

**GOVERNMENT OF PAKISTAN**  
**PAKISTAN TELECOMMUNICATION AUTHORITY,**  
**Headquarters F-5/1, Islamabad**

Phone: 051-2878130 Fax: 051-2878120

<http://www.pta.gov.pk>

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**Subject: PTA directive on Implementation of Federal Government's Policy Directive on Security and Improvement of national telecom and Information Service through Inter-Operator Network Redundancies.**

In pursuance of the federal government's policy directive No. 17-1/2005-D(T), dated September 29, 2008, on the captioned subject PTA directs all information and communication network operators to follow the detailed instruction mentioned below and report compliance according to the time frame mentioned below:

**1 Backbone Redundancy**

As part of efforts for having dependable framework for telecommunications sector development, all telecom operators shall:

- 1.1** Establish redundancy by way of resource sharing for their long haul traffic to comply with at least two other operators on reciprocal basis.
- 1.2** Every operator shall balance at least 30% of its long haul traffic with at least two different operators but in any case will not share less than 10% of its traffic with any single operator.
- 1.3** All operators who own backbone network will develop redundancy through mutual interconnect or through diverse capacity exchange agreements which will be based on any one or more than one of the following modes:
  - 1.3.1** Equal exchange of quality dark fiber pair Kilometers,
  - 1.3.2** Exchange of equally good quality wavelength (Lambda-Kilometers) over full ring or sub-rings,
  - 1.3.3** Exchange of equal MIU Kilometers of domestic backbone among infrastructure owners, and
  - 1.3.4** Suitable exchange arrangement at the SDH layer (STM-1/ STM-4).

**1.4** All those operators who do not own backbone network shall develop redundancy through mutual interconnect or diverse capacity exchange arrangements which will be based on suitable exchange arrangement at the SDH layer (STM-1/ STM-4).

## **2 Duration of Redundancy**

**2.1** The redundancy so developed by the operators as mentioned above for network security will be alterable after 5 years but in any case will not adversely affect the threshold set therein this directive.

**2.2** If any operator plans to alter or change its reciprocal redundancy development plan prior to five (5) years for any genuine commercial reasons then it will have to seek prior permission from PTA and will have to satisfy PTA by giving sufficient reason along with evidence up to the entire satisfaction of PTA.

## **3 Phased Implementation**

The diverse measures mentioned in section 1, to develop nation wide network redundancy, will comprehensively be implemented within the following time periods:

**3.1** Phase -1: Within three (3) months from issuance of this directive in the cities of Karachi, Lahore, Peshawar, Quetta, and Islamabad and,

**3.2** Phase -2: Within six (6) months from issuance of this directive for the cities of Hyderabad, Sukkur, Multan, Faisalabad, Sialkot, Gujranwala,.

## **4 Bypassing of Backbone:**

**4.1** All the operators shall ensure that no fiber backbone will be routed in its entirety physically through exchanges or facilities prone to physical damage.

**4.2** Any connectivity to node cities on the backbone will be on a point outside these physical facilities preferably within secure boundary walls deploying bypass for the rest of the backbone within one year.

**5 International Network Security and Reliability:** The licensees that operate and lease infrastructure for international voice, data, IP services will be required to take following measures:

**5.1** All submarine cable operators will *inter-se* establish redundancy on reciprocal basis through resources sharing and capacity interchange up to STM-4 level or which will be able to transport at least 33% of their international voice and data traffic whichever is higher.

**5.2** All submarine cable operators are required to establish redundancy mechanism mention herein within six months.

**5.3** Any restorability requirement between submarine cable operators beyond 33% of the prescribed limit or more than STM-4 level as the case may be will be done on premium based incentive regime.

**6** **Measures for information Technology Infrastructure Resilience:** To cater for security of data and internet traffic originating /terminating in the country all operators owning IP backbones and offering IP services including IP/IPLC leased services, internet, email, VPN, video conferencing etc. will be required to comply to the following:

**6.1** To take measures for incorporating redundancy at multiple level of their network with complete provision for disaster recovery through backup disaster recovery sites.

**6.2** Be obligated to cater for and establish peering between their IP backbones at least on three key locations Karachi, Lahore and Islamabad and also including their international gateway routes, through appropriately sized interfaces. This will ensure that internet traffic destined for domestic domains stays within the country to provide information security and to economize on international bandwidth usage.

**6.3** IP bandwidth provider's international gateway and key domestic routers mentioned above to be configured for exchange of ports and other routing surfaces to ensure that inter-ISP and government email traffic stays within the country to ensure information safety.

**6.4** Operators with virtual points of presence in the country and offshore cross connect points to other international cable systems to ensure that reasonable diversity of options to counter offshore outages and vulnerabilities.

## **7 Measures at Metro and Local Level:**

**7.1** To enhance network security and reliability at metro and local interconnect level, all operators having installed capacity of 10 million users will take following measures to develop physical and network redundancy:

**7.1.1** create multiple fiber routes or ring connectivity between major domestic landing points and interconnect sites for eliminating single points of failure , and

**7.1.2** similar measures for connectivity between operators own crucial network points will also be established.

**7.2** All major operators extending collocation and interconnect facility to other operators will make sure that all aggregations points e.g. zero manholes for entry into their premises are gradually secured in under ground vaults inside the facility boundaries and multiple points of entry and diverse routes will be established for reducing the risk in case of disaster or accident on zero-manholes.

7.3 All operators will comply with the security measures mentioned in section 7 above within a period of 18 months.

**8.** In the interest of international security and to keep the pace of economic growth of the country PTA will ensure the implementation of this directive in true letter and spirit by ensuring that the timeline set therein are strictly followed. The Authority will follow-up the implementation of this directive to ensure that the operators have been successful in:

- i. Achieving diversity and redundancy, for availability of service for at-least 99.9% of time (almost full availability).
- ii. Devising their own mechanism to undertake vulnerability audit and improve networks in Federal and Provincial capitals within three months followed by similar coverage of 6-7 major cities within six months respectively.
- iii. Ensuring that service level arrangements (SLAs) regarding capacity and network sharing are implemented between operators.

- iv. Filing their Agreements with the Authority which in turn have the option of intervention if such a need arises.



**Wasim Tauqir**

**Director General (Strategy & Development)**

**To:**

- 1. Government Liaison Officers of all LDIs, Cellular & WLL Operators**
- 2. Mr. Gul Ahmed,**  
EVP Regulatory Affairs, PTCL HQs, Islamabad.
- 3. Maj ® Shams Uddin**  
Regulatory Head, NTC HQs, Islamabad.
- 4. Mr. Mukhtar Ahmed,**  
M/s TransWorld, Islamabad.

**Cc:**

- 1. CEOs/Presidents of all LDIs, Cellular & Mobile Operators**
- 2. President/CEO of NTC, PTCL & TWA**
- 3. Dir(Coord), PTA HQs, Islamabad.**
- 4. Dir(Enf), PTA HQs, Islamabad.**