Dynamics 365 Contact Center - Architecture Map

Architecture Flow Overview

The D365 Contact Center architecture follows a hierarchical flow:

CHANNELS → WORKSTREAMS → ROUTING RULES → QUEUES → AGENTS

Each layer adds intelligence, context, and control to ensure optimal customer service delivery through AI-powered routing and intelligent work distribution.

Visual Architecture Flow

■ CHANNELS - Customer Engagement Layer

Communication entry points for customer engagement across multiple mediums:

- **Voice** - PSTN calls via Azure Communication Services

- **Chat** - Live chat support with web widget integration

- **SMS** - Text messaging via Azure Communication Services or Twilio

- **Social** - Facebook, WhatsApp, Apple Messages for Business, LINE

- **Teams** - Microsoft Teams native integration

- **Custom** - Custom messaging channels and integrations

- **Records** - Cases, emails, and entity records

Phone Numbers: Each phone number connects to a voice channel within a workstream. A workstream can have multiple voice channels with different phone numbers (e.g., for multilingual support).

■ WORKSTREAMS - Routing & Configuration Layer

Containers that enrich, route, and configure work item behavior:

Types:

- **Messaging Workstream** → Routes: Chat, SMS, Social, Teams

- **Voice Workstream** → Routes: Phone calls (Push mode only)

- **Record Workstream** → Routes: Cases, Emails, Records

Work Distribution Modes:

- **Push:** Auto-assign to agents with alerts (required for voice)

- **Pick:** Agents manually select work items

Configuration:

- Capacity settings (unit-based or profile-based)

- Allowed presences (Available, Busy, etc.)

- Skill matching algorithm (Exact, Closest, None)

- Session templates and agent notifications

- Context variables and representative affinity

- Auto-close settings and wrap-up time

■ ROUTING RULES - Intelligent Routing Layer

Classification Rules:

- Categorize incoming work items

- Add context and metadata

- Evaluate customer parameters

Route-to-Queue Rules:

- Condition-based routing logic

- Priority-based assignments

- Skill-based matching

- Multiple rules per workstream

Fallback Queue:

Safety net for work items when:

- No route-to-queue rules match

- Classification or routing errors occur

■ QUEUES - Work Distribution Layer

Collections that organize and distribute work items:

Queue Types (matched to workstream channel type):

- **Messaging Queue** → Holds: Chat, SMS, Social messages

- **Voice Queue** → Holds: Phone calls

- **Record Queue** → Holds: Cases, Emails, Records

Assignment Methods:

1. **Highest Capacity** - Routes to agent with most capacity

2. **Round Robin** - Rotates based on membership order

3. **Least Active** - Routes to least recently active agent

4. **Custom Assignment** - Rule-based (priority, severity, capacity)

Configuration:

- Queue Priority (numeric: lower = higher priority)

- Operating Hours (schedules & time zones)

- Overflow Management (redirect when threshold exceeded)

- Agent membership

Default Queues (system-defined):

- Default messaging queue

- Default voice queue

- Default entity queue

■■ ASSIGNMENT ALGORITHM - Evaluation Layer

The assignment algorithm evaluates multiple factors:

- **Skills** - Exact match, closest match, or none

- **Presence** - Available, Busy, Do Not Disturb

- **Capacity** - Current workload vs. max capacity (unit-based or profile-based)

- **Queue Membership** - Agent must be in the queue

- **Priority & Rules** - From workstream configuration

■ AGENTS - Service Representative Layer

Service representatives who handle customer interactions:

Agent Configuration:

- Assigned to one or more queues

- Capacity profile (defines workload capacity)

- Skills (for skill-based routing)

- Presence status (Available, Busy, Away, etc.)

- Channel-specific capacity

Agent Experience:

- **Push mode:** Receives auto-assigned work with notifications

- **Pick mode:** Manually selects from "Open work items"

- **Representative affinity:** Same agent handles returning work items

- **Wrap-up time:** Capacity blocked after completing work

■ Key Relationships

■■ Top-Down Relationships (Architecture Flow)

1. Channel → Workstream (Many-to-One)

- **Forward:** Multiple channels of the SAME type can share one workstream

- **Example:** 3 chat channels → 1 messaging workstream

- **Reverse:** ■ A workstream can have MULTIPLE channels attached (of the same type)

2. Phone Number → Voice Channel → Workstream (Many-to-One)

- **Forward:** Each phone number is associated with exactly ONE voice channel, which belongs to ONE workstream

- **Constraint:** Phone numbers must have inbound calls enabled and cannot be shared across workstreams

- **Reverse:** ■ A workstream CAN have MULTIPLE voice channels, each with a different phone number

- **Use Case:** Multilingual support - configure multiple voice channels with different phone numbers for different languages (e.g., Spanish number, German number, French number all in one workstream)

3. Workstream → Queues (One-to-Many)

- **Forward:** One workstream can route to multiple queues via route-to-queue rules

- **Required:** Must have one fallback queue as safety net

- **Reverse:** ■ A queue CAN receive work from MULTIPLE workstreams (of matching channel type)

- **Example:** A "VIP Voice Queue" can receive calls from both "Premium Support Workstream" and "Executive Support Workstream"

4. Queue → Agents (Many-to-Many)

- **Forward:** Queues can have multiple agents as members

- **Reverse:** ■ Agents CAN be members of MULTIPLE queues

- **Distribution:** Based on assignment method and availability

- **Example:** Agent John can be in "Voice Queue", "Chat Queue", and "VIP Queue" simultaneously

■■ Bottom-Up Relationships (Reverse Flow)

Agent Perspective:

- ■ An agent can be a member of **multiple queues**

- ■ An agent receives work from **all queues they belong to**

- ■ Work assignment depends on capacity, skills, and presence across all queues

- ■ Agents can view work items from all their queues in the Omnichannel Agent Dashboard

- **Example:** Agent Sarah in "Voice Queue", "VIP Chat Queue", and "Email Queue"

Queue Perspective:

- ■ A queue can receive work from **multiple workstreams** (matching channel type)

- ■ A queue can have **multiple agents** as members

- ■ A queue can be a fallback queue for **multiple workstreams**

- ■ A queue CANNOT receive work from workstreams of **different channel types**

- **Example:** "Premium Support Voice Queue" receives calls from both "Executive Support Workstream" and "VIP Customer Workstream"

Workstream Perspective:

- ■ A workstream can have **multiple channels** of the same type attached

- ■ A workstream can route to **multiple queues**

- ■ A workstream can use the same queue as **other workstreams**

- ■ A voice workstream can have **MULTIPLE phone numbers** through multiple voice channels

- ■ Common use case: Multiple voice channels with different phone numbers for multilingual support

Channel Perspective:

- ■ A channel belongs to **ONE workstream** (based on configuration flow)

- ■ Multiple channels of the same type can share one workstream

- **Example:** 3 different chat widget channels → all in 1 messaging workstream

■ Type Constraints

Workstream → Channel Type Constraint:

- Messaging workstream → Messaging queues only

- Voice workstream → Voice queues only

- Record workstream → Record queues only

- ■ Cross-type routing NOT allowed

- ■ Multiple workstreams of the same type CAN share the same queue

Workstream Type → Distribution Mode:

- Voice: Push mode ONLY

- Messaging: Push or Pick mode

- Record: Push or Pick mode

- ■■ Mode CANNOT be changed after creation

■ Relationship Summary Table

From	To	Cardinality	Can Reverse?
Channel	Workstream	Many-to-One	■ Yes (One workstream → Many channels)
Phone Number	Voice Channel	One-to-One	■ No (Each phone number → One voice channel only)
Voice Channel	Workstream	Many-to-One	■ Yes (One workstream ← Many voice channels with different phone numbers)
Workstream	Queue	One-to-Many	■ Yes (One queue ← Many workstreams)
Queue	Agent	Many-to-Many	■ Yes (fully bidirectional)

Phone Numbers Configuration

Relationship Architecture

Phone Number → Voice Channel → Workstream

- Each phone number is associated with exactly ONE voice channel

- Each voice channel belongs to ONE workstream

- ■ One workstream CAN have MULTIPLE voice channels (each with different phone numbers)

Configuration Steps

1. **Provision:** Acquire phone numbers via Azure Communication Services

2. **Enable:** Enable inbound calls on the phone numbers

3. **Create Voice Channels:** In the workstream, create multiple voice channels (one per phone number)

4. **Associate:** Link each phone number to its respective voice channel in the workstream

5. **Configure:** Set up language settings and voice profiles for each channel

Multiple Phone Numbers per Workstream

Use Case: Multilingual Support

- Create multiple voice channels within one workstream

- Each voice channel has a different phone number

- Each voice channel configured with a different primary language

- **Example:** +1-555-0100 (Spanish), +1-555-0200 (German), +1-555-0300 (French) all in one workstream

Single Phone Number - Multiple Languages

Alternatively, one phone number can support multiple languages with:

- Primary language (first greeting)

- Additional language options for customers

- Hold and wait music configuration per language

- Voice profile settings (voice, style, speed, pitch) per language

Constraints

- Only numbers with inbound calls enabled are available

- Each phone number can only be in ONE voice channel

- Cannot associate number already linked to another workstream

- Anonymous calls only supported via Azure Direct Routing

- Cannot edit or upgrade phone number features after connecting to workstream

■ Routing Flow Example

Complete Call Routing Journey:

1. **Customer Action:** Customer calls +1-555-0100

2. **Phone Number Lookup:** Phone Number (+1-555-0100) associated with "Premium Support Voice Workstream"

3. **Classification:** Classification Rules evaluate call context (customer type, product, history)

4. **Route-to-Queue Decision:**
- Rule 1: If customer = "Premium" → "VIP Voice Queue"
- Rule 2: If product = "Product A" → "Product A Voice Queue"
- No match → "Fallback Voice Queue"

5. **Queue Processing:** Queue receives call and applies assignment method (e.g., Highest Capacity)

6. **Agent Evaluation:** Assignment algorithm evaluates:
- Agent presence (Available, Busy, DND)
- Agent capacity (current workload vs. max)
- Agent skills (if skill matching enabled)
- Queue membership

7. **Assignment:** Call assigned to Agent with highest capacity + matching skills + allowed presence

8. **Agent Notification:** Agent receives notification and call appears in workspace with full context

9. **Post-Call:** After call ends, agent enters wrap-up time (capacity blocked for configured duration)

■■ Important Constraints

✓ Unified routing must be enabled for Record workstreams

✓ Work distribution mode (Push/Pick) CANNOT be changed after workstream creation

✓ Voice workstreams support PUSH mode ONLY

✓ Phone numbers can only be associated with ONE voice channel at a time

✓ Queues and workstreams must have matching channel types

✓ Cross-queue transfers only allowed within same channel type

✓ Bots receive conversations only in push-based workstreams

✓ Representative affinity only applies to push-type work distribution

✓ System Administrator role OR secure column permissions required for configuration

■ AI & Intelligence Features

Unified Intelligent Routing (AI-Infused)

- **Sentiment Analysis** - Real-time emotion detection

- **Predicted Effort** - AI estimates complexity

- **Skills Matching** - Intelligent capability matching

- **Presence Awareness** - Real-time availability tracking

- **Capacity Optimization** - Dynamic workload balancing

- **Customer Parameters** - Historical data evaluation

Agent Copilot Features

- **Knowledge Chat/Search** - Q&A format knowledge retrieval

- **Agent Prompting** - AI-powered suggestions

- **Email Draft Generation** - Automated response drafting

- **Case Summary Generation** - AI-generated summaries

- **Conversation Summaries** - Automatic recap

- **Live Call Transcription** - Real-time transcription

- **Call Sentiment Analysis** - Continuous monitoring

■ Supporting Components

Bots

- Connected from Copilot Studio

- Push-based workstreams only

- Pre-conversation automation

- Handoff to human agents

Templates

- Session templates

- Notification templates

- Consistent agent experience

- Customizable layouts

Context Variables

- Custom data passing

- Through routing pipeline

- Available to agents

- Integration support

Operating Hours

- Queue-based schedules

- Time zone support

- Business hours routing
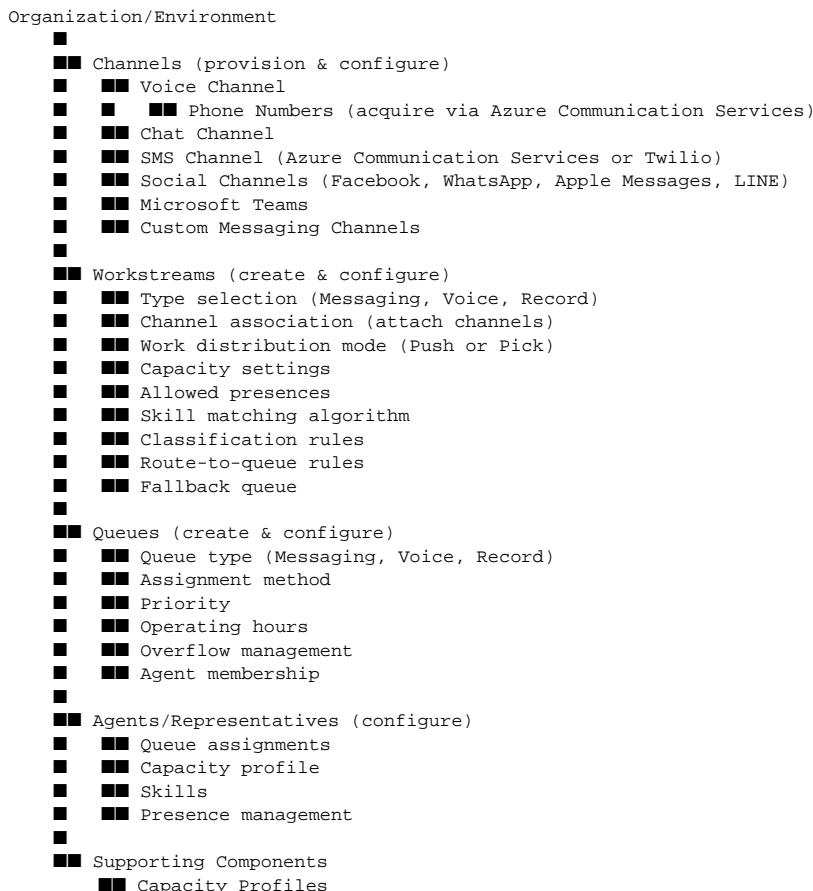
- After-hours handling

Capacity Profiles

- Define agent workload limits

- Channel-specific capacity

- Unit or profile-based

- Dynamic adjustment

Smart Assist

- AI-powered suggestions

- Knowledge article recommendations

- Quick replies library

- Real-time assistance

■ Configuration Hierarchy

```
Organization/Environment
    ■
    ■■ Channels (provision & configure)
    ■    ■■ Voice Channel
    ■    ■    ■■ Phone Numbers (acquire via Azure Communication Services)
    ■    ■■ Chat Channel
    ■    ■■ SMS Channel (Azure Communication Services or Twilio)
    ■    ■■ Social Channels (Facebook, WhatsApp, Apple Messages, LINE)
    ■    ■■ Microsoft Teams
    ■    ■■ Custom Messaging Channels
    ■
    ■■ Workstreams (create & configure)
    ■    ■■ Type selection (Messaging, Voice, Record)
    ■    ■■ Channel association (attach channels)
    ■    ■■ Work distribution mode (Push or Pick)
    ■    ■■ Capacity settings
    ■    ■■ Allowed presences
    ■    ■■ Skill matching algorithm
    ■    ■■ Classification rules
    ■    ■■ Route-to-queue rules
    ■    ■■ Fallback queue
    ■
    ■■ Queues (create & configure)
    ■    ■■ Queue type (Messaging, Voice, Record)
    ■    ■■ Assignment method
    ■    ■■ Priority
    ■    ■■ Operating hours
    ■    ■■ Overflow management
    ■    ■■ Agent membership
    ■
    ■■ Agents/Representatives (configure)
    ■    ■■ Queue assignments
    ■    ■■ Capacity profile
    ■    ■■ Skills
    ■    ■■ Presence management
    ■
    ■■ Supporting Components
         ■■ Capacity Profiles
```

- ■■ Session Templates
- ■■ Notification Templates
- ■■ Context Variables
- ■■ Operating Hours
- ■■ Bots/Agents (Copilot Studio)
- ■■ Smart Assist configurations

Summary

The D365 Contact Center architecture supports omnichannel customer service with:

- **Multiple entry points** through diverse channels

- **Intelligent routing** with AI-powered decision making

- **Flexible workstreams** supporting multilingual and multi-channel scenarios

- **Dynamic work distribution** based on skills, capacity, and presence

- **Agent empowerment** with AI-assisted tools and insights

- **Bidirectional relationships** allowing complex routing scenarios

This unified architecture enables organizations to deliver exceptional customer service across all touchpoints with optimal resource utilization and intelligent automation.

■ Documentation Sources

All information sourced from official Microsoft Learn documentation:

- [Create and manage workstreams](https://learn.microsoft.com/en-us/dynamics365/customer-service/administer/create-workstreams)

- [Create and manage queues for unified routing](https://learn.microsoft.com/en-us/dynamics365/customer-service/administer/queues-omnichannel)

- [Set up inbound calling for the voice channel](https://learn.microsoft.com/en-us/dynamics365/customer-service/administer/voice-channel-inbound-calling)

- [Manage phone numbers](https://learn.microsoft.com/en-us/dynamics365/customer-service/administer/voice-channel-manage-phone-numbers)

- [Configure multilingual voice agents](https://learn.microsoft.com/en-us/dynamics365/contact-center/administer/configure-multilingual-agents)

- [Overview of channels](https://learn.microsoft.com/en-us/dynamics365/customer-service/use/channels)

- [Contact center architecture reference](https://learn.microsoft.com/en-us/dynamics365/guidance/reference-architectures/contact-center-dynamics-365-customer-service-enterprise)

- [Omnichannel Agent Dashboard](https://learn.microsoft.com/en-us/dynamics365/customer-service/use/oc-agent-dashboard)

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