Understanding
PBX Fundamentals

BTS
Real-World Experience
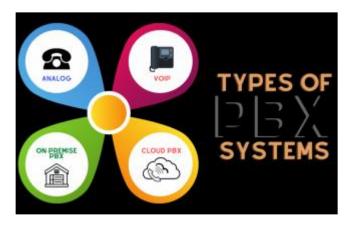
Course Description

This course provides a practical and in-depth foundation on Private Branch Exchange (PBX) or a Private Automatic Branch Exchange (PABX - which is out of fashion since all modern day PBXs are automatic), is a phone switch serving a business or organization and is usually located on the organization's premises.

The PBX provides phone services including internal calling, and access to the public switched telephone network. It allows a small number of outside lines to be shared among all of the people of the organization. Advanced PBX phone switches sometimes provide auto-attendant, voice-mail, and ACD (automatic call distribution) services for the organization.

Students Will Learn

- **Understand Private Branch Exchange (PBX) and Key Telephone System (KTS)**
- **Learn about integration of PBX with ACD, CTI, and IVR**
- **Understand PBX Systems and Technology**
- **Understand major innovations, including the shift from analog to digital transmission and switching, the introduction of stored program-controlled PBX systems, and advances in KTS/Hybrid systems**
- **Understand residual value assessment for VoIP equipment**
- **Learn about Centrex services**
- **And much More**

Target Audience

This course is designed to provide a general overview for strategic or telecom managers, Datacom managers with responsibility for telecom, Call Center designers, consultants, communications professionals, software engineers, system engineers, network professionals, VoIP implementers, Network integrators, Product and service developers, Industry analysts, marketing and sales professional, IT professionals, and others who plan on using, evaluating or working with PBX products, applications and services as well as wholesale markets carriers and CLECs/ICPs/ISPs

Prerequisites

None.

Course Outline

Module I: PBX Technology Basics

- Telephone System Fundamentals
- Key Telephone System Technology
- KTS/Hybrid System Technology
- PBX Technology
- PBX Components
- System Control
- System Overview
- Switching Network Design
- Switching Matrix
- PBX Call Processing Designs
- Cabinet Design
- Circuit Cards
- Wiring/Cabling Fundamentals
- Environmental Issues
- System Redundancy
- Trunk Interfaces
- PBX Peripherals
- Attendant Consoles
- Maintenance and Administration
- PBX Architectures
- Centralized Versus Distributed
- Availability
- Security
- Capacity
- Open systems
- Technology Alternatives
- Technology Leaders
- Trends

Module II: Technology Analysis

- Business Use
- QoS Issues
- Port Capacity
- Traffic Handling
- QoS issues
- Trunk traffic engineering
- System Sizing Analysis
- Call Centers/ACDs
- A PBX vs. ACD Comparison

- Evaluating the differences between a PBX with Automatic Call Distributor (ACD) capabilities
- Taking Advantage of PBX Switch Integration in Computer Telephony Applications
- Voice and Call Processing
- Unified Messaging
- PBX Networking
- PBX Telemanagement Systems
- Wireless PBX Communications
- Standards
- Price vs. Performance
- Selection Guidelines
- Current Telephone System Analysis
- Gathering Data
- Current Equipment Inventory
- The Local Service Provider
- New System Specification
- Feature Selection
- New Telephone System Selection
- PBX Terminal Equipment
- Basic Call Processing Features
- PBX Networking
- Computer Telephony Integration (CTI)
- Advanced Call Center Concepts
- Systems Management
- Administration and Maintenance

Module III: PBX Total Market

- Enterprise Voice Equipment Markets
- PBX Systems Market
- Key Telephone Systems Market
- Wireless PBX Systems Market
- IP-Based PBX Add-on Market and Server-Based PBX Market
- Market Revenues
- Installed Base Profile
- PBX, KTS Summary - Revenue, Lines, Systems

Module IV: PBX and Key Telephone Systems Market

- Status Quo of PBXs
- Installed base/shipments/forecasts
- Who's buying PBXs, and why
- Unique PBX capabilities/applications
- Major market space suppliers
- IP-enabled legacy PBXs
- Definition and examples
- PBX Directions
- Design Issues
- Application Issues
- Pros/Cons
- Definition and examples
- Pros/Cons
- Cost Issues

Module V: PBX Installed Base

- PBX Installed Base Summary
- PBX Installed Base Growth by Size Segment
- PBX Installed Base by Size Segment
- PBX Installed Base by Industry and Line Size Segment
- PBX Installed Base by Region
- PBX Installed Base Aging and Investment Protection

Module VI: IP-PBX Market

- IP-PBX Summary
- IP-PBX Shipments by Vendor

Module VII: CENTREX Installed Base

- **Centrex Installed Base Summary**
- **Centrex Installed Base Quarterly Dynamics by RBOC and Line Size Segment**
- **Centrex Installed Base by RBOC and by Line Size Segment**
- **Centrex Installed Base by Region**

Module VIII: PBX Trunks

- **PBX/CPE Basics**
- **Trunk Features**
- **PBX Trunk use in Hotels and Motels**
- **Direct Inward Dial (DID) Overview**
- **Features and Functions**
- **Start Signaling**
- **Hunting**
- **Optional Services**
- **Restrictions**
- **Hotel/Motel Trunk Options**
- **Direct Inward Dial (DID) Features**

Module IX: Building an End-to-End IP PBX System

- **Technologies and implementation considerations for planning and building a converged enterprise, converged, IP telephony network**
- **IP addressing, dial plan, network infrastructure, quality-of-service (QOS) strategies, admission control, voice messaging and legacy migration**
- **Network Infrastructure**
- **LAN and metro considerations**
- **High Availability and QOS in the campus**
- **Inline power and IP addressing scheme**
- **WAN considerations (QOS, topologies)**

- **Telephony Infrastructure**
- **Call processing agent provisioning**
- **Call Admission Control (locations, H.323 gatekeeper)**
- **Survivable remote site telephony**
- **Gateways and DSP resources**
- **Dial plan**
- **911 and E.911**
- **Applications**
- **LDAP directory**
- **Voice mail, Interactive Voice Response**
- **IP phone services**
- **Legacy Migration and Integration**

Delivery Method

Instructor-Led with numerous labs and exercises.

Equipment Requirements
(This apply's to our hands-on courses only)

BTS always provides equipment to have a very successful Hands-On course. BTS also encourages all attendees to bring their own equipment to the course. This will provide attendees the opportunity to incorporate their own gear into the labs and gain valuable training using their specific equipment.

Course Length

2 Days