RMDCN IPVPN Status
Network Reliability and Performance
June 2007 – April 2008

14th RMDCN Operations Committee meeting

Submitted by ECMWF

Agenda

- New RMDCN IPVPN SLA Calculation
- Global RMDCN performance (SLA)
- Availability per month + SLA breaches

New RMDCN IPVPN SLA Calculation

- **Availability according to SLA**
  - ➔ **DT = Down Time (hours)**
  - ➔ **Availability according to SLA = ((720*42)-DT)/(720*42)**
    - ✓ 720 = 30*24
    - ✓ 42 = number of RMDCN sites
    - ✓ Examples:
      - – DT = 10 ➔ Availability according to SLA = 99.96%
      - – DT = 42 ➔ Availability according to SLA = 99.86%

New RMDCN IPVPN SLA Calculation

- **Availability including backup**
  - ➔ **ADT = Actual Down Time (hours)**
    - ✓ ADT = DT – (DT for sites for which ISDN kicked off or MC sites)
  - ➔ **Availability including backup =((720*42)-**ADT**)/(720*42)**
    - ✓ 720 = 30*24
    - ✓ 42 = number of RMDCN sites
    - ✓ Examples:
      - – DT = 10, but MC sites, ADT = 0 ➔ Availability BU = 100%
      - – DT = 42, but ADT = 10 ➔ Availability BU = 99.96 %

New RMDCN IPVPN SLA Calculation

- **What is an "availability SLA breach"**
  - ➔ **Each RMDCN site has an SLA level**
    - ✓ According to the site topology
      - – Mission Critical: 100%
      - – Enhanced Resilience
      - – Standard Resilience
    - ✓ According the country and the city in the country ("key city" or not)
    - ✓ Examples:
      - – Austria: Enhanced Resilience, key city (Vienna), SLA = 99.9%
      - – Latvia: Enhanced Resilience, Region 2 (Eastern Europe), SLA = 99.8%
  - ➔ **If "calculated SLA" < SLA: "SLA breach"**
    - ✓ SLA Rebate = ("Monthly Qualifying Charge" / 25) * DT
    - ✓ SLA Rebate cannot exceed the "Monthly Qualifying Charge", that is: DT Max = 25

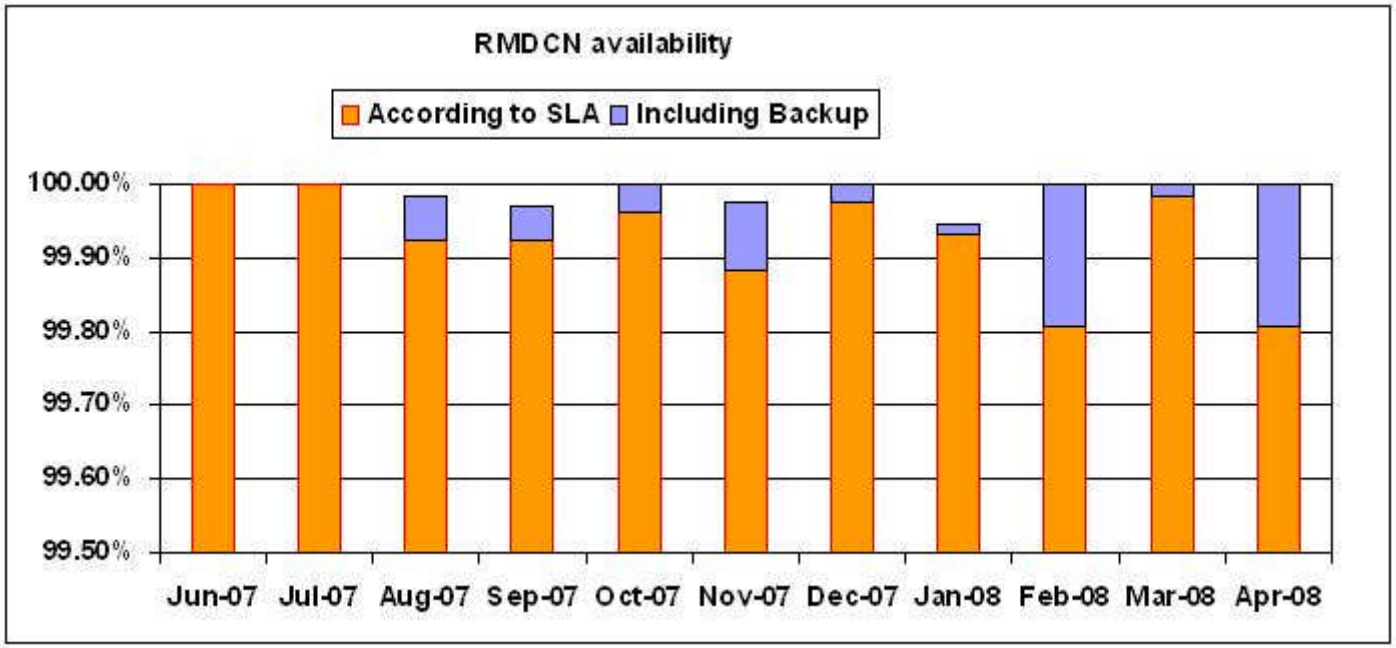
New RMDCN IPVPN SLA Calculation

- **Other Service Level Agreement Metrics**
  - ➔ **Round Trip Delay**
    - ✓ Measured from CE to CE at specific locations
  - ➔ **Packet Loss**
    - ✓ Guaranteed on PE to PE path only and measured monthly
  - ➔ **Guaranteed Time To Repair (GTTR)**
  - ➔ **Service Degradation**

- **Migration: completed by mid-June 2007**

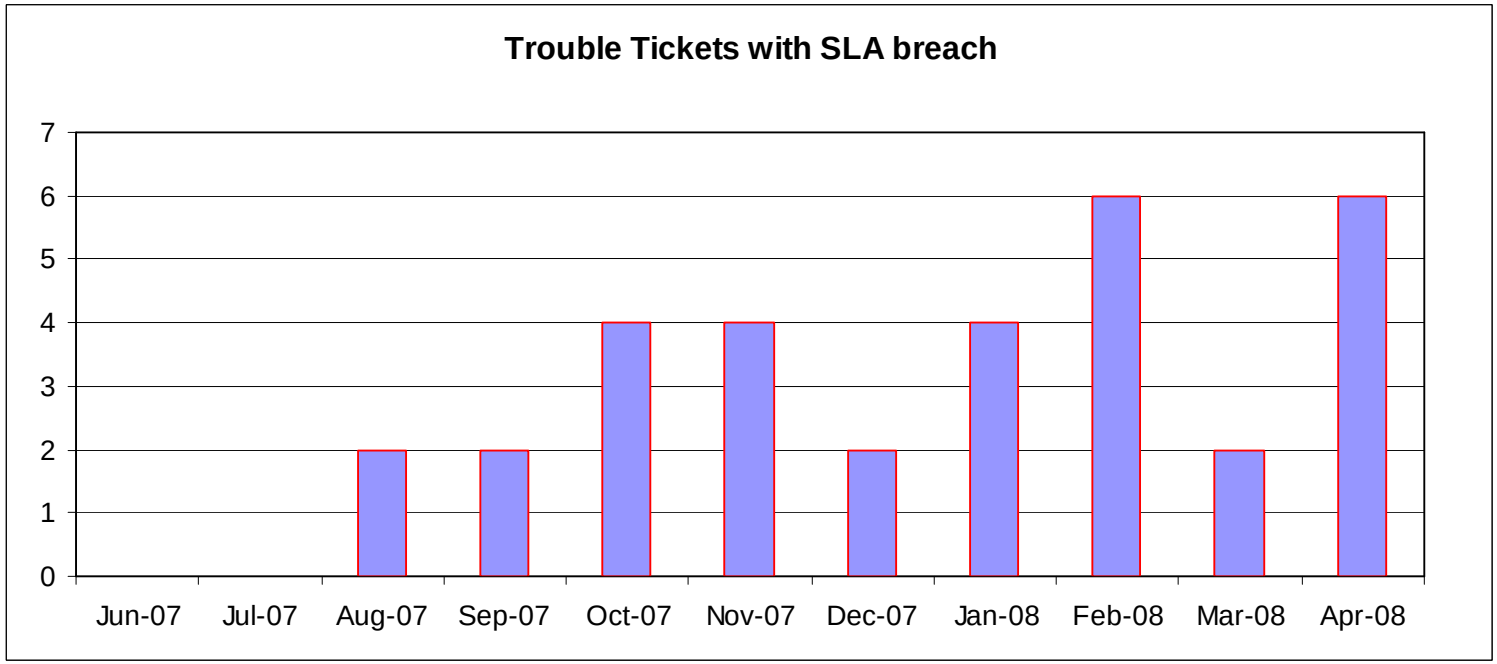
Global RMDCN performance

- **RMDCN availability June 2007 – April 2008**



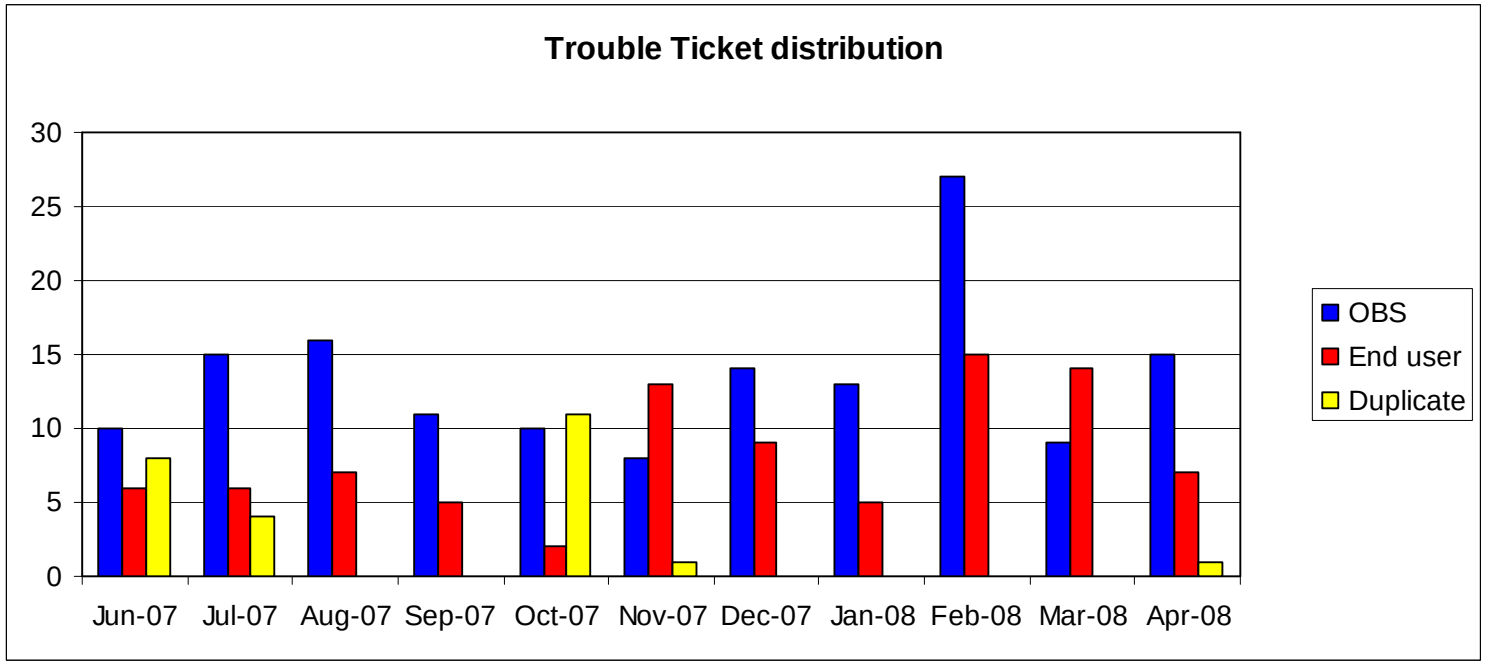
Global RMDCN performance

- **RMDCN TT with SLA breach June 2007 – April 2008**



Global RMDCN performance

- **RMDCN TT distribution June 2007 – April 2008**



Availability per month + SLA breaches

- June 2007
  - No SLA breaches
  - Availability according to SLA: 100%
  - Availability including backup: 100%
- July 2007
  - No SLA breaches
  - Availability according to SLA: 100%
  - Availability including backup: 100%

Availability per month + SLA breaches

- **August 2007**
  - ➔ **2 SLA breaches:**
    - ✓ Italy: TT 5315504. Italy was down for 18.5h on 8-9 Aug 07 due to line terminal failure at PTT exchange.
    - ✓ Bulgaria: TT 5350095. Main circuit down for 5 hours on 22 Aug. PTT internal network issue
  - ➔ **Availability according to SLA: 99.92%**
  - ➔ **Availability including backup: 99.98%**

Availability per month + SLA breaches

- **September 2007**
  - ➔ **2 SLA breaches:**
    - ✓ TT 5406903. Saudi Arabia was down for 9 hours on 10 Sep 07 due to a local PTT failure. There is no NAS backup at this site.
    - ✓ TT 5410400. Norway's primary link was down nearly 14 hours on 11-12 Sep 07 because of a configuration problem at a PTT node.
  - ➔ **Availability according to SLA: 99.92%**
  - ➔ **Availability including backup: 99.97%**

Availability per month + SLA breaches

- **October 2007**
  - ➔ **4 SLA breaches:**
    - ✓ TT 5536213. Belgium's main link was down for 6 hours on 2 Oct 07 because a cable was disconnected on a local PTT equipment. The NAS backup worked properly.
    - ✓ TT 5516782. Romania's main link was down for nearly 2 hours on 22 Oct 07 because of a local PTT power supply fault. The ISDN backup kicked off properly.
    - ✓ TT 5497367. Italy's primary link was down for 1h 15m on 15 Oct 07 because of a Telecom Italia maintenance.
    - ✓ TT 5460608. Switzerland's primary link was down for around 3h 20m on 29 Oct 07. This was due to an OBS power supply issue. The NAS backup worked fine.
  - ➔ **Availability according to SLA: 99.96%**
  - ➔ **Availability including backup: 100%**

Availability per month + SLA breaches

- **November 2007**
  - ➔ **4 SLA breaches:**
    - ✓ TT 5640696. India\x{2019}s main circuit experienced a 10-hours outage on 30 Nov 07 because of a faulty local PTT MUX. The RMDCN traffic was properly routed through the NAS backup.
    - ✓ TT 5602674. Saudi Arabia\x{2019}s main link was down for 6 hours on 16 Nov 07 because of a faulty local PTT line. There is no NAS backup at this site.
    - ✓ TT 5577766. Romania\x{2019}s main link was down for 17 hours on 08 Nov 07. The reason was a local PTT optical fibber cut. The ISDN backup worked as expected.
    - ✓ TT 5547009. Bulgaria experienced routing issues with France for 2 hours on 01 Nov 07. OBS fixed the problem by temporary re-routing traffic to Bulgaria from France through the secondary French link.
  - ➔ **Availability according to SLA: 99.88%**
  - ➔ **Availability including backup: 99.97%**

Availability per month + SLA breaches

- **December 2007**
  - ➔ **2 SLA breaches:**
    - ✓ TT 5665498. ECMWF's main RMDCN circuit went down for 4 hours on 10 Dec 2007 because of a faulty GigaBit card that needed resetting.
    - ✓ TT 5654168. Bulgaria's main link was down for 4 hours on 06 Dec 07. The reason for outage was a hanging local PTT equipment provoked by a major outage. The ISDN backup worked properly.
  - ➔ **Leased line between UKMO and ECMWF down:**
    - ✓ TT 5647624. ECMWF's Leased Line with the UKMO went down for 7h 30m on 04 Dec 2007. Resetting a card on a local PTT equipment fixed the outage (BT).
  - ➔ **Availability according to SLA: 99.97%**
  - ➔ **Availability including backup: 100%**

Availability per month + SLA breaches

- **January 2008**
  - ➔ **4 SLA breaches:**
    - ✓ TT 5782864. Serbia's main RMDCN circuit went down for 90 minutes on 30 Jan 2008. The reason was a local PTT outage. The NAS backup did not function as it was also affected by the outage.
    - ✓ TT 5781287. Portugal's main RMDCN circuit went down for 7 hours 30 minutes on 30 Jan 2008 because of a local PTT issue. The ISDN backup work normally.
    - ✓ TT 5781254. China's primary RMDCN circuit went down for 2 hours 30 minutes on 30 Jan 2008 because of a local PTT fault.
    - ✓ TT 5741136. Serbia's main link was down for 8 hours 30 minutes on 15 Jan 08. The reason for outage was a local PTT issue. This issue also affected the NAS backup which did not kick off.
  - ➔ **Availability according to SLA: 99.93%**
  - ➔ **Availability including backup: 99.95%**

Availability per month + SLA breaches

- **February 2008**
  - **6 SLA breaches:**
    - ✓ TT 5807046. The UK's secondary circuit went down for 10 hours on 13 Feb 2008 following a problem within OBS's core network.
    - ✓ TT 5807016. Iceland's experienced a 10 hours outage on 13 Feb 2008 due to a problem within OBS's core network. The ISDN backup kicked off properly.
    - ✓ TT 5819251. Romania's RMDCN circuit went down for 4 hours on 12 Feb 2008 following an emergency PTT maintenance. The NAS backup worked as expected.
    - ✓ TT 5807228. China experienced a 5 hours cut of one of its access circuits following a problem that occurred within OBS's core network on 11 Feb 2008.
    - ✓ TT 5806962. ECMWF's secondary access circuit was down on 10 Feb 2008 for 10 hours 30 minutes after an outage occurred within OBS's core network.
    - ✓ TT 5801166. ECMWF's secondary access circuit went down for 19 hours on 07 Feb 2008 because of an optical fibre failure at POPLA exchange in London.
  - **Availability according to SLA: 99.81%**
  - **Availability including backup: 100%**

Availability per month + SLA breaches

- **March 2008**
  - ➔ **2 SLA breaches:**
    - ✓ TT 5879500. Sweden's primary access circuit went down for 4 hours on 10 Mar 2008 following a PTT hit that was fixed by local PTT.
    - ✓ TT 5878412. Denmark's secondary access circuits went down for 1 hours on 10 Mar 2008 following a line flapping problem that was fixed by the local PTT.
  - ➔ **Availability according to SLA: 99.98%**
  - ➔ **Availability including backup: 100%**

Availability per month + SLA breaches

- **April 2008**
  - ➔ **6 SLA breaches:**
    - ✓ 5997272. The Netherlands's access circuit experienced a 13 hours outage on 26 April because of a local PTT issue. The backup ISDN access was used for the duration of the outage.
    - ✓ TT 5997689. Denmark's secondary access circuit was down for 1 hour 15 minutes on 25 April because of a flapping issue.
    - ✓ TT 5957858. Iceland lost its main circuit for nearly 24 hours on 11 April. OBS's RFO was a line flapping issue. The ISDN backup access worked fine.
    - ✓ TT 5936985. Turkey's backup circuit went down for 17 hours 30 minutes on 02 April. The reason for outage was a faulty PTT.
    - ✓ TT 5933840. One of the two access circuits in Russia was down for 1 hour on 01 April after an optical fiber cable cut in Romania, which was subsequently repaired and restored.
    - ✓ TT 5933543. Romania's circuit went down for 2 hours on 01 April following a node isolation due to double fiber cut. The ISDN backup access kicked off properly.
  - ➔ **Availability according to SLA: 99.81%**
  - ➔ **Availability including backup: 100%**

Questions?