<br>ng<br>Tea<br>m |  |  |  |  |  |  |
| <b>Check point 3</b> | <b>T-3</b>                                                                                                                                                       |         |                         |  |  |  |  |  |  |
| C3 / 01              | Execute remediation actions for VMware/ migration conversion tool                                                                                                |         | MIG                     |  |  |  |  |  |  |
| C3 / 02              | Qualification of <b>target DB</b> servers complete                                                                                                               |         | INF                     |  |  |  |  |  |  |
| C3 / 03              | Open FTP and SCP ports for data transfer on <b>source DB</b> servers                                                                                             |         | MW                      |  |  |  |  |  |  |
| C3 / 04              | Open FTP and SCP ports for data transfer on <b>target DB</b> servers                                                                                             |         | INF                     |  |  |  |  |  |  |
| C3 / 05              | Complete installation of DB binaries for each DB instance and executable                                                                                         |         | MW                      |  |  |  |  |  |  |
| C3 / 06              | Confirm set up access to Backup related to Database                                                                                                              |         | MW                      |  |  |  |  |  |  |
| C3 / 07              | Pre-work for middleware is complete                                                                                                                              |         | MW                      |  |  |  |  |  |  |
| C3 / 08              | <b>IF</b> Pre-work has been identified for applications, it is complete                                                                                          | C0 / 03 | AM                      |  |  |  |  |  |  |
| C3 / 09              | Confirm that all servers in scope can be discovered by Migration Factory tooling <b>and</b> should be performed on a bi-weekly basis                             | C0 / 11 | MIG                     |  |  |  |  |  |  |
| <b>Check point 4</b> | <b>T-2</b>                                                                                                                                                       |         |                         |  |  |  |  |  |  |
| C4 / 01              | Database changes scheduled, understood and impacted prior to cutover weekend                                                                                     |         | MW                      |  |  |  |  |  |  |
| C4 / 02              | Confirm service desk ticket open (for source server down) - <b>AND</b> inform service desk of all servers involved in the migration of that specific application |         | AM                      |  |  |  |  |  |  |
| <b>Check point 5</b> | <b>T-1</b>                                                                                                                                                       |         |                         |  |  |  |  |  |  |
| C5 / 01              | Final cutover plan issued to all contributing teams                                                                                                              |         | MIG                     |  |  |  |  |  |  |
| C5 / 02              | Confirm data migration setup functionality tested                                                                                                                |         | MIG                     |  |  |  |  |  |  |
| C5 / 03              | Cutover commencement communication issued to key stakeholders                                                                                                    |         | MIG                     |  |  |  |  |  |  |
| C5 / 04              | Lessons learned meeting post cutover scheduled                                                                                                                   |         | MIG                     |  |  |  |  |  |  |

**AM-** Application Team

**MIG-** Migration Team

**INF-** Infrastructure Team

It is equally important to track the above in terms of issue log to stay on track or, if anything is going wrong, bring it back on track. Some organizations run this on a weekly basis while some reduce the time period. My suggestion is to run it on a weekly basis as this gives you time to reduce errors and prepare properly for migration. The template below can help you track the issue log.

| # | MG | Raised at | Closed at | Description of issue | Actions | Owner | Status | Notes |
|---|----|-----------|-----------|----------------------|---------|-------|--------|-------|
|   |    |           |           |                      |         |       |        |       |
|   |    |           |           |                      |         |       |        |       |
|   |    |           |           |                      |         |       |        |       |

On the other hand, cutover templates are helpful when listing the tasks to be executed during the migration, such as:

1. What activities are to be performed?
2. Who is going to perform the activities?
3. The timeframe in which the activities are to be performed.

All the suppliers—infrastructure, application team, middleware team, and business testing team—should sit together to list their activities for this template. This template varies depending upon migration method to be used i.e. whether it is P2V, V2V, and LPAR to LPAR, new build or lift and shift. The over-arching component that varies in all of these is application testing time. For P2V, V2V, LPAR to LPAR, and lift and shift, testing time is minimal since it is simply shut down and start up of application in most cases. However, in the case of new build where an application needs to be freshly installed, timelines increase. I have taken a reference of P2V/V2V activities that should be covered in the cutover template and have listed them below:

| Planned Start Time: |               | Sat 18 January 2014 18:00:00 |                                                                                                                        |                         |                      |                          |        |                                                                                                                  |
|---------------------|---------------|------------------------------|------------------------------------------------------------------------------------------------------------------------|-------------------------|----------------------|--------------------------|--------|------------------------------------------------------------------------------------------------------------------|
|                     |               | Server xyz                   |                                                                                                                        |                         |                      |                          |        |                                                                                                                  |
|                     |               | P2V/V2V                      |                                                                                                                        |                         |                      |                          |        |                                                                                                                  |
| Task ID             | Source Status | Target Status                | Description                                                                                                            | Team                    | Owner                | Planned Duration (HH:MM) | Status | Notes                                                                                                            |
| M1                  |               |                              | MILESTONE 1 - START : PRE-MIGRATION ACTIVITIES - Infra                                                                 | CC                      | Command Centre       | Sat 18-Jan 18:00         |        | Command Centre to notify the M1 owner to start the activity<br>M1 Owner to Acknowledge email from Command Centre |
| 001.                |               |                              | Send Information Note to Stakeholders, application will be down as specified in CR                                     | AM                      | N/A                  | 0:00:00                  |        |                                                                                                                  |
| 002.                |               |                              | Confirm Full Backup of Server                                                                                          | Infrastructure Supplier | Email ID             | 1:00:00                  |        |                                                                                                                  |
| 003.                |               |                              | Confirm DNS changes if applicable (Optional task to be added to Template)                                              | EUC Team                | N/A                  | 0:00:00                  |        |                                                                                                                  |
| 004.                |               |                              | Put Server monitoring in Maintenance Mode                                                                              | Infrastructure Supplier | Email ID             | 0:30:00                  |        |                                                                                                                  |
| M1                  |               |                              | MILESTONE 1 - END : PRE-MIGRATION ACTIVITIES - Infra                                                                   | Infrastructure Supplier | Email id of M1 owner | Sat 18-Jan 19:30         |        | M1 Owner to Notify Command Centre of Milestone End.<br>Command Centre to notify M2 Owner to start M2 Milestone   |
| M2                  |               |                              | MILESTONE 2 - START : PRE-MIGRATION ACTIVITIES - Apps/Middleware                                                       | AM Team                 | Email ID             | Sat 18-Jan 19:30         |        | M2 Owner to Acknowledge email from Command Centre<br>M2 Owner to notify Team Members of Milestone activity       |
| 005.                |               |                              | Capture Database snapshot from source server                                                                           | MW                      | Email ID             | 2:00:00                  |        |                                                                                                                  |
| 006.                |               |                              | Shut down applications and Services                                                                                    | AM                      | Email ID             | 2:00:00                  |        |                                                                                                                  |
| 007.                |               |                              | Shutdown Middleware components and Services and complete Pre-Migration Tasks (including configuration and data backup) | MW                      | Email ID             | 3:00:00                  |        |                                                                                                                  |
| M2                  |               |                              | MILESTONE 2 - END : PRE-MIGRATION ACTIVITIES - Apps/Middleware                                                         | AM Team                 | Email ID of M2 owner | Sun 19-Jan 02:30         |        | M2 Owner to Notify Command Centre of Milestone End.<br>Command Centre to notify M3 Owner to start M3 Milestone   |
| M3                  |               |                              | MILESTONE 3 - START : Migration Method Execution                                                                       | Migration Team          | Email ID             | Sun 19-Jan 02:30         |        | M3 Owner to Acknowledge email from Command Centre.<br>M3 Owner to notify Team Members of Milestone activity      |
| 008.                |               |                              | Perform VMware converter for P2V/Virtual to Virtual conversion                                                         | Migration Team          | Email ID             | 04:00:00                 |        |                                                                                                                  |
| 009.                |               |                              | Confirm vCPU/ Memory , Cluster / Data store location                                                                   | Migration Team          | Email ID             | 00:10:00                 |        |                                                                                                                  |
| 010.                |               |                              | Confirm source data volumes( Local and SAN) copied using VMware converter process                                      | Migration Team          | Email ID             | 00:10:00                 |        |                                                                                                                  |
| 011.                |               |                              | Confirm SOURCE server powered down                                                                                     | Migration Team          | Email ID             | 00:10:00                 |        |                                                                                                                  |
| 012.                |               |                              | Perform server health checks (HW Driver Uninstall / VM Tools Install and Reconfiguration                               | Migration Team          | Email ID             | 01:00:00                 |        |                                                                                                                  |
| M3                  |               |                              | MILESTONE 3 - END : Migration Method Execution                                                                         | Migration Team          | Email ID             | Sun 19-Jan 08:00         |        | M3 Owner to Notify Command Centre of Milestone End.<br>Command Centre to notify M3 Owner to start M4 Milestone   |
| M4                  |               |                              | MILESTONE 4 - START : Post Migration Activities - Infra                                                                | EUC Team                | Email ID             | Sun 19-Jan 08:00         |        | M4 Owner to Acknowledge email from Command Centre.<br>M4 Owner to notify Team Members of Milestone activity      |
| 013.                |               |                              | Update DNS Servers                                                                                                     | EUC Team                | Email ID             | 00:30:00                 |        |                                                                                                                  |
| 014.                |               |                              | Verify and signoff anti-virus server installed                                                                         | Migration Team          | Email ID             | 00:15:00                 |        |                                                                                                                  |
| 015.                |               |                              | Install monitoring tools on target server image                                                                        | Migration Team          | Email ID             | 00:15:00                 |        |                                                                                                                  |
| 016.                |               |                              | Run qualification scripts                                                                                              | Migration Team          | Email ID             | 01:00:00                 |        |                                                                                                                  |
| 017.                |               |                              | Consolidate qualification documents & approvals                                                                        | Migration Team          | Email ID             | 02:00:00                 |        |                                                                                                                  |

|           |  |  |                                                                                                                                                   |                       |                          |                  |  |                                                                                                                  |
|-----------|--|--|---------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|--------------------------|------------------|--|------------------------------------------------------------------------------------------------------------------|
| 018.      |  |  | Perform backup solution install on target                                                                                                         | Migration Team        | Email ID                 | 01:00:00         |  |                                                                                                                  |
| 019.      |  |  | Perform backup solution testing                                                                                                                   | Migration Team        | Email ID                 | 00:30:00         |  |                                                                                                                  |
| 020.      |  |  | Confirm backup testing complete and signed off                                                                                                    | Migration Team        | Email ID                 | 02:00:00         |  |                                                                                                                  |
| 021.      |  |  | Configure and enable monitoring with new IP addresses                                                                                             | Migration Team        | Email ID                 | 1:00:00          |  |                                                                                                                  |
| 022.      |  |  | Complete required service acceptance tasks to allow 'go-live' to complete                                                                         | Migration Team        | Email ID                 | 01:00:00         |  |                                                                                                                  |
| 023.      |  |  | Confirm Server Ready for Application Testing                                                                                                      | Migration Team        | Email ID                 | 01:00:00         |  |                                                                                                                  |
| M4        |  |  | <b>MILESTONE 4 - END : Post Migration Activities – Infra</b>                                                                                      | Migration Team        | Email ID                 | Sun 19-Jan 18:30 |  | M4 Owner to Notify Command Centre of Milestone End.<br>Command Centre to notify M5 Owner to start M5 Milestone   |
| M5        |  |  | <b>MILESTONE 5 - START : POST-MIGRATION ACTIVITIES - Apps /Middleware</b>                                                                         | AM Team               | Email ID                 | Sun 19-Jan 18:30 |  | M5 Owner to Acknowledge email from Command Centre<br>M5 Owner to notify Team Members of Milestone activity       |
| 024.      |  |  | Start Middleware Services and Performing Post Migration activities (data restore if required and configuration check - check Hosting Permissions) | MW                    | Email ID                 | 2:00:00          |  |                                                                                                                  |
| 025.      |  |  | Start application and its related services                                                                                                        | AM                    | <a href="#">Email ID</a> | 4:00:00          |  |                                                                                                                  |
| 026.      |  |  | Apply specific application configuration changes                                                                                                  | AM                    | Email ID                 | 0:00:00          |  |                                                                                                                  |
| M5        |  |  | <b>MILESTONE 5 - END : POST-MIGRATION ACTIVITIES - Apps /Middleware</b>                                                                           | AM                    | Email ID                 | Mon 20-Jan 00:30 |  | M5 Owner to Notify Command Centre of Milestone End.<br>Command Centre to notify M6 Owner to start M6 Milestone   |
| M6        |  |  | <b>MILESTONE 6 -START : POST-MIGRATION TESTING</b>                                                                                                |                       | Email ID                 | Mon 20-Jan 00:30 |  | M6 Owner to Acknowledge email from Command Centre<br>M6 Owner to notify Team Members of Milestone activity       |
| 027.      |  |  | CC to ensure that the migration cutover activities of the dependent servers are completed before releasing it for post migration testing          | CC                    | Email ID                 | 0:00:00          |  |                                                                                                                  |
| 028.      |  |  | Execute post-migration testing of Application Instance , Compare and share the results with Stakeholders                                          | AM                    | <a href="#">Email ID</a> | 21:00:00         |  | Inform "Application Migration Testing" mailbox once completed with eRoom link where documents are stored         |
| 029.      |  |  | Capture Database snapshot from target and compare with source                                                                                     | MW                    | Email ID                 | 2:00:00          |  |                                                                                                                  |
| 030.      |  |  | Confirm testing and service acceptance tasks complete, and send the post migration test report the System owner for approval.                     | AM                    | <a href="#">Email ID</a> | 1:00:00          |  |                                                                                                                  |
| 031.      |  |  | Send confirmation to command center, and provide go ahead for the UAT to proceed                                                                  | AM                    | <a href="#">Email ID</a> | 1:00:00          |  | Inform "Application Migration Testing" mailbox once completed with eRoom link where documents are stored         |
| 032.      |  |  | Confirm that Post Migration testing is complete                                                                                                   | AM                    | <a href="#">Email ID</a> | 1:00:00          |  |                                                                                                                  |
| M6a-Start |  |  |                                                                                                                                                   | CC                    | Email ID                 | 0:00:00          |  |                                                                                                                  |
| 033.      |  |  | UAT - Command Centre to send the email with TP template for the business to start testing.                                                        | CC                    | Email ID                 | 0:00:00          |  |                                                                                                                  |
| 034.      |  |  | UAT - Execute UAT of Application Instance , Compare and share the results with Stakeholders                                                       | Customer Testing Team | Email ID                 | 0:00:00          |  |                                                                                                                  |
| 035.      |  |  | UAT - Confirm UAT testing and service acceptance tasks complete                                                                                   | Customer Testing Team | Email ID                 | 0:00:00          |  |                                                                                                                  |
| M6a – End |  |  |                                                                                                                                                   |                       |                          | 0:00:00          |  |                                                                                                                  |
| M6        |  |  | <b>MILESTONE 6 - END : POST-MIGRATION TESTING</b>                                                                                                 |                       | Email ID                 | Tue 21-Jan 02:30 |  | M6 Owner to Notify Command Centre of Milestone End.<br>Command Centre to notify M6a Owner to start M6a Milestone |
| M7        |  |  | <b>MILESTONE 7 - START : REQUEST written approval to 'go-live' from Customer</b>                                                                  | CC                    | Email ID                 | Tue 21-Jan 02:30 |  | Command Centre to send TP4 to M7 Owner                                                                           |
| 036.      |  |  | Request approval from Customer to Go-Live                                                                                                         | CC                    | Email ID                 | 0:10:00          |  |                                                                                                                  |

|      |  |  |                                                                               |                        |          |                      |  |                                                                                                                                   |
|------|--|--|-------------------------------------------------------------------------------|------------------------|----------|----------------------|--|-----------------------------------------------------------------------------------------------------------------------------------|
| M7   |  |  | MILESTONE 7 - END :<br>Provide written approval to<br>'go-live' from Customer | CC                     | Email ID | Tue 21-<br>Jan 02:40 |  | M7 Owner to Acknowledge email from<br>Command Centre                                                                              |
| M8   |  |  | MILESTONE 8 - START :<br>Go Live Communications                               |                        |          | Tue 21-<br>Jan 02:40 |  | M8 Owner to Acknowledge email from<br>Command Centre<br>M8 Owner to notify Team Members (Migration<br>Team) of Milestone activity |
| 037. |  |  | Inform BAU team of go-live<br>'switching' of Application                      | Infrastructure<br>Team | Email ID | 0:45:00              |  |                                                                                                                                   |
| 038. |  |  | Communicate to all key<br>stakeholder that migration<br>has been completed    | AM                     | Email ID | 0:00:00              |  | Inform "Application Migration Testing" mailbox<br>once completed with eRoom link where<br>documents are stored                    |
| M8   |  |  | MILESTONE 8 - END : : Go<br>Live Communications                               | CC                     | Email ID | Tue 21-<br>Jan 03:25 |  | M8 Owner to Notify Command Centre of<br>Milestone End.                                                                            |

**CC - Command Centre**

**AM - Application Team**

**MW - Middleware team**

Please note I have mentioned different suppliers here based on my experience. However, this environment could be managed by a single supplier. If so, terms will change accordingly.

Please note timeline is just a reference that I have used. The time required for each cutover plan will vary depending upon:

- How much data is associated with each server?
- How much time application team needs to test their application?
- How much time to start and shut down applications?
- How much time to backup, etc.?
- What is the WAN bandwidth link speed available to migrate?

While preparing the cutover plan, two more things are important to be noted and covered. One is the roll back plan and second is the contact list listed below:

- **Roll Back Plan** helps to ensure there is a plan to revert to in case something goes wrong with the migration or it's necessary to switch back and forth between old and new state to identify the root cause of the problem or have comparison in between. I have listed tasks below referring to P2V/V2V migration.

| Rollback Plan |               |               |                                                                       |                |          |                          |        |       |
|---------------|---------------|---------------|-----------------------------------------------------------------------|----------------|----------|--------------------------|--------|-------|
| Task ID       | Source Status | Target Status | Description                                                           | Team           | Owner    | Planned Duration (HH:MM) | Status | Notes |
| 001.          | OFF           | ON            | MILESTONE: DECISION HAS MADE TO Roll-Back                             | Business       | Email id | 0:15                     |        |       |
| 002.          | OFF           | ON            | Disable NEW Virtual server Network card and shutdown the server       | Migration Team | Email ID | 0:15                     |        |       |
| 003.          | OFF           | OFF           | Revert DNS Update                                                     | Wipro          | Email ID | 0:30                     |        |       |
| 004.          | OFF           | OFF           | Revert IP Address in other server ex. Cyclone                         | Migration Team | Email ID | 0:30                     |        |       |
| 005.          | ON            | OFF           | Power on the Source Virtual server                                    | Migration Team | Email ID | 0:30                     |        |       |
| 006.          | ON            | OFF           | SQL - Restore the services on source server                           | MW             | Email ID | 0:30                     |        |       |
| 007.          | ON            | OFF           | Oracle - Restore the services on source server                        | MW             | Email ID | 2:30                     |        |       |
| 008.          | ON            | OFF           | IIS - Restore the services on source server                           | MW             | Email ID | 0:10                     |        |       |
| 009.          | ON            | OFF           | Weblogic - Start the Weblogic and applications                        | MW             | Email ID | 0:30                     |        |       |
| 010.          | ON            | OFF           | Web sphere - Start the web sphere and applications                    | MW             | Email ID | 0:30                     |        |       |
| 011.          | ON            | OFF           | Start application and its related services                            | AM             | Email ID | 2:00:00                  |        |       |
| 012.          | ON            | OFF           | Execute fallback testing of source sever                              | AM             | Email ID | 21:00:00                 |        |       |
| 013.          | ON            | OFF           | Confirm testing and service acceptance tasks complete                 | AM             | Email ID | 3:00:00                  |        |       |
| 014.          | ON            | OFF           | Provide written approval to 'go-live' from Customer                   | ASM/SO         | Email ID | 0:15                     |        |       |
| 015.          | ON            | OFF           | Inform BAU team of go-live 'switching' of server to production status | CC             | Email ID | 0:15                     |        |       |
| 016.          | ON            | OFF           | Communicate to all key stakeholder that fallback has been completed   | CC             | Email ID | 0:15                     |        |       |
| 017.          | ON            | OFF           | Delete the Target Virtual Machine from the Data store                 | Migration Team | Email ID | 0:15                     |        |       |

- **Contact List** helps identify whom to contact if some tasks are delayed, to check progress of tasks, or who to reach out to in case of issues or roll back. A Sample Contact List is shown below.

|                             |      |         |       |       | Servers |                    |
|-----------------------------|------|---------|-------|-------|---------|--------------------|
| Role                        | Name | Company | Email | Phone | XYZ     | Escalation Contact |
| Application Testing Mailbox |      | XYZ     | -     |       | Y       |                    |
| SPOC for Help Desk          |      | XYZ     | -     |       | Y       |                    |
| Migration Manager           |      | XYZ     | -     |       | Y       | Y                  |
| Project Coordinator         |      | XYZ     | -     |       | Y       |                    |
| Backup Team                 |      | XYZ     | -     |       | Y       |                    |
| Monitoring Tools Team       |      | XYZ     | -     |       | Y       |                    |
| DNS Contact                 |      | XYZ     | -     |       | Y       |                    |
| Customer PM                 |      | XYZ     | -     |       | Y       |                    |
| Middleware Team             |      | XYZ     | -     |       | Y       |                    |
| Application SPOC            |      | XYZ     | -     |       | Y       |                    |
| Test Lead                   |      | XYZ     | -     |       | Y       |                    |
| VMware SPOC                 |      | XYZ     |       |       | Y       |                    |

## Communication

The backbone of any migration execution, communication ensures all the right stakeholders are talking to each other in a timely manner and no time is wasted during any migration execution. This role bundles the different suppliers into one group.

It is crucial in any enterprise migration project to have clear management from a stakeholder perspective. For enterprise accounts, the key decision makers and SME's are spread across different locations or regions. Hence, it is important that the same message is communicated to them on time and everyone is in synch and provides their support during any phase of the project whether it is data collection, planning, or execution layer.

It is important to have a clearly defined communication plan which will help determine:

- Process: Who are involved? How? What stage to reach out to them?
- Escalation Procedure
- Communication method: Email or any template mechanism or SharePoint for sharing information?
- Time estimation for response.

In geographically dispersed locations, communication over email or phone could prove less effective due to different cultures and difference in thinking. Therefore, it is wise to have weekly face-to-face meetings over live meeting or a personal visit once or twice over a two-month period to build customer confidence and understand their challenges. It is important to locate a small team—if not a complete team—who can sit with them during the tenure of the migration.

In the cutover plan shown previously, CC refers to Command Center. A command center is usually established to make sure the communication process runs smooth during execution of the cutover plan and keep all stakeholders informed, from the execution SPOC level layer up to the business. Once the cutover plan is ready, it is handed over to Command Center where it picks up and ensures migration communication happens smoothly during migration. A major task it does during execution layer is to gather everyone on the same call should there be any issues during migration. For example, suppose an XY application is being migrated and migration is failing. Migration SPOC tells the Command Center that migration has failed and it needs to be rolled back. Command Center sets up a call between all the stakeholders where a decision is reached whether an application can absorb additional downtime and troubleshooting can be done, or if it needs to be rolled back.

In the Execution Layer, the following steps are very important:

- a. Group the applications and servers into groups that can be moved together and independently of other applications. This step is critical to ensure applications having dependencies on each other are moved together and within required downtime. Listed below are the application migration grouping principles that should be captured although there are more points to these which vary by customer:
  - o Multiple applications hosted on the same server will be part of the same migration wave with some exceptions.
  - o Business process will be considered as part of grouping a wave.
  - o The latter waves will be smaller to provide contingency.

- o Applications and middleware with dependencies on each other and running on different servers will be part of the same migration wave with some exceptions.
  - o Applications which are not dependent on middleware and database should be moved first.
  - o Interdependent applications will be moved together.
  - o Non-production environments will be migrated prior to corresponding production environments on weekdays.
  - o Applications will be grouped and scheduled to move in waves.
  - o Wave1 will consist of simple applications which have no interdependencies, no dependencies on middleware, and allow each migration method to be utilised. Further waves will have a balanced risk profile.
  - o Plans will take into account blackout dates and other critical events
- b. Understand the amount of downtime associated with each set and get agreement from business. There could be multiple applications associated with each group since multiple applications could be running on the same infrastructure which needs to be migrated at the same time; hence, downtime agreement from all application and business owners must be made to migrate all applications at the same time.
- c. Run the pre-migration checklist from T-6 to T-1 before the cutover plan execution.
- d. Pre-Migration Testing Results to be captured before cutover plan execution. We have seen cases where application owners come back post-migration claiming an application is not performing or not behaving as it was before migration. This is where testing and the QCS team that tests the application and captures their results before migration come into the picture. Similar tests are performed post-migration and compared against the original results to identify if there are discrepancies between the two.

- e. Share the cutover plan with the business within 1-2 weeks to come to an agreement on the time required to cut over the application and make necessary tweaks wherever possible based on feedback from business.

Time is precious to business and it is important to utilize their time in an effective manner. Migration needs to be done on time. Not sharing cutover plans with stakeholders for their approval increases the likelihood that migration plans will be postponed.

- f. Have a Go/No-Go meeting between Application supplier, Infrastructure supplier, and Business to arrive at a go/no-go agreement from business/system owners for scheduled migration.

The list of activities covered as part of a Go/No-go meeting are:

| Criteria                                                                                                                                                                                                                                                                                                                    | Status | Comments                                                             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------------------------------------------|
| Readiness checklist complete                                                                                                                                                                                                                                                                                                |        |                                                                      |
| Application CR approved                                                                                                                                                                                                                                                                                                     |        | Approval except for one application                                  |
| Middleware CR approved                                                                                                                                                                                                                                                                                                      |        |                                                                      |
| Infrastructure CR approved                                                                                                                                                                                                                                                                                                  |        |                                                                      |
| Pre-migration testing completed                                                                                                                                                                                                                                                                                             |        | In progress for one application                                      |
| System Owner agreement on migration date                                                                                                                                                                                                                                                                                    |        |                                                                      |
| Cutover plan approved                                                                                                                                                                                                                                                                                                       |        | Approved for GO applications but WIP for conditional GO applications |
| Communication and escalation contacts identified.<br><i>(Command Centre tool will be used for communications during migrations. Each task owner updates the status of the task in the cutover plan when a task is completed and notifies the next task owner. No activity starts until notified by previous task owner)</i> |        |                                                                      |
| Rollback plan is available                                                                                                                                                                                                                                                                                                  |        |                                                                      |
| Resources required for actual migration activities are available                                                                                                                                                                                                                                                            |        |                                                                      |

- g. Execute the cutover plan and satisfy business expectations by executing within the agreed timeline and secure application “go-live” from business.

This is the final step after going through the entire discovery and planning. The list of activities that should be performed have been covered under cutover plans. So, let's proceed and perform those activities, communicate effectively, and migrate the application successfully.

## **Conclusion**

Understanding complexity of applications to be moved and associated infrastructure is key to any migration project. Business invests a great deal of time in these initiatives. Therefore, it is necessary to respect the value of their time and build their confidence by following best practices and processes during any migration project.

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