

- Remote 'field robots' with interfaces for POTS, VoIP, GSM, CDMA and 3G networks
- Remotely manage, configure and upgrade distributed intelligent agents
- Apply the latest Voice Quality Analysis algorithms: PESQ (ITU-T P.862), P.SEAM (ITU-T P.563), E-Model (ITU-T P.107)
- Beethoven RM 100 provides Advanced Management and Control system to collect and analyse data from field robots
- Sophisticated Alarm generation and filtering to integrate directly to your Operational Support Systems
- Centralised database, to record call records for orchestrated field tests
- CPE testing facilitated for Wireless Local Loop configurations

*"Beethoven monitors voice quality right to the edge of the network, to get a true picture of the customer experience"*

## Beethoven FR

### Network robot probe to reach the edge of Your Voice Network

The ability to reach to the very edges of your network, allows you to monitor and manage the quality of the service delivered to your customer. Satisfied customers lead to increased revenue, and keeps you ahead of the competition.

The Beethoven FR elements are distributed around your network to give you observability of your network performance to the very edge.

Co-ordinated and managed by the Beethoven RM 100, the distributed 'field robots' can be deployed in your fixed or wireless network, to give you a fuller understanding of service status for your customers. If you can pre-empt issues before your customers detect them, you will minimize customer churn, and safeguard your reputation for quality voice service delivery.

The Beethoven FR elements are configured for use with POTS (FR-10), VoIP (FR-20), GSM (FR-30), CDMA/3G (FR-40) interfaces .

The distributed field robot elements can be configured to facilitate Voice/Data testing, with results collated to a central database.

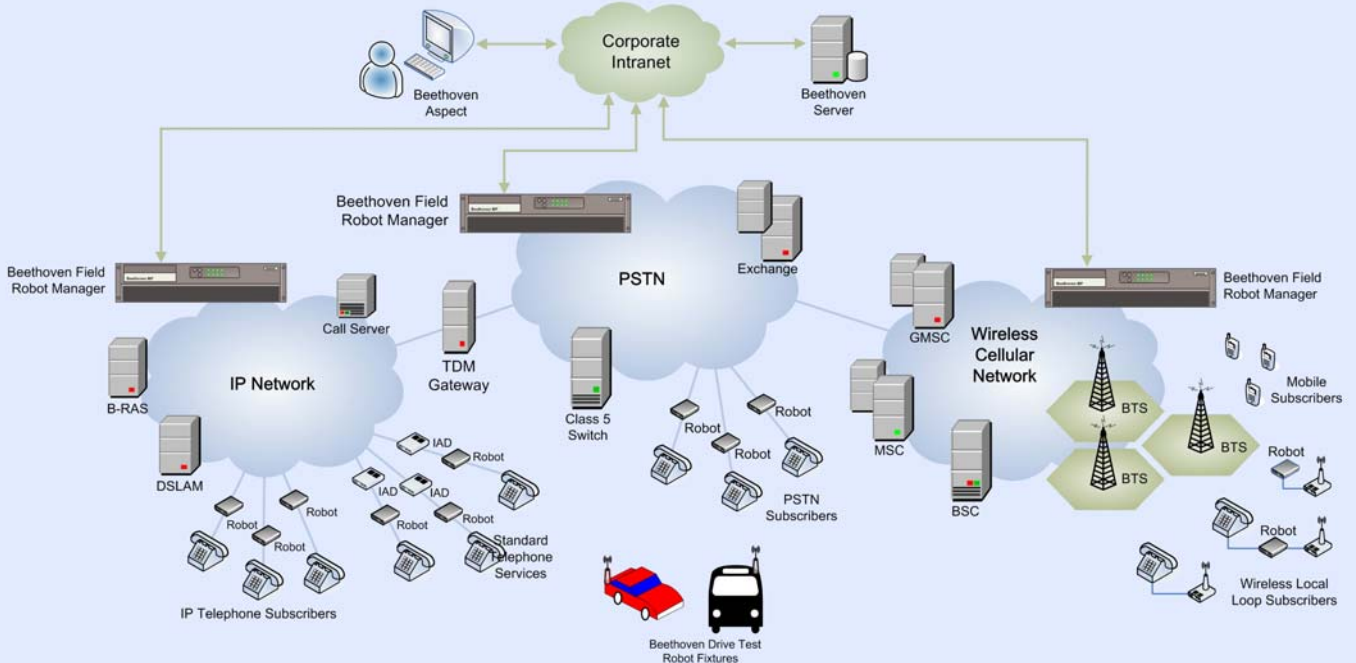
The Beethoven RM 100 in combination with the Beethoven FR elements can be scaled to your network and analysis needs.

# Features

- Intrusive and Non-intrusive Voice Quality Analysis metrics including Mean Opinion Score (MOS) using P.SEAM (ITU-T P.563), PESQ (ITU-T P.862), E-Model (ITU-T G.107)
- Real customer experience assessment
- Interfaces for VoIP, GSM, CDMA, POTS
- Intuitive web based Management System
- Detail Call metrics for each call are stored in a central database
- Alarm generation

# Benefits

- Customer experience management, allowing voice service problems to be pro-actively monitored and managed
- Minimise customer churn through delivering appropriate Quality of Service
- Robot elements allow management of hybrid networks
- Simple management, global access, automatic report generation
- Data mining and baseline trends identified for your network
- Intelligent Alarm generation and filtering using trend and event data



# Specifications Summary

## Voice Quality Metrics

Transmission Rating Factor	ITU-T G.107 E-Model
Mean Opinion Score	Non-intrusive P.SEAM (ITU-T P.563) Non-intrusive E-Model (ITU-T G.107) Intrusive PESQ (ITU-T P.862)
Echo	Echo Return Loss, ERLpeak, transmission delay
Double Talk	% Double talk, Double Talk Muting, Front end clipping
Background Noise	Periods of non-speech, noise measurement
Speech Power Level	Power level
Voice Activity Detection	Voice classification
DTMF detection	Configurable sensitivity

## Interfaces

Type	POTS (FR-10) 10/100/1000Mbps (VoIP) (FR-20) xDSL (VoDSL), GSM (FR-30) CDMA/3G (FR-40)
Density	Configurable

## Regulatory Compliance

Safety	UL 60950, CSA 60950, IEC 950, TUV/GS EN60950
EMC	Verified to FCC Class A; tested to CISPR 22 Class A, EN55022 Class A, VCCI Class A ITE, AS/NZS 3548 Class A, CNS13438
Immunity	EN 55024



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