



CARRIER SERVICES

REFERENCE INTERCONNECT OFFER - OPERATIONS AND MAINTENANCE MANUAL

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1 Abstract

The following document details the procedures for Operations and Maintenance between MTN SA and the OLO. It contains forecasting, provisioning and testing procedures, and is meant to provide guidance in setting up interconnection. This document also lays out the operational procedures to be followed when reporting unplanned or planned outages or network or code changes.

2 Definitions

- 2.1 **“Interconnection Outages”** means a failure of interconnection, whether planned or unplanned, of any of the components included in the interconnection.
- 2.2 **“Planned Outage”** means an expected change to the technical implementation, configuration or equipment and location or capacity of the interconnection.
- 2.3 **“Unplanned Outage”** means an unexpected fault or failure of the technical implementation, configuration or equipment of the interconnection.
- 2.4 **“Month End Freeze Period”** means the period of duration from the 25th of any given month to the 5th of the next month.
- 2.5 **“Service Affecting Fault”** is one that directly or indirectly affects traffic flow or reduces the level of service provided to OLO or MTN SA or either of their respective customers.
- 2.6 **“SME”** is the service management engineer that forms part of the support structure.
- 2.7 **“Commercial Representative”** is a representative of either Party responsible for the day to day management of the commercial relationship between the Parties.
- 2.8 **“POIL” or “Point of Interconnection Link”** means the physical and/or logical electronic communications link established for the mutual exchange of Calls between the Systems;

3 Operations and Maintenance

3.1 Introduction

This chapter specifies the operations and maintenance principles that MTN SA and the OLO will be required to conform to following signing of the Service Contract. It describes the processes for Services provided by each Party and the exchange of information between Parties.

3.1.1 Interconnection Service Desk (ISD)

It being essential that any malfunctioning of the Interconnection be rectified promptly and efficiently, each Party shall establish an ISD to which all matters relevant to the proper functioning of the Interconnection (generally of a technical nature) are to be reported. Each ISD shall fulfill the following criteria:

- be staffed on a 24-hour basis and equipped with the necessary infrastructure to facilitate efficient communication (contact details are to be updated by the Parties as and when changes occur);
- offer its full assistance to the other for the rectification of Interconnection Outages and other faults;
- be responsible for processing reported Interconnection Outages and other faults using its own procedures;
- function as the traffic controlling Party for the circuit on which it loads outgoing traffic.
- be used as the contact point for any inter-service assistance required; and
- supply unique reference numbers for faults detected, for traceability and history as well as trending.

3.1.2 Fault Handling and Rectification Procedures

3.1.2.1 Unplanned Interconnection Outages

Upon detection of an unplanned Interconnection Outage, the Parties shall immediately notify each other's ISD and Commercial Representative. At the time of notification, the Interconnection Outage could have ceased to exist or could still be persisting. In cases where the Interconnection Outage has ceased to exist, the ISD's will note the occurrence, duration and details of the failure and inform the Commercial Representative. In cases where the Interconnection Outage is persisting, immediate action shall be taken to localize the fault causing the failure and to identify the Party responsible for clearing the fault (should this have been unclear at first). The ISD's shall thereafter, and until full restoration of service, inform each other's ISD and Commercial Representative at mutually agreed upon intervals, of the progress of the repair. Once full service has been restored the ISD's will note the Interconnection Outage duration and details of the failure.



3.1.2.2 **Planned Interconnection Outages**

Planned Interconnection Outages shall be kept to an absolute minimum and shall not be carried out during busy traffic times or the Month End Freeze Period. The Party planning such an Interconnection Outage shall inform the other Party's ISD and Commercial Representative not less than seven (7) days in advance (by mutual agreement this time scale may be reduced) and agree upon a suitable time and expected duration for such an Interconnection Outage. If the planned Interconnection Outage does not directly affect the other Party, such other Party's ISD and Commercial Representative shall nevertheless be informed of the planned time and duration of the Interconnection Outage. During a planned Interconnection Outage the responsible Party shall, at regular intervals and until full restoration of service, inform the other Party's ISD and Commercial Representative of the progress. Once full service has been restored the ISD's will note the Interconnection Outage duration. If full service is not restored within the expected duration, the Interconnection Outage will be regarded as an unplanned Interconnection Outage (occasioned by a planned Outage) and the procedure above for dealing with unplanned Interconnection Outages will be followed.

3.1.2.3 **Planned Interconnection Changes**

Planned Interconnection Changes include new number range assignments, capacity increase or decrease requests, or changes to the interconnection POIL location or method of interconnection, and all other such changes. The Party planning or requesting such a Change shall inform the other Party's Commercial Representative not less than seven (7) days in advance (by mutual agreement this time scale may be reduced) and agree upon a suitable time to effect such changes. If the planned Change does not directly affect the other Party, such other Party's Commercial Representative shall nevertheless be informed of the planned change and effective date. At three (3) days before the agreed upon date for effect of Changes, the Commercial Representatives from each Party shall inform each other of the readiness for such requested Change. Should a delay to the work to effect the requested Changes occur at any time, the responsible Party's Commercial Representative shall immediately inform the other Party's Commercial Representative and detail the nature and length of the delay and the new expected effective date.

3.1.2.4 Outage and Fault History

Each Party shall maintain records, preferably in electronic format, containing details of all Interconnection Outages and other faults and the corresponding restoration times which were handled between it and the other Party's ISD for a running twelve-month period. These records should be used to assess the fault performance of the Interconnection.

3.1.3 Maintenance Procedures

3.1.3.1 Maintenance Methodology

It is accepted that certain scheduled and unscheduled maintenance actions will be carried out by the Parties on the items comprising the Interconnection. Where such actions could affect the proper functioning of the Interconnection, e.g. when work is to be performed on critical centralized equipment, the other Party's ISD shall be informed accordingly. In the case of scheduled maintenance, the schedule of critical activities shall be made available to the other Party's ISD in advance; it will, however, not be necessary to inform such ISD of the completion of such activities. If the maintenance action results in an Interconnect Outage, the procedure provided for in paragraph 3.2 shall be followed.

3.1.3.2 System and Circuit Identification

Each Party shall communicate to the other generic system and circuit identification for mapping to its own generic system and circuit identification scheme.

3.1.3.3 Interconnection Circuit Utilization Details

The Parties may, where required, exchange records of utilization and Call connection performance over the interface to ensure that the service over the interface is maintained at satisfactory levels. Information regarding planned dates for route augmentation shall also be exchanged between the Parties whenever necessary.

3.1.3.4 Malicious Call Tracing

Authorized malicious call tracing may be requested by either of the ISD's and the other Party shall give priority to such a request.

3.2 Escalation Procedure for Operational Matters

In all cases of Interconnection Outages or interaction between the Parties concerning operation and maintenance activities, the following agreed escalation procedure shall apply:

3.2.1 Fault Category Classifications

Severity Level	Notification Time (Time to Acknowledge)	Severity Definition
Critical	10 minutes via email*	Critical problems are defined as those affecting the entire network of the Service Recipient or a service outage at the Service Provider. The condition includes a critical work stoppage during normal working hours that affects multiples sites for critical components or function of a customer's business.
Major	15 minutes via email*	Major problems are defined as affecting less than 10% of the Service Recipient's network, including single site outages, management link down impacting the Service Provider's ability to view the Service Recipient's network (non-service affecting) or Critical sites identified by the Service Provider.
Minor	1 hour via email*	Minor problems are defined as affecting individual sites, and do not interrupt service or performance.
Informational	4 hours via email*	Informational problems are for the Service Provider's information update only. Informational Remedy tickets are created by the Service Provider's regarding a situation at the Service Recipient's site that requires resolution but may not trigger an alarm at the Service Provide. Informational problems do not require repair.

Table 3.2.1.1 Fault category classifications

****Due to the nature of incident management, the Service Provider will endeavour to supply updates as per above, however this cannot be guaranteed.***



3.2.2 Fault Resolution Times

For the transport of carrier service, MTN SA and the OLO make use of their own infrastructure and that of third parties. Therefore, fault resolution time is also dependent on the times delivered by third parties.

		MTN SA
Fault Category:	Target Fault Resolution Time: (Fault in OLO Network)	Target Fault Resolution Time: (Fault in MTN SA Network)
Critical	Four business hours	Four business hours
Major	Eight business hours	Eight business hours
Minor	Forty-eight business hours	Forty-eight business hours

Table 3.2.2.1 Fault resolution time for different fault categories

Note:

Both Parties will use reasonable endeavours to meet the above restoration times. However, there may be occasions when these times cannot be met, e.g. transmission cable failure, major network fault in either operator's network or in that of third parties. Instances where the above times have not been met are to be closely monitored and statistics maintained.

3.2.3 Fault Reporting Hierarchy and Fault Escalation Matrix

3.2.3.1 The intention of fault escalation is to raise awareness of faults within OLO and MTN SA management on a peer-to-peer hierarchical basis to ensure that the appropriate levels of resources are directed towards fault resolution.

3.2.3.2 All escalations between Parties are to be made by the appropriate representative of the Party escalating; e.g. if the reporting Party requires a level 3 escalation it is expected that the reporting Party's level 3 representative will contact the other Party.

3.2.3.3 MTN SA Commercial Interconnect department contact details:

MTN Carrier Services



Commercial Interconnect

interconnect@mtn.co.za

3.2.3.4 The fault reporting hierarchy is shown in the tables below.

Escalation Level & Time	Contact Name	Position	Contact Information
1 st Level Critical Immediate	Service Assurance Engineer	First line Support	0838690699/ 0877400111/ 083182 Option 2/2
2 nd Level Critical 2 Hours	Primrose Dube	Supervisor: Service Assurance	0832120899 primrose.dube@mtn.com
3 rd Level Critical 3 Hours	Thulani Mhlanga	Manager: Service Assurance	0832002307 thulani.mhlanga@mtn.com
4 th Level Critical 4 Hours	Rishan Ramnath	Acting Senior Manager: Service Assurance	0832124667 Rishan.Ramnath@mtn.com



Escalation Level & Time	Contact Name	Position	Contact Information
1st Level Major 2 Hours	Service Assurance Engineer	First line Support	0838690699/ 0877400111/ 083182 Option 2/2
2 nd Level Major 4 Hours	Primrose Dube	Supervisor: Service Assurance	0832120899 primrose.dube@mtn.com
3 rd Level Major 6 Hours	Thulani Mhlanga	Manager: Service Assurance	0832002307 thulani.mhlanga@mtn.com
4th Level Major 8 Hours	Rishan Ramnath	Acting Senior Manager: Service Assurance	0832124667 Rishan.Ramnath@mtn.com

Escalation Level & Time	Contact Name	Position	Contact Information
1st Level Minor 12 Hours	Service Assurance Engineer	First line Support	0838690699/ 0877400111/ 083182 Option 2/2
2 nd Level Minor 18 Hours	Primrose Dube	Supervisor: Service Assurance	0832120899 primrose.dube@mtn.com
3 rd Level Minor 24 Hours	Thulani Mhlanga	Manager: Service Assurance	0832002307 thulani.mhlanga@mtn.com
4th Level Minor 48 Hours	Rishan Ramnath	Acting Senior Manager: Service Assurance	0832124667 Rishan.Ramnath@mtn.com

Table 3.2.3.3.1 MTN SA Fault escalation hierarchy applicable to relevant Fault Category



Office hours are from 8:00 -18:00 hours on a working day, Monday to Friday, except on public holidays.

Escalation Category	OLO
FAULT REPORTING	
1ST LEVEL ESCALATION	
2ND LEVEL ESCALATION	
3RD LEVEL ESCALATION	
4TH LEVEL ESCALATION	

Table 3.2.3.3.2 OLO Fault escalation hierarchy

3.2.4 INCIDENT REPORTS

Upon request the Service Provider will provide the Service Recipient with a written report concerning an outage incident or missed service level. General parameters are outlined below:

□□ Root Cause Analysis (RCA) (for critical faults only)

- At any time, the Service Recipient can request a formal Incident Report be provided in writing for a particular incident categorized as a critical fault. Until the investigation is completed a verbal RCA will be provided as requested. Information known at the point of request will be provided. The formal RCA report will be supplied within a week of resolution.

□□ Post-Mortem (for critical faults only)

- On request, the Service Provider will provide post-mortem for a specific event or incident categorized as a critical fault. The Post mortem will contain the following information: Service Recipient name, report prepared by, date report prepared, circuit identifier/telephone number, Service Provider trouble ticket number, Service Recipient internal ticket number, date and time trouble reported, date and time service restored, synopsis of trouble and resolution, summary of events, root cause analysis and future prevention.

3.2.5 Software Upgrades and Modifications

3.2.5.1 To ensure that there are no interworking problems, software enhancements shall, prior to the introduction thereof into an active exchange, be introduced and tested between the Parties at

a test exchange. A minimum of two weeks written notice shall be given before testing can commence.

3.2.5.2 Unless otherwise agreed in writing between the Parties, a 30-day lapse is required between a software upgrade in any MSC or switching unit and the general release into the rest of the ECN.

3.2.5.3 A controllable number of software patches should be activated in any 24-hour period on the same switching unit. The testing of such patches will be by agreement in writing. All applications and tests shall be done between 22h00 and 05h00 or during such other low traffic periods as may be agreed.

3.3 Operation and Maintenance Meetings

3.3.1 Periodic meetings involving Commercial Representatives from both Parties will be held, at least quarterly (where for the purposes of this document any reference to “quarterly” or “quarter” means a calendar quarter) and may be held face to face or by teleconference. Meetings will consider issues relating to implementation and operation of Services provided pursuant to this Service Contract.

3.3.2 Service Implementation Meetings will include the following:

- **Forecasting**

Forecasting will consider the service forecasts for both Parties and will seek to validate any assumptions used in making forecasts.

- **Order Planning**

Order Planning will consider the final forecast and will lead to the production of an order plan (**Order Plan**).

- **Provisioning**

Provisioning Review will review progress against plans and lead to agreement on any changes required.

- **Operational**

Operational Review will review and discuss performance reports, review operational problems and agree on resolution initiatives and timelines.



3.3.3 Additional technical meetings may be held prior to the provisioning phase for the early exchange of information regarding technical standards, the numbering scheme of each network, switch identification, routing etc.

3.4 Testing

3.4.1 The objectives of the testing are:

- to maintain the integrity of both networks;
- to meet the contractual specifications;
- to locate and enable resolution of faults with the interconnection; and
- to ensure that billing is completed correctly.

3.4.2 The following framework is used to support interconnect testing.

3.4.2.1 **Individual Location Test.** This phase of the testing verifies that the network of MTN SA and the OLO are suitable for interconnection. Each Party must demonstrate that its interface conforms to the technical requirements, specifications and scope agreed to and included in the relevant Service Contract entered into between the Parties, depending on the type of peering method chosen.

3.4.2.2 **Network Interconnection Test.** This Network Interconnection Test ensures the interoperability of the ECNs, management of the links, tests whether all types of calls can be made. These include SS7 and SIP tests and the exchange of CDR records. Network statistics are also compared to ensure correct functioning of the interconnect.

3.4.2.3 **First Live Test.** This is the phase prior to the general operation of the interconnection. During this phase, fine-tuning of operational procedures takes place. This phase uses non-billable and billable traffic depending on the test.



3.4.3 **Test Cases.** The interconnect test types (also referred to as test cases) required are shown below. Within each type there are key areas of testing which are shown below.

	Test Cases	Test Phases		
		Individual Location Test	Network Interconnection Test	First Live Test
1.	Interoperability Tests 1. SS7 Tests 2. IP tests 3. Network Routing 4. Routing Tests 5. Failover tests	X X 	X X X X	 X X X
2	Service Tests 1. Service from MTN SA to OLO 2. Services from OLO to MTN SA 3. CLI tests		X X X	X X X
3	Billing 1. Charging per service 2. CDR verifications		X X	X X

Table 3.4.3.1 Interconnect Test Cases

3.5 Provisioning Procedure

3.5.1 Forecast

3.5.1.1 The forecast process requires both Parties to plan and exchange forecasts for each applicable peering type provided pursuant to this Service Contract, and to ensure that changes to the forecasts are communicated in a timely fashion.

3.5.1.2 The exchange of forecast information is required to enable each Party to plan and manage its System and human resources. The process is ongoing over a rolling 24- month period with quarterly updates.

3.5.1.3 Each Party has the opportunity to comment on the validity of provisional forecast information in the forecasting meetings, and to review any assumptions used. Each Party is



encouraged to provide appropriate supplementary information to aid the development of forecasts.

3.5.1.4 All information exchanged will be treated as confidential and will not be used for any purpose other than for the determination of a forecast.

3.5.1.5 Each Party shall provide a provisional forecast for all Services that they require for the ensuing two year period. This provisional forecast will consist of the locations and number of POILs, together with traffic forecasts pursuant to this Service Contract. Traffic forecasts will include the locations of the applicable Point of Interconnection. The Parties will exchange forecasts on agreed dates each quarter, using the forms shown below and/or such other forms as agreed in writing between the Parties.

MTN SA POP	OLO POP	Forecast: Number Concurrent Calls				Total
		Q1	Q2	Q3	Q4	

Table 3.5.1.1 Sample forecast template Concurrent Calls

MTN SA POP	OLO POP	Forecast :Number of E1s				Total
		Q1	Q2	Q3	Q4	

Table 3.5.1.2 Sample forecast template Number of E1s

3.5.2 Ordering

3.5.2.1 The Parties will agree an Order Plan for each quarter at the preceding quarterly ordering meeting and following sign-off by both Parties the Order Plan shall be treated as submitted and shall constitute a binding Order from each Party for capacity. The relevant final forecast will be an integral component of the Order. The format of the Order Plan is given in Table 3.5.2.1 and Table 3.5.2.2.



3.5.2.2 The Order Plan will include a “Ready for Test Date” and “Ready for Service Date” for the capacity. These dates will depend on whether additional POILs are required, or whether additional bandwidth is required, depending on the type of interconnection and will be agreed between the Parties on a case by case basis.

3.5.2.3 The Ready for Test Date and Ready for Service Date may be subject to Force Majeure circumstances, including delays caused by third parties. In the event of any delay attributable to such Force Majeure circumstances, events and delays caused by the third parties, the Ready for Test Date and/or Ready for Service Date shall be deemed extended by the number of days of delay.



Date		Supplier			Reference No.		
Existing POILs							
Origin	Destination	Carrier Type		No of Links	Ready for Test date	Ready for Service date	Comments

Table 3.5.2.1 Sample ordering template for existing POILs

Date		Supplier			Reference No.		
New requirement							
Origin	Destination	Carrier Type	No of Links	Ready for Test date	Ready for Service date	Comments	

Table 3.5.2.2 Sample ordering template new requirements

3.5.3 Provisioning

3.5.3.1 After the submission of the Order Plan, both Parties shall carry out the necessary preparations required for installation of the orders as per the Order Plan.

3.5.3.2 Both Parties shall seek to minimise delay and the effects of delay.