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Frameworx 12
Implementation (Managed Service) Conformance Certification Report

Nokia Solutions & Networks
Service Management & MS Operations Lifecycle Framework (SMC and NOC) Version 2.0

February 2014

Version 1.0

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1 Introduction

1.1 Executive Summary

This document provides details of NSN's self-assessment and TM Forum's Conformance Assessment of **NSN Service Management & MS Operations Lifecycle Framework** implementation, against the following Frameworx 12 components:

- Business Process Framework Version 12

The assessment included a review of:

- The methodology approach to process modeling against the TM Forum's Business Process Framework Release 12 according to the specific processes submitted in scope for the Assessment.

Conformance to the Information Framework was not submitted as part of this assessment.

2 Product Functionality/Capability Overview

2.1 NSN Service Management & Managed Services Operations lifecycle Framework – Overview

Service Management & MS Operations include managing the Service lifecycle and supporting Customer lifecycle by focusing on the major components of service management layer and Customer Experience Management (CEM) Operations through Service Management Center (SMC) and Network Operation Center (NOC). In this managed services offering NSN covers the entire lifecycle of mobile broadband services running on an operator's multi-vendor, heterogeneous networks, including service design, launch and service assurance. Intelligent service models provide an integrated view of all services across the Evolved Packet Core (EPC), transmission and radio networks significantly enhancing service quality and subscriber experience.

The major focus from MS point of view is to deliver:

- Network Operations in local delivery model
- Network Operations through centralized delivery model
- Field Maintenance
- Network Performance Management
- Service Design (Service Modeling and design engineering)
- Service Fulfillment (including Service inventory, Service provisioning and activation)
- Service Assurance (including Service Problem and Service Quality Management)
- Service Profitability Management
- Customer Experience Insights & Business Analytics Support
- Customer Care Insights and Proactive Support
- Marketing Insights and Support
- Governance across Customer, Service and Resource(Network and support functions) layer

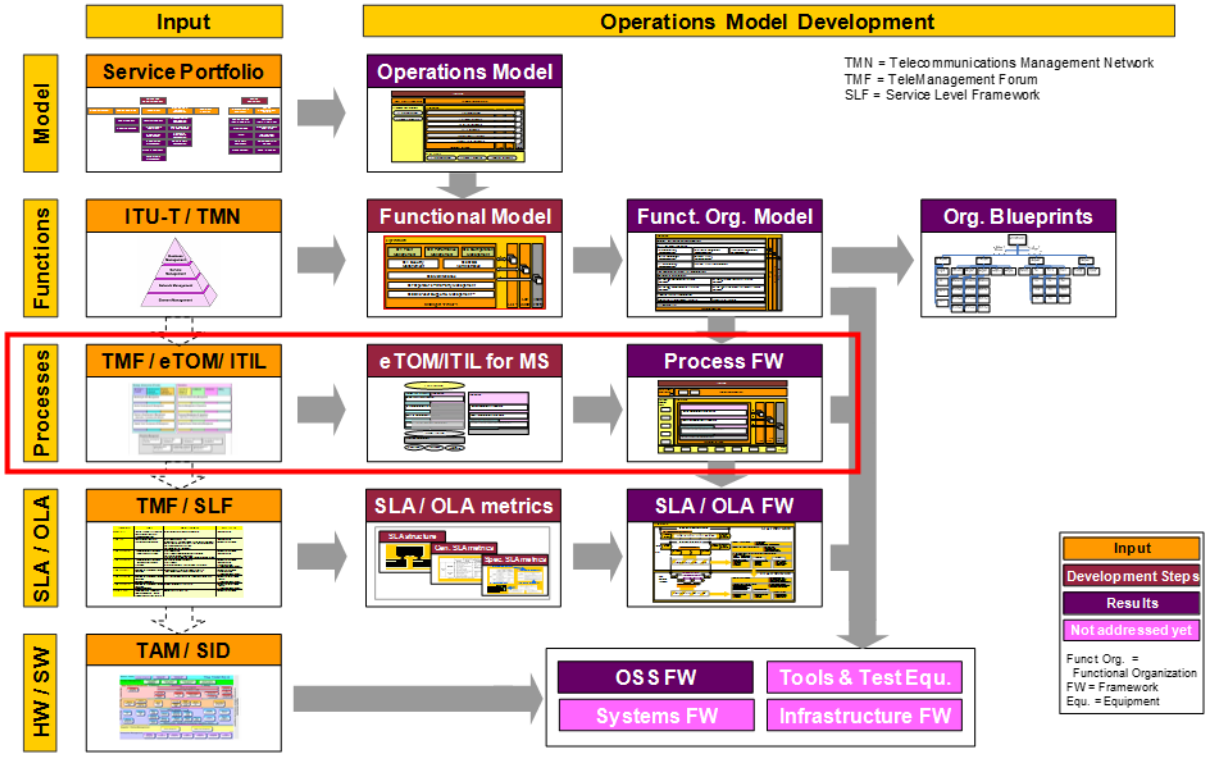

Figure 2-1 SMC Operation Life Cycle Overview Diagram

The NSN Process Framework Utilizes eTOM, ITIL and the experience gained by delivering more than 200 global Managed Services Projects using the best of the tools, resources as well as Centralized operations though Global Delivery Centers.

Target of Process Framework

- Process framework allows MS Portfolio mapping
- Process framework are based on eTOM framework, best practices from ITIL and NSN operations model
- Service delivery processes based on the framework follows 80/20* rule
- Service delivery processes are the basis for interaction between
  - GNOC and local NOCs
  - Customer Operations (CRM, Marketing) and Service Operations(SMC)
  - Service Operations (SMC) and Network Operations (NOC)
  - Service Operations and Support functions Operations
  - Service Operations and Field Management
  - Service Operations and Enterprise Management
  - Service Operations and New Product Development
  - NOCs and Hosting environments
  - Service Organization and the Customer (Carrier)
- Process framework allows integration of existing Best Practices with minimal interruption
- Re-use existing developments within Nokia Solution and Networks
- Centralized Management of Service Delivery Processes

- Process framework shall be used as preferred reference for glossary, service scoping, …
- Unified "language" within MS and also towards to customer/partners
- Ease scoping workshops with customers in pre-sales / bid phase

Support for Level 3 processes within the 8 Level 2 Process Highlighted in Orange are mapped for this Certification.

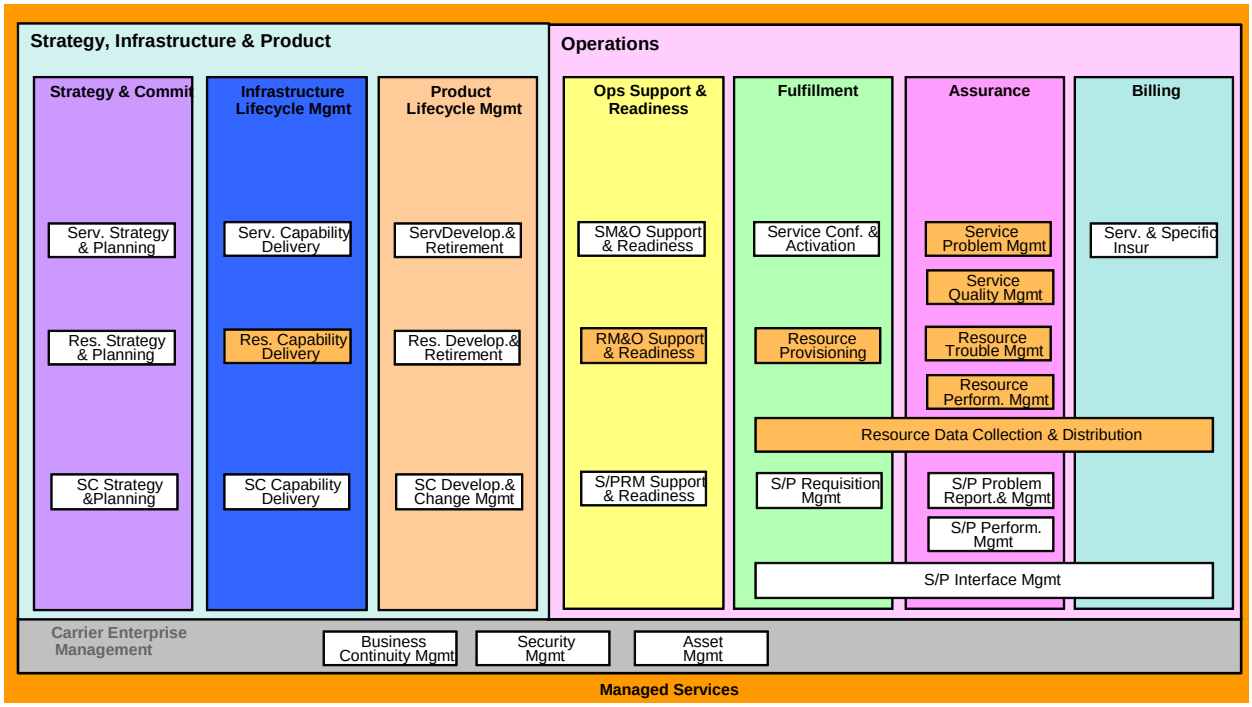

Figure 2-2 Business Process Framework coverage

This Service Management & MS Operations lifecycle framework is a key building block to help Operators to transform their position in the value chain. Reshaping our customers related telecom revenues, OPEX, CAPEX and other balance sheet elements will ensure long-term competiveness, time-to-market and profitability for our customers.

The competitive advantages such as standardized processes & tools, new business models, consultative sales and our best-in-class Operations Lifecycle helps us to achieve our vision to become "The leading Transformation partner for Communication Service Providers".

By applying the Service Management & MS Operations lifecycle framework blueprint to design and run the Service Delivery Organizations for Managed Services contracts (Network Operations and Customer Centric Service Operations through NOC and SMC) of Nokia Solution and Networks the following benefits can be realized:

a. Assurance to Nokia Solution and Networks customers that it has a credible model and a clear understanding of how to delivery Managed Services

b. Benefit from the best practices and innovations established across more than 200 Nokia Solution and Networks Managed Services contracts

c. Continuously improve through the learning resulting from global benchmarking

d. Minimize Customer's 'Demand Organization' and hence its costs
e. Mitigate risks by relying on a well-structured Service Delivery Organization which implements higher levels of a Process Maturity Model
f. Flexibility based on global as well as local deliveries to ensure the right approach for the right customer and, for global players, to repeat it
g. Building MS capabilities towards service and customer centric operations

The Service Management & MS Operations lifecycle framework assessment was carried out against the Business Process Framework Release 12.0.

3 Business Process Framework Assessment Overview

3.1 Mapping Technique Employed

Business Process Framework Level 3 descriptions are analyzed by looking for implied tasks. (This is similar to how process decomposition can use Semantic Analysis). Each Business Process Framework process is supported by descriptive text. In many cases, each process is aligned and mapped to appropriate company documentation references solution, methodology or modeling material.

The Business Process Framework Level 3 descriptions are analyzed by looking for implied tasks. Color coded text as highlighted below is used as part of the process mapping whereby highlighted text indicates the level of support for a Level 3 process implied task:

- GREEN is used to highlight key words or key statements that are fully supported
- YELLOW is used to highlight key words/key statements that are partially supported
- GREY is used to highlight key words/key statements that are not supported
- No highlighting is used for words/statements that are irrelevant, just for reference or needed to complete the sentence.

Manual and Automated Support

It is important to determine whether the implied task is supported by manual steps, automated steps, or a combination of both. In this document, “A”, “M”, or “AM” is used for each task to indicate that the step or steps is/are automated (A), manual (M), or both (AM).

***TM Forum Note 1**: When process mappings are presented against Level 4 processes, the mappings are provided against the text in the “Mandatory” field for the process. In the event of the Mandatory field not being used, the process mappings are in that case provided against the Level 4 Brief/Extended descriptions.*

***TM Forum Note 2**: Note that if a Level 3 process has not been decomposed to Level 4 processes in the Business Process Framework, in such cases the process mapping support is provided against the Level 4 process descriptions (Brief & Extended).*

3.2 Business Process Framework Level 2 Process Scope

The following figures represent the Business Process Framework Level 2 processes that were presented in scope for the assessment, and the textual callouts represent the components of NSN's Service Management & MS Operations Lifecycle Framework that were assessed and support the corresponding Business Process Framework processes according to the results in Chapter 6 Frameworx Conformance.

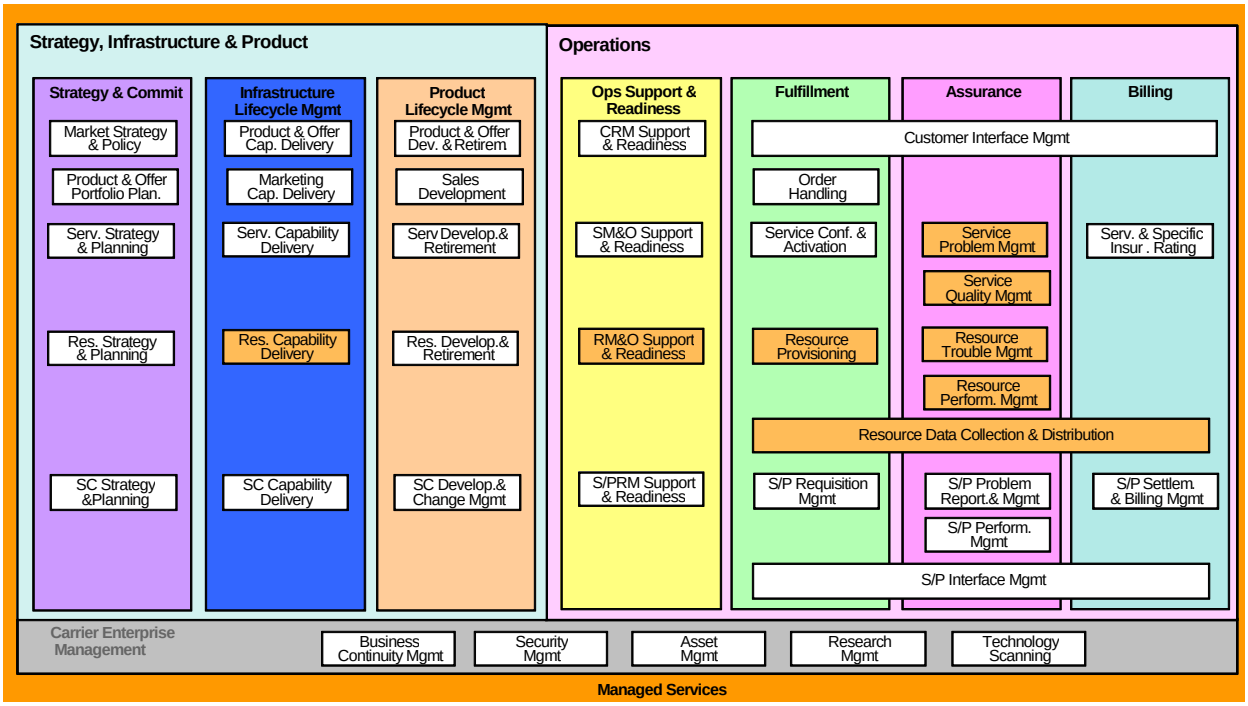

Figure 3-1 - Operations Level 2 process coverage for NSN's Service Management & MS Operations Lifecycle Framework Assessment

The following diagram identifies the number of Level 3 processes that were submitted for assessment, for each Level 2 process that was submitted in scope for the Assessment.

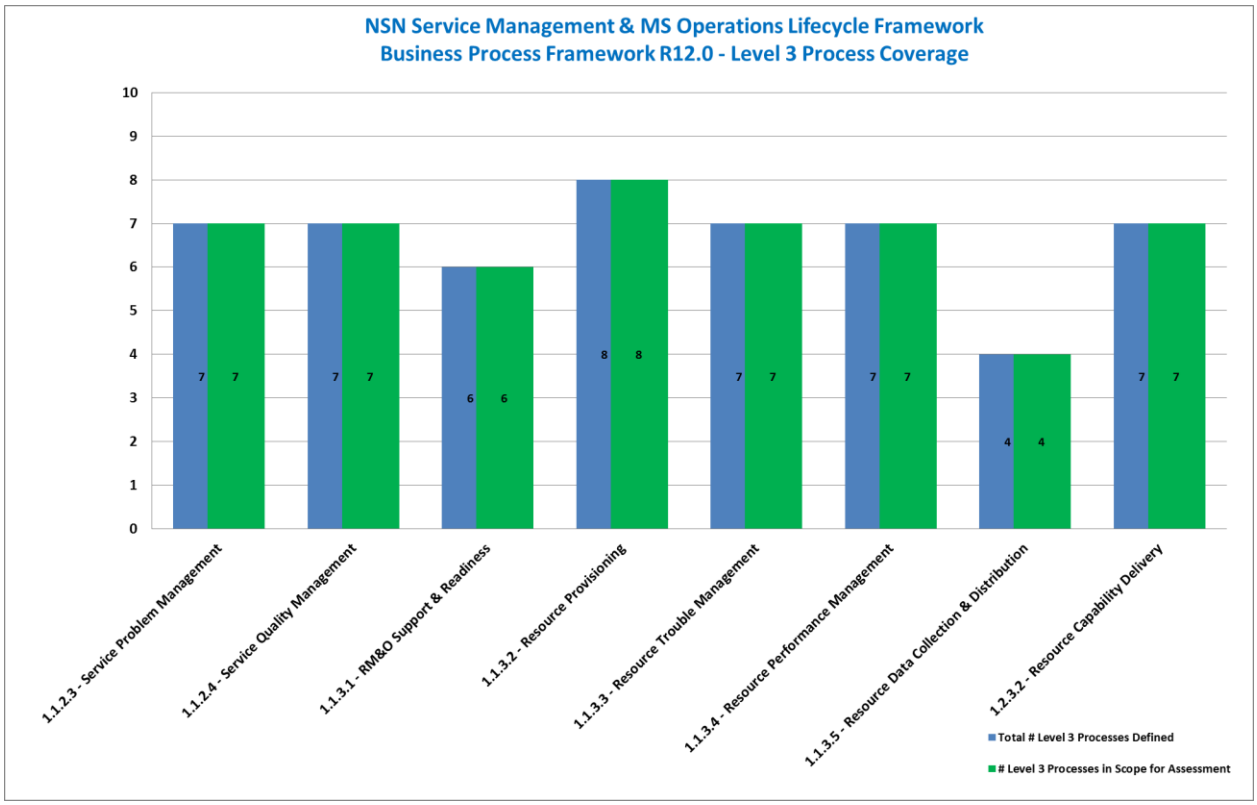

Figure 3-2 - Level 3 process coverage for NSN's Service Management & MS Operations Lifecycle Framework Assessment

3.3 Product Scope

The diagram in **Figure 3-3** represents NSN´s Service Management & MS Operations Lifecycle Framework and how it is mapped to the Business Process Framework.

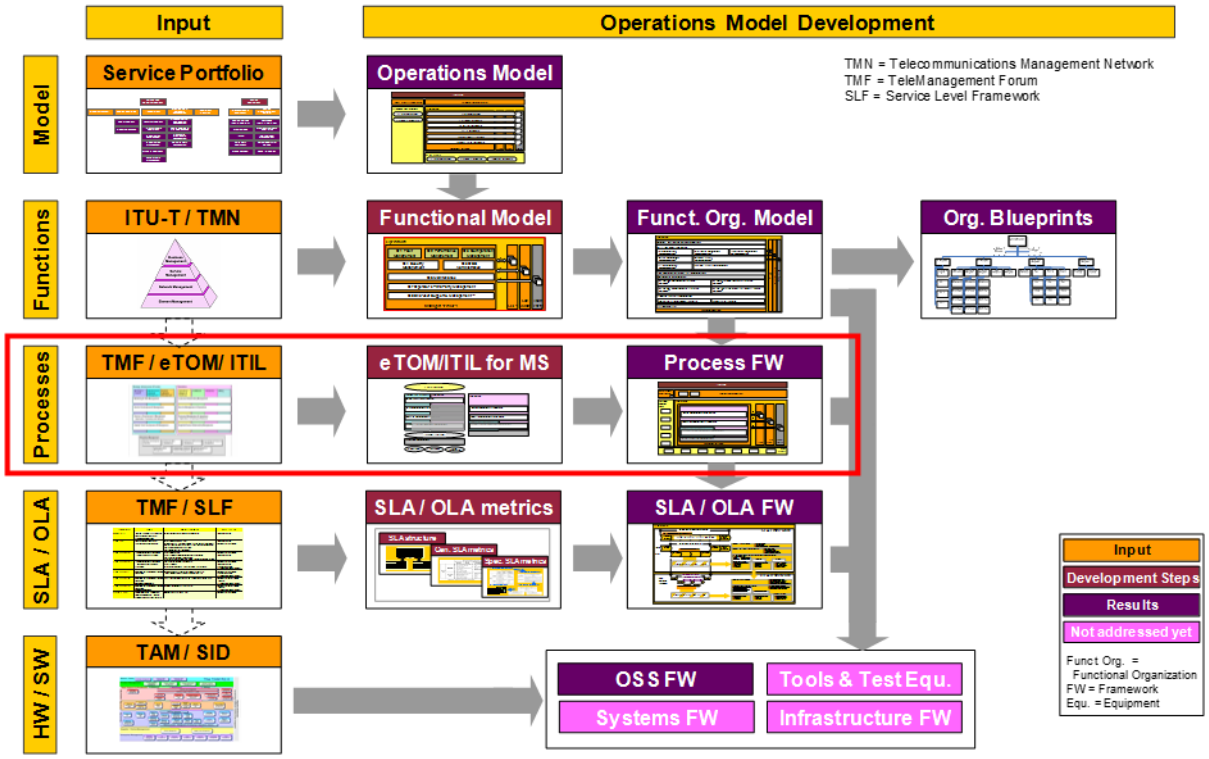

Figure 3-3 - NSN Service Management & MS Operations Lifecycle Framework Footprint with Scope for eTOM Assessment

4 Business Process Framework – Process Mapping Descriptions

This section provides the Process Mapping output from NSN' Self-Assessment which was reviewed by TM Forum Subject Matter Experts alongside supporting documentation for NSN´s Service Management & MS Operations Lifecycle Framework.

4.1 Level 2: Service Problem Management (1.1.2.3)

eTOM Description

Service Problem Management processes are responsible for the management of problems associated with specific services. The objective of these processes is to respond immediately to reported service problems or failures in order to minimize their effects on customers, and to invoke the restoration of the service, or provide an alternate service as soon as possible.

Responsibilities of the Service Problem Management processes include, but are not limited to:

· Detecting, analyzing, managing and reporting on service alarm event notifications;

· Initiating and managing service trouble reports;

· Performing service problem localization analysis;

· Correcting and resolving service problems;

· Reporting progress on service trouble reports to other processes;

· Assigning & tracking service problem testing and recovery activities; and

· Managing service problem jeopardy conditions

Service Problem Management processes perform analysis, decide on the appropriate actions/responses and carry them out with the intent of restoring normal operation on specific services.

However these activities need to interact with the Problem Handling processes, as the latter have a view on customer impact. Service Problem Management processes are responsible for informing Problem Handling processes of any potential customer problems. Where the original report arose as a result of customer problems, the Service Problem Management processes may be coordinated by Problem Handling processes.

4.1.1 L3: Create Service Trouble Report

Brief Description

Create a new service trouble report.

Extended Description

The objective of the Create Service Trouble Report process is to create a new service trouble report.

A new service trouble report may be created as a result of service alarm event notification analysis, and subsequent creation of new service alarm event records, undertaken by the Survey & Analyze Service Problem processes, or at the request of analysis undertaken by other processes in the CRM (in particular a Customer Problem Report can generate one or more Service Trouble Reports), RM&O, SM&O or S/PRM layers which detect that some form of failure has occurred for which service restoration activity is required to restore normal operation. AM

Log Incident **Ref1:Page32**

Main activities:
- Open TT form
- Fill mandatory fields
- Copy all available information into the TT form
- TT status is updated to "created"

If the service trouble report is created as a result of a notification or request from processes other than the Survey & Analyze Service Problem processes, the Create Service Trouble Report processes are responsible for converting the received information into a form suitable for the Service Problem Management processes, and for requested additional information if required.

These processes will make estimates of the time to restore service which will be included in the new service trouble report so that other processes can gain access to this information. AM

Log Incident **Ref1:Page32**

Ref 3: Page 6

Main activities:
- Open TT form
- Fill mandatory fields
- Copy all available information into the TT form
- TT status is updated to "created"

4.1.2 L3: Diagnose Service Problem

Brief Description

Identify the root cause of the specific service problem

Extended Description

The objective of the Diagnose Service Problem processes is to identify the root cause of the specific service problem. These processes are invoked by the Track & Manage Service Problem processes.

The responsibilities of these processes include, but are not limited to:

· Verifying whether the service configuration matches the appropriate product features;

· Performing diagnostics against the specific services;

· Running tests against the specific services;

· Starting and stopping audits against specific services; and

· Scheduling routine testing of the specific services.

The Diagnose Service Problem processes will make the results of the root cause analysis available to other processes. The Diagnose Service Problem processes will update the open service trouble report, as required during the assessment, and when the root cause has been identified.

When the process is complete the Diagnose Service Problem processes will notify the Track & Manage Service Problem processes.AM

Discover Incident **Ref1: Page 31**

Ref 4: Page 4-9

This sub-process is reflecting the main activities of the ITIL Incident Investigation & Diagnosis process block.
Main activities:
- incident investigation
- check if root cause/solution is available in the Problem DB
- if root cause/solution is available TT status is updated to "analyzed"

4.1.3 L3: Correct & Resolve Service Problem

Brief Description

Restore the service to a normal operational state as efficiently as possible

Extended Description

The objective of the Correct & Resolve Service Problem processes is to restore the service to a normal operational state as efficiently as possible.

Based on the nature of the service failure leading to the associated service alarm event notification, automatic restoration procedures might be triggered. Manual restoration activity is assigned to the Correct & Resolve Service Problem processes from the Track & Manage Service Problem processes.

Depending on the nature of the specific service failure, these processes may possibly re-assign services or re-configure service parameters.AM

Resolve Incident **Ref1: Page35**

Ref7: page 7-11

Description/Definition
This sub-process is reflecting the main activities of the ITIL Incident Resolution & Recovery process block.
Main activities:
- implementation of the incident resolution
- testing of the implemented resolution
- when testing was successful TT status is updated to "resolved"

For large service failures requiring extensive re-assignment and/or re-configuration activity to restore normal operation, these processes will attempt to implement work-arounds to recover the specific service operation. In these circumstances, recovery of normal operation may require invocation of the Support Service Problem Management processes.AM

Create Known Error Record **Ref1:Page38**
Main activities:
- Description of the root cause
- Description of the final solution
- Description of a work around, if needed
- Update of the Problem DB with these information

They will also report successful restoration of normal service operation, restoration through temporary work-arounds or an unsuccessful attempt at service restoration to Track & Manage Service Problem through updates to the associated service trouble report.AM

Resolve Problem **Ref1: Page42**

Main activities:
- Implementation of the problem resolution
- testing of the implemented resolution
- When testing was successful TT status is updated to "resolved"

4.1.4 L3: Track & Manage Service Problem

Brief Description

Ensure that testing, repair and restoration activities are assigned, coordinated and tracked efficiently, and that escalation is invoked as required for any open service trouble reports in jeopardy

Extended Description

The purpose of the Track & Manage Service Problem processes is to ensure that testing, repair and restoration activities are assigned, coordinated and tracked efficiently, and that escalation is invoked as required for any open service trouble reports in jeopardy.

Responsibilities of these processes include, but are not limited to:

· Initiating first-in testing using automated remote testing capabilities;

· Adding additional information to an open service trouble report based on the first-in testing;

· Scheduling, assigning and coordinating repair and restoration activities;

· Generating the respective resource trouble report creation request(s) to Create Resource Trouble Report based on specific service trouble reports;

· Initiate any final testing to confirm clearance of the service problem;

· Undertake necessary tracking of the execution progress;

· Modifying information in an existing service trouble report based on assignments;

· Modifying the service trouble report status;

· Canceling a service trouble report when the specific problem was related to a false service alarm event; and

· Monitoring the jeopardy status of open service trouble reports, and escalating service trouble reports as necessary.AM

Track Incident **Ref1:Page36**

Description/Definition
Tracking of a incident is a permanent process. It starts with the creation of a TT and ends with the closing of a TT. The main focus of the tracking process is to ensure that the the resolution of a incident is running acc. to the agreed SLA's and KPI's. This process keep track of all the activities from logging an incident to closing incident and do the necessary modification in TT based on the updates from different activities. This also manages the co-ordination with internal and external parties where ever required.

Note that some specific resource components may be owned and managed by suppliers/partners. In these cases the Track & Manage Service Problem process is responsible for initiating requests, through S/P Problem Reporting & Management processes for restoration and recovery by the supplier/partner of the specific resource components.

These processes will co-ordinate all the actions necessary in order to guarantee that all tasks are finished at the appropriate time and in the appropriate sequence.AM

Track Problem **Ref1: Page 42**

Description/Definition
Tracking of a problem is a permanent process. It starts with the creation of a TT and ends with the closing of a TT. The main focus of the tracking process is to ensure that the the resolution of a problem is running acc. to the agreed SLA's and KPI's.

The Track & Manage Service Problem processes are responsible for engaging external suppliers/partners in correction and recovery activities when:

· higher level expertise and/or higher level support is required to resolve the service problem, (which may be automatic in the case of highest priority service problems);

· the specific service has been purchased from an external supplier (as in an interconnect service); or

· the specific service is delivered by an external partner.AM

Manage Incident Escalation **Ref1: Page 33**

Description/Definition
Escalation procedures has to be defined in the design phase of a service.
An escalation can depend on:
- Incident priority
- effected service
- effected amount of end customers etc.
This process also manages the notification to different stakeholder wherever needed

Where the engagement with an external supplier/partner is for purchased or delivered services, as the case may be, the tracking and management of the supplier/partner problem resolution activity is actually performed by the S/P Problem Reporting & Management processes, with the Track & Manage Service Problem processes relegated to an overall coordination role. The Track & Manage Service Problem processes will also inform the Close Service Problem processes by modifying the service trouble report status to cleared when the service problem has been resolved.AM

Manage Incident Escalation **Ref6 : page 6-8**

Track Incident **Ref1:Page36**

Description/Definition
Tracking of a incident is a permanent process. It starts with the creation of a TT and ends with the closing of a TT. The main focus of the tracking process is to ensure that the the resolution of a incident is running acc. to the agreed SLA's and KPI's. This process keep track of all the activities from logging an incident to closing incident and do the necessary modification in TT based on the updates from different activities. This also manages the co-ordination with internal and external parties where ever required.

4.1.5 L3: Report Service Problem

Brief Description

Monitor the status of service trouble reports, provide notifications of any changes and provide management reports

Extended Description

The objective of the Report Service Problem processes is to monitor the status of service trouble reports, provide notifications of any changes and provide management reports.

These processes are responsible for continuously monitoring the status of service trouble reports and managing notifications to processes and other parties registered to receive notifications of any status changes, for example, Service Quality Management and Customer QoS/SLA Management processes. Notification lists are managed and maintained by the Support Service Problem Management processes.

These processes record, analyze and assess the service trouble report status changes to provide management reports and any specialized summaries of the efficiency and effectiveness of the overall Service Problem Management process. These specialized summaries could be specific reports required by specific audiences.

These processes will make the necessary reports about the problem that occurred, the root cause and the activities carried out for restoration.AM

Manage Incident Escalation **Ref1: Page 33**
Ref6 : page 6-8

Description/Definition
Escalation procedures has to be defined in the design phase of a service.
An escalation can depend on:
- Incident priority
- effected service
- effected amount of end customers etc.

This process also manages the notification to different stakeholder wherever needed

4.1.6 L3: Close Service Trouble Report

Brief Description

Close a service trouble report when the service problem has been resolved

Extended Description

The objective of the Close Service Trouble Report processes is to close a service trouble report when the service problem has been resolved.

These processes monitor the status of all open service trouble reports, and recognize that a service trouble report is ready to be closed when the status is changed to cleared.AM

Track Incident **Ref1:Page36**

Ref5: Page 5

Description/Definition
Tracking of an incident is a permanent process. It starts with the creation of a TT and ends with the closing of a TT. The main focus of the tracking process is to ensure that the resolution of an incident is running acc. to the agreed SLA's and KPI's. This process keep track of all the activities from logging an incident to closing incident and do the necessary modification in TT based on the updates from different activities. This also manages the co-ordination with internal and external parties where ever required.

4.1.7 L3: Survey & Analyze Service Problem

Brief Description

Monitor service alarm event notifications and manage service alarm event records in real-time

Extended Description

The objective of the Survey & Analyze Service Problem processes is to monitor service alarm event notifications and manage service alarm event records in real-time.

Responsibilities of the Survey & Analyze Service Problem processes include, but are not limited to:

· Detecting and collecting service alarm event notifications;

· Initiating and managing service alarm event records;

· Performing service alarm event notification localization analysis;

· Correlating and filtering service alarm event records;

· Reporting service alarm event record status changes to other processes;

· Managing service alarm event record jeopardy conditions.AM

Event Management **(Ref 1: Page 29)**

Description/Definition
An event can be defined as a measurable or identifiable occurrence which is relevant to the management of the infrastructures and consequently the provision of services. Events are typically messages or displays produced by services, configuration items or monitoring tools. An effective service operation is dependent upon the knowledge of the status of the infrastructures and any variances from the normal service operation. This can be guaranteed by good monitoring and a system of controls which is provided on the basis of two tool types:
- Active monitoring tools, which interrogate key CIs to ascertain their availability
- Passive monitoring tools, which detect and process alarm signals from configuration items.
A distinction is drawn between the following types of events in the service operation area:
- Events which show that processing has been properly executed (information).
These can be completed status reports on a batch processing, registration of a user login or notification that an e-mail has been successfully sent.
- There are also events which flag errors or variances (warning) for example when a user logs on using an incorrect password or in the event of a CPU overload.
- There are also events which display an unusual system response but which is not yet a variance (exception).
Event Management is an extensively automated process which is audited on a regularly basis.

Service alarm event notification analysis encompasses the identification of the service alarm event in terms of reporting entity and nature of the service alarm event. It will then analyze the service alarm events based on a number of criteria and then suppress redundant, transient or implied service alarm events by means of filtering and correlation. It includes the notification of new service alarm event records, or status changes of previously reported service alarm event records, as well as abatement messages when service alarm event records have been cleared.

The analysis will correlate service alarm event notifications to planned outage notifications to remove false service alarm event notifications arising as a result of the planned outage activity.

These processes may determine that a service alarm event notification may represent a customer impacting condition. In these circumstances this process is responsible for indicating a potential customer problem to the Problem Handling processes. As a part of this indication this process is responsible for identifying the impacted deployed product instances associated with the service instances presenting alarm event notifications and passing this information to the Problem Handling processes.

Service alarm event record correlation and filtering encompasses the correlation of redundant, transient or implied service alarm event notifications with a specific "root cause" service alarm event notification and associated service alarm event record.

The Survey & Analyze Service Problem processes might trigger a well-defined action based on specific service alarm event notification information as well as the non-arrival of service alarm event notification information after a specific time interval has elapsed.

These processes are also responsible for monitoring and triggering the appropriate action when a service alarm event record is not cleared within a pre-defined period of time.AM

Event Management **(Ref 1: Page 29)**
(Ref 2: Slide 24-27

Description/Definition
An event can be defined as a measurable or identifiable occurrence which is relevant to the management of the infrastructures and consequently the provision of services. Events are typically messages or displays produced by services, configuration items or monitoring tools. An effective service operation is dependent upon the knowledge of the status of the infrastructures and any variances from the normal service operation. This can be guaranteed by good monitoring and a system of controls which is provided on the basis of two tool types:
- Active monitoring tools, which interrogate key CIs to ascertain their availability
- Passive monitoring tools, which detect and process alarm signals from configuration items.
A distinction is drawn between the following types of events in the service operation area:
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These can be completed status reports on a batch processing, registration of a user login or notification that an e-mail has been successfully sent.
- There are also events which flag errors or variances (warning) for example when a user logs on using an incorrect password or in the event of a CPU overload.
- There are also events which display an unusual system response but which is not yet a variance (exception).
Event Management is an extensively automated process which is audited on a regularly basis.

4.1.8 Supporting Evidence References (Works Cited)

[Ref 1] < Service Management Process Binder.docx>

[Ref 2] < Service Mgmt-Basic-Service desk.ppt>

[Ref 3] < Log incident.pdf>

[Ref 4] < Discover incident.pdf>

[Ref 5] < Track incident.pdf>

[Ref 6] < Manage incident Escalation.pdf>

[Ref 7] < Resolve incident.pdf>

4.1.9 Summary of Level 3 Scores

Table 4.1 Level 2: 1.1.2.3 - Service Problem Management Conformance Scores

Level 2: 1.1.2.3 - Service Problem Management [7/7]		
Level 3 Process	**Level 4 Process**	**L4/L3 Process Score**
1.1.2.3.1 - Create Service Trouble Report		**4.33**
	1.1.2.3.1.1 - Generate Service Problem	100%
	1.1.2.3.1.2 - Convert Report To Service Problem Format	50%
	1.1.2.3.1.3 - Estimate Time For Restoring Service	50%
1.1.2.3.2 - Diagnose Service Problem		**4.00**
	1.1.2.3.2.1 - Verify Service Configuration	50%
	1.1.2.3.2.2 - Perform Specific Service Problem Diagnostics	50%
	1.1.2.3.2.3 - Perform Specific Service Problem Tests	50%
	1.1.2.3.2.4 - Schedule Routine Service Problem Tests	50%
	1.1.2.3.2.5 - Stop And Start Audit On Services	50%
	1.1.2.3.2.6 - Notify T&M Root Cause Service Problem	50%
1.1.2.3.3 - Correct & Resolve Service Problem		**4.00**
	1.1.2.3.3.1 - Reassign / Reconfigure Failed Service	50%
	1.1.2.3.3.2 - Manage Service Restoration	100%
	1.1.2.3.3.3 - Implement Service Problem Work Arounds	25%
	1.1.2.3.3.4 - Invoke Support Service Problem Management Processes	25%
1.1.2.3.4 - Track & Manage Service Problem		**5.00**
	1.1.2.3.4.1 - Coordinate Service Problem	100%
	1.1.2.3.4.2 - Perform First in Service Testing	100%
	1.1.2.3.4.3 - Cancel Service Problem	100%
	1.1.2.3.4.4 - Escalate/End Service Problem	100%
	1.1.2.3.4.5 - Perform Final Service Test	100%
1.1.2.3.5 - Report Service Problem		**3.50**
	1.1.2.3.5.1 - Monitor Service Problem	25%
	1.1.2.3.5.2 - Distribute Service Problem Notifications	25%
	1.1.2.3.5.3 - Distribute Service Problem Management Reports & Summaries	25%
1.1.2.3.6 - Close Service Trouble Report		**5.00**
1.1.2.3.7 - Survey & Analyze Service Problem		**5.00**
	1.1.2.3.7.1 - Manage Service Alarm Event Notifications	100%
	1.1.2.3.7.2 - Filter Service Alarm Event Notifications	100%
	1.1.2.3.7.3 - Correlate Service Alarm Event Notifications	100%
	1.1.2.3.7.4 - Abate Service Alarm Event Records	100%
	1.1.2.3.7.5 - Trigger Defined Service Alarm Action	100%

4.2 L2: Service Quality Management

eTOM Description

Managing, tracking, monitoring, analyzing, improving and reporting on the performance of specific services.

4.2.1 L3: Monitor Service Quality

Brief Description

Monitor received service quality information and undertake first-in detection

Extended Description

The objective of the Monitor Service Quality processes is to monitor received service quality information and undertake first-in detection.

The responsibilities of the processes include, but are not limited to:

· Undertake the role of first in detection and collection by monitoring and logging the received specific service performance quality data;

· Comparing the received specific service performance quality data to performance quality standards set for each specific service (available from the Service Inventory);

· Assessing and recording received specific service performance quality data which is within tolerance limits for performance quality standards, and for which continuous monitoring and measuring of performance is required; **AM**

Start Filtering **(Ref: [Page 6, Ref 2])**

Start filtering network elements which have exceeded KPI thresholds for

A: PM TT Tracker (elements which have been processed the previous day)

B: TTs (TTs been active in the last 24 hours)

C: CR (CRs carried out within the last 24 hours)

D: Alarms (existing alarms are active/been in last 24 hours)

E: Known Exceptions (known problems, which have no solution, and agreed to be not considered in KPIs)

· Recording the results of the continuous monitoring for reporting through the Report Service Quality Performance processes; **AM**

Start Filtering **(Ref: [Page 4, Ref 2])**

Start filtering network elements which have exceeded KPI thresholds for

A: PM TT Tracker (elements which have been processed the previous day)

B: TTs (TTs been active in the last 24 hours)

C: CR (CRs carried out within the last 24 hours)

D: Alarms (existing alarms are active/been in last 24 hours)

E: Known Exceptions (known problems, which have no solution, and agreed to be not considered in KPIs)

Create report **(Ref: [Page 5, Ref 3])**

Create the scheduled reports.

· Detect performance quality threshold violations which represent specific service failures due to abnormal performance; **AM**

Check PM TT Tracker **(Ref: [Page 4, Ref 2])**

Filter and Check for problems.

· Pass information about specific service failures due to performance quality threshold violations to Service Problem Management to manage any necessary restoration activity as determined by that process;

· Pass information about potential specific customer SLA/QoS performance degradations arising from specific service quality performance degradations (using knowledge about service to purchased product offering linkages) to Problem Handling to manage any necessary restoration activity as determined by that process; AM

Start Filtering **(Ref: [Page 4, Ref 2])**

Start filtering network elements which have exceeded KPI thresholds for

A: PM TT Tracker (elements which have been processed the previous day)

B: TTs (TTs been active in the last 24 hours)

C: CR (CRs carried out within the last 24 hours)

D: Alarms (existing alarms are active/been in last 24 hours)

E: Known Exceptions (known problems, which have no solution, and agreed to be not considered in KPIs)

· Detect performance degradation for specific services which provide early warning of potential issues; AM

Check PM TT Tracker **(Ref: [Page 5, Ref 2])**

Filter and Check for problems.

· Forward service performance degradation notifications to other Service Quality Management processes, which manage activities to restore normal specific service performance quality; andAM

Create TT **(Ref: [Page 5, Ref 2])**

Follow TT system instructions to Create, Assign, Submit and Acknowledge a new trouble ticket. Associate the network alarm with the Trouble Ticket (TT) for further analysis and action. Make sure the TT is properly filled in with emphasis on: correct site id, event time, priority and work log. Note 1: As part of this activity the alarm is normally acknowledged to keep the alarm GUI clean, however in some cases it is intentionally not acknowledged in order to more easy follow the current status and behavior of the alarm e.g. Power outage or Transmission alarms. Note 2: In case of serious problems it might in practice from case to case be that the TT is actually raised at a little later stage than the process suggests i.e. communication, organisation and resolving work takes precedence. These events should however be minimised as far as possible, and the TT should be created in arrears with correct information and time stamps etc.

· Log specific service performance quality degradation and violation details within the repository in the Manage Service Inventory processes to ensure historical records are available to support the needs of other processes. AM

Create report **(Ref: [Page 5, Ref 3])**

Create the scheduled reports.

Service Performance Management **(Ref6: Slide [29,30,31])**

The processes also perform automated service testing using simulated calls simulating standard user behavior, and collect data related to service usage which may supply information to other processes (i.e. marketing, service cost, etc.) and identify abnormal usage by the service users (i.e. bad passwords, terminal configurations, etc.).

4.2.2 L3: Analyze Service Quality

Brief Description

Analyze and evaluate the service quality performance of specific services

Extended Description

The purpose of the Analyze Service Quality processes is to analyze the information received from the Monitor Service Quality process to evaluate the service quality performance of specific services.

Using the data from Monitor Service Quality, these processes will correlate events in order to filter repetitive alarms and failure events that do not affect the quality delivered, and they will calculate key service quality indicators, (such as Mean Time Between Failures and other chronic problems).

The responsibilities of the processes include, but are not limited to:

· Undertaking analysis as required on specific service performance information received from the Monitor Service Quality processes; AM

Consolidate Data **(Ref: [Page 5, Ref 1])**

Creation of periodical Network Optimization (NPO) Resource Performance Specific scheduled report

Create NPO Specific Report **(Ref: [Page 5, Ref 1])**

Creation of Network Optimization (NPO) Resource Performance specific report.

· Initiating, modifying and cancelling continuous performance data collection schedules for specific services required to analyze specific service performance. These schedules are established through requests sent to the Enable Service Quality Management processes.AM

Update Proactive Optimization Schedule **(Ref: [Page 8, Ref 4])**

Update the proactive resource optimisation schedule

· Determining the root causes of specific service performance degradations and violations; AM

Detailed Performance Analysis **(Ref: [Page 5, Ref 4])**

Detailed Analysis of the performance issue. See NPO Service/Working Item. This activity represents a Service/Working item. The Activity is described at L5 using Work Instructions, which consider current SW/HW release and Tools used.

· Recording the results of the analysis and intermediate updates in the Service Inventory for historical analysis and for use as required by other processes; and

· Undertaking specific detailed analysis (if the original requested came from Customer QoS/SLA Management processes) to discover the root cause of customer QoS performance degradations that

may be arising due to interactions between service instances, without any specific service instance having an unacceptable performance in its own right.AM

Detailed Performance Analysis **(Ref: [Page 5, Ref 4])**

Detailed Analysis of the performance issue. See NPO Service/Working Item. This activity represents a Service/Working item. The Activity is described at L5 using Work Instructions, which consider current SW/HW release and Tools used.

4.2.3 L3: Improve Service Quality

Brief Description

Restore the service quality to a normal operational state as efficiently as possible.

Extended Description

The objective of the Improve Service Quality processes is to restore the service quality to a normal operational state as efficiently as possible.

These processes follow service improvement plans specified by the supplier/partner, or use service improvement plans developed by the service provider. Where appropriate service improvement plans are not available these processes are responsible for developing appropriate service improvement plans. AM

Prepare New Detailed Plan & Change Request **(Ref: [Page 7, Ref 4])**

Creation of correction plan based on detailed analysis recommendations

Verify Resolution **(Ref: [Page 6, Ref 4])**

Verify improvements from troubleshooting performance optimization

Where activity to improve service quality performance is likely to impact other in-use specific services, this process is responsible for providing appropriate notification of the improvement proposal and ensuring authorization is received to proceed with the service improvement plan. When the service improvement activity is about to commence, these processes are responsible for notifying when service improvement activity is commencing and when it is completed.

Based on the information determined within the Analyze Service Quality processes and the nature of the specific service degradation, these processes may possibly re-assign services or re-configure service parameters. AM

Update Hotspot tracker **(Ref: [Page 9, Ref 5])**

Update the High traffic hotspot list.

Analyze Capacity Shortfall **(Ref: [Page 8, Ref 5])**

Analyse NW Capacity issues and investigate the root cause

Update Proactive Optimization Schedule **(Ref: [Page 9, Ref 5])**

Update the pro-active (capacity) optimisation schedule

Define Upgrade Solution (Considering proactive capacity Activities) **(Ref: [Page 8, Ref 5])**

Define the upgrade solution. Check also for parallel Proactive Capacity Management process works on the same NW Element present in Reactive. It is possible that element which appears in daily reactive capacity problems already exist with a planned solution in Proactive capacity process for solution. No need for Reactive capacity work.

Include to Proactive Capacity Optimisation Schedule (Ref: [Page 8, Ref 5])

Update the proactive capacity optimization schedule

New Detailed plan (Ref: [Page 8, Ref 5])

Define upgrade solution

Create Configuration Request (Ref: [Page 8, Ref 5])

Create Configuration Request (CR)

Verify Resolution (Ref: [Page 8, Ref 5])

Verify improvements from troubleshooting capacity optimization

4.2.4 L3: Report Service Quality Performance

Brief Description

Monitor the status of service performance degradation reports, provide notifications of any changes and provide management reports

Extended Description

The objective of the Report Service Quality Performance processes is to monitor the status of service performance degradation reports, provide notifications of any changes and provide management reports.

These processes are responsible for continuously monitoring the status of service performance degradation reports and managing notifications to other processes in the SM&O and other process layers, and to other parties registered to receive notifications of any status changes. Notification lists are managed and maintained by the Enable Service Quality Management processes. AM

Update Hotspot tracker **(Ref: [Page 9, Ref 5])**

Update the High traffic hotspot list.

Analyze Capacity Shortfall **(Ref: [Page 8, Ref 5])**

Analyse NW Capacity issues and investigate the root cause

Update Proactive Optimization Schedule **(Ref: [Page 9, Ref 5])**

Update the pro-active (capacity) optimisation schedule

Define Upgrade Solution (Considering proactive capacity Activities) **(Ref: [Page 8, Ref 5])**

Define the upgrade solution. Check also for parallel Proactive Capacity Management process works on the same NW Element present in Reactive. It is possible that element which appears in daily reactive capacity problems already exist with a planned solution in Proactive capacity process for solution. No need for Reactive capacity work.

Include to Proactive Capacity Optimisation Schedule **(Ref: [Page 8, Ref 5])**

Update the proactive capacity optimization schedule

New Detailed plan **(Ref: [Page 8, Ref 5])**

Define upgrade solution

Create Configuration Request **(Ref: [Page 8, Ref 5])**

Create Configuration Request (CR)

Verify Resolution **(Ref: [Page 8, Ref 5])**

Verify improvements from troubleshooting capacity optimization

These processes record, analyze and assess the service performance degradation report status changes to provide management reports and any specialized summaries of the efficiency and effectiveness of

the overall Service Quality Management process. These specialized summaries could be specific reports required by specific audiences.

These processes also report any identified constraints that can affect service quality standards to other processes. These constraints may include specific resource failures, capacity shortages due to unexpected demand peaks, etc. AM

Distribute Report **(Ref: [Page 7, Ref 3])**

Distribute the report to the intended customers (internal and external customers). Use defined methods (save reports to common IT servers, drives, email, etc.). Send notifications to the respected internal/external customers/departments.

Update Operator **(Ref: [Page 8, Ref 4])**

Operator input on TTs or Customer VIPs

4.2.5 L3: Create Service Performance Degradation Report

Brief Description

Create a new service performance degradation report.

Extended Description

The objective of the Create Service Performance Degradation Report process is to create a new service performance degradation report, modify existing service performance degradation reports, and request cancellation of existing service performance degradation reports.

A new service performance degradation report may be created as a result of specific service performance notifications undertaken by the Monitor Service Performance processes, or at the request of analysis undertaken by other CRM, SM&O or RM&O processes which detect that some form of deterioration or failure has occurred requires an assessment of the specific service performance. AM

Create TT **(Ref: [Page 5, Ref 2])**

Follow TT system instructions to Create, Assign, Submit and Acknowledge a new trouble ticket. Associate the network alarm with the Trouble Ticket (TT) for further analysis and action. Make sure the TT is properly filled in with emphasis on: correct site_id, event time, priority and work log. Note 1: As part of this activity the alarm is normally acknowledged to keep the alarm GUI clean, however in some cases it is intentionally not acknowledged in order to more easy follow the current status and behavior of the alarm e.g. Power outage or Transmission alarms. Note 2: In case of serious problems it might in practice from case to case be that the TT is actually raised at a little later stage than the process suggests i.e. communication, organisation and resolving work takes precedence. These events should however be minimised as far as possible, and the TT should be created in arrears with correct information and time stamps etc.

If the service performance degradation report is created as a result of a notification or request from processes other than Monitor Service Performance processes, the Create Service Performance Degradation Report processes are responsible for converting the received information into a form suitable for the Service Performance Management processes, and for requesting additional information if required. AM

Create TT **(Ref: [Page 5, Ref 2])**

Follow TT system instructions to Create, Assign, Submit and Acknowledge a new trouble ticket. Associate the network alarm with the Trouble Ticket (TT) for further analysis and action. Make sure the TT is properly filled in with emphasis on: correct site_id, event time, priority and work log. Note 1: As part of this activity the alarm is normally acknowledged to keep the alarm GUI clean, however in some cases it is intentionally not acknowledged in order to more easy follow the current status and behavior of the alarm e.g. Power outage or Transmission alarms. Note 2: In case of serious problems it might in practice from case to case be that the TT is actually raised at a little later stage than the process suggests i.e. communication, organisation and resolving work takes precedence. These events should however be minimised as far as possible, and the TT should be created in arrears with correct information and time stamps etc.

4.2.6 L3: Track & Manage Service Quality Performance Resolution

Brief Description

Efficiently assign, coordinate and track specific service performance analysis, restoration and improvement activities, and escalate any open service performance degradation reports in jeopardy.

Extended Description

The objective of the Track & Manage Service Quality Performance Resolution processes is to efficiently assign, coordinate and track specific service performance analysis, restoration and improvement activities, and escalate any open service performance degradation reports in jeopardy.

Responsibilities of these processes include, but are not limited to:

· Adding additional information to an open service performance degradation report based on the first-in and on-going analysis; AM

Update Report **(Ref: [Page 6, Ref 2])**

Update the "Resource Performance KPI/KQI" report based on "First-in" detection results. These results, are important to justify/communicate reasons or actions being carried out to resolve certain KPI performance issues. Customers will see the report, and query "what is being done to resolve/explain" the KPI issues. The Filtering results is used to resolve/explain issue in the report.

· Scheduling, assigning and coordinating analysis and specific service performance restoration activities and/or repair activities delegated to other processes;

· Generating the respective resource trouble report creation request(s) to Create Resource Trouble Report based on specific service performance degradation reports where analysis the root cause is related to resources; AM

Create TT **(Ref: [Page 5, Ref 2])**

Follow TT system instructions to Create, Assign, Submit and Acknowledge a new trouble ticket. Associate the network alarm with the Trouble Ticket (TT) for further analysis and action. Make sure the TT is properly filled in with emphasis on: correct site_id, event time, priority and work log. Note 1: As part of this activity the alarm is normally acknowledged to keep the alarm GUI clean, however in some cases it is intentionally not acknowledged in order to more easy follow the current status and behavior of the alarm e.g. Power outage or Transmission alarms. Note 2: In case of serious problems it might in practice from case to case be that the TT is actually raised at a little later stage than the process suggests i.e. communication, organisation and resolving work takes precedence. These events should however be minimised as far as possible, and the TT should be created in arrears with correct information and time stamps etc.

· Modifying information in an existing service performance degradation report based on assignments;

· Modifying the service performance degradation report status;

· Canceling a service performance degradation report when the specific request was related to a false service failure event; and AM

Update Report **(Ref: [Page 6, Ref 2])**

Update the "Resource Performance KPI/KQI" report based on "First-in" detection results. These results, are important to justify/communicate reasons or actions being carried out to resolve certain KPI performance issues. Customers will see the report, and query "what is being done to resolve/explain" the KPI issues. The Filtering results is used to resolve/explain issue in the report.

· Monitoring the jeopardy status of open service performance degradation reports, and escalating service performance degradation reports as necessary.AM

Note that some specific resource components may be owned and managed by suppliers/partners. In these cases the Track & Manage Service Quality Performance process is responsible for initiating requests, through S/P Performance Management for resolution by the supplier/partner of the specific resource components.

These processes will co-ordinate all the actions necessary in order to guarantee that all tasks are finished at the appropriate time and in the appropriate sequence.

The Track & Manage Service Quality Performance Resolution processes will also inform the Close Service Performance Degradation Report processes by modifying the service performance degradation report status to cleared when the specific service performance quality issues have been resolved.AM

Check PM TT Tracker **(Ref: [Page 6, Ref 2])**

Filter and Check for problems.

Update Report **(Ref: [Page 6, Ref 2])**

Update the "Resource Performance KPI/KQI" report based on "First-in" detection results. These results, are important to justify/communicate reasons or actions being carried out to resolve certain KPI performance issues. Customers will see the report, and query "what is being done to resolve/explain" the KPI issues. The Filtering results is used to resolve/explain issue in the report.

4.2.7 L3: Close Service Performance Degradation Report

Brief Description

Close a service performance degradation report when the service performance has been resolved

Extended Description

The objective of the Close Service Performance Degradation Report processes is to close a service performance degradation report when the service performance has been resolved.

These processes monitor the status of all open service performance degradation reports, and recognize that a service performance degradation report is ready to be closed when the status is changed to cleared. AM

Update Report **(Ref: [Page 6, Ref 2])**

Update the "Resource Performance KPI/KQI" report based on "First-in" detection results. These results, are important to justify/communicate reasons or actions being carried out to resolve certain KPI performance issues. Customers will see the report, and query "what is being done to resolve/explain" the KPI issues. The Filtering results is used to resolve/explain issue in the report.

4.2.8 Supporting Evidence References (Works Cited)

[Ref 1] <Resource KPI Pre Analysis.pdf>

[Ref 2] <Resource Performance Filtering.pdf>

[Ref 3] <Resource Performance Report Generation.pdf>

[Ref 4] <Resource Performance Trouble Shooting.pdf>

[Ref 5] <Resource Traffic & Capacity Optimization.pdf>

[Ref 6] < Service mgmt - Basic Engineers Training - Service Performance mgmt.ppt>

4.2.9 Summary of Level 3 Scores

Table 4.2 Level 2: 1.1.2.4 - Service Quality Management Conformance Scores

Level 2: 1.1.2.4 - Service Quality Management [7/7]		
Level 3 Process	**Level 4 Process**	**L4/L3 Process Score**
1.1.2.4.1 - Monitor Service Quality		**4.50**
	1.1.2.4.1.1 - Manage Service Performance Quality Data	100%
	1.1.2.4.1.2 - Record Service Performance Quality Data	100%
	1.1.2.4.1.3 - Correlate Service Performance Event Notifications	25%
1.1.2.4.2 - Analyze Service Quality		**5.00**
	1.1.2.4.2.1 - Perform Specific Service Performance Diagnostics	100%
	1.1.2.4.2.2 - Manage Service Performance Data Collection Schedules	100%
1.1.2.4.3 - Improve Service Quality		**4.33**
	1.1.2.4.3.1 - Reassign / Reconfigure Service or Service Parameters	100%
	1.1.2.4.3.2 - Manage Service Improvement Notification and Authorization	50%
	1.1.2.4.3.3 - Develop Service Improvement Plans	50%
1.1.2.4.4 - Report Service Quality Performance		**4.33**
	1.1.2.4.4.1 - Monitor Service Performance Degradation Report	100%
	1.1.2.4.4.2 - Report Constraints to Other Processes	50%
	1.1.2.4.4.3 - Distribute Service Quality Management Reports & Summaries	50%
1.1.2.4.5 - Create Service Performance Degradation Report		**4.50**
	1.1.2.4.5.1 - Generate Service Performance Degradation Problem	100%
	1.1.2.4.5.2 - Convert Report To Service Performance Degradation Report Format	50%
1.1.2.4.6 - Track & Manage Service Quality Performance Resolution		**5.00**
	1.1.2.4.6.1 - Coordinate Service Quality	100%
	1.1.2.4.6.2 - Request Service Performance Degradation Report Creation and Update	100%
	1.1.2.4.6.3 - Update First in Service Testing Results	100%
	1.1.2.4.6.4 - Cancel Service Performance Degradation Report	100%
	1.1.2.4.6.5 - Escalate/End Service Performance Degradation Report	100%
	1.1.2.4.6.6 - Clear Service Performance Degradation Report Status	100%
	1.1.2.4.6.7 - Engage External Service Suppliers	100%
1.1.2.4.7 - Close Service Performance Degradation Report		**5.00**

4.3 L2: RM&O Support & Readiness

eTOM Description

RM&O Support & Readiness processes are responsible for managing resource infrastructure to ensure that appropriate application, computing and network resources are available and ready to support the Fulfillment, Assurance and Billing processes in instantiating and managing resource instances, and for monitoring and reporting on the capabilities and costs of the individual FAB processes.

Responsibilities of these processes include but are not limited to:

· Supporting the operational introduction of new and/or modified resource infrastructure and conducting operations readiness testing and acceptance;

· Managing planned outages;

· Managing and ensuring the ongoing quality of the Resource Inventory;

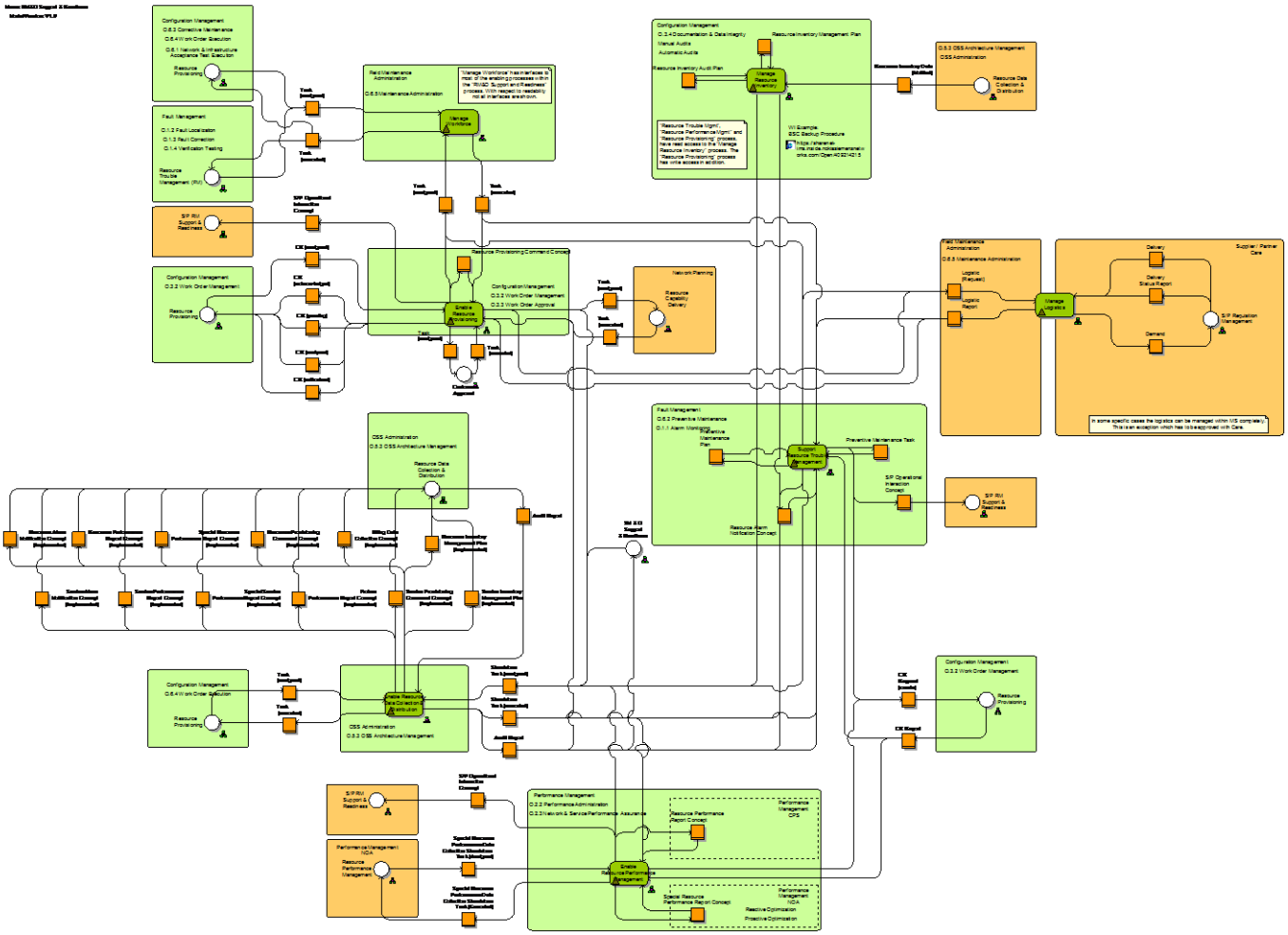
· Analyzing availability and performance over time on resources or groups of resources, including trend analysis and forecasting;

· Demand balancing in order to maintain resource capacity and performance

· Performing pro-active maintenance and repair activities;

· Establishing and managing the workforce to support the eTOM processes; and

· Managing spares, repairs, warehousing, transport and distribution of resources and consumable goods.



4.3.1 L3: Enable Resource Provisioning

Not submitted in scope as not considered applicable for NSN Managed Services.

4.3.2 L3: Enable Resource Performance Management

Not submitted in scope as not considered applicable for NSN Managed Services.

4.3.3 L3: Support Resource Trouble Management

Not submitted in scope as not considered applicable for NSN Managed Services.

4.3.4 L3: Enable Resource Data Collection & Distribution

Brief Description

Administering and management of the processes which enable the effective operation of the resource data collection and data distribution network, and monitoring, managing and reporting on the capability of the Resource Data Collection & Distribution processes.

Extended Description

The responsibilities of the Enable Resource Data Collection & Distribution processes are twofold - administering and management of the processes which enable the effective operation of the resource data collection and data distribution infrastructure, and monitoring, managing and reporting on the capability of the Resource Data Collection & Distribution processes.

The Resource Data Collection & Distribution processes may be either scheduled activities, or may be triggered as a result of ad-hoc events.

Responsibilities of these processes include, but are not limited to:

· Administering and managing the scheduling of resource data collection and resource data distribution; AM

Periodicity of Scheduled Backup **Ref 2 page 4**

· Managing the registration and access control processes used by other processes to gain access to the collected resource data;

· Managing the registration and access control processes that enable processes to download resource data to be distributed to identified resource instances; AM

User ID Management Process Steps **Ref 3 Page 9-10**

· Establishing and managing resource data storage facilities, and associated management processes, within the resource data collection and resource data distribution infrastructure, to be used as temporary data holding facilities as required; AM

Safe Copy Recommendations **Ref 2 page 5**

· Tracking and monitoring of the Resource Data Collection and Distribution processes and associated costs, and reporting on the capability of the Resource Data Collection and Distribution processes; and

· Identifying any technical driven shortcomings of the resource data collection and resource data distribution infrastructures, and providing input to Resource Development & Management processes to rectify these issues.

Note that the underlying resource infrastructure used for the actual transport of resource data are managed as appropriate by other processes within the RM&O and RD&M horizontal process groupings.

4.3.5 L3: Manage Resource Inventory

Brief Description

Establish, manage and administer the enterprise's resource inventory, as embodied in the Resource Inventory Database, and monitor and report on the usage and access to the resource inventory, and the quality of the data maintained in it

Extended Description

The responsibilities of the Manage Resource Inventory processes are twofold - establish, manage and administer the enterprise's resource inventory, as embodied in the Resource Inventory Database, and monitor and report on the usage and access to the resource inventory, and the quality of the data maintained in it.

The resource inventory maintains records of all resource infrastructure and resource instance configuration, version, and status details. It also records test and performance results and any other resource related- information, required to support RM&O and other processes. AM

Spares Inventory Record **Ref1 Page13**

The resource inventory is also responsible for maintaining the association between service instances and resource instances, created as a result of the Resource Provisioning Management processes.

Responsibilities of these processes include, but are not limited to:

· Identifying the inventory-relevant information requirements to be captured for resource infrastructure and resource instances;

Spares Storage Locations **Ref1 Page13**

· Identifying, establishing and maintaining resource inventory repository facilities;M

Spares Storage Locations **Ref1 Page13**

· Establishing and managing the resource inventory management and information capture processes;

Spares Identification **Ref 1 Page 14**

· Managing the registration and access control processes that enable processes to create, modify, update, delete and/or download resource data to and from the resource inventory;

Spares Identification **Ref 1 Page 14**

· Ensuring the resource inventory repository accurately captures and records all identified resource infrastructure and resource instance details, through use of automated or manual audits; AM

Spares Identification **Ref 1 Page 14**

Spares Inventory Audit **Ref 1 Page 15**

· Tracking and monitoring of the usage of, and access to, the resource inventory repository and associated costs, and reporting on the findings; and AM

Spares Movement Tracking **Ref 1 Page 15**

· Identifying any technical driven shortcomings of the resource inventory repository, and providing input to Resource Development & Management processes to rectify these issues. AM

Spares Inventory Level **Ref 1 Page 13**

4.3.6 L3: Manage Logistics

Brief Description

Manage and control warehousing, stock level management, physical distribution and transport of purchased resources and consumable goods.

Extended Description

The responsibility of the Manage Logistics processes is twofold - manage and control warehousing, stock management, physical distribution and transport of purchased resources and consumable goods, and monitoring, managing and reporting on the capability of the Manage Logistics processes.

These processes are applicable for both resources managed by the processes in the RM&O processes as well as the myriad of consumable goods used by the enterprise in its day-to-day activities, such as paper, stationery, etc.

These processes manage all operational processes associated with the storage and distribution of purchased resources and consumable goods from the supplier. In addition, these processes are responsible for initiating orders for consumable goods, spare parts and for monitoring and reporting on progress of consumable goods orders. The actual order placed is managed through the appropriate S/PRM processes. AM

Spares Storage Locations	**Ref 1 Page 13**
Faulty Module Shipment	**Ref 1 Page 15**

These purchased items may be temporarily stored in enterprise, vendor or third party managed warehouses before being delivered to smaller distribution points, or being delivered direct to site. Or alternatively they may be delivered directly to site from supplier's facilities. AM

Spares Storage Locations	**Ref 1 Page 13**

These processes are responsible for determining the distribution path for individual resources and consumable goods.

These processes are responsible for the internal operational processes associated with managing a warehouse including aspects such as yard management, dock management, pick management, etc. These processes track all goods stored in the warehouse from the time of inward delivery to outwards dispatch.

These processes manage the co-ordination and control of transport infrastructure, including land, air and sea transport capabilities. The transport may be owned and managed by the enterprise, the vendor or a third-party. Different parties may be responsible for different aspects of the overall end-end transport requirements, i.e., a vendor may deliver to a warehouse, and a third party from the warehouse to site. These processes are responsible for determining truck loads, distribution routes, etc. AM

Spares Inventory Record	**Ref 1 Page 13**
Spare Distribution	**Ref 1 Page 14**
Faulty Module Shipment	**Ref 1 Page 15**

Care Process Flow **Ref 1 Page 18**

To the extent that the above processes are managed by either the supplier, or by third parties, the enterprise processes are responsible for initiating requests, and for monitoring, tracking and reporting on the operation of the supplier, and/or third party.

Each of the above processes has sub-processes responsible for:

· Managing the registration and access control processes that enable enterprise processes to create, modify, update, delete and/or download individual requests into supplier and/or third party systems associated with any of the above processes;

· Managing the registration and access control processes that enable supplier and/or third party processes to create, modify, update, delete and/or download relevant details into enterprise systems associated with any of the above processes;

· Managing of issuing and re stocking of spares;

· Tracking and monitoring of the usage of, and access to, the specific process and associated costs of the specific processes, and reporting on the findings; and

· Identifying any technical driven shortcomings of the specific automated support capabilities, and providing input to Resource Development & Management processes to rectify these issues. AM

Spares Management Process **Ref 1 Page 5-15**

4.3.7 Supporting Evidence References (Works Cited)

[Ref 1] < MS India Spares Management Process ver 1[1].4.pdf>

[Ref 2] < Data_Backup procedure 230210.pdf>

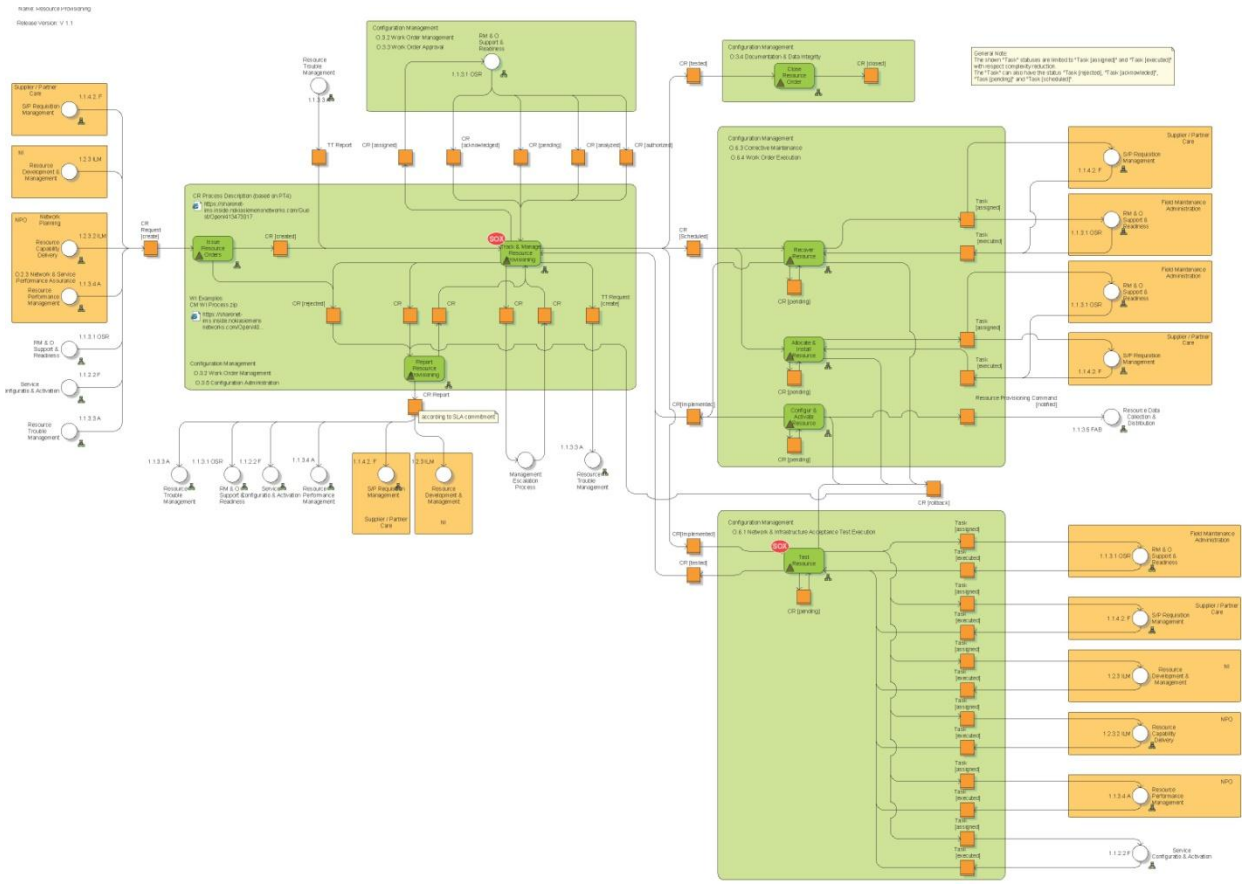
[Ref 3] < NSN MS India User Access Management Process Ver 1.0.pdf>

4.3.8 Summary of Level 3 Scores

Table 4.3 Level 2: 1.1.3.1 - RM&O Support & Readiness Conformance Scores

Level 2: 1.1.3.1 - RM&O Support & Readiness [6/6]		
Level 3 Process	**Level 4 Process**	**L4/L3 Process Score**
1.1.3.1.1 - Enable Resource Provisioning		*N/A*
1.1.3.1.2 - Enable Resource Performance Management		*N/A*
1.1.3.1.3 - Support Resource Trouble Management		*N/A*
1.1.3.1.4 - Enable Resource Data Collection & Distribution		**3.75**
	1.1.3.1.4.1 - Manage and Administer Resource Data Collection and Distribution	50%
	1.1.3.1.4.2 - Manage Resource Data Storage Facilities and Associated Processes	25%
	1.1.3.1.4.3 - Track, Monitor and Report Resource Data Collection Processes and Capabilities	50%
	1.1.3.1.4.4 - Identify Data Collection Issues and Report	25%
1.1.3.1.5 - Manage Resource Inventory		**4.50**
	1.1.3.1.5.1 - Manage Resource Inventory Database and Processes	50%
	1.1.3.1.5.2 - Perform Audit Tests	50%
	1.1.3.1.5.3 - Track and Monitor Resource Repository Capabilities	100%
	1.1.3.1.5.4 - Identify Repository Issues and Provide and Repors and Warnings	100%
1.1.3.1.7 - Manage Logistics		**4.63**
	1.1.3.1.7.1 - Manage Warehousing	25%
	1.1.3.1.7.2 - Manage Orders	100%
	1.1.3.1.7.3 - Track and Monitor Logistics and Manage Resource Inventory	100%
	1.1.3.1.7.4 - Identify Logistic Issues and Provide and Reports	100%

4.4 L2: Resource Provisioning



The "Resource Provisioning" process describes the configuration management activities on the resource layer. This includes the implementation, configuration and testing of a resource. It has to be seen together with the "RM&O Support and Readiness" process which includes all support processes for the resource layer like "Workforce Management", "Inventory Management", "Spare Part Management" etc. Resource Provisioning processes encompass allocation, installation, configuration, activation and testing of specific resources to meet the service requirements, or in response to requests from other processes to alleviate specific resource capacity shortfalls, availability concerns or failure conditions.

4.4.1 L3: Allocate & Install Resource

Brief Description

Allocate specific resources required to support a specific service

Extended Description

The objective of the Allocate & Deliver Resource processes is to allocate specific resources required to support a specific service.

These activities include but are not limited to:

· Investigating the ability to be able to satisfy specific service orders as a part of a feasibility check; **AM**

Check availability and Feasibility of resource **[Ref 1, Page 6]**

This function determines whether there are adequate specific resources available to fulfil the request. Investigating the ability to be able to satisfy specific service orders as a part of a feasibility check. Input: Scheduled CR Ready for Allocation

Output: Resource Check OK or Resource Check Failed

Failure causes CR Cancellation with a rejected CR which is input to the Track & Manage Resource Provisioning Process

· Reserving or allocating specific resources in response to issued resource orders; **AM**

Reserve and allocate resource **[Ref 1, Page 7]**

This function is responsible for reserving or allocating specific resources in response to issued resource order.

Input: Resource Check OK

Output: Resources Allocated or Resources not allocated

Resource Allocated moves to the Resource Availability Check. Resources not confirmed results in update of the Resource Status on the CR and requires Restart of the Allocate and Install Resource Process

· Confirming availability of, or initiating an order for, equipment or software with a Supplier/Partner; and **AM**

Confirm availability of resource **[Ref 1, Page 6]**

This function confirms the availability of specific resources in response to issued resource order.

Input: Resources Allocated. The availability of the resources is then confirmed. Resource confirmed results in allocation of tasks to internal resource and/or external resource.

Resources not allocated results in update of the Resource Status on the CR and requires restart of the Allocate and Install Resource Process

· Installing and commissioning specific resources following delivery. **AM**

Install Resource **[Ref 1, Page 6]**

This function is responsible for installing and commissioning specific resources, and updating the resource inventory as part of these processes.

Where the Allocate & Deliver Resource processes are requested by a resource order issued as part of a pre-order feasibility check, these processes determine whether there are adequate specific resources available to fulfill the request. Where there are not sufficient specific resources available, these processes may initiate enquiries using the relevant S/PRM and/or Resource Support & Readiness processes to determine lead times for specific resource availability. Depending on business rules, and on any specific levels of commitment contained in the initiating service order, these processes may reserve specific resources linked to the initiating service order for a period of time, and releasing them when the time period has expired. These processes are responsible for creating a response to the initiating processes with respect to the feasibility assessment. **AM**

Check availability and Feasibility of resource **[Ref 1, Page 6]**

This function determines whether there are adequate specific resources available to fulfil the request. Investigating the ability to be able to satisfy specific service orders as a part of a feasibility check. Input: Scheduled CR Ready for Allocation

Output: Resource Check OK or Resource Check Failed

Failure causes CR Cancellation with a rejected CR which is input to the Track & Manage Resource Provisioning Process

Reserve and allocate resource **[Ref 1, Page 7]**

This function is responsible for reserving or allocating specific resources in response to issued resource order.

Input: Resource Check OK

Output: Resources Allocated or Resources not allocated

Resource Allocated moves to the Resource Availability Check. Resources not confirmed results in update of the Resource Status on the CR and requires Restart of the Allocate and Install Resource Process

Where the Allocate & Deliver Resource processes are requested by a resource order issued in response to a confirmed service order, these processes are responsible for allocating the specific resources required to satisfy the initiating service order. Any previously reserved specific resources are marked as allocated. **AM**

Coordinate internal and external work tasks **[Ref 1, Page 6]**

This functions tracks and coordinates the internal and external installation work tasks. Internal Task Assignment will result in a Task Assignment to RM&O Support Readiness Process. External Task Assignment will result in a Task Assignment to S/P Requisition Management Process.

These process are responsible for initiating, using the S/PRM processes, resource requisition orders for any specific resources in shortfall. Sufficient information is supplied with the resource requisition orders to ensure that the appropriate specific resources are delivered to the appropriate location for installation and configuration. This may include, for example, a central office, a transmission room, or the customer premise.

Following delivery, these processes are responsible for installing and commissioning specific resources, and updating the resource inventory as part of these processes. Where installation of the specific resources requires an upfront major resource infrastructure, the installation of both the resource infrastructure and specific resources may be undertaken under the control of the Support Resource Provisioning processes.

The Allocate & Deliver Resource processes will closely interact with the Manage Resource Inventory processes to determine availability of physical and logical specific resources to select from, thereby applying specific selection criteria **AM**

Change Request Scheduling & Implementation **[Ref 9, page 36]**

Update A&I status **[Ref 1, Page 7]**

This function is responsible for checking the status of the installation procedures and set the exit status of this flow.

4.4.2 L3: Configure & Activate Resource

Brief Description

Configure and activate the specific resources allocated against an issued resource order

Extended Description

The objective of the Configure & Activate Resource Processes is to configure and activate the specific resources allocated against an issued resource order. These processes are responsible for, but not limited to:

· Assessing and planning the approach to be undertaken for configuration and activation; **AM**

Plan approach for configuration and activation **[Ref 3, Page 6]**

This function is responsible for assessing and planning the approach to be undertaken for configuration and activation. Re-use standard configuration and activation processes applicable to specific resources.

· Re-use standard configuration and activation processes applicable to specific resources; **AM**

Create a standard procedure **[Ref 3, Page 6]**

This function creates configuration and activation procedures if not available.

· Providing notifications as required if the activation activity requires a planned outage or is likely to initiate false specific resource alarm event notifications; and **AM**

Send notifications about outage and alarms **[Ref 3, Page 6]**

This function is responsible for providing notifications as required if the activation activity requires a planned outage or is likely to initiate false specific resource alarm event notifications.

· Updating the information contained in the resource inventory as to the configuration of specific resources and their status. **AM**

Update C&A status. **[Ref 3, Page 6]**

At the successful conclusion of these activities, the status of the specific resources will be changed from allocated to activated, which means they are in use. The status is set to C&A failed if configuration or activation failed.

At the successful conclusion of these activities, the status of the specific resources will be changed from allocated to activated, which means they are in use. **AM**

Change Request Scheduling & Implementation **[Ref 9, page 36-37]**

4.4.3 L3: Test Resource

Brief Description

Test specific resources to ensure they are operating within normal parameters.

Extended Description

The responsibility of the Test Resource processes is to test specific resources to ensure they are operating within normal parameters. The objective is to verify whether the resources are working correctly and meet the appropriate performance levels. **AM**

These processes test specific resources against supplier/partner defined test plans, or against test plans developed by the service provider. Where appropriate test plans are not available these processes are responsible for developing appropriate test plans. These processes are also responsible for capturing and storing the test results for historical and downstream testing comparison purposes. **AM**

Check if Test plan is available **[Ref 7, Page 6]**

This function checks that a Test Plan has been created and if not ensures the creation of the Test Plan before resource testing is started

Create Test plan **[Ref 7, Page 6]**

This function creates a Test Plan if it is not existing

Resource Testing **[Ref 7, Page 6]**

This function tests the Resource According to the Test Plan and ensures the resources are working correctly and meet the appropriate performance levels.

Create Test plan report **[Ref 7, Page 6]**

The results of the performed Tests are reported in The Test Plan Report

Check results update CR status **[Ref 7, Page 6]**

The results reported in the Test Plan Report are updated to the CR which and result in either a tested CR or Rollback of the CR if the Test reports that the resource is not working correctly or does not meet the appropriate performance levels.

If these tests succeed, the specific resources will be marked as in-service which means the specific resources are available for use. **AM**

Check results update CR status **[Ref 7, Page 6]**

The results reported in the Test Plan Report are updated to the CR which and result in either a tested CR or Rollback of the CR if the Test reports that the resource is not working correctly or does not meet the appropriate performance levels.

4.4.4 L3: Track & Manage Resource Provisioning

Brief Description

Ensure resource provisioning activities are assigned, managed and tracked efficiently

Extended Description

The objective of the Track & Manage Resource Provisioning process is to ensure resource provisioning activities are assigned, managed and tracked efficiently.

Responsibilities of these processes include, but are not limited to:

· Scheduling, assigning and coordinating resource provisioning related activities; **AM**

CR ready for Allocation and Installation **[Ref 8, Page 6]**

This function is responsible for the ensuring the readiness of a configuration request for the allocation and installation of resources following a requested installation.

Resource Ready for Configuration and Activation **[Ref 8, Page 6]**

This function is responsible for the ensuring the readiness of a CR for the configuration of resources following a) A CR for configuration of the resource b) Implementation of a CR for de-installation/breakdown c) Implementation of a CR for Installation.

· Escalating status of resource orders in accordance with local policy; **AM**

CR time frame failed **[Ref 8, Page 6]**

The CR is to be performed within the defined Maintenance Window. If the execution of the CR exceeds the Maintenance Window decision is required to Roll Back the CR or Stop CR Execution initiate the Out of Plan Escalation function

· Undertaking necessary tracking of the execution process; **AM**

Change Request: Creation & Assignment **[Ref 9, Page 32]**

· Adding additional information to an existing resource order;· **AM**

Change Request: Creation & Assignment **[Ref 9, Page 32]**

· Modifying information in an existing resource order; **AM**

Change Request: Creation & Assignment **[Ref 9, Page 32]**

· Modifying the resource order status;· **AM**

Change Request: Creation & Assignment **[Ref 9, Page 32]**

· Canceling a resource order when the initiating service order is cancelled; **AM**

Change Request: Creation & Assignment **[Ref 9, Page 32]**

Cancel CR **[Ref 8, Page 6]**

This function is responsible for initiating, using the S/PRM processes, purchase orders for any specific resources in shortfall. Sufficient information is supplied with the purchase orders to ensure that the appropriate specific resources are delivered to the appropriate location for installation and configuration.

· Monitoring the jeopardy status of resource orders, and escalating resource orders as necessary; and **AM**

CR time frame failed **[Ref 8, Page 6]**

The CR is to be performed within the defined Maintenance Window. If the execution of the CR exceeds the Maintenance Window decision is required to Roll Back the CR or Stop CR Execution initiate the Out of Plan Escalation function

· Indicating completion of a resource order by modifying the resource order status. **AM**

Resource Ready for Configuration and Activation **[Ref 8, Page 6]**

This function is responsible for the ensuring the readiness of a CR for the configuration of resources following a) A CR for configuration of the resource b)Implementation of a CR for reinstallation/breakdown c) Implementation of a CR for Installation.

Change Request Scheduling & Implementation **[Ref 9, page 36-37]**

These processes will co-ordinate all the actions necessary in order to guarantee that all tasks are finished at the appropriate time and in the appropriate sequence.

The Track & Manage Resource Provisioning processes are responsible for engaging external suppliers in provisioning activities when these have been outsourced or contracted to external parties.

The Track & Manage Resource Provisioning processes will also inform the Close Resource Order processes by modifying the resource order status to complete when the resource order has been fulfilled. **AM**

Change Request Scheduling & Implementation **[Ref 9, page 36-37]**

4.4.5 L3: Report Resource Provisioning

Brief Description

Monitor the status of resource orders, provide notifications of any changes and provide management reports.

Extended Description

The objective of the Report Resource Provisioning processes is to monitor the status of resource orders, provide notifications of any changes and provide management reports.

These processes are responsible for continuously monitoring the status of resource orders and managing notifications to processes and other parties registered to receive notifications of any status changes. Notification lists are managed and maintained by the Enable Resource Provisioning processes. **AM**

Monitor CR status **[Ref 6, Page 6]**

This function is responsible for monitoring the status of the resource during the execution of the CR.

Notifications of Resource order Status Changes **[Ref 6, Page 6]**

This function is responsible for creation of defined reports on change of the Resource Status according to the service levels agreed for the Configuration Management process

Send Notifications **[Ref 6, Page 6]**

This function is responsible for creation of defined notifications during the CR execution time window according to the service levels agreed for the Configuration Management process

These processes record, analyze and assess the resource order status changes to provide management reports and any specialized summaries of the efficiency and effectiveness of the overall Resource Provisioning process. These specialized summaries could be specific reports required by specific audiences. **AM**

Notifications of Resource order Status Changes **[Ref 6, Page 6]**

This function is responsible for creation of defined reports on change of the Resource Status according to the service levels agreed for the Configuration Management process

Send Notifications **[Ref 6, Page 6]**

This function is responsible for creation of defined notifications during the CR execution time window according to the service levels agreed for the Configuration Management process

4.4.6 L3: Close Resource Order

Brief Description

This process monitors the status of the order and changes the status to closed when it is completed.

Extended Description

The objective of the Close Resource Order processes is to close a resource order when the resource provisioning activities have been completed.

These processes monitor the status of all open resource orders, and recognize that a resource order is ready to be closed when the status is changed to complete. **AM**

Final Check of CR **[Ref 2, Page 5]**

This function is responsible for verifying that all tasks defined in the CR have been completed and tested. This includes checking of the resource status to ensure correct performance and that test results are within the defined limits.

Close CR **[Ref 2, Page 5]**

This function is responsible for closure of the CR in the CR System

4.4.7 L3: Issue Resource Orders

Brief Description

Issue correct and complete resource orders

Extended Description

The purpose of the Issue Resource Orders processes is to issue correct and complete resource orders.

The resource orders may be required to satisfy pertinent service order information received, may arise as a result of requests for resource provisioning to satisfy resource trouble recovery activities, may arise to alleviate resource performance issues, or may arise as a result of information received from suppliers/partners in relations to specific resources.

These processes assess the information contained in the service order, through a resource order request, initiating resource process request or supplier/partner initiated request, to determine the associated resource orders that need to be issued. **AM**

Create CR in tool **[Ref 4, Page 7]**

This function is responsible to create the CR within the CR Management Tool ensuring all mandatory fields are completed.

Change Request: Creation & Assignment **[Ref 9, page 32]**

The issued resource order may require a feasibility assessment to be undertaken, may require new provisioning activities for specific resources, may require a change to a previously issued resource order or may require the deletion/recovery of previously delivered specific resources. **AM**

Create CR in tool **[Ref 4, Page 7]**

This function is responsible to create the CR within the CR Management Tool ensuring all mandatory fields are completed.

Check if all info available **[Ref 4, Page 7]**

This function is responsible to ensure that all required additional information required for CR Approval is available. The output of this process is a decision required on acceptance of the CR.

Where the initiating request or service order has a standard set of associated resource orders, this process is responsible for issuing the resource orders, and for creating a record of the relevant initiating request or service order information and the associated resource orders. **AM**

Create CR in tool **[Ref 4, Page 7]**

This function is responsible to create the CR within the CR Management Tool ensuring all mandatory fields are completed.

Check if all info available **[Ref 4, Page 7]**

This function is responsible to ensure that all required additional information required for CR Approval is available. The output of this process is a decision required on acceptance of the CR.

Where the initiating request or service order has special or unusual requirements, and a specific feasibility assessment has not been previously undertaken, this process marks the issued resource order as requiring special handling, and passes management for further processing to the Track & Manage Resource Provisioning process. **AM**

Reject CR and send to Originator **[Ref 4, Page 8]**

This function is responsible for rejecting a CR if the required additional information is not available and to send the rejected CR to the CR Originator with a request for the required additional information.

Perform Impact Analysis **[Ref 4, Page 8]**

This function is responsible for performing an impact analysis on the network as a result of CR implementation. The Impact Analysis ensures that the impact of the CR Implementation meets or will not result in a breach of the defined Service Level Agreements and that all stakeholders are identified. The outputs from this are either a) A Rejected CR or b) A CR with 1st Level Approval

Check CR Category **[Ref 4, Page 7]**

This function is responsible for assignation of the CR Priority to either a) Critical b) Major c) Minor according to criteria defined in the Service Level Agreement

Send CR to execution **[Ref 4, Page 8]**

This function is responsible for approval of the CR and sending to the scheduling approval process

Send CR to 2nd Level **[Ref 4, Page 9]**

This function is responsible for sending a CR for 2nd Level Approval if the CR Category is defined as Critical or Major

Analyse CR **[Ref 4, Page 7]**

This function is responsible for 2nd Level Analysis of the CR and approval/rejection of the CR.

Check if Customer approval is required **[Ref 4, Page 8]**

This function is responsible for checking a vendor approved CR for a required customer approval according to the Service Level Agreement definition

Request Customer Approval **[Ref 4, Page 8]**

This function is responsible for requesting customer approval of a vendor approved CR

Where the initiating request or service order has special or unusual requirements, and a specific feasibility assessment has been previously undertaken, this process issues the previously determined resource orders. **AM**

Perform Impact Analysis **[Ref 4, Page 8]**

This function is responsible for performing an impact analysis on the network as a result of CR implementation. The Impact Analysis ensures that the impact of the CR Implementation meets or will not result in a breach of the defined Service Level Agreements and that all stakeholders are identified. The outputs from this are either a) A Rejected CR or b) A CR with 1st Level Approval status

The orchestration, if required, and tracking of the progress of a resource order is the responsibility of the Track & Manage Resource Provisioning processes. **AM**

Change Request: Creation & Assignment **[Ref 9, page 32]**

4.4.8 L3: Recover Resource

Brief Description

Recover specific resources that are no longer required.

Extended Description

The responsibility of the Recover Resource processes is to recover specific resources that are no longer required.

These processes follow recovery plans specified by the supplier/partner, or follow recovery plans developed by the service provider. Where appropriate recovery plans are not available these processes are responsible for developing appropriate recovery plans.

Check Plan **[Ref 5, Page 6]**

Check if removal procedures and plans are available

Check is authorisation is available **[Ref 5, Page 6]**

This function is responsible for ensuring authorization is received to proceed with the recovery plan.

Where recovery of resources is likely to impact other in-use specific resources or specific services, this process is responsible for providing appropriate notification of the recovery proposal and ensuring authorization is received to proceed with the recovery plan. When the recovery activity is about to commence, these processes are responsible for notifying when recovery work is commencing and when it is completed. **AM**

Check is authorisation is available **[Ref 5, Page 6]**

This function is responsible for ensuring authorization is received to proceed with the recovery plan.

Notify removal activities **[Ref 5, Page 6]**

Where recovery of resources is likely to impact other in-use specific resources or specific services, this function is responsible for providing appropriate notification of the recovery proposal.

Create Removal Plan **[Ref 5, Page 6]**

Where appropriate recovery plans are not available this function is responsible for developing appropriate recovery plans.

Execute Recovery Plan **[Ref 5, Page 6]**

This function is responsible for follow recovery plans specified by the supplier/partner, or follow recovery plans developed by the service provider.

When recovered, the specific resources will be marked as unallocated. **AM**

Update CR Status **[Ref 5, Page 6]**

When recovered, the specific resources will be marked as unallocated.

4.4.9 Supporting Evidence References (Works Cited)

[Ref 1] < Allocate & Install Resource .pdf>

[Ref 2] < Close Resource Order .pdf>

[Ref 3] < Configure and Activate Resource .pdf>

[Ref 4] < Issue Resource Order .pdf>

[Ref 5] < Recover Resource.pdf >

[Ref 6] < Report Resource Provisioning .pdf>

[Ref 7] < Test Resource.pdf>

[Ref 8] < Track and Manage Resource Provisioning.pdf>

[Ref 9] < NSN SDU Network Change Management Process Ver 2.0.pdf>

4.4.10 Summary of Level 3 Scores

Table 4.4 Level 2: 1.1.3.2 - Resource Provisioning Conformance Scores

Level 2: 1.1.3.2 - Resource Provisioning [8/8]		
Level 3 Process	**Level 4 Process**	**L4/L3 Process Score**
1.1.3.2.1 - Allocate & Install Resource		**4.80**
	1.1.3.2.1.1 - Determine Resource Availability	50%
	1.1.3.2.1.2 - Reserve Resource	100%
	1.1.3.2.1.3 - Release Resource	100%
	1.1.3.2.1.4 - Allocate Resource	100%
	1.1.3.2.1.5 - Install and Commission Resource	100%
1.1.3.2.2 - Configure & Activate Resource		**5.00**
	1.1.3.2.2.1 - Configure Resource	100%
	1.1.3.2.2.2 - Implement Resource	100%
	1.1.3.2.2.3 - Activate Resource	100%
1.1.3.2.3 - Test Resource		**5.00**
	1.1.3.2.3.1 - Test Specific Resources	100%
	1.1.3.2.3.2 - Develop Test Plans	100%
	1.1.3.2.3.3 - Capture Test Results	100%
1.1.3.2.5 - Track & Manage Resource Provisioning		**4.75**
	1.1.3.2.5.1 - Coordinate Resource Provisioning Activity	100%
	1.1.3.2.5.2 - Track Resource Provisioning Activity	100%
	1.1.3.2.5.3 - Manage Resource Provisioning Activity	100%
	1.1.3.2.5.4 - Update Resource Repository	50%
1.1.3.2.6 - Report Resource Provisioning		**5.00**
	1.1.3.2.6.1 - Monitor Resource Order Status	100%
	1.1.3.2.6.2 - Distribute Resource Order Notification	100%
	1.1.3.2.6.3 - Distribute Resource Provisioning Reports	100%
1.1.3.2.7 - Close Resource Order		**5.00**
1.1.3.2.8 - Issue Resource Orders		**5.00**
	1.1.3.2.8.1 - Assess Resource Request	100%
	1.1.3.2.8.2 - Create Resource Orders	100%
	1.1.3.2.8.3 - Mark Resource Order for Special Handling	100%
1.1.3.2.9 - Recover Resource		**4.75**
	1.1.3.2.9.1 - Develop Resource Recovery Plan	25%
	1.1.3.2.9.2 - Provide Resource Recovery Proposal Notification	100%
	1.1.3.2.9.3 - Request Resource Recovery Authorization	100%
	1.1.3.2.9.4 - Commence Resource Recovery	100%
	1.1.3.2.9.5 - Complete Resource Recovery	100%
	1.1.3.2.9.6 - Recover Specific Resource	100%

4.5 L2: Resource Trouble Management

eTOM Description

Resource Trouble Management processes are responsible for the management of troubles associated with specific resources. The objectives of these processes are to efficiently and effectively manage reported resource trouble, isolate the root cause and act to resolve the resource trouble.

Responsibilities of the Resource Trouble Management processes include, but are not limited to:

· Detecting, analyzing, managing and reporting on resource alarm event notifications;

· Initiating and managing resource trouble reports;

· Performing resource trouble localization analysis;

· Correcting and resolving resource trouble;

· Reporting progress on resource trouble reports to other processes;

· Assigning & tracking resource trouble testing and repair activities; and

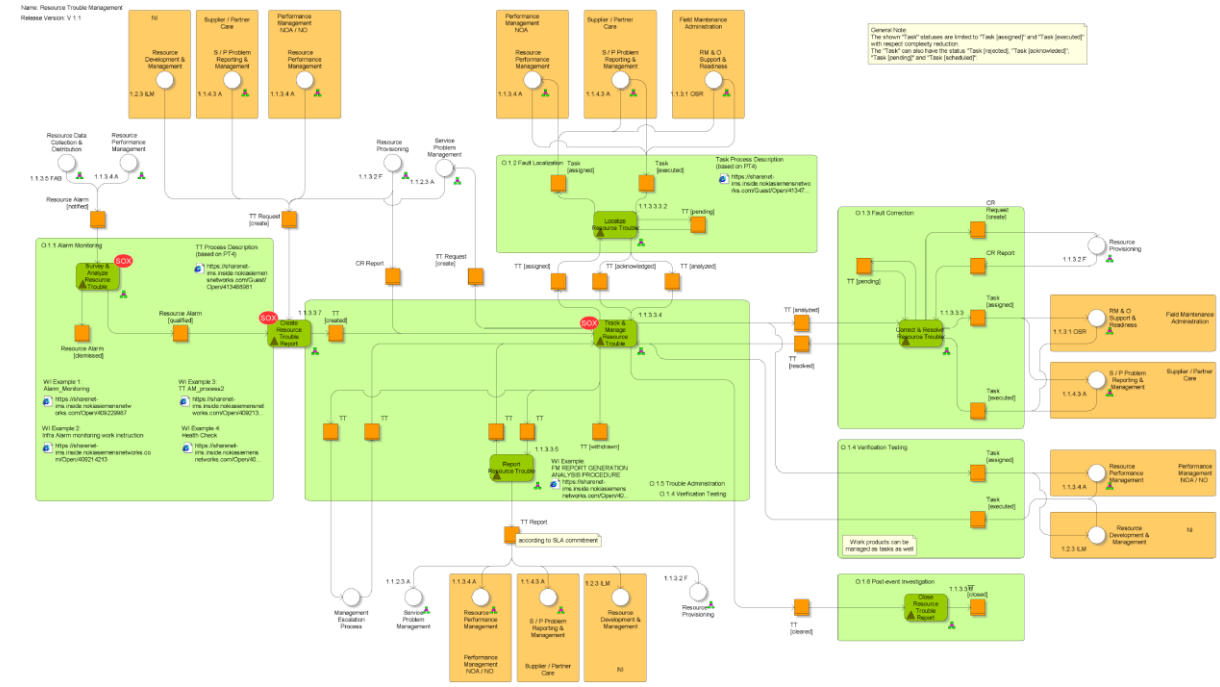
· Managing resource trouble jeopardy conditions.

On one hand, resource troubles may relate to Problems in the Service domain and therefore also potentially in the customer domain. On the other hand, they may relate to specific resource failures or performance degradations, which are caused by resource faults.

As such, the Resource Trouble Management processes work with specific resource alarm event notifications received from Resource Data Collection & Distribution, specific resource performance notifications from Resource Performance Management, and potential specific resource trouble notifications from Service Problem Management processes.

Resource Trouble Management processes perform analysis, decide on the appropriate actions/responses and carry them out with the intent of restoring normal operation on specific resources.

However these activities need to interact with the Service Problem Management processes, as the latter have a view on service impact. Resource Trouble Management processes are responsible for informing Service Problem Management of any potential service problems. Where the original report arose as a result of service problems, the Resource Trouble Management processes may be coordinated by Service Problem Management processes.



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4.5.1 L3: Survey & Analyze Resource Trouble

Brief Description

Monitor resource alarm event notifications and manage resource alarm event records in real-time

Extended Description

The objective of the Survey & Analyze Resource Trouble processes is to monitor resource alarm event notifications and manage resource alarm event records in real-time.

Responsibilities of the Survey & Analyze Resource Trouble processes include, but are not limited to:

· Detecting and collecting resource alarm event notifications; A

Wait for Alarm Suppressions within timeframe [Ref 6, Page 7]

This function is responsible to check for an intermittent alarm, the alarm is monitored for few minutes (based on agreement) and if it does not clear within this time (Reason Intermittent Alarms), analysis & basic trouble shooting is Initiated by the monitoring team.

· Initiating and managing resource alarm event records; AM

Wait for Alarm Suppressions within timeframe [Ref 6, Page 7]

This function is responsible to check for an intermittent alarm, the alarm is monitored for few minutes (based on agreement) and if it does not clear within this time (Reason Intermittent Alarms), analysis & basic trouble shooting is Initiated by the monitoring.

Dismiss Resource Alarm [Ref 6, Page 6]

This function checks if the alarm clears within the defined timeframe, if so it is considered to be intermittent alarm and is hence dismissed.

· Performing resource alarm event notification localization analysis; **AM**

Distribute Resource Trouble Report [Ref 5, Page6]

· Correlating and filtering resource alarm event records; **AM**

Apply correlation and filtering for false alarms [Ref 6, Page9]

This Function applies correlation and filtering to localise the problem and severity of the problem.

· Reporting resource alarm event record status changes to other processes; and **AM**

Distribute Resource Trouble Report [Ref 5, Page6]

· Managing resource alarm event record jeopardy conditions. **AM**

Emergency Informative Process **[Ref 6, Page 6]**

This Function checks if Emergency process needs to invoke based on severity of the fault and the affected network.

Resource alarm event notification analysis encompasses the identification of the resource alarm event in terms of reporting entity and nature of the resource alarm event. It will then analyze the resource alarm events based on a number of criteria and then suppress redundant, transient or implied resource alarm events by means of filtering and correlation. It includes the notification of new resource alarm event records, or status changes of previously reported resource alarm event records, as well as abatement messages when resource alarm event records have been cleared. **AM**

TT Categorization & Severity Levels **[Ref 9, Page 31]**

The analysis will correlate resource alarm event notifications to planned outage notifications to remove false resource alarm event notifications arising as a result of the planned outage activity. **AM**

Verify if Resource Alarm caused by Planned Works **[Ref 6, Page 9]**

This Function checks on the Monitoring tool if this alarm results from a planned activity. In case of alarm due to a planned activity, AM Team waits till end of planned outage window and if alarm clears, the process ends here. If alarm does not clear after the planned outage window, the TT process is initiated.

These processes may determine that a resource alarm event notification may represent a service impacting condition. In these circumstances this process is responsible for indicating a potential service problem to the Service Problem Management processes. As a part of this indication this process is responsible for identifying the impacted service instances associated with the resource instances presenting alarm event notifications and passing this information to the Service Problem Management processes. **AM**

Verify if Resource Alarm caused by Planned Works **[Ref 6, Page 6]**

This Function checks on the Monitoring tool if this alarm results from a planned activity. In case of alarm due to a planned activity, AM Team waits till end of planned outage window and if alarm clears, the process ends here. If alarm does not clear after the planned outage window, the TT process is initiated.

Resource alarm event record correlation and filtering encompasses the correlation of redundant, transient or implied resource alarm event notifications with a specific “root cause” resource alarm event notification and associated resource alarm event record. **AM**

Apply correlation and filtering for false alarms **[Ref 6, Page 6]**

This Function applies correlation and filtering to localise the problem and severity of the problem.

Alarm Management Process **[Ref 9, Page 9]**

The Survey & Analyze Resource Trouble processes might trigger a well-defined action based on specific resource alarm event notification information as well as the non-arrival of resource alarm event notification information after a specific time interval has elapsed. **AM**

Verify if Resource Alarm caused by Planned Works **[Ref 6, Page 6]**

This Function checks on the Monitoring tool if this alarm results from a planned activity. In case of alarm due to a planned activity, AM Team waits till end of planned outage window and if alarm clears, the process ends here. If alarm does not clear after the planned outage window, the TT process is initiated.

Alarm Management Process **[Ref 9, Page 9]**

These processes are also responsible for monitoring and triggering the appropriate action when a resource alarm event record is not cleared within a pre-defined period of time.**AM**

Verify if Resource Alarm caused by Planned Works **[Ref 6, Page 6]**

This Function checks on the Monitoring tool if this alarm results from a planned activity. In case of alarm due to a planned activity, AM Team waits till end of planned outage window and if alarm clears, the process ends here. If alarm does not clear after the planned outage window, the TT process is initiated.

4.5.2 L3: Localize Resource Trouble

Brief Description

Identify the root cause of the specific resource trouble

Extended Description

The objective of the Localize Resource Trouble processes is to identify the root cause of the specific resource trouble. These processes are invoked by the Track & Manage Resource Trouble processes.

The responsibilities of these processes include, but are not limited to:

·Verifying whether the resource configuration matches the appropriate service features; **AM**

Verify Resource Trouble Report **[Ref 4, Page 8]**

This Function checks if all information provided in Trouble Ticket is correct and complete to perform fault localisation.

Work Flow Description **[Ref 10, Page 11]**

Fault Management Responsibility Matrix **[Ref 10, Page 17]**

·Performing diagnostics against the specific resources;· **AM**

Perform Analysis **[Ref 4, Page 11]**

This Function performs multiple diagnostics and correlations to identify the root cause of the fault.

Work Flow Description **[Ref 10, Page 11]**

·Running tests against the specific resources; **AM**

Perform Analysis **[Ref 4, Page11]**

This Function performs multiple diagnostics and correlations to identify the root cause of the fault.

·Starting and stopping audits against specific resources; and **AM**

·Scheduling routine testing of the specific resources. **AM**

Perform Analysis **[Ref 4, Page11]**

This Function performs multiple diagnostics and correlations to identify the root cause of the fault.

Technical Support Required **[Ref 4, Page 12]**

The Localize Resource Trouble processes will make the results of the root cause analysis available to other processes. The Localize Resource Trouble processes will update the open resource trouble report, as required during the assessment, and when the root cause has been identified. **AM**

Develop solution **[Ref 4, Page 7]**

This function is to develop a solution to rectify the fault if the solution is not available.

Work Flow Description **[Ref 10, Page 11]**

When the process is complete the Localize Resource Trouble processes will notify the Track & Manage Resource Trouble processes. **AM**

4.5.3 L3: Correct & Resolve Resource Trouble

Brief Description

Restore or replace resources that have failed as efficiently as possible

Extended Description

The objective of the Correct & Resolve Resource Trouble processes is to restore or replace resources that have failed as efficiently as possible. **AM**

Based on the nature of the resource failure leading to the associated resource alarm event notification, automatic restoration procedures might be triggered. Manual restoration activity is assigned to the Correct & Resolve Resource Trouble processes from the Track & Manage Resource Trouble processes. **AM**

Acknowledge Resource Trouble Report **[Ref 3, Page 6]**

This function acknowledges the Trouble Ticket and accepts it. Acknowledge means the task assigned is initiated and the SLA will be measured from the acknowledgement time.

Depending on the nature of the specific resource failure, these processes may possibly repair or replace the failed unit or specific resource. These processes are also responsible for isolating a unit with a fault and managing the redundant resource units (e.g. hot standby). **M**

Determine required restoration activity **[Ref 3, Page 6]**

This Function identifies the required procedures and restoration activities.

Perform Repair & Restoration **[Ref 3, Page 6]**

This Function executes the repair and restoration procedures/activities to restore the affected network element.

For large resource failures requiring extensive repair and/or replacement activity to restore normal operation, these processes will attempt to implement work-arounds to recover the specific resource operation. In these circumstances, recover of normal operation may require invocation of the Support Resource Trouble Management processes. **AM**

Perform Repair & Restoration **[Ref 3, Page 6]**

This Function executes the repair and restoration procedures/activities to restore the affected network element.

Work Flow Description **[Ref 10, Page 11]**

They will also report successful restoration of normal operation, restoration through temporary work-arounds or an unsuccessful attempt at restoration to Track & Manage Resource Trouble through updates to the associated resource trouble report. **AM**

Perform Repair & Restoration **[Ref 3, Page 6]**

This Function executes the repair and restoration procedures/activities to restore the affected network element.

Work Flow Description **[Ref 10, Page 11]**

Verification Testing **[Ref 8, Page 5]**

This Function run required tests to check if the effected network element is restored to the normal state and the fault is fully resolved.

Create & Assign Task **[Ref 3, Page 9]**

This Function is to request creation of Configuration Request if some configuration changes are needed to rectify the fault.

4.5.4 L3: Track & Manage Resource Trouble

Brief Description

Ensure testing, repair and restoration activities are assigned, coordinated and tracked efficiently, and that escalation is invoked as required for any open resource trouble reports in jeopardy

Extended Description

The objective of the Track & Manage Resource Trouble is to ensure testing, repair and restoration activities are assigned, coordinated and tracked efficiently, and that escalation is invoked as required for any open resource trouble reports in jeopardy. Responsibilities of these processes include, but are not limited to:

·Initiating first-in testing using automated remote testing capabilities; **AM**

Verification Testing **[Ref 8, Page 5]**

This Function run required tests to check if the effected network element is restored to the normal state and the fault is fully resolved.

Work Flow Description **[Ref 10, Page 11]**

·Adding additional information to an open resource trouble report based on the first-in testing; **AM**

Update overall Resource Trouble Resolution Description **[Ref 5, Page 6]**

This function Updates the information in Trouble Ticket and notify to different stake holders.

·Scheduling, assigning and coordinating repair and restoration activities; **AM**

Schedule Repair & Restoration **[Ref 7, Page 7]**

This Function is to schedule the repair and restoration process as per the SLA.

Assign Repair & Restoration **[Ref 7, Page 6]**

This function is to assign the task of repair and restore to the correct resolving group.

Work Flow Description **[Ref 10, Page 11]**

·Initiate any final testing to confirm clearance of the service problem; **AM**

Verification Testing **[Ref 8, Page 5]**

This Function performs the final check before updating the Trouble Ticket status to clear.

·Undertake necessary tracking of the execution progress; **AM**

·Modifying information in an existing resource trouble report based on assignments; **AM**

Update overall Resource Trouble Resolution Description **[Ref 5, Page 6]**

This function Updates the information in Trouble Ticket and notify to different stake holders.

Work Flow Description **[Ref 10, Page 11]**

·Modifying the resource trouble report status; **AM**

Update overall Resource Trouble Resolution Description [Ref 5, Page 6]

This function Updates the information in Trouble Ticket and notify to different stake holders.

Work Flow Description [Ref 10, Page 11]

·Canceling a resource trouble report when the specific trouble was related to a false alarm event; and **AM**

Work Flow Description [Ref 10, Page 11]

·Monitoring the jeopardy status of open resource trouble reports, and escalating resource trouble reports as necessary. **AM**

Work Flow Description [Ref 10, Page 11]

These processes will co-ordinate all the actions necessary in order to guarantee that all tasks are finished at the appropriate time and in the appropriate sequence. **AM**

Work Flow Description [Ref 10, Page 11]

The Track & Manage Resource Trouble processes are responsible for engaging external suppliers in correction and recovery activities when higher level expertise and/or higher level support is required to resolve the resource trouble. This engagement can be linked to the priority of the resource trouble report, and could occur automatically for highest priority resource trouble reports. **AM**

Work Flow Description [Ref 10, Page 11]

Assign Repair & Restoration [Ref 7, Page 6]

This function is to assign the task of repair and restore to the correct resolving group. **AM**

Work Flow Description [Ref 10, Page 11]

The Track & Manage Resource Trouble processes will also inform the Close Resource Trouble processes by modifying the resource trouble report status to cleared when the resource trouble has been resolved. **AM**

Update overall Resource Trouble Resolution Description [Ref 5, Page 6]

This function Updates the information in Trouble Ticket and notify to different stake holders.

4.5.5 L3: Report Resource Trouble

Brief Description

Monitor the status of resource trouble reports, provide notifications of any changes and provide management reports

Extended Description

The objective of the Report Resource Trouble processes is to monitor the status of resource trouble reports, provide notifications of any changes and provide management reports.

These processes are responsible for continuously monitoring the status of resource trouble reports and managing notifications to processes and other parties registered to receive notifications of any status changes, for example, Resource Performance Management and Service Quality Management. Notification lists are managed and maintained by the Support Resource Trouble Management processes. **AM**

Distribute Resource Trouble Report **[Ref 5, Page 6]**

AM

These processes record, analyze and assess the resource trouble report status changes to provide management reports and any specialized summaries of the efficiency and effectiveness of the overall Resource Trouble Management process. These specialized summaries could be specific reports required by specific audiences. **AM**

Distribute Resource Trouble Report **[Ref 5, Page 6]**

. **AM**

Compile all info related to Resource Trouble **[Ref 5, Page 6]**

This Function includes the collection of information like Trouble Ticket status, Trouble Ticket information, Time stamps, Root cause, Solution, resolver group etc. into the trouble ticket.

These processes will make the necessary reports about the resource trouble that occurred, the root cause and the activities carried out for restoration. **AM**

Compile all info related to Resource Trouble **[Ref 5, Page 6]**

This Function includes the collection of information like Trouble Ticket status, Trouble Ticket information, Time stamps, Root cause, Solution, resolver group etc. into the trouble ticket. **AM**

Distribute Resource Trouble Report **[Ref 5, Page 6]**

The objective of the Report Resource Trouble processes is to monitor the status of resource trouble reports, provide notifications of any changes and provide management reports. **AM**

4.5.6 L3: Close Resource Trouble Report

Brief Description

Close a resource trouble report when the resource problem has been resolved

Extended Description

The objective of the Close Service Trouble Report processes is to close a service trouble report when the service problem has been resolved.

These processes monitor the status of all open service trouble reports, and recognize that a service trouble report is ready to be closed when the status is changed to cleared. **AM**

Update overall Resource Trouble resolution description **[Ref 1, Page 4]**

This function updates the information in Trouble Ticket and notifies to the applicable stake holders **AM**

Work Flow Description **[Ref 10, Page 11]**

Close Resource Trouble Report **[Ref 1, Page 4]**

This Function changes the Trouble Ticket status to "close state" once the fault resolved and the network is in normal state. **AM**

4.5.7 L3: Create Resource Trouble Report

Brief Description

Create a new resource trouble report

Extended Description

The objective of the Create Resource Trouble Report process is to create a new resource trouble report.

Create Resource Trouble Report from record **[Ref 2, Page 7]**

This function creates a Trouble ticket with all the required information.

Work Flow Description **[Ref 10, Page 11]**

A new resource trouble report may be created as a result of resource alarm event notification analysis, and subsequent creation of new resource alarm event records, undertaken by the Survey & Analyze Resource Trouble processes, or at the request of analysis undertaken by other processes in the RM&O, SM&O (in particular a Service Trouble Report can generate one or more Resource Trouble Reports) or S/PRM layers which detect that some form of failure has occurred for which resource restoration activity is required to restore normal operation. **AM**

Verify existing Resource Trouble Report **[Ref 2, Page 7]**

This Function verifies all the information in the Trouble Ticket is complete and correct. **AM**

Verify if time to re-open exceed **[Ref 2, Page 7]**

This Function verifies if trouble ticket for a resolved issue can be reopened if the fault reoccurred within few hours of resolution of the trouble ticket. The trouble Ticket can be reopened if the status is resolved but not closed. **AM**

Create Resource Trouble Report from record **[Ref 2, Page 7]**

This function creates a Trouble ticket with all the required information

Re-open Resource Trouble Report **[Ref 2, Page 7]**

This function re-opens an existing Trouble Ticket if the problem is not resolved or appears again before full closure of the Trouble Ticket.

If the resource trouble report is created as a result of a notification or request from processes other than the Survey & Analyze Resource Trouble processes, the Create Resource Trouble Report processes are responsible for converting the received information into a form suitable for the Resource Trouble Management processes, and for requesting additional information if required. **AM**

Verify existing Resource Trouble Report **[Ref 2, Page 7]**

This Function verifies all the information in the Trouble Ticket is complete and correct. **AM**

Verify if time to re-open exceed **[Ref 2, Page 7]**

This Function verifies if trouble ticket for a resolved issue can be reopened if the fault reoccurred within few hours of resolution of the trouble ticket. The trouble Ticket can be reopened if the status is resolved but not closed.

Create Resource Trouble Report from record **[Ref 2, Page 7]**

This function creates a Trouble ticket with all the required information

Re-open Resource Trouble Report **[Ref 2, Page 7]**

This function re-opens an existing Trouble Ticket if the problem is not resolved or appears again before full closure of the Trouble Ticket.

These processes will make estimates of the time to restore resource which will be included in the new resource trouble report so that other processes can gain access to this information. **A**

Work Flow Description **[Ref 10, Page 11]**

4.5.8 Supporting Evidence References (Works Cited)

[Ref 1] < Close Resource Trouble Report Extended.pdf>

[Ref 2] < Create Resource Trouble Report Extended.pdf>

[Ref 3] < Correct & Resolve Resource Trouble Extended.pdf>

[Ref 4] < Localize Resource Trouble Extended.pdf>

[Ref 5] < Report Resource Trouble Extended.pdf>

[Ref 6] < Survey & Analyse Resource Trouble Extended.pdf>

[Ref 7] < Track & Manage Resource Trouble Extended.pdf>

[Ref 8] < Verification Testing Extended.pdf>

[Ref 9] < Emergency Informative Process Extended.pdf>

[Ref 10] < NSN SDU Resource Trouble Management Process_ Ver 2 0.pdf>

4.5.9 Summary of Level 3 Scores

Table 4.5 Level 2: 1.1.3.3 - Resource Trouble Management Conformance Scores

Level 2: 1.1.3.3 - Resource Trouble Management [7/7]		
Level 3 Process	**Level 4 Process**	**L4/L3 Process Score**
1.1.3.3.1 - Survey & Analyze Resource Trouble		**4.00**
	1.1.3.3.1.1 - Manage Resource Alarm Event Notifications	50%
	1.1.3.3.1.2 - Filter Resource Alarm Event Notifications	100%
	1.1.3.3.1.3 - Correlate Resource Alarm Event Notifications	25%
	1.1.3.3.1.4 - Abate Alarm Event Records	50%
	1.1.3.3.1.5 - Trigger Defined Action	25%
1.1.3.3.2 - Localize Resource Trouble		**4.08**
	1.1.3.3.2.1 - Verify Resource Configuration	25%
	1.1.3.3.2.2 - Perform Specific Resource Trouble Diagnostics	100%
	1.1.3.3.2.3 - Perform Specific Resource Trouble Tests	50%
	1.1.3.3.2.4 - Stop And Start Audit On Resources	50%
	1.1.3.3.2.5 - Schedule Routine Resource Trouble Tests	50%
	1.1.3.3.2.6 - Notify T&M Root Cause Resource Trouble	50%
1.1.3.3.3 - Correct & Resolve Resource Trouble		**3.90**
	1.1.3.3.3.1 - Repair / Replace Failed Resource	25%
	1.1.3.3.3.2 - Isolate Unit with Fault	50%
	1.1.3.3.3.3 - Manage Standby Resource Units	50%
	1.1.3.3.3.4 - Implement Resource Trouble Work Arounds	50%
	1.1.3.3.3.5 - Invoke Support Resource Trouble Management Processes	50%
1.1.3.3.4 - Track & Manage Resource Trouble		**4.00**
	1.1.3.3.4.1 - Coordinate Resource Trouble	50%
	1.1.3.3.4.2 - Perform First in Testing	50%
	1.1.3.3.4.3 - Cancel Resource Trouble	50%
	1.1.3.3.4.4 - Escalate/End Resource Trouble	50%
	1.1.3.3.4.5 - Perform Final Test	50%
	1.1.3.3.4.6 - Engaging External Suppliers	50%
1.1.3.3.5 - Report Resource Trouble		**4.00**
	1.1.3.3.5.1 - Monitor Resource Trouble	50%
	1.1.3.3.5.2 - Distribute Notifications	50%
	1.1.3.3.5.3 - Distribute Management Reports & Summaries	50%
1.1.3.3.6 - Close Resource Trouble Report		**50%**
1.1.3.3.7 - Create Resource Trouble Report		**4.00**
	1.1.3.3.7.1 - Generate Resource Trouble	50%
	1.1.3.3.7.2 - Convert Report To Resource Trouble Format	50%
	1.1.3.3.7.3 - Estimate Time For Restoring Resource	50%

4.6 L2: Resource Performance Management

eTOM Description

Brief Description

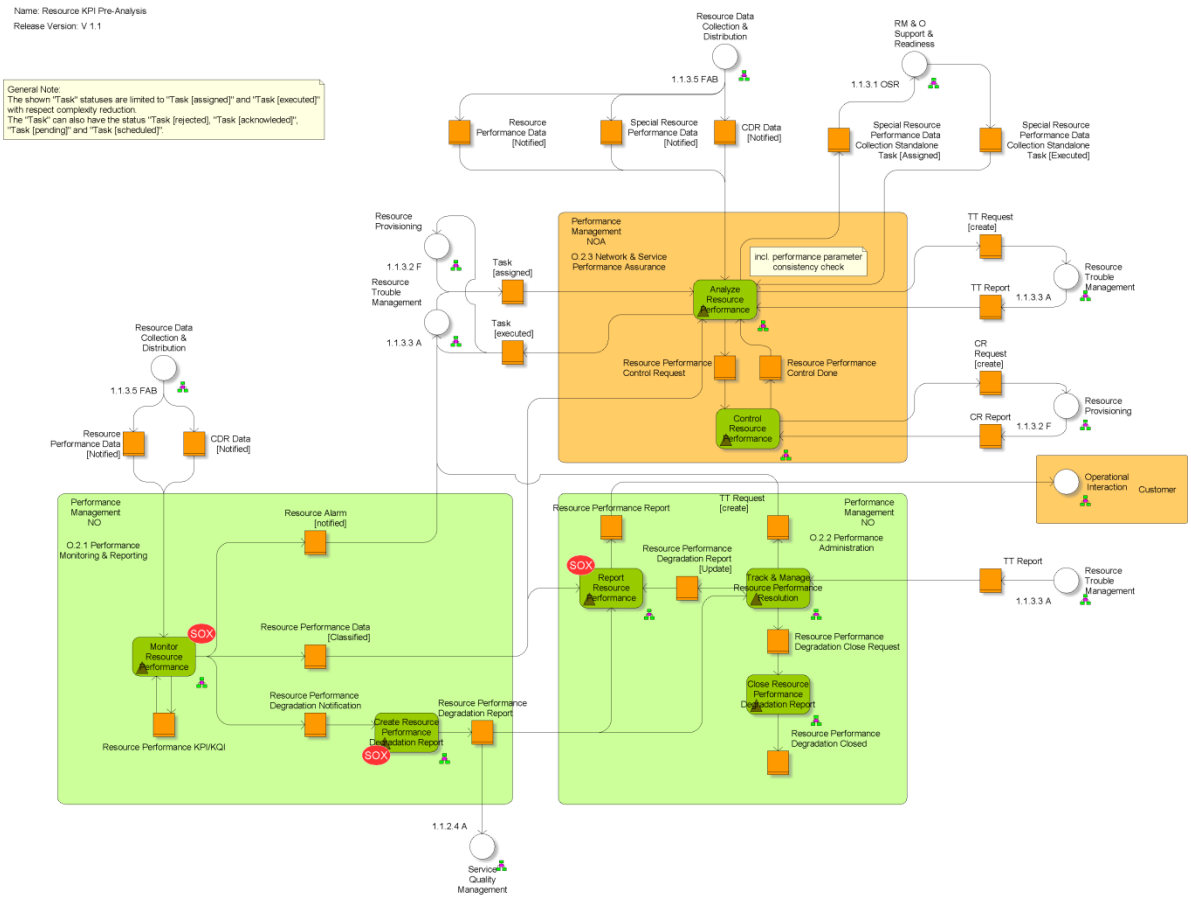
Managing, tracking, monitoring, analyzing, controlling and reporting on the performance of specific resources

Extended Description

Resource Performance Management processes encompass managing, tracking, monitoring, analyzing, controlling and reporting on the performance of specific resources. They work with basic information received from the Resource Data Collection & Distribution processes.

If the analysis identifies a resource performance violation or a potential service performance violation, information will be passed to Resource Trouble Management and/or Service Quality Management as appropriate. The latter processes are responsible for deciding on and carrying out the appropriate action/response. This may include requests to the Resource Performance Management processes to install controls to optimize the specific resource performance.

The Resource Performance Management processes will continue to track the resource performance problem, ensuring that resource performance is restored to a level required to support services.



4.6.1 L3: Monitor Resource Performance

Brief Description

Monitor received resource performance information and undertakes first-in detection.

Extended Description

The objective of the Monitor Resource Performance processes is to monitor received resource performance information and undertake first-in detection.

The responsibilities of the processes include, but are not limited to:

· Undertaking the role of first in detection by monitoring the received specific resource performance data; **AM**

Evidence: - Start Filtering **(Ref: [Page 6, Evidence 2])**

Start filtering network elements which have exceeded KPI thresholds for

A: PM TT Tracker (elements which have been processed the previous day)

B: TTs (TTs been active in the last 24 hours)

C: CR (CRs carried out within the last 24 hours)

D: Alarms (existing alarms are active/been in last 24 hours)

E: Known Exceptions (known problems, which have no solution, and agreed to be not considered in KPIs)

· Comparing the received specific resource performance data to performance standards set for each specific resource (available from the Resource Inventory); **AM**

Evidence: - Start Filtering **(Ref: [Page 6, Evidence 2])**

Start filtering network elements which have exceeded KPI thresholds by comparing for

A: PM TT Tracker (elements which have been processed the previous day)

B: TTs (TTs been active in the last 24 hours)

C: CR (CRs carried out within the last 24 hours)

D: Alarms (existing alarms are active/been in last 24 hours)

E: Known Exceptions (known problems, which have no solution, and agreed to be not considered in KPIs)

· Assessing and recording received specific resource performance data which is within tolerance limits for performance standards, and for which continuous monitoring and measuring of specific resource performance is required; **AM**

Evidence: - Start Filtering **(Ref: [Page 6, Evidence 2])**

Start filtering network elements which have exceeded KPI thresholds for

A: PM TT Tracker (elements which have been processed the previous day)

B: TTs (TTs been active in the last 24 hours)

C: CR (CRs carried out within the last 24 hours)

D: Alarms (existing alarms are active/been in last 24 hours)

E: Known Exceptions (known problems, which have no solution, and agreed to be not considered in KPIs)

· Recording the results of the continuous monitoring for reporting through the Report Resource Performance processes; **AM**

Evidence: - Start Filtering **(Ref: [Page 5, Evidence 2])**

Start filtering network elements which have exceeded KPI thresholds for

A: PM TT Tracker (elements which have been processed the previous day)

B: TTs (TTs been active in the last 24 hours)

C: CR (CRs carried out within the last 24 hours)

D: Alarms (existing alarms are active/been in last 24 hours)

E: Known Exceptions (known problems, which have no solution, and agreed to be not considered in KPIs)

Create report **(Ref: [Page 6, Evidence 3])**

Create the scheduled reports.

· Detecting performance threshold violations which represent specific resource failures due to abnormal performance; **AM**

Evidence: - Check PM TT Tracker **(Ref: [Page 5, Evidence 2])**

Filter and Check for problems.

· Passing information about resource failures due to performance threshold violations to Resource Trouble Management to manage any necessary restoration activity as determined by that process; **AM**

Evidence: - Start Filtering **(Ref: [Page 5, Evidence 2])**

Start filtering network elements which have exceeded KPI thresholds for

A: PM TT Tracker (elements which have been processed the previous day)

B: TTs (TTs been active in the last 24 hours)

C: CR (CRs carried out within the last 24 hours)

D: Alarms (existing alarms are active/been in last 24 hours)

E: Known Exceptions (known problems, which have no solution, and agreed to be not considered in KPIs)

· Passing information about potential specific service performance degradations arising from specific resource degradations to Service Quality Management to manage any necessary restoration activity as determined by that process; **AM**

· Detecting performance degradation for specific resources which provide early warning of potential issues; **AM**

Evidence: - Check PM TT Tracker **(Ref: [Page 5, Evidence 2])**

Filter and Check for problems.

· Forwarding resource performance degradation notifications to other Resource Performance Management processes, which manage activities to restore normal specific resource performance; and **AM**

Work Flow Description **(Ref:** [Page 6, Evidence 6])

Evidence:-Create TT **(Ref: [Page 5, Evidence 2])**

Follow TT system instructions to Create, Assign, Submit and Acknowledge a new trouble ticket. Associate the network alarm with the Trouble Ticket (TT) for further analysis and action. Make sure the TT is properly filled in with emphasis on: correct site_id, event time, priority and work log. Note 1: As part of this activity the alarm is normally acknowledged to keep the alarm GUI clean, however in some cases it is intentionally not acknowledged in order to more easy follow the current status and behavior of the alarm e.g. Power outage or Transmission alarms. Note 2: In case of serious problems it might in practice from case to case be that the TT is actually raised at a little later stage than the process suggests i.e. communication, organisation and resolving work takes precedence. These events should however be minimised as far as possible, and the TT should be created in arrears with correct information and time stamps etc.

· Logging specific resource performance degradation and violation details within the repository in the Manage Resource Inventory processes to ensure historical records are available to support the needs of other processes. **AM**

Create report **(Ref: [Page 6, Evidence 3])**

Create the scheduled reports.

4.6.2 Report Resource Performance

Brief Description

Monitor the status of resource performance degradation reports, provide notifications of any changes and provide management reports

Extended Description

The objective of the Report Resource Performance processes is to monitor the status of resource performance degradation reports, provide notifications of any changes and provide management reports.

These processes are responsible for continuously monitoring the status of resource performance degradation reports and managing notifications to other processes in the RM&O and other layers, and to other parties registered to receive notifications of any status changes. Notification lists are managed and maintained by the Enable Resource Performance Management processes. **AM**

Resource Performance Report Generation **(Ref: [Evidence 3])**

Obtain data from data from Data collection & Distribution process

Review requests and create performance report for Performance filtering process

Consolidate Data **(Ref: [Page 6, Evidence 3])**

Creation of periodical NPO Specific scheduled report

Update Report Requirement **(Ref: [Page 6, Evidence 3])**

Update the report requirements. There is normally a standard set of report requirements (formats, durations, colour codes, size of report, different customers) - these may however may require certain "updates" based on certain customer feedback,

Distribute Report **(Ref: [Page 7, Evidence 3])**

Distribute the report to the intended customers (internal and external customers). Use defined methods (save reports to common IT servers, drives, email, etc.). Send notifications to the respected internal/external customers/departments.

Update Operator **(Ref: [Page 7, Evidence 4])**

Operator input on TTs or Customer VIPs

These processes record, analyze and assess the resource performance degradation report status changes to provide management reports and any specialized summaries of the efficiency and effectiveness of the overall Resource Performance Management process. These specialized summaries could be specific reports required by specific audiences. **AM**

Distribute Report **(Ref: [Page 7, Evidence 3])**

Distribute the report to the intended customers (internal and external customers). Use defined methods (save reports to common IT servers, drives, email, etc.). Send notifications to the respected internal/external customers/departments.

Update Operator **(Ref: [Page 8, Evidence 4])**

Operator input on TTs or Customer VIPs

4.6.3 Create Resource Performance Degradation Report

Brief Description

Create a new resource performance degradation report

Extended Description

The objective of the Create Resource Performance Degradation Report process is to create a new resource performance degradation report, modify existing resource performance degradation reports, and request cancellation of existing resource performance degradation reports.

A new resource performance degradation report may be created as a result of specific resource performance notifications undertaken by the Monitor Resource Performance processes, or at the request of analysis undertaken by other RM&O, SM&O or S/PRM processes which detect that some form of deterioration or failure has occurred requires an assessment of the specific resource performance. **AM**

Evidence:-Create TT **(Ref: [Page 5, Evidence 2])**

Follow TT system instructions to Create, Assign, Submit and Acknowledge a new trouble ticket. Associate the network alarm with the Trouble Ticket (TT) for further analysis and action. Make sure the TT is properly filled in with emphasis on: correct site_id, event time, priority and work log. Note 1: As part of this activity the alarm is normally acknowledged to keep the alarm GUI clean, however in some cases it is intentionally not acknowledged in order to more easy follow the current status and behavior of the alarm e.g. Power outage or Transmission alarms. Note 2: In case of serious problems it might in practice from case to case be that the TT is actually raised at a little later stage than the process suggests i.e. communication, organisation and resolving work takes precedence. These events should however be minimised as far as possible, and the TT should be created in arrears with correct information and time stamps etc.

If the resource performance degradation report is created as a result of a notification or request from processes other than Monitor Resource Performance processes, the Create Resource Performance Degradation Report processes are responsible for converting the received information into a form suitable for the Resource Performance Management processes, and for requesting additional information if required. **AM**

Evidence:-Create TT **(Ref: [Page 5, Evidence 2])**

Follow TT system instructions to Create, Assign, Submit and Acknowledge a new trouble ticket. Associate the network alarm with the Trouble Ticket (TT) for further analysis and action. Make sure the TT is properly filled in with emphasis on: correct site_id, event time, priority and work log. Note 1: As part of this activity the alarm is normally acknowledged to keep the alarm GUI clean, however in some cases it is intentionally not acknowledged in order to more easy follow the current status and behavior of the alarm e.g. Power outage or Transmission alarms. Note 2: In case of serious problems it might in practice from case to case be that the TT is actually raised at a little later stage than the process

suggests i.e. communication, organisation and resolving work takes precedence. These events should however be minimized as far as possible, and the TT should be created in arrears with correct information and time stamps etc.

4.6.4 Track & Manage Resource Performance Resolution

Brief Description

Ensure testing, repair and restoration activities are assigned, coordinated and tracked efficiently, and that escalation is invoked as required for any open resource performance degradation reports in jeopardy

Extended Description

The objective of the Track & Manage Resource Performance Resolution processes is to efficiently assign, coordinate and track specific resource performance analysis and control activities, and escalate any open resource performance degradation reports in jeopardy.

Responsibilities of these processes include, but are not limited to:

· Adding additional information to an open resource performance degradation report based on the first-in and on-going analysis; **AM**

Update Report **(Ref: [Page 6, Evidence 2])**

Update the "Resource Performance KPI/KQI" report based on "First-in" detection results. These results, are important to justify/communicate reasons or actions being carried out to resolve certain KPI performance issues. Customers will see the report, and query "what is being done to resolve/explain" the KPI issues. The Filtering results is used to resolve/explain issue in the report.

· Scheduling, assigning and coordinating analysis and specific resource performance restoration activities and/or repair activities delegated to other processes; **AM**

Evidence:-Create TT **(Ref: [Page 5, Evidence 2])**

Follow TT system instructions to Create, Assign, Submit and Acknowledge a new trouble ticket. Associate the network alarm with the Trouble Ticket (TT) for further analysis and action. Make sure the TT is properly filled in with emphasis on: correct site_id, event time, priority and work log. Note 1: As part of this activity the alarm is normally acknowledged to keep the alarm GUI clean, however in some cases it is intentionally not acknowledged in order to more easy follow the current status and behavior of the alarm e.g. Power outage or Transmission alarms. Note 2: In case of serious problems it might in practice from case to case be that the TT is actually raised at a little later stage than the process suggests i.e. communication, organisation and resolving work takes precedence. These events should however be minimised as far as possible, and the TT should be created in arrears with correct information and time stamps etc.

· Generating the respective S/P problem report creation request(s) to Initiate S/P Problem Report processes based on specific resource performance degradation reports where analysis the root cause is related to S/P products; **AM**

Work Flow Description (Ref: **[Page 6, Evidence 6])**

Evidence:-Create TT **(Ref: [Page 5, Evidence 2])**

Follow TT system instructions to Create, Assign, Submit and Acknowledge a new trouble ticket. Associate the network alarm with the Trouble Ticket (TT) for further analysis and action. Make sure the TT is properly filled in with emphasis on: correct site_id, event time, priority and work log. Note 1: As part of this activity the alarm is normally acknowledged to keep the alarm GUI clean, however in some cases it is intentionally not acknowledged in order to more easy follow the current status and behavior of the alarm e.g. Power outage or Transmission alarms. Note 2: In case of serious problems it might in practice from case to case be that the TT is actually raised at a little later stage than the process suggests i.e. communication, organisation and resolving work takes precedence. T events should however be minimised as far as possible, and the TT should be created in arrears with correct information and time stamps etc.

· Modifying information in an existing resource performance degradation report based on assignments; **AM**

.

· Modifying the resource performance degradation report status; **AM**

Update Report **(Ref: [Page 6, Evidence 2])**

Update the "Resource Performance KPI/KQI" report based on "First-in" detection results. These results, are important to justify/communicate reasons or actions being carried out to resolve certain KPI performance issues. Customers will see the report, and query "what is being done to resolve/explain" the KPI issues. The Filtering results is used to resolve/explain issue in the report.

· Canceling a resource performance degradation report when the specific request was related to a false resource failure event; and

· Monitoring the jeopardy status of open resource performance degradation reports, and escalating resource performance degradation reports as necessary. **AM**

These processes will co-ordinate all the actions necessary in order to guarantee that all tasks are finished at the appropriate time and in the appropriate sequence. **AM**

Update Report **(Ref: [Page 6, Evidence 2])**

Update the "Resource Performance KPI/KQI" report based on "First-in" detection results. These results, are important to justify/communicate reasons or actions being carried out to resolve certain KPI performance issues. Customers will see the report, and query "what is being done to resolve/explain" the KPI issues. The Filtering results is used to resolve/explain issue in the report.

Check PM TT Tracker **(Ref: [Page 6, Evidence 2])**

Filter and Check for problems.

The Track & Manage Resource Performance Resolution processes will also inform the Close Resource Performance Degradation Report processes by modifying the resource performance degradation report status to cleared when the specific resource performance issues have been resolved. **AM**

Update Report **(Ref: [Page 6, Evidence 2])**

Update the "Resource Performance KPI/KQI" report based on "First-in" detection results. These results, are important to justify/communicate reasons or actions being carried out to resolve certain KPI performance issues. Customers will see the report, and query "what is being done to resolve/explain" the KPI issues. The Filtering results is used to resolve/explain issue in the report.

4.6.5 Close Resource Performance Degradation Report

Brief Description

Close a resource performance degradation report when the resource performance has been resolved

Extended Description

The objective of the Close Resource Performance Degradation Report processes is to close a resource performance degradation report when the resource performance has been resolved.

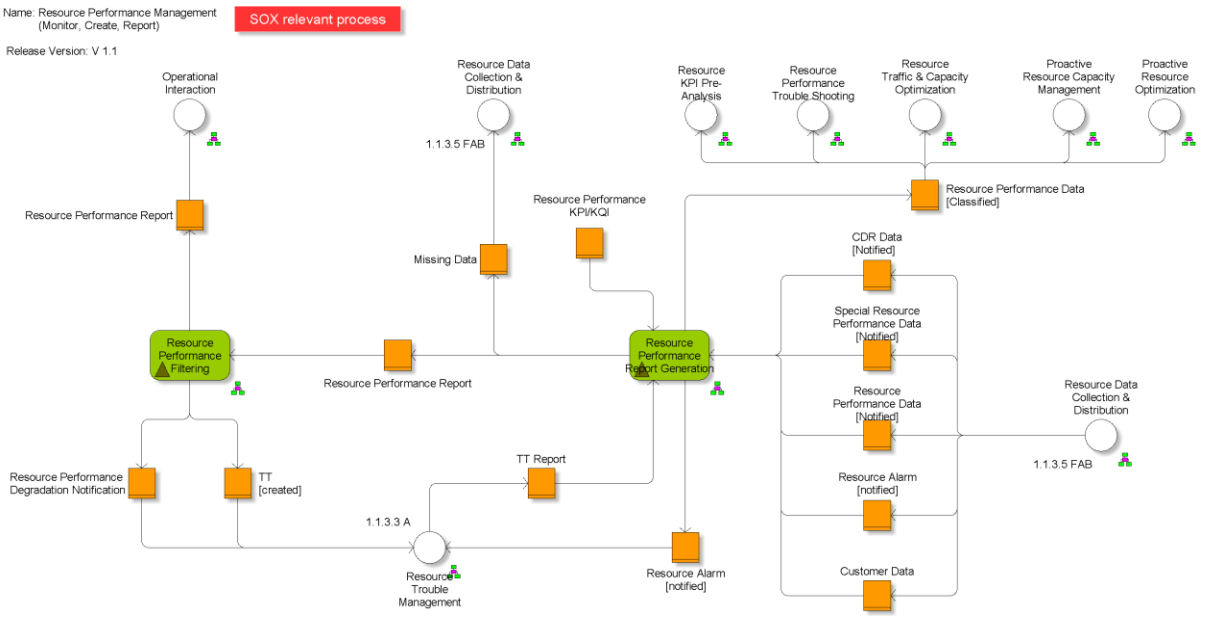
Update Report **(Ref: [Page 6, Evidence 2])**

Update the "Resource Performance KPI/KQI" report based on "First-in" detection results. These results, are important to justify/communicate reasons or actions being carried out to resolve certain KPI performance issues. Customers will see the report, and query "what is being done to resolve/explain" the KPI issues. The Filtering results is used to resolve/explain issue in the report

These processes monitor the status of all open resource performance degradation reports, and recognize that a resource performance degradation report is ready to be closed when the status is changed to cleared. **AM**

Update Report **(Ref: [Page 6, Evidence 2])**

Update the "Resource Performance KPI/KQI" report based on "First-in" detection results. These results, are important to justify/communicate reasons or actions being carried out to resolve certain KPI performance issues. Customers will see the report, and query "what is being done to resolve/explain" the KPI issues. The Filtering results is used to resolve/explain issue in the report.



4.6.6 Analyze Resource Performance

Brief Description

Analyze and evaluate the performance of specific resources

Extended Description

The objective of the Analyze Resource Performance processes is to analyze the information received from the Monitor Resource Performance process to evaluate the performance of a specific resource.

The responsibilities of the processes include, but are not limited to:

· Undertaking analysis as required on specific resource performance information received from the Monitor Resource Performance processes; **AM**

Consolidate Data **(Ref: [Page 5, Evidence 1])**

Creation of periodical Network Optimization (NPO) Resource Performance Specific scheduled report

Create NPO Specific Report **(Ref: [Page 5, Evidence 1])**

Creation of Network Optimization (NPO) Resource Performance specific report.

· Initiating, modifying and cancelling continuous performance data collection schedules for specific resources required to analyze specific resource performance. These schedules are established through requests sent to the Enable Resource Data Collection & Distribution processes; **AM**

Update Proactive Optimization Schedule **(Ref: [Page 8, Evidence 4])**

Update the proactive resource optimisation schedule

· Determining the root causes of specific resource performance degradations and violations; **AM**

Detailed Performance Analysis **(Ref: [Page 5, Evidence 4])**

Detailed Analysis of the performance issue. See NPO Service/Working Item. This activity represents a Service/Working item. The Activity is described at L5 using Work Instructions, which consider current SW/HW release and Tools used.

· Recording the results of the analysis and intermediate updates in the Resource Inventory for historical analysis and for use as required by other processes; and **AM**

· Undertaking specific detailed analysis (if the original requested came from Service Quality Management processes) to discover the root cause of service performance degradations that may be arising due to interactions between resource instances, without any specific resource instance having an unacceptable performance in its own right.

4.6.7 Control Resource Performance

Brief Description

Apply controls to resources in order to optimize the resource performance

Extended Description

The objective of the Control Resource Performance processes is to apply controls to resource instances in order to optimize the resource performance.

The responsibilities of the processes include, but are not limited to:

· Instantiating controls to attempt to restore resource instances to normal operation, at the request of Analyze Resource Performance processes. These controls may be based on established control plans, or the controls may be developed within the Control Resource Performance processes depending on circumstances. **AM**

Prepare New Detailed Plan & Change Request **(Ref: [Page 7, Evidence 4])**

Creation of correction plan based on detailed analysis recommendations

Verify Resolution **(Ref: [Page 6, Evidence 4])**

Verify improvements from troubleshooting performance optimization

· Instantiating controls to attempt to restore failed resource instances to normal operation, at the request of Resource Trouble Management or Service Quality Management processes. These controls may be based on established control plans, or the controls may be developed within the Control Resource Performance process depending on circumstances. **AM**

Update Hotspot tracker **(Ref: [Page 9, Evidence 5])**

Update the High traffic hotspot list.

Analyze Capacity Shortfall **(Ref: [Page 8, Evidence 5])**

Analyze NW Capacity issues and investigate the root cause

Update Proactive Optimization Schedule **(Ref: [Page 9, Evidence 5])**

Update the pro-active (capacity) optimization schedule

Define Upgrade Solution (Considering proactive capacity Activities) **(Ref: [Page 8, Evidence 5])**

Define the upgrade solution. Check also for parallel Proactive Capacity Management process works on the same NW Element present in Reactive. It is possible that element which appears in daily reactive capacity problems already exist with a planned solution in Proactive capacity process for solution. No need for Reactive capacity work.

Include to Proactive Capacity Optimization Schedule **(Ref: [Page 8, Evidence 5])**

Update the proactive capacity optimization schedule

New Detailed plan **(Ref: [Page 8, Evidence 5])**

Define upgrade solution

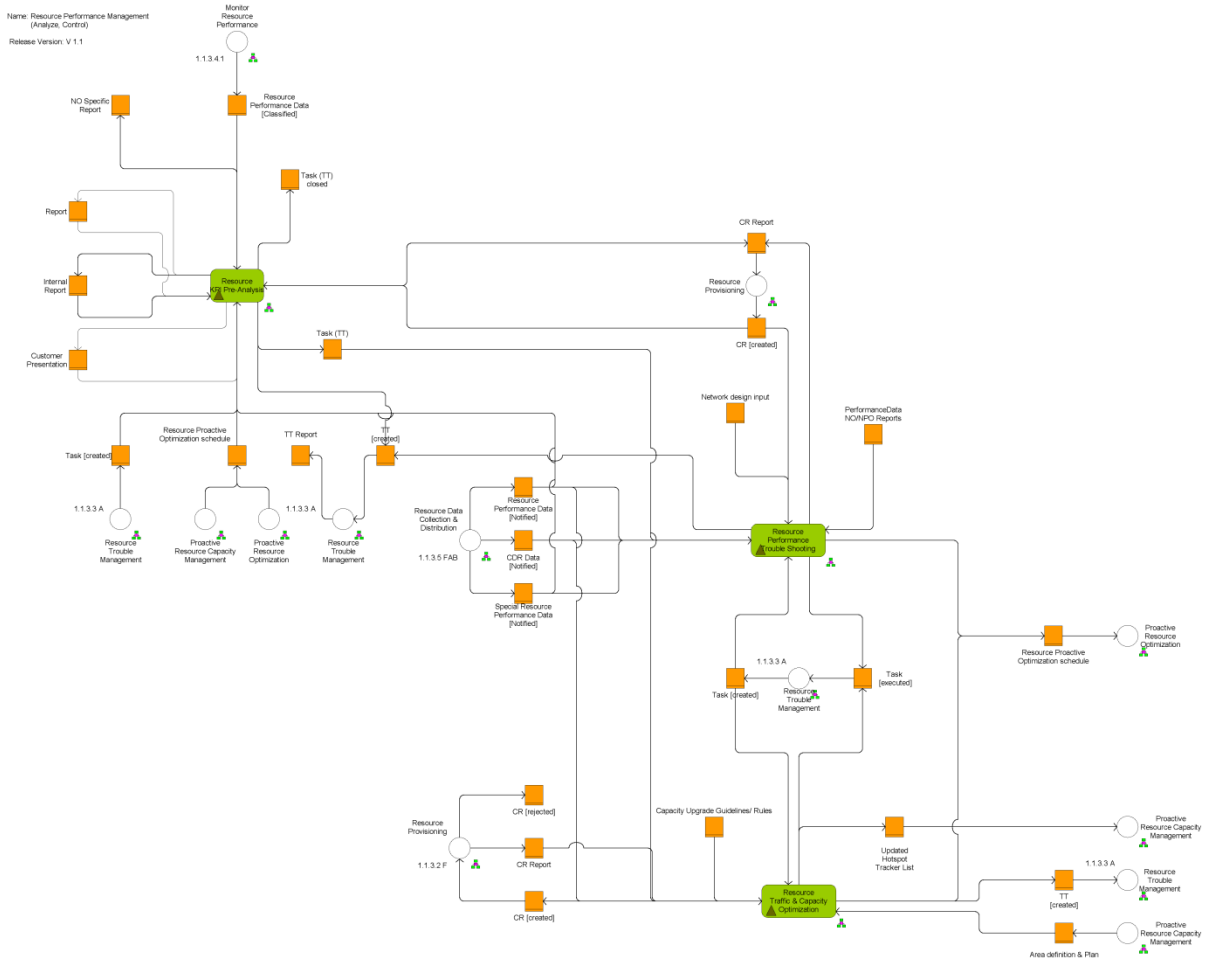
Create Configuration Request **(Ref: [Page 8, Evidence 5])**

Create Configuration Request (CR)

Verify Resolution **(Ref: [Page 8, Evidence 5])**

Verify improvements from troubleshooting capacity optimization

L4: Analyze Resource Performance, Control Resource Performance Details (NSN)



4.6.8 Supporting Evidence References (Works Cited)

[Evidence 1] <Resource KPI Pre Analysis Extended.pdf>

[Evidence 2] <Resource Performance Filtering Extended.pdf>

[Evidence 3] <Resource Performance Report Generation Extended>

[Evidence 4] <Resource Performance Trouble Shooting Extended>

[Evidence 5] <Resource Traffic & Capacity Optimization Extended>

[Evidence 6] <NSN Performance Reporting Process Ver 1 0.docx>

4.6.9 Summary of Level 3 Scores

Table 4.6 Level 2: 1.1.3.4 – Resource Performance Management Conformance Scores

Level 2: 1.1.3.4 - Resource Performance Management [7/7]		
Level 3 Process	**Level 4 Process**	**L4/L3 Process Score**
1.1.3.4.1 - Monitor Resource Performance		**4.33**
	1.1.3.4.1.1 - Manage Resource Performance Data	100%
	1.1.3.4.1.2 - Record Resource Performance Data	50%
	1.1.3.4.1.3 - Correlate Resource Performance Event Notifications	50%
1.1.3.4.2 - Analyze Resource Performance		**3.75**
	1.1.3.4.2.1 - Perform Specific Resource Performance Diagnostics	25%
	1.1.3.4.2.2 - Manage Resource Performance Data Collection Schedules	50%
1.1.3.4.3 - Control Resource Performance		**5.00**
	1.1.3.4.3.1 - Instantiate Resource Performance Controls	100%
	1.1.3.4.3.2 - Instantiate Resource Trouble Controls	100%
1.1.3.4.4 - Report Resource Performance		**4.00**
	1.1.3.4.4.1 - Monitor Resource Performance Degradation Report	50%
	1.1.3.4.4.2 - Distribute Resource Quality Management Reports & Summaries	50%
1.1.3.4.5 - Create Resource Performance Degradation Report		**4.50**
	1.1.3.4.5.1 - Generate Resource Performance Degradation Problem	100%
	1.1.3.4.5.2 - Convert Report To Resource Performance Degradation Report Format	50%
1.1.3.4.6 - Track & Manage Resource Performance Resolution		**4.86**
	1.1.3.4.6.1 - Coordinate Resource Performance	100%
	1.1.3.4.6.2 - Request S/P Performance Degradation Report Creation and Update	50%
	1.1.3.4.6.3 - Update First in Resource Testing Results	100%
	1.1.3.4.6.4 - Cancel Resource Performance Degradation Report	100%
	1.1.3.4.6.5 - Escalate/End Resource Performance Degradation Report	100%
	1.1.3.4.6.6 - Clear Resource Performance Degradation Report Status	100%
	1.1.3.4.6.7 - Engage External Resource Suppliers	100%
1.1.3.4.7 - Close Resource Performance Degradation Report		**5.00**

4.7 L2: Resource Data Collection & Distribution

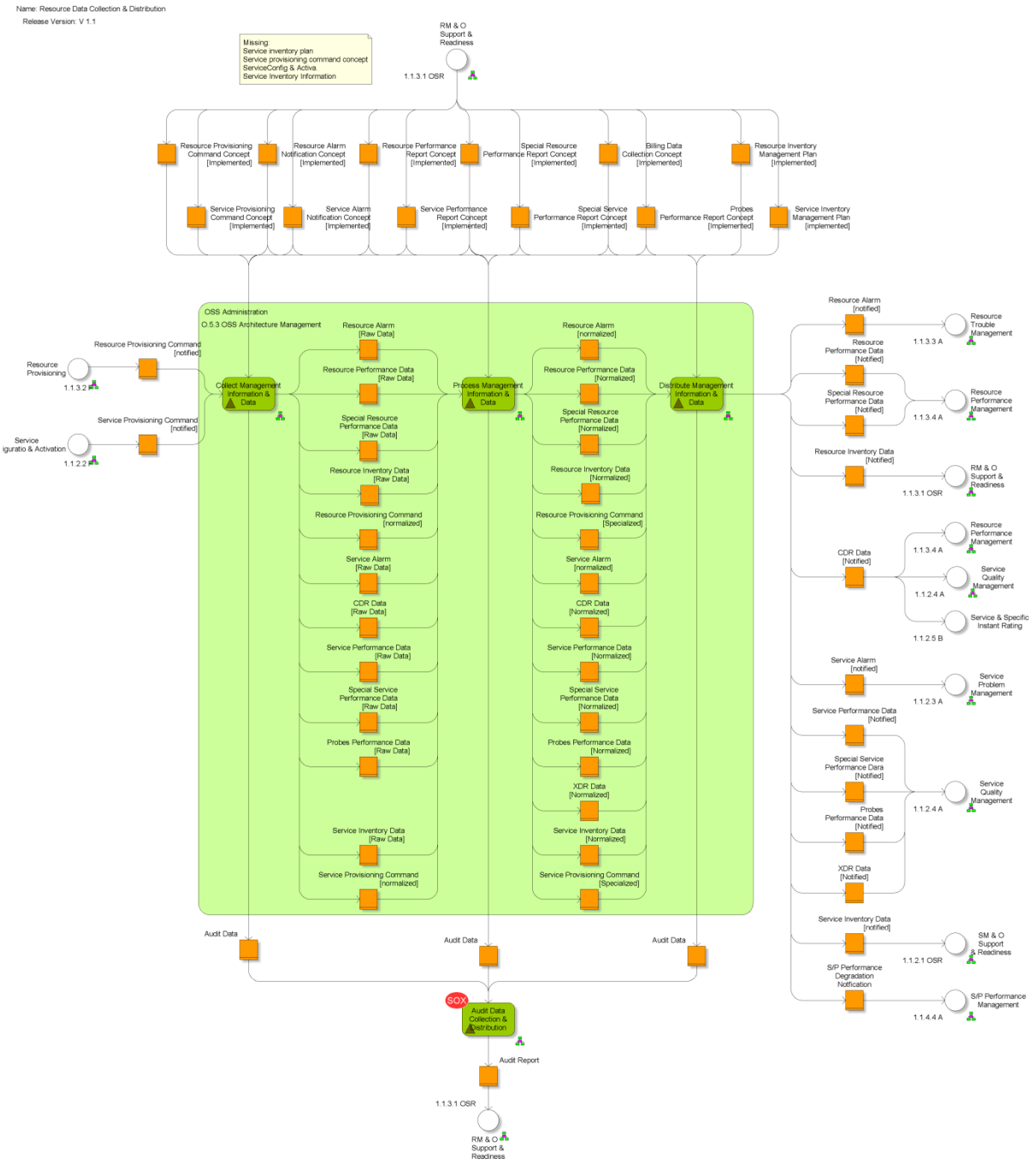
eTOM Description

Brief Description

Collect and/or distribute management information and data records between resource and service instances and other enterprise processes.

Extended Description

Resource Data Collection & Distribution processes is responsible for collection and/or distribution of management information and data records between resource and service instances and other enterprise processes. Resource Data Collection & Distribution processes interact with the resource and service instances to intercept and/or collect usage, network and information technology events and other management information for distribution to other processes within the enterprise, and with enterprise processes to accept command, query and other management information for distribution to resource and service instances. The responsibilities of these processes also include processing of the data and/or management information through activities such as filtering, aggregation, formatting, transformation and correlation of the information before presentation to other processes, resource instances or service instances. Client processes for this management information perform usage reporting and billing activities, as well as Fault and Performance analysis of resources and services. These include Resource Performance Management, Service Quality Management and Service & Specific Instance Rating. Client resource and service instances for this management information use the management information for configuration, or use the management information to trigger activities within the resource or service instances.



The "Resource Data Collection & Distribution" process describes the management of resource and service data to support all operational processes on the resource and service layer with the needed information. This process will be managed within the OSS Administration team mainly.

4.7.1 L3: Collect Management Information & Data

Brief Description

Collection of management information and data records from resource and service instances and other enterprise processes.

Extended Description

The Collect Management Information & Data processes are responsible for collection of management information and data records from resource and service instances and other enterprise processes. These processes interact with the resource and service instances to intercept and/or collect usage, network and information technology events and, performance and other management information for distribution to other processes within the enterprise, and with enterprise processes to accept command, query and other management information for distribution to resource and service instances.

AM

Check Schedule for Data Collection **[Ref 2, Page]**

Check and schedule resource data collection (based on calendar, e.g. daily basis, hourly basis, 15 minute interval)

Update Data Collection Method **[Ref 2, Page]**

Update the data collection method (scripts/tools/interfaces). This may be required due to new Software/hardware releases.

Schedule Collect Data **[Ref 2, Page]**

Schedule data collection in the tools and systems

Request Field measurement **[Ref 2, Page]**

Request field based, e2e measurements (define the method/tool, tests, area, scope, specific technology, duration)

Collect Customer Data **[Ref 2, Page]**

Collect specific customer input data. If required. The Activity is described at L5 using Work Instruct.

Collect Element Data **[Ref 2, Page]**

Collect Network Element data. This data is current "live" raw data. The Activity is described at L5 using Work Instructions, which consider current SW/HW release and Tools used.

Collect Historical Data **[Ref 2, Page]**

Collect Historical raw data (Performance data archived/old in Data warehouse). Sometimes data is required to be saved, for usage in future reports (Trend graphs over time). The Activity is described at L5 using Work Instructions, which consider current SW/HW release and Tools used.

Collect OSS Data **[Ref 2, Page]**

Collect OSS data. This data is current "live" raw data. The Activity is described at L5 using Work Instructions, which consider current SW/HW release and Tools used.

4.7.2 Process Management Information & Data

Brief Description

Process the management information and/or data into a form suitable for the intended recipient processes, resource instances or service instances

Extended Description

The Process Management Information & Data processes are responsible for processing the management information and/or data into a form suitable for the intended recipient processes, resource instances or service instances.

The responsibilities of this process include, but are not limited to:

-Identifying the intended recipient processes, resource instances or service instances to determine the appropriate processing required; **AM**

Process Data **[Ref 2, Page 9]**

Process the Raw data based on requirements. The Activity is described at L5 using Work Instructions, which consider current SW/HW release and Tools used.

-Filtering and/or low level correlation of the management information and/or data based on well-defined criteria; **AM**

Check post processing **[Ref 2, Page 8]**

Check the post processing of the raw data and verify that the post processing been successful based on requirements.

-Aggregating or disaggregating the management information and/or data to provide summarized versions; and **AM**

Check post processing **[Ref 2, Page 8]**

Check the post processing of the raw data and verify that the post processing been successful based on requirements.

-Formatting the management information and/or data into a form suitable for the intended recipient before distribution. **AM**

Check post processing **[Ref 2, Page 8]**

Check the post processing of the raw data and verify that the post processing been successful based on requirements.

4.7.3 Distribute Management Information & Data

Brief Description

Distribute processed management information and/or data to resource instances, service instances or other processes within the enterprise for further analysis and/or reporting.

Extended Description

The Distribute Management Information & Data processes are responsible for distributing processed management information and/or data to resource instances, service instances or other processes within the enterprise for further analysis and/or reporting. **M**

These processes also manage any orchestration required for distribution of the management information and/or data. Upon successful delivery these processes are responsible for informing the original sending process or instance that the information has been successfully distributed (if required), and for deleting the locally stored information from any local repositories. **AM**

Save to historical DB **[Ref 2, Page 10]**

Save the data to historical database (data warehouse) for future use. Sometimes data is required to be saved, for usage in future reports (Trend graphs over time).

Distribute data **[Ref 2, Page 9]**

This function distributes data. Distribute data as required: Email or storage server

4.7.4 Audit Data Collection & Distribution

Brief Description

Audit the management information & data collection, processing and distribution activities in order to identify possible anomalies.

Extended Description

The Audit Data Collection & Distribution processes are responsible for auditing the management information & data collection activities in order to identify possible anomalies such as loss of management information and/or data in the different collection, processing and distribution steps.
AM

Check completeness of data **[Ref 1, Page 6]**

This process Checks if the prepared report is complete in all aspect as per the requirement.

Store log file **[Ref 1, Page 7]**

If all the data is available in the report and the report is in correct format the audit success report is created and stored as log file.

Create audit report **[Ref 1, Page 6]**

This process is to create the Audit report.

Identify partners for support **[Ref 1, Page 6]**

This process identifies the support require from the partners (internal as well as external) for collection of missing data.

Distribute audit report **[Ref 1, Page 6]**

This process will distribute the audit to the predefined list.

4.7.5 Supporting Evidence References (Works Cited)

[Ref 1] < Audit Data Collection & Distribution.pdf >

[Ref 2] < Data Collection & Distribution (Resource).pdf>

4.7.6 Summary of Level 3 Scores

Table 4.7 Level 2: 1.1.3.5 - Resource Data Collection & Distribution Conformance Scores

Level 2: 1.1.3.5 - Resource Data Collection & Distribution [4/4]		
Level 3 Process	**Level 4 Process**	**L4/L3 Process Score**
1.1.3.5.1 - Collect Management and Security Information & Data		**4.50**
	1.1.3.5.1.1 - Intercept Events/Information	50%
	1.1.3.5.1.2 - Deliver Management Information	100%
1.1.3.5.2 - Process Management and Security Information & Data		**5.00**
	1.1.3.5.2.1 - Determine Recipients for Information/Data	100%
	1.1.3.5.2.2 - Filter Information/Data	100%
	1.1.3.5.2.3 - Aggregate Information/Data	100%
	1.1.3.5.2.4 - Format Information/Data	100%
1.1.3.5.3 - Distribute Management and Security Information & Data		**5.00**
	1.1.3.5.3.1 - Distribute Information/Data	100%
	1.1.3.5.3.2 - Manage Distribution	100%
	1.1.3.5.3.3 - Confirm Distribution and Clean-up	100%
1.1.3.5.4 - Audit Management and Security Data Collection & Distribution		**5.00**

4.8 L2: Resource Capability Delivery

eTOM Description

Resource Capability Delivery processes use the capability definition or requirements to deploy new and/or enhanced technologies and associated resources.

The objectives of these processes is to ensure that network, application and computing resources are deployed, according to the plans set by Resource Development. They deliver the physical resource capabilities necessary for the ongoing operations, and long term well-being of the enterprise, and ensure the basis on which all resources and services will be built.

Responsibilities of the Resource Capability Delivery processes include, but are not limited to:

· Planning resource supply logistics (warehousing, transport, etc.)

· Planning the Resource Installation

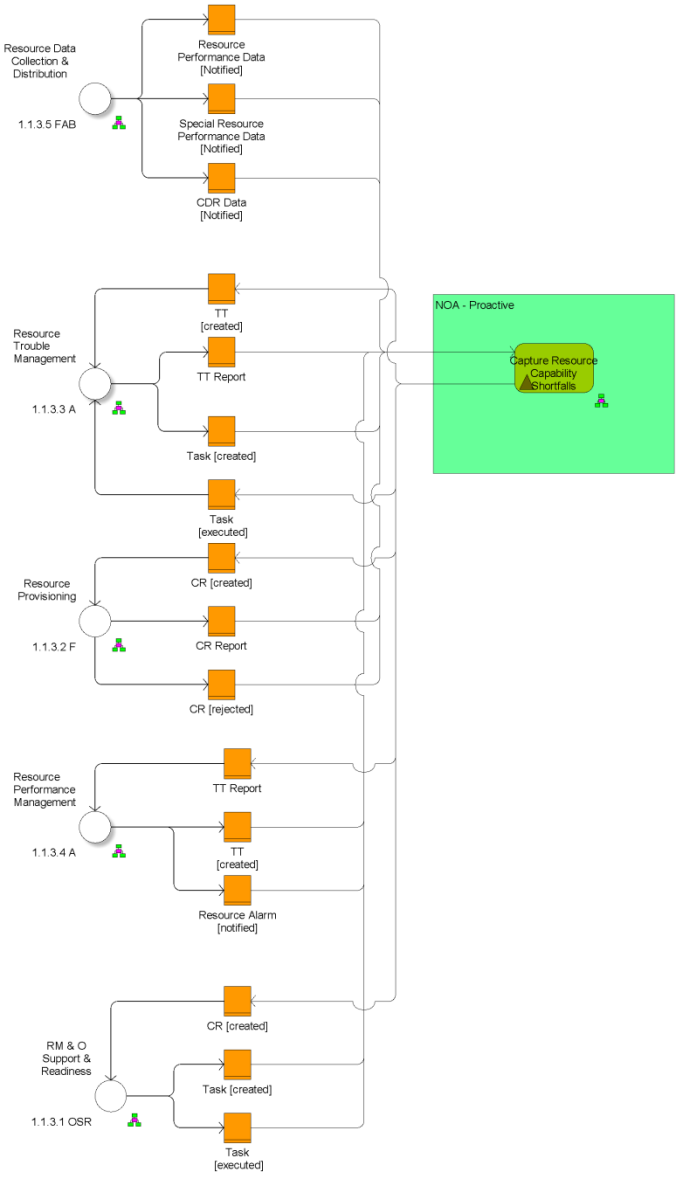
· Contracting and Directing the Resource Construction where needed

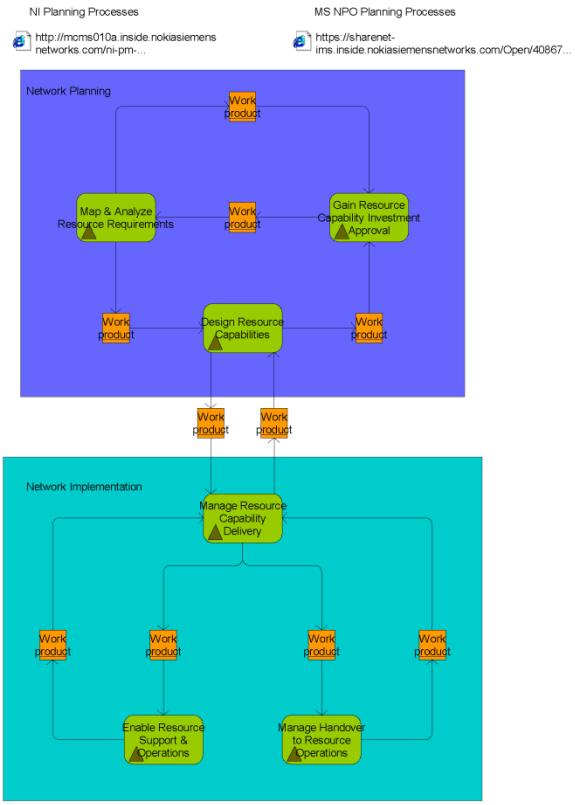
· Verifying the Resource Installation

· Handover the Resource Capability to Operations through interactions with the Manage Resource Class Configuration

Logical network configurations (such as resource elements integration) are as important to the network resources as the physical aspects. All aspects must be planned and considered in the design and implementation of the network, including infrastructure owned by the enterprise, and by supplier/partners, other physical resources and logical elements.

Name: Resource Capability Delivery
Release Version: V 1.1





4.8.1 L3: Map & Analyze Resource Requirements

Brief Description

Define the detailed resource infrastructure requirements to support the service capabilities required by the enterprise

Extended Description

The Map & Analyze Resource Requirements processes define the detailed resource infrastructure requirements to support the service capabilities required by the enterprise. The processes provide detailed analysis of new resource requirements linked to relevant geographic distributions. These processes also establish the detailed performance requirements. These processes take the forecast information available from the Produce Resource Business Plans and requirements information from the Map & Analyze Service Requirements processes, as well as resource infrastructure requirements developed by the Develop Detailed Resource Specifications processes, to establish detailed views of anticipated resource demand and performance requirements.AM

Review Proactive Activity **[Ref 3: page 9]**

Review the proactive resource performance optimization schedule and tasks (Review schedule and execute Service/Working items based on expected performance improvement.)

[These processes manage the capacity planning for the resource infrastructure, and identify capacity requirements based on service forecasts and appropriate resource related metrics, i.e., transaction volumes, storage requirements, traffic volumes, port availabilities, etc.

The processes include any cross-enterprise coordination and management functions to ensure that the demand distributions capture the needs of all stakeholders.]

4.8.2 L3: Capture Resource Capability Shortfalls

Brief Description

Identify specific or imminent resource capacity, resource performance and/or resource operational support shortfalls

Extended Description

The Capture Resource Capability Shortfalls processes identify specific or imminent resource capacity, resource performance and/or resource operational support shortfalls. These processes take information available from the Resource Management & Operations processes to establish detailed views of anticipated resource and shortfalls and support process issues.

NOT APPLICABLE

4.8.3 L3: Gain Resource Capability Investment Approval

Brief Description

Capture all activities required to develop and gain necessary approval for investment proposals to develop and deliver the required resource capabilities

Extended Description

The Gain Resource Capability Investment Approval processes capture all activities required to develop and gain necessary approval for investment proposals to develop and deliver the required resource capabilities, including identification of potential suppliers/partners. These processes take the input from the Map & Analyze Resource Requirements, the Capture Resource Capability Shortfalls and the Map & Analyze Service Requirements processes to develop and gain approval for any business proposals arising. In some cases the business proposal may require the creation and approval of a formal business case, in other cases the business proposal approval may be delegated to local management. In any event the cost estimates for delivering the resource infrastructure, including costs for materials (equipment and tools), labor and training are part of the investment proposal.

The rules and procedures outlining the necessary approval process to be used are also part of these processes.

The processes include any cross-enterprise coordination and management functions to ensure that the investment proposals capture the needs of, and are supported by, all stakeholders.

NOT APPLICABLE

4.8.4 L3: Design Resource Capabilities

Brief Description

Manage the design of the resource infrastructure to meet the requirements in any approved investment proposals.

Extended Description

The Design Resource Capabilities processes manage the design of the resource infrastructure to meet the requirements in any approved investment proposals. These processes ensure the collation and coordination of requirements from all approved investment proposals, assess the most appropriate resource infrastructure, develop the tactical/solution architecture and design specifications to be used to build or source the necessary resource infrastructure components, and select the most appropriate resource infrastructure suppliers/partners to support the resource requirements. A key element of the overall design is the integration approach between the existing legacy resource infrastructure and any proposed new resource infrastructure. This integration design is managed within the architecture and specification processes.

Note that the actual management of the sourcing process is handled within the Supply Chain Development & Management processes.

NOT APPLICABLE

4.8.5 L3: Enable Resource Support & Operations

Brief Description

Manage the design of any improvements or changes required to the resource operational support processes to support the investment proposals and new resource capabilities and infrastructure

Extended Description

The Enable Resource Support & Operations processes manage the design of any improvements or changes required to the resource operational support processes to support the investment proposals and new resource capabilities and infrastructure. The processes ensure the identification of operational support groups, required skill sets, and availability of appropriate training programs. These processes ensure the identification, collation and coordination of support requirements from all approved investment proposals, and from any operational support shortfalls identified in the Capture Resource Capability Shortfalls processes.

NOT APPLICABLE

4.8.6 L3: Manage Resource Capability Delivery

Brief Description

Manage the provision, implementation, commissioning and roll-out of the new or enhanced resource capability, and associated operational support processes.

Extended Description

The Manage Resource Capability Delivery processes manage the provision, implementation, commissioning and roll-out of the new or enhanced resource capability and associated operational support processes. These processes are predominantly program/project management process functions, and require the detailed management and co-ordination of the delivery of individual resource infrastructure components to achieve the delivery of the overall resource capability. Within the Manage Resource Capability Delivery processes separate suppliers/partners may be responsible for the delivery of the resource capability, and other suppliers/partners for the installation and construction. The Manage Resource Capability Delivery processes ensure that the roles and responsibilities of all parties are identified, managed and coordinated. AM

Stream 3: Deliver Process Description **[Ref 1: Slide 5 Onwards]**

NSN Network Implementation Follow PM BOK

Deliver Process Description.ppt
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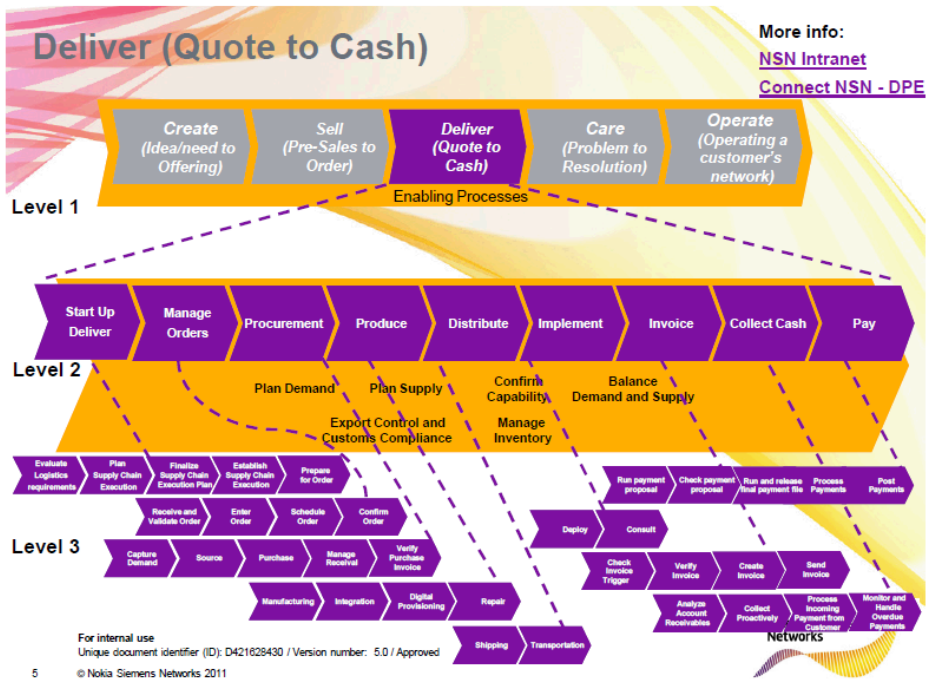
5.0
For internal use



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These processes are responsible to ensure that the quality of the implemented resource capability meets the design specifications. These processes manage the commissioning of the new resource infrastructure by ensuring the availability of test programs and specifications against which to test the new resource infrastructure meets the design requirements. AM

Site Integration & Acceptance Process [Ref 2: Page 11]

This Process has been created to ensure that all the Network Elements are tested and accepted by the various stakeholders. This is based on test cases defined in the NSN Acceptance Manual for the respective hardware & software releases. Different stakeholders include CSP(Communication Service Provider), NSN Project Management Team, SDU Cluster Project Engineers, SDU Service Delivery Engineer, SDU Radio optimization Engineers, Logistic Engineers & the Subcon vendor team.

These processes leverage the Supply Chain Development & Management processes as necessary to establish any new sourcing arrangements for the delivery of resource components.AM

4.8.7 L3: Manage Handover to Resource Operations

Brief Description

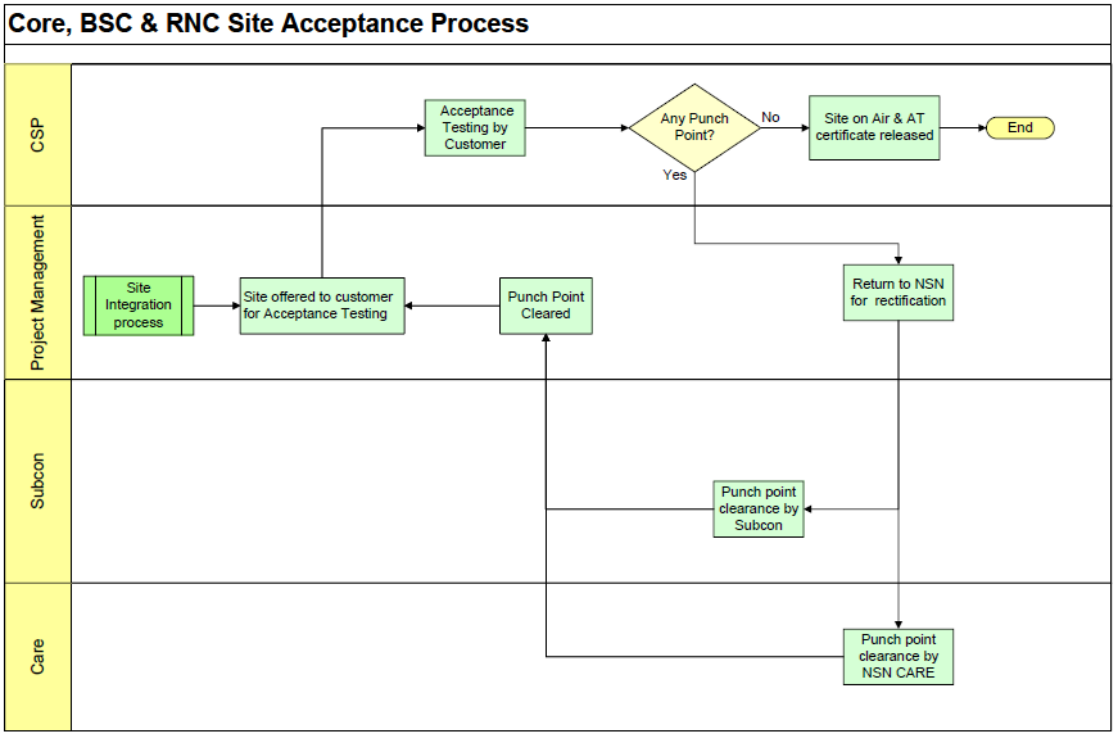
Manage the processes involved in handover of deployed resource infrastructure to operational control

Extended Description

The Manage Handover to Resource Operations processes manage the processes involved in handover of deployed resource infrastructure to operational control. These processes ensure that all operational and performance design requirements have been met by the installed resource infrastructure, and that all tools, test equipment, operational procedures, support groups, and training is in place to allow for successful operation. These processes include the management and coordination of all stakeholders required to gain approval and acceptance of the handover to operational control. AM

Site Integration & Acceptance Process [Ref 2: Page 11]

This Process has been created to ensure that all the Network Elements are tested and accepted by the various stakeholders. This is based on test cases defined in the NSN Acceptance Manual for the respective hardware & software releases. Different stakeholders include CSP(Communication Service Provider), NSN Project Management Team, SDU Cluster Project Engineers, SDU Service Delivery Engineer, SDU Radio optimization Engineers, Logistic Engineers & the Subcon vendor team.



4.8.8 Supporting Evidence References (Works Cited)

[Ref 1] < NSN_SDU_Site_Integration_&_Acceptance_Process_Ver_3.0.pdf>

[Ref 2] < 20120316_Deliver Process Description.pdf>

[Ref3] < Proactive Resource Optimization.pdf>

4.8.9 Summary of Level 3 Scores

Table 4.8 Level 2: 1.2.3.2 - Resource Capability Delivery Conformance Scores

Level 2: 1.2.3.2 - Resource Capability Delivery [7/7]		
Level 3 Process	**Level 4 Process**	**L4/L3 Process Score**
1.2.3.2.1 - Map & Analyze Resource Requirements		**3.50**
	1.2.3.2.1.1 - Capture Resource Demand & Performance Requirements	50%
	1.2.3.2.1.2 - Agree Resource Infrastructure Requirements	0%
1.2.3.2.2 - Capture Resource Capability Shortfalls		**0%**
	1.2.3.2.2.1 - Capture Resource Capacity Shortfalls	N/A
	1.2.3.2.2.2 - Capture Resource Performance Shortfalls	N/A
	1.2.3.2.2.3 - Capture Resource Operational Support Shortfalls	N/A
1.2.3.2.3 - Gain Resource Capability Investment Approval		**0%**
	1.2.3.2.3.1 - Develop Resource Capability Investment Proposals	N/A
	1.2.3.2.3.2 - Approve Resource Capability Investment	N/A
1.2.3.2.4 - Design Resource Capabilities		**0%**
	1.2.3.2.4.1 - Define Resource Capability Requirements	N/A
	1.2.3.2.4.2 - Specify Resource Capability Infrastructure	N/A
	1.2.3.2.4.3 - Select Resource Capability Suppliers/Partners	N/A
1.2.3.2.5 - Enable Resource Support & Operations		**0%**
	1.2.3.2.5.1 - Design Resource Operational Support Process Improvements	N/A
	1.2.3.2.5.2 - Identify Resource Support Groups, Skills & Training	N/A
	1.2.3.2.5.3 - Identify Resource Support Requirements	N/A
1.2.3.2.6 - Manage Resource Capability Delivery		**4.63**
	1.2.3.2.6.1 - Co-ordinate Resource Capability Delivery	100%
	1.2.3.2.6.2 - Ensure Resource Capability Quality	100%
	1.2.3.2.6.3 - Manage Commissioning of New Resource Infrastructure	100%
	1.2.3.2.6.4 - Establish Resource Capability Sourcing	25%
1.2.3.2.7 - Manage Handover to Resource Operations		**5.00**
	1.2.3.2.7.1 - Co-ordinate Resource Operational Handover	100%
	1.2.3.2.7.2 - Validate Resource Infrastructure Design	100%
	1.2.3.2.7.3 - Ensure Resource Handover Support	100%

5 Information Framework Assessment Overview

Not applicable for this assessment.

5.1 Product Scope

Not applicable for this assessment.

6 Frameworx Conformance Result

This section details the Scores awarded to reflect Conformance of NSN´s Service Management & MS Operations Lifecycle Framework to the Business Process Framework & Information Framework components of Frameworx 12.

6.1 Business Process Framework – Scoring Rules

The conformance scores granted were based on the following TM Forum scoring rules:

Frameworx 12.0 Conformance Certification (Product/Solution/Implementation)		
Business Process Framework (eTOM) - Conformance Level Descriptions (Level 3 processes)		
Process level	**Conformance Score**	**Qualifier**
Level 1	**Not applicable**	**Conformance Assessment shall not be carried out at this process level - hence Confomance Level shall not be awarded at this level.**
Level 2	**Not applicable**	**A conformance level is not awarded to Level 2 processes in Frameworx 12.0 Assessments. The Certification Report shall highlight the coverage of a Level 2 process submitted in scope for an Assessment in terms of number of Level 3 processes submitted for assessment out of the total number defined for the Level 2 process.**
Level 3	**Score is awarded between 3.1 & 5.**	**The Conformance Score is awarded for each Level 3 processes submitted in scope for the Assessment.** **The Conformance Score awarded can be a value between 3.1 & 5 depending on the level of coverage & conformance to the Level 3 process based on the alignment to the level 3 Implied Tasks as decomposed in the Level 4 process definitions.** *Any manual implementation of the process support shall be noted in the Conformance Report and Detailed Results Report.*

Figure 6-1 - TM Forum Business Process Framework: Conformance Scoring Rules

6.2 Business Process Framework - Conformance Result Summary

The graphs in this section provide an overview of the conformance levels granted to the Level 3 Processes presented in scope for NSN´s SMC& NOC Assessment. Each Level 3 process was measured using a Business Process Framework (eTOM) conformance score according to level of Conformance – Full Conformance or Partial Conformance as described in section 6.1 Business Process Framework – Scoring Rules.

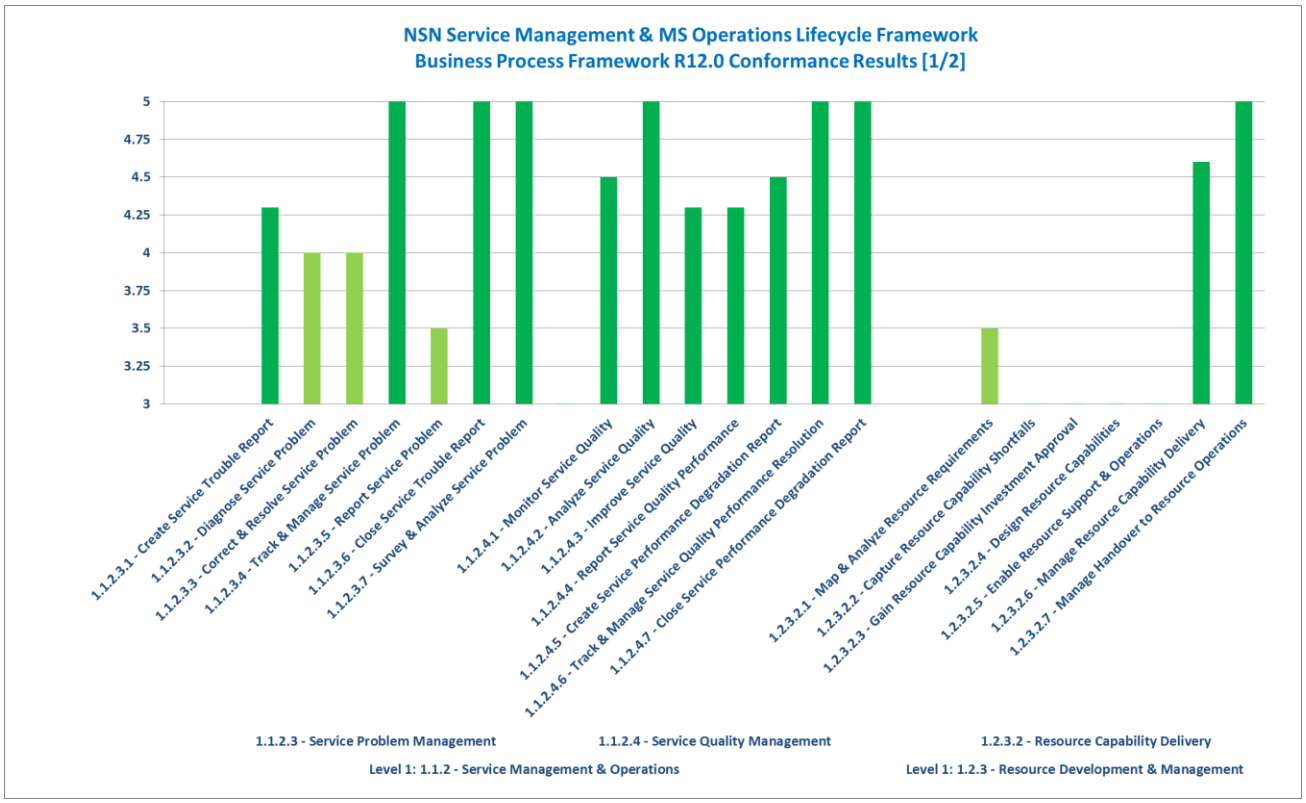


Figure 6-2 – Business Process Framework: Conformance Result Summary [1/2]

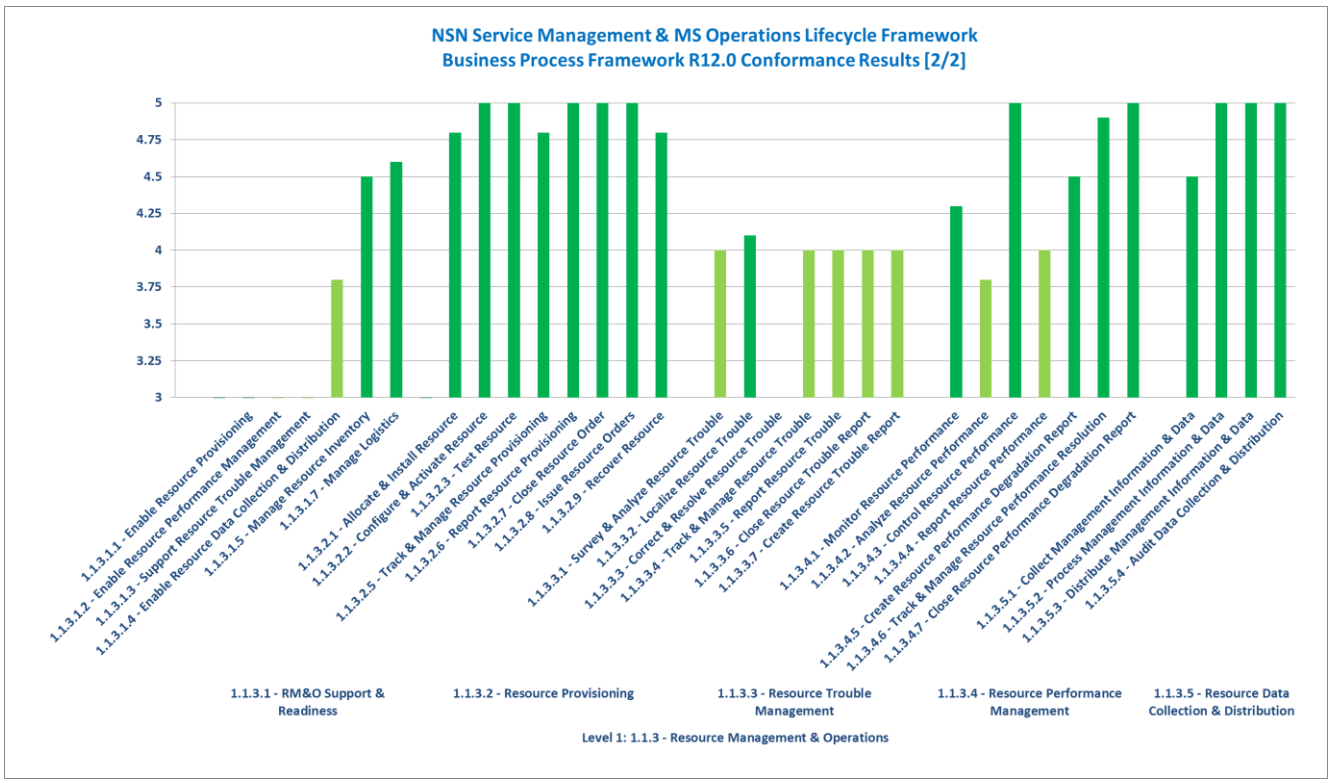


Figure 6-3 - Business Process Framework: Conformance Result Summary [2/2]

6.3 Business Process Framework – Detailed Conformance Results

The following table provides a more detailed breakdown of the scores awarded with some additional commentary

Table 6.1 – Business Process Framework: Detailed Conformance Results

NSN Service Management & MS Operations Lifecycle Framework Business Process Framework (eTOM) Release 12.0 Conformance		
L1 / L2 / L3 Process	**L3 Process Score [L2 Coverage]**	**Comments**
Level 1: 1.1.2 - Service Management & Operations		
Level 2: 1.1.2.3 - Service Problem Management	**[7/7]**	
1.1.2.3.1 - Create Service Trouble Report	4.3	**Partially Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM) but with some deviations. See Mapping Table for more details.
1.1.2.3.2 - Diagnose Service Problem	4	**Partially Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM) but with some deviations. See Mapping Table for more details.
1.1.2.3.3 - Correct & Resolve Service Problem	4	**Partially Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM) but with some deviations. See Mapping Table for more details.
1.1.2.3.4 - Track & Manage Service Problem	5	**Fully Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM).

NSN Service Management & MS Operations Lifecycle Framework Business Process Framework (eTOM) Release 12.0 Conformance		
L1 / L2 / L3 Process	**L3 Process Score [L2 Coverage]**	**Comments**
1.1.2.3.5 - Report Service Problem	3.5	**Partially Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM) but with some deviations. See Mapping Table for more details.
1.1.2.3.6 - Close Service Trouble Report	5	**Fully Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM).
1.1.2.3.7 - Survey & Analyze Service Problem	5	**Fully Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM).
Level 2: 1.1.2.4 - Service Quality Management	**[7/7]**	
1.1.2.4.1 - Monitor Service Quality	4.5	**Partially Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM) but with some deviations. See Mapping Table for more details.
1.1.2.4.2 - Analyze Service Quality	5	**Fully Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM).
1.1.2.4.3 - Improve Service Quality	4.3	**Partially Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM) but with some deviations. See Mapping Table for more details.

NSN Service Management & MS Operations Lifecycle Framework Business Process Framework (eTOM) Release 12.0 Conformance		
L1 / L2 / L3 Process	**L3 Process Score [L2 Coverage]**	**Comments**
1.1.2.4.4 - Report Service Quality Performance	4.3	**Partially Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM) but with some deviations. See Mapping Table for more details.
1.1.2.4.5 - Create Service Performance Degradation Report	4.5	**Partially Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM) but with some deviations. See Mapping Table for more details.
1.1.2.4.6 - Track & Manage Service Quality Performance Resolution	5	**Fully Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM).
1.1.2.4.7 - Close Service Performance Degradation Report	5	**Fully Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM).
Level 2: 1.1.3.1 - RM&O Support & Readiness	**[6/6]**	
1.1.3.1.1 - Enable Resource Provisioning	0	**Not assessed**
1.1.3.1.2 - Enable Resource Performance Management	0	**Not assessed**
1.1.3.1.3 - Support Resource Trouble Management	0	**Not assessed**
1.1.3.1.4 - Enable Resource Data Collection & Distribution	3.8	**Partially Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM) but with some deviations. See Mapping Table for more details.

NSN Service Management & MS Operations Lifecycle Framework Business Process Framework (eTOM) Release 12.0 Conformance		
L1 / L2 / L3 Process	**L3 Process Score [L2 Coverage]**	**Comments**
1.1.3.1.5 - Manage Resource Inventory	4.5	**Partially Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM) but with some deviations. See Mapping Table for more details.
1.1.3.1.7 - Manage Logistics	4.6	**Partially Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM) but with some deviations. See Mapping Table for more details.
Level 2: 1.1.3.2 - Resource Provisioning	**[8/8]**	
1.1.3.2.1 - Allocate & Install Resource	4.8	**Partially Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM) but with some deviations. See Mapping Table for more details.
1.1.3.2.2 - Configure & Activate Resource	5	**Fully Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM).
1.1.3.2.3 - Test Resource	5	**Fully Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM).
1.1.3.2.5 - Track & Manage Resource Provisioning	4.8	**Partially Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM) but with some deviations. See Mapping Table for more details.

NSN Service Management & MS Operations Lifecycle Framework Business Process Framework (eTOM) Release 12.0 Conformance		
L1 / L2 / L3 Process	**L3 Process Score [L2 Coverage]**	**Comments**
1.1.3.2.6 - Report Resource Provisioning	5	**Fully Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM).
1.1.3.2.7 - Close Resource Order	5	**Fully Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM).
1.1.3.2.8 - Issue Resource Orders	5	**Fully Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM).
1.1.3.2.9 - Recover Resource	4.8	**Partially Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM) but with some deviations. See Mapping Table for more details.
Level 2:1.1.3.3 - Resource Trouble Management	**[7/7]**	
1.1.3.3.1 - Survey & Analyze Resource Trouble	4	**Partially Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM) but with some deviations. See Mapping Table for more details.
1.1.3.3.2 - Localize Resource Trouble	4.1	**Partially Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM) but with some deviations. See Mapping Table for more details.

NSN Service Management & MS Operations Lifecycle Framework Business Process Framework (eTOM) Release 12.0 Conformance		
L1 / L2 / L3 Process	**L3 Process Score [L2 Coverage]**	**Comments**
1.1.3.3.3 - Correct & Resolve Resource Trouble	3	**Partially Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM) but with some deviations. See Mapping Table for more details.
1.1.3.3.4 - Track & Manage Resource Trouble	4	**Partially Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM) but with some deviations. See Mapping Table for more details.
1.1.3.3.5 - Report Resource Trouble	4	**Partially Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM) but with some deviations. See Mapping Table for more details.
1.1.3.3.6 - Close Resource Trouble Report	4	**Partially Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM) but with some deviations. See Mapping Table for more details.
1.1.3.3.7 - Create Resource Trouble Report	4	**Partially Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM) but with some deviations. See Mapping Table for more details.
Level 2: 1.1.3.4 - Resource Performance Management	**5**	

NSN Service Management & MS Operations Lifecycle Framework Business Process Framework (eTOM) Release 12.0 Conformance		
L1 / L2 / L3 Process	**L3 Process Score [L2 Coverage]**	**Comments**
1.1.3.4.1 - Monitor Resource Performance	4.3	**Partially Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM) but with some deviations. See Mapping Table for more details.
1.1.3.4.2 - Analyze Resource Performance	3.8	**Partially Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM) but with some deviations. See Mapping Table for more details.
1.1.3.4.3 - Control Resource Performance	5	**Fully Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM).
1.1.3.4.4 - Report Resource Performance	4	**Partially Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM) but with some deviations. See Mapping Table for more details.
1.1.3.4.5 - Create Resource Performance Degradation Report	4.5	**Partially Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM) but with some deviations. See Mapping Table for more details.
1.1.3.4.6 - Track & Manage Resource Performance Resolution	4.9	**Partially Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM) but with some deviations. See Mapping Table for more details.

NSN Service Management & MS Operations Lifecycle Framework Business Process Framework (eTOM) Release 12.0 Conformance		
L1 / L2 / L3 Process	**L3 Process Score [L2 Coverage]**	**Comments**
1.1.3.4.7 - Close Resource Performance Degradation Report	5	**Fully Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM).
Level 2: 1.1.3.5 - Resource Data Collection & Distribution	**[6/6]**	
1.1.3.4.1 - Monitor Resource Performance	4.3	**Partially Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM) but with some deviations. See Mapping Table for more details.
1.1.3.4.2 - Analyze Resource Performance	3.8	**Partially Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM) but with some deviations. See Mapping Table for more details.
1.1.3.4.3 - Control Resource Performance	5	**Fully Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM).
1.1.3.4.4 - Report Resource Performance	4	**Partially Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM) but with some deviations. See Mapping Table for more details.
1.1.3.4.5 - Create Resource Performance Degradation Report	4.5	**Partially Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM) but with some deviations. See Mapping Table for more details.

NSN Service Management & MS Operations Lifecycle Framework Business Process Framework (eTOM) Release 12.0 Conformance		
L1 / L2 / L3 Process	**L3 Process Score [L2 Coverage]**	**Comments**
1.1.3.4.6 - Track & Manage Resource Performance Resolution	4.9	**Partially Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM) but with some deviations. See Mapping Table for more details.
1.1.3.4.7 - Close Resource Performance Degradation Report	5	**Fully Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM).
Level 2: 1.1.3.5 - Resource Data Collection & Distribution	**[4/4]**	
1.1.3.5.1 - Collect Management Information & Data	4.5	**Partially Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM) but with some deviations. See Mapping Table for more details.
1.1.3.5.2 - Process Management Information & Data	5	**Fully Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM).
1.1.3.5.3 - Distribute Management Information & Data	5	**Fully Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM).
1.1.3.5.4 - Audit Data Collection & Distribution	5	**Fully Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM).
Level 2: 1.1.1.14 - Manage Billing Events	**[4/4]**	

NSN Service Management & MS Operations Lifecycle Framework Business Process Framework (eTOM) Release 12.0 Conformance		
L1 / L2 / L3 Process	**L3 Process Score [L2 Coverage]**	**Comments**
1.1.1.14.1 - Enrich Billing Events	5	**Fully Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM).
1.1.1.14.2 - Guide Billing Events	5	**Fully Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM).
1.1.1.14.3 - Mediate Billing Events	5	**Fully Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM).
1.1.1.14.4 - Report Billing Event Records	5	**Fully Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM).
Level 2: 1.2.3.2 - Resource Capability Delivery	**[7/7]**	
1.2.3.2.1 - Map & Analyze Resource Requirements	3.5	**Partially Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM) but with some deviations. See Mapping Table for more details.
1.2.3.2.2 - Capture Resource Capability Shortfalls	0	**Not Assessed**
1.2.3.2.3 - Gain Resource Capability Investment Approval	0	**Not Assessed**
1.2.3.2.4 - Design Resource Capabilities	0	**Not Assessed**
1.2.3.2.5 - Enable Resource Support & Operations	0	**Not Assessed**

NSN Service Management & MS Operations Lifecycle Framework Business Process Framework (eTOM) Release 12.0 Conformance		
L1 / L2 / L3 Process	**L3 Process Score [L2 Coverage]**	**Comments**
1.2.3.2.6 - Manage Resource Capability Delivery	4.6	**Partially Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM) but with some deviations. See Mapping Table for more details.
1.2.3.2.7 - Manage Handover to Resource Operations	5	**Fully Conformant** Supporting evidence and documentation submitted for the assessment of this level 3 process fulfilled alignment criteria with the standard Business Process Framework (eTOM).

6.4 Information Framework – Scoring Rules

The conformance scores granted were based on the following TM Forum scoring rules:

Frameworx 12.0 Conformance Certification (Product/Solution/Implementation)	
Information Framework (SID) - Conformance Score Descriptions	
Conformance Score	**Qualifier**
Non Conformance [Score = 1]	**The content of the model is compatible with a subset of the Information Framework (SID) ABEs that define its domain coverage. This provides two interacting components/solutions with a common vocabulary and model structure. The subset represents the scope of the model, expressed in Information Framework (SID) domains**
Non Conformance [Score = 2]	**The model has passed level 1 conformance and the content of the ABE, part of the domain coverage and defined in the model, contains the ABE's core business entity or entities. A core business entity is an entity upon which other entities within the ABE are dependent. e.g. Service in the Service ABE. A core entity is also an entity whose**
Very Low Conformance [2.0 < Score <= 3.0]	**The model has passed level 2 conformance and *a percentage of the required attributes of the ABE's core entity or entities are defined in the model.**
Low Conformance [3.0 < Score <= 4.0]	**The model has passed level 3 conformance and *a percentage of the dependent entities within the ABE are defined in the model. A dependent entity is one whose instances are dependent on an instance of a core entity. For example, a ServiceCharacteristic instance within the Service ABE is dependent upon an instance of the Service entity.**
Medium Conformance [4.0 < Score <= 5.0]	**The model has passed level 4 conformance and *a percentage of the required attributes of the ABE's dependent entities are defined in the model.**
High Conformance [5.0 < Score <= 6.0]	**The model has passed level 5 conformance and *a percentage of all attributes of the ABE's core entities are defined in the model.**
Very High Conformance [6.0 < Score < 7.0]	**The model has passed level 6 conformance and *a percentage of all attributes of the ABE's dependent entities are defined in the model.**
Full Conformance [Score = 7.0]	**The model has achieved Level 7 conformance (Full Conformance) and all attributes of the ABE's core & dependent entities are defined in the model.**
**** For each level, according to what is required, a value is calculated based on the percentage of entities/attributes supported - as appropriate. This will result in a decimal figure (rounded to one decimal place).***	

Figure 6-4 - TM Forum Information Framework: Conformance Scoring Rules

Notes:

*A **core business entity** is an entity upon which other entities within the ABE are dependent. For example, Service in the Service ABE. A model should strive to attain as high a level of Information Framework (SID) conformance as possible. A core entity is also an entity whose absence in the ABE would make the ABE incomplete.*

*A **dependent entity** is one whose instances are dependent on an instance of a core entity. For example, a ServiceCharacteristic instance within the Service ABE is dependent upon an instance of the Service entity.*

6.5 Information Framework – Conformance Result Summary

Not applicable for this assessment.

6.6 Information Framework – Detailed Conformance Result

Not applicable for this assessment.