

Amatou Voice Agent - Technical Datasheet

Architecture & Integration Specification

Version: 1.0 | Last Updated: December 2025

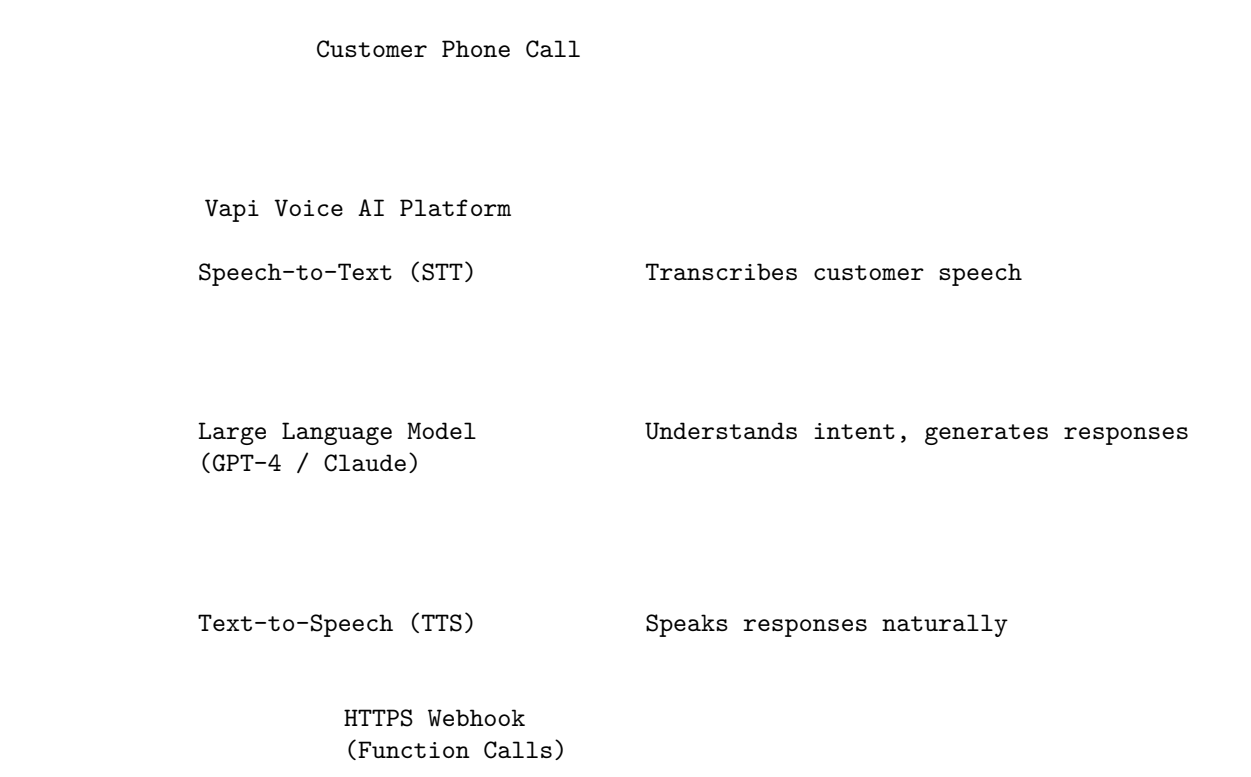
System Overview

The Amatou Voice Agent is a webhook-based AI voice system that integrates with existing appointment booking infrastructure through a RESTful API. The system handles inbound phone calls, processes customer requests using natural language AI, and manages appointments through your calendar system.

Core Components

- 1. **Vapi Voice AI Platform** - Speech-to-text, LLM processing, text-to-speech
 - 2. **FastAPI Webhook Backend** - Custom business logic and integrations
 - 3. **Calendar System** - Easy!Appointments or custom booking system
 - 4. **Notification Service** - Twilio for SMS/WhatsApp confirmations
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Architecture Diagram



FastAPI Webhook Backend
(Your Infrastructure)

Webhook Handler

- Authentication check
- Function routing
- Error handling

Calendar
Service

- Check Avail.
- Book

Twilio
Service

- SMS
- WhatsApp
- Confirm

Easy!Appointments
(or custom)

- Appointments
- Customers
- Services

Customer
Phone/Chat

- SMS
- WhatsApp

API Specifications

Webhook Endpoint

URL Structure: `https://your-domain.com/api/webhooks/vapi`

Method: POST

Authentication: Custom header with shared secret

```
POST /api/webhooks/vapi HTTP/1.1
Host: your-domain.com
Content-Type: application/json
x-vapi-secret: your-webhook-secret-here
```

```
{
  "type": "function-call",
  "call": {
    "id": "call-uuid",
    "monitor": {
```

```

    "controlUrl": "https://api.vapi.ai/calls/uuid/control"
  },
  "functionCall": {
    "name": "check_availability",
    "parameters": {
      "date": "2025-12-25"
    }
  }
}

```

Supported Functions

1. **check_availability** Checks available appointment slots for a specific date.

Parameters: - **date** (string, required): Date in YYYY-MM-DD format

Response:

```

{
  "result": {
    "success": true,
    "slots": ["09:00", "09:30", "10:00", "14:00", "14:30"]
  }
}

```

2. **book_appointment** Books an appointment with customer details.

Parameters: - **date** (string, required): Appointment date in YYYY-MM-DD format - **time** (string, required): Start time in HH:MM format (24-hour) - **first_name** (string, required): Customer's first name - **last_name** (string, required): Customer's last name - **email** (string, required): Customer's email address - **phone** (string, required): Phone number in E.164 format (+447123456789)

Response:

```

{
  "result": {
    "success": true,
    "appointment_id": 12345,
    "confirmation_sent": true
  }
}

```

3. **transfer_to_agent** Transfers the call to a human team member.

Parameters: - **reason** (string, required): Brief reason for transfer

Response:

```

{
  "result": {
    "success": true,
    "message": "Transfer initiated successfully"
  }
}

```

Integration Requirements

Calendar System

Supported Out-of-the-Box: - Easy!Appointments (REST API v1)

Custom Integration Requirements: - RESTful API for availability checking - Endpoint for creating appointments - Customer management capability - Timezone support

API Endpoints Needed:

```
GET /api/v1/availabilities?providerId=X&serviceId=Y&date=YYYY-MM-DD
POST /api/v1/appointments
GET /api/v1/customers?email=customer@example.com
POST /api/v1/customers
```

Notification Service

Supported: - Twilio (SMS and WhatsApp)

Requirements: - Twilio Account SID - Twilio Auth Token - Verified phone number for SMS - WhatsApp Business API access (optional)

Deployment Options

1. Docker Deployment (Recommended)

Requirements: - Docker 20.10+ - Docker Compose 1.29+ - 2GB RAM minimum - 10GB disk space

Services: - MySQL 8.0 (for Easy!Appointments) - Easy!Appointments (latest) - Voice Agent Backend (Python 3.12)

Deployment:

```
# Clone repository
git clone https://github.com/amatou/voice-agent.git
cd voice-agent

# Configure environment
cp .env.example .env
nano .env # Add credentials

# Start services
docker-compose up -d

# Verify health
curl http://localhost:8000/health
```

2. Native Deployment

Requirements: - Python 3.12+ - pip 23.0+ - Virtual environment - Nginx or similar reverse proxy - SSL certificate

Installation:

```
# Create virtual environment
python3 -m venv venv
source venv/bin/activate

# Install dependencies
pip install -r requirements.txt

# Run application
uvicorn app.main:app --host 0.0.0.0 --port 8000
```

Configuration

Environment Variables

```
# Application
APP_NAME=Amatou Voice Agent
APP_ENV=production
DEBUG=false
LOG_LEVEL=INFO
BACKEND_URL=https://your-domain.com

# Security
WEBHOOK_SECRET=<64-character-hex-string>

# Vapi
VAPI_API_KEY=<from-vapi-dashboard>
VAPI_ASSISTANT_ID=<your-assistant-id>
VAPI_PHONE_NUMBER=<assigned-number>

# Easy!Appointments
EASYAPPOINTMENTS_API_USERNAME=admin
EASYAPPOINTMENTS_API_PASSWORD=<secure-password>
EASYAPPOINTMENTS_BASE_URL=https://booking.your-domain.com
EASYAPPOINTMENTS_SERVICE_ID=1
EASYAPPOINTMENTS_PROVIDER_ID=2
EASYAPPOINTMENTS_TIMEZONE=Europe/London

# Twilio
TWILIO_ACCOUNT_SID=<from-twilio>
TWILIO_AUTH_TOKEN=<from-twilio>
TWILIO_PHONE_NUMBER=+44XXXXXXXXXX
TWILIO_WHATSAPP_NUMBER=whatsapp:+14155238886
```

```
# Call Transfer
TRANSFER_PHONE_NUMBER=+44XXXXXXXXXX
TRANSFER_ENABLED=true

# Performance
RATE_LIMIT_REQUESTS=100
RATE_LIMIT_PERIOD=60
```

Security Specifications

Transport Security

- **HTTPS Required:** All webhook endpoints must use TLS 1.2+
- **Certificate Validation:** Valid SSL certificate required
- **HTTP Headers:** Secure headers (HSTS, CSP, X-Frame-Options)

Authentication

- **Webhook Secret:** 256-bit secret for request validation
- **Header-Based Auth:** x-vapi-secret header on all requests
- **Request Signing:** SHA-256 HMAC validation (optional)

Data Handling

- **PII Protection:** Customer data encrypted in transit
- **No Data Retention:** No customer data stored on AI platform
- **GDPR Compliance:** Right to erasure, data portability
- **Access Logs:** 90-day retention for security auditing

Network Security

- **Firewall:** Only ports 80, 443, 22 exposed
 - **Rate Limiting:** 100 requests per minute per IP
 - **DDoS Protection:** Cloudflare or equivalent recommended
 - **IP Whitelisting:** Vapi platform IPs (optional)
-

Performance Characteristics

Response Times

- **Availability Check:** < 500ms average
- **Appointment Booking:** < 1000ms average
- **Call Transfer:** < 200ms average

Scalability

- **Concurrent Calls:** Unlimited (Vapi platform handles)
- **Backend Capacity:** 1000+ requests/second (FastAPI)
- **Database Load:** Optimized queries, connection pooling

Reliability

- **Uptime SLA:** 99.9% (Vapi platform)
 - **Backend Uptime:** 99.95% with proper deployment
 - **Health Monitoring:** Built-in /health endpoint
 - **Auto-Recovery:** Automatic restart on failure
-

Monitoring & Logging

Structured Logging

All operations logged with context:

```
{
  "timestamp": "2025-12-23T10:30:45Z",
  "level": "INFO",
  "event": "appointment_booked",
  "appointment_id": 12345,
  "customer_email": "customer@example.com",
  "date": "2025-12-25",
  "time": "14:30"
}
```

Metrics Available

- Call volume and duration
- Function call success/failure rates
- API response times
- Error rates by type
- Customer satisfaction (via call transfers)

Health Checks

Endpoint: GET /health

Response:

```
{
  "status": "healthy",
  "timestamp": "2025-12-23T10:30:45Z",
  "version": "1.0.0"
}
```

Technical Requirements Summary

Minimum Requirements

- **Server:** 2 vCPU, 2GB RAM, 10GB disk
- **Network:** Static IP, HTTPS, 10 Mbps bandwidth
- **Software:** Docker 20.10+ OR Python 3.12+
- **Database:** MySQL 8.0+ (for Easy!Appointments)

Recommended Requirements

- **Server:** 4 vCPU, 4GB RAM, 20GB SSD
- **Network:** Static IP, CDN, 100 Mbps bandwidth
- **Software:** Docker 24.0+, Nginx 1.24+
- **Monitoring:** Prometheus + Grafana OR similar

External Services

- **Vapi:** Account with API access
 - **Twilio:** Account with phone number
 - **DNS:** Domain with SSL certificate
 - **Email:** SMTP for notifications (optional)
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Support & Maintenance

Included Support

- **Email Support:** contact@amatou.co.uk
- **Response Time:** < 24 hours business days
- **Documentation:** Comprehensive guides and examples
- **Updates:** Quarterly feature releases

Enterprise Support (Optional)

- **Dedicated Support:** Phone and Slack channels
 - **Response Time:** < 4 hours, 24/7
 - **Account Manager:** Dedicated contact
 - **Custom Development:** Bespoke features and integrations
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Integration Timeline

Phase	Duration	Deliverables
1. Planning	2-4 hours	Requirements doc, integration plan
2. Setup	4-8 hours	Environment config, API credentials

Phase	Duration	Deliverables
3. Integration	8-16 hours	Calendar connection, webhook setup
4. Testing	4-8 hours	End-to-end testing, QA
5. Training	2-4 hours	Staff training, documentation
6. Launch	1-2 hours	Go-live, monitoring setup

Total: 2-5 business days (depending on complexity)

Technical Contact

For technical questions, integration support, or custom development:

Email: tech@amatou.co.uk **Documentation:** <https://docs.amatou.co.uk/voice-agent> **GitHub:** <https://github.com/amatou/voice-agent>

Amatou Technologies 86-90 Paul Street, London, EC2A 4NE www.amatou.co.uk

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