

524

Government of India
Ministry of Railways
(Railway Board)

No. 2007/Tele/WP/1/IT

New Delhi, dated 05.03.2007.

General Managers,
All Indian Railways.

Sub:- Design, Provision, Installation, maintenance and commissioning of telecom data network for IT applications.

In continuation of the Board's letter of even no. dated 12.2.2007, the methodology to be adopted for implementation of Telecom Data Networks including design, supply, installation and commissioning has been examined. In view of the fact that almost more than 4,000 locations are to be provided with UTS under works sanctioned vide 2007-08 WP and many other IT applications to be provided during 11th five Year Plan, there is a need to spell out the responsibility of various organizations who are expected to take up this work. Following has been decided:-

Planning:

1. Each CSTE would collect the details of all IT works, which are presently sanctioned, from CCM/COM along with locations to be covered under each work. They will also obtain telecom portion of the detailed estimate/abstract estimate from COM/CCMs as the case may be for further planning and action.

The major IT applications sanctioned as on date over IR are as under:-

- a) PRS/UTS;
- b) FOIS/COIS;
- c) Crew management and control charting;
- d) Freight maintenance manager
- c) Disaster recovery and Data Warehousing solution

2. The details of work sanctioned during 2007-08 Programme are available under computerization plan head in 2007-08 Pink Book. An extract is also being sent separately. Since telecom portion of data networking works is to be done by CSTEs, they will collect the details of all these works for telecom portion including locations to be connected, will prepare detailed estimate and will get the same sanctioned along with IT works through CCMs/COMs as the case may be. This would mean that processing of these works would be similar to estimate processing on the Railways for S&T portion of other joint works.

C. S. J. A. J.
S. W. A. J.

For Government
Ministry of Railways
New Delhi

873

1. Telecom Dte. would also advise Railways regarding IT proposals which are likely to be included in the 11th Plan.
2. As has already been advised we should plan for two separate networks 1) UTS/PRS and 2) for FOIS, CMS, COIS, weighbridge connectivity and other applications. Rail net will continue as the third network, which also would carry, management related IT applications.
3. Networks would be IP based and should make maximum use of IR infrastructure including Railways and RailTel as well as equipments.
4. Each Railway should, therefore, design three networks as stated above along with RailTel. They should not only take into account works being sanctioned in 2007-08 Pink Book but also keep in mind the requirements of 11th Five Year Plan. Network Plans duly signed jointly by CCE of the Railways and GM/RailTel should be sent to Board latest by 31st March, 2007. A typical network in this regard is enclosed herewith for guidance
5. It is to ensure that network is secure and foolproof to prevent any frauds, attack, data theft etc which can make the system vulnerable and compromise the security of the financial transaction being made through the network.
6. Media and route diversity have to be planned. Availability of communication link and connectivity has to be better than 99.95%. Railways have to therefore build adequate media/route/service provider diversity as needed to achieve this. Hiring of channels from other service providers can be planned by providing protection on an overall basis over and above Railway/RCIL's links. Since local leads are normally the weakest link, diversity for local leads should also be built up as needed.
7. In view of the fact, very high availability is to be achieved; redundant path through alternate service providers or Railway's alternative media or both should be catered for in network at every 100 to 150 kms.
8. Local lead redundancy should be planned as already advised.
9. RailTel should get the technical audit of their MPLS network undertaken quickly.
10. Trials should also be started by RCIL for working 6 UTS nodes in a chain at least on 3 Railways at their cost. This should be completed on W.Rly. NC.Rly. and ECoR by 15.4.07. The equipments used for the trials now can be used for the main work later.

Execution:

1. Access network i.e. connectivity to individual station would be on STM-1/STM-4 shorthaul network.
2. Since the basic cost reduction in the capital cost of the works is due to infrastructure sharing i.e. sharing of MPLS router and SDH back bone of RailTel, the works of providing data network needs to be therefore executed through RailTel under guidance of the CSTE. The hiring of channels for redundancy from alternate service providers may also be given to RailTel to economize recurring rental outgo. Payment of rentals will, however, be directly made by Railways.
3. Backhaul would work on MPLS/STM-16/STM-4 network of RailTel. RailTel should strengthen the existing MPLS network and provide additional MPLS routers wherever needed. This will in any case include provision of MPLS based routers at each divisional HQrs.
4. All Gate way routers should be duplicated by RailTel. The requirements of additional MPLS router as per Para 2 above and duplication of gateway routers should be spelt out in the joint network plan to be signed by Railways and RailTel. Since a number of applications are to run on MPLS other than Railways applications, highest preference is to be given to Railways' data communication traffic. Adequate bandwidth will also be provided which should be at least DS-3 (21E1) or higher.
5. All future data networks will be only E1 based wherever OFC is available.
6. It is understood that Railways are providing STM-1/4 equipment for various OFC works done by them. Uniformity of STMs which are possible to be controlled through one NMS at Divisional level and in turn by Regional NOC of Railtel is, therefore, essential. Railway should keep this aspect into view where provision of OFC equipments is being done by them.
7. While executing works provision of maintenance including positioning of maintenance personnel as is different from AMC should be covered for at least 3 years period.
8. Per location cost of IP based UTS network based on present day cost is as per enclosed unit estimate (Annex.-1). This with suitable adjustments which may vary from Railway to Railway along with the cost of local lead etc. will be charged to the cost of the work. Maintenance cost, AMCs cost and hiring cost of channels is not to be charged to project, this being revenue, expenditure. This has to be charged to revenue only. Unnecessary frills should not be loaded on to the estimates.

9. Unless & until decided by CSTE and RCIL otherwise, the work of supply, installation and commissioning of telecom data networking equipments like STMs, switches, routers, modems and other interfaces etc. along with NMS shall be undertaken by RCIL. The work of local lead provisioning from OFC PoP, LAN wiring and extension/provision of reliable power supply etc. will be undertaken by Railways.
10. Railways should take action for procurement in line with the above and advise RCIL and CRIS so that no duplication in procurement takes place.

Network Management & Control:

1. There will be three tier NMS to manage the network with complete diagnostic capability. This will be provided in divisional & zonal HQrs as far as Railway is concerned and in regional & national level as far as RailTel is concerned. The actual provisioning/management of circuits will be through Regional and National level NOC. The Divisional control will have facility to monitor the locations. In case, they are not able to diagnose the fault, they will approach Zonal/Regional NMS who will then provide necessary assistance. If required, National NOC will be approached to provide required assistance. Zonal/regional NOC will control and manage, provisioning/management of channels for inter-railway circuits.
2. After network is set up there will be 3 levels of maintenance:
 - Level 1 will be by Railway's staff for routine maintenance & failure rectification.
 - Level 2 will be by Railway's staff in consultation with Regional NOC of RailTel.
 - Level 3 will be by RailTel/OEM in consultation with RailTel National NOC.
3. NMS should cater for all works/location which are already commissioned or under commissioning and are expected to be commissioned under 2007-08 WP/11th Five Year Plan. Since NMS will work in coordination with MPLS network, this too will either have to be provided in consultation with RCIL or by RCIL. CSTE's should advise CCMs/CRIS accordingly so that no action is taken by them in this regard and here is therefore no duplication.

FOIS/COIS/CMS etc. and their transfer on Railway's/Railtel's channels:

Directions have been given to Railways to transfer various FOIS circuits on to RailTel channels. These are to be implemented early. Following guidelines to be adhered to in regard to this network:-

- a) Wherever protected OFC is available, the work should be planned in a similar way as UTS/PRS with ring protection.
- b) In case of only linear OFC, stand by should be on VSAT/other alternative means.
- c) In case Railway OFC does not exist and Railway VSAT only has to be provided, the stand by should be either on channel from other service providers or else through other technical means like Ethernet radio /wi-fi etc.
- d) Network design for FOIS/COIS/CMS/weighbridge connectivity etc. should also be made jointly by Zonal Railways and Railtel and sent by 31.3.07.

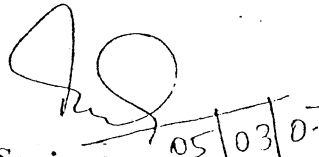
Monitoring/Planning:

1. Besides Intra Railway connectivity, Zonal/Divisional HQrs and main server locations will need inter-Railway connectivity between each other and with CRIS/Railway Board. This activity and network design has to be planned centrally.
2. Transfer of various channels from DOT to Railway needs coordination with RailTel, Zonal Railway, FOIS and CRIS. They also need central monitoring and control.
3. FOIS estimates are centrally controlled by FOIS organization on Northern Railways. Most of the IT works other than UTS/PRS are appearing in Northern Railway's Pink Book. Funds allocations available is also controlled by CAO/FOIS and FA & CAO/C Northern Railway. There is thus a need of coordinating this activity with CAO/FOIS and FA&CAO so that S&T portion of funds and estimates which are made for all Railway as a whole can be segregated and transferred to various zonal Railways.
4. IP planning and routing will also have to be controlled centrally. While the actual provisioning will be done by RailTel, the Central organization is required to coordinate this activity between Railway and RailTel.
5. There is thus an immediate need to set up a central organization for coordinating various activities between Northern Railway, RailTel, CRIS, FOIS and other Zonal Railways under overall guidance of Railway Board. Till a separate organization is created, IRPMU (which is already undertaking telecom portion of FOIS work) will be strengthened and will coordinate the above activities under overall guidance of the Railway Board.

6. RailTel will establish a separate organization in the HQ and identify officials in Regional Offices who will be solely responsible for Railways works. Organization in HQ would be headed by a General Manager supported by adequate officials. Since the basic working of the system will depend upon MPLS, functioning of this organization should work under Director/Network who is in charge of MPLS network in RailTel.
7. A periodical review meeting will be held every month between RGMs/RailTel and CCEs of Railways to review the progress of work. A quarterly meeting with CSTE's at the level of Director/Network Projects will also be held.
8. To enable the RailTel to execute this job and meet this additional responsibility, each Railway would endeavor to release one officer and SE/SSE to RailTel.

Training:

While IRISSET should develop facilities to train Railway personnel in the field of telecom data network, RailTel as part of the contract should get the training undertaken through OEMs for adequate Railway personnel to be decided in consultation with CSTE's. S&T training centres should also develop expertise for basic TCM level maintenance and fault diagnostic.


05/03/07
(Sanjay Dungrakoti)
Director/Tele
Railway Board

DA : 1 (Annexure-I)

Copy to:

1. AM(C&IS) for information.
2. AM(Budget), EDF(X)II, DF(X)I & II for information.
3. CSTE's/All Indian Railways for information and necessary action.
4. CCMs/All Indian Railways for information and necessary action.
5. MD/RCIL for information and necessary action.
6. CPM/IRPMU, for information and necessary action.
7. FA&CAO/Con./Northern Railway, for information and necessary action.
8. Director/IRISSET for information and necessary action.