

Remote Infrastructure Management Operating Model

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Abstract : This document proposes an effective Operating Model for Remote Infrastructure Management. Remote Infrastructure Management (RIM) services is a worldwide business where a service provider company manages their client's ICT infrastructure anywhere in the world or on any private or public cloud from the remote places across the globe and mostly on 24x7x365 basis.

The Remote Infrastructure Management market size is expected to grow from USD 23.60 Billion in 2018 to USD 41.25 Billion by 2025, at a Compound Annual Growth Rate (CAGR) of 11.8% during the forecast period. [1]

The researcher by this paper has derived the Operating Model to effectively manage and run this business. This model is imperative because of complexity of this business's whole ecosystem. Remote Infrastructure Management services supports a very exhaustive and long list of support services in ICT infrastructure.

The researcher having a vast and thorough experience in this particular domain, not only derived this model but successfully implemented it in various companies he worked in multiple countries. The various essential components of this model are further explained in detail to understand it thoroughly.

This model will be usable as a guideline for the new entrant companies and its managers to implement RIM services as well as to the established companies trying to introduce further efficiency & productivity in Remote Infrastructure Management services.

Keywords - Remote Infrastructure Management, ICT, Model, Components, Services, Cloud etc.

I. INTRODUCTION

Remote Infrastructure Management is one of the flourishing business opportunities even in a cloud computing era. Remote Infrastructure Management is a procedure or process of remotely monitoring and managing ICT (Information and Communications Technology) infrastructure.

This ICT infrastructure can reside anywhere across the globe physically in any datacentres or on any public or private cloud providers.

These datacentres can be client company's own or co-located or hosted on such service providers for example Rackspace. Or it can be provided by various cloud providers, for example Amazon Web Services, Microsoft Azure etc. Or simply these can be just email services hosted on say Google.

The ICT infrastructure can comprise of various physical & virtual servers running Windows/Linux and other operating systems, Database servers, Queue managers, Various networking devices, storages, various corporate & business applications, IT security, telephony equipment and various other services including release and change management, etc.

There are vendor companies who provides Remote Infrastructure Management services to their clients and both providers and clients can present anywhere across the globe and need not to be in the same country.

As mentioned in the abstract section in this document, The Remote Infrastructure Management market size is expected to grow from USD 23.60 Billion in 2018 to USD 41.25 Billion by 2025, at a Compound Annual Growth Rate (CAGR) of 11.8% during the forecast period. [1]

Remote infrastructure management is a strong growth area for India-based providers, with revenue experiencing more than 40% growth on average. India-based providers are still in the early stage of maturity in RIM capabilities as they continue to invest in automation and intellectual property. And there are major Indian players who has a major earning from Remote Infrastructure Management services, for example Wipro, HCL, Cognizant, Infosys, TCS etc. [2]

An Operating Model helps the **strategy** for a company on how to effectively run a business. It describes the basic processes and structures to create & manage particular services. Operating model guides how various components and functions connected together and operates together to effectively achieve the business goal.

An operating model is a visual representation of how an organization delivers value to its internal and external customers. Operating models, which may also be called value-chain maps, are created to help employees visualize and understand the role each part of an organization plays in meeting the needs of other components.

Operating models are useful tools for helping managers understand how changes to one part of the organization might impact the value other parts are tasked with delivering. They are usually organized from the top down and can be very high level or very granular. A large organization may find it necessary to create dozens of operating models to accurately capture the steps each department must go through to successfully meet the needs of other parts of the business and customers. [3]

II. LITERATURE REVIEW

Researcher has worked with multiple cloud and Remote Infrastructure Management (RIM) services companies across the globe and doing so tried to find out which are the factors that influences and challenges this domain. And thought to come up with an 'Operating Model' which describes the whole Remote Infrastructure Management ecosystem and its functional components

Author studied and attended ITIL guidelines (Information Technology Information Library Ver 3) in details through which most of the RIM policies are derived. Author referred to ITIL Intermediate Certification Companion study guide/book 2016 version written by Helen Morris & Liz Gallacher.[4]

Author read whitepapers and web material on RIM from various top RIM companies for example Wipro, HCL, Synechron, TCS, Fujitsu and IBM (*). [5,6,7]

Author also get a chance to study IT Security aspect of Infrastructure Management while undergoing CISA & CISM certifications and certification books. As well as author got an opportunity to implement PCI-DSS, ISO 270001 and SAS-70 Policies during his work.

Author also referred multiple Gartner and IDC market research reports during his work.

During this phase author found out that there is no comprehensive guidelines and operating model available hence the need to propose which will act as a guide to the new entrant companies and its managers and stakeholders to understand the various functional components RIM business has and to effectively plan & implement RIM services.

III. OPERATING MODEL: DEFINITIONS & LEGENDS

An operating model can be visualized as the operational design to deliver the business strategy. It can be the other way around too, means ideas to improve operating model can do the changes in business strategy.

The operating model defines how the organization will deliver the capabilities and financial outcomes required by the strategy. An operating model mainly covers following categories or zones–

a. Core or Internal zone:

This area is internal & confidential to the company and do not have the visibility to the outside world. It mainly contains following sub components :

Internal Policies, procedures, Processes and activities encompassing the work that needs to be done.

Manpower & Organization

Management system: the planning and performance management of the work

ICT assets and Information: the corporate and business software applications and databases to support the desired work

b. Intermediate zone:

Which partially interfaces to outside world, external parties, government and clients

Building, Locations and other supporting assets: the places where the work is done. As well as the essential equipment needed to carry the work successfully. The required departments viz: accounts, administration, maintenance etc

c. External zone:

Which are fully outward centric having most of the direct communication with external parties and clients

external vendors, sourcing, partners and agencies etc: these are outside the organization however supporting the internal work

Each element of this operating model is designed to contribute for the success of the host organization. It has an impact on both the balance sheet. These three zones closely interact with each other and hence greatly influence the functions within their own zones and across the zones. Hence determines the overall efficiency of the operating model.

IV. OPERATING MODEL FOR REMOTE INFRASTRUCTURE MANAGEMENT SERVICES

Hereby the researcher proposes a unique Remote Infrastructure Management Operating Model which will be effective for any ICT company who want to provide these services to their clients across the globe in an efficient manner.

The researcher through his in-depth hands-on experience have successfully implemented the proposed operating model.

It is a component-based model and these components have the needed relations among them.

The Remote Infrastructure Management Operating Model proposed here talks about the essential functions or components and the relation between them to successfully establish a Remote Infrastructure Management services business or guide to successfully run the existing ones.

This Remote Infrastructure Management Operating Model has three main categories to which various essential components or functions are part of. We are calling these categories as zones.

The main three zones are :

1. Core or Inward zone
2. Intermediate zone
3. Outward or Strategic zone

The major essential services or functions are mapped to the respective zones based on their relationship and operating environment as per the core Remote Infrastructure Management services business requirements. These functions have a specific importance in their respective zones influencing the overall effectiveness of the model.

These 3 zones cover the entire Remote Infrastructure Management Operating Model. They are interdependent and have their own focus areas. The functions within them not only affect each other within the zones but has influence on functions in other zones too. Hence it is very important to understand each zone and functions within them in as details as possible. Researcher will explain the importance of each zone and its functional components in details in next sections. This will help anyone to understand this model and in turn will help to create whole ecosystem to launch Remote Infrastructure Management services.

Table 1: Table of Zones verses components or essential functions

| Core or Inward Zone Components | Intermediate Zone Components | Outward Zone Components |
|------------------------------------|-------------------------------------|-----------------------------------|
| Organizational Structure or Chart | Service Portfolio Management | Top Management's Interest & Focus |
| Access Management | RIM Market Research | Operating Principles |
| Incident Management | Go-To-Market Strategies | Value Proposition |
| Escalation Management | Sourcing & Contract Management | Client Relationship Management |
| Change Management | Cloud & Virtualization Technologies | |
| Problem Management | Transitioning Methodologies | |
| Capacity Management | Secured and Redundant Connectivity | |
| Capability Management | Compliances & Audits | |
| Manpower Motivation Management | | |
| Knowledge Management - COE | | |
| Information & Data Security | | |
| Service Levels Management | | |
| Coverage & Availability Management | | |
| Finance Management | | |
| NOC Operations | | |
| Metrics | | |

IV a. The Zone details

The Core Zone

It has the very basic, fundamental and most essential functional components which are very much internal and hence confidential to the core business of the Remote Infrastructure Management services. These functions are directly related to each other having a direct impact on the core business. Hence strategically these are the most important components of the operating model.

This is the zone where whole corporate policies & procedures are carved out and the right organization structure is set to support Remote Infrastructure Management services. The respective departments and its head & right manpower is arranged mapping the planned organization structure & chart. Finance function takes care of arranging and allocating the funds in an effective way.

HR function hires the right required talent to support Remote Infrastructure Management services business.

After hiring the well experienced talent those heads define the most suitable Remote Infrastructure Management services enabled policies and procedures viz: Incident, escalation, problem and change management processes as well as capacity and access management processes. For all above functions the directives are taken from 'Service Portfolio Management' strategic group falling in intermediate zone which intercepts internal as well as external zones or environments. The management group with their respective heads formulate the service levels mapping the company's services portfolio and hires the required talents for each of those service levels. In general, the same heads and strategic group formulates the 'service level agreements' between company and its clients to efficiently deliver Remote Infrastructure Management services. It mainly follows ITIL framework of best practices.

Most of the time Remote Infrastructure Management services are provided round the clock means on 24x7x365 basis to the clients across the globe hence management need to keep their manpower motivated by using various motivational methods. Because of the ever-changing ICT technologies company has to keep its manpower constantly updated by imparting the required technology and soft skill trainings. The COE- 'Center Of Excellence' or 'Competency' group is formed to create a technology research and development so as to provide services in newer upcoming ICT areas and policies. This department in turn creates the knowledge base required to impart new intended Remote Infrastructure Management services. This group is responsible to impart training to the manpower in sync with HR as a part of the capability management as well as a part of Manpower Motivation Management.

The right support coverage and availability strategies and processes are derived to support Remote Infrastructure Management services for their clients mapping to the agreed and signed service level agreements. The required manpower is then put to various work shifts adhering to the respective labor laws and compliances. The required facilities to support coverage and availability is framed and implemented. The right set of services are set to support this from ICT infrastructure to the buildings and security.

Most of the time it is recommended to set up a NOC – Network Operations Center, a physical infrastructure comprising of IT hardware, internet links, telephony, multiple big monitors, the right monitoring, supporting and ticketing tools, support level wise seating arrangement, etc.

At last the various essential metrics are derived by this group to support Remote Infrastructure Management services. For example, executive level metrics, availability metrics, time to resolve metrics, etc.

We will see all these functions in detail in next sections

The Intermediate Zone

It encompasses the functions which intercepts internal as well as external zones and interacts heavily with both continuously. They either directly influence the other zones or directly gets influenced by other zone either way. However, these are also important functions for the success of a whole Remote Infrastructure Management services business.

At this zone the required market research happens for Remote Infrastructure Management services. This department constantly pings and scan the external environment for new opportunities, new market segments and for any policy changes. In turn they provide the highly influential data to the ‘service portfolio management’ group to formulate and update company’s service portfolio. This group establish the various market and sales channels to sell its services and establish various partnerships viz: OEM partnership, licensing partnership, etc.

The company set up the contracts with right vendors and agencies to source its various essential resources viz: manpower, hardware, tools etc. The secured and redundant direct or indirect communications and network links are established to the internet or to the client’s infrastructure or to the cloud. There are multiple secured technologies and protocols used to accompany this, viz: VPN, Tunnels, Cryptography, L3/MPLS links etc. This connectivity frequently intercepts various known cloud & virtual server providers providing various hosting services to clients.

There is a ‘Transitioning Group’ specially exists for Remote Infrastructure Management services providers whose focus is to transition the client’s services and support to the provider company. This itself is a huge task which need to be implemented and carried very delicately at starting level to provide Remote Infrastructure Management services.

Lastly dedicated groups make sure that the company is adhering to various mandatory Compliances and hence company has to undergo various statutory audits from time to time.

The Outward Zone is mainly ‘the Strategic Zone’

It looks more outwards and consists of the company’s operating principles, vision and strategic framework needing it’s top management’s thoughtful support & attention. This also consists of ‘client relationship management’ groups who essentially engages and hooks to the respective clients creating the bridge between client’s requirements and delivery of services. The top management team at this layer does the job of value proposition to the client means they make a business statement to the prospects on why they should buy the company services and what value company can provide to them in turn.

V. GRAPHICAL REPRESENTATION OF THE “REMOTE INFRASTRUCTURE MANAGEMENT OPERATING MODEL”

Author have hereby designed and proposed a graphical representation of Remote Infrastructure Management – Operating Model which will be easier to understand.

Author has tried to align the most important functional components of RIM ecosystem and explained the relationship between them categorizing into 3 main zones or categories.

These three zones are already been explained in detail in previous section



Figure1: Graphical representation of the “Remote Infrastructure Management Operating Model”

This section will explain each of the main functional component of above Remote Infrastructure Management Operating Model.

1) Organization Chart/Structure : This lays out the coordinative manpower and departmental structure mapping to granular functions to provide required services directing to achieve organizational goals. Each department will have their own heads having the complete end to end responsibilities and accountability to run that group efficiently. Each group must provide the required operational and high level metrics to governing top management.

2) Finance : This department is responsible to arrange the required fund to run the company and allocate the funds to the respective departments and resources. They are responsible to manage cash inflows and outflows and have to abide to statutory compliances and audits.

3) Manpower Motivation Management : This function is responsible to continuously motivate the enterprise’s manpower by using various proven methodologies as mainly the Remote Infrastructure Management services are provided in 24x7x367 basis. It proposes various recognition, awards, rewards & incentive systems. They provide various trainings and professional certifications to the manpower which motivates them. This is a part of the Human Resource department in sync with top management and departmental heads.

4) Knowledge& Capability Management- COE : This R&D function makes sure that company constantly scans the external environment and then develops the newer required skills as per the current market trend, to provide the required services to their client. This department sometimes called as ‘center of excellence’ or ‘competency group’.

5) Access Management : Is the policies & process of identifying, tracking, controlling and managing authorized users access to a resource, system, application & building or location. In turn preventing unauthorized access or entry. It encompasses all tools, policies, methodologies and processes to maintain access privileges within an IT environment either for its own or its client’s resources under contract.

6) Incident & Escalation Management : It is a part of ITIL guidelines or framework for best practices. Incident management (IM) is the practice of restoring services as quickly as possible after an incident. This is valid for company’s internal infrastructure or for its client’s infrastructure under Remote Infrastructure Management services. There are formal policies and procedures documented for both to carry out IM response. IM is the reactive process. This service is usually mapped to the agreed service level agreements. There are appropriate escalation matrix or steps are defined to get the incident resolved based on priorities set.

7) Problem Management : aims to manage the lifecycle of Problems. The primary objectives of this ITIL process are to prevent Incidents from happening, and to minimize the impact of incidents that cannot be prevented. 'Proactive Problem Management' analyzes Incident Records, and uses data collected by other IT Service Management processes to identify trends or significant Problems. There are many tools available to manage and record them like ticketing systems.

8) Change Management : These are mainly processes and policies to create, record, track and manage the changes done to any IT resources. The Change Management process is designed to help control the life cycle of strategic, tactical, and operational changes to IT services through standardized procedures. The goal of Change Management is to control risk and minimize disruption to associated IT services and business operations.[8]

9) Capacity Management : It aims at ensuring the capacity of IT services. It ensures the IT infrastructure is able to deliver the agreed service level targets in a cost effective and timely manner. There is a formal process to manage various capacities not only infrastructure wise but manpower too with right skills.

10) Information & Data Security : Any enterprise need to secure confidential information, data and resources from unauthorized access as well as from vulnerabilities. Not only for **themselves** but for their client whom a company is providing services. This usually achieved by adhering to security compliances and policies. Various tools and technologies are used to achieve data security. Many a times this are mandatory by law.

11) Service Level Management & Agreement (SLA) : There are internal as well as external service levels need to be maintained by providers adhering to the SLA agreements and services defined & signed. This process provides a framework by which services are defined and accordingly services are provided to the internal & external clients. There are penalties if adherence is not done.

12) Coverage & Availability Management : states the service coverage need to be given to internal and external clients adhering to SLA. And to make sure that the required resources are available to support that coverage and SLA. For example the coverage can be 8x5 hours Monday to Friday or 24x5 or 24x7 etc . 24x7x365 is the maximum coverage possible. Secondly how many people are required to give that coverage or per shift which depends on the services to support. Availability Management is to make sure that the particular resources are available as per SLA be it manpower or IT resources, hardware or applications.

13) NOC – Network Operations Center : is a one or more geographically distributed physical centers where the whole IT infrastructure is installed and manpower deployed to continuously monitor and manage the IT resources, hardware, processes and applications. There is a team seats support service level wise having multiple huge monitors in front of them running various tools and applications to monitor & manage resources on 24x7x365 basis.

14) Metrics : Metrics are reports. These are from basic operational level simple metrics or reports till executive level complicated metrics or reports. These need to be provided as per agreed SLAs. These reports gives the current & historical status or data as well as trends for particular resource under observation. For example Availability metrics, Productivity and Utilization metrics, SLA adherence metrics, etc.

15) Compliances and Audits : The Remote Infrastructure Management service provider need to be compliant to various standard frameworks and policies , for example PCI DSS – Payment card industry data security standards, HIPAA - The Health Insurance Portability and Accountability Act of 1996 , SOX – Sarbanes Oxley Act, Graham-Leach-Bliley Act (GLBA), ISO 27001, SAS70 or SSAE16, ITIL framework Ver 3, etc. The service providers need to do frequent statutory security and Financial audits to make sure the compliancy.

16) Transitioning Methodologies : Transitioning methodologies are required when a RIM service provider need to move a part of or a whole resource management service from current company, vendor or location to itself. This is a very complicated and intense move focusing on many smaller areas simultaneously. Hence all the steps need to be planned carefully adhering to the strict SLAs and timelines. The success depends on the due diligence and thorough planning.

The rest of the functional components in the other two zones are well explained under section IV a. i.e. Intermediate and Outward or Strategic Zone details.

VI. IMPORTANCE OF REMOTE INFRASTRUCTURE MANAGEMENT OPERATING MODEL

The proposed Remote Infrastructure Management (RIM) Operating Model can be used by emerging enterprises or companies who would want to get into Remote Infrastructure Management services business. This model will also help to the established companies in this business area and their respective managers to make their operations more effective and productive.

By studying this model they will easily get an idea on the whole ecosystem and what are all main functional components should they focus upon saving their huge research time. This model will help them in effectively implementing the required structure and align the functions.

This model will help enterprises to understand how these functional components are connected to each other and what are their interdependence and how they influence each other.

This model will help companies in allocating the right resources to the right functions and will help them to plan the desired service portfolio.

This model will align their attention to formulate necessary policies and procedures to provide RIM services to their clients and will help them to formulate right SLAs. This model will guide them to focus on thorough planning to transition services.

This model will let them know what all strict compliances are needed and what data security measures they need to follow to cater secured services to their clients.

This model will also state to implement a proper NOC Network operations center with secured network connectivity to cater effective services to their clients and need to provide various metrics to them from time to time.

VII. LIMITATION& CONCLUSION

There is no quantitative method to measure the success of this model however the author has derived this model for the first time through his extensive and in-depth experience in Remote Infrastructure Management services business. The author has designed and effectively implemented this model throughout his carrier giving a good success. Hence author has proposed this paper which might help the new entrants be it a company, stakeholders, decision makers or managers who are already into or want to venture into the field of Remote Infrastructure Management services business. The author have tried to explain the whole model and put in its functional zones and components and their relations with each other at basic level. However, the reader can easily get the in depth knowledge about any particular functional component via multiple abundantly available resources like Books, Whitepapers, Journals, Vendors, Web references etc. By this document the author has given a clear direction on what functional components to focus upon and how they are grouped segregating the responsibilities and accountabilities respectively.

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