

# RADIANT Error Codes Reference

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2025-12-25

## Contents

<b>RADIANT Error Codes Reference</b>	1
Overview	1
Error Code Format	2
Authentication Errors (1xxx)	2
Authorization Errors (2xxx)	2
Validation Errors (3xxx)	3
Resource Errors (4xxx)	3
Rate Limiting Errors (5xxx)	3
AI/Model Errors (6xxx)	4
Billing Errors (7xxx)	4
Storage Errors (8xxx)	4
Internal Errors (9xxx)	5
Usage in Code	5
TypeScript/JavaScript	5
Response Format	5
Client Handling	6
Retry Logic	6
Error Display	6
Adding New Error Codes	6
See Also	7

## RADIANT Error Codes Reference

Standardized error codes for consistent API responses across all RADIANT services.

### Overview

All RADIANT errors follow a consistent format:

```
{  
    "error": {  
        "code": "RADIANT_AUTH_1001",  
        "message": "Invalid authentication token. Please sign in again.",  
        "category": "authentication",  
        "retryable": false,  
    }  
}
```

```

        "timestamp": "2024-12-25T10:30:00.000Z"
    }
}

```

## Error Code Format

RADIANT\_<CATEGORY>\_<NUMBER>

- **RADIANT** - Prefix for all error codes
  - **CATEGORY** - Short category identifier (AUTH, VAL, RES, etc.)
  - **NUMBER** - Unique 4-digit number within category
- 

## Authentication Errors (1xxx)

Errors related to authentication and identity.

Code	HTTP	Retryable	Description
RADIANT_AUTH_10001			Invalid authentication token
RADIANT_AUTH_10002			Token has expired
RADIANT_AUTH_10003			Missing authentication token
RADIANT_AUTH_10004			Invalid API key
RADIANT_AUTH_10005			API key has expired
RADIANT_AUTH_10006			API key has been revoked
RADIANT_AUTH_10007			Insufficient API key scope
RADIANT_AUTH_10008			Multi-factor authentication required
RADIANT_AUTH_10009			Session has expired

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## Authorization Errors (2xxx)

Errors related to permissions and access control.

Code	HTTP	Retryable	Description
RADIANT_AUTHZ_2001	403		Forbidden - access denied
RADIANT_AUTHZ_2002	403		Tenant ID mismatch
RADIANT_AUTHZ_2003	403		Required role not assigned
RADIANT_AUTHZ_2004	403		Permission denied
RADIANT_AUTHZ_2005	403		Resource access denied
RADIANT_AUTHZ_2006	403		Subscription tier insufficient

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## Validation Errors (3xxx)

Errors related to input validation.

Code	HTTP	Retryable	Description
RADIANT_VAL_3001	400		Required field is missing
RADIANT_VAL_3002	400		Invalid field format
RADIANT_VAL_3003	400		Value out of allowed range
RADIANT_VAL_3004	400		Invalid data type
RADIANT_VAL_3005	400		Constraint violation
RADIANT_VAL_3006	400		Schema mismatch
RADIANT_VAL_3007	400		Invalid JSON in request body
RADIANT_VAL_3008	400		Maximum length exceeded
RADIANT_VAL_3009	400		Minimum length required

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## Resource Errors (4xxx)

Errors related to resources and entities.

Code	HTTP	Retryable	Description
RADIANT_RES_4001	404		Resource not found
RADIANT_RES_4002	409		Resource already exists
RADIANT_RES_4003	410		Resource has been deleted
RADIANT_RES_4004	423		Resource is locked
RADIANT_RES_4005	409		Resource conflict
RADIANT_RES_4006	429		Resource quota exceeded

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## Rate Limiting Errors (5xxx)

Errors related to rate limiting and throttling.

Code	HTTP	Retryable	Description
RADIANT_RATE_5001	429		Rate limit exceeded
RADIANT_RATE_5002	429		Tenant rate limit exceeded
RADIANT_RATE_5003	429		User rate limit exceeded
RADIANT_RATE_5004	429		API key rate limit exceeded
RADIANT_RATE_5005	429		Model rate limit exceeded
RADIANT_RATE_5006	429		Burst limit exceeded

**Retry-After Header:** Rate limit errors include `Retry-After` header with seconds to wait.

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## AI/Model Errors (6xxx)

Errors related to AI models and inference.

Code	HTTP	Retryable	Description
RADIANT_AI_6001	404		Model not found
RADIANT_AI_6002	503		Model temporarily unavailable
RADIANT_AI_6003	503		Model overloaded
RADIANT_AI_6004	502		AI provider error
RADIANT_AI_6005	400		Context length exceeded
RADIANT_AI_6006	400		Content filtered by safety
RADIANT_AI_6007	400		Invalid AI request
RADIANT_AI_6008	500		Streaming error
RADIANT_AI_6009	504		AI request timeout
RADIANT_AI_6010	503		Model is cold (warming up)

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## Billing Errors (7xxx)

Errors related to billing, credits, and subscriptions.

Code	HTTP	Retryable	Description
RADIANT_BILL_7001	402		Insufficient credits
RADIANT_BILL_7002	402		Payment required
RADIANT_BILL_7003	402		Payment failed
RADIANT_BILL_7004	402		Subscription expired
RADIANT_BILL_7005	402		Subscription cancelled
RADIANT_BILL_7006	400		Invalid coupon code
RADIANT_BILL_7007	429		Usage quota exceeded

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## Storage Errors (8xxx)

Errors related to file storage.

Code	HTTP	Retryable	Description
RADIANT_STOR_8001	413		Storage quota exceeded
RADIANT_STOR_8002	413		File too large
RADIANT_STOR_8003	415		Invalid file type
RADIANT_STOR_8004	500		Upload failed
RADIANT_STOR_8005	404		File not found

## Internal Errors (9xxx)

Internal server errors and system failures.

Code	HTTP	Retryable	Description
RADIANT_INT_9001	500		Internal server error
RADIANT_INT_9002	500		Database error
RADIANT_INT_9003	500		Cache error
RADIANT_INT_9004	500		Queue processing error
RADIANT_INT_9005	503		Service unavailable
RADIANT_INT_9006	502		Dependency failure
RADIANT_INT_9007	500		Configuration error
RADIANT_INT_9008	504		Request timeout

## Usage in Code

### TypeScript/JavaScript

```
import {
    ErrorCodes,
    RadianError,
    createNotFoundError,
    createValidationError,
    isRetryableError
} from '@radian/shared';

// Using factory functions (recommended)
throw createNotFoundError('User', userId);
throw createValidationError('Email is required', 'email');

// Direct construction
throw new RadianError(ErrorCodes.AUTH_INVALID_TOKEN, 'Custom message', {
    details: { tokenPrefix: 'rad_...' },
    requestId: context.awsRequestId,
});

// Check if retryable
if (isRetryableError(error.code)) {
    // Implement retry logic
}
```

### Response Format

```
// RadianError automatically formats responses
const error = new RadianError(ErrorCodes.RESOURCE_NOT_FOUND);
return error.toResponse();
```

```
// Returns:  
// {  
//   statusCode: 404,  
//   headers: { 'Content-Type': 'application/json' },  
//   body: '{"error":{"code":"RADIANT_RES_4001","message":"Resource not found.","category":"re  
// }
```

---

## Client Handling

### Retry Logic

```
async function callWithRetry(fn: () => Promise<Response>, maxRetries = 3) {  
  for (let i = 0; i < maxRetries; i++) {  
    try {  
      const response = await fn();  
      if (response.ok) return response;  
  
      const error = await response.json();  
      if (!error.error.retryable) throw error;  
  
      const retryAfter = response.headers.get('Retry-After') || '5';  
      await sleep(parseInt(retryAfter) * 1000);  
    } catch (e) {  
      if (i === maxRetries - 1) throw e;  
    }  
  }  
}
```

### Error Display

```
function getUserMessage(error: RadiantError): string {  
  // Error codes include user-friendly messages  
  return error.message;  
}  
  
function shouldShowRetryButton(error: RadiantError): boolean {  
  return error.retryable;  
}
```

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## Adding New Error Codes

1. Add the code to packages/shared/src/errors/codes.ts:

```
export const ErrorCodes = {  
  // ... existing codes  
  MY_NEW_ERROR: 'RADIANT_CAT_NNNN',  
} as const;
```

2. Add metadata:

```
export const ErrorCodeMetadata: Record<ErrorCode, {...}> = {  
  // ... existing metadata  
  [ErrorCodes.MY_NEW_ERROR]: {  
    httpStatus: 400,  
    category: 'category',  
    retryable: false,  
    userMessage: 'User-friendly error message.',  
  },  
};
```

3. Update this documentation.

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## See Also

- [API Reference](#)
- [Contributing Guide](#)
- [Troubleshooting](#)