

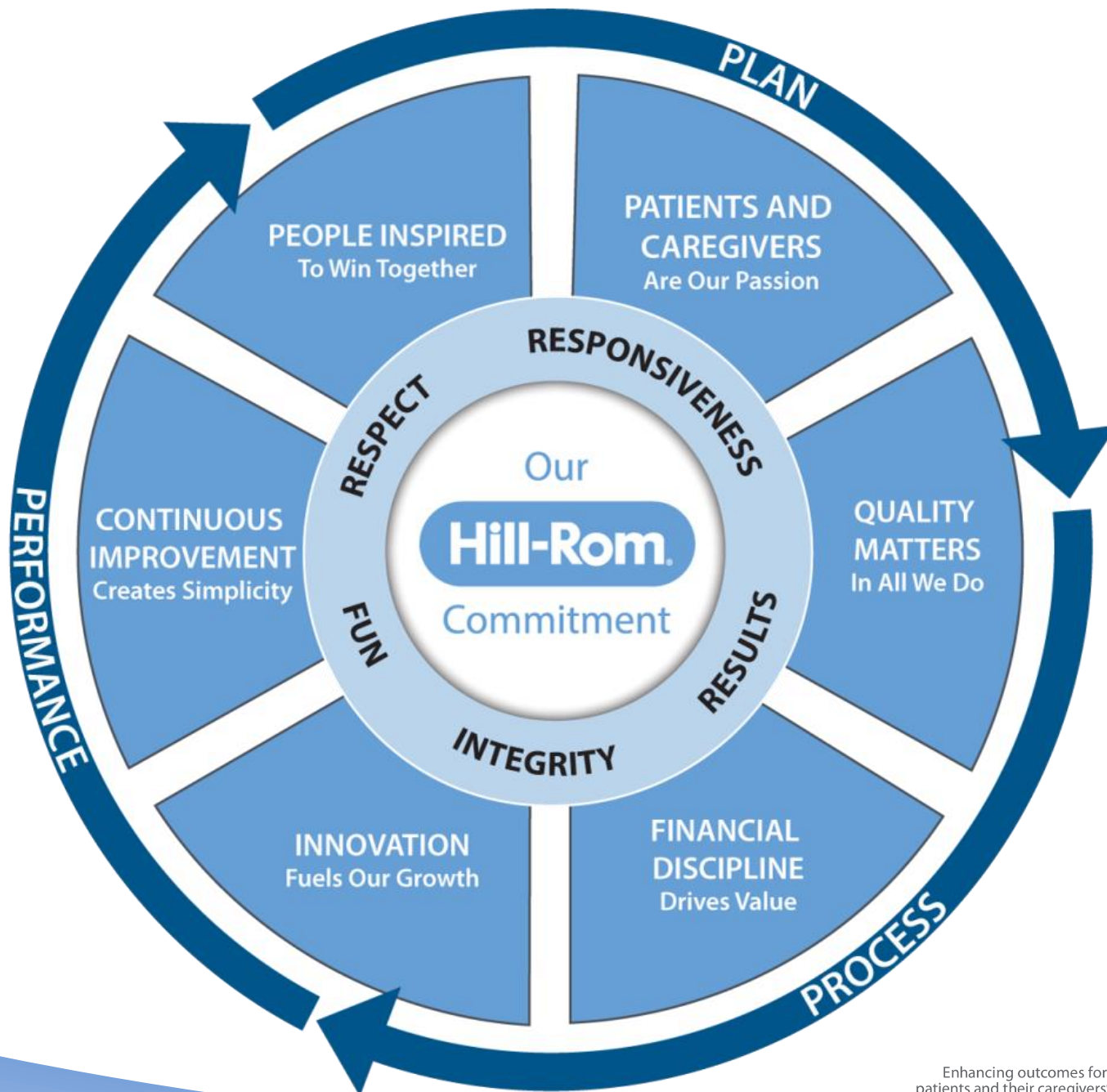
HCA Training

Connex CS and CSM

Eric Jensen

Please join the skype call in # to listen

[video](#)



High level Topics

HCA Structure
IT infrastructure at HCA • HCA Server Spreadsheet
Welch Allyn Connex Vitals Workflow • Flow of Data & Mapping through database and cloverleaf
Connection to the network and server • Encryption
Clinician Authentication (Cannot Login)
Bar Code Scanning (Patient Context, Cannot retrieve patient)

HCA - Hospital Corporation of America

CREATING HEALTHY COMMUNITIES

26+ MILLION

Patient encounters each year

Patient encounters each year



233,000

Employees



37,000

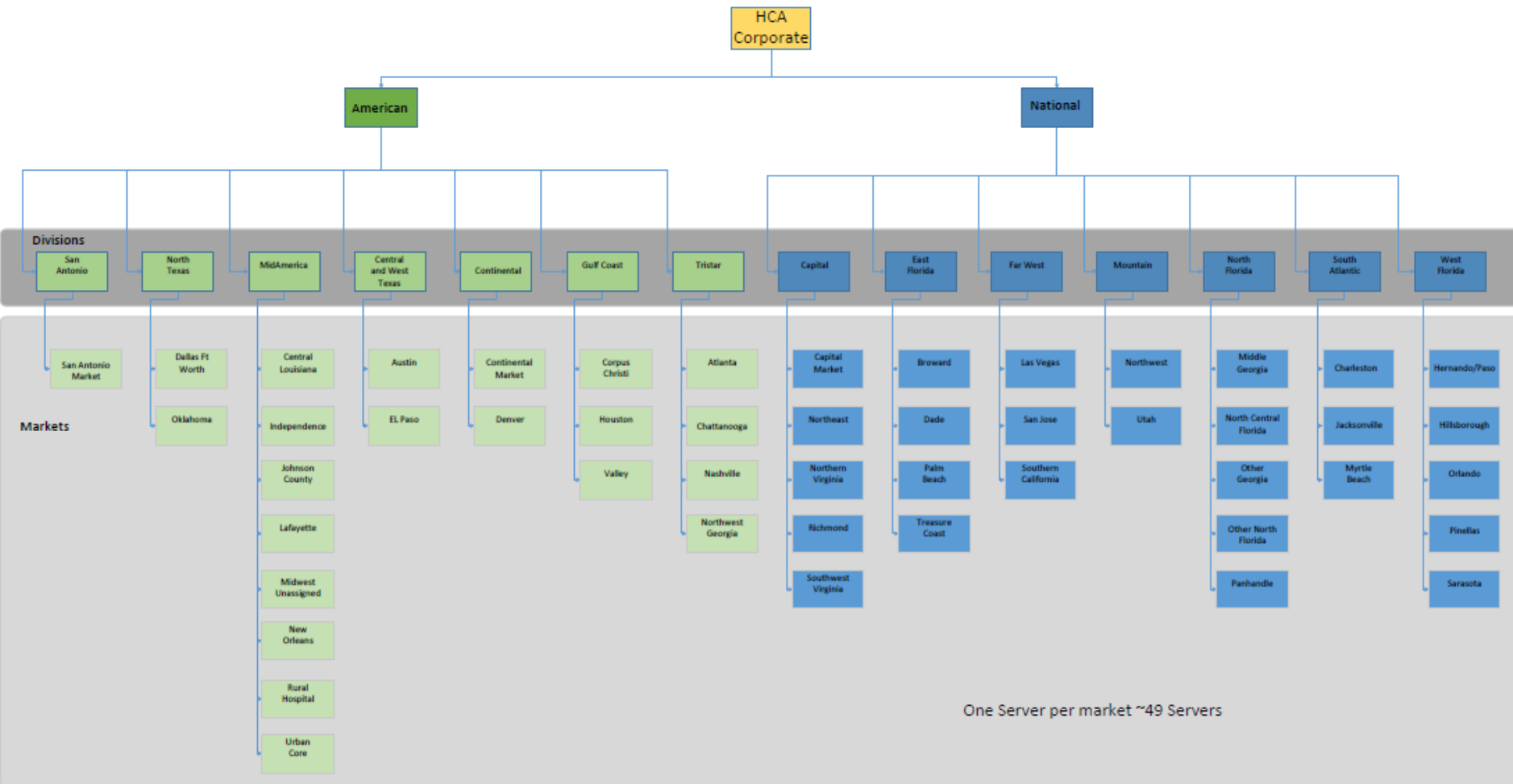
Active physicians



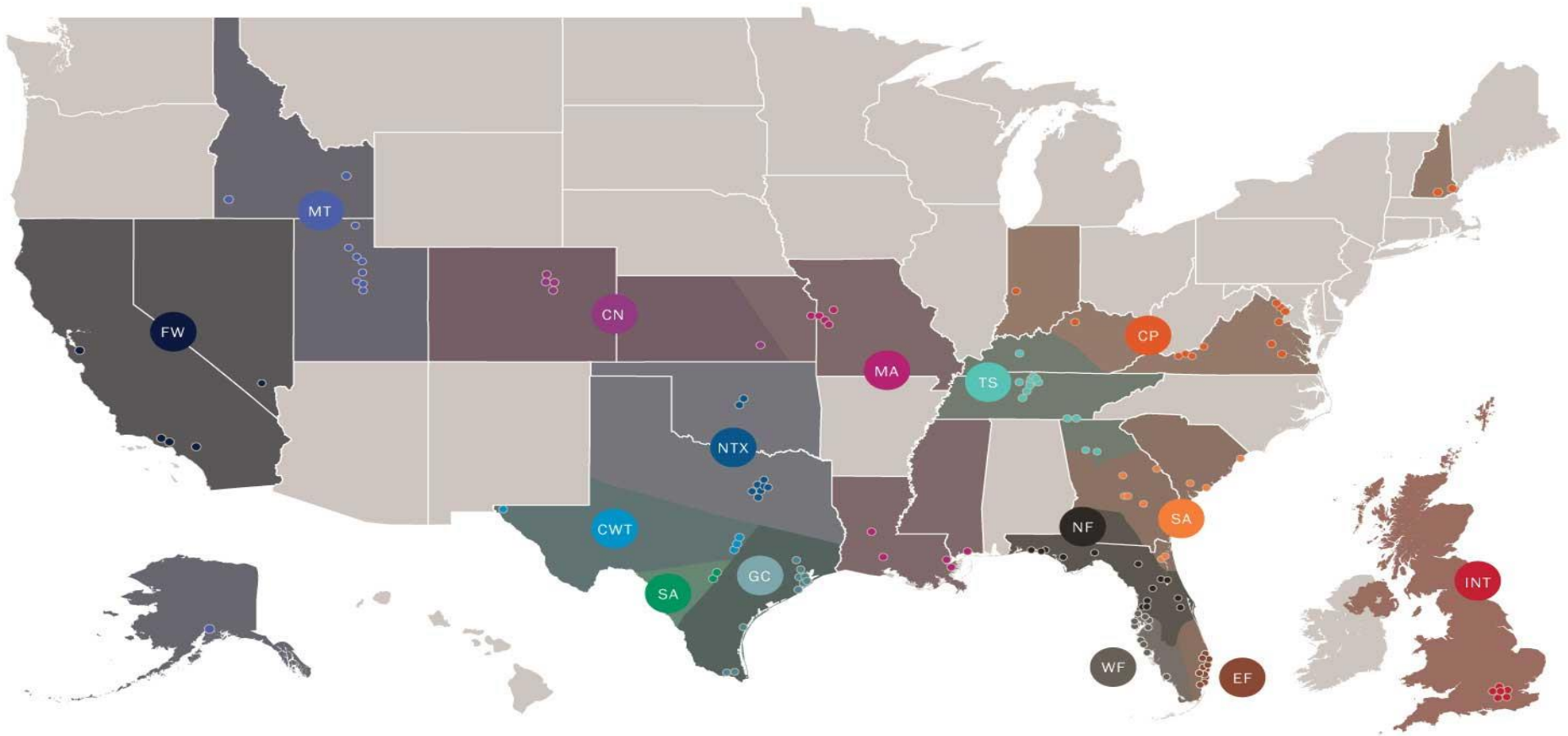
79,000

Nurses

HCA Structure

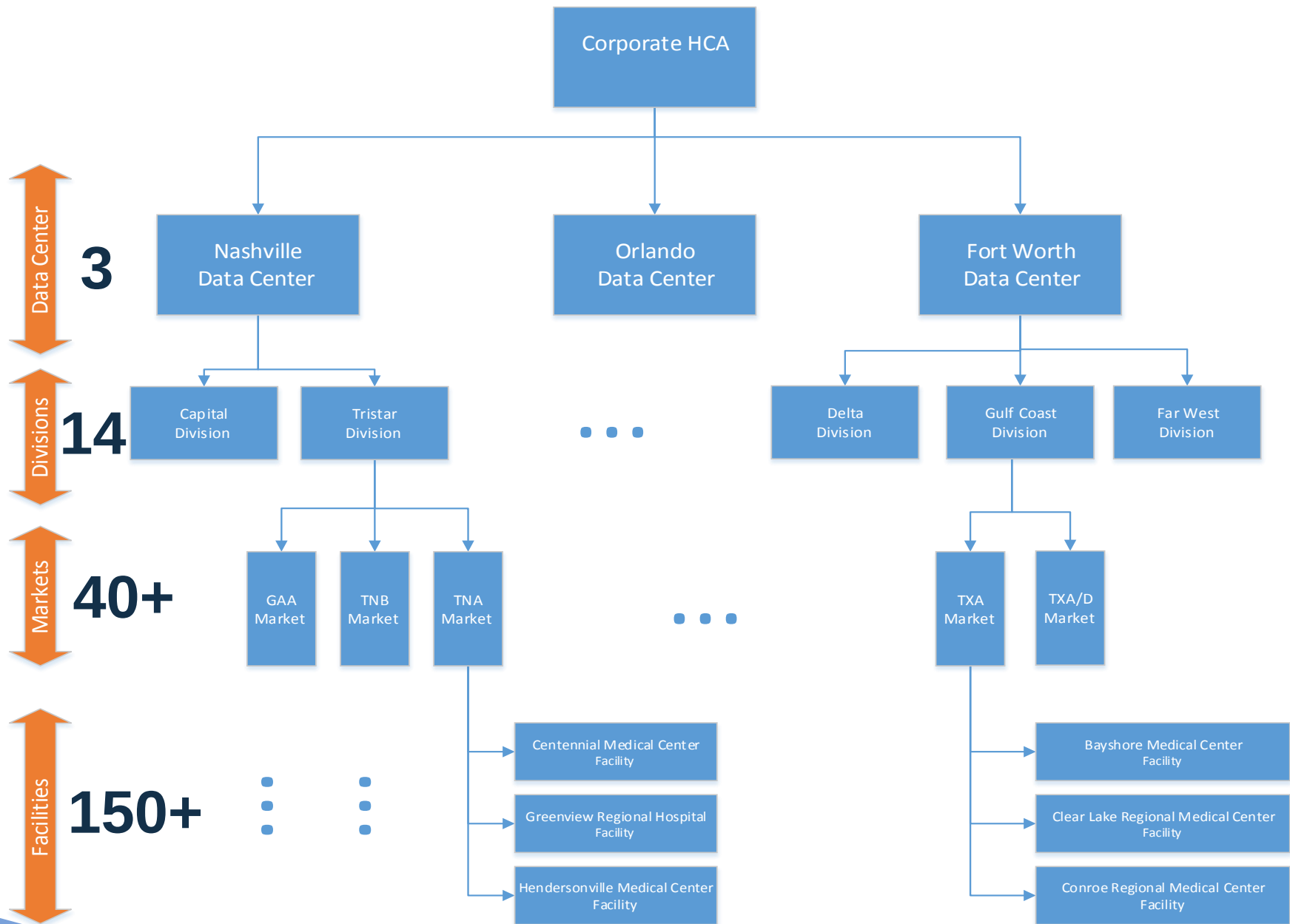


One Server per market ~49 Servers



Division Name

FW	Far West	NTX	North Texas	TS	Tristar	NF	North Florida
MT	Mountain	CWT	Central & West TX	CP	Capital	EF	East Florida
CN	Continental	SA	San Antonio	SA	South Atlantic	WF	West Florida
MA	Mid-America	GC	Gulf Coast	INT	International Facilities		

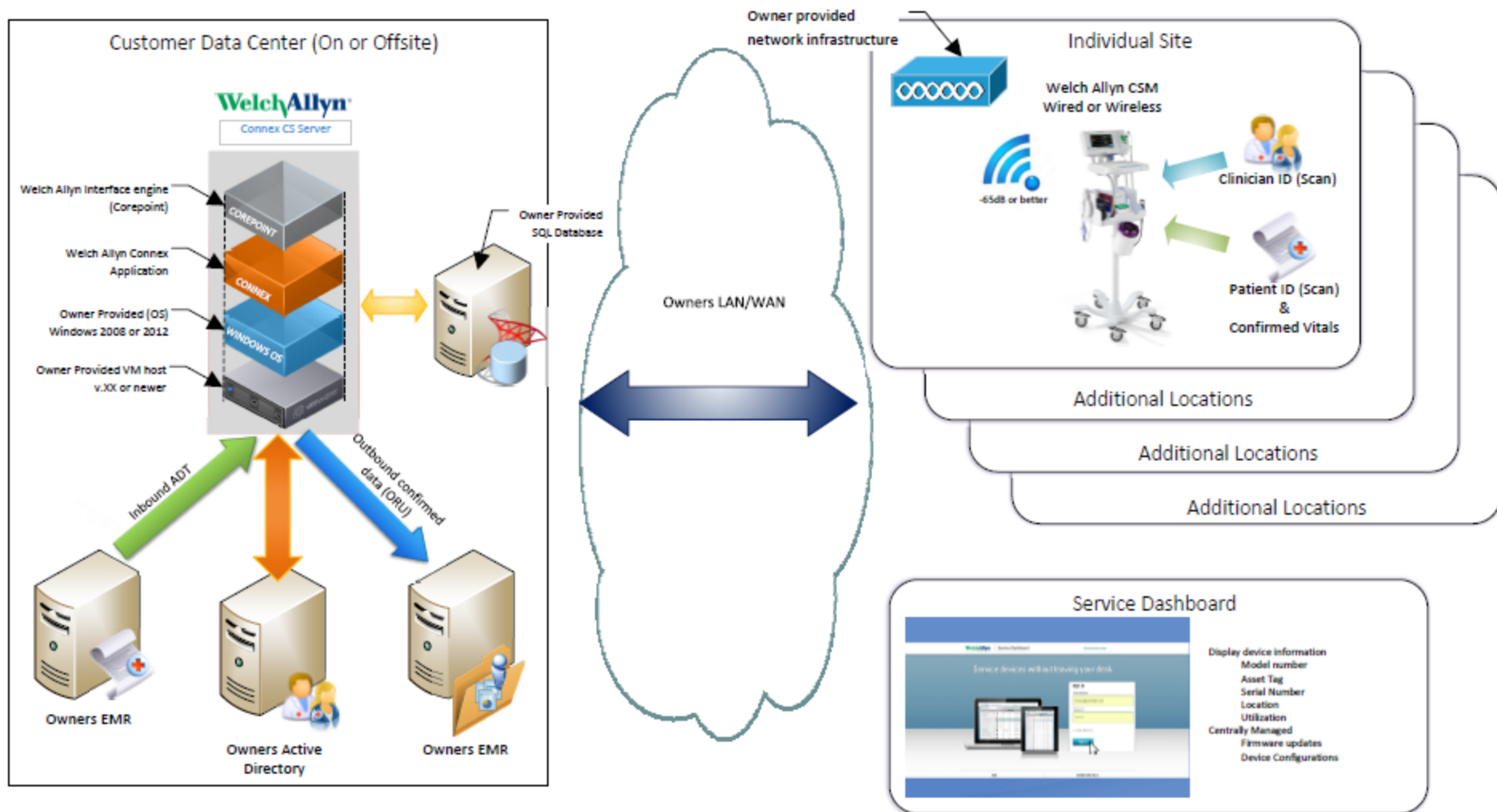


Connex CS Server (Software only) and CSM

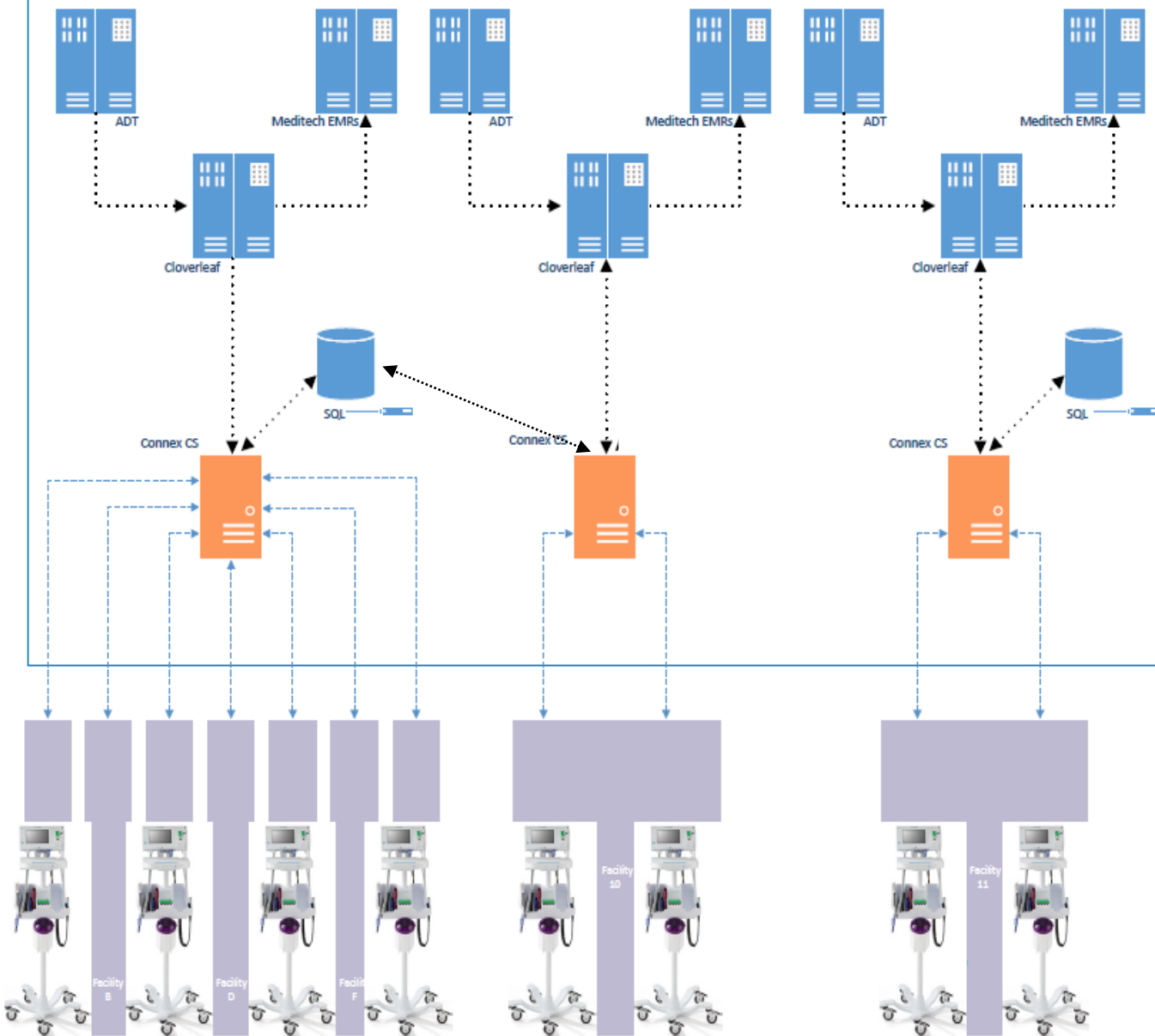
Conceptual diagram

WelchAllyn

Hill-Rom



Data Center: Orlando



Data Center: Fort Worth

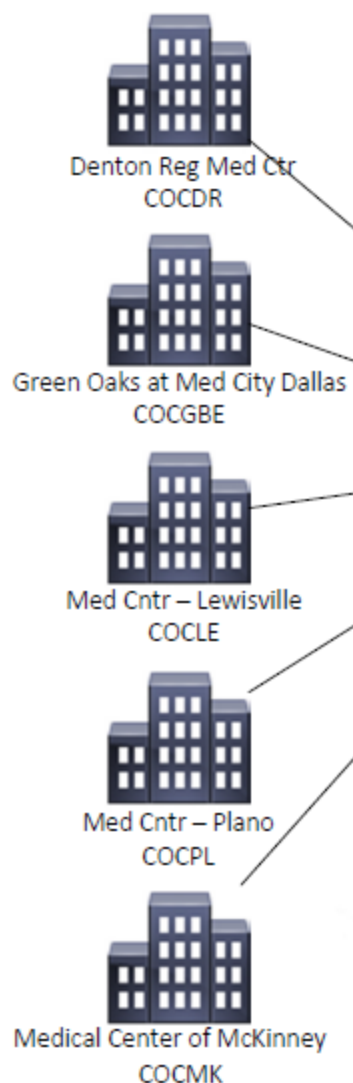
...

Data Center: Nashville

...

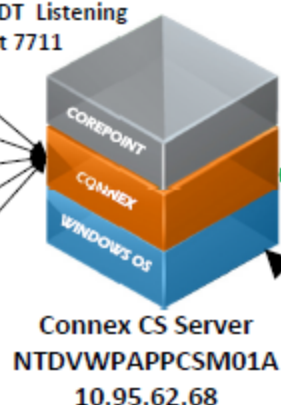
Welch Allyn System Architecture for Dallas Ft Worth Market

Dallas/Ft Worth Facilities

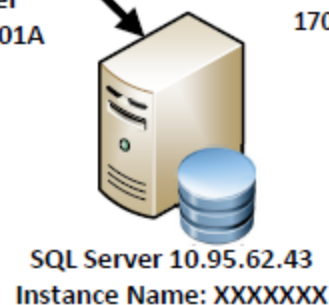


Device connections to
Connex Server and ADT

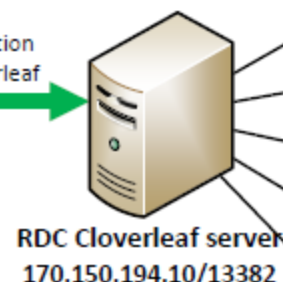
Connex ADT Listening
port 7711



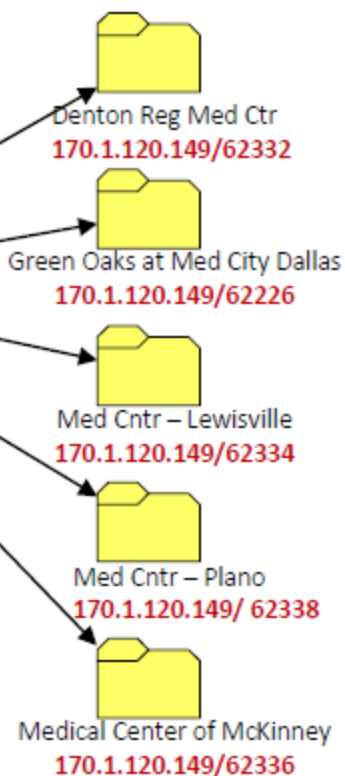
Single ORU Connection
Out Bound to Cloverleaf



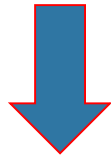
Cloverthreads to Meditech/
ORU message w/COCID



Meditech NMI



Best Clinical Practice Workflow



Wireless Workflow  & Ethernet Workflow :

To collect and document a single set of Vital Signs on single patient . . .



1. Scan Clinician



2. Scan Patient ID



3. Capture Vital Signs, manual parameters, & modifiers.



4. Save & Send Readings



5. Vitals are documented in the EMR

For Continuous Interval Monitoring (multiple sets of vitals) on a Single Patient . . .

First, complete Steps 1 & 2 as above with Wireless/Ethernet connections, then:



3. Capture interval data with CVSM in "Monitor" Profile.



4. Touch Review tab on CVSM, select vitals to send; Touch Send.

WelchAllyn

B5A SRV03

BLU



Advanced settings.

Radio

Security

Server

Bluetooth®

Network connectivity method

NRS



Data encryption

NRS IP address

172.18.25.249



NRS port

7711



Test network connection

General

Parameters

Network

Service

Exit



Advanced settings.

Radio

Security

Server

Bluetooth®



Enable radio

ESSID

RD026

Radio mode

a/b/g/n



Dynamic frequency
selection



Enable radio network
alarms

Roaming

OKC

Update
radio

General

Parameters

Network

Service

Exit



Advanced settings.

Radio

Security

Server

Bluetooth®

Authentication type

WPA2-Personal



Passphrase

8-800-445-2200
© 2008 Welch AllynUpdate
radio

General

Parameters

Network

Service

Exit



Advanced settings.

Ethernet stats

Radio stats

General

Config file

Log file

System

Network

MAC address 00:1A:FA:FF:FD:19

IP address 0.0.0.0

Subnet mask 0.0.0.0

Gateway 0.0.0.0

DHCP server 0.0.0.0

DHCP lease time

Network Statistics

Rx bytes 0

Tx bytes 0

Rx packets 0

Tx packets 0

Rx multicast packets 0

Errors

Rx errors 0

Tx errors 0

Rx packets dropped 0

Tx packets dropped 0

General

Parameters

Network

Service

Exit



Advanced settings.

Ethernet stats

Radio stats

General

Config file

Log file

System

Network

MAC address 00:17:23:e0:26:50
 IP address 172.18.26.90
 Subnet mask 255.255.255.0
 Gateway 172.18.26.1
 DHCP server 172.18.0.5
 DHCP lease time 3 00:00:00
 Network Statistics
 Rx bytes 21727
 Tx bytes 29345
 Rx packets 168
 Tx packets 403
 Rx multicast packets 0
 Errors
 Rx errors 0
 Tx errors 0
 Rx packets dropped 0
 Tx packets dropped 0

Radio settings

Version 1.00.02
 DHCP address obtained
 SSID RD026
 Access point MAC D8:C7:C8:5B
 Authentication type WPA2-Personal
 RSSI -42
 Radio band a/b/g/n
 Channel 165
 Power mode Max
 FIPS mode ON

General

Parameters

Network

Service

E



Advanced settings.

Radio

Security

Server

Bluetooth®

Network connectivity method

NRS



Data encryption

NRS IP address

172.18.25.249

NRS port

7711

Test network connection

General

Parameters

Network

Service

Exit

Ping NRS Server 172.18.25.249

Success

Query NRS server 172.18.25.249 for Connex IP address

172.18.25.249

WACP rendezvous with Connex server 172.18.25.249

Success

OK

Proper NRS configuration

Connex CS Administrator Tools

Admin Tools Users Roles

- Alarm Gateway
 - Input/Output - FWDCWPAPPNRC01
 - Priority filter
- Data Services
 - Release locks
- Export data
 - Settings
- HL7
 - ADT configuration
 - Continuous measurement configuration
 - Vital signs configuration
- Import data
 - Custom Configuration
 - Patients
 - Settings
 - Users
- Licensing
 - Pool configuration
 - Status
- Logs
 - Audit
 - Log viewer
- Settings
 - Connections
 - Custom Configuration
 - Device Clinician Authentication
 - Server
 - Stations**
 - Stations admin

Settings for: **CONNEX**

Back

Network rendezvous services

Server

DCP listener port

☒ Use inherited value (44435)

☐ 44435

Network rendezvous listener port

☒ Use inherited value (7711)

☐ 7711

Services to be resolved by DCP

0	10.95.62.41	281	UDP
---	-------------	-----	-----

Add Delete

Service type	Host	Port	Protocol
0		281	UDP

Services will be resolved by DCP network rendezvous

14	10.95.62.41	7750
8	10.95.62.41	281
10	10.95.62.41	283

Add Delete

Ordinal	Host	Port
8 - Patient spot upload connection request - WACP over TCP		281

Edit Save Cancel



Advanced settings.

Radio

Security

Server

Bluetooth®

Network connectivity method

Host IP

☐

Data encryption

Host IP address

172.18.25.249



Host Port

281



Test network connection

General

Parameters

Network

Service

Exit

R&D TEST_CCM12

Ping Connex Server 172.18.25.249

Success

WACP rendezvous with Connex server 172.18.25.249

Success

OK

Best Clinical Practice Workflow

Wireless Workflow & Ethernet Workflow :

To collect and document a single set of Vital Signs on single patient . . .



1. Scan Clinician



2. Scan Patient ID



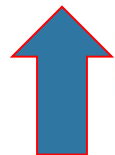
3. Capture Vital Signs, manual parameters, & modifiers.



4. Save & Send Readings



5. Vitals are documented in the EMR



For Continuous Interval Monitoring (multiple sets of vitals) on a Single Patient . . .

First, complete Steps 1 & 2 as above with Wireless/Ethernet connections, then:



3. Capture interval data with CVSM in "Monitor" Profile.



4. Touch Review tab on CVSM, select vitals to send; Touch Send.

Alarm Gateway

Input/Output - FWDCWPAPPNRC01

Priority filter

Data Services

Release locks

Export data

Settings

HL7

ADT configuration

Continuous measurement configuration

Vital signs configuration

Import data

Custom Configuration

Patients

Settings

Users

Licensing

Pool configuration

Status

Logs

Audit

Log viewer

Settings

Connections

Custom Configuration

Device Clinician Authentication

Server

Stations

Stations admin

Select authentication providers

Check all providers that a clinician can belong to. Order is important. First one hit will be used

Status	Provider Name	Provider Type	
☒	SunriseProdAD	ActiveDirectory	Delete
☐	ConnexClientServices	ConnexDatabase	Delete

Up

Down

Active Directory Credentials

Domain IP address

159.139.152.114

Active directory user name

entrsvcldpmdi01

Add provider

Authentication provider type

ConnexDatabase ▾

Security provider name

Add

Clinician identifier

Check all clinician identifiers scanned at the device. Order is important. First one hit will be used

- ☒ AccountName
☐ Username
☐ EmployeeId

Up

Down

Group membership

Select groups

- ☐ 25394Vitals_CLIN
☒ 25471Vitals_CLIN

Group name

Add

FMR identifier

Save

Cancel

Best Clinical Practice Workflow

Wireless Workflow & Ethernet Workflow :

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Best Clinical Practice Workflow

Wireless Workflow & Ethernet Workflow :

To collect and document a single set of Vital Signs on single patient . . .



1. Scan Clinician



2. Scan Patient ID



3. Capture Vital Signs, manual parameters, & modifiers.



4. Save & Send Readings



5. Vitals are documented in the EMR

For Continuous Interval Monitoring (multiple sets of vital signs on a Single Patient . . .

First, complete Steps 1 & 2 as above with Wireless or Ethernet connections, then:

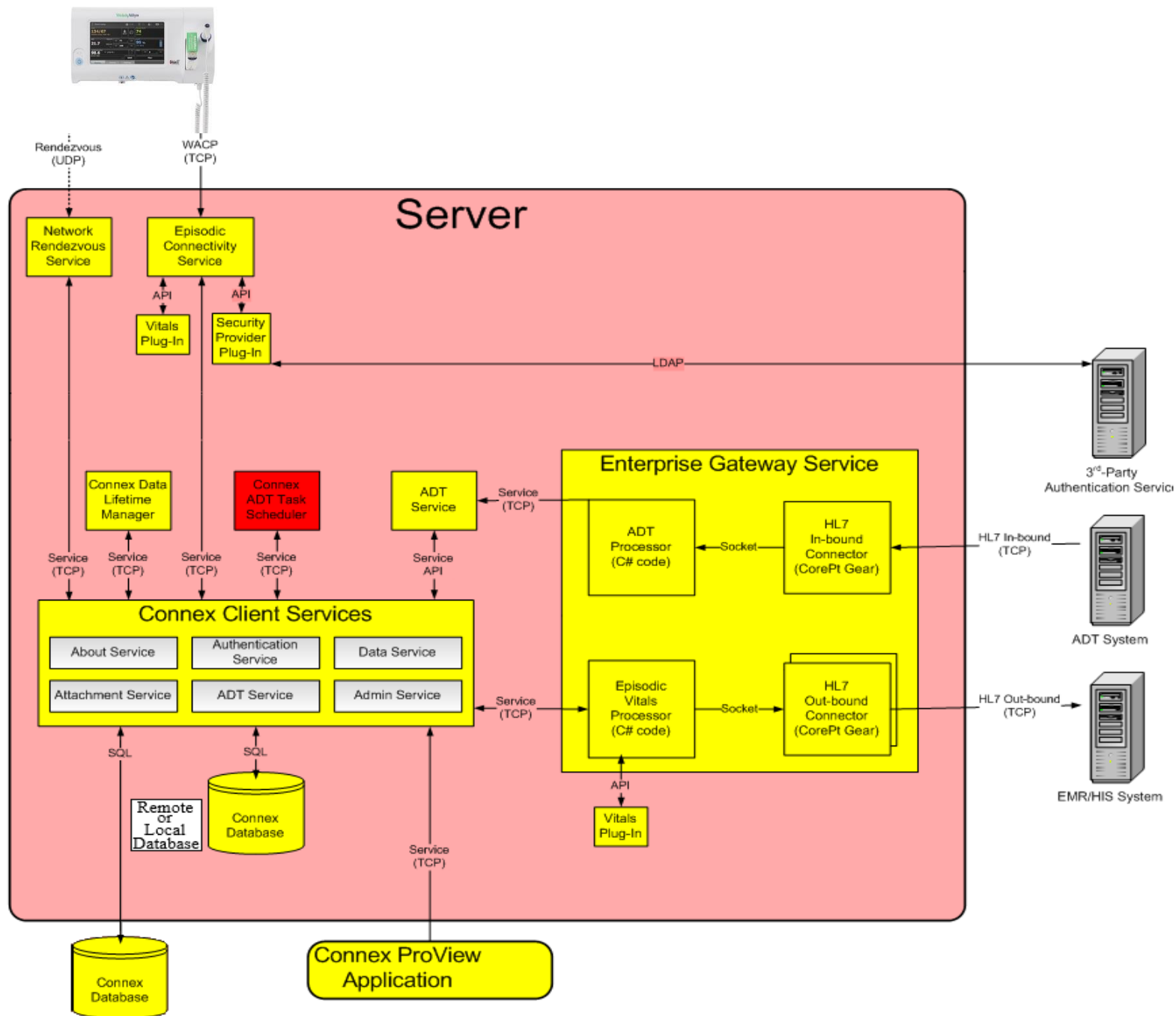


3. Capture interval data with CVSM in "Monitor" Profile.

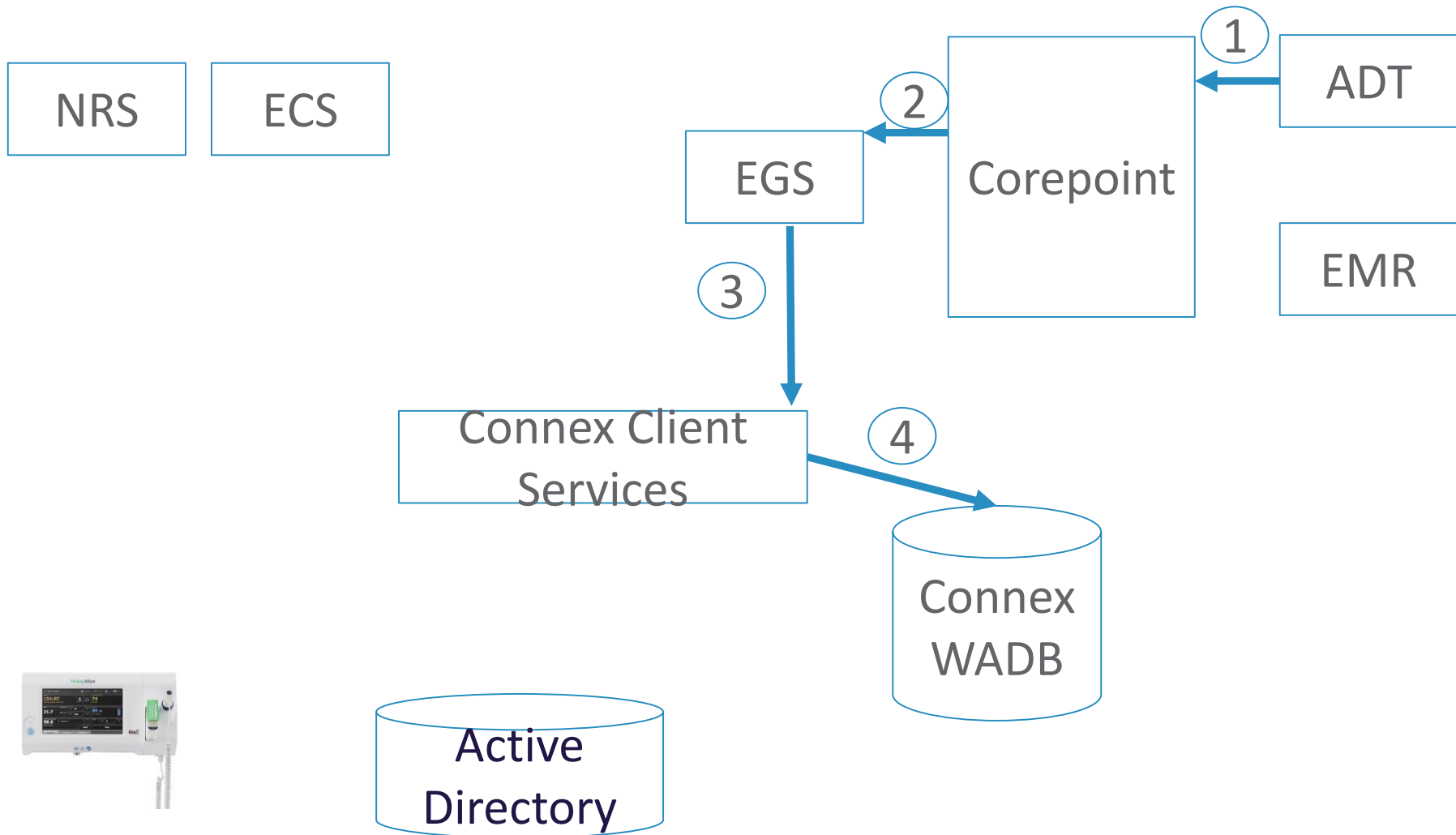


4. Touch Review tab on CVSM, select vitals to send; Touch Send.

Day 2



Flow of Data for ADT



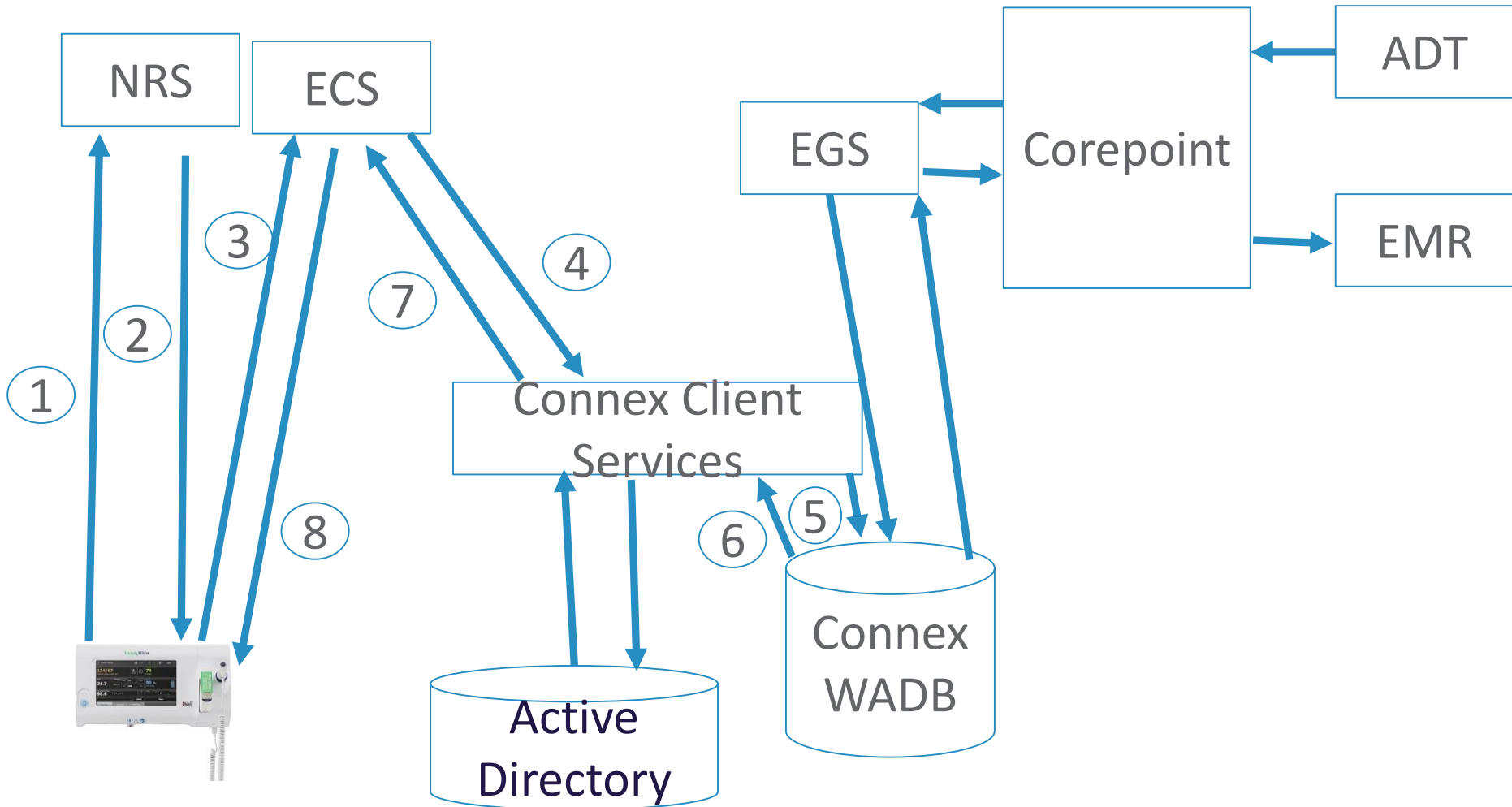
The diagram illustrates the Connex integration architecture, showing the flow of data between various components. The components are represented by boxes and cylinders, with numbered arrows indicating the direction of data flow.

- Medical Device:** A small device with a screen and a green button, located at the bottom left.
- NRS (Nurse Reporting System):** A box at the top left.
- ECS (Emergency Care System):** A box at the top center.
- Connex Client Services:** A box in the center.
- Active Directory:** A cylinder at the bottom center.
- Connex WADB (Connex Web Application Database):** A cylinder at the bottom right.
- EGS (Emergency Gateway System):** A box at the top right.
- Corepoint:** A large box on the far right.
- ADT (Ambulatory Data Transfer):** A box at the top right, connected to Corepoint.
- EMR (Electronic Medical Record):** A box at the bottom right, connected to Corepoint.

The numbered arrows indicate the following data flows:

- Medical Device to NRS.
- NRS to Medical Device.
- Medical Device to ECS.
- ECS to Connex Client Services.
- Connex Client Services to Connex WADB.
- Active Directory to Connex Client Services.
- Connex Client Services to ECS.
- ECS to NRS.
- Medical Device to NRS.
- Connex WADB to EGS.
- EGS to Corepoint.
- Corepoint to ADT.
- Corepoint to EMR.

Flow of Data for patient lookup



Flow of Data

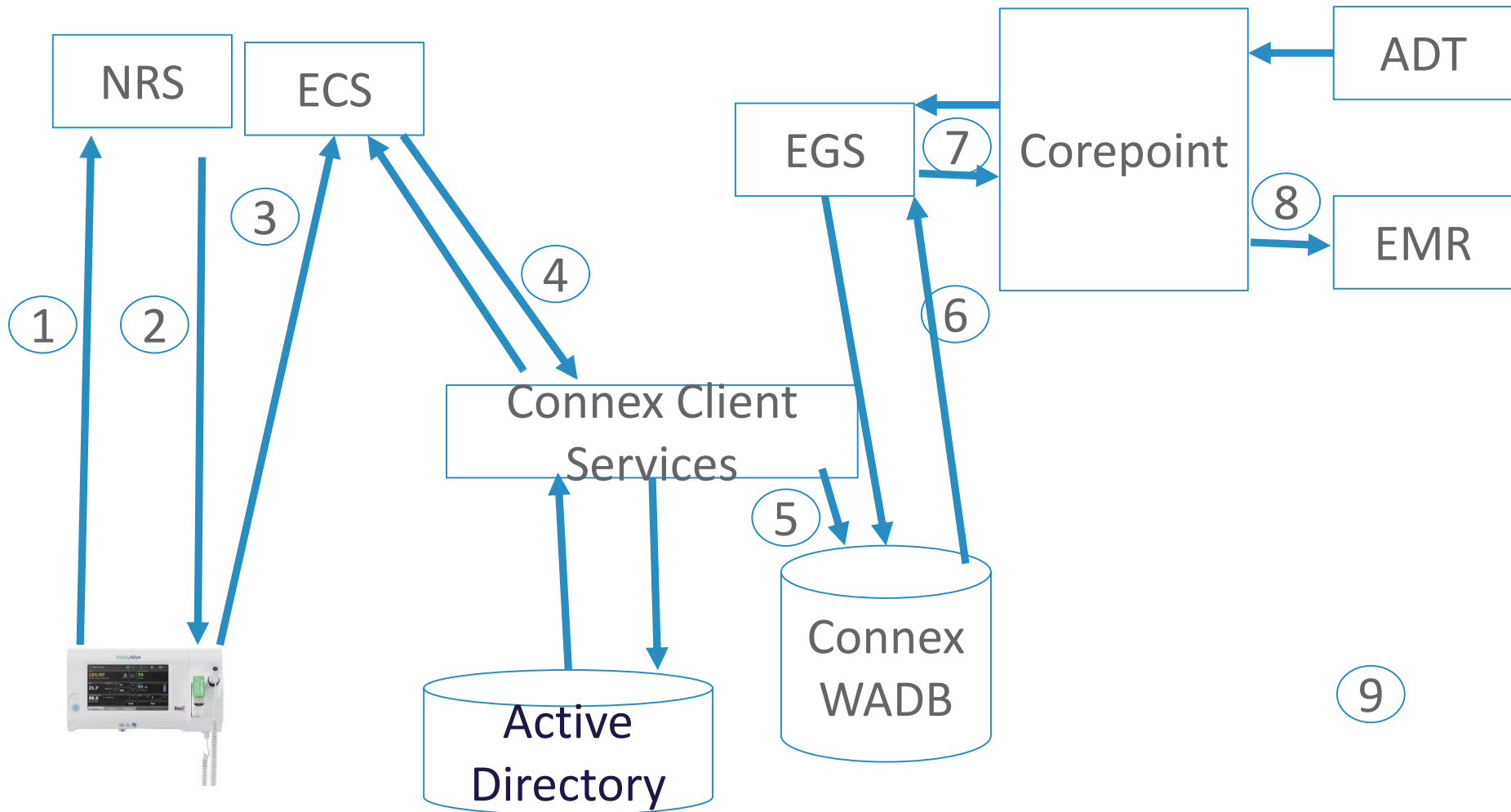
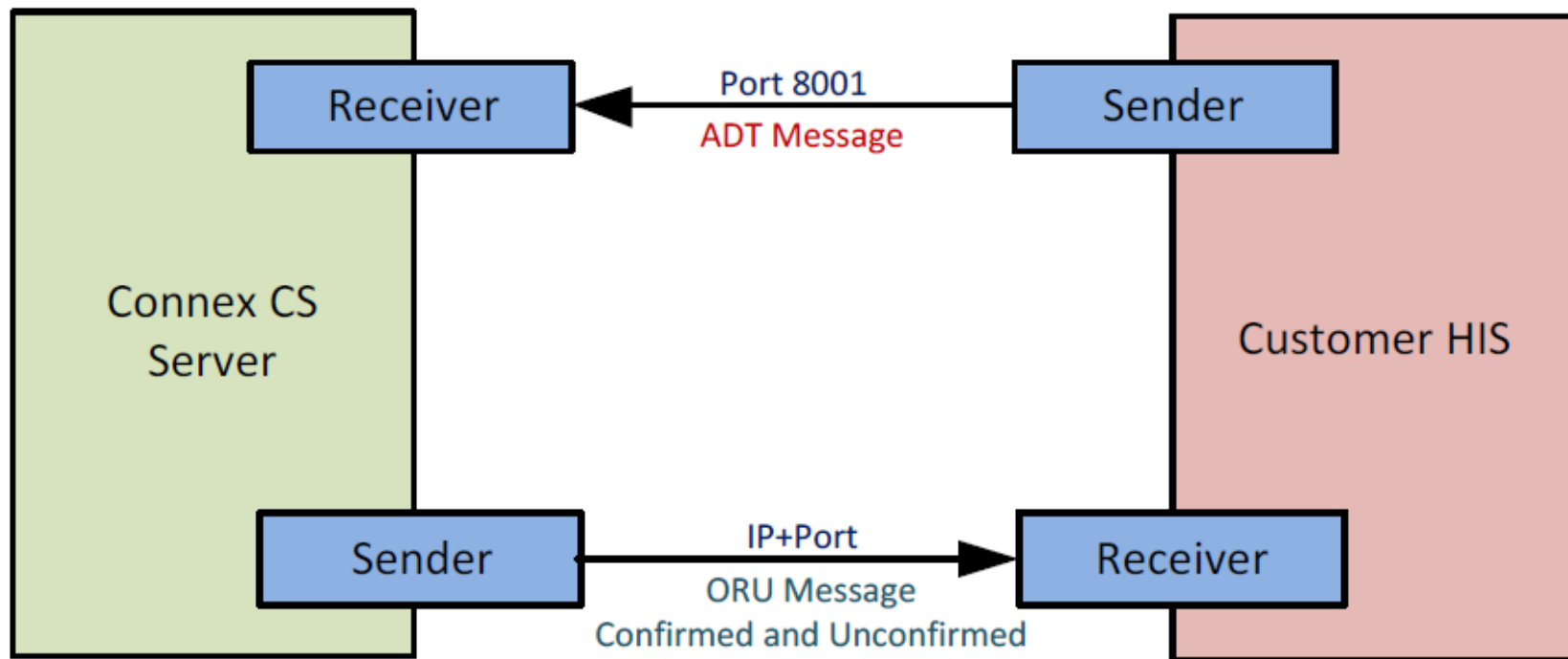


Figure 4: Single ORU Interface



Devices

Reports

Configure

Search by asset tag, model, etc.

REFINE RESULTS:

ORGANIZATION

Any Organization

Far West Division (20)

Las Vegas (1)

(not set) (1)

Mountain View Hospital (5)

Southern Hills Hospital Medical Ctr (1)

Sunrise Hospital Medical Center (4)

► San Jose (9)

► Mountain Division (6)

MODEL

Any Model

Connex Spot Monitor (23)

ConnexCS (3)

	!	MODEL	ASSET TAG	SERIAL NUMBER	LOCATION	LAST CONNECTED	
		ConnexCS Server	(not set)	Perf_Server_PERF-SERVER_Server	Far West Division San Jose (not set)	25 SEP 2013, 6:45 PM EDT	>
		ConnexCS Server	(not set)	CN01065_WIN-U2K5T0NJO10_Server	Mountain Division North West (not set)	08 MAY 2015, 3:34 PM EDT	>
		ConnexCS Server	(not set)	RAID_CS-CONNEXSVR_Server	Far West Division Las Vegas (not set)	25 SEP 2013, 5:52 PM EDT	>
		Connex Spot Monitor	AssetTag Field	100000444015	Far West Division Las Vegas Mountain View Hospital	25 AUG 2016, 3:01 PM EDT	>
		Connex Spot Monitor	AssetTag Field	100000200415	Mountain Division North West Eastern Idaho Regional Medical Ctr	25 AUG 2016, 3:33 PM EDT	>
		Connex Spot Monitor	AssetTag Field	100002694714	Far West Division Las Vegas Sunrise Hospital Medical Center	25 AUG 2016, 3:37 PM EDT	>
		Connex Spot Monitor	AssetTag Field	100000074014	Far West Division Las Vegas Mountain View Hospital	25 AUG 2016, 3:01 PM EDT	>
		Connex Spot Monitor	AssetTag Field	100000032014	Far West Division San Jose Regional Medical Ctr of San Jose	24 AUG 2016, 10:25 PM EDT	>
		Connex Spot Monitor	AssetTag Field	000020141218	Far West Division Las Vegas Southern Hills Hospital Medical Ctr	24 AUG 2016, 10:08 PM EDT	>
		Connex Spot Monitor			Mountain Division North West		>

PC: Customer

PC: Location

CSM: LocationID

National Division Facility

Supporting slides



Advanced settings.

Ethernet stats

Radio stats

General

Config file

Log file

System

Asset tag

Device location

Centennial

Device location ID

HCA

☐

Allow display lock

Touchscreen calibration

Start

General

Parameters

Network

Service

Exit



Advanced settings.

Ethernet stats

Radio stats

General

Config file

Log file

System

Configuration file

Active Config file name
CENT03102016_PROD_Copy-signed.w...

Date of generation
2016-06-02

Date loaded to device
2016-12-20

Load configuration from network

Load

Save current configuration.

Save to USB

General

Parameters

Network

Service

Exit



Advanced settings.

Ethernet stats

Radio stats

General

Config file

Log file

System

Log file

Save to USB

General

Parameters

Network

Service

Exit



Advanced settings.

Ethernet stats

Radio stats

General

Config file

Log file

System

Reset to defaults

☐

Radio settings only

☒

All settings

Reset

Load firmware from network

Firmware is up-to-date.

Load

General

Parameters

Network

Service

Exit

- <https://www.youtube.com/watch?v=bTbHwnxCGal>
- Teamwork
 - <https://www.youtube.com/watch?v=ftPOy4yUGMQ>
- Funny leadership
 - <https://www.youtube.com/watch?v=SA7bKo4HRTg>