

## The Integration of S-Series VoIP PBX

# and CyberData SIP Intercoms and

## Paging Endpoints

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## 1. Overview

This solution uses Yeastar IPPBX and CyberData SIP Intercoms and Paging Endpoints, providing an advanced SIP Paging Solution based on IP technology. This solution helps you to build a whole paging solution, with Yeastar acting as a SIP server for CyberData registration while CyberData taking charge of paging management.

S-Series VoIP PBX could work perfectly with CyberData SIP Intercoms and Paging Endpoints and help you to achieve the following features:

- > Intercom between CyberData Intercoms and Yeastar PBX extensions.
- > Individual paging by dialing extension number to end point.
- > Page different paging groups by zone number in CyberData SIP Paging Server.

#### Note:

The Logic is demonstrated in the diagram as below,



Figure 1-1



## 2. Register CyberData to Yeastar PBX

#### 2.1 Create Extensions in Yeastar IPPBX

Yeastar IP PBX offers SIP accounts for CyberData devices including SIP Paging Server, SIP Paging Adapter, SIP Intercom, SIP Paging Amplifier and SIP Speaker to register as PBX extensions. So that other IP phones and software phones in the PBX can easily reach CyberData devices and paging.

1. Make sure your Yeastar IPPBX and CyberData devices are in the same LAN and accessible. For example, in this guide, all the device are in the segment if 192.168.100.X, detail as below,

Yeastar IPPBX: 192.168.100.100 SIP Paging Server: 192.168.100.2 SIP Paging Adapter: 192.168.100.3 SIP Paging Amplifier: 192.168.100.4 SIP Outdoor intercom: 192.168.100.5 SIP Speaker: 192.168.100.6

2. Log on Yeastar IPPBX, and create extensions for CyberData registration.

| s       | Series Configuration |
|---------|----------------------|
| 上 admin | eenee eenigaraaen    |
| A       |                      |
| 100     | Forgot Password?     |
|         | Login                |

Figure 2-1 The default IP username/password is admin/password

Go to the page Extension page and create extensions,



| PBX  | Extensions Extension Gro  | Settings              |  | - e* ×            |   |
|--|---|-----------------------|--|-------------------|---|
| Extensions<br>Trunks<br>Call Control<br>Call Features<br>Voice Promots | Add Bulk Add Edit Basic Features Advar General                      | Delete                | Extension                              | Name,Type         | ¢ |
| General<br>Recording<br>System<br>Event Center                         | Type ①:<br>Extension ①:<br>Registration Name ①:<br>User Information | SIP IAX<br>301<br>301 | Caller ID :<br>Registration Password : | 301<br>Pincode301 |   |
|  | Name ①:<br>Email ①:<br>Prompt Language ①:                           | Paging Server         | User Password ①:<br>Mobile Number ①:   | •••••             |   |
|  |   |                       | Save Cancel                            |                   |   |

Path: Settings -> PBX -> Extensions -> Add extensions

Figure 2-2

For instance, we create extension 301 for CyberData SIP Paging Server registration as above,

Type: SIP Extension: 301 Caller ID: 301 Registration Name: 301 Registration Password: Pincode301

Also, please create extension as below with the same method.

IP phone: 300 SIP Paging Server: 301 SIP Paging Adapter: 302 SIP Paging Amplifier: 303 SIP Outdoor Intercom: 304 SIP Speaker: 305



## 2.2 Register CyberData Products to Yeastar IPPBX's

#### extensions.

Notes:

1. There are 2 ways to power up CyberData products, one is connecting to PoE switch, the other one is an alternate power input to be used when PoE is not available. Note: different device using the different power input as below,

+48V DC : SIP Paging Server and SIP Paging Adapter.

+8 to +12V DC/ 1000mA : All intercoms.

+12V DC/ 1000mA for SIP speakers.

In this guide, we connect CyberData to a PoE Switch.

2. The default IP of CyberData device is 10.10.10.10, Please change the IP to the same segment of IPPBX.

#### 1. Change the CyberData devices' IP address.

Now, we take SIP Paging Server 301 as an example.

First, change the SIP Paging Server's IP address to 192.168.100.2, in this part, you may need to add an IP address to your PC, such as 10.10.10.11, then log on SIP Paging Server with the default Username/Password: admin/admin. Then go to the page "Network", and change the IP to 192.168.100.2.

| C)                                | /ber            | Data | v3.1 | Pag                  | ing         | Server |
|-----------------------------------|-----------------|------|------|----------------------|-------------|--------|
| Stored Network                    | Settings        |      |      | VLAN Settin          | ngs         |        |
| Addressing Mode:                  | ● Static ○ DHCP |      |      | VLAN ID (0-4095):    | 0           | _      |
| Hostname:                         | PagingServer    |      |      | VLAN Priority (0-7): | 0           | -      |
| IP Address:                       | 192.168.100.2   |      |      |                      | ,           |        |
| Subnet Mask:                      | 255.255.255.0   |      |      |                      |             |        |
| Default Gateway:                  | 192.168.100.1   |      |      |                      |             |        |
| DNS Server 1:                     | 192.168.1.1     |      |      |                      |             |        |
| DNS Server 2:                     |                 |      |      |                      |             |        |
| DHCP Timeout in seconds'          | 60              |      |      |                      |             |        |
| * A value of -1 will retry foreve | er              |      |      |                      |             |        |
|                                   |                 |      |      |                      |             |        |
| -                                 | ~               |      |      | Save Reboot          | Toggle Help |        |
| Current Network                   | Settings        |      |      |                      |             |        |
| IP Address: 192.168.1             | 00.2            |      |      |                      |             |        |
| Subnet Mask: 255.255.2            | 55.0            |      |      |                      |             |        |
| Detault Gateway: 192.168.1        | 00.1            |      |      |                      |             |        |

Figure 2-3

Addressing Mode: Static Hostname: PagingServer (it's just a name) IP Address: 192.168.100.2 Subnet Mask: 255.255.255.0 Default Gateway: 192.168.100.1 (the same local gateway as S-Series)



DNS Server: 192.168.1.1 (the same local DNS Server as S-Series)

After the IP changing, you need to save the configuration and reboot SIP Paging Server by clicking the button on the WEB page.

Please change other CyberData devices' IP address with the same way.

SIP Paging Server: 192.168.100.2 SIP Paging Adapter: 192.168.100.3 SIP Paging Amplifier: 192.168.100.4 SIP Outdoor Intercom: 192.168.100.5 SIP Speaker: 192.168.100.6

#### 2. Register CyberData to extensions of Yeastar IPPBX

After logging on the SIP Paging Server, go to the SIP page in the up-middle side of the page, then filled in the according SIP account information to finish the registration.

| Cyb                         | erData          | v3.1 Paging S                         | Server     |
|-----------------------------|-----------------|---------------------------------------|------------|
| SIP Settings                |                 | Nightringer Settings                  |            |
| Enable SIP operation:       |                 | Enable Nightringer:                   |            |
| Register with a SIP Server: |                 | SIP Server:                           | 10.0.253   |
| Use Cisco SRST              |                 | Remote SIP Port:                      | 5060       |
| Primary SIP Server:         | 192.168.100.100 | Local SIP Port:                       | 5061       |
| Primary SIP User ID:        | 301             | Outbound Proxy:                       |            |
| Primary SIP Auth ID:        | 301             | Outbound Proxy Port:                  | 0          |
| Primary SIP Auth Password:  | •••••           | User ID:                              | 241        |
|                             |                 | Authenticate ID:                      | 241        |
| Backup SIP Server 1:        |                 | Authenticate Password:                | •••••      |
| Backup SIP User ID 1:       |                 | Re-registration Interval (in seconds) | 360        |
| Backup SIP Auth ID 1:       |                 | Relay rings to multicast:             |            |
| Backup SIP Auth Password 1: |                 | Multicast Address:                    | 224.1.2.32 |
|                             |                 | Multicast Port:                       | 2020       |
| Backup SIP Server 2:        |                 |                                       | ,          |
| Backup SIP User ID 2:       |                 |                                       |            |
| Backup SIP Auth ID 2:       |                 | Call Disconnection                    |            |
| Backup SIP Auth Password 2: |                 | Terminate Call after delay: 0         | -          |

Figure 2-4

Enable SIP Operation: Checked Register with a SIP Server: Checked Primary SIP Server: 192.168.100.100 (The IP address of IPPBX) Primary SIP User ID: 301 (the extension for Paging Server) Primary SIP Auth ID: 301 Primary SIP Auth Password: Pincode301

After configuration, save and reboot are required to take effect. Please use the same method to finish other CyberData Devices' registration.

SIP Paging Server: 301 SIP Paging Adapter: 302



SIP Paging Amplifier: 303 SIP Outdoor Intercom: 304 SIP Speaker: 305

## 3. Page to CyberData's extension number

Since you are the administrator of this paging system, you are using the IP Phone to conduct paging action, you can directly paging to any end point by dialing the relevant extension number of CyberData device.

#### 3.1 Page to CyberData SIP Outdoor Intercom



Figure 3-1

You can use IP Phone to dial extension 304 directly, then CyberData SIP Outdoor Intercom will auto answer the call, then IP phone can start paging and communicate with the person who stands in front of the intercom and vice versa, the SIP intercom of CyberData can establish a conversation with IP phone by dialing the extension number of the IP phone 300.





#### 3.2 Page CyberData SIP Paging Adapter



Notice: The SIP Paging Adapter has no speaker, but you can connect an Audio Amplifier and speaker to conduct paging.

You can use IP phone 300 to dial the extension number of the paging adapter 302 directly, after hearing a BEEP sound, you can start to page.





### 3.3 Page CyberData SIP Paging Amplifier

The CyberData SIP Paging Amplifier supports to register a SIP account, and finish the paging by directly dial the extension number 303 using IP phone 300.



### 3.4 Page CyberData SIP Speaker



CyberData Speaker is able to register as a SIP extension of Yeastar IPPBX. You can directly page it by dialing its SIP account 306 using IP phone 300.



## 4. Page Different Paging Groups

CyberData SIP Paging Server divides the whole paging area into 100 paging groups, different paging groups are distinguished by 2 digits zone number from 00 to 99. With the specific paging zone number selected by broadcaster, the voice is paged to a specific page address in the LAN. For example, in this guide, we setup 2 paging groups 00 and 01 as below.



Figure 4-1



#### 4.1 Configure the SIP Paging Server

Log on the SIP Paging server (192.168.100.2), go to the page PGROUPS,

| Paging Groups |           |      |               |      |     |         |      |  |
|---------------|-----------|------|---------------|------|-----|---------|------|--|
| #             | Address   | Port | Name          | Code | TTL | Lineout |      |  |
| 0             | 234.2.1.1 | 2000 | PagingGroup00 |      | 255 | Yes     | Edit |  |
| 1             | 234.2.1.2 | 2002 | PagingGroup01 |      | 255 | Yes     | Edit |  |
| 2             | 234.2.1.3 | 2004 | PagingGroup02 |      | 255 | Yes     | Edit |  |
| 3             | 234.2.1.4 | 2006 | PagingGroup03 |      | 255 | Yes     | Edit |  |
| 4             | 234.2.1.5 | 2008 | PagingGroup04 |      | 255 | Yes     | Edit |  |
| 5             | 234.2.1.6 | 2010 | PagingGroup05 |      | 255 | Yes     | Edit |  |
|               |           |      |               |      |     |         |      |  |

Figure 4-2

Then edit the group #0 and #1, we take Group #0 as an example,

#### Configure PGROUP

| PGROUP        | 0             |   | Save Changes |
|---------------|---------------|---|--------------|
| Address       | 234.2.1.1     |   |              |
| Port          | 11000         | l | Cancel       |
| Name          | PagingGroup00 |   |              |
| Security Code |               |   |              |
| TTL           | 255           |   |              |
| Line-out      |               |   |              |

#### Figure 4-3

Fill in the Address: 234.2.1.1, and the port as 11000 to finish setting up for Group 00. Please edit the Paging Group #1,and fill in the address 234.2.1.2, and the port as 11002 for setting up Group 01.



### 4.2 Configure the Paging end-point

In the group 00, we assign SIP Paging Amplifier and SIP Paging Adapter as the members. Now we are going to set up the multicast for them.

For example we setup the SIP Paging Adapter. Log on the WEB page and go to the page Multicast.

| Multicast Settings<br>Enable Multicast Operation: |              |       |                  |      |        |  |  |  |  |
|---|--------------|-------|------------------|------|--------|--|--|--|--|
| Priority  | Address      | Port  | Name             | Веер | Buffer |  |  |  |  |
| 9   | 239.168.3.10 | 11000 | Emergency        |      |        |  |  |  |  |
| 8   | 239.168.3.9  | 10000 | MG8              |      |        |  |  |  |  |
| 7   | 239.168.3.8  | 9000  | MG7              |      |        |  |  |  |  |
| 6   | 239.168.3.7  | 8000  | MG6              |      |        |  |  |  |  |
| 5   | 239.168.3.6  | 7000  | MG5              |      |        |  |  |  |  |
| 4   | 239.168.3.5  | 6000  | MG4              |      |        |  |  |  |  |
| 3   | 239.168.3.4  | 5000  | MG3              |      |        |  |  |  |  |
| 2   | 239.168.3.3  | 4000  | MG2              |      |        |  |  |  |  |
| 1   | 239.168.3.2  | 3000  | MG1              |      |        |  |  |  |  |
| 0   | 239.168.3.1  | 2000  | Background Music |      |        |  |  |  |  |

#### Figure 4-4

Enable the Multicast Operation and fill the Address and Port with the Group 00 information in SIP Paging Server setting.



|          | Mu          | Iticast    | Settings         |      |        |
|----------|-------------|------------|------------------|------|--------|
|          | Enab        | le Multica | st Operation: 🗹  |      |        |
| Priority | Address     | Port       | Name             | Веер | Buffer |
| 9        | 234.2.1.1   | 11000      | Emergency        |      |        |
| 8        | 239.168.3.9 | 10000      | MG8              |      |        |
| 7        | 239.168.3.8 | 9000       | MG7              |      |        |
| 6        | 239.168.3.7 | 8000       | MG6              |      |        |
| 5        | 239.168.3.6 | 7000       | MG5              |      |        |
| 4        | 239.168.3.5 | 6000       | MG4              |      |        |
| 3        | 239.168.3.4 | 5000       | MG3              |      |        |
| 2        | 239.168.3.3 | 4000       | MG2              |      |        |
| 1        | 239.168.3.2 | 3000       | MG1              |      |        |
| 0        | 239.168.3.1 | 2000       | Background Music |      |        |

Figure 4-5

Now, we have set up the SIP Paging Adapter as the member of Group 00. Please configure others CyberData Paging end-points in the same way.

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#### 4.3 Page different Groups by the zone number

CyberData SIP Paging Server has registered to the extension 301 of Yeastar IPPBX, if you want to page different paging groups (paging zone), you can follow the steps below,

1. Make a call to SIP Paging Server 301 using IP phone 300.

2. The SIP Paging Server will answer the call automatically, and play a prompt "Enter the 2 digits zone number".

3. You can enter 00 to page paging group 00, and enter 01 to page group 01.

## 5. Nightringer Settings

Each CyberData end-point and SIP Paging Server support 2 SIP extensions, primary extension used for paging, and the secondary Nightringer is used to play a ring tone when a SIP call is made to the nightringer extension. The nightringer extension usually is in the same ring group including a SIP Phone in PBX, the ring tone is a notification to users in the area that there is an incoming calls, then users can pick up the SIP phone to answer the calls, once users answered the call, nightringer extension will stop play the ring tone.



Figure 5-1

Scenario:

At the non-business hour, if there is an incoming call from outside, then PBX will route this call to the ring group which consist of CyberData nightringers and IP Phones registered to the internal extensions of PBX. All the end-points of this ring group will ring, nightringer extensions will play a ring tone to the working area through CyberData devices, to make users in the area notice that there is



an incoming call, and they can reach the IP Phone and answer the calls.

#### 5.1 Register CyberData Nightringer to Yeastar PBX

CyberData support users register two SIP extensions to PBX, the primary extension use the SIP port UDP 5060, and nightringer extension use the SIP Port UDP 5061,

Register CyberData Paging Server's Nightringer,

|  | _             |
|--|---------------|
| Enable Nightringer:                    |               |
| SIP Server:                            | 192.168.9.158 |
| Remote SIP Port:                       | 5060          |
| Local SIP Port:                        | 5061          |
| Outbound Proxy:                        |               |
| Outbound Proxy Port:                   | 0             |
| User ID:                               | 401           |
| Authenticate ID:                       | 401           |
| Authenticate Password:                 | •••••         |
| Re-registration Interval (in seconds): | 360           |
| Relay rings to multicast:              |               |
| Multicast Address:                     | 224.1.2.32    |
| Multicast Port:                        | 2020          |

Figure 5-2

Register CyberData End-points to S-Series,

| Nightringer Settings                   |               |
|--|---------------|
| Enable Nightringer:                    |               |
| SIP Server:                            | 192.168.9.158 |
| Remote SIP Port:                       | 5060          |
| Local SIP Port:                        | 5061          |
| Outbound Proxy:                        |               |
| Outbound Proxy Port:                   | 0             |
| User ID:                               | 402           |
| Authenticate ID:                       | 402           |
| Authenticate Password:                 | •••••         |
| Re-registration Interval (in seconds): | 360           |

Figure 5-3



### 5.2 Configure Ring Group in Yeastar PBX

| Settings           |   |  |       |   |   |            |          | — 🗆 × |
|--------------------|---|--|-------|---|---|------------|----------|-------|
| V PBX              | < IVR   | Ring Group   | Queue | Conference  | Pickup Group  | Speed Dial | Callback | DIS/  |
| Exte               |   |  | Ad    | dd Ring Group   | p   |            |          | ×     |
| Cal                | Number ():  | 62   | )1    |   |   |            |          |       |
| Cal                | Name ①:   | 62   | )1    |   |   |            |          |       |
| Voic<br>Ger        | Ring Strategy():  | Rir  | g All | •   |   |            |          |       |
| Rec                | Seconds to ring each me   | ember(s) 60  |       | -   |   |            |          |       |
| > Syste<br>> Event | Members ①   | Availa   | ble   |   | Selec   | cted       |          |       |
|                    | test -<br>1000<br>1001<br>1002<br>1003<br>1004<br>1005<br>Failover Destination: | Group<br>- 1000<br>- 1001<br>- 1002<br>- 1003<br>- 1004<br>- 1005<br>Hang up | •     | <ul> <li>▲ 401-</li> <li>▲ 402-</li> <li>▲ 403-</li> <li>▲ 404-</li> <li>▲ 405-</li> <li>≪</li> <li>▲ IP</li> </ul> | 401<br>402<br>403<br>404<br>405<br>ghtRinger a<br>Phones sele | ind        | X × X    | D     |
|                    |   |  |       | Save Cano   | cel   |            |          |       |
|                    |   |  | F     | iaure 5-4   |   |            |          |       |

#### 1. Create a ring group including all the CyberData Nightringers and IP Phones.

#### 2. Setup a business hour in Yeastar PBX

| Settings       |                     |                 |            |            |                 |             | × |
|----------------|---------------------|-----------------|------------|------------|-----------------|-------------|---|
| V PBX          | Inbound Routes C    | outbound Routes | AutoCLIP R | outes      | Time Conditions |             |   |
| Extensions     | Time Conditions     | Holiday         |            |            |                 |             |   |
| Trunks         |                     |                 | Add Time   | Condition  | 2               |             | ~ |
| Call Control   |                     |                 | Aug mile   | Contaition |                 |             | ~ |
| Call Features  | Name 🛈:             | Business h      | our        |            |                 |             |   |
| Voice Prompts  | Time:               | 08 -            | 30 -       | 17 -       | · 00 - +        |             |   |
| General        |                     |                 |            |            |                 |             |   |
| Recording      | Days of Week:       |                 | Sunday     | 🗹 Monday   | 🗹 Tuesday       | 🗹 Wednesday |   |
| > System       |                     | 2               | 🕈 Thursday | 🗹 Friday   | Saturday        |             |   |
| > Event Center | Advanced Options ①: |                 |            |            |                 |             |   |
|                |                     |                 |            |            |                 |             |   |
|                |                     |                 |            |            |                 |             |   |
|                |                     |                 |            |            |                 |             |   |
|                |                     |                 | Save       | Cancel     | 0               |             |   |

Figure 5-5



|                  |   |                       |              |              | em)           |      |        | > |
|------------------|---|-----------------------|--------------|--------------|---------------|------|--------|---|
| Name ①: Ro       |   | Routein               |              |              |               |      |        | ^ |
| DID Pattern      | 0:  |                       |              |              |               |      |        |   |
| Caller ID Pa     | ttern ①:  |                       |              |              |               |      |        |   |
| Member Tru       | inks ①:   |                       |              |              |               |      |        |   |
|                  |   | Available             |              |              | Selected      |      |        |   |
|                  |   |                       |              | 9.127 (SIP-P | 'eer)         |      |        |   |
|                  |   |                       | >><br><<br>< |              |               |      | x × ×  |   |
| - Enable         | Time Condition ()                                   | ( Barat-1900 )        |              | Ē            |               |      |        |   |
| Status           | Time Condition                                      | ( Reset:*800 )        | Destination  | Ð            | Feature Corie | Edit | Delete |   |
| Enable<br>Status | Time Condition ①<br>Time Condition<br>Business hour | ( Reset:*800 )<br>IVR | Destination  | +            | Feature Code  | Edit | Delete |   |

Figure 5-6

-END-

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