

ANNEX 3 (14 OCTOBER 2008)

IT REQUIREMENTS

The Portuguese Party shall take all necessary action to make available to ITU, free of charge, the IT infrastructure, equipment and services as described in this Annex in a manner that ITU considers adequate to ensure the proper functioning of the Events and that provides the same functionalities and performance as that available at ITU headquarters.

The Portuguese Party shall involve ITU in the equipment selection process. Any equipment selected should be approved by both Parties prior to an order being placed. The equipment selection should be completed at least three (3) months before the opening dates of the Events, allowing sufficient time for purchase/rental, delivery and preparation. More lead time may be required, depending upon the procurement processes of the Portuguese Party.

The Event venue and any pre-installed ICT and electrical infrastructure should be made available to the Parties' IT support teams at least one (1) month before the opening date of the Events in order to carry out the preparatory work. The Portuguese Party must ensure there is rack space for the ITU server and network equipment, stable and adequate electrical power and air conditioning, backed up by Uninterruptible Power Supply (UPS) units, in the IT room and wiring closets prior to the arrival of the ITU IT support team on 13 April 2009. Emergency generator equipment may be necessary, if local power supply conditions are subject to outages longer than the UPS batteries can sustain.

The voice and data network shall remain operational for at least one (1) full day after the closing date of WTPF-09.

The IT teams of both Parties shall work together to define the exact timeframe for the delivery of the infrastructure and services.

1. Network requirements

1.1 General requirements

A physical Ethernet network that consists of two logical networks: an internal network for ITU operations called "Purple LAN" and an external network for Events participants called "Orange LAN", which shall include a cybercafé and the wireless LAN. A redundant firewall separates the two networks and both networks shall be able to access the Internet.

The Portuguese Party shall provide all the network equipment (e.g. hubs, switches, routers), cabling and equipment racks necessary to implement the "Purple" and "Orange" networks. The network shall be dedicated to the Events and operational (without servers) prior to the arrival of the ITU IT support team.

The cabling infrastructure shall have well-labelled cables and network connection points; copper cables shall be of category 5 standard or above; fibres can be multi-mode or mono-mode, depending on the distance between the two end-points.

The network shall have redundancy at the core level. Edge switches with twenty-four (24) or more ports shall have double uplinks, preferably using Gigabit Ethernet, to two different core switches in a load balanced manner. This redundancy should be augmented with appropriate technologies such as VRRP/HSRP and spanning tree protocols; there should not be more than a total of forty-eight (48) devices per edge switch or more than four (4) PCs or printers per hub.

The ports on the edge switches should not be more than ninety percent (90%) full to cater for last minute requirements. When there is a choice between two switches of twenty-four (24) ports or one switch of forty-eight (48) ports, select two switches of twenty-four (24) ports so that in case of equipment failure, fewer users would be affected.

Edge switches for connecting PCs, laptops and printers shall be dedicated to either the “Purple LAN” or “Orange LAN”, distribution and core switches may be shared between the two logical networks.

All network equipment selected shall be certified by the manufacturer for operating in a medium and large network environment. Under normal operational conditions, the average network ping response time from any wired connected PC to the local servers or gateway should not be more than one (1) millisecond.

Spare equipment with ready-to-apply configuration of all edge switches shall be available on-site.

All PCs or servers installed shall be able to access the Internet through the local ISP. PCs in the Orange-LAN may access the Internet directly, while PCs in the Purple-LAN may access the Internet via a proxy server.

The switches provided shall support VLANs and 802.1q trunking protocol.

The network shall be delivered with monitoring and security management tools with alerting by e-mail or SMS to allow quick determination of network anomalies.

Detailed up-to-date documentation of the entire network and operations procedure shall be readily available to the ITU IT support team.

1.2 ITU private “Purple-LAN”, including wireless LAN in the conference rooms

The local internal network shall consist of a dedicated network for ITU (hereinafter referred to as the “Purple-LAN”) that can support the entire work of the Events. This wired local area network shall comprise 10/100 Mbps Ethernet segments for PCs, printers and servers connections.

The Purple-LAN should be connected to ITU headquarters in Geneva through two (2) dedicated leased lines (see definition below) and to the Orange-LAN through a firewall. The definition of the Virtual LANs (VLAN) on the Purple-LAN shall be communicated to the Government four (4) months before the opening dates of the Events.

There should be at least one (1) wireless access point in each conference room (see Annex 2) to allow ITU staff to connect to the Purple-LAN:

- a) the wireless LAN shall be 802.11a, b, g and Wi-Fi compliant (plus any new generally adopted standards at the time of the Events);
- b) the access points shall support common encryption protocols (e.g. WEP, WPA, WPA2);
- c) the target average ping response time from the laptops to the gateway shall not exceed twenty (20) ms during normal load conditions;
- d) the target average throughput for each associated laptop shall be three (3) Mbps or above;
- e) the wireless access points shall be centrally controlled to allow rapid, if possible auto, reconfiguration of the access points to adapt to changing load conditions in the conference rooms and blocking of individual laptops in case of virus problems;
- f) the SSID will be communicated to the Portuguese Party at the time of installation; this SSID should not be broadcast.

The Purple-LAN shall be fully operational (including all network services) on 13 April 2009.

The Parties' IT support teams will work together to finalize the network design.

1.3 Events participants “Orange-LAN”, including Wireless LAN

A second network for the Events participants (hereinafter referred to as the “Orange-LAN”), with same or different network equipment and cabling than 1.2 mentioned above, for the cybercafé and Events participants laptops (wired and wireless) connection to the Internet and webcast service.

The Orange-LAN shall be connected to the Internet through a firewall to the local ISP (see definition below).

The definition of the VLANs in the Orange-LAN shall be communicated to the Portuguese Party six (6) months before the Events.

There shall be sufficient wireless LAN access point to support the number of participants attending the Events throughout the premises (e.g. meeting rooms, offices, cybercafé, press centre):

- a) the wireless LAN capacity for each meeting room and work area must be equal to the capacity of the room (*i.e.*, assume that every Events participant may wish to connect a laptop at the same time); in the even this is not technically feasible, this should be compensated by providing wired Ethernet connections for the laptops;
- b) the wireless LAN shall be 802.11a, b, g and Wi-Fi compliant (plus any new generally adopted standards at the time of the Events);
- c) the access points shall support common encryption protocols (e.g. WEP, WPA, WPA2);
- d) the target average ping response time from the PCs to the gateway shall not exceed twenty (20) ms during normal load conditions;
- e) the target average throughput for each associated laptop shall be three (3) Mbps or above;
- f) the wireless access points shall be centrally controlled to allow rapid, if possible auto, reconfiguration of the access points to adapt to changing load conditions in the conference rooms and blocking of individual laptops in case of virus problems;
- g) the broadcast SSID shall be set to that requested by ITU.

The wireless LAN infrastructure shall be load tested to ensure it can support the full capacity of the conference rooms.

In all conference rooms, one (1) in every two (2) seats at table shall be equipped with an Orange LAN Fast Ethernet LAN cable with male interface, allowing Events participants and ITU officials to connect their laptops to the Internet by wire if desired.

The Orange-LAN shall be fully operational on 17 April 2009 at the latest.

The Parties' IT support teams will work together to finalize the network design.

2. Dedicated leased lines to ITU

Two (2) 2 mbps spatially diverse (distinct) terrestrial international circuits to link ITU headquarters in Geneva with the Purple-LAN, connected to two (2) different routers in automatic failover and load-sharing mode. The round trip time (rtt) of the links between Geneva and the Events premises shall not exceed 150 ms.

The routers used shall have at least two (2) Fast Ethernet (10/100 mbps) and one (1) WAN (T1/E1/xDSL) interfaces, with adequate DRAM and CPU power to support filtered traffic between

the Events premises and ITU headquarters. The routers shall support the routing protocols that are being used at the ITU headquarters, which will be communicated to the Portuguese Party during the planning phase. The termination of the two (2) circuits and the routers should be in the IT room where the core network equipment will be installed.

3. Internet connection

Two (2) 20 mbps duplex Internet links operating in load-sharing or failover mode to two (2) separate Internet exchange points (e.g. 2 PoPs of an ISP). Sufficient bandwidth shall be foreseen for supporting all the participants at the Event, including reserved bandwidth for webcast.

The termination of the two (2) links should be in the IT room where the core network equipment will be installed.

The local Internet Service Provider shall provide forward DNS, SMTP and conference domain name services and at least one hundred and twenty-eight (128) Internet routable IP addresses.

The following protocols shall be permitted on the Internet links: http, https, ftp, sftp, pptp, pna, rtsp, plus other protocols or tcp/udp ports on request.

The link shall allow web browsing and common VPN client connections from the Orange-LAN.

The link shall allow web browsing via proxy from the Purple-LAN and site-to-site IPSec VPN between the Purple-LAN and ITU in Geneva.

Client based VPN and Remote Desktop Client connection shall also be allowed.

A web-based page such as "MRTG" for monitoring the Internet traffic shall be operational and accessible by ITU technical staff. The daily Internet traffic statistics shall be made available to ITU at the end of WTPF-09.

4. System and network security

Adequate security measures shall be applied such that the network infrastructure is protected from unauthorized access and attacks. The sub-networks where Events participants will be connected shall also be protected using technologies such as Access Control Lists and firewalls.

Firewall in redundant configuration mode to protect the Purple-LAN and Orange-LAN from possible attacks from the Internet and to control any cross access between the Purple and Orange LANs; with an Intrusion Detection System for monitoring suspicious activities and security monitoring, alerting and reporting tools for the installed IT infrastructure.

The network equipment and installed computers shall have the stable release of latest patch as appropriate.

For all PCs to be installed, ITU will provide the images of the PCs, which contain updated version of anti-virus software, configured with daily updates of virus databases scheduled for downloads.

As a general practice, computers (e.g. in the cybercafé) which are dedicated to web browsing will be configured in such a way that users will not be able to install, save or shutdown the machine.

ITU will provide additional information as part of the work documents.

5. Telephones and faxes

5.1 Quantity of equipment required

Please refer to the document entitled “Table of Requirements” for the exact number of fixed, mobile phones and faxes required.

5.2 Specifications

Fixed telephone sets (some with local access and others with international access) shall be provided. All ITU staff shall be able to call the ITU headquarters in Geneva by using an abbreviated dialling code (*e.g.*, simply dialling a short prefix and the extension):

- a) definition of local access: within the Congress Center, city and to reach the mobile phones provided by the Portuguese Party. Plus access to ITU headquarters fixed and mobile phones of ITU staff members who will remain in Geneva:
 - i) fixed phones and faxes: +41 22 730 5xxx and +41 22 730 6xxx (through central PABX);
 - ii) ITU mobile phones: +41 79 249 48xx, +41 79 599 15xx and +41 79 217 35xx;
 - iii) main ITU fax number: +41 22 733 7256;
- b) definition of international access: local access plus unrestricted access to all countries.

The telephone system shall be VoIP or TDM based; the following functions shall be provided:

- a) voicemail for all extensions;
- b) transfer of call between extensions;
- c) electronic phone book (optional);
- d) last callers and dialled numbers (optional).

Mobile phones with local line and international line shall be provided to key ITU officials identified by ITU. These telephones are to be assigned on-site by ITU at its discretion. In addition, international access SIM cards and pre-paid phone cards are to be made available for sale in the Congress Center.

Telephone lines for the answering machines in the interpreters’ office.

Fax machines all with international access and compatible with those at ITU headquarters. At least two (2) of these fax machines shall be equipped with paper feeder for sending multiple pages documents, with telephone list option for sending to multiple locations in one manual operation.

In the Press working room used by the media, the fax machines and telephones shall be for use with pre-paid cards (journalists to cover the communication costs), as well as two (2) ISDN (BRI) lines with network termination for use by journalist.

The list of attributed telephone and fax numbers should be made available to ITU at least four (4) weeks prior to the opening of WTPF-09.

6. Webcast

Webcast service shall be provided for the main conference rooms as described in Annex 2. The Host Country webcast team shall coordinate with the ITU webcast manager for the webcast schedule and placing the webcast streams on the ITU website. The following items can be foreseen for each room from which there will be webcasting:

6.1 Equipment and Infrastructure

- a) video cameras and cameramen if video is required;
- b) audio and video control equipment;
- c) audio only or audio & video encoder/streamer supporting AV streams with floor + A/C/E/F/R/S/P;
- d) transmission of the audio (floor + A/C/E/F/R/S/P) and video signal(s) from the conference rooms designated for webcast to the webcast centre, where the encoders/streamers will be installed;
- e) in the event that it is not possible to centrally install all the encoders/streamers, they may be installed in the meeting rooms, provided that they are in a locked area, with proper ventilation, power backed up by UPS and enough workspace for two (2) support staff;
- f) DVD reader/writer for manual encoding via DVDs and VCDs;
- g) one (1) control monitor for each room where webcast is required;
- h) headphones.

It should be noted that the double audio recording of the meetings: one (1) for floor and one (1) for English audio feeds described in Annex 2 is a separate requirement, which is not part of the webcasting requirement.

6.2 Network requirements for webcast

- a) All the encoders/streamers and the webcast servers on the Orange-LAN with public routable IP addresses;
- b) Four (4) additional public routable IP addresses on the Orange-LAN for the admin PCs;
- c) Permission of PCs on the Purple-LAN to access the webcast streams from the webcast server on the Orange-LAN across the firewall;
- d) Dedicated Internet bandwidth to be confirmed, plan 16 kbps per audio feed or 152 kbps per audio and video feed (for each of the seven (7) channels from each conference room).

7. Cybercafé & service desk

A cybercafé equipped with Wireless LAN, PCs, wired Ethernet connections, printers and high speed photocopiers for use by Events participants. Please refer to Table of Requirements for the exact number of equipment required. There should be sufficient power points with European and US electrical sockets for laptops and for recharging batteries. Toner and power adapters shall be made available to the service desk.

A service desk area with at least sixteen (16) network connection points on both the Purple and Orange LANs, with PCs and network printers for the ITU and local staff and spares.

8. Server requirements

The following servers shall be required from the Portuguese Party to provide a Windows-based IP network environment, with local file, print, mail and Internet services.

- a) Two (2) servers in redundant configuration mode for WINS, DHCP, DNS, file and print server for the Orange-LAN;
- b) SMTP and conference domain name service on the Orange-LAN provided by the local ISP;

- c) servers in redundant configuration mode for web-hosting of a mirror ITU site for the documents of the Events;
- d) Two (2) webcast servers on the Orange-LAN in redundant configuration mode for broadcasting the Events on the Internet and the local Purple and Orange LANs;
- e) Two (2) spare servers for any of the above or any unforeseen requirements.

8.1 Minimum hardware and operating system requirements of the servers

- a) INTEL-compatible based servers released in the market within the last twelve (12) months;
- b) sufficient RAM to run the operating system and the above listed services efficiently;
- c) redundant power supplies;
- d) RAID controller with 150 Gbyte;
- e) CD drive;
- f) USB ports;
- g) network interface for LAN connection and server monitoring;
- h) English Windows operating system with Virus scanner.

ITU shall provide the information on how the servers should be configured.

9. PCs, printers, scanners and other equipment

9.1 Quantity of equipment required

Please refer to the document entitled “Table of Requirements” for the exact number of PCs, printers and scanners required for ITU and local staff, meeting rooms, rooms management system, cybercafé, registration and spares.

9.2 PCs (minimum requirements)

All PCs provided shall be from a reputable manufacturer, released to the market within the last twelve (12) months, with sufficient CPU and two (2) Gbyte memory for working efficiently in a typical office environment, in particular with:

- a) 17” Flat Screen;
- b) US international keyboard in general; some PCs with keyboard of the local language for use by local staff;
- c) CD drives;
- d) USB ports;
- e) built-in or external speakers;

It is very important that all the PCs provided are **identical**, which is a prerequisite for the replication process.

9.3 Printers (minimum requirements)

- a) At least twenty-four (24) ppm robust network laser printers, black and white, recto-verso for use by several persons or for high volume printing;

- b) At least sixteen (16) ppm directly connected or network laser printers, black and white, recto-verso for use by one or two persons in the same office;
- c) At least sixteen (16) ppm network laser printers, colour;
- d) Toners, including spares.

Note: Two (2) of the PCs and one (1) of each model of the printers shall be sent to ITU headquarters two (2) months before the Events. ITU shall prepare on DVDs the master images for the various PC configurations needed. The DVDs, printer and the PCs shall then be sent to the Portuguese Party so that the local team can replicate the PCs that are required in advance, using an agreed replication software.

On the last day of WTPF-09, all the hard-disks on the PCs and servers provided by the Portuguese Party must be erased.

9.4 Scanners (minimum requirements)

- a) Flat-bed scanners with USB interface and automatic data Feeder for ~sixteen (16) Pages / Minute;
- b) device driver where required, scanning and OCR software;
- c) scan to e-mail facility, Scan to PDF Black & White and Colour.

9.5 Large flat screens (Plasma/LCD) (minimum requirements)

- a) Screen size: 42”;
- b) resolution: 1024 x 768 pixels or more;
- c) interface: VGA, S-Video, RCA A/V;
- d) speakers.

9.6 Additional requirements

In addition to the items listed in the “Table of Requirements” document, two (2) external DVD burners are also required, e.g. for webcast encoding from DVDs.

10. Software licences

It is the responsibility of the Portuguese Party to arrange for the necessary software licences for the software installed in the servers and PCs that are provided by the Portuguese Party.

ITU will provide the Portuguese Party with details of software in the DVD images for the PC replication and the configuration requirements of the servers four (4) months before the Events so that Portugal may conclude the necessary licence agreements.

11. Facilities in rooms for ICT equipment

- a) The technical rooms and wiring closets for network equipment and servers shall have proper locks, with keys given to the ITU IT support team.
- b) The technical rooms and wiring closets shall also have adequate air-conditioning or ventilation, meeting the environmental requirements of the installed equipment.

- c) The technical rooms and the wiring closets shall be equipped with standard 19” equipment racks for network equipment and patch panels, with sufficient number of power outlets backed up by Uninterrupted Power Supply (UPS) to survive short power outages of up to ten (10) minutes.
- d) In addition to the equipment racks for network equipment and patch panels, the IT room shall be equipped with two (2) additional standard 19” racks with shelves, equipped with Keyboard/Video/Mouse (KVM) switch, flat screen, keyboard and mouse. There shall be sufficient number of power outlets (at least twenty (20) KVA for the two racks) backed up by two (2) independent Uninterrupted Power Supplies (UPS) to survive short power outages of up to ten (10) minutes. These two (2) racks will be used for installing the servers from ITU and the Portuguese Party.
- e) Encoders which are either located in the webcast centre or near the conference rooms, shall also be backed up by UPS.
- f) Preferably SNMP managed UPS so that service personnel will be alerted in case of failover to the UPS.
- g) Computers, laptop connection points (with LAN cables), printers, office equipment and power outlets to be installed in offices, meeting rooms and cybercafé as per Annex 2 and the “Table of Requirements” document.
- h) Access to the Events premises shall be provided to the IS support staff on a 24/7 basis.
- i) The working room(s) for IT support staff shall have adequate ventilation and air conditioning to handle the thermal load of both the staff and the equipment that will be installed.

12. Onsite support

Below is an estimation of the local IT staff required for the Events. It is the responsibility of the Portuguese Party to ensure there is adequate support for the listed functions outlined below, which may vary depending on the time available for the preparation, installation and the number of people at the Events.

12.1 Local staff for Events support (parts of it to be transferred to Staffing Table)

For the implementation and operations of the ICT infrastructure and to provide support for end users, with the understanding 24x7 coverage will be required during the Events period:

Function	Number
ICT Coordinator	1
Network Engineer	1
Windows & Unix System Engineer	1
IT Technician & Coordinator	1
IT Technician	4
Network Technician	2
Webcast Support Technician	2
Telephone Engineer	1
Telephone Technician	1

The job descriptions for the above functions are included in a separate document with job descriptions of all local staff.

12.2 Service providers

The Portuguese Party should obtain support from the manufacturer or service provider of the selected hardware and software for the implementation of this Annex. The support may include site survey, design, implementation and maintenance of the solutions. It will be appropriate to involve ITU in the selection process. In all cases ITU shall be provided with contact details of the Service Providers.

24x7 maintenance support from service providers for any critical components.

13. Documentation

The following information should be provided to ITU during the preparatory phase, which is approximately five (5) months ahead of the Events.

13.1 Initial preparatory phase

- a) Floor plan.
- b) A list of key management and IT personnel with their titles, functions and telephone numbers and email addresses.
- c) Documentation detailing the physical and logical layout of the existing network.

13.2 Middle preparatory phase

- a) A list of other IT personnel and service provider contacts with their titles, functions and telephone numbers.
- b) RFP for ICT services.
- c) Specification of selected hardware: PCs, printers, scanners, plasma screens, servers, UPS, etc.
- d) Documentation detailing the physical and logical layout of the Event network, including:
 - i) cabling;
 - ii) network equipment;
 - iii) connectivity;
 - iv) VLANs;
 - v) access control list and firewall definitions;
 - vi) IP addresses;
 - vii) configuration files of the network equipment
- e) Wireless LAN infrastructure and coverage.
- f) Telephone numbering plan.
- g) Reference numbers and implementation schedule of the leased lines.

13.3 Final preparatory phase

- a) CVs of local staff.
- b) Escalation procedure (24x7 coverage).
- c) Final operational documentation and configuration files.

13.4 Events timeline

A detailed Events timeline document will be prepared by ITU and transmitted to the the Portuguese Party in due time.