

## Entities & Relationships (ER) Overview

### Main Entities:

1. **Customer**
2. **Policy**
3. **Property**
4. **Coverage**
5. **BillingAccount**
6. **Payment**
7. **Cancellation**
8. **Claim**
9. **Agent**
10. **ChatInteraction**
11. **AI\_Metadata**

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## Entity Tables & Fields

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### 1. Customer

Field Name	Type	Description
customer_id	UUID/PK	Unique identifier
name	String	Full name
email	String	Email address
phone	String	Contact number
preferred_language	String	e.g., EN, ES, FR
communication_method	String	Chat, Email, Phone

Field Name	Type	Description
sentiment_score	Float	Based on past chats
customer_type	String	New, Returning, VIP
mailing_address	String	Mailing address

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## 2. Policy

Field Name	Type	Description
policy_id	UUID/PK	Unique policy ID
policy_number	String	Alphanumeric
customer_id	FK	Linked to Customer
policy_type	String	HO3, HO6, Auto, etc.
status	String	Active, Lapsed, Cancelled
effective_date	Date	Start date
expiration_date	Date	End date
renewal_date	Date	Renewal date
underwriting_company	String	Issuer
agent_id	FK	Linked to Agent
billing_account_id	FK	Linked to BillingAccount
term_length_months	Integer	Policy term

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## 3. Property

Field Name	Type	Description
property_id	UUID/PK	Unique property ID

Field Name	Type	Description
policy_id	FK	Linked to Policy
address	String	Property location
occupancy_type	String	Owner, Renter
dwelling_type	String	Condo, Single-Family, etc.
year_built	Integer	Year of construction
roof_type	String	Roof material
roof_age	Integer	In years
construction_type	String	Masonry, Wood, etc.
square_footage	Integer	Sq. ft.
stories	Integer	Number of floors
protection_class	String	ISO class

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#### 4. Coverage

Field Name	Type	Description
coverage_id	UUID/PK	Unique coverage ID
policy_id	FK	Linked to Policy
coverage_type	String	A, B, C, D, E, F
limit_amount	Decimal	Coverage limit
deductible_type	String	All Perils, Hurricane, etc.
deductible_amount	Decimal	Deductible
endorsements	JSON/Text	Optional coverages
discounts	JSON/Text	Applied discounts

Field Name	Type	Description
surcharges	JSON/Text	Applied surcharges
replacement_cost	Decimal	Replacement cost estimate

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## 5. BillingAccount

Field Name	Type	Description
billing_account_id	UUID/PK	Unique billing ID
policy_id	FK	Linked to Policy
billing_plan	String	Monthly, Annual, etc.
current_balance	Decimal	Current amount due
next_due_date	Date	Upcoming due date
escrow_indicator	Boolean	True if escrowed
payment_method	String	Credit Card, ACH, etc.
autopay_enabled	Boolean	Autopay status
lender_billed	Boolean	Lender-billed flag

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## 6. Payment

Field Name	Type	Description
payment_id	UUID/PK	Unique payment ID
billing_account_id	FK	Linked to BillingAccount
payment_date	Date	When payment was made
amount_paid	Decimal	Amount
payment_status	String	Success, Failed

Field Name	Type	Description
refund_issued	Boolean	Refund status
nsf_flag	Boolean	NSF occurred

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## 7. Cancellation

Field Name	Type	Description
cancellation_id	UUID/PK	Unique ID
policy_id	FK	Linked to Policy
cancellation_date	Date	Effective cancellation
reason	String	Non-payment, Request, etc.
reinstatement_status	String	Eligible, Not Eligible
reinstatement_fee	Decimal	Fee to reinstate
grace_period_days	Integer	Days allowed

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## 8. Claim

Field Name	Type	Description
claim_id	UUID/PK	Unique claim ID
policy_id	FK	Linked to Policy
claim_date	Date	Incident date
claim_type	String	Fire, Theft, Wind, etc.
amount_paid	Decimal	Paid out
adjuster_contact	String	Contact info

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## 9. Agent

Field Name	Type	Description
agent_id	UUID/PK	Unique agent ID
name	String	Agent name
contact_info	String	Phone/email
agency_affiliation	String	Agency name
license_status	String	Active, Suspended
commission_rate	Decimal	Commission %

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## 10. ChatInteraction

Field Name	Type	Description
chat_id	UUID/PK	Unique chat session
customer_id	FK	Who initiated
date	DateTime	When it occurred
intent_classification	String	Billing, Policy, Claims, etc.
ai_confidence_score	Float	Confidence level
resolved	Boolean	Was issue resolved
escalation_flag	Boolean	Escalated to human
chat_notes	Text	Optional transcript

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## 11. AI\_Metadata

Field Name	Type	Description
metadata_id	UUID/PK	Unique ID
chat_id	FK	Related ChatInteraction

Field Name	Type	Description
matched_faq_id	String	FAQ or intent
kb_article_link	String	Related knowledge article
improvement_feedback	Text	Internal notes on response quality
user_authenticated	Boolean	Login verified or not
last_sync_time	Timestamp	Last policy data sync

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### Relationships Summary

- One Customer → Many Policies
- One Policy → One Property
- One Policy → Many Coverages
- One Policy → One BillingAccount
- One BillingAccount → Many Payments
- One Policy → Many Claims
- One Policy → Zero or One Cancellation
- One Policy → One Agent
- One Customer → Many ChatInteractions
- One ChatInteraction → One AI\_Metadata