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iSAP2000
Multiservice Access Multiplexer (2U)

The iSAP2000 is a 2U 19" 6 slots rack type E1 Time Division Multiplexer for fractional E1 network across, which is designed for nonstop operation. There are 6 slots available for hot-swappable I/O cards and two slots are provided for power supplies. Uplink supports E1 copper connection, maximum up to 96x E1 cross connect for Voice and Data. The iSAP2000 optionally accommodates up to two separate power supplies, which may derive power from AC (110/220) or DC (-36~72V) power sources. When two power supplies are installed, the modules provide complete power redundancy and are hot swappable even during the E1 cards' transmission. The iSAP2000 provides E1 copper uplink, the maximum E1 supports up to 96 E1 channels with cross connection for Voice and Data, the interface included RS232, V35, FXS, FXO, ET100 & E&M. CTC Union also provides and maintains our own SmartView EMS (Element Management System) which is a Java based client/server manager for monitoring, configuration, maintenance, or troubleshooting a large number of network elements over a long period of time.

Interface Cards
- E1 card: iSAP-8E1, iSAP-16E1
- Power modules: 2000-AC240, 2000-DC48

- I/O cards: iSAP-RS232, iSAP-N*64K/V35, iSAP-ET100, iSAP-E&M , iSAP-FXS , iSAP-FXO

Features
- Supports MAX. 96xE1 with full cross-connect, Supports DS0 cross-connect
- Supports 16 channel Main E1 LTU card
- Supports E1 time slot broadcast function
- Modular design for Voice I/O card, the voice I/O card has two sub-module, each sub-module supports 4-port FXO/FXS

- All modules and cards support hot-swapping
- DCE card types included N*64K, RS232(Sync/Async) ET100, ET100R, E&M, FXO, FXS...etc.
- Supports Console, Telnet, SNMP and GUI management
- Available types of power built-in : AC+AC, AC+DC, DC+DC
- Modular design, 2U 19", 6-slot for I/O cards

Specifications

Management	
NMS	10/100Base-TX
Console	RS232
iSAP-8E1, iSAP-16E1	
Interface	Supports 8E1, 16E1 two types interface
E1 Cross connect	96 x E1 transparent cross connect, supports E1, time slot
CAS cross connect	Supports 16 time slot CAS follow voice time cross connect
Line Impedance	120 / 75 ohms
Frame format	CAS(PCM30)/CCS(PCM31)
Connector	RJ45
iSAP-RS232	
Data rate	≤38.4kbps Async or 64/128kbps Sync
Ports	6-port
Interface	RS232
iSAP-N*64K/V35	
Data rate	N × 64kbps(N=1~30 or 31)
Ports	4-port
Connector	V.35 Interface
iSAP-ET100	
Standards	IEEE 802.3, 802.3u
MDI/MDIX	Auto
Data rate	10/100Mbp
Ports	4-port
Connector	RJ45
iSAP-E&M	
Loop current	5~30 mA, maximum 70mA
Ports	8-port
Connector	RJ45

iSAP-FXS	
ITU-T Standard	G.712/G.713/G.714
Line resistance	600Ω
Off-hook current	25mA
Line distance	2km
Ports	8-port
On-hook current	10mA+/-3mA
Effective Ring	Frequency: 25Hz Voltage: 75V, peak to peak110V MAX line resistance: 1500Ω
Connector	RJ45
iSAP-FXO	
ITU-T Standard	G.712/G.713/G.714
Line resistance	600Ω
Line distance	2km
Ports	8-port
Caller ID	Supports DTMF, FSK Standard
Connector	RJ45
Electrical & Mechanical	
Dimensions	440 × 300 × 88mm (D x W x H)
Environmental	Operating: 0~60°C Storage:-25~70°C Humidity: 10~90%, non-condensing
Power	AC 220V: 165~265V, 50~60Hz DC -48V:-36~-76VDC
Power Consumption	< 40W

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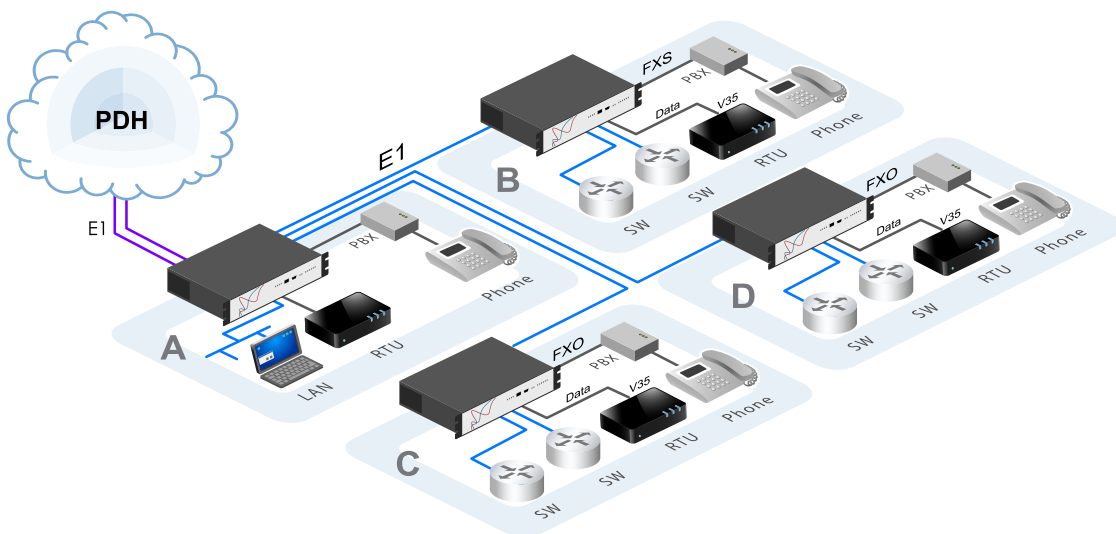**Figure1 :** Point to Multi-points 16E1 aggregation
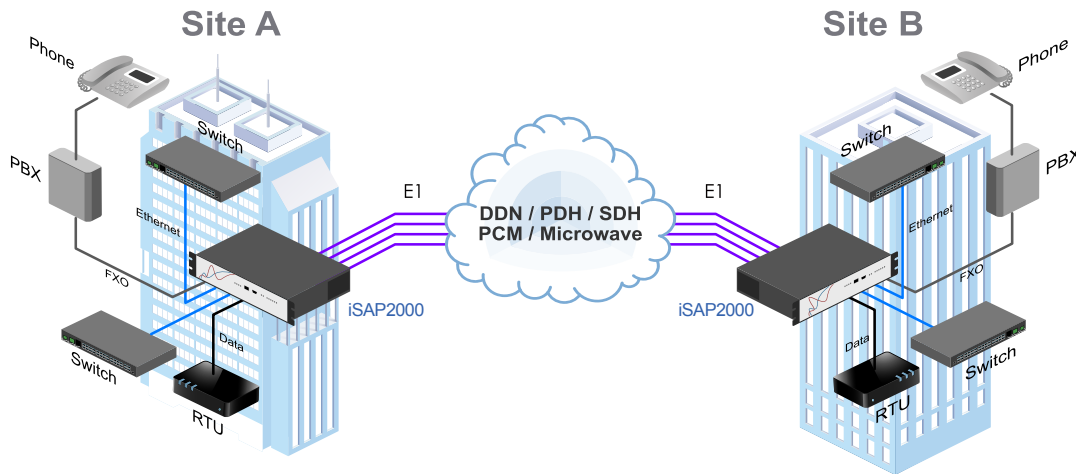
Figure2 : Point to Multi-points 63E1 aggregation over STM-1

Ordering Information

Model Name	Type	Description
iSAP2000-CH	Chassis	2U 19" 6 slots Chassis with bulit-in CPU card, power modules not included
iSAP2000/AC	Power	AC power plug-in module (165 to 265 VAC)
iSAP2000/DC	Power	DC Power plug-in module (±36 to ±76 VDC)
iSAP-EMS	Software	EverLink2000 EMS software for iSAP5100 and iSAP2000
iSAP-8E1R	Main E1 card	8 channels Main-E1 LTU card: Fractional E1 RJ45
iSAP-16E1R	Main E1 card	16 channels Main-E1 LTU card: Fractional E1 RJ45
iSAP-CAB-RJ45/4BNC	Cable	2ch E1 RJ45 to 4BNC cable (1.5 meter)
iSAP-FXO	Voice card	8 channels FXO interface card
iSAP-FXS	Voice card	8 channels FXS interface card
iSAP-E&M	Voice card	8 channels 2/4 wires E&M voice interface card
iSAP-RS232	RS-232 card	6 channels RS-232 interface card (V4.0), Low speed: 128kbps 19.2kbps Async
CAB-DB62DB25F6-232-LS	Cable	RS-232 adapter cable for low speed: DB62 Male to 6x DB25 Female, 1M
iSAP-ET100	FE card	4 channels 10/100Base-TX Ethernet Bridge card
iSAP-DATA	Data card	4 channels V.35/X.21/RS530/RS449 cards
CAB-HP68MB34F4-V35	Cable	V35 adapter cable for High speed: HP68 Male to 4x MB34 Female, 1M
CAB-HP68DB25F4-530	Cable	RS530 adapter cable for High Speed: HP68 Male to 4x DB25 Female, 1M
CAB-HP68DB15F4-X.21	Cable	X21 adapter cable for High speed: HP68 Male to 4x DB15 Female, 1M
CAB-HP68DB37F4-449	Cable	RS449 adapter cable for High Speed: HP68 Male to 4x DB37 Female, 1M

Chassis
iSAP2000 – ☐☐
Example: iSAP2000 – CH

Card Type
iSAP2000 – ☐☐☐☐
Example: iSAP2000 – 8E1R

Control Card

iSAP5100-MS-DM-96
iSAP5100-MS-DM-155
CPU Control SNMP
Management Card

Features
- RS-232 port for dumb terminal at 9.6k, 8bit, no parity
- SNMP V1 and V2C support
- MIB file compliant to MIB-II ASN.1
- Firmware upgrade by TFTP
- Hot swappable

Specifications

Electrical Interface	Console RS-232 port
	NMS LAN 10/100Base-TX
Fiber Interface	STM-1 155Mbps (MS-DM-96)
	SFP-LC (MS-DM-155)
Network Management	Telnet, SNMP, EMS, local console port
Dimensions	340 × 145 × 32mm (W × D c H)
Temperature	0℃ ~ 50℃
Humidity	5 ~ 95%
MTFB	65,000 hrs

Aggregate Card

iSAP-8E1R
iSAP-16E1R
Main E1 Cross Connect
Aggregate Card

Features
- Available in 8,16 E1 channels
- Supports PCM31 or PCM30 framed/unframed
- Path / Card Redundancy / Hot Swappable
- E1 timeslots can support cross-connect function
- E1 channel can act as Sub-E1 for drop & insert

Specifications

Frame format	CAS(PCM30) / CCS(PCM31) ; CRC on/off , framed/unframed
Bit rate	2.048Mbps
Line codes	HDB3/AMI
Rx sensitivity	0 ~ -43dB
Tx driver	1.5km over 0.5mm E1 cable
Line impedance	75 ohms (unbalanced)
	120 ohms (balanced)
Pulse amplitude	nominal 2.37V (75ohm) nominal 3.00V (120ohm)
Pulse shape	According to ITU-T G.703
Dimensions	23 × 181 × 197mm (W × D × H)
Temperature	0℃ ~ 50℃
Humidity	5 ~ 95%
MTFB	65,000 hrs

Tributary Card

iSAP-RS232
RS232 Sync/Asyn Card

Features
- Six independent channels
- N x 64 setting from any E1 channel
- Transparent asynchronous rates up to 115.2kbps
- Synchronous 64 or 128Kbps, DCE mode
- Diagnostic loop backs
- Hot swappable

Specifications

Datacom interfaces	ITU-T V.24 compliant
	Multiplexing Nx64K data onto E1 time-slot
Data speed	N × 64K (N=1 to 2)
Data access	RS-232, supplied with corresponding interface cable
Access mode	DCE
Diagnostics	Local / Remote / Bi-directional Loop
Dimensions	23 × 181 × 197mm (W × D × H)
Temperature	0℃ ~ 50℃
Humidity	5 ~ 95%
MTFB	65,000 hrs

iSAP-Data
N x 64 Synchronous Serial Card

Features
- Four independent Synchronous channels
- N x 64 setting from any E1 channel
- Each channel operates in native DCE mode
- Diagnostic loop backs
- LED indicators for Power, Alarm, RD/TD activity
- Hot swappable

Specifications

Datacom interfaces	ITU-T and ANSI compliant
	Multiplexing Nx64K data onto E1 time-slot
Data speed	N × 64K (N=1 to 30, or 31)
Data access	RS-530, RS-449, V.35, X.21, supplied with corresponding interface cable
Access mode	DCE
Diagnostics	Local / Remote / Bi-directional Loop
Dimensions	23 × 181 × 197mm (W × D × H)
Temperature	0℃ ~ 50℃
Humidity	5 ~ 95%
MTFB	65,000 hrs

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Interface Card

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Specifications & design are subject to change without prior notice. Please visit CTC Union website for more details.   www.ctcu.com / sales@ctcu.com

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Tributary Card

iSAP-ET100
Fast Ethernet Bridge Card

Features

- Four independent Ethernet over E1 channels
- Utilizes HDLC WAN encapsulation
- MAC Address learning table with 5 minute aging
- Auto-MDIX and Auto-Negotiation
- Hot swappable

Specifications

Standards	IEEE 802.3, IEEE 802.3u
Ports	4-port RJ45
Throughput latency	1 frame
MDI/MDIX	Auto
Buffer	4K bits
Encapsulation	HDLC
Data rate	10/100Base-TX
Packet side	64 ~ 1522 bytes
Dimensions	23 × 181 × 197mm (W × D × H)
Temperature	0℃ ~ 50℃
Humidity	5 ~ 95%
MTFB	65,000 hrs

iSAP-E&M
E&M Voice Card

Features

- Eight independent channels
- 2/4 wire independent setting
- 1x 64 setting from any E1 channel
- E&M Signaling PBX trunks
- Provides E line, M line, SB (battery) and SG (ground) lines
- Supports types I, II, III, IV or V
- G.711 Codec
- LED indicators for Power, Alarm, activity
- Hot swappable

Specifications

Loop current	5~30 mA, maximum 70 mA
Return loss	300-600Hz >12dB (2W), 600-3400Hz >15dB (2W), 300-3400Hz >20dB (4W)
Group delay	@-10dBm0 <750uSec(2W) <600uSec(4W)
Total Distortion	according to ITU-T G.223
Channel crosstalk	< -65dB, 1020Hz@0dBm
Noise	< -65dBm0p weighted
Dimensions	23 × 181 × 197mm (W × D × H)
Temperature	0℃ ~ 50℃
Humidity	5 ~ 95%
MTFB	65,000 hrs

iSAP-FXS
FXS Voice Card

Features

- Eight independent channels
- 2 wire independent setting
- G.711 Codec
- 1× 64 setting from any E1 channel
- Provides ring function
- Supports caller-ID forwarding
- PSTN extension or direct "Hot-line"
- Links telephone to telephone or extends POTS
- LED indicators for Power, Alarm, RD/TD activity
- Hot swappable

Specifications

Effective ring voltage	AC 75VRMS +/-15V@25Hz +/-3Hz, <10% THD
Ring voltage at 300mA load	>50VACRMS
Loop resistance	<1.8K Ohms, including 300 Ohms for telephone
On-hook current	10mA +/-3mA
Off-hook loop current	18-50mA
Channel crosstalk	< -65dB, 1020Hz@0dBm
Noise	< -65dBm0p weighted
Surge protection	1000V, 10uSec transient response, decay to 50% in 700uSec 300VRMS for less than 200mSec; no component damage 220VRMS for 15 minutes; damage only local loop
Dimensions	23 × 181 × 197mm (W × D × H)
Temperature	0℃ ~ 50℃
Humidity	5 ~ 95%
MTFB	65,000 hrs

iSAP-FXO
FXO Voice Card

Features

- Eight independent channels
- 2 wire independent setting
- G.711 Codec
- 1× 64 setting from any E1 channel
- PCM30 R2 Signaling PSTN trunks
- Links PBX to PBX or extends POTS
- LED indicators for Power, Alarm, activity
- Hot swappable

Specifications

On-hook DC resistance	> 100K Ohms
Ring AC resistance	> 7.5K Ohms
Ring power sensitivity	< 50mW
Off-hook DC resistance	< 300 Ohms
Max. Input Voltage	70VDC
Max. Input Current	150mA
Channel crosstalk	< -65dB, 1020Hz@0dBm
Noise	< -65dBm0p weighted
Return loss	300-600Hz >12dB (2W) 600-3400Hz >15dB (2W) 300-3400Hz >20dB (4W)
Dimensions	23 × 181 × 197mm (W × D × H)
Temperature	0℃ ~ 50℃
Humidity	5 ~ 95%
MTFB	65,000 hrs

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