**IOH GENERIC MOP**

Method of Procedure

UPGRADE TiMOS 23.3.R2

AT {{ ring\_id }}



|  |  |  |  |
| --- | --- | --- | --- |
| **Prepared by:** | **Matius Febrian Christo** | **Date:** | 20, Dec 2023 |
| **Reviewer:** | **Indra Bayu Leonardo** | **Date:** | 20, Dec 2023 |
| **Approver:** | **Andrew Ivander** | **Date:** | 20, Dec 2023 |

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# Description of Upgrade TiMOS at {{ ring\_id }}

## This MOP cover Plan for Upgrade TiMOS Nokia 7210 SASSX

## Description of Site

New Device info:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **No** | **Hostname** | **Platform** | **IP Address** | **Site Name** | **Site ID** | **Versi TiMOS** |
| {%tr for data in all\_data\_site %} | | | | | | |
| 1 | {{ data[2] }} | Nokia {{ data[5] }} | {{ data[3] }} | {{ data[1] }} | {{ data[0] }} | {{ data[6] }} |
| {%tr endfor %} | | | | | | |

**Topology**



**Specification :**

A picture containing line, screenshot, text, diagram

Description automatically generated

## Purpose and Requirements

|  |  |
| --- | --- |
| **Change purpose\*** | This MoP is prepared for Upgrade TiMOS Nokia 7210 SASSX to 23.3.R2. We will perform this activity at maintenance window. |
| **Change scope** | Upgrade TiMOS 7210 SASSx at {{ ring\_id }} |
| **Change time\*** | 2023-12-XX 00:00 - 2023-12-XX 05:00 |
| **Down Time** | 30 minutes **(Expected Downtime during upgrading TiMOS)** |

## Description of Change and Change Influence

To support modernization IOH Project integration NE to accommodate traffic grow as calculated in future by planning team. The purpose of upgrade TiMOS is to provide an upgrade in TiMOS for capability Chassis.

In general Datacomm the expected result after upgrade TiMOS is the TiMOS is upgraded, all card and traffic is working normally.

|  |  |  |
| --- | --- | --- |
| **NE Name** | **NE Type**  **(MPU Type** | **Software Version** |
| {%tr for data in all\_data\_site %} | | |
| {{ data[2] }} | 7210 SAS-SX | {{ data[6] }} |
| {%tr endfor %} | | |

|  |  |  |
| --- | --- | --- |
| **NE Name** | **NE Type**  **(MPU Type** | **Software Version** |
| {%tr for data in all\_data\_site %} | | |
| {{ data[2] }} | 7210 SAS-SX | {{ data[6] }} |
| {%tr endfor %} | | |
| {%tr for data in info\_device\_cn %} | | |
| {{data[0]}} | {{data[3]}} | IOS-XR 7.5.2 |
| {%tr endfor %} | | |

|  |  |
| --- | --- |
| **Change Influence** | |
| **Impact** | **Risk Description** |
| Performance | Low, if change description not proper and impact to configuration port will Not Impact Performance to BTS Site |

# Preparations for Change



## Change Periode

The change period is **XX Desember 2023, 00:00 – 05:00 (Indonesia GMT+7.00)**

* 1. Composition of Change Team and Responsibility of Team Members
     1. Customer Change Team

|  |  |  |
| --- | --- | --- |
| Name | Responsibility | Telephone No. |
| Anugrah Rahman Rusadi | IOH Project Manager | +62 815-1127-1797 |
| Dwi Suryono | TBM CWJ | +62 816-683-139 |
| Rony Wibowo | TBM CWJ | +62 816-686-680 |

NOKIA On-site Change Team

|  |  |  |
| --- | --- | --- |
| Name | Responsibility | Telephone No. |
| Tri Reza | TD Nokia | +62 815-8660-8657 |
| Chandra Cahyono | Remote Monitoring Team During CRQ | +62 856-4015-7962 |
| Paulus Bangun | Remote Monitoring – After CRQ (babysitting) | +62 812-8833-7112 |
| Andrew Ivander | Remote Team During CRQ | +62 857-7119-9133 |
| Indra Bayu Leonardo | Remote Team During CRQ | +62 812-9479-7980 |
| Rizky Subagyo | Onsite Team | +62 858-9272-8583 |

Huawei Support & Guarantee Team

|  |  |  |
| --- | --- | --- |
| Name | Responsibility | Telephone No. |
| GTAC | GTAC PSE | 0078036015242 / 08001-080808 / 0062-21-5711378 (accessible through mobile call only) (Indonesia) |

* 1. Remote Access+ Platform and Software Preparation

|  |  |  |
| --- | --- | --- |
| **Type** | **Content** | **Owner** |
| Category | Detail Description | Qorie Kurniawan |
| Remote access solution | Login NE using customer network from NOC office for backup last configuration | Andrew Ivander |
| Remote access authorization | Remote access authorization : as BO datacom engineer we have authorization for login device | Andrew Ivander |
| Remote access test | Remote access test : day before will onsite team will try login using console, | Andrew Ivander |
| Platform, software and license | SecureCRT for login NE, EPNM & NFMP for Alarm monitor, performance monitor, Cacti for monitor graph traffic, inspector for backup configuration, Notepat++/ultra edit for compare configuration. | Andrew Ivander |
| Site permission | Onsite team will apply enterance permit to TOC engineer and IOH customer region | Andrew Ivander |
| NE login permission | executor have authorization and privillege to excute the change | Andrew Ivander |
| " Three Approvals" | On progress for approval, will update at icare system after got approval | Andrew Ivander |
| Tools and Softwares | SecureCRT, Notepad++ / ultraedit, inspector, eSpace, NCE | Andrew Ivander |

* 1. Check of Equipment Running

|  |  |
| --- | --- |
| **Check Item\*** | **Check result or steps\*** |
| Health check | Check all current existing connectivity -> existing connections status maintain  Check all existing device / hardware -> status alarm clear and all existing board registered  Check all existing point to point service connections by do ping test -> all existing service ping test result maintain no packet drop, no fo cut before execution.  Check all existing interface that already service -> no service interface down before activity  Check all existing network protocol -> all running bgp peer at established state no idle state,all running ospf peer occur and in full state without idle state,all running mpls ldp peer occur in normal state,all running bfd peer in up status with no alarm  Check all service under related NE using NCE -> no traffic drop or degrade before activity under related NE  Check all alarm appear under related NE using NCE -> no major alarm occur activity under related NE |

* 1. Change Risks and Countermeasures

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No.** | **Main Issues and Risks Description** | **Possibility** | **Impact** | **Countermeasure** |
| 1 | Configuration lost/failure | Low | Medium | - Call and info to Team Leader to explain detail step what have done previously.  - Reconfigure port, or do replacement/change port. |

* 1. Check Before Change

|  |  |  |  |
| --- | --- | --- | --- |
| **No.** | **Preparations Before Change** | **Owner** | **Completion Date** |
| 1 | **Change back solution has been prepared, confirmed and authorized by customer \*** | Andrew Ivander | 1 Day before implementation |
| 2 | **Change solution and change back solution have been verified\*** | Andrew Ivander | 1 Day before implementation |
| 3 | **Spare parts are ready for use within x minutes; if no spare part, contingency plan is available \*** | Andrew Ivander | 1 Day before implementation |
| 4 | **As per change scenario, collect data for recovery following <7210 SAS-Sx product data collection guide>, and upload to iCare/eTrance \*** | Andrew Ivander | 1 Day before implementation |
| 5 | Confirm has perform main/standby switchover test | Andrew Ivander | 1 Day before implementation |
| 6 | Readiness of getting access permission to the site | Andrew Ivander | 1 Day before implementation |
| 7 | Readiness of remote log-in environment | Andrew Ivander | 1 Day before implementation |
| 8 | Confirm change risks and emergency measures | Andrew Ivander | 1 Day before implementation |
| 9 | Confirm data and configuration are backup | Andrew Ivander | 1 Day before implementation |
| 10 | Confirm network performance is tested and recorded | Andrew Ivander | 1 Day before implementation |
| 11 | Readiness of change test personnel | Rizky Subagyo | 1 Day before implementation |
| 12 | Readiness of relevant equipment maintenance personnel | Andrew Ivander | 1 Day before implementation |
| 13 | Readiness of support & guarantee team | Rizky Subagyo | 1 Day before implementation |
| 14 | Readiness of mobile phone test card | Rizky Subagyo | 1 Day before implementation |
| 15 | Readiness of boards, tools, and instruments | Rizky Subagyo | 1 Day before implementation |

# Operation Steps for Change

## Overall Description of Change Steps

|  |  |  |  |
| --- | --- | --- | --- |
| **No.** | **Main steps** | **Start time** | **End time** |
| 1 | Preparation before Operation | 23:00 | 23:45 |
| 2 | Service Confirmation | 23:45 | 00:00 |
| 3 | Change Procedure | 00:00 | 02:00 |
| 4 | Test Verification | 02:00 | 02:30 |
| 5 | Briefly Report After the Operation | 02:30 | 03:00 |
| 6 | Rollback Steps | 03:00 | 03:30 |
| 7 | Service Verification and Test | 03:30 | 04:00 |

## 3.1.1 Operation Steps for Change

Ensure that the Nokia 7210 SASSX runs stably.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No. \*** | **Change Step\*** | **Operation\*** | **Implementation Person\*** | **Time\*** |
| 1 | Log in to the NE by remote | Nokia remote login to NE using SecureCRT from NOC office  Please refer to the attachment | Andrew Ivander +62 857-7119-9133 | 23:00 -- 23:45 |
| 2 | Health check | Datacom Health check performe 1 hour befor patch impelementation :  **If Cisco Router**  show ip interface brief  show interface  show bgp nei BRI  show isis nei  show isis int brief  sh int accounting  sh arp  show mpls traffic-eng tunnels  show bgp vpnv4 unicast summ  show bgp all all sum  show bgp nei brief  show l2vpn xconnect  show route summary  show route vrf all summ  show route  show ipv4 vrf all interface  show run  show ipv4 vrf all interface bri | i Up  show lldp nei  **If Nokia Router**  show time  show uptime  show bof  show system information  show system cpu  show chassis  show chassis detail  show card state  show card detail  show mda detail  show log log-id 99  show log log-id 99 application snmp  show log log-id 99 application chassis  show log log-id 100  show port  show port detail | match expression "Speed|Change|Rx Optical"  show port | match "Yes"  show router status  show router route-table summary  show router interface  show router ospf <All Instance ID> interface  show router ospf area32 neighbor  show router bgp summary  show router mpls status  show router mpls lsp  show router mpls lsp terminate  show router ldp status  show router ldp session  show service service-using  show service service-using | match Down  show service service-using | match Up  show service sdp  show service sdp-using  show service sap-using  show system sync-if-timing  show service fdb-mac  show service fdb-mac | match sap  check U2000 cacti  inspector tools | Andrew Ivander +62 857-7119-9133 | 23:00 -- 23:45 |
| 3 | Backup Configuration | **If Cisco Router**  commit label *UpgradeTimos23*  **If Nokia Router**  admin tech-support cf3:\before\_UpgradeTimos23\_1.tec  admin tech-support  cf3:\before\_ UpgradeTimos23\_2.tec | Andrew Ivander +62 857-7119-9133 | 23:00 -- 23:45 |
| 4 | Start Execution Script | Start update description :  **Need to Configure**  **{% for data in all\_data\_site %}**  Copy file from cf2 to cf1 at **{{ data[2] }}**    {% endfor %} | Andrew Ivander +62 857-7119-9133 | 00:00 -- 02:00 |

## Test and Verification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Change Validation** | | | | |
| **No. \*** | **Test Item\*** | **Operation Method\*** | **Owner\*** | **Time\*** |
| 1 | Nokia & Cisco Router | Datacom need check after implementation :  **If Cisco Router**  show ip interface brief  show interface  show bgp nei bri  show isis nei  show isis int brief  sh int accounting  sh arp  show mpls traffic-eng tunnels  show bgp vpnv4 unicast summ  show bgp all all sum  show bgp nei brief  show l2vpn xconnect  show route summary  show route vrf all summ  show route  show ipv4 vrf all interface  show run  show ipv4 vrf all interface bri | i Up  show lldp nei  **If Nokia Router**  show time  show uptime  show bof  show system information  show system cpu  show chassis  show chassis detail  show card state  show card detail  show mda detail  show log log-id 99  show log log-id 99 application snmp  show log log-id 99 application chassis  show log log-id 100  show port  show port detail | match expression "Speed|Change|Rx Optical"  show port | match "Yes"  show router status  show router route-table summary  show router interface  show router ospf <All Instance ID> interface  show router ospf area32 neighbor  show router bgp summary  show router mpls status  show router mpls lsp  show router mpls lsp terminate  show router ldp status  show router ldp session  show service service-using  show service service-using | match Down  show service service-using | match Up  show service sdp  show service sdp-using  show service sap-using  show system sync-if-timing  show service fdb-mac  show service fdb-mac | match sap  check U2000 cacti  inspector tools | Andrew Ivander +62 857-7119-9133 | 02:00 -- 02:30 |
| 2 | Voice and data (bts) | Call NOC to check service voice and data before implementation | Andrew Ivander +62 857-7119-9133 | 02:00 -- 02:30 |
| 3 | Collect operation logs | Collect the operation logs of the redirection storage that night, UI operation logs, and upload | Andrew Ivander +62 857-7119-9133 | 02:00 -- 02:30 |
| 4 | Briefly report after the operation | Briefly report after the operation | Andrew Ivander +62 857-7119-9133 | 02:00 -- 02:30 |

## Solution for Changeback in the Case of Failure

### 3.3.1 Definition of Change Failure

|  |  |
| --- | --- |
| **Changeback time\*** | XX Desember 2023 03:00 a.m (local time) |
| **Changeback decision maker\*** | TD Tri Reza (+62 815-8660-8657) , Project Manager IOH : Anugerah R (+62 815-1127-1797) |
| Changeback condition | A change failure shall be recognized if the following major problems (port and device alarm) and impact to service voice and data more than 15 minutes |

### 3.3.2 Solution For Changeback Steps

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **No.** | **Change back Step** | **Operation** | **Implementation Person** | **Time Required** | **Time(hourly level)** |
| 1 | Backing Up | Backup Configuration/Collect the device status/Collect Protocol Status/Traffic Flow/Traffic Utilization | Rizky Subagyo  08987091489 | 10 Minutes | 03:00 -- 03:30 |
| 2 | Rollback Activity/Command | Refer to 3.3.3 | Rizky Subagyo  08987091489 | 15 minutes | 03:00 -- 03:30 |
| 3 | Checking the Router/Switch Status | Backup Configuration/Collect the device status/Collect Protocol Status/Traffic Flow/Traffic Utilization | Rizky Subagyo  08987091489 | 15 Minutes | 03:00 -- 03:30 |
| 4 | Related Service KPI verification | Check with NOC | Rizky Subagyo  08987091489 | 30 Minutes | 03:00 -- 03:30 |

### 3.3.3 Changeback Steps

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No.\*** | **Changeback Steps\*** | **Operation content\*** | **Owner\*** | **Time\*** |
| 1 | Data Collection / Backup config | Backup alarm by command and from EPNM/NFMP | Andrew Ivander +62 857-7119-9133 | 03:00 -- 03:30 |
| 2 | Rollback Configuration | Move Physical Connection if needed  **Need to Configure**  **At Nokia Router**  admin rollback compare <Index file rollback> to active-cfg  admin rollback revert <Index file rollback> now  **at Cisco Router**  rollback configuration to *BeforeUpgradeTimos23* | Andrew Ivander +62 857-7119-9133 | 03:00 -- 03:30 |

### 3.3.4 Equipment Status Check (optional)

**NA**

### 3.3.5 Tests after Changeback

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Rollback Validation** | | | | |
| **No. \*** | **Test Item\*** | **Operation Method\*** | **Owner\*** | **Time\*** |
| 1 | Nokia & Cisco Router | **If Cisco Router**  show ip interface brief  show interface  show bgp nei BRI  show isis nei  show isis int brief  sh int accounting  sh arp  show mpls traffic-eng tunnels  show bgp vpnv4 unicast summ  show bgp all all sum  show bgp nei brief  show l2vpn xconnect  show route summary  show route vrf all summ  show route  show ipv4 vrf all interface  show run  show ipv4 vrf all interface bri | i Up  show lldp nei  **If Nokia Router**  show time  show uptime  show bof  show system information  show system cpu  show chassis  show chassis detail  show card state  show card detail  show mda detail  show log log-id 99  show log log-id 99 application snmp  show log log-id 99 application chassis  show log log-id 100  show port  show port detail | match expression "Speed|Change|Rx Optical"  show port | match "Yes"  show router status  show router route-table summary  show router interface  show router ospf <All Instance ID> interface  show router ospf area32 neighbor  show router bgp summary  show router mpls status  show router mpls lsp  show router mpls lsp terminate  show router ldp status  show router ldp session  show service service-using  show service service-using | match Down  show service service-using | match Up  show service sdp  show service sdp-using  show service sap-using  show system sync-if-timing  show service fdb-mac  show service fdb-mac | match sap  check U2000 cacti  inspector tools | Andrew Ivander +62 857-7119-9133 | 03:30 -- 04:00 |
| 2 | voice and data | Call NOC to check service voice and data before perform rollback steps | Andrew Ivander +62 857-7119-9133 | 03:30 -- 04:00 |

### 3.3.7 Changeback Risk Analysis

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No.\*** | **Main Issues and Risks Description\*** | **Possibility\*** | **Impact\*** | **Countermeasure\*** |
| 1 | Change description cause missed configuration on port. | low | medium | 1. Escalated to project TD Tri Reza (+62 815-8660-8657) and Supervisor less than 5minutes to explain detail situation.    2. Parallel open SR emergency or call GTAC standby ( On-Duty GTAC or call GTAC hotline 00862981770999 ) to get support.    3. Get approval from TD, Management and Customer before perform rollback/solution on step4.    4. Execute emergency plan for the disaster recovery schenario following GTAC guidance. |

## Change of Spare Parts and Emergency Workstation (optional)

|  |  |  |
| --- | --- | --- |
| **Type** | **Content** | **Planned Time** |
| Spare parts | Any board or SFP fail, will directly request from warehouse | Implementation Time |

# Work after Change

## Observation

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **No.** | **Operation Items:** | **Operation method** | **Owner** | **Time** | **Expected Result** |
| 1 | Keep monitoring alarm | Through NCE IPBB/IPRAN check alarm | Paulus Bangun  +62 812-8833-7112 | XX Desember 2023 17:00 – 19:00 | No new alarm |
| 2 | Check Throughput | Through Cacti Check throughput and traffic pattern Bandung – Sukabumi | Andrew Ivander +62 857-7119-9133 | XX Desember 2023 17:00 – 19:00 | Throughput performance maintain |
| 3 | Monitor KPI | Through NCE IPBB/IPRAN and DCN monitor KPI after activity | Paulus Bangun  +62 812-8833-7112 | XX Desember 2023 17:00 – 19:00 and  For next 24 hour | KPI is maintain. |

## Provision of Materials (optional)

NA

## Provision of Software (optional)

NA

## Training (Optional)

NA

## Matters Needing Attention (Optional