**B-ISDN**

**OVERVIEW**

BISDN is an extension of ISDN in terms of capabilities, i.e. it not only has the narrowband capability of ISDN but also the broadband capability

**Definition**

* “A service requiring transmission channels capable of supporting rates greater than the primary rate.” ITU-T. Any service inquiry with a speed greater than 1.544 Mbps is defined as broadband, and any communications based on this speed are called broadband communications
* BISDN is an extension of ISDN only in term of the name. Everything is different including protocol, architecture, transmission, and switching technology.
* The Goal of BISDN is to achieve complete integration of services, ranging from low-bit--rate bursty signals to high-bit-rate continuous real-time signals.

• Designed to exploit the advances in technology.

• Provides for integration of wide range of communications facilities and the support of universal communications with the following characteristics.

* Worldwide exchange between any two subscribers in any medium.
* Retrieval and sharing of information from multiple sources, in multiple media.
* Distribution of a wide variety of materials to home or office, on demand.

**Figure Broadband Services should be drawn and the same is attached at the end of the notes(PgNo 6)**

• Interactive Services

* Two-way exchange of information (other than controlsignaling information) between two subscribers or between a subscriber and a service provider.

• Distribution Services

* Primarily one way transfer of information, from service provider to B-ISDN subscriber.

**B-ISDN Services**

**Distribution Services Without User Presentation Control**

* Referred also as broadcast services
* Provide a continuos flow of information, which is distributed from a central source to an unlimited number of authorized receivers connected to the network.
* User can access this flow of information but has no control over it.
* Example: High definition television (HDTV)

**Distribution Services With User Presentation Control**

* Distribute information from a central source to a large number of users.
* Information is provided as a sequence of information entities (e.g. , frames) with cyclical repetition.
* User has the ability of individual access to the cyclical distributed information and can control start and order of presentation.
* Example: cable text

**Figure B-ISDN Architecture(Functional) should be drawn and the same is attached at the end of the notes(PgNo 12)**

**Functional Architecture**

* Control of B-ISDN based on common-channel signaling
* B-ISDN must support all the 64-kbps transmission services, both circuit switching and packet switching.
* In addition it should support higher-data-rate transmission services. Example: high resolution video(150 Mbps), video-on-demand (600 Mbps)
* At the user-network interface, higher-data-rate transmission are provided using ATM.
* Needs fiber subscriber loops.

**Transmission Structure**

Three new transmission services

* Full-duplex 155 Mbps
* Asymmetrical 155 Mbps (subscriber to the network), and 622 Mbps (network to subscriber)
* Full duplex 622 Mbps - for multiple video

The B-ISDN reference protocol model consists of three planes:

* Management Plane
* User Plane
* Control Plane

**Figure B-ISDN protocol reference model:**

**MANAGEMENT PLANE:**

Two types of functions exist in this plane

* **Layer management:** All the management functions related to the resources and parameters residing in its protocol entities such as signaling are performed by layer management.
* **Plane management:** All the management functions that relate to the whole system are located in the plane management.



**USER PLANE**

* The function of the user plane is to transfer the user information from point A to point B in the network.
* All associated mechanisms, such as flow control congestion control, or recovery from errors are included.

**CONTROL OR SIGNALING PLANE**

This plane is responsible for call control and connection control functions related to setting up and tearing down a connection.

**Physical Layer Functions**

Divided into two sublayers

* Physical medium: It is the lowest layer of the B-ISDN protocol, and it includes the functions that are only physical-medium-dependent. It itself provides line coding and if necessary, electrical to optical conversion.
* Transmission convergence: The main functions of this sub layer are cell rate decoupling, HEC (Header Error Control) header sequence generation, cell delineation, transmission frame adaptation, transmission frame generation

**ATM Layer functions**

* generic flow control
* cell header generation
* virtual channel identifier
* cell multiplexing and demultiplexing

**ATM adaptation layer function:**

* The basic function of the AAL is the enhancedadaptation of the services provided by the ATM layer until the requirement of the higher layer’sservices are met.
* In this layer, the higher layer protocol data unitsare mapped onto the information field of the ATM cell, which is 48 bytes long.