CyberData
The IP Endpoint Company

Microsoft® Lync Server 2010 with CyberData Paging Systems using Patton´s SmartNode™ Product Line

Application Note

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Contents

1 Introduction

This application note is a general overview of requirements and configuration basics to interconnect CyberData Paging Equipment and Microsoft® Lync Server 2010 using Patton SmartNode VoIP Gateways.

Discussed in this document:

- Presentation of the Patton SmartNode VoIP Gateway concept

- Basic Configuration of CyberData equipment

- Basics for a simple setup

- Provide a sample SmartNode configuration file working with Microsoft® Lync and CyberData

NOT discussed in this document:

- Detailed configuration of Microsoft® Lync Server 2010

- Detailed configuration capabilities of Patton SmartNode VoIP Gateways

- Detailed functionality of CyberData's product line

For verbose technical details on the Patton device, please visit the Patton SmartNode webpage (**http://www.patton.com/smartnode**). More configuration notes, samples and manuals are available.

For more technical information on CyberData's equipment please visit the CyberData product page (**http://www.cyberdata.net/products/voip/digitalanalog/paging_endpoints**). Individual product pages along with manuals and datasheets are available there.

2 Supported features

Patton's SmartNode allows CyberData's VoIP Endpoints to support the following Microsoft® Lync relevant features:

- REFER calls

- DNS load balancing

- Media bypass (enabled or disabled)

- Trust/untrust mediation server. The user of this document is familiar with NET equipment.

3 Limitations

Patton SmartNode does not support TLS or SRTP. Configure the Lync topology to use SIP over TCP to the PSTN Gateway. (CyberData's equipment does not need to utilize TCP for the SIP as the Patton Device will make the needed conversions.)

4 Configuration

4.1 General setup

Here is a basic setup for CyberData paging functionality along with Microsoft® Lync Server 2010.
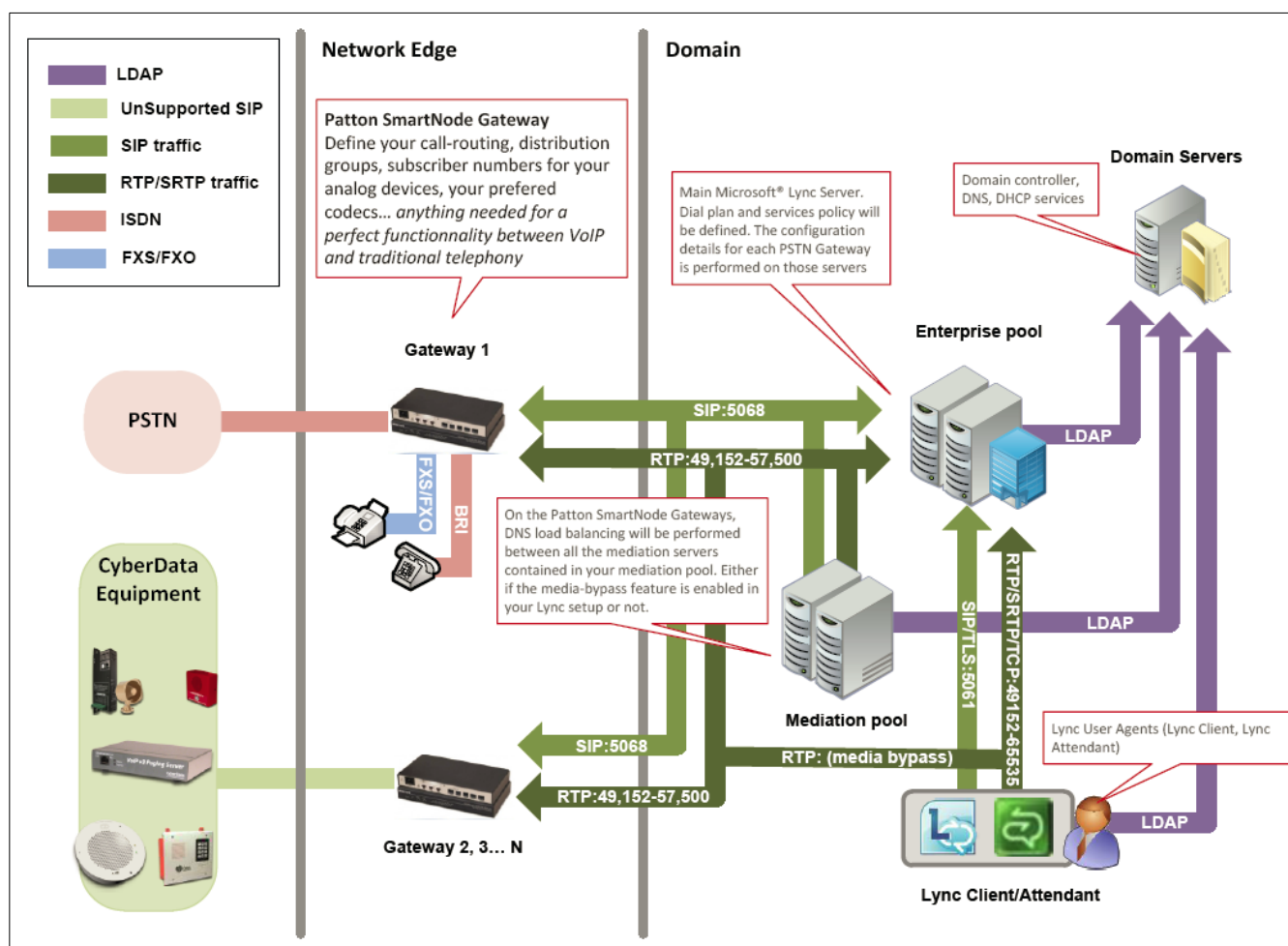
The key points for a good configuration are separated as follows:

Patton SmartNode

- Define your call routing
- Define distribution groups, hunting groups
- Add security with the trust/untrust server and ACL feature
- Modify called/calling party numbers and any other relevant call parameters
- Define your codecs and other key point for a perfect functionality between VoIP and traditional telephony

Microsoft® Lync Server 2010

- Define your dial-plan
- Define trunks to PSTN
- Define call routing to PSTN
- Define voice policy
- Enable/disable call transfer (REFER)
- Enable/disable media-bypass (RTP traffic flowing between UAs and the PSTN gateway)
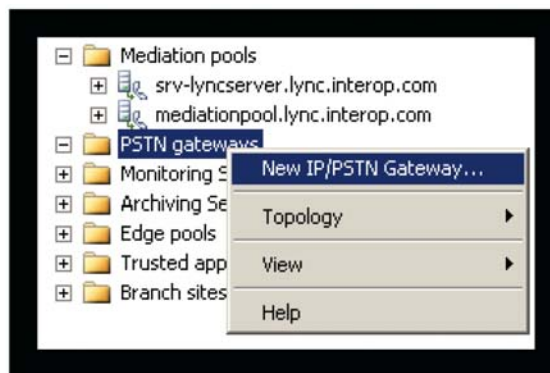
CyberData VoIP Paging Equipment

- Define your paging groups
- Define your extensions
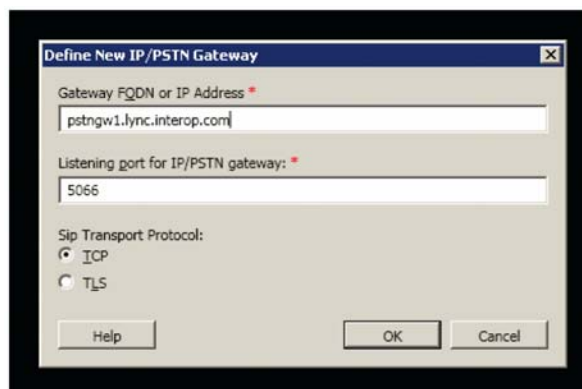- Understand your desired features

4.2 Lync Server

4.2.1 Topology builder

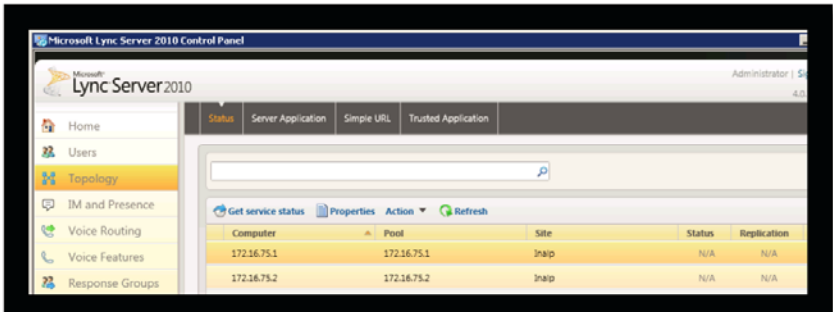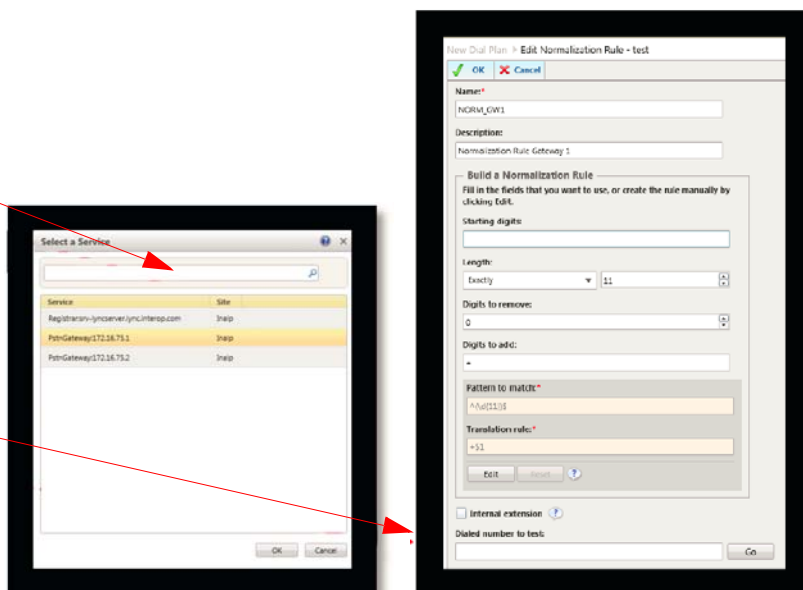| Task	Screenshot
In the Lync topology builder, add a new IP/PSTN Gateway.	
Select TCP as transport protocol. Choose the desired port to be used on the gateway.	
You can add multiple gateways on this panel.	
Publish the topology.	

4.2.2 Management console

| Task	Screenshot
Topology > Status. You should be able to see all the gateways listed. **Note:** The "N/A" in the Status and Replication column is normal.	
Voice Routing > Dial Plan (New Pool Dial plan) Select the wanted Gateway. Add a new **Associated Normalization Rule.** **Note:** You can decide if you need a specific dial plan for each gateway by defining a **Site Dial Plan**.	

Task	Screenshot
Voice Routing > Route (New route) 1. Define a name 2. Add a description 3. Define the rule/pattern 4. Associate an existing Gateway	
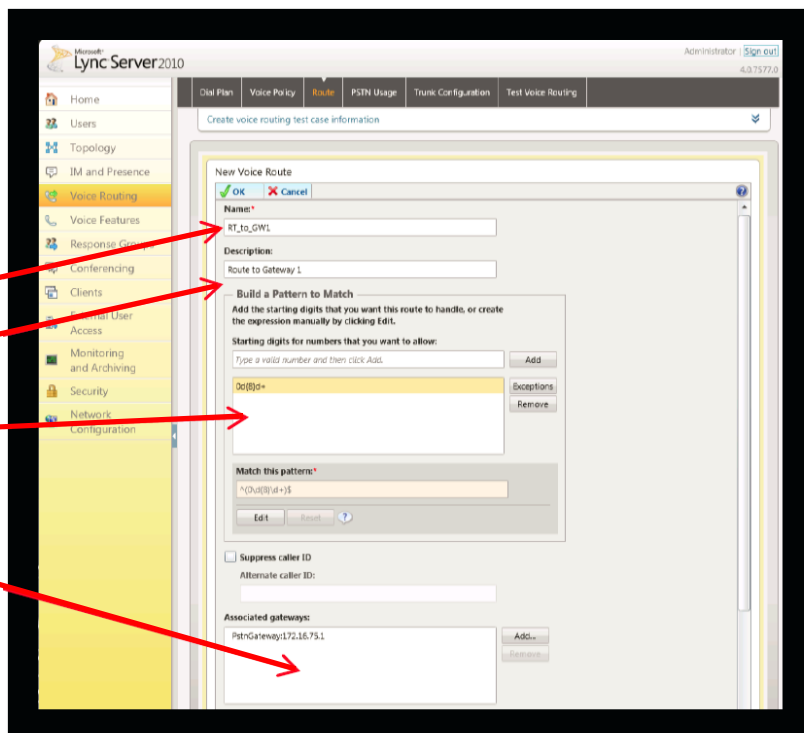
4.2.3 Analog device configuration

In order to add either analog Paging equipment with your network of both Lync and CyberData you will configure Microsoft® Lync is via commands in the Lync CMDlet. In the sample commands below, you will have to change the highlighted parts.
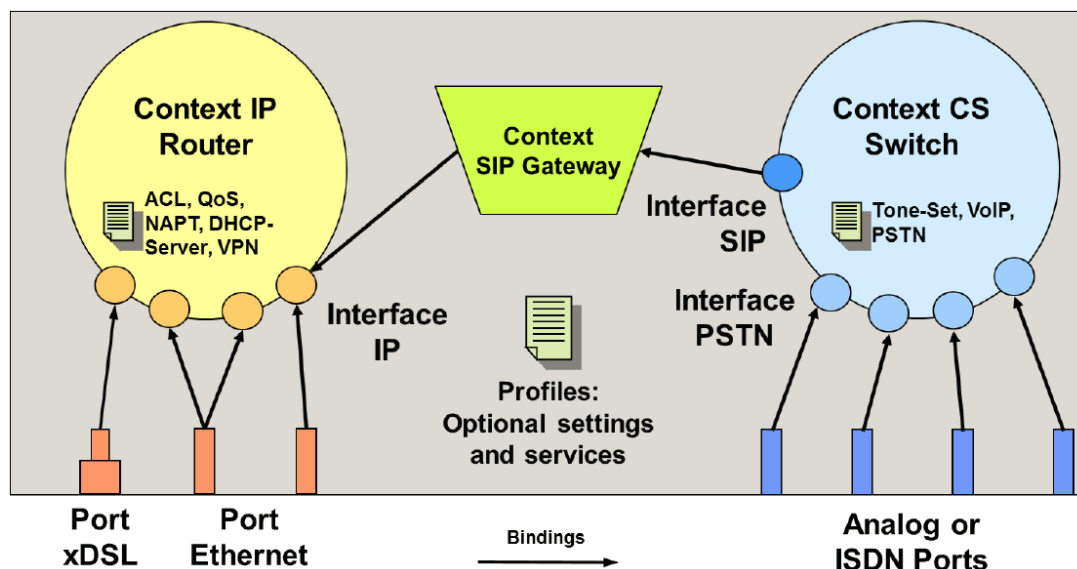
Analog phones:

```
New-CsAnalogDevice -AnalogFax $false -Gateway x.x.x.x/FQDN -LineUri
tel:+xxxxxxxxxx -OU "CN=Users,DC=lync,DC=com" -SipAddress
sip:+xxxxxxxxxx@lync.com -RegistrarPool lyncserver.lync.com
```

4.3 Patton SmartNode

4.3.1 Concept

This schema describes briefly the configuration concept of the Patton SmartNode PSTN gateway:

For more information on how to configure your Patton SmartNode PSTN Gateway, please refer to the official software configuration guide.

4.3.2 Required information

In order to configure your Patton SmartNode correctly, be sure to have all the required information:

- IP addresses
- DNS servers
- NTP server and port
- Subscriber numbers per FXS ports
- Routes for ISDN ports

4.3.3 Configuration sample

Note To make this configuration sample works with your current infrastructure, you will have to change the highlighted parts of it. There are three different colors of highlighted each representing a different part of the config.

The Yellow Highlighter means this is part of a standard SmartNode config and is needed no matter what.
The Pink Config concerns parts of the config that only effect CyberData.
The Darker Yellow signifies Lync Specific Configurations

Things to remember:

1. When part of the config is represented in all capital letters it is a name that can be changed.

2. This config (with slight modification) will work for any SmartWare based SmartNode.

3. In the config below the SmartNode acts as a SIP Server to the CyberData Equipment (CyberData's gear registers TO the SmartNode)

4. The SmartNode is a client of MS Lync.

```
#------------------------------------------------------------------#
#                                                                  #
# SN/Model/Number                                                  #
# R#.# YYYY-MM-DD H323 RBS SIP                                     #
# SN/00A0BAXXXXXX                                                  #
# CYBER-Lync Sample Config                                         #
#                                                                  #
#------------------------------------------------------------------#

cli version 3.20
gui type basic
banner "Banner text"
dns-client server x.x.x.x
dns-client cache-max-age 3600
webserver port 80 language en
sntp-client
sntp-client server primary x.x.x.x port 123 version 4
system hostname Device-name

system

  ic voice 0

system
  clock-source 1 bri 0 0

profile ppp default

profile tone-set default

profile voip VOIPLYNC
   codec 1 g711ulaw64k rx-length 20 tx-length 20
   codec 2 g711alaw64k rx-length 20 tx-length 20
   dtmf-relay rtp
   silence-suppression

profile voip VOIPCYBER
   codec 1 g711alaw64k rx-length 20 tx-length 20
   codec 2 g711ulaw64k rx-length 20 tx-length 20

profile pstn default

profile ringing-cadence default
   play 1 1000
   pause 2 4000
```

Device Specific information is displayed here such as Model Number, Serial Number, and Configuration

Profiles are configuration sets that can do nothing until called by a logical part of the SmartNode™ a Profile named 'default' is going to be used until another one is specifically configured by the SmartNode™

A 'voip profile' is the place where Codec's are selected along with a few other features. This profile is called "VOIPLYNC" and is later called by the SIP Interface.

This 'voip profile' is called "VOIPCYBER" and is later called by the SIP Interface.

```
profile sip default
  no autonomous-transitioning

profile aaa default
  method 1 local
  method 2 none

context ip router

interface CYBERSIDE
  ipaddress x.x.x.x m.m.m.m

interface LYNCSIDE

  ipaddress x.x.x.x m.m.m.m

context ip router
  route 0.0.0.0 0.0.0.0 x.x.x.x

context cs switch

  routing-table called-e164 RT_TBL
    route 0000 dest-interface IF_FXS_00
    route 3... dest-service SLS
    route [124-9].. dest-interface IF_SIP_LYNC

  interface sip IF_SIP_LYNC
    bind context sip-gateway GW_SIP_LYNC
    route call dest-table RT_TBL
    remote mediationpool.lync.interop.com 5068
    hold-method direction-attribute sendonly
    use profile voip VOIPLYNC
    early-disconnect
    call-reroute accept
    call-reroute emit
    session-timer 3600
    trust remote

  interface sip IF_SIP_CYBER
    bind context sip-gateway GW_SIP_CYBER
    use profile voip VOIPCYBER
    route call dest-table RT_TBL
    local 10.0.0.1

  service sip-location-service SLS
    bind location-service SER_CYBER

  interface fxs IF_FXS_00
    route call dest-table RT_TBL

context cs switch
  no shutdown

authentication-service AUTH_SRV_CYBER
  realm 1 10.0.0.1
  username 100 password patton
  username 101 password patton
  username 102 password patton
  username 103 password patton
  username 104 password patton
  username 105 password patton

location-service SER_LYNC
  match-any-domain

  identity-group default

    call outbound
      preferred-transport-protocol tcp
```

The 'context cs switch' is where call control is done in the gateway.

This 'routing-table' handles calls that have been pointed to it. (Every Interface has a 'route' command that points calls coming from that interface)

This 'sip interface' is called **IF_SIP_LYNC** and it is the logical entry/exit point for all calls coming from or heading to MS Lync. You can also see some communication settings are set here such as remote server.

This 'sip interface' is called **IF_SIP_CYBER** and it is the logical entry/exit point for all calls coming from or heading CyberData's Equipment.

This 'sip-location-service' is named **SLS** and it is the database where the IP's of all users registered to the SmartNode are stored. If a call is routed to this service it will poll its database for a match of the 'called number' and route the call to the matching IP Address.

This 'fxs interface' is called **IF_FXS_00** and it is the logical entry/exit point for all calls of the bound Physical Analog Port.

Routing Tables control call flow, refer to SmartNode Configuration Guide or contact PATTON support for further information.

```
      call inbound

location-service SER_CYBER
  domain 1 10.0.0.1

  identity-group default

    authentication inbound
       authenticate 1 authentication-service AUTH_SRV_CYBER

    registration inbound


context sip-gateway GW_SIP_LYNC

  interface SIP
    bind interface LYNCSIDE context router port 5066

context sip-gateway GW_SIP_LYNC
  bind location-service SER_LYNC
  no shutdown

context sip-gateway GW_SIP_CYBER

  interface SIP
    bind interface CYBERSIDE context router port 5060

context sip-gateway GW_SIP_CYBER
  bind location-service SER_CYBER
  no shutdown

port ethernet 0 0
  encapsulation ip
  bind interface LYNCSIDE router
  no shutdown

port ethernet 0 1
  encapsulation ip
  bind interface CYBERSIDE router
  no shutdown

port fxs 0 0
  encapsulation cc-fxs
  bind interface IF_FXS_00 switch
  no shutdown
```

4.4 CyberData Configuration

4.4.1 Configuration Theory

CyberData's paging equipment mimics an IP Phone in standard setup with only a few slight differences. The first being the "Dial Out Settings". This is for the devices made by CyberData that do not allow dialing (Such as an indoor or outdoor intercom). In this case you set up the SIP Registration just like you would any phone to any standard PBX and then you add the Dial Out Extension which is the 'hotline' number to dial anytime the intercom button is pushed. The second outstanding feature is the Nightringer, (this does not need to be implemented). When the Nightringer is enabled, the Intercom will register as a second SIP extension. Registration does not have to be to the same SmartNode as the primary registration. Any calls made to the Nightringer extension will cause the Intercom to play a ringtone. There is no way to answer this call. The Nightringer is designed to be used in buildings where calls made after hours are directed to a ring group. For more information on the Nightringer functionality and purpose feel free to contact CyberData.

4.4.2 Practical Configuration of a 2-Way Device

4.4.3 Practical Configuration of a 1-Way Device