Products/Solutions/Expertise of C-DAC Mumbai in Smart City Domain

CCC Products

Text-to-Speech Synthesis System (TTS)

TTS: Introduction

- Text-to-Speech (TTS) refers to the ability of computers to read text aloud.
- Indian Language TTS Consortium (CDAC Mumbai is also part of consortium)has developed reasonably good quality of TTS for Indian Languages.
  - CDAC Kolkata (Bengali) and CDAC Trivendram (Malayalam) is also part of consortium
- TTS for around 10 languages (Hindi, Marathi, Tamil, Telugu, Malayalam, Bengali, Odia, Kannada, Gujarati, etc) are ready to use.
- TTS have already been released as Open Source, available at below link:

  http://www.iitm.ac.in/donlab/tts/

TTS: Technical Details

- Technology Details
  - Indian Language TTS voices have been built using hmm based parametric speech sythesis technique.
- Development Tools Used
  - Speech tools, festival, festvox, HTS, HTK, SPTK, Hybrid Segmentation Tool, Wavesurfer
- Software Requirment to Use TTS
  - Speechtools, Festival & HTS Engine
- Compatable Operating System
  - Linux

TTS: Demonstration

- Live demo is available at below link:

  http://tdil-dc.in/tts1/

TTS: Additional Information

- Applications Developed using TTS
  - TTS browser plugin for Firefox and Google Chrome
  - Android based Applications:
    - SMS Reader (online)
      - Uses TTS from server
    - SMS Reader (Offline)
      - Uses inbuild TTS
- Micromax Launched Unite4 & Unite Pro with Indus OS2.0, which brings TTS in 6 languases to smar phone

TTS: Additional Information

- Integrated to Vikaspedia Portal
    - For Hindi language it is live
        - http://hi.vikaspedia.in/

Automatic Speech Recognition (ASR)

ASR: Introduction

- Automatic Speech Recognition (ASR) is the process to convert audio/speech signal into text
- Currently working for three Languages
  - Hindi, Tamil and English
- System is trained for e-Gov service names, state names, language names and some named entities.
- Can be easily customised for other domains.

ASR: Technical Details

- Technology Details
  - Hidden Markov Model based speech recognition engine.
- Development Tools Used
  - Kaldi, IRSTLM
- Software Requirment to Use ASR
  - KALDI
- Compatable Operating System
  - Linux

ASR: Demonstration

- ASR Live Demo is available at below number:

022-26201603 Ext 2

ASR: Additional Information

- ASR has been integrated into CDAC Mumbai internal PBX system

Customer Relationship Manager (CRM)

CRM: Introduction

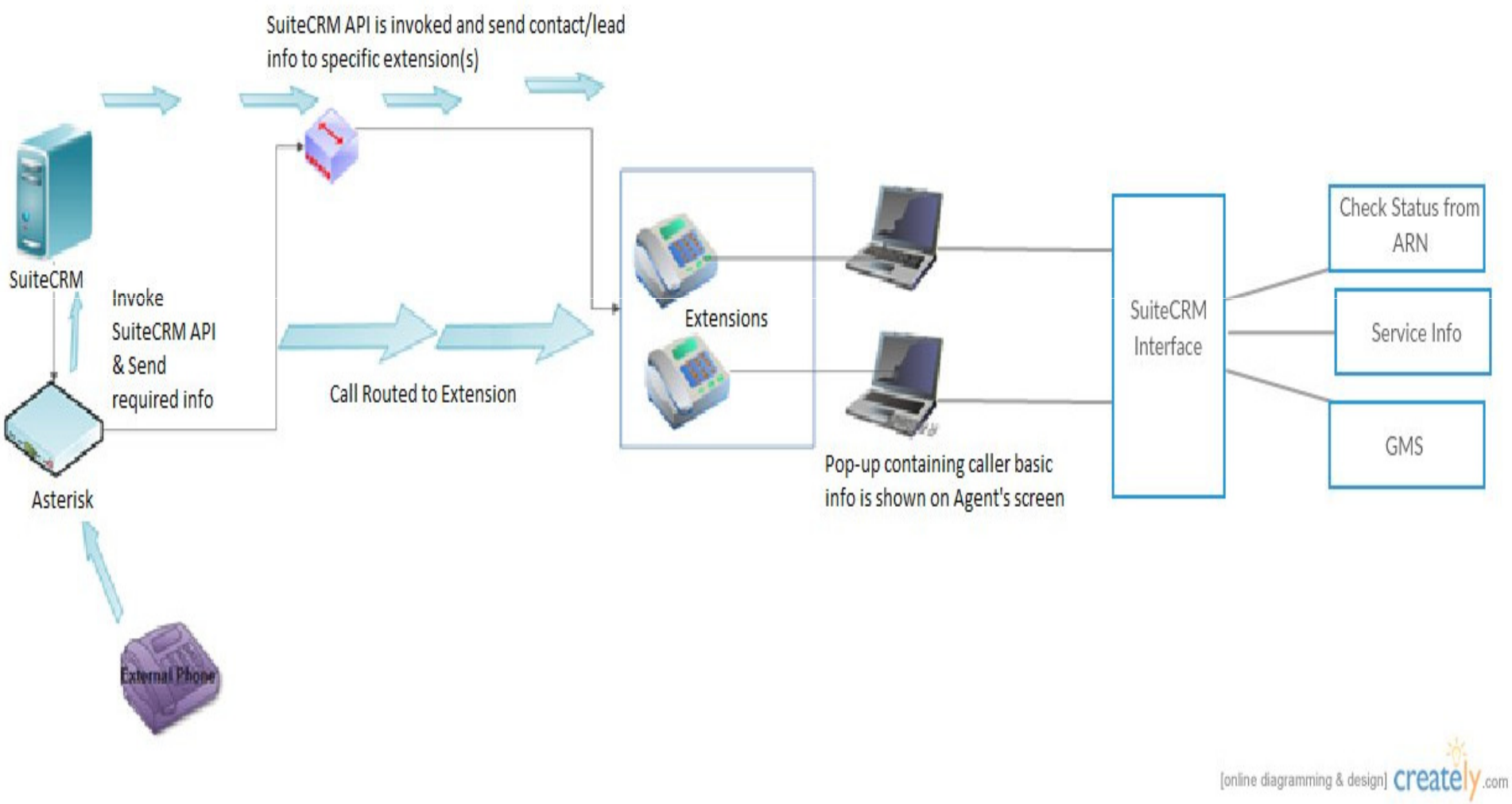
- CRM - helps to manage and analyze customer interactions and data throughout the customer life cycle
- SuiteCRM is powerful, more agile, customizable, free and open source Customer Relationship Management application.
- Suit CRM has been customised to use in call centre environment
  - It provides back-office support to the Call centre Agents including taking notes from citizen and forwarding it to concerned officer
  - Interacts with departments servers to get status of applications
- Connects the Asterisk and the IP phones

CRM: Technical Details

- Language : PHP (ver 5.3.3)
- Database : MySQL (ver 5.1.73)
- Browser : Firefox 38.0 and above, Chrome 40.0 and above
- Server OS: CentOS 6.5 Final (64 Bit)
- SuiteCRM : Ver 7.3

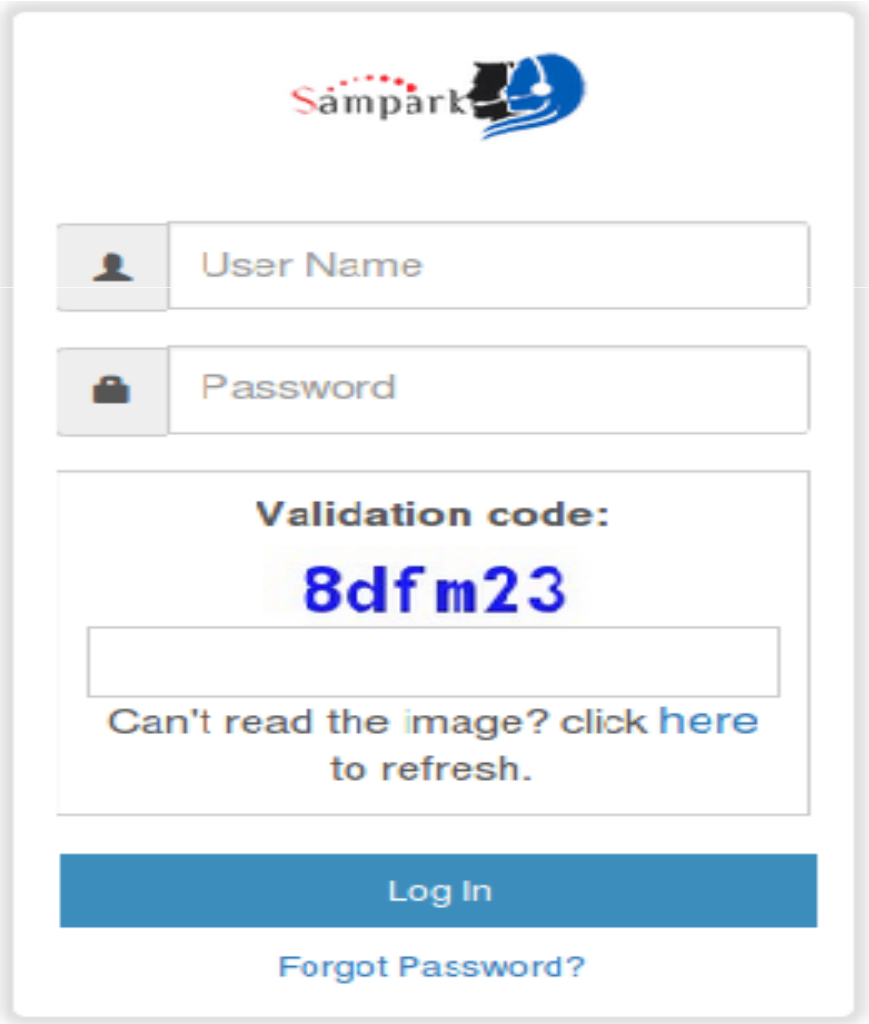
CRM: Screenshots

Work Flow


SuiteCRM API is invoked and send contact/lead info to specific extension(s)
SuiteCRM
Invoke SuiteCRM API & Send required info
Asterisk
External Phone
Call Routed to Extension
Extensions
Pop-up containing caller basic info is shown on Agent's screen
SuiteCRM Interface
Check Status from ARN
Service Info
GMS
[online diagramming & design] creately.com

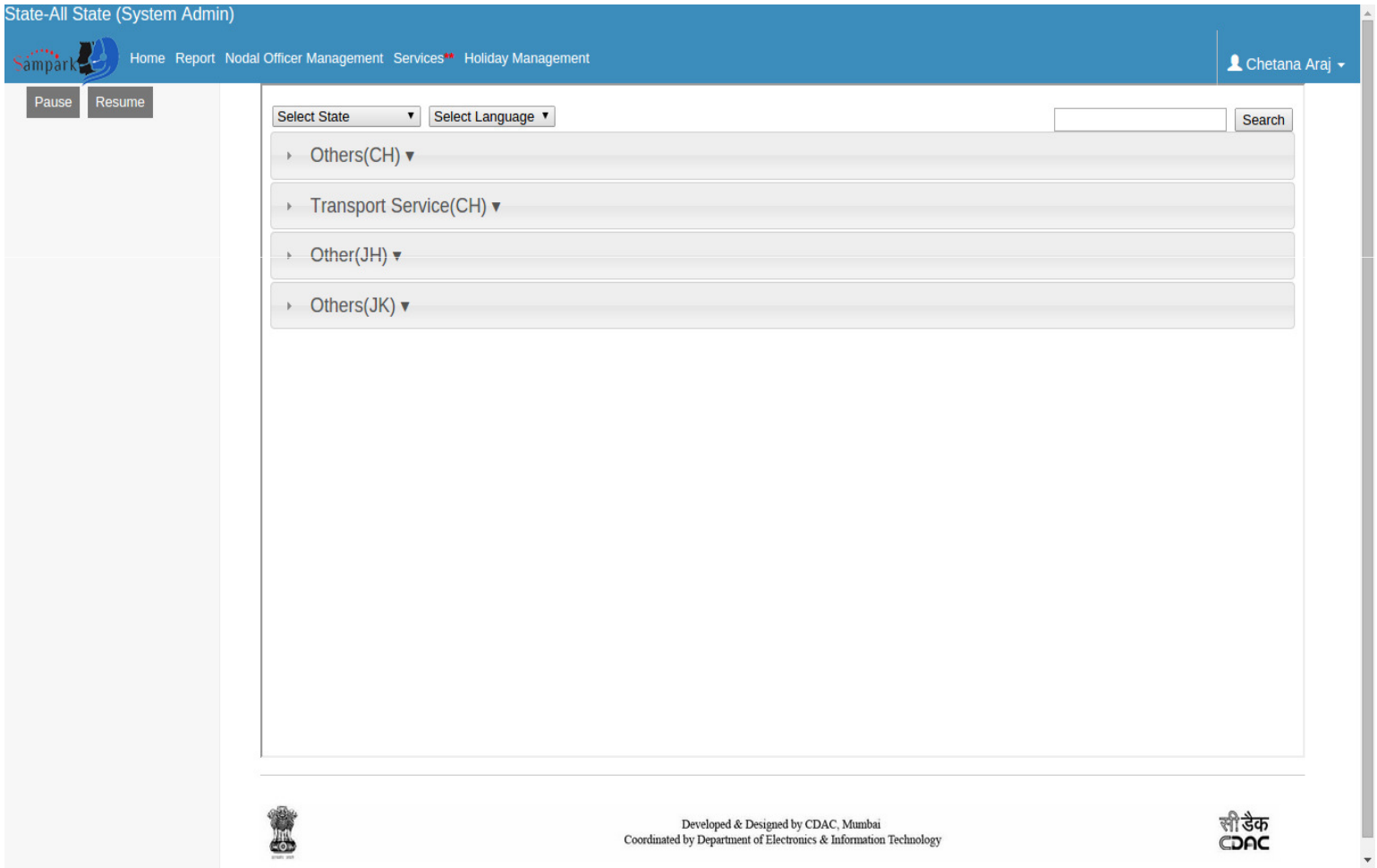
Screenshot - 1

- Login Screen



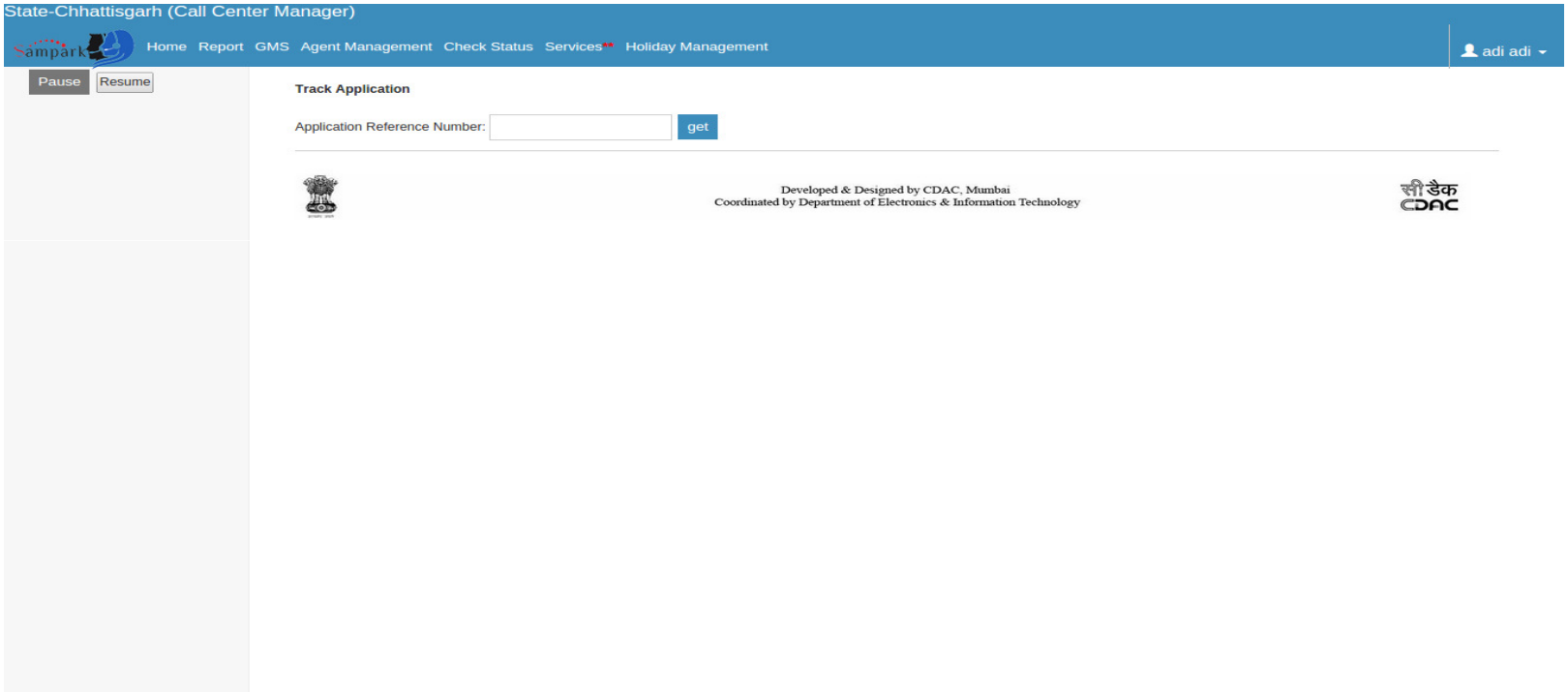
Screenshot - 3

- Services



Screenshot - 5

- Check Status



Interactive Voice Response System (IVRS)

IVRS: Introduction

- Interactive voice response system (IVRS) is a technology that allows a computer to interact with humans through the use of voice and DTMF tones input via keypad.

- Asterisk is an open source framework for building communications applications.

- It supports voice over IO (VoIP), Soft IP Phone (SIP)

- It provides various facilities like Automatic Call Distribution (ACD), Reporting, holiday Scheduling

IVRSL: Technical Details

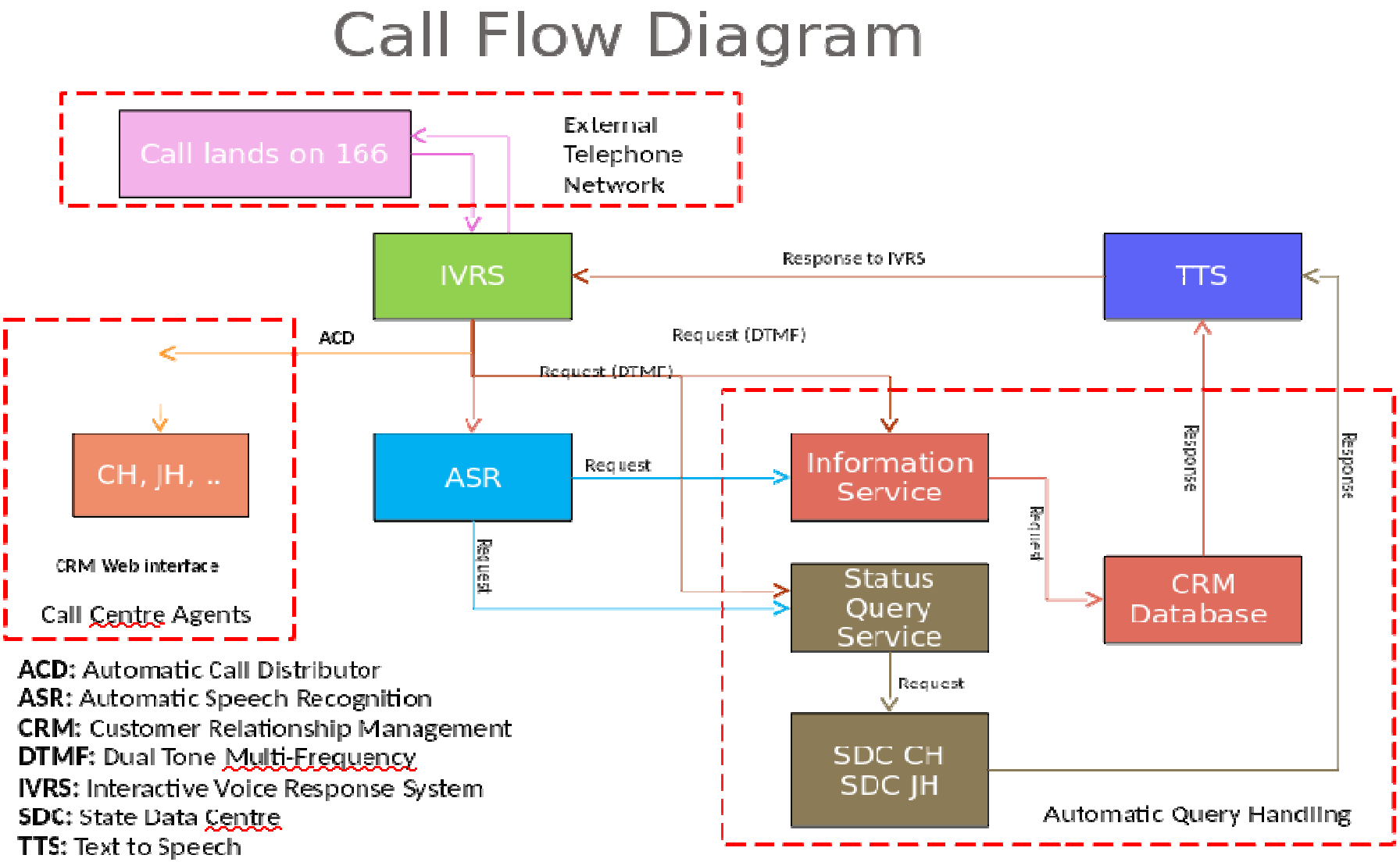
HARDWARE

Server : Dell R530 2U Rack server
Processor : Intel(R) Xeon(R) CPU E5-2630 v3 @ 2.40GHz
PRI Card : Sangoma A102 (2 Port PRI card)
PRI Line : 1 MTNL PRI Line with 30 channels

SOFTWARE

IVR Framework : Asterisk 13 LTS
PRI interfacing : Dahdi 2.10.1, Wanpipe 7.0.14, LibPRI 1.4.15
Database : MySQL 5.1.73

Call Flow Diagram



ACD: Automatic Call Distributor
ASR: Automatic Speech Recognition
CRM: Customer Relationship Management
DTMF: Dual Tone Multi-Frequency
IVRS: Interactive Voice Response System
SDC: State Data Centre
TTS: Text to Speech

Thank You

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