

Extraction Report: 10_api_specification

Property	Value
Domain	API
Format	.json
Text length	1,993 chars
Sentences	31

Entities

Spacy NER: 29 entities (479ms)

Entity	Label	Score
Bearer	ORG	
Tokens	GPE	
3600 seconds	TIME	
1000	CARDINAL	
API	ORG	
429	CARDINAL	
Query Parameters	PERSON	
20	CARDINAL	
max	PERSON	
100	CARDINAL	
200	CARDINAL	
Content-Type	ORG	
integer	PERSON	
integer }		
Response	PERSON	
401	CARDINAL	
2	CARDINAL	
8	CARDINAL	
201	CARDINAL	
d.	NORP	
400	CARDINAL	
Email	PERSON	
UUID	ORG	
204	CARDINAL	
403	CARDINAL	
404	CARDINAL	
January 2026	DATE	

Gliner NER: 73 entities (424ms)

Entity	Label	Score
https://api.example.com/v2	protocol	0.64
Authentication	constraint	0.45
Bearer token	requirement	0.94
required	constraint	0.39
all endpoints	constraint	0.37
1000 requests per minute	metric	0.78
API key	requirement	0.84
Too Many Requests	constraint	0.79

Entity	Label	Score
users	database_table	0.66
paginated list	data_structure	0.79
limit	constraint	0.82
Number of users per page	constraint	0.72
offset	constraint	0.72
Pagination offset	constraint	0.76
active	constraint	0.73
inactive	constraint	0.77
suspended	constraint	0.70
Content-Type: application/json	protocol	0.49
User	database_table	0.42
total": integer	database_column	0.33
limit": integer	database_column	0.31
Unauthorized	constraint	0.68
expired token	constraint	0.42
Rate limit	constraint	0.92
POST /users	database_table	0.42
Creates a new user account	action	0.53
email	requirement	0.74
Must be a valid email	requirement	0.94

Stanza NER: 18 entities (1162ms)

Entity	Label	Score
3600 seconds	TIME	
1000	CARDINAL	
429	CARDINAL	
20	CARDINAL	
100	CARDINAL	
200	CARDINAL	
401	CARDINAL	
2	CARDINAL	
8	CARDINAL	
201	CARDINAL	
400	CARDINAL	
409	CARDINAL	
204	CARDINAL	
403	CARDINAL	
404	CARDINAL	
January 2026	DATE	

Flair NER: 2 entities (176ms)

Entity	Label	Score
OpenAPI 3.1	MISC	0.99
User Management API	MISC	0.90

Relations (SRL)

33 SRL frames (81ms)

Verb	Agent	Patient	Other
openapi v2.0	https://api.example.com/v2	3.1 Specification	

Authenticata | Base URL | | | token | Bearer | | | require | | | ARG2=for all endpoints | | expire | Tokens | | ARGM-TMP=after 3600 seconds | | exceed | | limit | | | return | | 429 Too Many Requests | | offset | Pagination | | | active|inactive|suspende | - status (string , optional , enum : | Filter by user status | | | exceed | Rate limit | | | indicate | Retry - After header | wait time | | | create | POST /users Description : | new user account | | | require | | - email (string , | | | be | Request Body (required): - email | valid email | ARGM-MOD=must | | | be | | unique across system | ARGM-MOD=must | | require | name (string , | Minimum 2 characters , maximum 100 chara | | | require | - password (string , | Minimum 8 characters | | | include | | uppercase , lowercase , and digit | ARGM-MOD=must | | create | User | | | generate | | i d. Response 400 | | | exist | Email | | | delete | | user | ARG2=by ID | | require | | admin role | | | require | Path Parameters : - i d (UUID , | The user ID to delete | | | delete | user ID | | |

Enriched Extraction (batch-enrich)

Single GPU call: 73 entities, 31 roles, 33 SRL frames (895ms)

Latency Comparison

Method	Latency
Separate (GLiNER 424ms + GLiClass 398ms + SRL 81ms)	903ms
batch-enrich (unified)	895ms
Speedup	1.0x

Per-Sentence Enriched Results (sample)

Sentence	Entities	Role	SRL Frames
OpenAPI 3.1 Specification — User Management API v2.0			

Base U | 5 | Entity (0.23) | 4 | | Tokens expire after 3600 seconds. | 0 | Condition (0.14) | 1 | | Rate limiting: 1000 requests per minute per API key. | 2 | Condition (0.23) | 0 | | Exceeding the limit returns 429 Too Many Requests. | 1 | Condition (0.21) | 2 | | GET /users Description: Returns a paginated list of users. | 3 | Entity (0.36) | 0 | | Query Parameters: - limit (integer, optional, default: 2 | 4 | Variable (0.14) | 1 | | - status (string, optional, enum: active|inactive|suspended) | 3 | State (0.94) | 1 | | Response 200: Content-Type: application/json Body: { | 5 | Object (0.62) | 0 | | integer } Response 401: Unauthorized. | 1 | Condition (0.29) | 0 | | Invalid or expired token. | 1 | Condition (0.24) | 0 | | Response 429: Rate limit exceeded. | 1 | Condition (0.23) | 1 | | Retry-After header indicates wait time. | 0 | Condition (0.25) | 1 | | POST /users Description: Creates a new user account. | 2 | Entity (0.25) | 1 | | Request Body (required): - email (string, required): Mus | 2 | Requirement (0.42) | 2 | | Must be unique across the system. | 2 | Variable (0.21) | 1 |

Entity Type Distribution (enriched)

Label	Count
constraint	24
database_column	10
action	10
database_table	8
role	7

Label	Count
requirement	6
protocol	3
system_component	3
metric	1
data_structure	1

Role Distribution (enriched)

Role	Count
Condition (State)	13
Entity (Core)	5
Variable (Scientific)	2
Object (Event)	2
Requirement (Causal)	2
Permission (Normative)	2
Action (Event)	2
State (State)	1
Exception (Discourse)	1
Prohibition (Normative)	1

QLang Sentences

Gliclass: 31 classifications (398ms)

Causal (2)

- [Requirement] (0.42) Request Body (required):
 - email (string, required): Must be a valid email....
- [Requirement] (0.21) All clients must migrate to v2 endpoints....

Core (5)

- [Entity] (0.23) OpenAPI 3.1 Specification — User Management API v2.0

Base URL: <https://api.exam...>

- [Entity] (0.36) GET /users Description: Returns a paginated list of users....
- [Entity] (0.25) POST /users Description: Creates a new user account....
- [Entity] (0.15) Response 201: User created....
- [Entity] (0.17) Deprecation Notice: The v1 endpoints /users/list and /users/create are deprecate...

Discourse (1)

- [Exception] (0.93) Returns { "errors": [{"field": string, "message": string}] }....

Event (4)

- [Object] (0.62) Response 200: Content-Type: application/json Body: { "users": [User], "t...
- [Object] (0.92) Returns the User object with generated id. Response 400: Validation error....
- [Action] (0.78) DELETE /users/{id} Description: Deletes a user by ID....
- [Action] (0.19) Response 204: User deleted successfully....

Normative (3)

- [Permission] (0.16) - name (string, required): Minimum 2 characters, maximum 100 characters.
 - r...
- [Prohibition] (0.83) Response 403: Forbidden....
- [Permission] (0.43) Only admins can delete users....

Scientific (2)

- [Variable] (0.14) Query Parameters:
 - limit (integer, optional, default: 20, max: 100): Number...
- [Variable] (0.21) Must be unique across the system....

State (14)

- [Condition] (0.14) Tokens expire after 3600 seconds....
- [Condition] (0.23) Rate limiting: 1000 requests per minute per API key....
- [Condition] (0.21) Exceeding the limit returns 429 Too Many Requests....
- [State] (0.94) - status (string, optional, enum: active|inactive|suspended): Filter by user sta...
- [Condition] (0.29) integer } Response 401: Unauthorized....
- [Condition] (0.24) Invalid or expired token....
- [Condition] (0.23) Response 429: Rate limit exceeded....
- [Condition] (0.25) Retry-After header indicates wait time....

Qualtron: 7 classifications (11989ms)

Causal (1)

- [Requirement] (0.95) - name (string, required): Minimum 2 characters, maximum 100 characters....

Mission (1)

- [FailureSignal] (0.95) Response 429: Rate limit exceeded....

Normative (1)

- [Obligation] (0.95) All clients must migrate to v2 endpoints....

Programming (1)

- [Type] (0.95) OpenAPI 3.1 Specification — User Management API v2.0...

Scientific (1)

- [Variable] (0.95) Query Parameters:
 - limit (integer, optional, default: 20, max: 100): Number...

State (2)

- [Condition] (0.95) Email already exists....
- [State] (0.90) No content returned....

QHG Process Models

FSM (3780ms)

Could not parse structured output

None

BPMN (119ms)

Could not parse structured output

```
{"elements": [], "flows": []}
```

DFG (8951ms)

Could not parse structured output

None

KnowledgeState (3358ms)

Could not parse structured output

None

CNL / QNR2 Rules

2 rule patterns detected

Obligation (2)

- must include uppercase, lowercase, and digit.
- must migrate to v2 endpoints.

Heuristic Facts & Rules

0 facts, 8 rules

Rules (sample)

- [obligation] Authentication: Bearer token required for all endpoints. Tokens expire after 3600 seconds....
- [obligation] Request Body (required):...
- [obligation] - email (string, required): Must be a valid email. Must be unique across the system....
- [obligation] - name (string, required): Minimum 2 characters, maximum 100 characters....
- [obligation] - role (string, required, enum: admin|editor|viewer): User role assignment....
- [obligation] - password (string, required): Minimum 8 characters, must include uppercase, lowercase, and digit....
- [obligation] - id (UUID, required): The user ID to delete....
- [obligation] January 2026 and will be removed in v3. All clients must migrate to v2 endpoints....

Topics (Gensim LDA)

- **Topic 0:** {'word': 'user', 'weight': 0.0929}, {'word': 'response', 'weight': 0.0571}, {'word': 'delete', 'weight': 0.0571}, {'word': 'users', 'weight': 0.0393}, {'word': 'specification', 'weight': 0.0214}, {'word': 'openapi', 'weight': 0.0214}, {'word': 'management', 'weight': 0.0214}, {'word': 'content', 'weight': 0.0214}
- **Topic 1:** {'word': 'string', 'weight': 0.0704}, {'word': 'required', 'weight': 0.0591}, {'word': 'user', 'weight': 0.0477}, {'word': 'email', 'weight': 0.0364}, {'word': 'characters', 'weight': 0.0364}, {'word': 'response', 'weight': 0.0364}, {'word': 'returns', 'weight': 0.025}, {'word': 'minimum', 'weight': 0.025}
- **Topic 2:** {'word': 'endpoints', 'weight': 0.0561}, {'word': 'per', 'weight': 0.0386}, {'word': 'requests', 'weight': 0.0386}, {'word': 'users', 'weight': 0.0386}, {'word': 'api', 'weight': 0.0211}, {'word': 'required', 'weight': 0.0211}, {'word': 'returns', 'weight': 0.0211}, {'word': 'seconds', 'weight': 0.0211}
- **Topic 3:** {'word': 'users', 'weight': 0.0088}, {'word': 'integer', 'weight': 0.0087}, {'word': 'optional', 'weight': 0.0087}, {'word': 'endpoints', 'weight': 0.0087}, {'word': 'limit', 'weight': 0.0087}, {'word': 'offset', 'weight': 0.0087}, {'word': 'response', 'weight': 0.0087}, {'word': 'clients', 'weight': 0.0087}
- **Topic 4:** {'word': 'integer', 'weight': 0.0611}, {'word': 'users', 'weight': 0.0494}, {'word': 'response', 'weight': 0.0377}, {'word': 'limit', 'weight': 0.0376}, {'word': 'offset', 'weight': 0.0376}, {'word': 'optional', 'weight': 0.0376}, {'word': 'user', 'weight': 0.0259}, {'word': 'default', 'weight': 0.0259}

Summary (Sumy LexRank)

Authentication: Bearer token required for all endpoints. Response 200: Content-Type: application/json
Body: { "users": [User], "total": integer, "limit": integer, "offset": integer } Response 401: Unauthorized. Request Body (required): - email (string, required): Must be a valid email. Returns { "errors": [{"field": string, "message": string}] }. Response 204: User deleted successfully.