# Asset Management API Documentation

## Overview

The Asset Management API provides comprehensive CRUD operations for managing asset costs, lifecycle, operational expenses, and risk mapping. All endpoints require authentication and appropriate permissions.

## Base URL

http://localhost:3000/api/v1/asset-management

## Authentication

All endpoints require a valid JWT token in the Authorization header:

Authorization: Bearer <your-jwt-token>

## Permissions

Asset Management operations require the following permissions: - asset\_management:create - Create new records - asset\_management:read - View records - asset\_management:update - Update existing records - asset\_management:delete - Delete records

## Endpoints

### 💰 Asset Cost Management

#### Create Cost Record

POST /costs

**Request Body:**

{  
 "costType": "purchase",  
 "amount": 15000.00,  
 "currency": "USD",  
 "billingCycle": "one\_time",  
 "vendor": "Dell Technologies",  
 "contractNumber": "DELL-2025-001",  
 "purchaseOrder": "PO-2025-0123",  
 "costCenter": "IT-INFRASTRUCTURE",  
 "budgetCode": "CAPEX-2025-Q1",  
 "notes": "Server purchase for data center expansion",  
 "assetUuid": "550e8400-e29b-41d4-a716-446655440000"  
}

**Response:**

{  
 "message": "Cost record created successfully",  
 "data": {  
 "id": 1,  
 "costType": "purchase",  
 "amount": "15000.00",  
 "vendor": "Dell Technologies",  
 "createdAt": "2025-07-16T12:00:00.000Z"  
 }  
}

#### Get Cost Records

GET /costs?page=1&limit=50&costType=purchase&vendor=Dell

**Query Parameters:** - page (integer): Page number (default: 1) - limit (integer): Items per page (default: 50, max: 100) - sortBy (string): Sort field (default: createdAt) - sortOrder (string): asc or desc (default: desc) - costType (string): Filter by cost type - billingCycle (string): Filter by billing cycle - vendor (string): Filter by vendor name - costCenter (string): Filter by cost center - minAmount (number): Minimum amount filter - maxAmount (number): Maximum amount filter - dateFrom (date): Start date filter - dateTo (date): End date filter - assetUuid (uuid): Filter by asset UUID

**Response:**

{  
 "data": [  
 {  
 "id": 1,  
 "costType": "purchase",  
 "amount": "15000.00",  
 "currency": "USD",  
 "vendor": "Dell Technologies",  
 "assetHostname": "server-01.example.com",  
 "assetIpv4": "192.168.1.10"  
 }  
 ],  
 "pagination": {  
 "page": 1,  
 "limit": 50,  
 "total": 100,  
 "pages": 2  
 }  
}

#### Get Specific Cost Record

GET /costs/{id}

#### Update Cost Record

PUT /costs/{id}

#### Delete Cost Record

DELETE /costs/{id}

### 🔄 Asset Lifecycle Management

#### Create Lifecycle Record

POST /lifecycle

**Request Body:**

{  
 "purchaseDate": "2025-01-15",  
 "warrantyEndDate": "2028-01-15",  
 "manufacturerEolDate": "2030-01-15",  
 "internalEolDate": "2029-06-30",  
 "replacementCycleMonths": 48,  
 "estimatedReplacementCost": 18000.00,  
 "replacementBudgetYear": 2029,  
 "replacementBudgetQuarter": 2,  
 "replacementNotes": "Consider cloud migration before replacement",  
 "assetUuid": "550e8400-e29b-41d4-a716-446655440000"  
}

#### Get Lifecycle Records

GET /lifecycle?warrantyExpiring=true&eolApproaching=true

**Query Parameters:** - warrantyExpiring (boolean): Assets with warranty expiring in 90 days - eolApproaching (boolean): Assets with EOL in 180 days - replacementDue (boolean): Assets due for replacement - budgetYear (integer): Filter by replacement budget year - assetUuid (uuid): Filter by asset UUID

**Response includes calculated fields:**

{  
 "data": [  
 {  
 "id": 1,  
 "purchaseDate": "2025-01-15",  
 "warrantyEndDate": "2028-01-15",  
 "daysUntilWarrantyExpiry": 1095,  
 "daysUntilEol": 1460,  
 "assetHostname": "server-01.example.com"  
 }  
 ]  
}

### 💡 Operational Costs Management

#### Create Operational Cost Record

POST /operational-costs

**Request Body:**

{  
 "yearMonth": "2025-01-01",  
 "powerCost": 245.50,  
 "spaceCost": 150.00,  
 "networkCost": 89.99,  
 "storageCost": 125.00,  
 "laborCost": 500.00,  
 "otherCosts": 25.00,  
 "notes": "January 2025 operational costs",  
 "assetUuid": "550e8400-e29b-41d4-a716-446655440000"  
}

#### Get Operational Costs

GET /operational-costs?yearFrom=2025-01-01&yearTo=2025-12-31

**Query Parameters:** - yearMonth (date): Specific month filter - yearFrom (date): Start date range - yearTo (date): End date range - assetUuid (uuid): Filter by asset UUID - costType (string): Filter by cost type (power, space, network, storage, labor, other)

**Response includes calculated total:**

{  
 "data": [  
 {  
 "id": 1,  
 "yearMonth": "2025-01-01",  
 "powerCost": "245.50",  
 "spaceCost": "150.00",  
 "totalCost": "1135.49",  
 "assetHostname": "server-01.example.com"  
 }  
 ]  
}

### 📊 Analytics

#### Get Cost Analytics

GET /analytics/costs/{assetUuid}?startDate=2025-01-01&endDate=2025-12-31

**Response:**

{  
 "message": "Cost analytics retrieved successfully",  
 "data": {  
 "costByType": [  
 {  
 "costType": "purchase",  
 "totalAmount": "15000.00",  
 "count": "1"  
 },  
 {  
 "costType": "maintenance",  
 "totalAmount": "2500.00",  
 "count": "3"  
 }  
 ],  
 "operationalTrend": [  
 {  
 "yearMonth": "2025-01-01",  
 "totalCost": "1135.49"  
 },  
 {  
 "yearMonth": "2025-02-01",  
 "totalCost": "1089.23"  
 }  
 ],  
 "summary": {  
 "totalCosts": 17500.00,  
 "totalRecords": 4  
 }  
 }  
}

## Data Types and Enums

### Cost Types

* purchase - Asset purchase
* lease - Leasing costs
* maintenance - Maintenance and repairs
* support - Support contracts
* license - Software licenses
* subscription - Subscription services
* upgrade - Hardware/software upgrades
* repair - Repair costs
* insurance - Insurance premiums
* other - Other costs

### Billing Cycles

* one\_time - One-time payment
* monthly - Monthly billing
* quarterly - Quarterly billing
* semi\_annual - Semi-annual billing
* annual - Annual billing
* biennial - Biennial billing

## Error Responses

### 400 Bad Request

{  
 "error": "Validation failed",  
 "details": [  
 {  
 "message": "\"amount\" must be a positive number",  
 "path": ["amount"],  
 "type": "number.positive"  
 }  
 ]  
}

### 401 Unauthorized

{  
 "error": "Unauthorized"  
}

### 403 Forbidden

{  
 "error": "Insufficient permissions"  
}

### 404 Not Found

{  
 "error": "Cost record not found"  
}

### 500 Internal Server Error

{  
 "error": "Internal server error"  
}

## Usage Examples

### Track Server Purchase

curl -X POST http://localhost:3000/api/v1/asset-management/costs \  
 -H "Authorization: Bearer YOUR\_TOKEN" \  
 -H "Content-Type: application/json" \  
 -d '{  
 "costType": "purchase",  
 "amount": 15000.00,  
 "vendor": "Dell Technologies",  
 "assetUuid": "550e8400-e29b-41d4-a716-446655440000"  
 }'

### Get Assets with Expiring Warranties

curl "http://localhost:3000/api/v1/asset-management/lifecycle?warrantyExpiring=true" \  
 -H "Authorization: Bearer YOUR\_TOKEN"

### Track Monthly Operational Costs

curl -X POST http://localhost:3000/api/v1/asset-management/operational-costs \  
 -H "Authorization: Bearer YOUR\_TOKEN" \  
 -H "Content-Type: application/json" \  
 -d '{  
 "yearMonth": "2025-01-01",  
 "powerCost": 245.50,  
 "spaceCost": 150.00,  
 "assetUuid": "550e8400-e29b-41d4-a716-446655440000"  
 }'

### Get Cost Analytics

curl "http://localhost:3000/api/v1/asset-management/analytics/costs/550e8400-e29b-41d4-a716-446655440000" \  
 -H "Authorization: Bearer YOUR\_TOKEN"

## Best Practices

1. **Cost Tracking**: Use consistent cost types and billing cycles
2. **Lifecycle Management**: Set internal EOL dates before manufacturer EOL
3. **Operational Costs**: Update monthly for accurate TCO calculations
4. **Analytics**: Use date ranges for meaningful cost analysis
5. **Permissions**: Implement proper RBAC for sensitive financial data