Operational Data Database Tasks

Setup Tasks

Database Creation

- [ ] Create operational_data database
- [ ] Set up database user permissions
- [ ] Configure database connection parameters
- [ ] Set up database backup procedures
- [ ] Test database connectivity

Table Creation

- [ ] Create system_metrics table
- [ ] Create api_usage table
- [ ] Create error_logs table
- [ ] Create pipeline_status table
- [ ] Create handler_metrics table
- [ ] Create alert_history table
- [ ] Create scheduled_jobs table

Index Optimization

- [ ] Create timestamp-based indexes
- [ ] Create component-based indexes
- [ ] Create performance monitoring indexes
- [ ] Create alert tracking indexes
- [ ] Validate index effectiveness

View Creation

- [ ] Create system_health view
- [ ] Create api_performance view
- [ ] Create error_summary view
- [ ] Create pipeline_health view
- [ ] Create handler_performance view
- [ ] Create active_alerts view
- [ ] Create job_status view

Testing Tasks

Connection Tests

- [ ] Test database connectivity
- [ ] Validate user permissions
- [ ] Test connection pooling
- [ ] Verify SSL connections

- [ ] Test failover mechanisms

Data Integrity Tests

- [ ] Test metric data accuracy
- [ ] Validate timestamp consistency
- [ ] Test error log completeness
- [ ] Verify pipeline status tracking
- [ ] Test alert correlation

Performance Tests

- [ ] Measure query response times
- [ ] Test concurrent monitoring operations
- [ ] Validate large dataset queries
- [ ] Test real-time data ingestion
- [ ] Monitor memory usage

Monitoring Tests

- [ ] Test system health monitoring
- [ ] Validate API performance tracking
- [ ] Test error detection and logging
- [ ] Verify alert generation
- [ ] Test dashboard data feeds

Configuration Tasks

Monitoring Setup

- [ ] Configure system metrics collection
- [ ] Set up API usage tracking
- [ ] Configure error logging
- [ ] Set up performance monitoring
- [ ] Configure alert thresholds

Data Retention

- [ ] Set up data archiving policies
- [ ] Configure log rotation
- [ ] Set up data cleanup procedures
- [ ] Configure backup schedules
- [ ] Set up data compression

Data Management Tasks

Metrics Collection

- [ ] Set up real-time metrics ingestion
- [ ] Configure batch metrics processing
- [ ] Set up data validation rules
- [ ] Implement data quality checks

- [ ] Set up data aggregation

Alert Management

- [ ] Set up alert generation rules
- [ ] Configure alert escalation
- [ ] Set up notification systems
- [ ] Implement alert correlation
- [ ] Set up alert suppression

Optimization Tasks

Performance Tuning

- [ ] Optimize metrics queries
- [ ] Implement data partitioning
- [ ] Configure query caching
- [ ] Set up read replicas
- [ ] Monitor resource usage

Monitoring Dashboard

- [ ] Set up real-time dashboards
- [ ] Configure performance metrics
- [ ] Set up error tracking
- [ ] Create usage analytics
- [ ] Set up alerting systems

Documentation Tasks

Technical Documentation

- [ ] Document database schema
- [ ] Create monitoring procedures
- [ ] Document alert configurations
- [ ] Create troubleshooting guide
- [ ] Document best practices

Operational Documentation

- [ ] Create monitoring runbooks
- [ ] Document escalation procedures
- [ ] Create maintenance guides
- [ ] Document backup procedures
- [ ] Create disaster recovery plans

Completion Criteria

Functional Requirements

- [ ] All monitoring systems operational
- [ ] Real-time data collection working

- [ ] Alert systems functional
- [ ] Dashboard data feeds active
- [ ] Performance tracking accurate

Non-Functional Requirements

- [ ] Query response time < 3 seconds
- [ ] 99.9% data collection uptime
- [ ] Real-time alert delivery
- [ ] Data retention compliance
- [ ] Backup procedures tested

Validation Checklist

Pre-Production

- [ ] All tests passing
- [ ] Performance benchmarks met
- [ ] Alert systems tested
- [ ] Documentation reviewed
- [ ] Monitoring configured

Production Ready

- [ ] Load testing completed
- [ ] Alert escalation tested
- [ ] Monitoring dashboards active
- [ ] Support procedures documented
- [ ] Disaster recovery tested

Success Metrics

- **Data Collection**: > 99.9% uptime
- **Query Performance**: < 3 seconds average
- **Alert Accuracy**: > 95% relevant alerts
- **Dashboard Availability**: > 99.5%
- **Data Retention**: 100% compliance

Known Issues & Limitations

- High-frequency metrics may require partitioning
- Large log volumes need regular cleanup
- Real-time alerts depend on system performance
- Dashboard performance varies with data volume
- Historical data queries may be slow

Support & Troubleshooting

Common Issues

1. **Slow Queries**: Check indexes and data volume
2. **Missing Metrics**: Verify collection agents
3. **Alert Delays**: Check processing pipeline
4. **Dashboard Issues**: Verify data feeds
5. **Storage Growth**: Check retention policies

Escalation Path

1. Check system health dashboards
2. Review error logs and metrics
3. Contact system administrator
4. Escalate to infrastructure team
5. Create incident ticket for tracking