

# **OSC001001 System Overview**

**ISSUE 2.0**



**Fixed Network Curriculum  
Development Section**



# Course Objectives

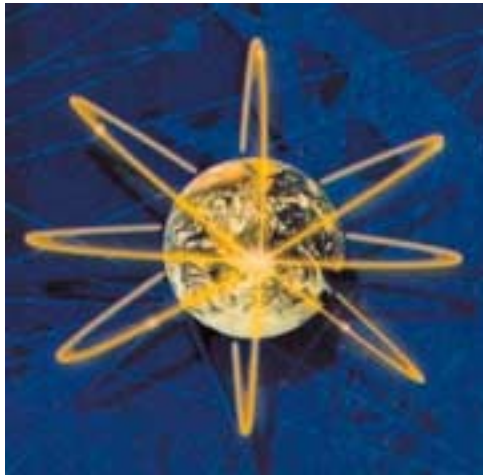
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- Upon completion of this course, you will understand:

→ Overall architecture of C&C08 switch

→ Module functions

# CONTENT



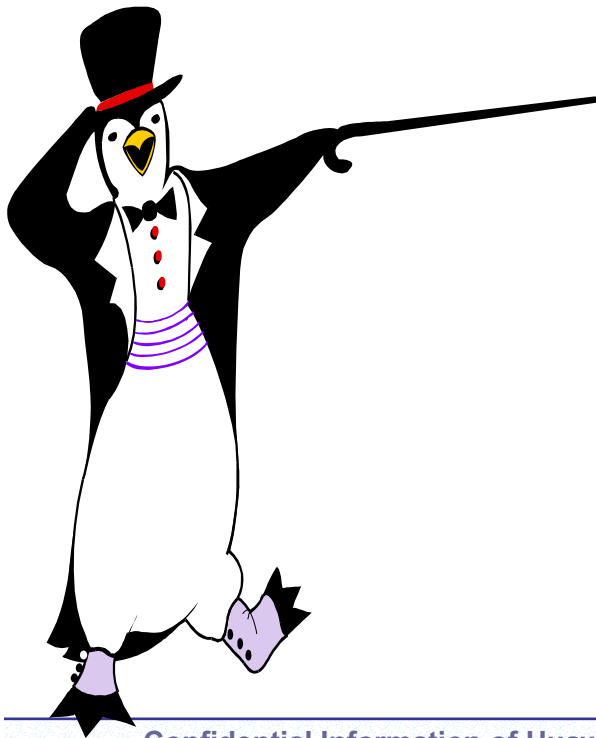
- *General*
- **Modular & Hierarchical Structure**
- **Module Function**
- **The Open Terminal System**
- **System Performance**



## C & C---?

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- City & Countryside
- Computer & Communication
- China & Communication

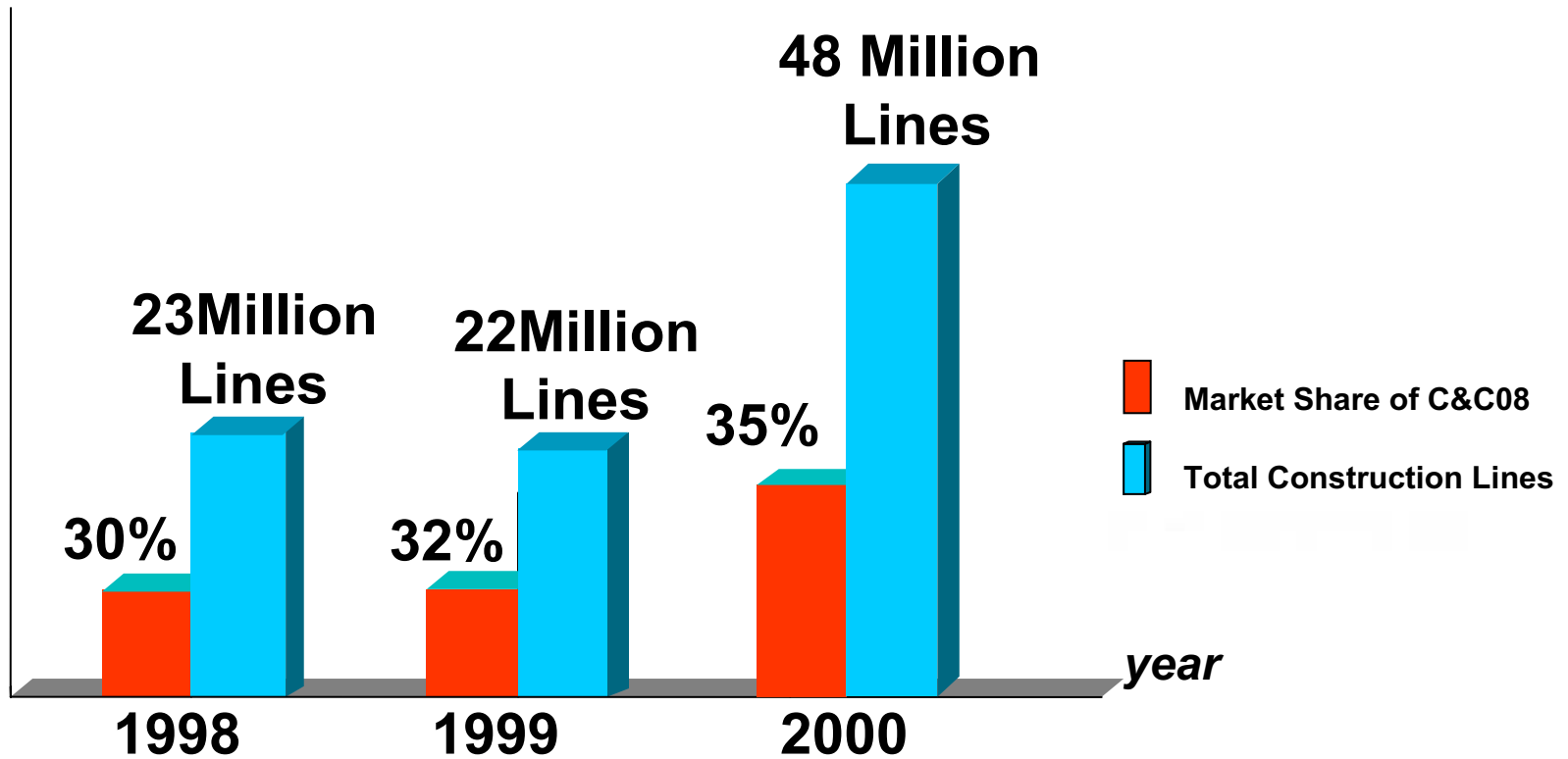




# C&C08 in Chinese Telecom Market

## C&C08 in Chinese Market

Rank No.1 in Chinese market.





# Huawei Worldwide Presence



***C&C08 is Widely used in more than 40 countries***



## Profile of C&C08



**Length: 2100mm**

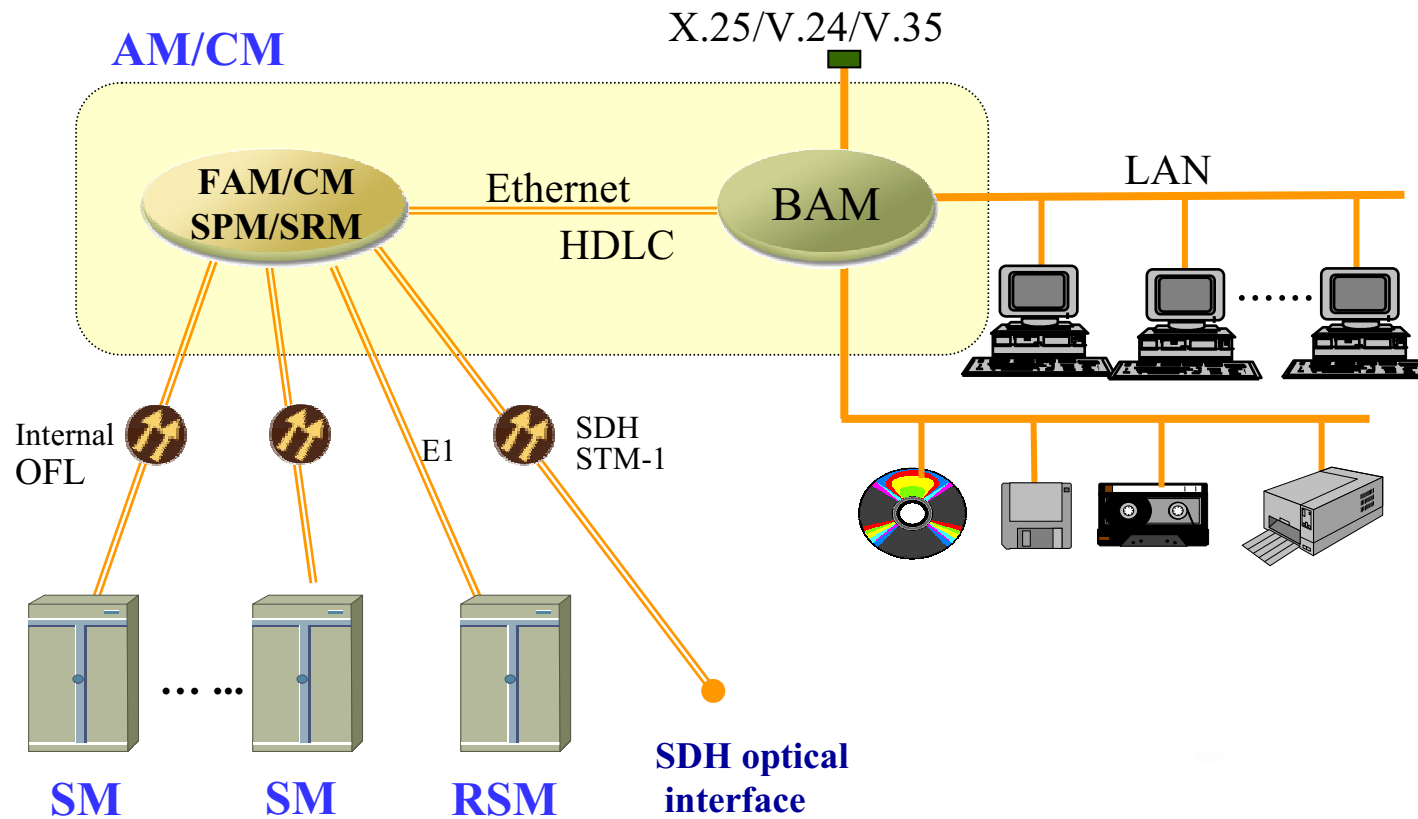
**Width: 800mm**

**Depth: 550mm**

- **Maximal capacity : 800,000 subscriber lines  
or 180,000 DT.**
- **Local, Tandem, Toll, International exchanges.**

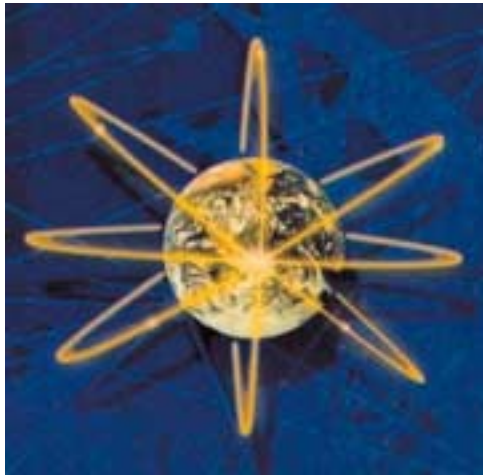


# Overall Structure



**AM/CM**--Administration/communication module **BAM**--Back administration module  
**SM**--Switching module **OFL**--Optical fiber interface

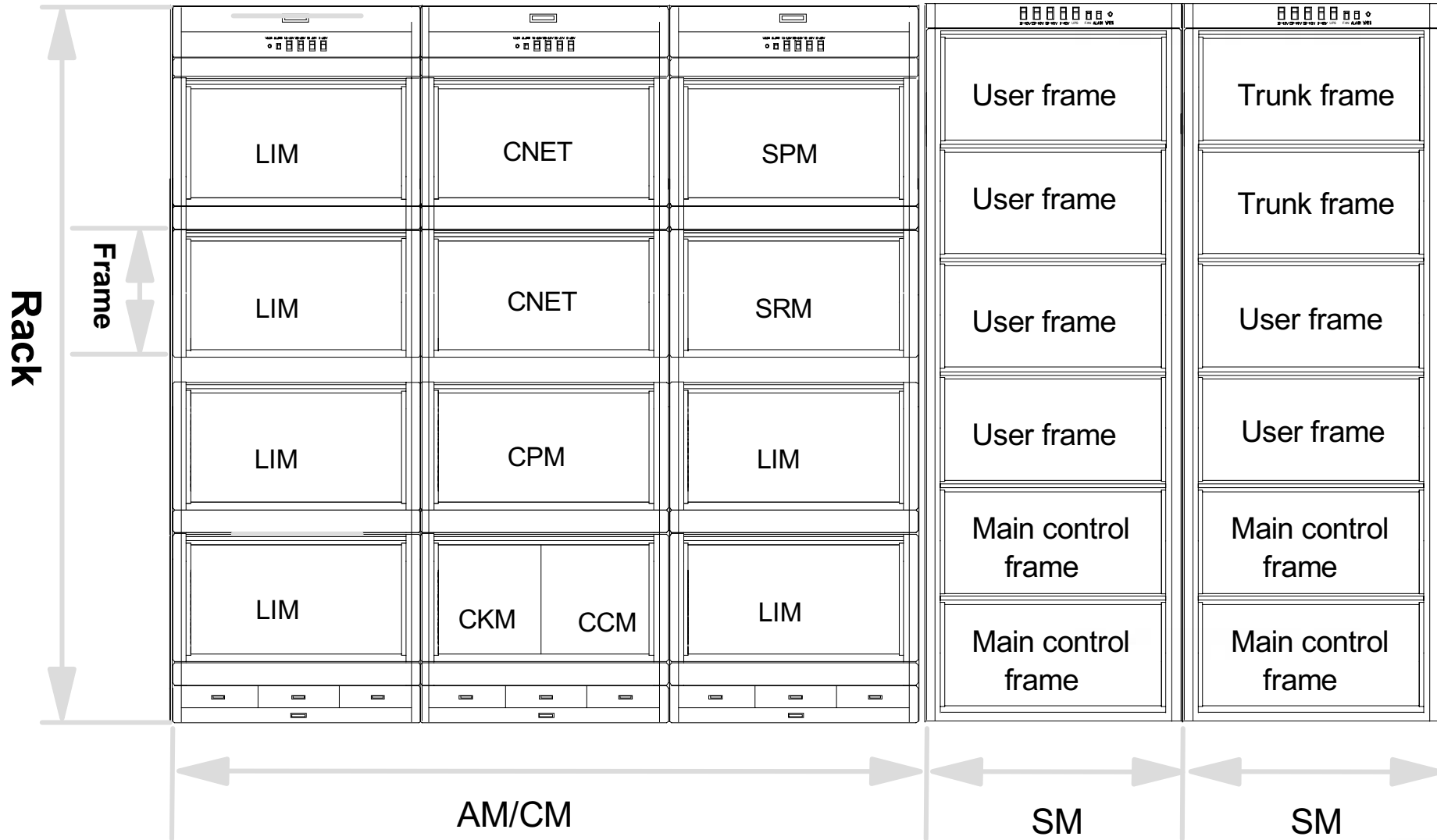
# CONTENT



- **General**
- ***Modular & Hierarchical Structure***
- **Module Function**
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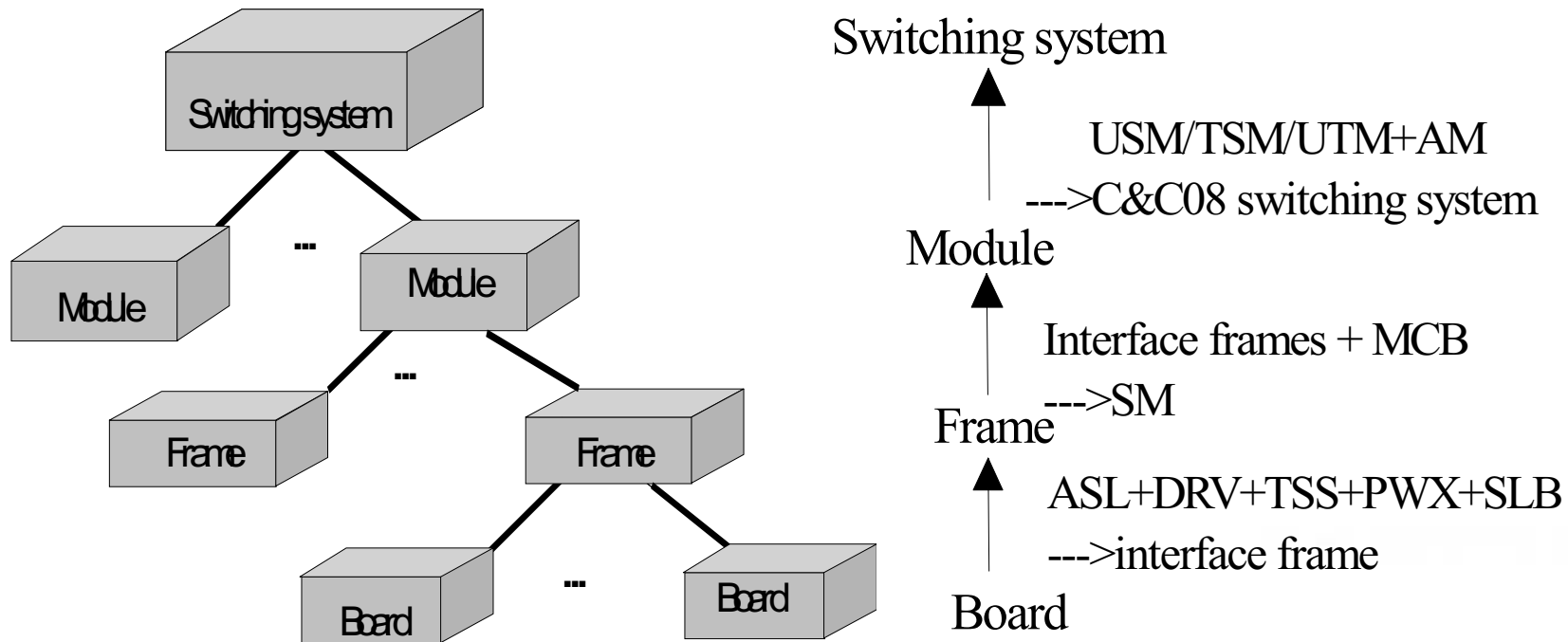
# Modular & Hierarchical Structure





# Modular & Hierarchical

- The typical Hierarchical Modular Structure of C&C08 Digital SPC Switching System

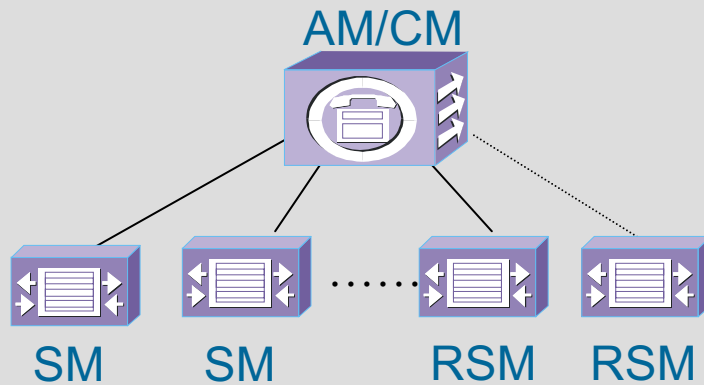




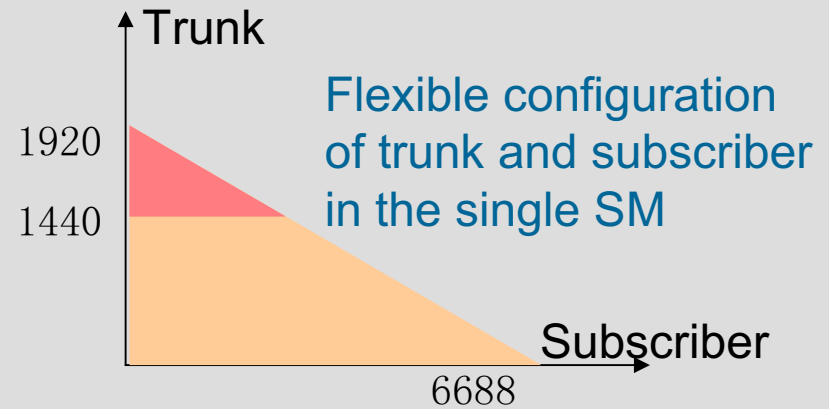
# Modular design

## Flexible Configuration

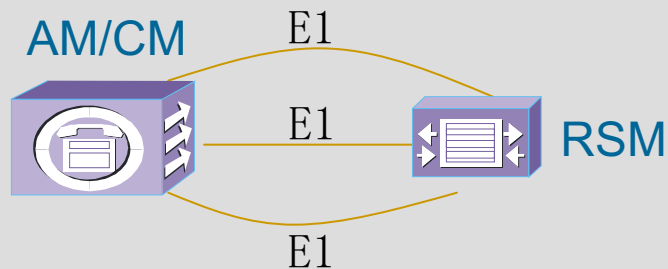
A、Smooth expansion of modules



B、



C、Adjustable voice channel between modules



D、Smooth expansion of central switching network by simply adding circuit board



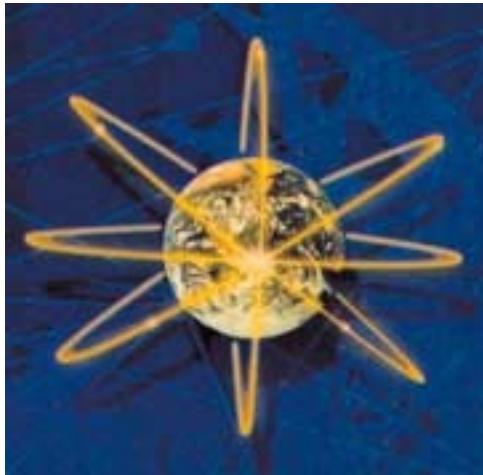


# Modules

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- CM—Communication Module
- AM—Administration Module
  - FAM (Front Administration Module)
  - BAM (Back Administration Module)
- SPM—Service Processing Module
- SRM—Shared Resource Module
- SM—Switching Module

# CONTENT

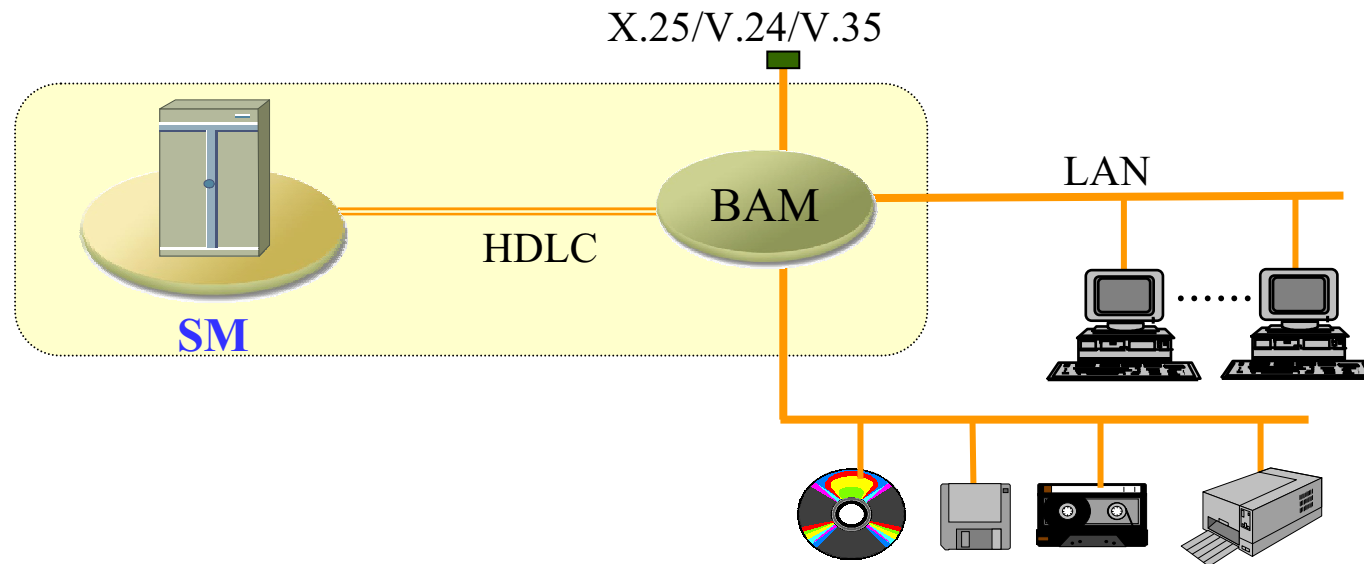


- **General**
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# Modules

## Single-module(stand-alone) office



**SM**--Switching module  
**BAM**--Back administration module





## Switching Module

- Independent switching function: handling intra-module traffic
- Providing various service interfaces



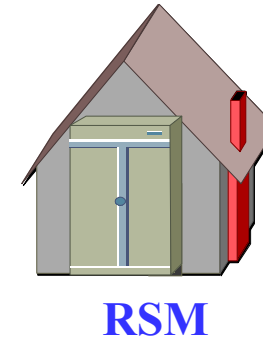
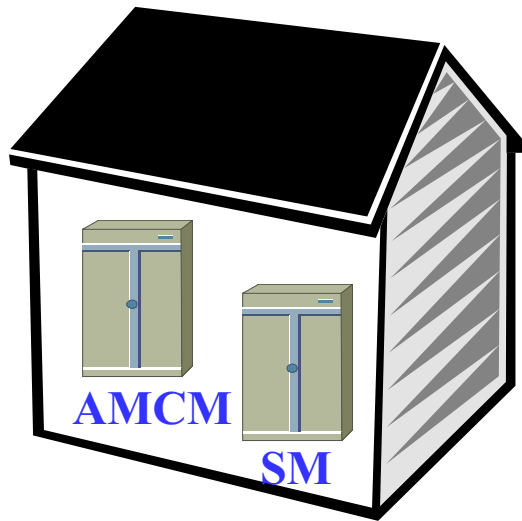
- A variety of functions including: database management, call processing, maintenance operation and etc.

**As single-module office;  
Or to form a multi-module office with AMCM.**



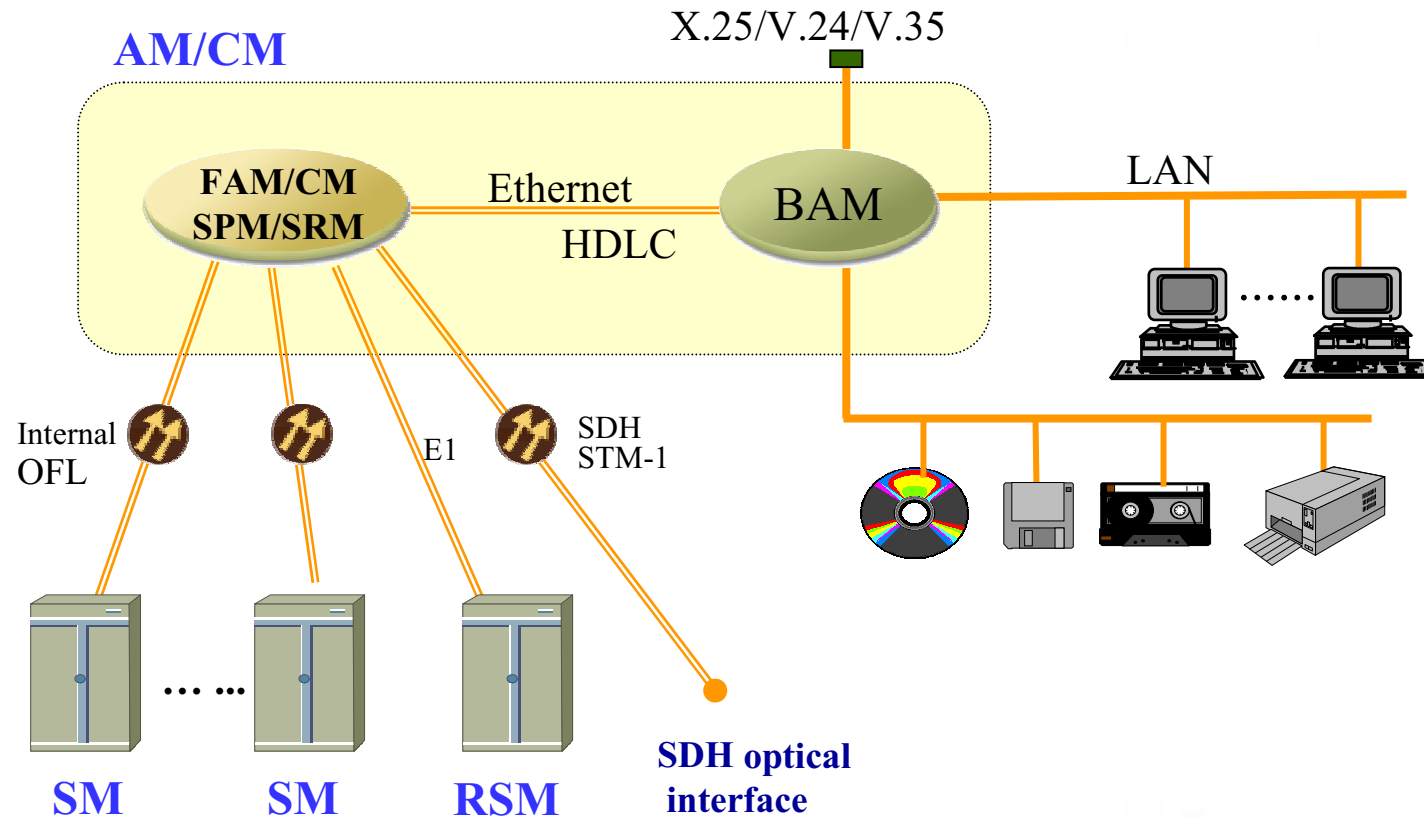
# SM & RSM

- Local SM: 40M optic interface
- RSM(remote switching module): standard E1 interface or SDH(STM-1) optic interface





# Modules



**AM/CM**--Administration/communication module

**BAM**--Back administration module

**SM**--Switching module

**OFL**--Optical fiber link



# FAM

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- Management of inter-SM call connection
- Providing open management interface to terminal system.
- FAM functions for routine management tasks like call ticket recording, traffic statistics, etc.



## CM

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- CM mainly consists of the central switching network and inter-module communication interfaces.
- CM is responsible for providing inter-SM speech channels and signaling links.



# BAM

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- BAM belongs to the open O&M terminal network which is based on TCP/IP protocol and client/server model.
- All the databases and program required by system operation are stored on the BAM.



# SPM

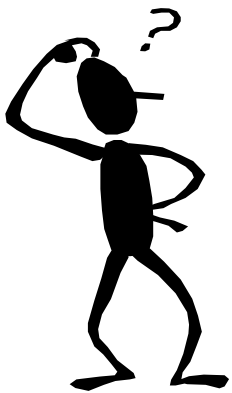
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- Service Processing Module (SPM) : working with the interfaces of E1 or SDH STM-1, SPM is able to provide a variety of service interfaces, including
  - Inter-office trunk(SS7; R2; No.5) ;
  - V5 interface to AN;
  - PRA of ISDN;
- SPM is connected with BAM directly by 10M/100M TCP/IP network interface



# SRM

- Shared Resource Module (SRM)
- Provides the resources required by SPM, including
  - signal tones
  - DTMF device
  - MFC device
  - conference telephone device
  - CID display device
- All resources are shared by all SPM in the whole office.





## Inter-connection: AM<=====>SM

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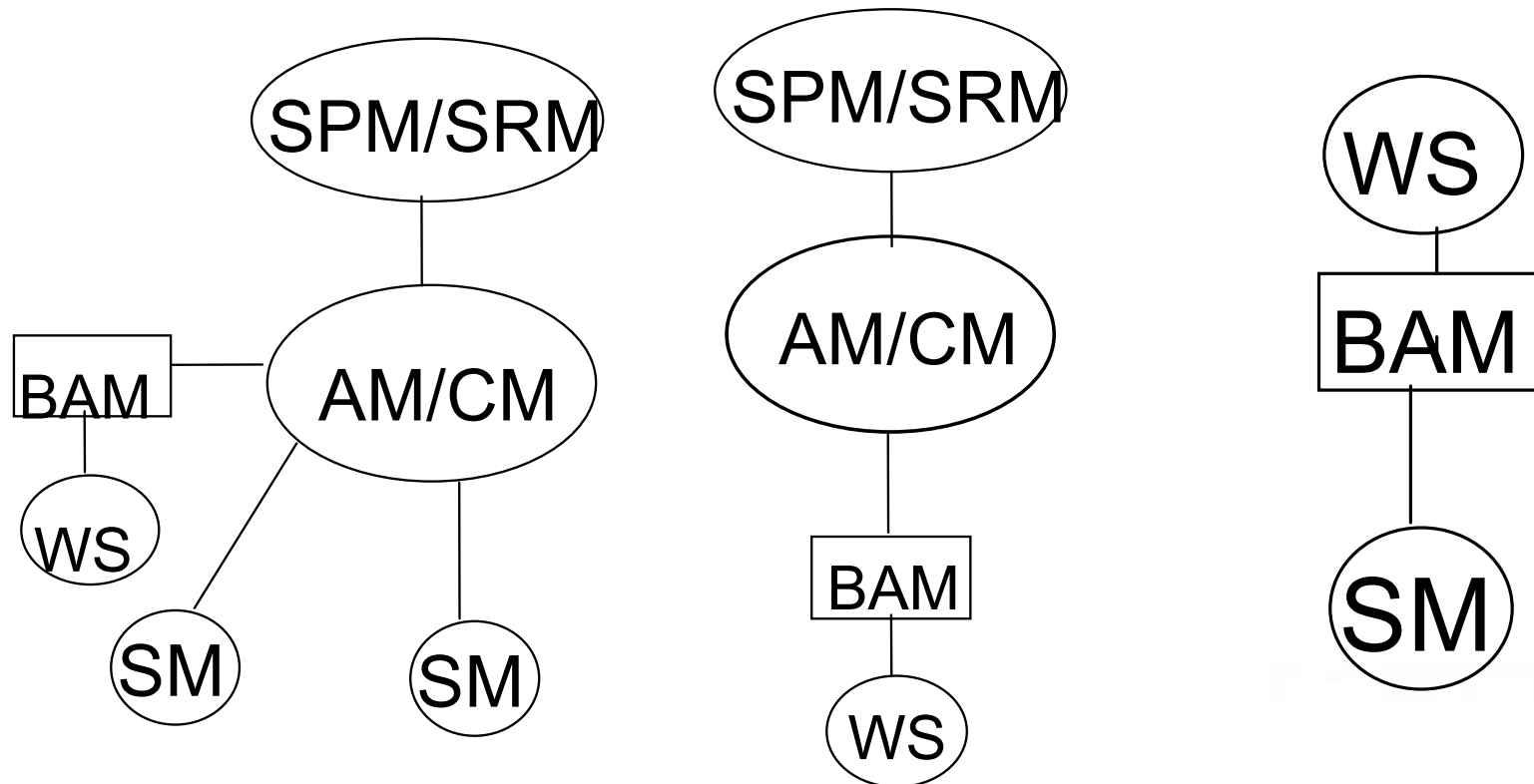
**STM-1 Interface**

**40Mbps OFL**

**E1 Interface**

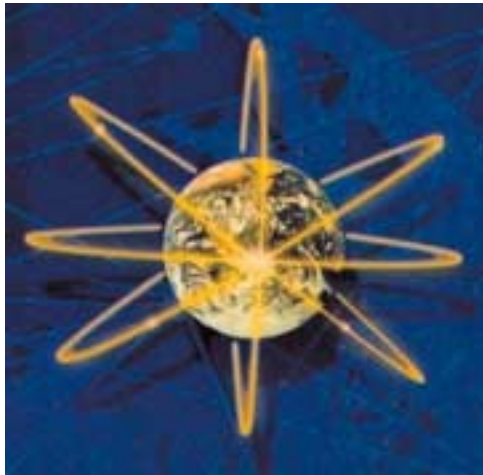


# Networking





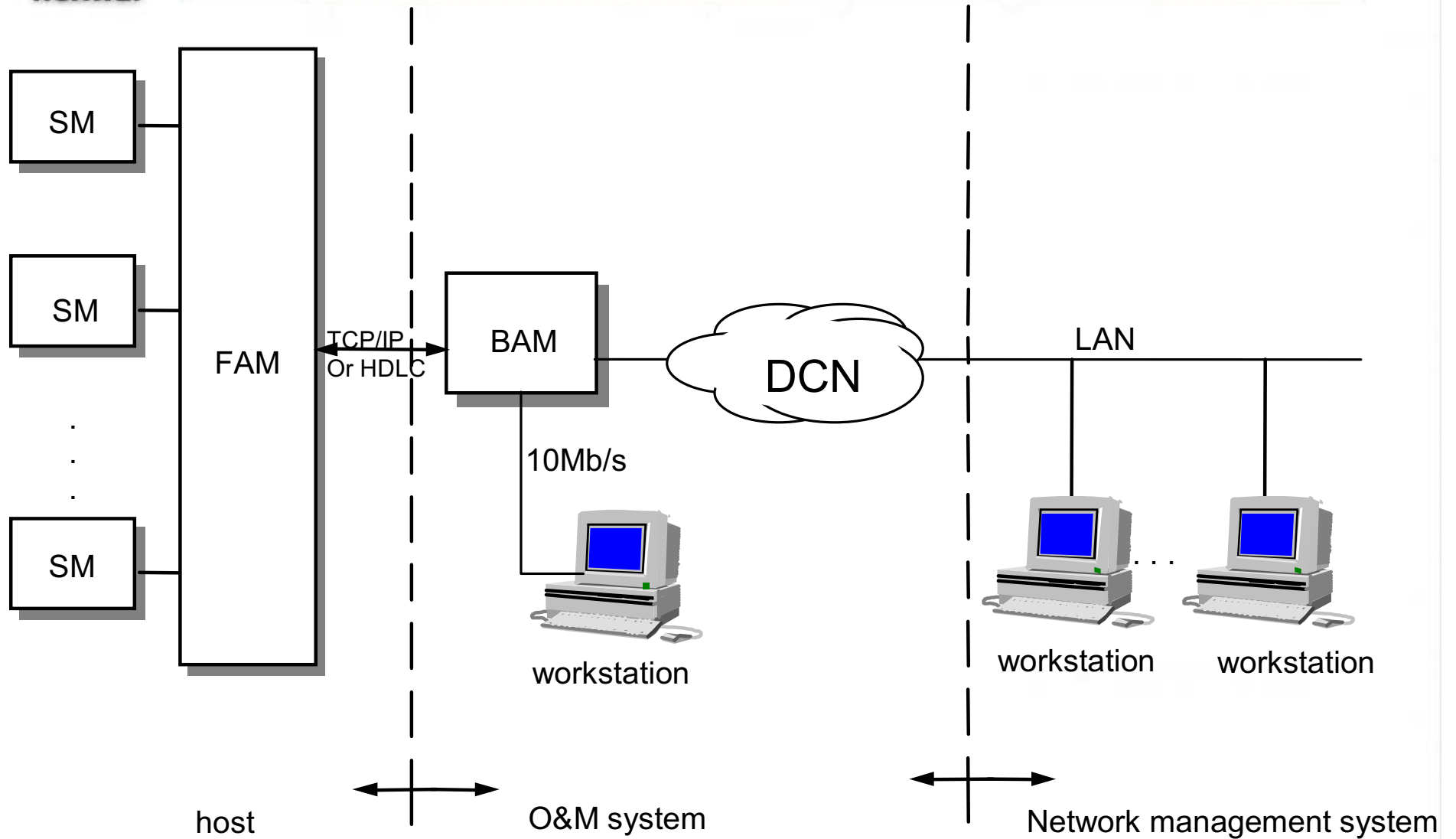
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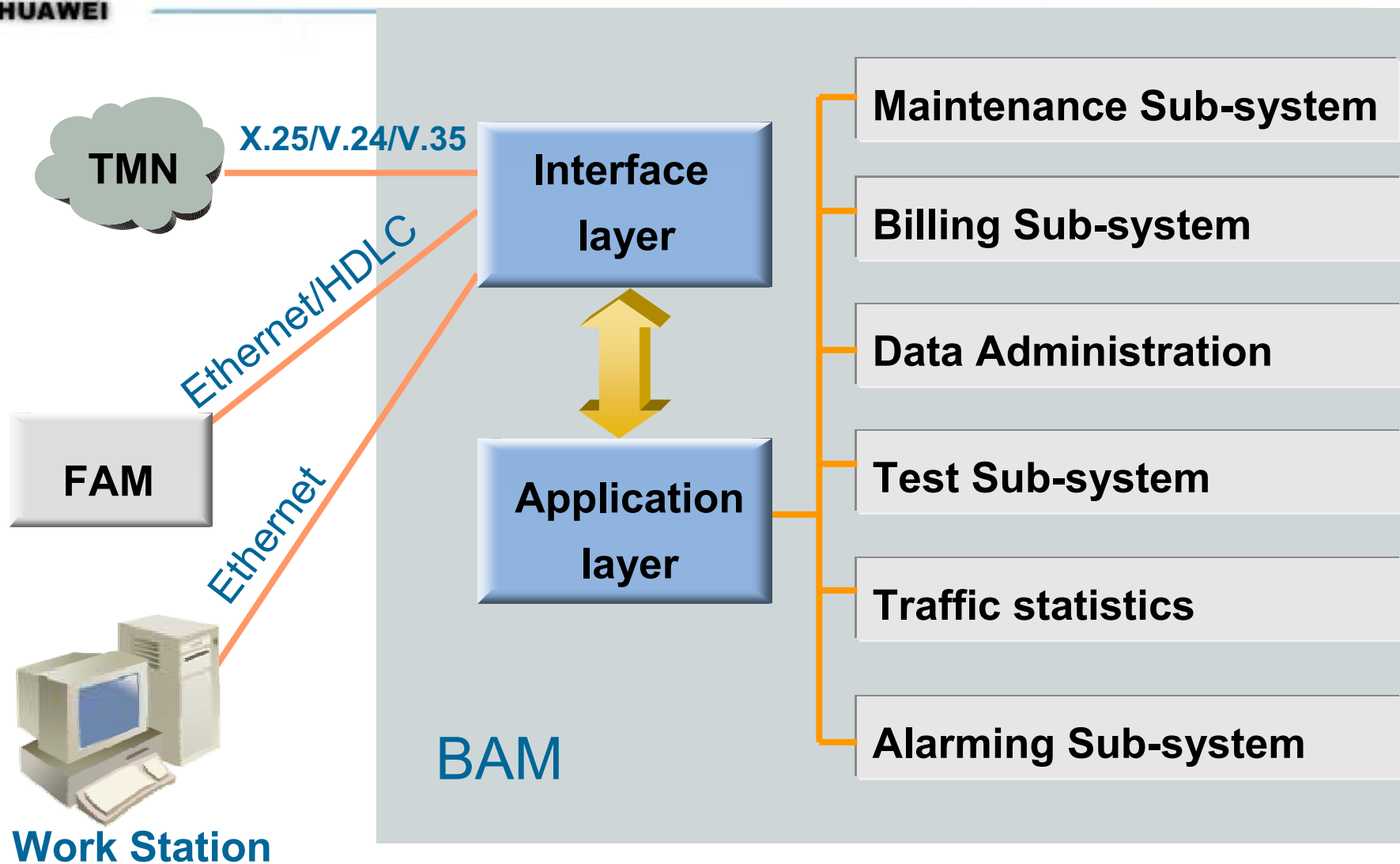


# Terminal System of C&C08 switch





# Architecture of BAM





# Fully Open Terminal System

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- Client/server scheme
- LAN-based
- Fully open interfaces
- Multi-point maintenance
- Modular software architecture
- Windows-based operating platform
- Multi-window and friendly man-machine interfaces



# GUI Operation & Maintenance Interface

C&C 08 maintain system [BAM107] cc08 - [Hardware config panel]

System Authority management View Windows Help

Hardware config

	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2
1																								
5			P R R A	P R R A	P P R T	D T 2																		
4																								
3		S L	A S L	D S L	A S L	A S L	A S L	A S L	A S L	A S L	D R U	D R U	A S L	A S L	A S L	A S L	A S L	A S L	A S L	A S L	A S L	T S		
2		N O D	N O D	N O D	N O D	N O D	N O D	N O D	N O D	N O D	N O D	N O D	N O D	N O D	N O D	N O D	N O D	N O D	N O D	N O D	N O D	N O D	N O D	
1		N O D	N O D	N O D	N O D	N O D	N O D	N O D	N O D	N O D	N O D	N O D	N O D	N O D	N O D	N O D	N O D	N O D	N O D	N O D	N O D	N O D	N O D	

Module[M] 1 Module

- Normal
- Normal
- Abnor
- Normal
- Abnor
- Fault
- Normal
- Ready

MML command Maj



# Intelligent MML Command Input

**C&C 08 Switch MML input tool**

System Operation Option Help

Navigation tree Search

- Subscriber management
  - ISDN management
  - CENTREX group
  - V5 management
  - Supplementary service
  - Number segmentation
  - Normal subscriber
    - Add Analog Subscriber(PBX)(ADD ST)**
    - Remove
    - Modify the
    - List Subscribers
    - Add a Base
    - Modify a
    - Remove
    - List Subscribers
    - Modify the
    - Park Telephone
    - Restore Telephone
    - Set Subscriber
    - Display C
    - Block Circ
    - Unblock
    - Reset Circ
    - Start Sub
    - Stop All T
    - List Place
    - Display L
  - PBX group

**Add Analog Subscriber(PBX)**

- Command title : ADD ST
- Command code : 8000
- Command function :  
Add an analog subscriber, including PBX subscriber.

Help

ADD ST: D=K' 2220002, MN=1, DS=25, RCHS=2;

History command: [ ]

Command input: ADD ST

TELEPHONE NUMBER: 2220002      DNSSET: 0

MODULE: 1      EQUIPMENT NUMBER: 25

CHARGING SOURCE CODE: 2      CALL SOURCE: 0

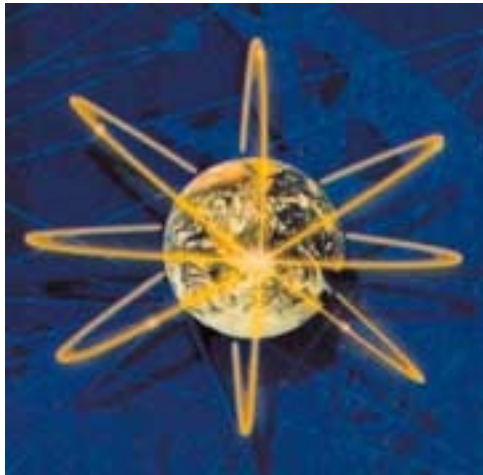
SUBSCRIBER TYPE: NRM (ORDINARY)      SUBSCRIBER STATUS: NRM (NORMAL)

ADDITIONAL STATUS: NM (ORDINARY SUBSCR)      PBX GROUP: NO

完成



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# Physical Characteristics

- **100,000-Trunk switch: 9 racks**

**Power consumption:**

**for a configuration of 10240L/1440DT**

**Normal: 3060w**

**Busy hours: 5240w**

- **Temperature: long-term operation: 0°C ~ 45°C**

**short-term operation: 0°C ~ 55°C**

- **Humidity: long-term operation: 20% ~ 80%**

**short-term operation: 10% ~ 90%**



# Physical Characteristics (Subscriber unit)

- Highly integrated: 0.35um VLSI
- 0.35W/L on idle
- 0.55 W/L on busy
- SM: 43.51A in busy time (DC power consumption)



# Reliability

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- MAIDT(mean accumulated intrinsic down time): 0.769H/20years
- MTBF(mean time between failure): 260.4 days
- MTTR(mean time to repair): 12.83 min.
- Annually fault rate of subscriber line circuit: 0.05%





# Summary

- **Modular & Hierarchical Structure**
- **Module Function**
- **The Open Terminal System**
- **System Performance**
  - ❖ **Maintain**
  - ❖ **System**

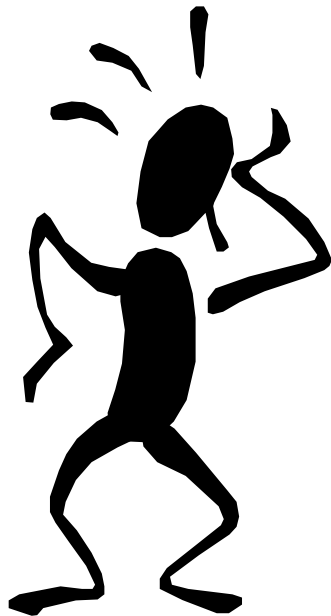




## Review...

- functionality of

- FAM
- BAM
- CM
- SM
- SPM
- SRM



*Their functions...*



## Let's have a try...

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- Try to draw a basic networking diagram, with the fundamental modules we've got to know from this overview.





Thank you

شكرا جزيلا