

## **Integrated Signal Capture Platform Introduction**

Version 2.1.1

## Revision History

	<b>Date</b>	<b>Change</b>
VER 2.0	2009-1-16	Created this document
VER 2.1	2009-2-16	Changed the name to integrated signal capture platform
VER 2.1.1	2010-3-10	Adjust the format and amended some textual errors

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# 1. About This Manual

Welcome to this document. It briefly describes the function, implementation scheme, network top, characteristics and performance of EHangcom integrated signal capture platform (hereinafter referred to as the integrated signal capture platform). This software-related purpose, intended audience, document description and relevant information are as follows:

## Purpose

This manual describes the function, implementation scheme, network topology, characteristics and performance of the integrated signal capture platform so that the marketers, customers and users can understand and use this platform better.

## Intended Audience

1. Distributors
2. System Integrators
3. Toolkit Developers
4. Independent Software Vendors (ISVs)
5. Value Added Resellers (VARs)
6. Original Equipment Manufacturers (OEMs)

## How to Use This Manual

This manual is concomitant with the software installation. This document mainly includes the following sections:

1. *Description*: This section briefly describes the integrated signal capture platform.
2. *Implementation Scheme*: This section briefly describes the implementation method of the integrated signal capture platform.
3. *Networking topology*: This section describes the network topology of the integrated signal capture platform.
4. *Performance*: This section describes the performance parameters of the integrated signal capture platform.
5. *Typical Applications*: This section describes the typical applications of the integrated signal capture platform.

## Relevant Information

For relevant information of this manual, refer to the following documents:

1. *ISX4000 System Introduction*
2. *ISX4000 OAM User Manual*
3. *ISX4000 Hardware Installation and Maintenance Manual*
4. *ISX4000 Hardware Products Datasheet*
5. *Integrated Signaling Collection Platform User Manual*
6. *Integrated Signaling Collection Platform Operating Manual*

## 2. Description

The integrated signal capture platform is an ultimate product as a result of secondary development based on Ehangcom iSX4000 universal application platform. It inherits the strong points of the iSX4000 universal application platform, such as high reliability, large capacity, distributed processing, multiple access modes and multi-protocol support.

The integrated signal capture platform is an integrated platform and provides functions such as convergence, capture and value added services. It is a one-station solution for customers. **After the convergence, capture and CTI hardware are not needed**, customers will benefit from project deployment, hardware investment, maintenance, energy consumption, etc.

The integrated signal capture platform supports both iSX4000 and iSX1000 switches. One iSX4000 switch has 64 E1 trunks, one STM-1 optical fiber interface, 16 signaling collection card slots and 4×100M redundancy Ethernet ports. With the power consumption below than 200W, it can provide 2048 64K links or 64 2M links for simultaneous capture of various signaling. One iSX1000 switch has 8 E1 trunks, three signaling capture card slots and 4 redundancy Ethernet ports. With the power consumption below than 100W, it can provide 248 64K links or 8 2M links. If multiple switches are used, the capture capacity is very high.

With the special chip and tailored algorithm, the signal capture board of the integrated signal capture platform supports any combination of  $N \times 64K$  ( $N$  is in the range of 1-31. Customization is required if  $N$  is greater than 31). The capture protocol supports transparent data, SS7 low-speed links (64K links), SS7 high-speed links (2M links or  $N \times 64K$  combined links), ISDN-PRI links, frame relay links ( $N \times 64K$  combined links) and H.223 links (such as AL1, AL2 and AL3).

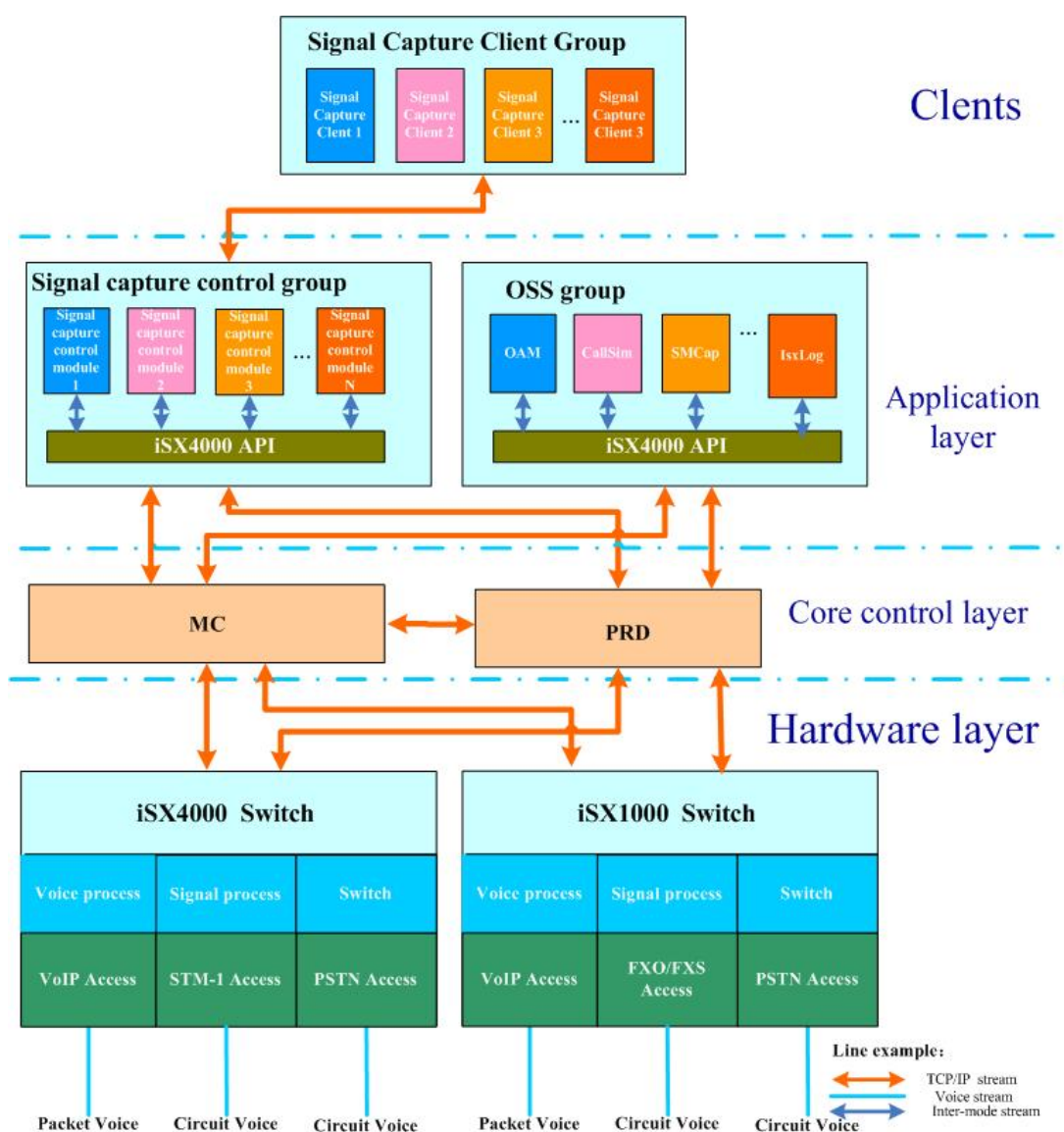
The integrated signal capture platform supports the client with the TCP/IP interface and multiple clients to balance data and enhance reliability.

# 3. Implementation Scheme

## 3.1 System Architecture

The architecture of the integrated signal capture platform is based on the DNS structure and performs convergence and capture through the cooperation of multiple modules.

The system logically consists of the hardware layer, core control layer, application layer (signal capture control module and OSS module) and client (signal capture user). The logic structure diagram is shown as follows:



### 3.1.1 Hardware Layer

The hardware layer is iSX4000 and iSX1000 switches. It provides

functions such as trunk access and optical access, switch and signal capture. It converts captured signal into TCP packets and sends them to the core control layers. To support value-added services, it also provides functions such as voice processing and signal processing.

### 3.1.2 Core control layer

The core control layer has MC and PRD. For specific functions, refer to the *iSX4000 System Introduction*.

### 3.1.3 Application Layer

The OSS system have functions such as switches maintain, etc.

The signal capture control module (HugeCap—Huge Capture Control) achieves the switch, convergence ,signal packet capture control, and forwards the signal data that obtained from the core control layer to clients. The signal capture control module can distribute to multiple computers and constitute a distributed processing array, thus solving the computing bottleneck and enhancing reliability.

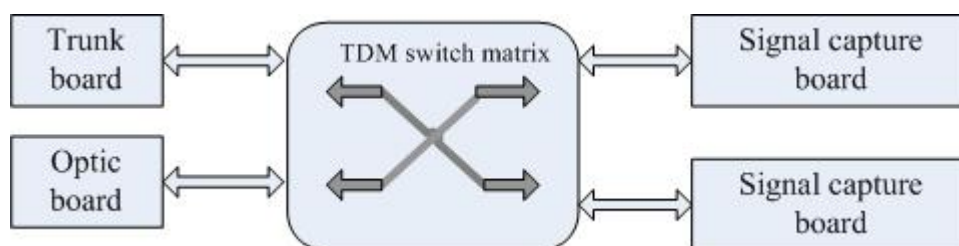
### 3.1.3 Signal Capture Client

Signal capture clients receive signal data from the signal capture module. The clients can distribute to multiple computers and constitute the distributed processing array.

Attention: Signal capture clients is developed by the user according to the needed.

## 3.2 Switching and Convergence Structure

Through the high-capacity switch matrix of iSX4000 or iSX1000 switches, the signal links that distributed in the trunk or optical fiber can be led to any signal capture boards, as shown in the following figure:

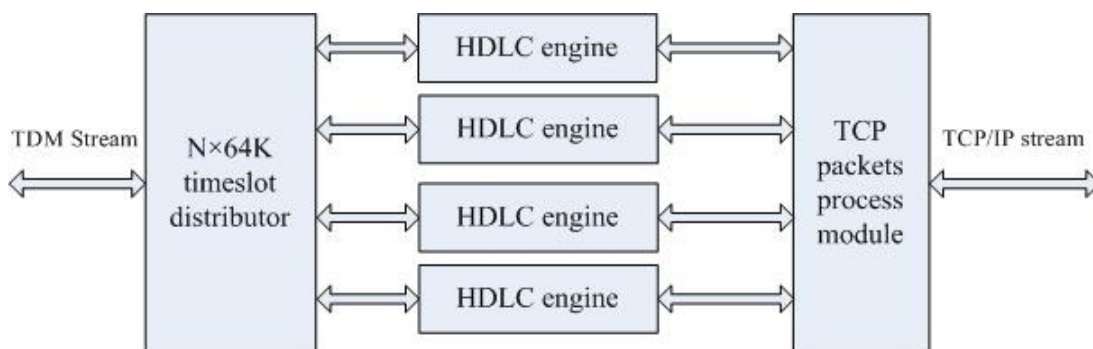




## 3.2 Signal Capture Structure

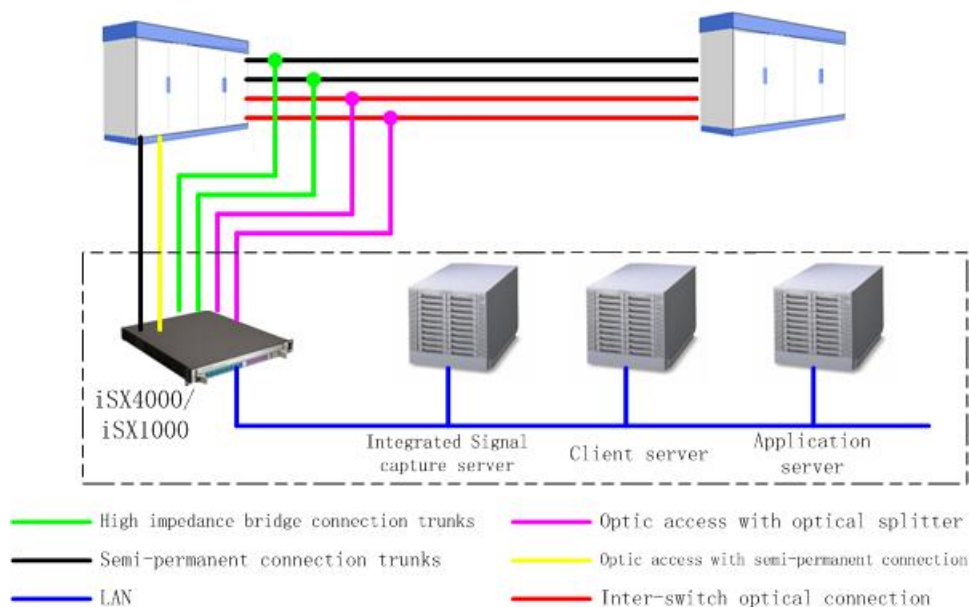
With the special chip and the special algorithm engine, the signal capture board can concurrently analyzes and capture multiple signal formats and send the captured data to the core control layer through TCP.

The capture structure of the signal capture board is shown in the following figure:



## 4 Networking Topology

The integrated signal capture platform supports both semi-permanent connection and high impedance bridge connection. A typical network topology is shown in the following figure:



Attention: This figure is just an example. The actual network environment may differ.

The number of iSX4000/iSX1000 switches and servers is adjusted according to the on-site situations.

## 4 Characteristics and Performance

The integrated signal capture platform integrates convergence and capture. It not only captures typical SS7 and ISDN-PRI signal links, but also capture the telecommunication data links (such as frame relay and X.25) as well as H.324 and 3G-324M video data that based on H.223. Therefore, it is a full-function capture platform.

Attention: The following performance data is based on iSX4000 switches, and iSX1000 switches are reduced progressively according to the capacity.

### 4.1 Interface

- Up to 64E1 trunk access; 75 ohms or 120 ohms
- Trunk gain adjustment during the high impedance bridge connection; up to 32dB amplification
- Up to one STM-1 optical access

### 4.1 Supported Protocols

- SS7 links: 64K, N×64K and 2M
- ISDN-PRI links: 64K
- Frame relay links: 64K and N×64K
- H.223 links: 64K and N×64K
  - AL1 interface data: Data or control signal such as LAPM/V.42 and LAPF/Q.922
  - AL2 interface data: Audio coding data, etc.
  - AL3 interface data; Video coding data, etc.

### 4.2 Capacity

- A single signal capture board provide 128 64K links or four 2M links;
- A single iSX4000 provide 16 signal capture boards and have a capacity of 2048 64K links or 64 2M links;
- An ordinary server may support 5 signal capture boards, i.e. can forward packets of 640 64K or 20 2M signal links;

### 4.2 Performance

- A single signal capture board can capture and forward 140,000 signal packets per second;
- One server that running the signal capture control module can forward 540,000 signal packets per second on CentOS4.5 and 740,000 signal packets per second on Win XP, 2000 and 2003;

Attention: Test conditions

- Test data is obtained from SS7 64K links without filter.
- CPU: intel core2 E4600 or above
- Memory: 2G
- Network card: Giga
- CentOS4.5: 540,000 packets per second
- Win XP, 2000 and 2003: 740,000 packets per second

## 5 Typical Applications

Typical applications of the integrated signaling collection platform are as follows:

- Signaling network monitoring
- The third party charging, real-time charging and internetwork charging
- Interconnection service monitoring
- Signaling network measuring
- Information console monitoring
- **Ultimate** message
- Recording system
- GPRS monitoring
- Video monitoring