

Subcontractor Facility Network Interface Specification

JPL will provide the capability to connect Subcontractor networks located in Subcontractor facilities to the JPL network infrastructure. The devices connected to those networks will have access to the same network services as devices connected to networks located in JPL facilities. The Subcontractor network connected to the JPL network shall not be connected to any other networks and be used solely to support JPL tasks.

JPL will provide the following:

Router

JPL will provide a router to connect networks located in Subcontractor facilities to the JPL network infrastructure. The router will be owned by JPL and managed and monitored by JPL Enterprise Information System (EIS) Network Service personnel. The router will be located in JPL facilities.

Channel Service Unit / Data Service Unit (CSU/DSU)

A CSU/DSU will provide the interface to the T-1 data communications circuit to the above router. The CSU/DSU will be owned by JPL and managed and monitored by JPL EIS Network Service personnel. The CSU/DSU will be located in JPL facilities.

Equipment Configuration

At the time of installation, the JPL EIS Network Service Team will provide configuration information for the network equipment located in Subcontractor facilities which is used to connect to the JPL network. This equipment includes the router and Ethernet switches.

Services

JPL will provide Domain Name Service (DNS) which includes IP address assignment, all standard connectivity to JPL facilities and will maintain the above listed equipment. The JPL EIS Network Service Team will provide consulting to assist the Subcontractor to determine the number of Ethernet switches required and to verify the network will support the Subcontractor's network requirements.

The Subcontractor shall provide the following:

The network equipment identified below, with the exception of the T-1 data communications link, shall be located in the Subcontractor's facility. The T-1 data communications link is a special telephone circuit used to transmit data between two locations.

The Subcontractor is responsible for the purchase, installation, maintenance, and vendor support agreements for the network equipment installed in their facility. The Subcontractor is responsible for the installation and all costs associated with the T-1 data communications link. The Subcontractor is also responsible ensuring that the appropriate spare equipment is available to repair failing equipment in the time frame required to meet the task's network availability requirements.

T-1 Data Communications Circuit

The T-1 data communications circuit allows network data to be transmitted between the Subcontractor's facility and JPL. This T-1 communications circuit must be ordered from the Subcontractor's local telephone service provider. The installation of the circuit must be coordinated with JPL through the JPL EIS Network Service Network Operations Center (see Contacts section below).

The circuit must be ordered with the following characteristics:

- Clear channel
- B8ZS
- Extended SuperFrame (ESF)

Subcontractor Facility Router

The Subcontractor shall install the specified router in the Subcontractor's facility to connect the Subcontractor's network to the T-1 data communications link. The router specified includes an internal CSU/DSU, an external CSU/DSU is unnecessary.

Subcontractor personnel shall configure the router pursuant to JPL technical direction. Changes to router hardware and software configurations must be reviewed and approved by JPL EIS Network Service personnel. JPL EIS Network Service personnel shall have access to the router and all router passwords to audit hardware and software configurations and monitor network performance and reliability.

The router to be used shall be a Cisco 2600 series router. Its hardware configuration will depend upon the requirements of the Subcontractor.

For one or two T1 links with one Ethernet Interface the following router configuration shall be used:

| Qty | Part No. | Description |
|------------|-----------------|--|
| 1 | CISCO 2610 | Cisco 2610 Modular Access Router |
| 1 or 2 | WIC-1DSU-T1 | Cisco 2600 series T1/Fractional T1 CSU-DSU |
| 1 | CD26-B-11.3= | Cisco 2600 Series IOS Enterprise Version 11.3 (7)T |

For one or two T1 links with two Ethernet Interfaces the following router configuration shall be used:

| Qty | Part No. | Description |
|------------|-----------------|--|
| 1 | CISCO 2611 | Cisco 2611 Modular Access Router |
| 1 or 2 | WIC-1DSU-T1 | Cisco 2600 series T-1 CSU-DSU Interface |
| 1 | CD26-B-11.3= | Cisco 2600 Series IOS Enterprise Version 11.3 (7)T |

Both the Cisco 2611 and the 2610 include 8 MB Flash Memory and 24 MB DRAM.

Subcontractor Facility Switches

The network shall be implemented using Ethernet switches. The switches specified provide 24 switched 10/100 Mbps auto-sensing Ethernet ports.

The Subcontractor shall provide the required number of Ethernet switches as required. Each device connected to the network shall be connected to a dedicated switch port. Each switch shall have two ports available to be used only as spares and for connecting test equipment.

One switch, designated the primary switch, shall be used to connect to the router and all other required switches. One port on the primary switch will be required for connection to the router. An additional port on the primary switch will be required for each connection to other switches. All other switches require one port for connection to the primary switch. If there are less than 22 devices to be connected to the network, they may all be connected to one switch.

Subcontractor personnel shall configure the Ethernet switches pursuant to JPL technical direction. Changes and deviations from the specified equipment and configurations must be reviewed and approved by JPL EIS Network Service personnel. JPL EIS Network

Service personnel shall have access to the switches and their passwords to audit hardware and software configurations and monitor network performance and reliability.

The Ethernet switches which shall be used are:

| Qty | Part No. | Description |
|-------------|-----------------|-------------------------------------|
| As required | WS-C2924-XL | Cisco Catalyst 2924 Ethernet Switch |

Subcontractor Facility Network Cabling

Subcontractor facility network cabling shall be Category 5 Unshielded Twisted Pair cable installed to EIA/TIA 568A specifications with an AT&T SYSTIMAX 15 year warranty. The Subcontractor shall use the JPL approved vendor (Pacific Bell) for installing network cable at Subcontractor facilities. The Subcontractor shall notify the JPL Network Operations Center when ready for the coordination of the cable installation.

Contacts

JPL EIS Network Service
JPL Network Operations Center (818) 354-8159

T-1 communications circuit ordering Subcontractor's local telephone service provider