OSC001001 System Overview

ISSUE 2.0

Fixed Network Curriculum Development Section
Course Objectives

• 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
• City & Countryside
• Computer & Communication
• China & Communication
C&C08 in Chinese Telecom Market

C&C08 in Chinese Market

Rank No.1 in Chinese market.

- 1998: 23 Million Lines (30%)
- 1999: 22 Million Lines (32%)
- 2000: 48 Million Lines (35%)

Market Share of C&C08
Total Construction Lines

www.huawei.com
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.
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
- The Open Terminal System
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Modular & Hierarchical

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

Switching system

- USM/TSM/UTM+AM
  --> C&C08 switching system

Module

- Interface frames + MCB
  --> SM

Frame

- ASL+DRV+TSS+PWX+SLB
  --> interface frame

Board
Modular design

Flexible Configuration

A. Smooth expansion of modules

AM/CM

SM  SM  RSM  RSM

B. Flexible configuration of trunk and subscriber in the single SM

Trunk

1920  1440

Subscriber

6688

C. Adjustable voice channel between modules

AM/CM

E1  E1  E1

RSM

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

16K → 32K → 64K → 128K
Modules

- 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
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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
• 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

- 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

- 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.
• 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
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

STM-1 Interface

40Mbps OFL

E1 Interface
Networking
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Terminal System of C&C08 switch

- SM
- FAM
- BAM
- DCN
- LAN
- workstations
- host
- O&M system
- Network management system

TCP/IP or HDLC
10Mb/s
Architecture of BAM

- Interface layer
  - Maintenance Sub-system
  - Billing Sub-system
  - Data Administration
  - Test Sub-system
  - Traffic statistics
  - Alarming Sub-system

- Application layer

- TMN (X.25/V.24/V.35)
  - Ethernet/HDLC

- FAM
  - Ethernet

- Work Station
  - BAM
  - www.huawei.com
Fully Open Terminal System

- 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
Add Analog Subscriber (PBX)

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

**History command:**

**Command input**: ADD ST

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<th>TELEPHONE NUMBER</th>
<th>MODULE</th>
<th>EQUIPMENT NUMBER</th>
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<tr>
<th>SUBSCRIBER TYPE</th>
<th>SUBSCRIBER STATUS</th>
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<tbody>
<tr>
<td>MM (ORDINARY)</td>
<td>MM (NORMAL)</td>
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</table>
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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%
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

- MAIDT (mean accumulated intrinsic down time): 0.769H/20 years
- 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...

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