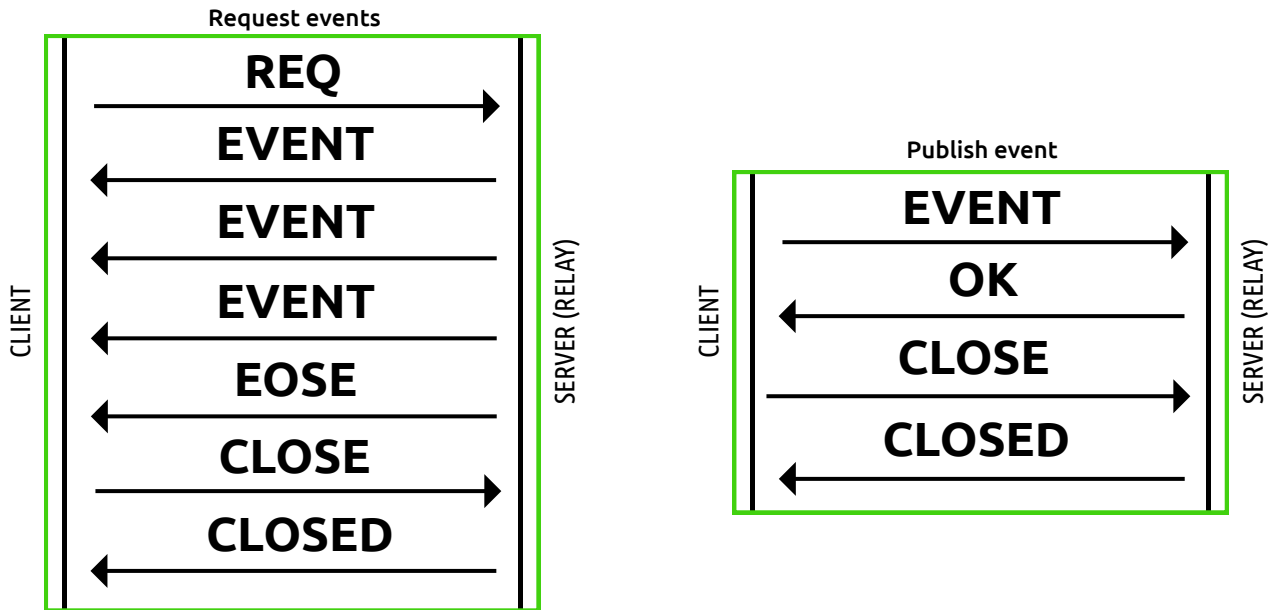


The `limit` property of a filter is only valid for the initial query and MUST be ignored afterwards. When `limit: n` is present it is assumed that the events returned in the initial query will be the last `n` events ordered by the `created_at`. Newer events should appear first, and in the case of ties the event with the lowest id (first in lexical order) should be first. It is safe to return less events than `limit` specifies, but it is expected that relays do not return (much) more events than requested so clients don't get unnecessarily overwhelmed by data.



From relay to client: sending events and notices

Relays can send 5 types of messages, which must also be JSON arrays, according to the following patterns:

- ["EVENT", <subscription_id>, <event JSON as defined above>], used to send events requested by clients.
- ["OK", <event_id>, <true|false>, <message>], used to indicate acceptance or denial of an EVENT message.
- ["EOSE", <subscription_id>], used to indicate the end of stored events and the beginning of events newly received in real-time.
- ["CLOSED", <subscription_id>, <message>], used to indicate that a subscription was ended on the server side.
- ["NOTICE", <message>], used to send human-readable error messages or other things to clients.

This NIP defines no rules for how NOTICE messages should be sent or treated.

EVENT messages MUST be sent only with a subscription ID related to a subscription previously initiated by the client (using the REQ message above).

OK messages MUST be sent in response to EVENT messages received from clients, they must have the 3rd parameter set to true when an event has been accepted by the relay, false otherwise. The 4th parameter MUST always be present, but MAY be an empty string when the 3rd is true, otherwise it MUST be a string formed by a machine-readable single-word prefix followed by a : and then a human-readable message. Some examples:

- ["OK", "b1a649ebe8...", true, ""]
- ["OK", "b1a649ebe8...", true, "pow: difficulty 25>=24"]
- ["OK", "b1a649ebe8...", true, "duplicate: already have this event"]
- ["OK", "b1a649ebe8...", false, "blocked: you are banned from posting here"]
- ["OK", "b1a649ebe8...", false, "blocked: please register your pubkey at https://my-expensive-relay.example.com"]
- ["OK", "b1a649ebe8...", false, "rate-limited: slow down there chief"]
- ["OK", "b1a649ebe8...", false, "invalid: event creation date is too far off from the current time"]
- ["OK", "b1a649ebe8...", false, "pow: difficulty 26 is less than 30"]
- ["OK", "b1a649ebe8...", false, "error: could not connect to the database"]

CLOSED messages MUST be sent in response to a REQ when the relay refuses to fulfill it. It can also be sent when a relay decides to kill a subscription on its side before a client has disconnected or sent a CLOSE. This message uses the same pattern of OK messages with the machine-readable prefix and human-readable message. Some examples:

- ["CLOSED", "sub1", "unsupported: filter contains unknown elements"]
- ["CLOSED", "sub1", "error: could not connect to the database"]
- ["CLOSED", "sub1", "error: shutting down idle subscription"]

The standardized machine-readable prefixes for OK and CLOSED are: duplicate, pow, blocked, rate-limited, invalid, and error for when none of that fits.