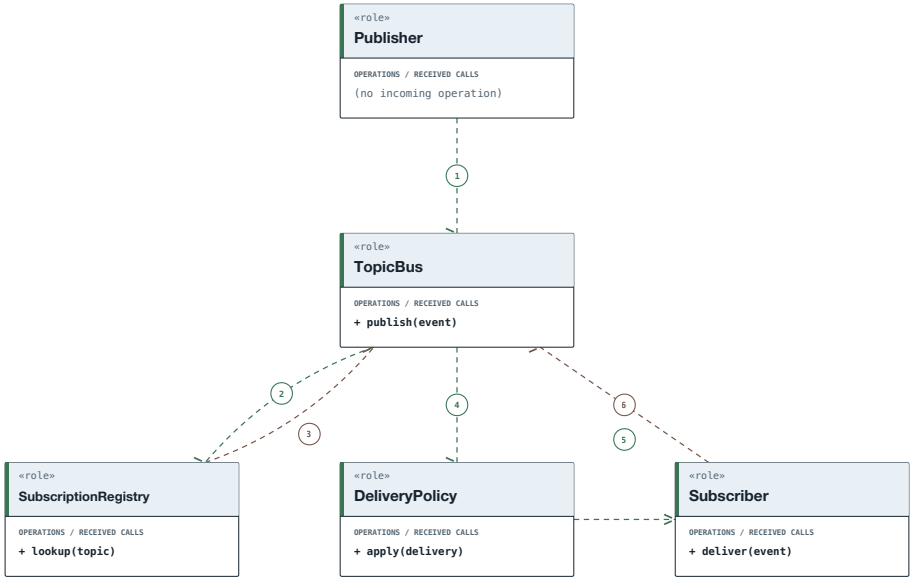
C03 Publish-subscribe

Communication / UML CLASS VIEW / ANALYTICAL MODEL

Decouple producers from consumers.

UML CLASS VIEW

dashed arrow: call dependency · brown: return/failure · analytical, not an observed trace



POINTCUT / PATTERN INTERFACE

CONTEXT	Producers and consumers are decoupled through topics.
TRIGGER	A message is published to a topic.
STRUCTURE	Topic schema, broker or bus, subscribers, and delivery policy.
EFFECT	Matching subscribers receive the message under declared ordering and durability rules.

CONTRACT / REQUIRED BEHAVIOR

REQUIRES	Topic identity and event compatibility are defined.
ENSURES	Delivery or drop is observable and subscriber selection is attributable.
INVARIANT	A subscriber cannot read a topic outside its authorization.
VIOLATION	Duplicate, late, or lost delivery follows an explicit semantic contract.

RELATIONSHIPS / ANALYTICAL CALLS

number · caller → callee · message

1 Publisher → TopicBus publish(event)
2 TopicBus → SubscriptionRegistry lookup(topic)
3 SubscriptionRegistry ↩ TopicBus return(subscribers)
4 TopicBus → DeliveryPolicy apply(delivery)
5 DeliveryPolicy → Subscriber deliver(event)
6 Subscriber ↩ TopicBus acknowledge(result)

VARIATION / TEST / NEGATIVE CONTROL

VARIATION	In-process bus, OS socket pubsub, cloud queue, and durable stream.
TEST_OBLIGATION	Test multi-subscriber delivery, no subscriber, disconnect, duplicate, and auth.
NEGATIVE_CONTROL	Directly invoking known listeners is C02 rather than C03.