Workshop

- AdventureWorks Sample Databases
  - AdventureWorks
  - AdventureWorksDW
  - AdventureWorksLT

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Sample Databases

AdventureWorks

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Sample Databases: AdventureWorks

- AdventureWorks sells bikes & related products (parts & accessories) through two sales channels:
  - direct to customers via internet
  - indirectly through resellers (stores or bike shops)
- Business transactions tracked: sales, purchases & inventory.
- These transactions may have some of the following dimensions:
  - Products sold or purchased - Product Hierarchy – Products, Product Subcategories & Product Categories
  - Address for customer, employees, stores & others - Geography Hierarchy – City, State, Country
  - Resellers (or Store)
  - Customers (Individuals buying over the internet)
  - Ship, Order, Due, Purchase & other Dates - Date Hierarchy - Year, Quarter, Month, Day
  - Employees – including salespeople
  - Vendors – product and part suppliers
  - Sales promotions

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Sample Databases: AdventureWorks

- Microsoft's documentation has not been kept up-to-date (similar to most IT's BI & DW documentation BTW) but is useful when understanding the overall model and business rules:
  - Schemas in AdventureWorks
  - AdventureWorks Data Dictionary
  - Adventure Works Cycles Business Scenarios

- Additional documentation
  - AdventureWorks – Data Dictionary – by Datedo (sells data dictionary software & ERD)
  - AdventureWorksDW – Data Dictionary – by Datedo

- AdventureWorks Data Model (both old)
  - AdventureWorks OLTP Database Diagram
  - AdventureWorks DW Schema

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Sample Databases: AdventureWorks

- AdventureWorks201x
  - OLTP (on-line transactional processing) database
  - System of record (SOR) for AdventureWorks
  - Normalized ER Model or 3rd Normal Form (3NF)
- AdventureWorksDW201x
  - Data Warehouse (DW)
  - Data source is AdventureWorks201x (sort of…)
  - Dimensional data model
- AdventureWorksLT
  - a subset of the AdventureWorks201x database
- AdventureWorks201x - Data
  - Sales
  - Inventory
  - Purchasing Sales
- AdventureWorksDW201x - Data
  - Internet Sales
  - Reseller Sales
  - Inventory

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AdventureWorks Database Family

AdventureWorksLT

dbName	Schema	TableName	Rows
AdventureWorksLT2019	dbo	BuildVersion	1
AdventureWorksLT2019	dbo	ErrorLog	0
AdventureWorksLT2019	SalesLT	Address	450
AdventureWorksLT2019	SalesLT	Customer	847
AdventureWorksLT2019	SalesLT	CustomerAddress	417
AdventureWorksLT2019	SalesLT	Product	295
AdventureWorksLT2019	SalesLT	ProductCategory	41
AdventureWorksLT2019	SalesLT	ProductDescription	762
AdventureWorksLT2019	SalesLT	ProductModel	128
AdventureWorksLT2019	SalesLT	ProductModelProductDescription	762
AdventureWorksLT2019	SalesLT	SalesOrderDetail	542
AdventureWorksLT2019	SalesLT	SalesOrderHeader	32

AdventureWorks

dbName	SchemaName	TableName	Rows
AdventureWorks2019	dbo	AWBuildVersion	1
AdventureWorks2019	dbo	DatabaseLog	1,596
AdventureWorks2019	dbo	ErrorLog	0
AdventureWorks2019	HumanResources	Department	16
AdventureWorks2019	HumanResources	Employee	290
AdventureWorks2019	HumanResources	EmployeeDepartmentHistory	296
AdventureWorks2019	HumanResources	EmployeePayHistory	316
AdventureWorks2019	HumanResources	JobCandidate	13
AdventureWorks2019	HumanResources	Shift	3
AdventureWorks2019	Person	Address	19,614
AdventureWorks2019	Person	AddressType	6
AdventureWorks2019	Person	BusinessEntity	20,777
AdventureWorks2019	Person	BusinessEntityAddress	19,614
AdventureWorks2019	Person	BusinessEntityContact	909
AdventureWorks2019	Person	ContactType	20
AdventureWorks2019	Person	CountryRegion	238
AdventureWorks2019	Person	EmailAddress	19,972
AdventureWorks2019	Person	Password	19,972
AdventureWorks2019	Person	Person	19,972
AdventureWorks2019	Person	PersonPhone	19,972
AdventureWorks2019	Person	PhoneNumberType	3
AdventureWorks2019	Person	StateProvince	181
AdventureWorks2019	Production	BillOfMaterials	2,679
AdventureWorks2019	Production	Culture	8
AdventureWorks2019	Production	Document	13
AdventureWorks2019	Production	Illustration	5
AdventureWorks2019	Production	Location	14
AdventureWorks2019	Production	Product	504
AdventureWorks2019	Production	ProductCategory	4
AdventureWorks2019	Production	ProductCostHistory	395
AdventureWorks2019	Production	ProductDescription	762
AdventureWorks2019	Production	ProductDocument	32
AdventureWorks2019	Production	ProductInventory	1,069
AdventureWorks2019	Production	ProductListPriceHistory	395
AdventureWorks2019	Production	ProductModel	128
AdventureWorks2019	Production	ProductModelIllustration	7
AdventureWorks2019	Production	ProductModelProductDescriptionCulture	762
AdventureWorks2019	Production	ProductPhoto	101
AdventureWorks2019	Production	ProductProductPhoto	504
AdventureWorks2019	Production	ProductReview	4
AdventureWorks2019	Production	ProductSubcategory	37
AdventureWorks2019	Production	ScrapReason	16
AdventureWorks2019	Production	TransactionHistory	113,443
AdventureWorks2019	Production	TransactionHistoryArchive	89,253
AdventureWorks2019	Production	UnitMeasure	38
AdventureWorks2019	Production	WorkOrder	72,591
AdventureWorks2019	Production	WorkOrderRouting	67,131
AdventureWorks2019	Purchasing	ProductVendor	460
AdventureWorks2019	Purchasing	PurchaseOrderDetail	8,845
AdventureWorks2019	Purchasing	PurchaseOrderDetail_Altered	10,599
AdventureWorks2019	Purchasing	PurchaseOrderHeader	4,012
AdventureWorks2019	Purchasing	PurchaseOrderHeader_altered	4,970
AdventureWorks2019	Purchasing	ShipMethod	5
AdventureWorks2019	Purchasing	Vendor	104

dbName	SchemaName	TableName	Rows
AdventureWorks2019	Production	BillOfMaterials	2,679
AdventureWorks2019	Production	Culture	8
AdventureWorks2019	Production	Document	13
AdventureWorks2019	Production	Illustration	5
AdventureWorks2019	Production	Location	14
AdventureWorks2019	Production	Product	504
AdventureWorks2019	Production	ProductCategory	4
AdventureWorks2019	Production	ProductCostHistory	395
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AdventureWorks2019	Production	ProductDocument	32
AdventureWorks2019	Production	ProductInventory	1,069
AdventureWorks2019	Production	ProductListPriceHistory	395
AdventureWorks2019	Production	ProductModel	128
AdventureWorks2019	Production	ProductModelIllustration	7
AdventureWorks2019	Production	ProductModelProductDescriptionCulture	762
AdventureWorks2019	Production	ProductPhoto	101
AdventureWorks2019	Production	ProductProductPhoto	504
AdventureWorks2019	Production	ProductReview	4
AdventureWorks2019	Production	ProductSubcategory	37
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AdventureWorks2019	Production	TransactionHistory	113,443
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AdventureWorks2019	Purchasing	ProductVendor	460
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AdventureWorks2019	Purchasing	PurchaseOrderDetail_Altered	10,599
AdventureWorks2019	Purchasing	PurchaseOrderHeader	4,012
AdventureWorks2019	Purchasing	PurchaseOrderHeader_altered	4,970
AdventureWorks2019	Purchasing	ShipMethod	5
AdventureWorks2019	Purchasing	Vendor	104
AdventureWorks2019	Sales	CountryRegionCurrency	109
AdventureWorks2019	Sales	CreditCard	19,118
AdventureWorks2019	Sales	Currency	105
AdventureWorks2019	Sales	CurrencyRate	13,532
AdventureWorks2019	Sales	Customer	19,820
AdventureWorks2019	Sales	PersonCreditCard	19,118
AdventureWorks2019	Sales	SalesOrderDetail	121,317
AdventureWorks2019	Sales	SalesOrderDetail_Updated	0
AdventureWorks2019	Sales	SalesOrderHeader	31,465
AdventureWorks2019	Sales	SalesOrderHeader_Updated	0
AdventureWorks2019	Sales	SalesOrderHeaderSalesReason	27,647
AdventureWorks2019	Sales	SalesPerson	17
AdventureWorks2019	Sales	SalesPersonQuotaHistory	163
AdventureWorks2019	Sales	SalesReason	10
AdventureWorks2019	Sales	SalesTaxRate	29
AdventureWorks2019	Sales	SalesTerritory	10
AdventureWorks2019	Sales	SalesTerritoryHistory	17
AdventureWorks2019	Sales	ShoppingCartItem	3
AdventureWorks2019	Sales	SpecialOffer	16
AdventureWorks2019	Sales	SpecialOfferProduct	538
AdventureWorks2019	Sales	Store	701

AdventureWorksDW

dbName	Schema	TableName	Rows
AdventureWorksDW2019	dbo	AdventureWorksDWBuildVersion	1
AdventureWorksDW2019	dbo	DatabaseLog	96
AdventureWorksDW2019	dbo	DimAccount	99
AdventureWorksDW2019	dbo	DimCurrency	105
AdventureWorksDW2019	dbo	DimCustomer	18,484
AdventureWorksDW2019	dbo	DimDate	3,652
AdventureWorksDW2019	dbo	DimDepartmentGroup	7
AdventureWorksDW2019	dbo	DimEmployee	296
AdventureWorksDW2019	dbo	DimGeography	655
AdventureWorksDW2019	dbo	DimOrganization	14
AdventureWorksDW2019	dbo	DimProduct	606
AdventureWorksDW2019	dbo	DimProductCategory	4
AdventureWorksDW2019	dbo	DimProductSubcategory	37
AdventureWorksDW2019	dbo	DimPromotion	16
AdventureWorksDW2019	dbo	DimReseller	701
AdventureWorksDW2019	dbo	DimSalesReason	10
AdventureWorksDW2019	dbo	DimSalesTerritory	11
AdventureWorksDW2019	dbo	DimScenario	3
AdventureWorksDW2019	dbo	FactAdditionalInternationalProductDescription	15,168
AdventureWorksDW2019	dbo	FactCallCenter	120
AdventureWorksDW2019	dbo	FactCurrencyRate	14,264
AdventureWorksDW2019	dbo	FactFinance	39,409
AdventureWorksDW2019	dbo	FactInternetSales	60,398
AdventureWorksDW2019	dbo	FactInternetSalesReason	64,515
AdventureWorksDW2019	dbo	FactProductInventory	776,286
AdventureWorksDW2019	dbo	FactResellerSales	60,855
AdventureWorksDW2019	dbo	FactSalesQuota	163
AdventureWorksDW2019	dbo	FactSurveyResponse	2,727
AdventureWorksDW2019	dbo	NewFactCurrencyRate	50
AdventureWorksDW2019	dbo	ProspectiveBuyer	2,059
AdventureWorksDW2019	dbo	sysdiagrams	9

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Data Model

AdventureWorksLT

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AdventureWorksLT: Tables & Row Counts

table name	row count
Address	450
Customer	847
CustomerAddress	417
Product	295
ProductCategory	41
ProductDescription	762
ProductModel	128
ProductModelProductDescription	762
SalesOrderDetail	542
SalesOrderHeader	32

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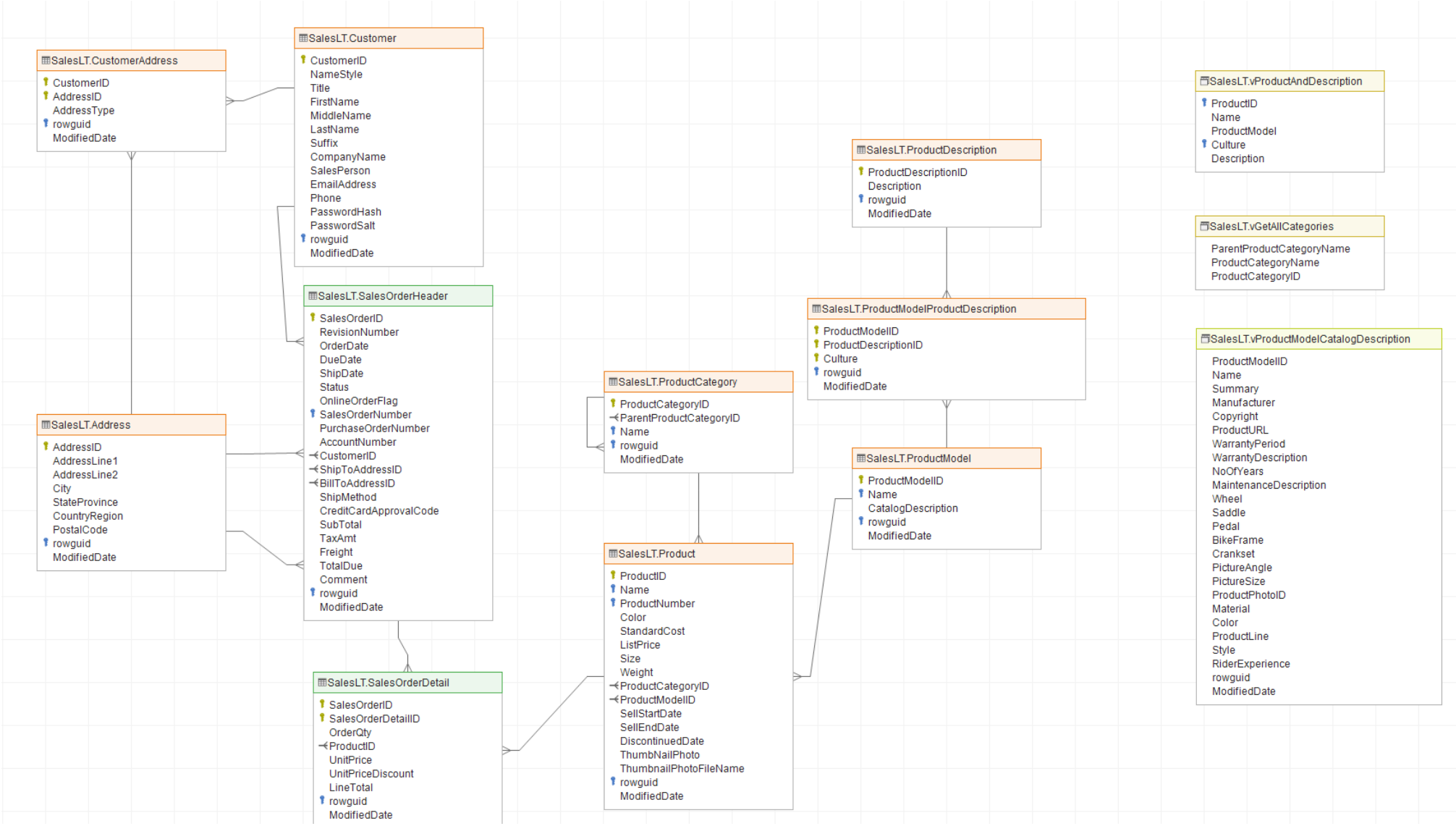
AdventureWorksLT Data Model



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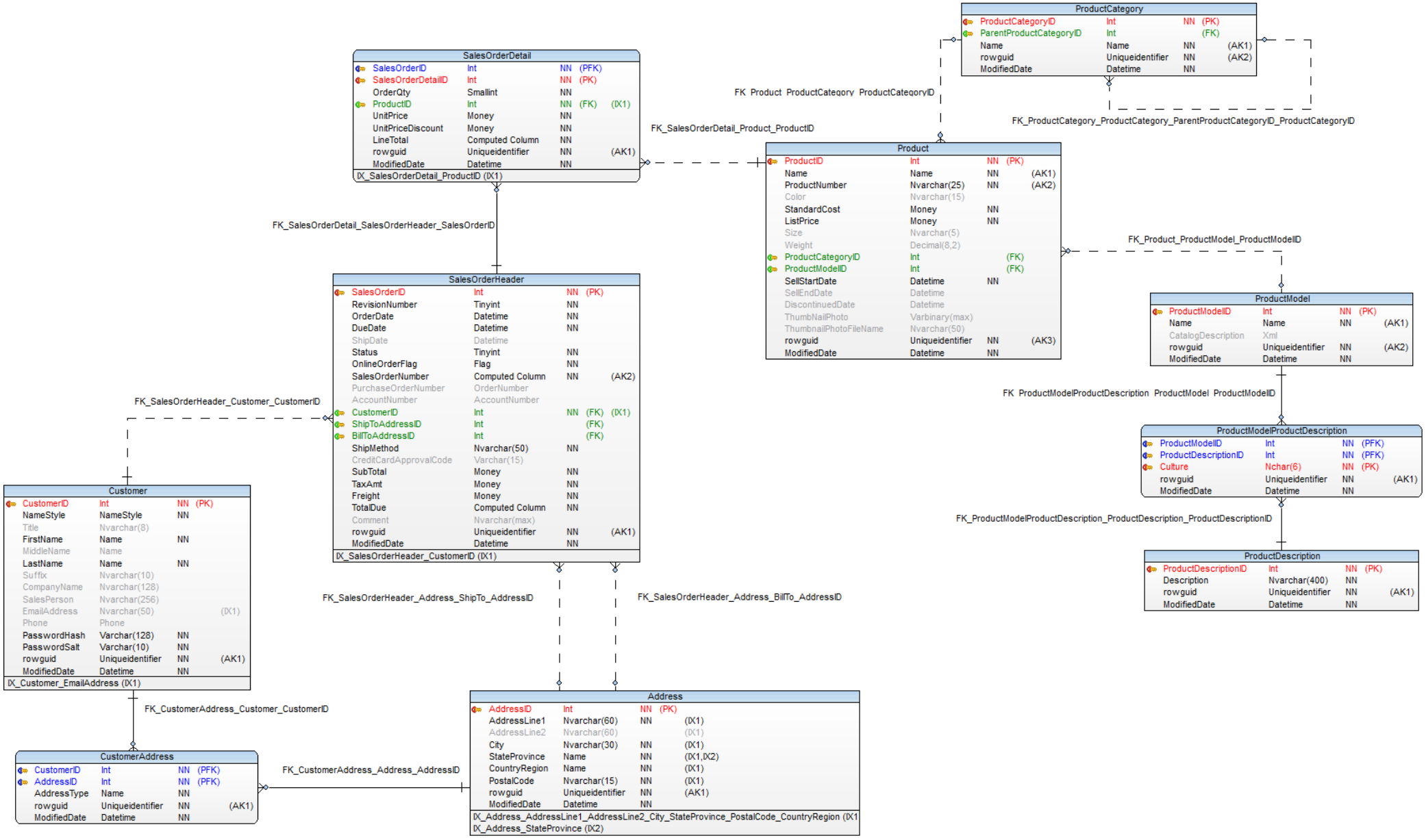
AdventureWorksLT Data Model



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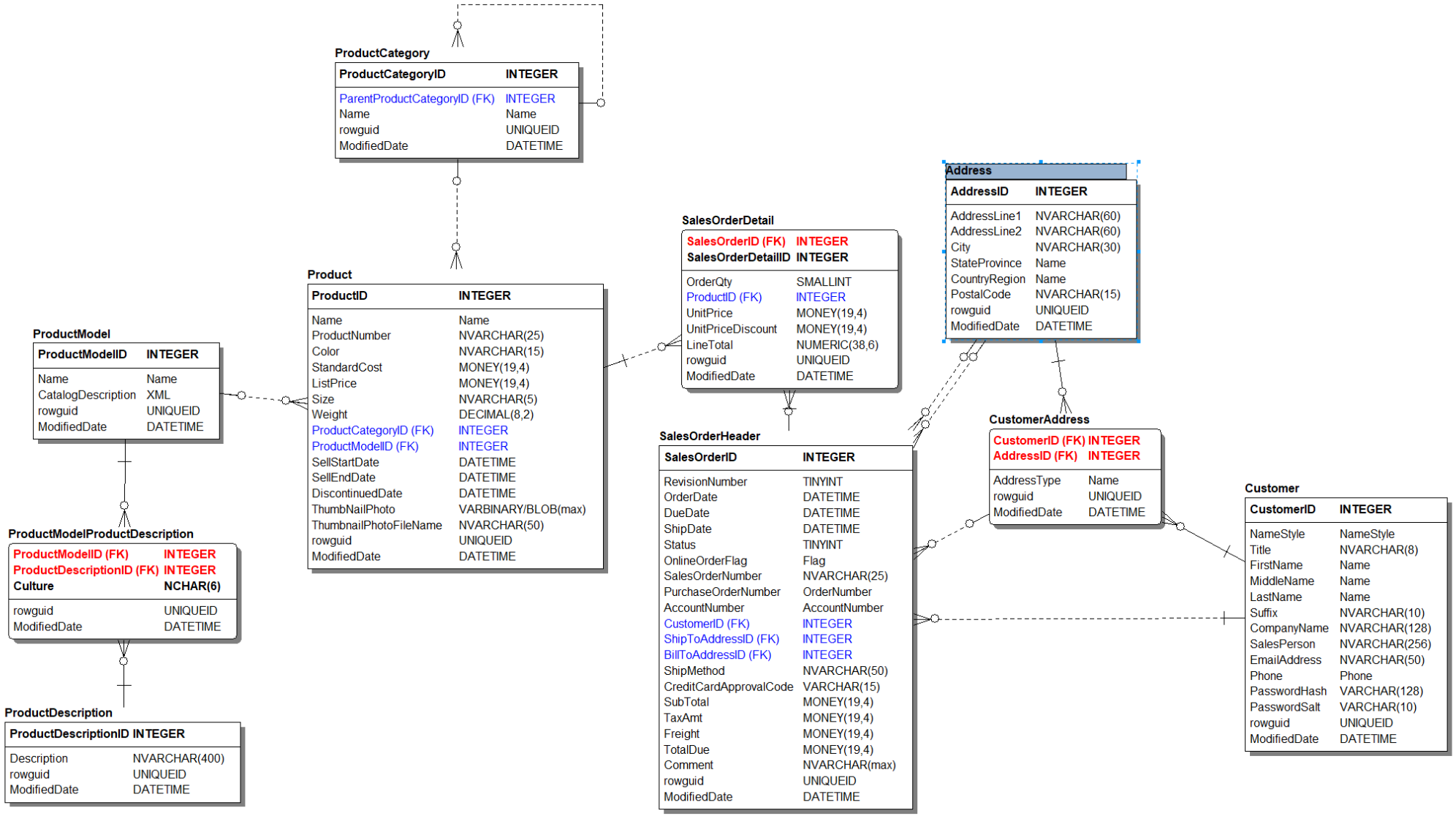
AdventureWorksLT: Reverse Engineer Data Model



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Data Model

AdventureWorks

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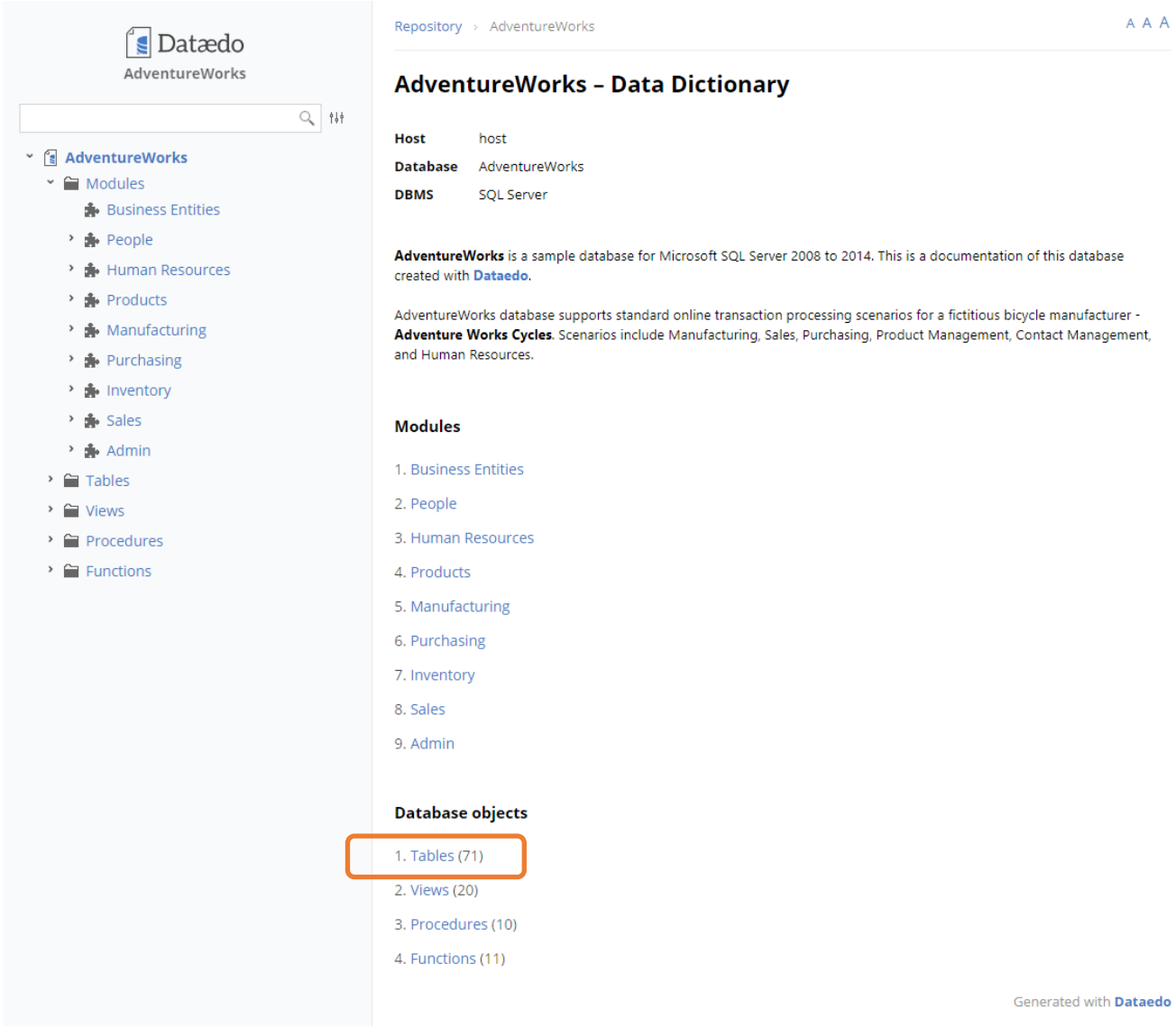
AdventureWorks Data Model



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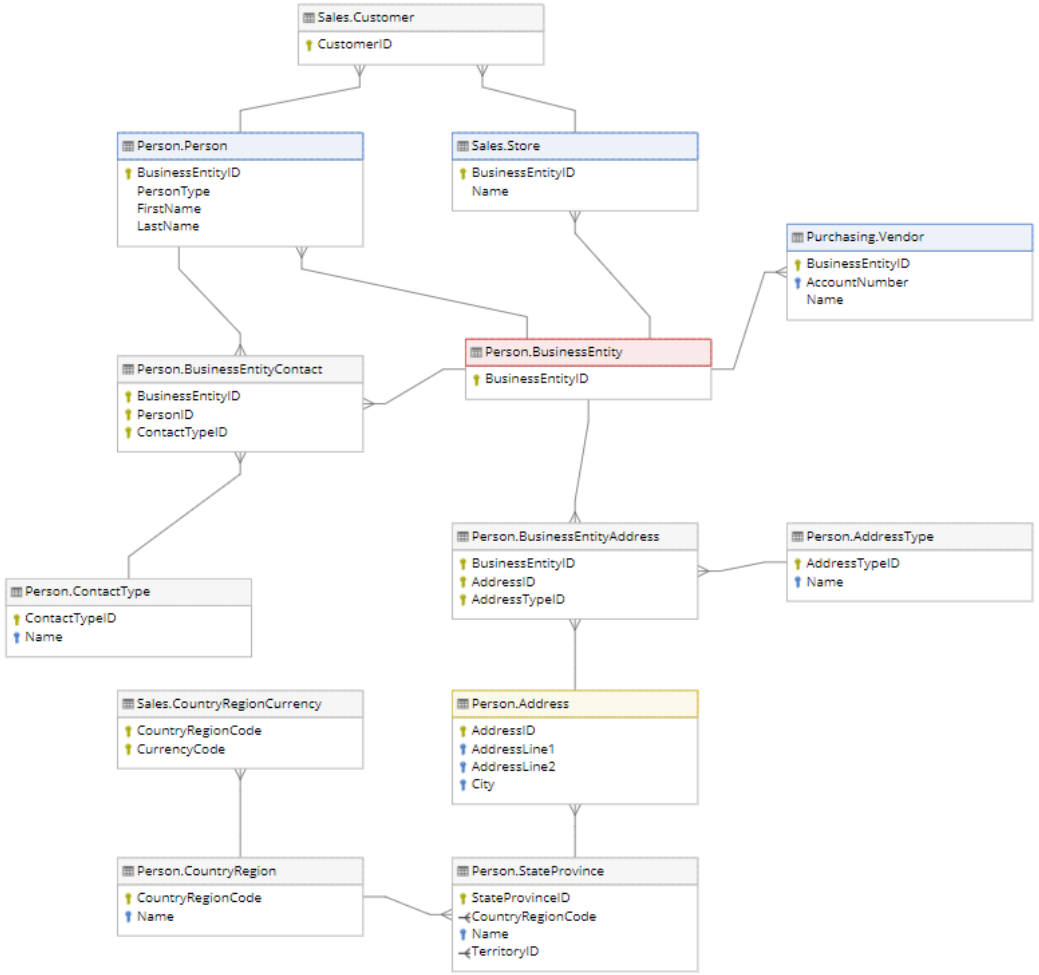
AdventureWorks Schemas

Business Entities



Vendors, customers, and employees have common tables for addresses and contacts. Those tables are linked to one table - BusinessEntity that holds ID for all vendors, customers, and employees tables.

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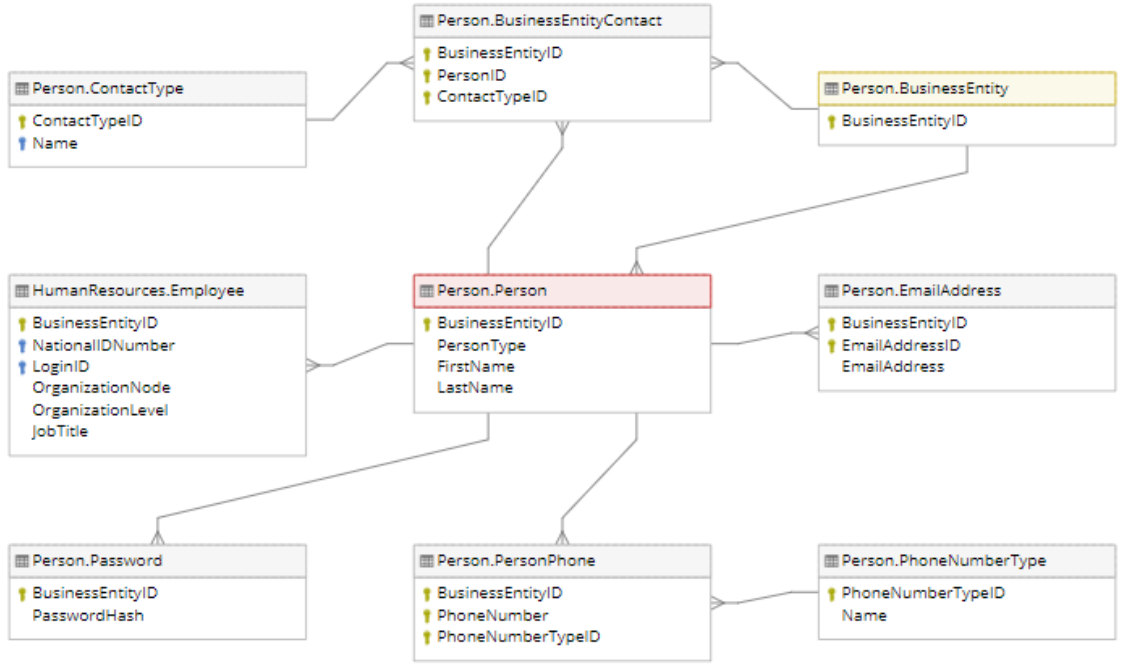
AdventureWorks Schemas

People



Names and addresses of individual customers, vendors, and employees.

Tables

	Name
1	Person.Address
2	Person.AddressType
3	Person.BusinessEntity
4	Person.BusinessEntityAddress
5	Person.BusinessEntityContact
6	Person.ContactType
7	Person.CountryRegion
8	Person.EmailAddress
9	Person.Password
10	Person.Person
11	Person.PersonPhone
12	Person.PhoneNumberType
13	Person.StateProvince

Views

	Name
1	Person.vAdditionalContactInfo
2	Person.vStateProvinceCountryRegion

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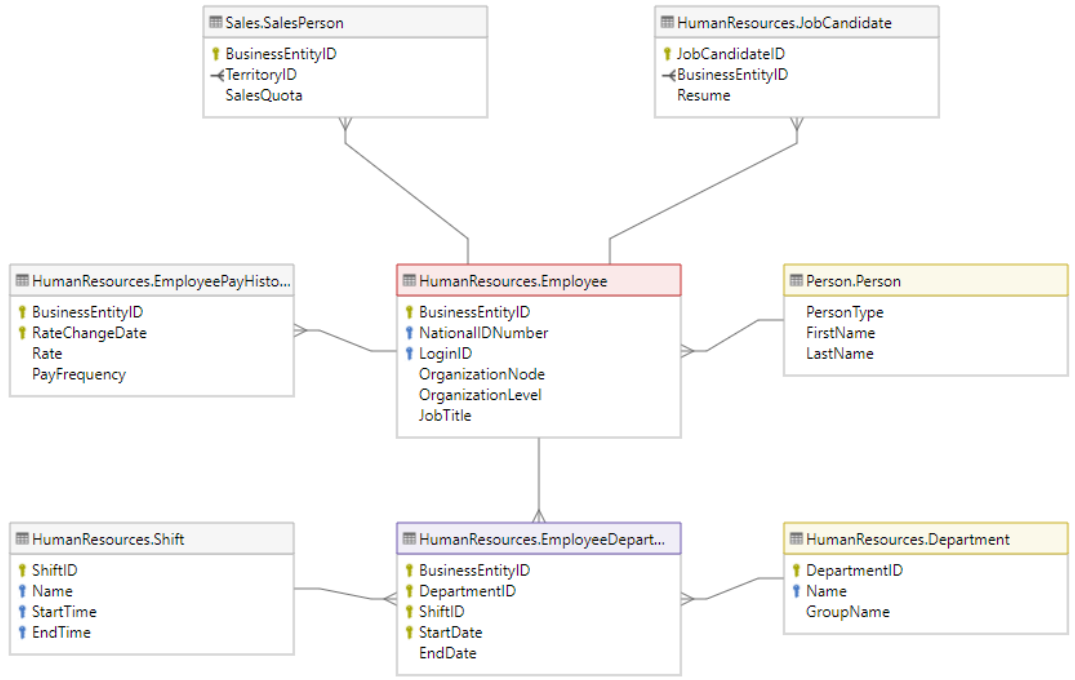
AdventureWorks Schemas

Human Resources



Employees of Adventure Works Cycles.

Human Resources

Tables

	Name
1	HumanResources.Department
2	HumanResources.Employee
3	HumanResources.EmployeeDepartmentHistory
4	HumanResources.EmployeePayHistory
5	HumanResources.JobCandidate
6	HumanResources.Shift

Views

	Name
1	HumanResources.vEmployee
2	HumanResources.vEmployeeDepartment
3	HumanResources.vEmployeeDepartmentHistory
4	HumanResources.vJobCandidate
5	HumanResources.vJobCandidateEducation
6	HumanResources.vJobCandidateEmployment

Procedures

	Name
1	dbo.uspGetEmployeeManagers
2	dbo.uspGetManagerEmployees
3	dbo.uspSearchCandidateResumes
4	HumanResources.uspUpdateEmployeeHireInfo
5	HumanResources.uspUpdateEmployeeLogin
6	HumanResources.uspUpdateEmployeePersonalInfo

Functions

	Name
1	dbo.ufnGetContactInformation

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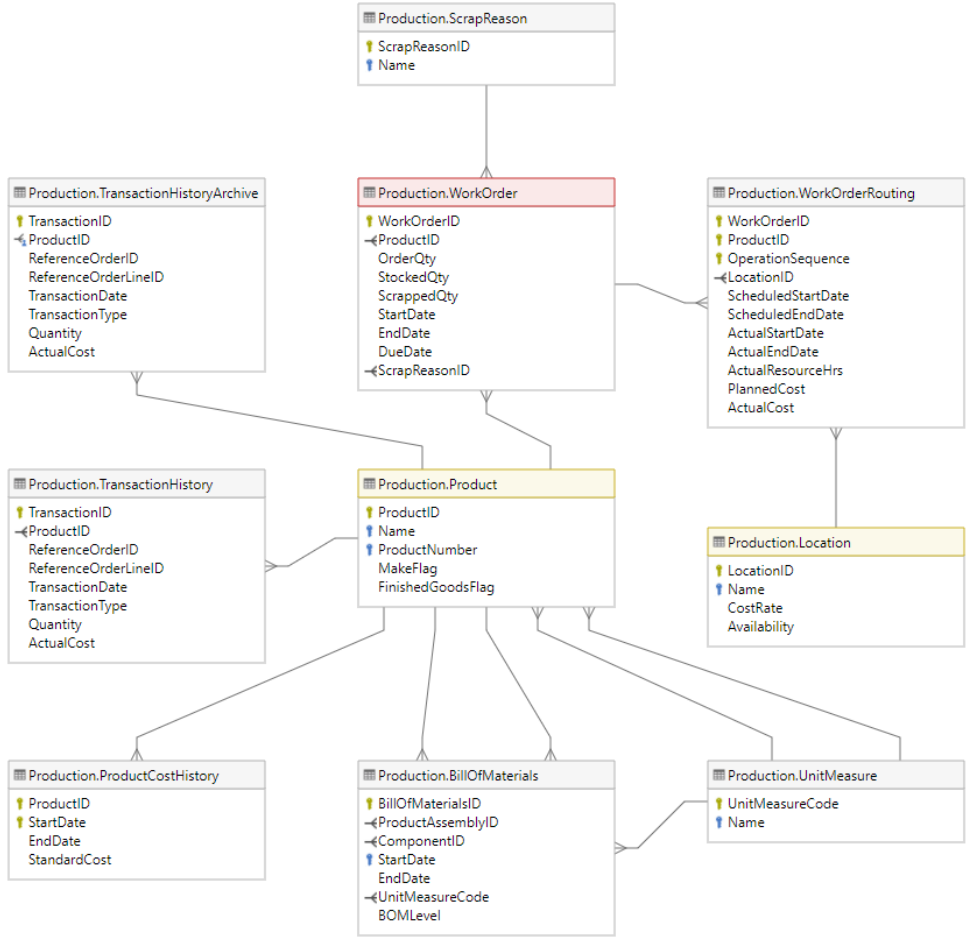
AdventureWorks Schemas

Manufacturing



Manufacturing process management module.

Tables

		Name
1		Production.BillOfMaterials
2		Production.ProductCostHistory
3		Production.ProductListPriceHistory
4		Production.ScrapReason
5		Production.TransactionHistory
6		Production.TransactionHistoryArchive
7		Production.WorkOrder
8		Production.WorkOrderRouting

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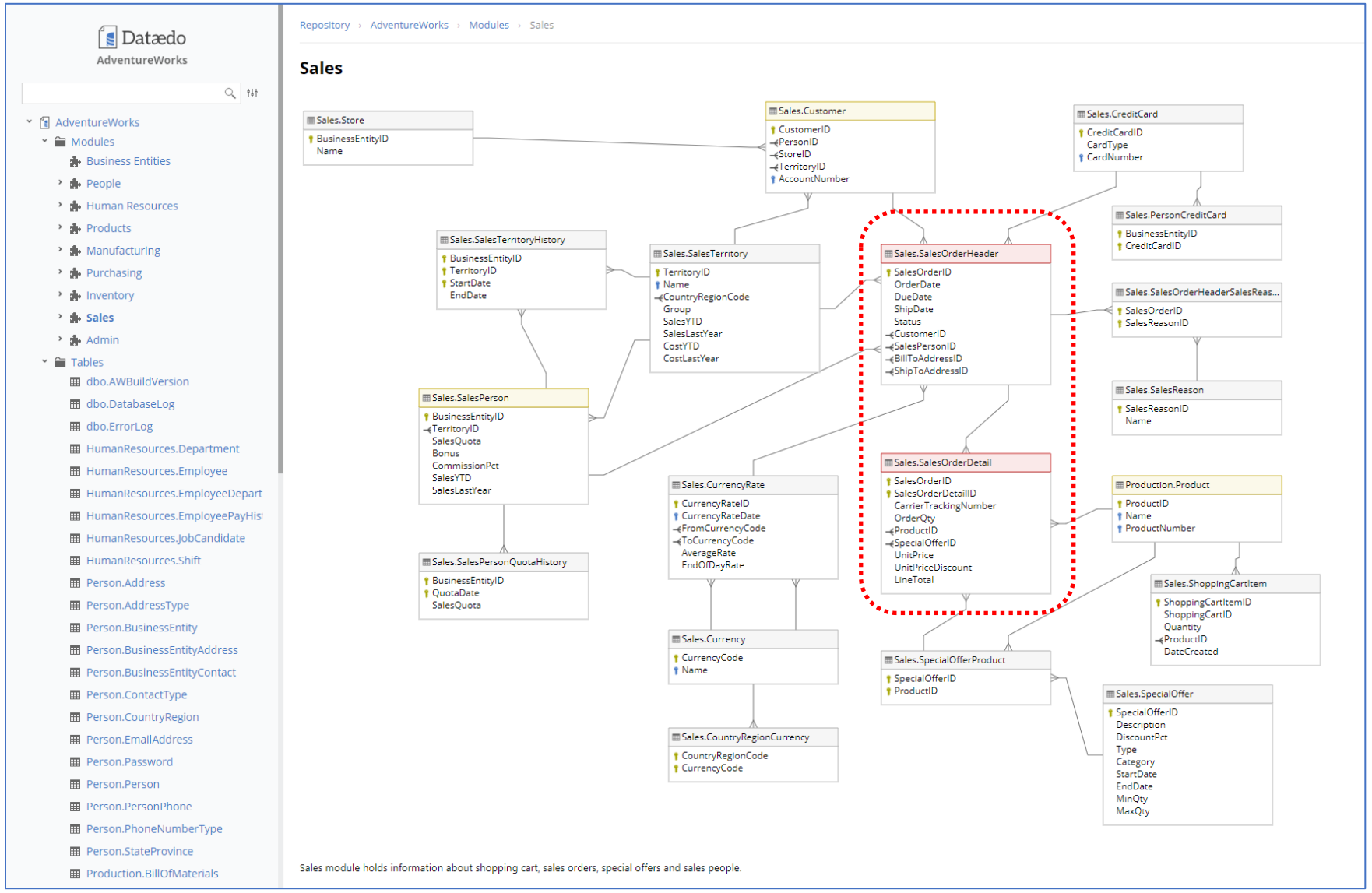
AdventureWorks Schemas



Sales

Sales module holds information about shopping cart, sales orders, special offers and sales people.

Tables

		Name
1		Sales.CountryRegionCurrency
2		Sales.CreditCard
3		Sales.Currency
4		Sales.CurrencyRate
5		Sales.Customer
6		Sales.PersonCreditCard
7		Sales.SalesOrderDetail
8		Sales.SalesOrderHeader
9		Sales.SalesOrderHeaderSalesReason
10		Sales.SalesPerson
11		Sales.SalesPersonQuotaHistory
12		Sales.SalesReason
13		Sales.SalesTaxRate
14		Sales.SalesTerritory
15		Sales.SalesTerritoryHistory
16		Sales.ShoppingCartItem
17		Sales.SpecialOffer
18		Sales.SpecialOfferProduct
19		Sales.Store

Views

		Name
1		Sales.vIndividualCustomer
2		Sales.vPersonDemographics
3		Sales.vSalesPerson
4		Sales.vSalesPersonSalesByFiscalYears
5		Sales.vStoreWithAddresses
6		Sales.vStoreWithContacts
7		Sales.vStoreWithDemographics

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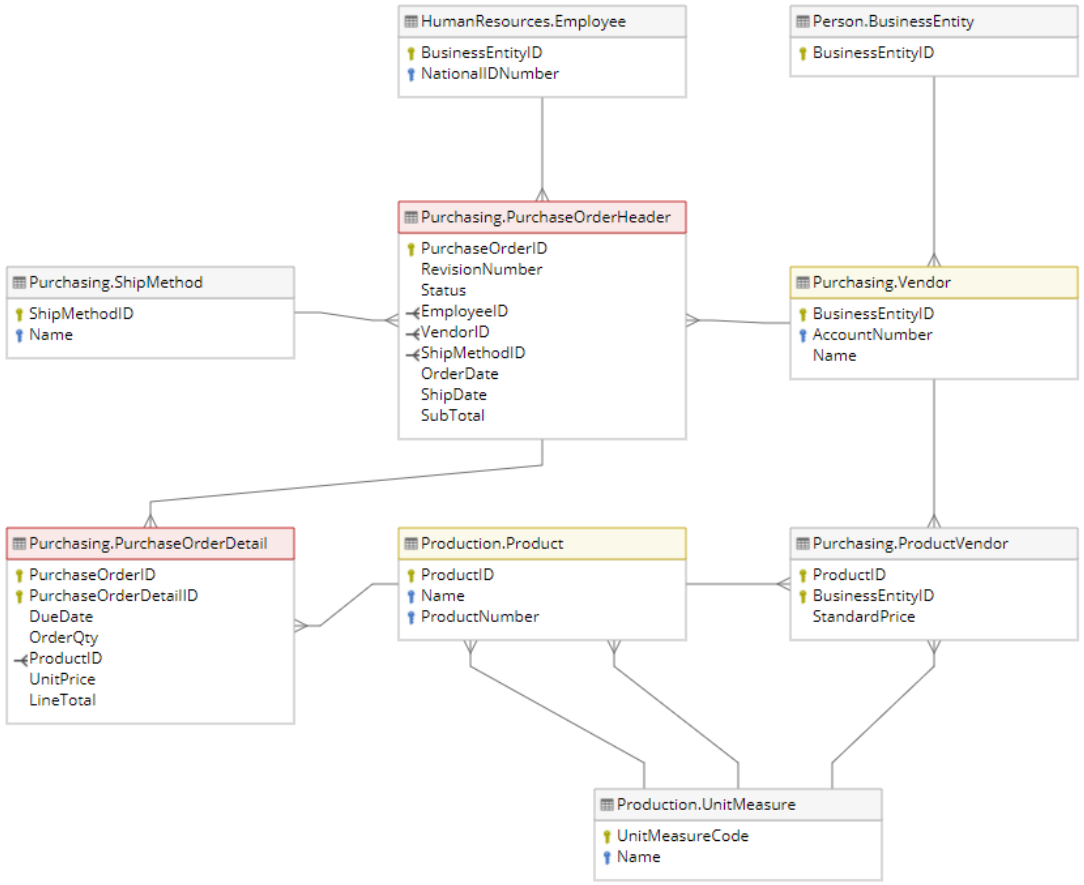
AdventureWorks Schemas

Purchasing



Vendors from who parts and products are purchased.

Tables

		Name
1		Purchasing.ProductVendor
2		Purchasing.PurchaseOrderDetail
3		Purchasing.PurchaseOrderHeader
4		Purchasing.ShipMethod
5		Purchasing.Vendor

Views

		Name
1		Purchasing.vVendorWithAddresses
2		Purchasing.vVendorWithContacts

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AdventureWorksDW

Reverse Engineer

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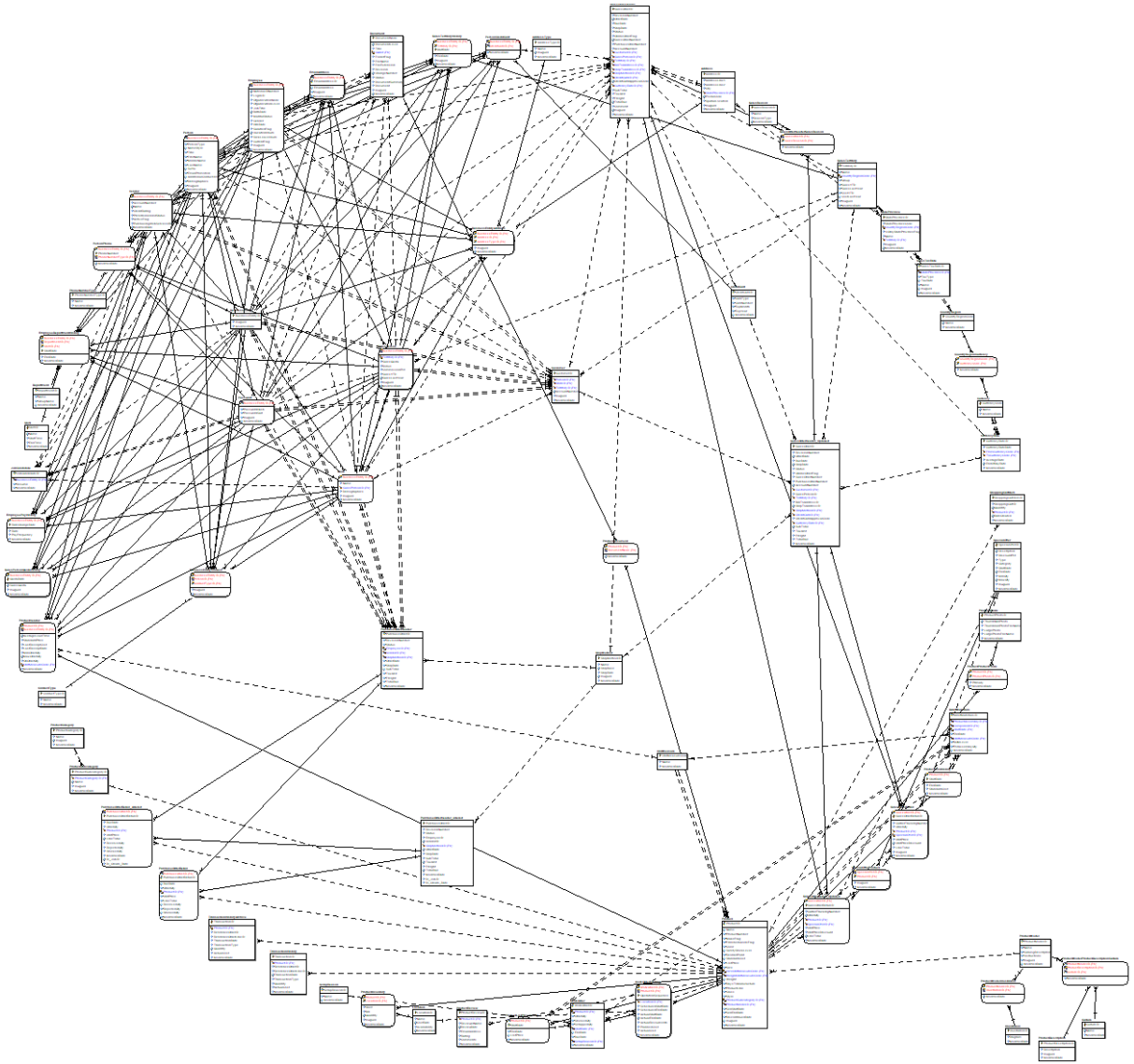
AdventureWorks: Reverse Engineer Data Model



- With all tables included it is difficult to understand the model

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Data Model

AdventureWorksDW

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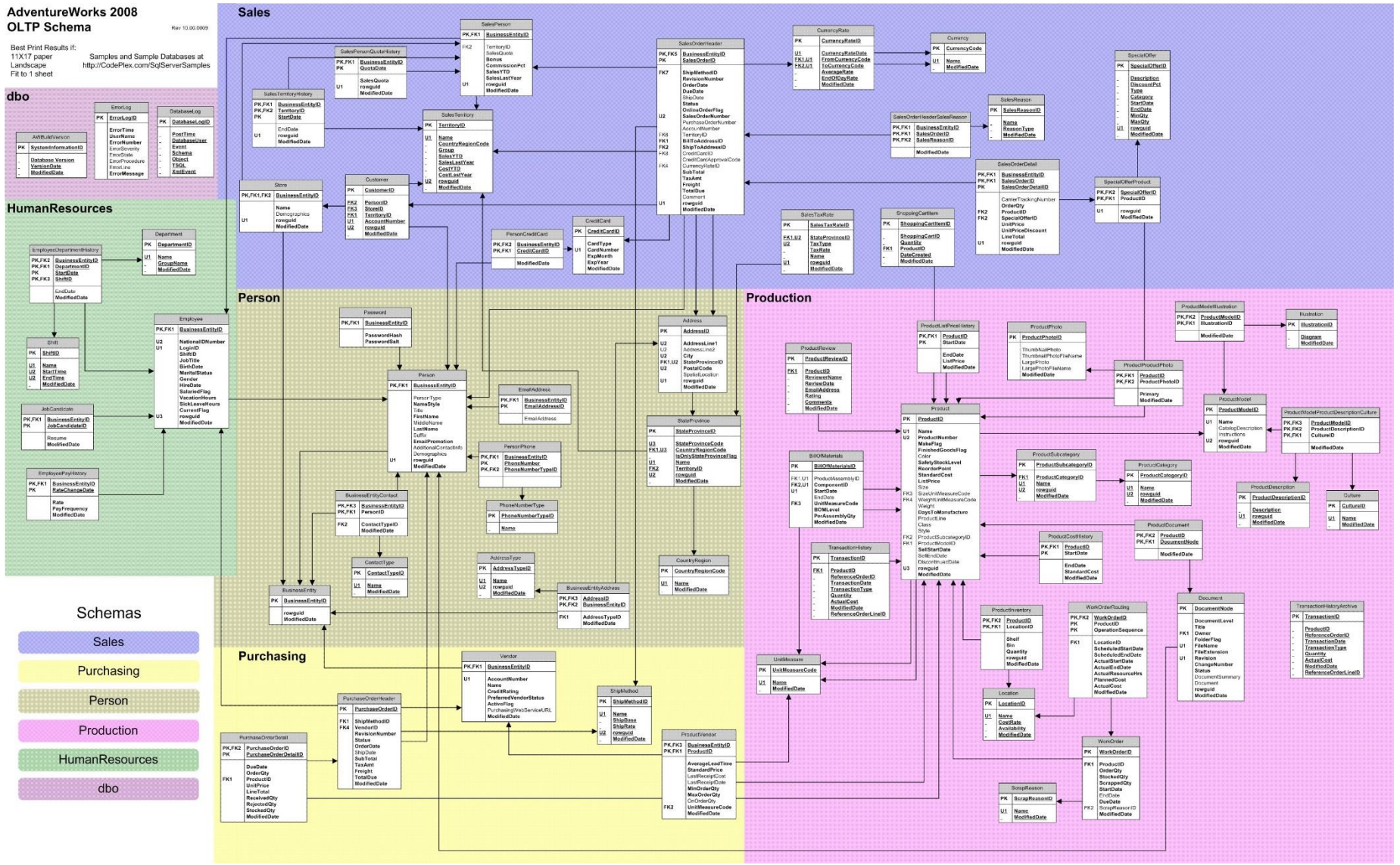
AdventureWorks Data Model



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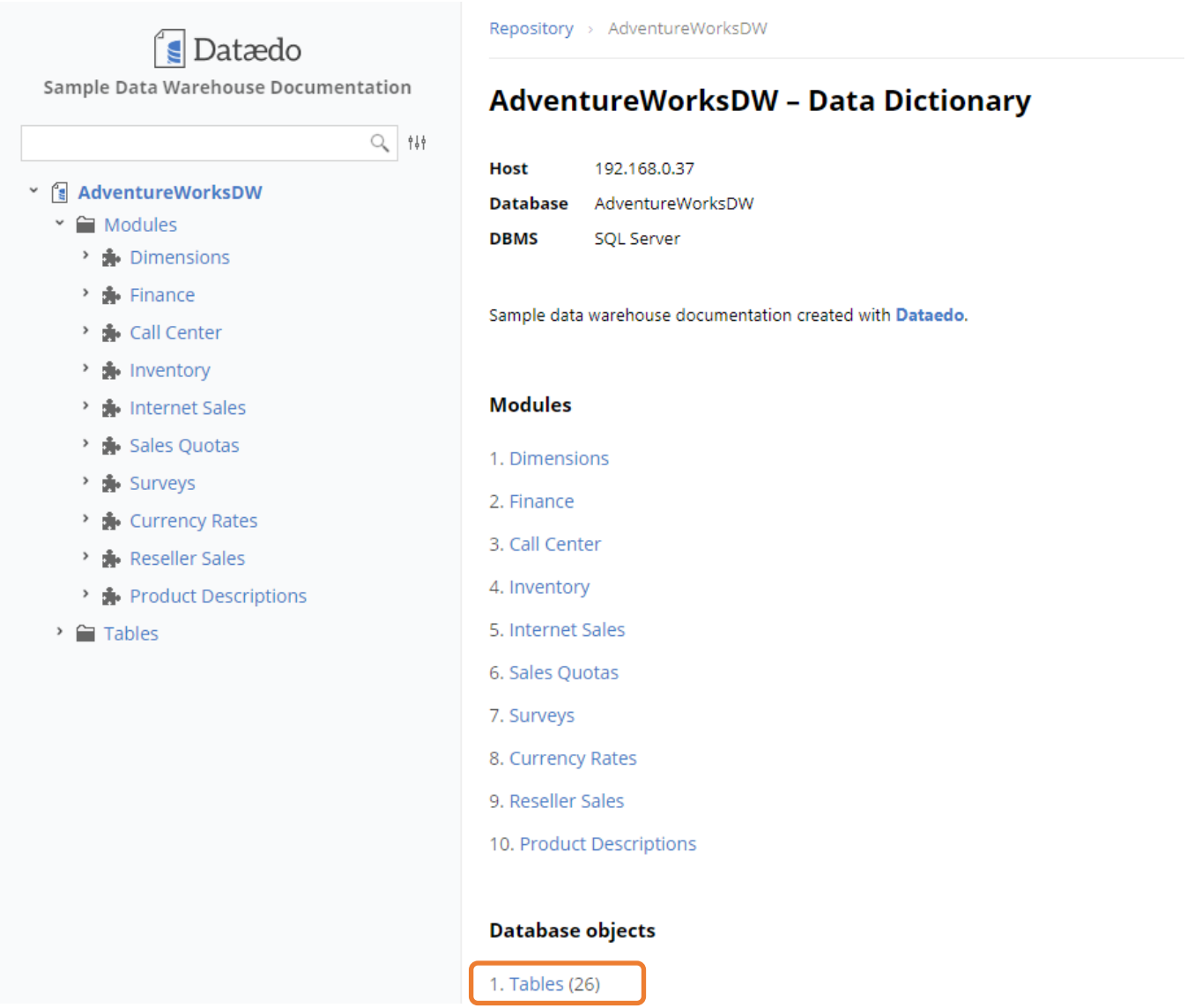
AdventureWorksDW Data Model



https://dataedo.com/samples/html/Data_warehouse/doc/AdventureWorksDW_4/home.html

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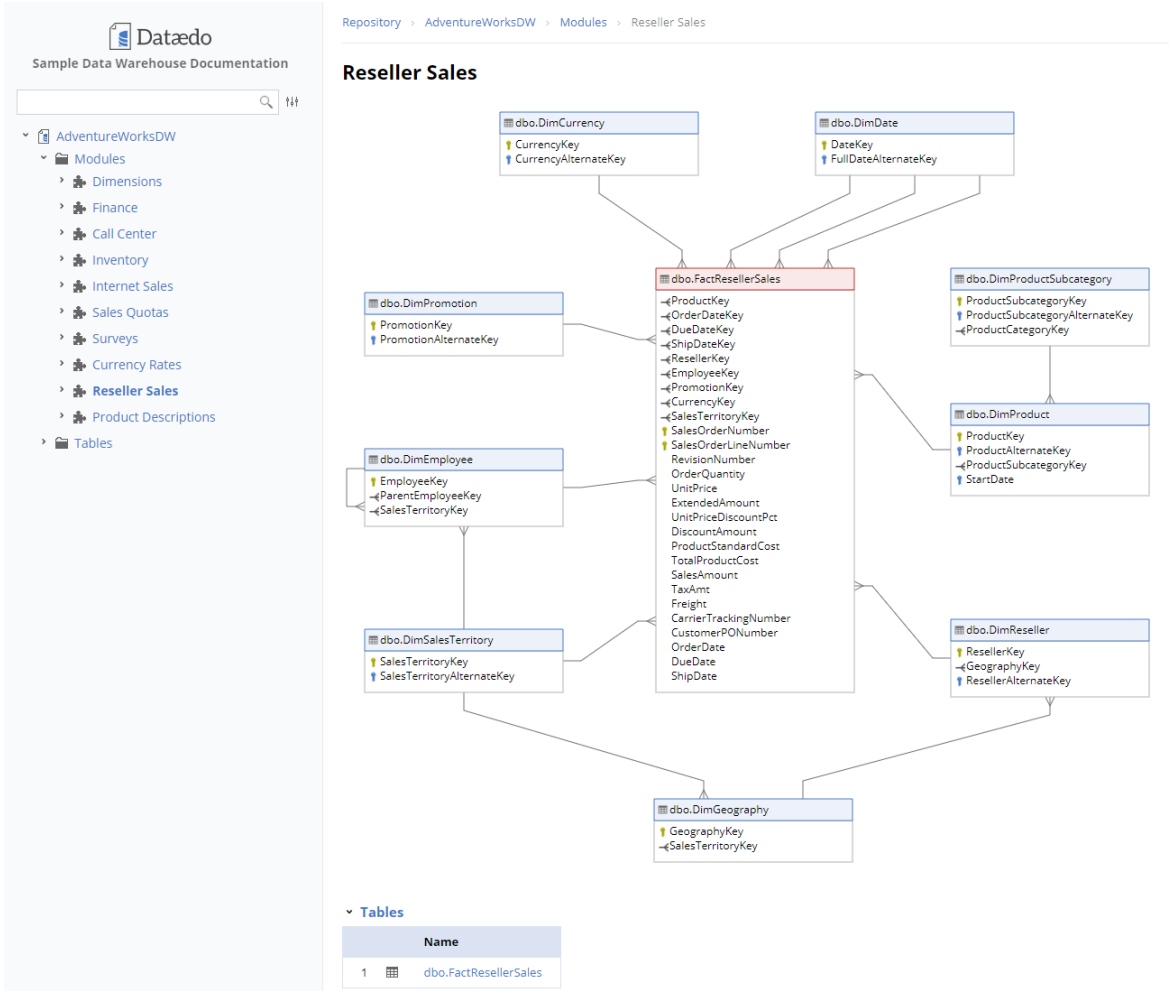
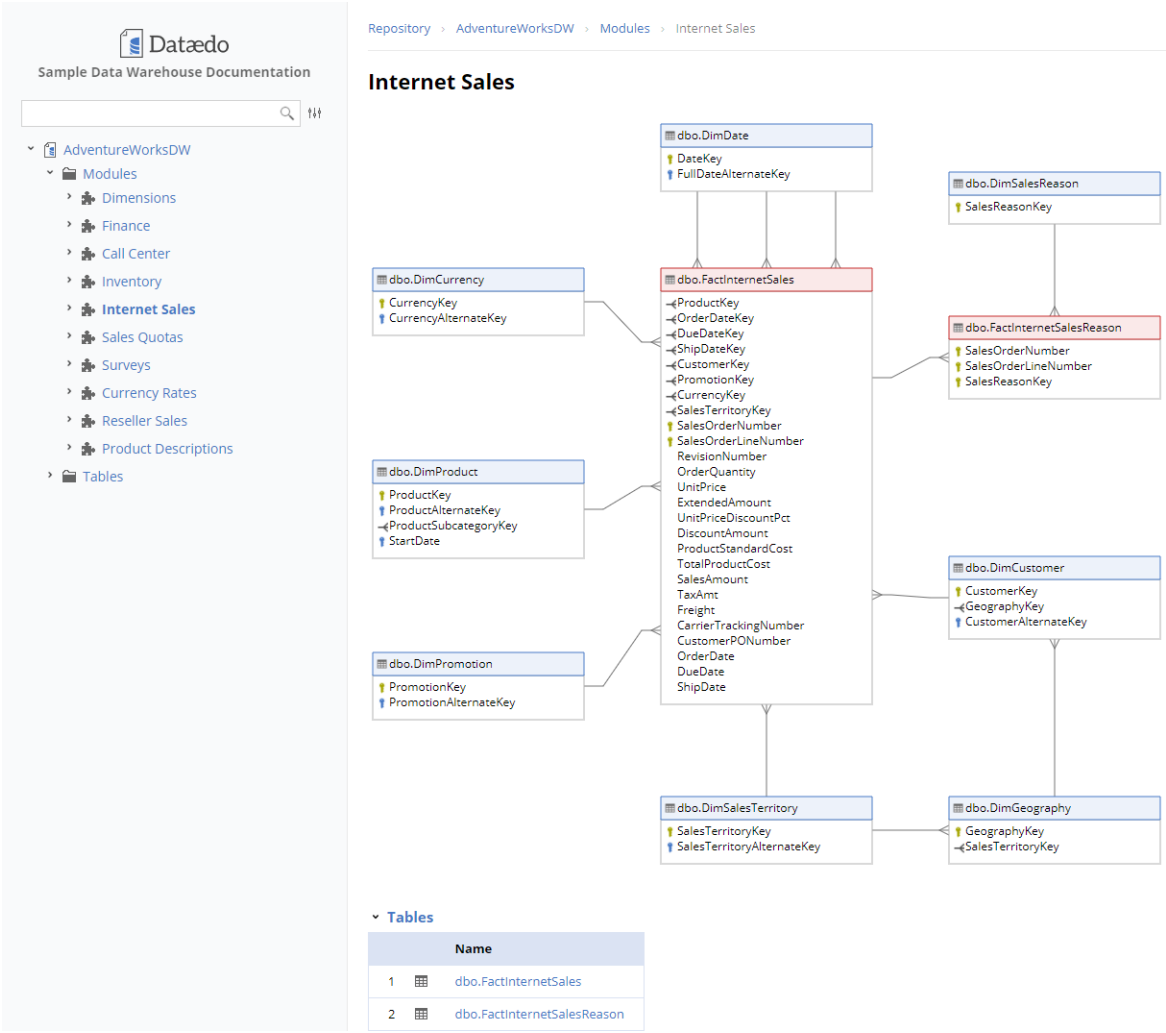
AdventureWorksDW Data Model





https://dataedo.com/samples/html/Data_warehouse/doc/AdventureWorksDW_4/modules/Reseller_Sales_105/module.html

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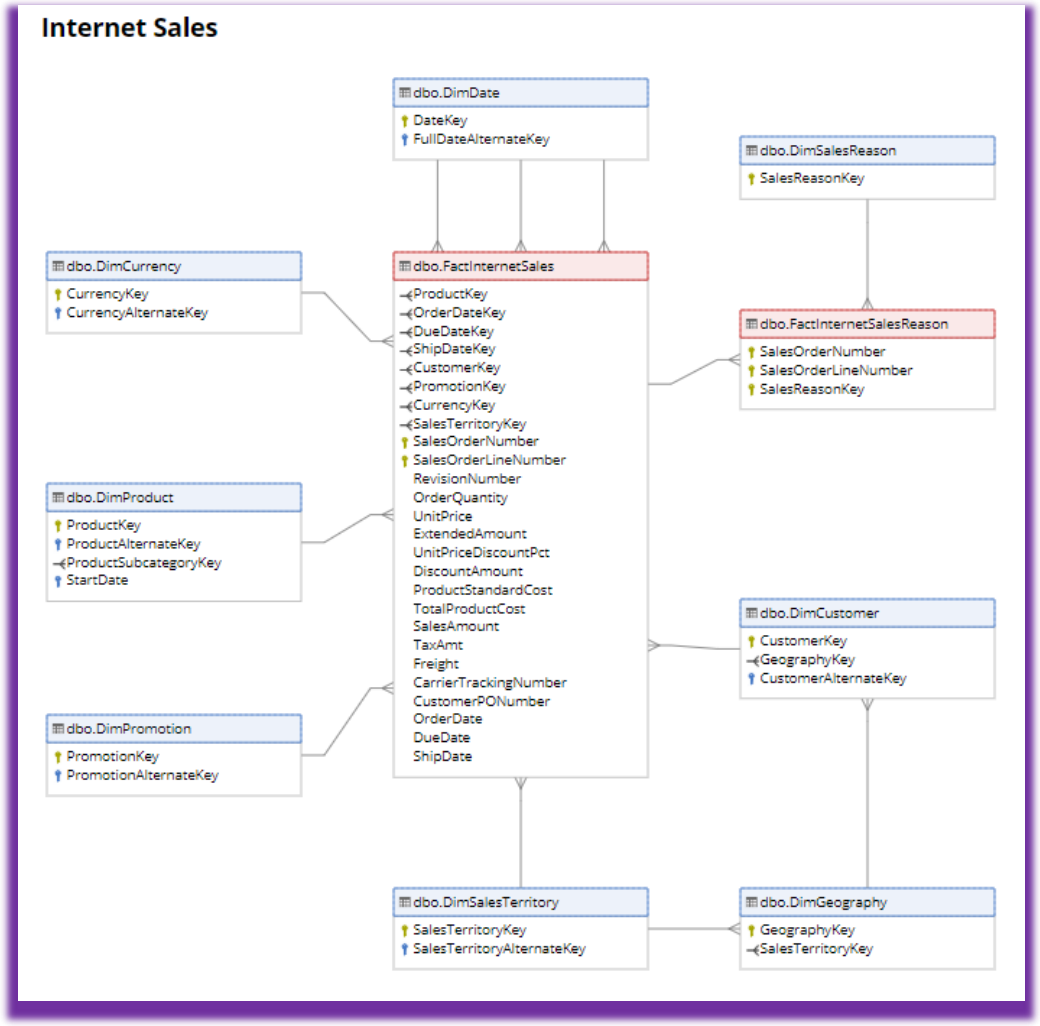
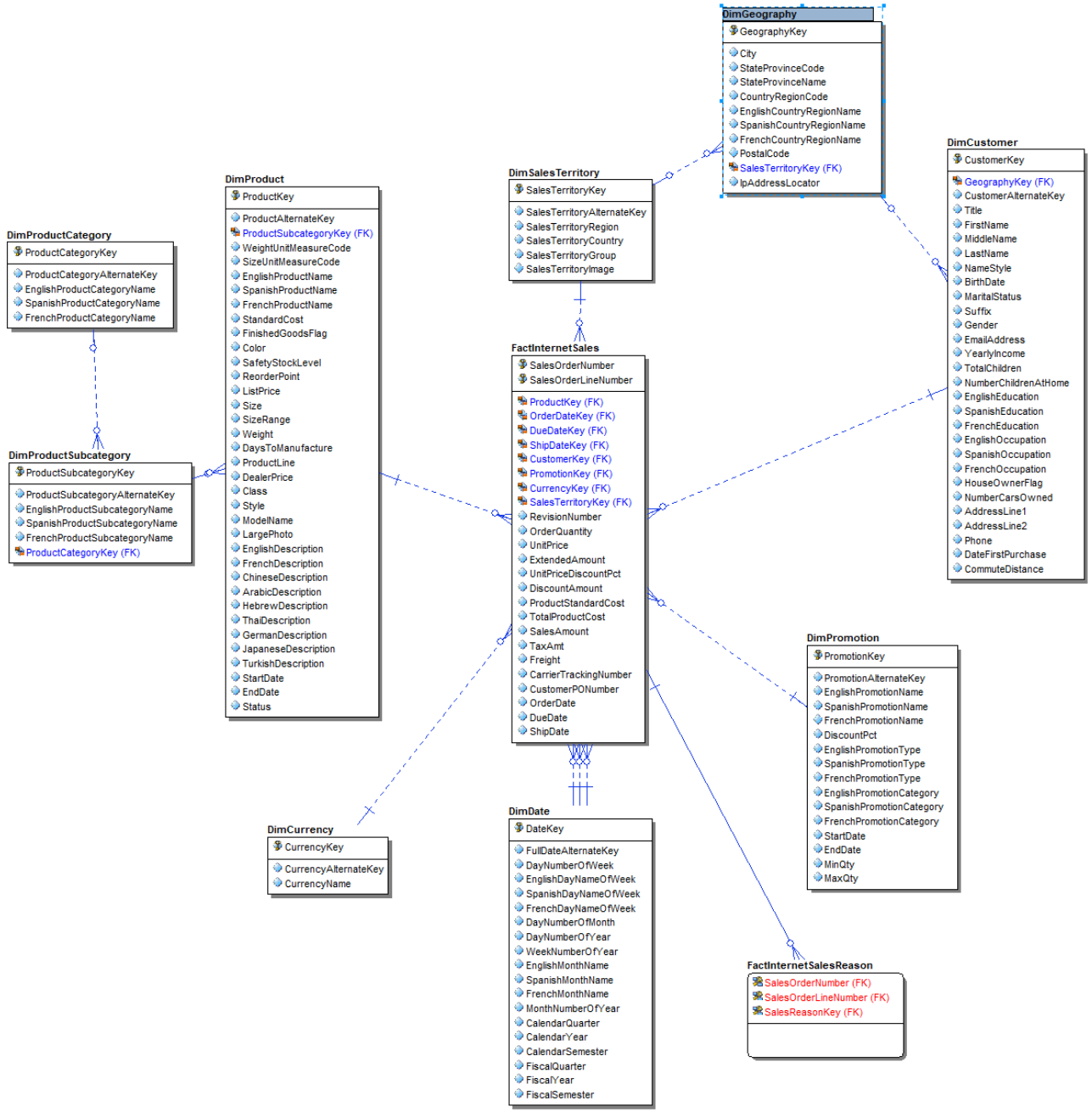
Internet Sales





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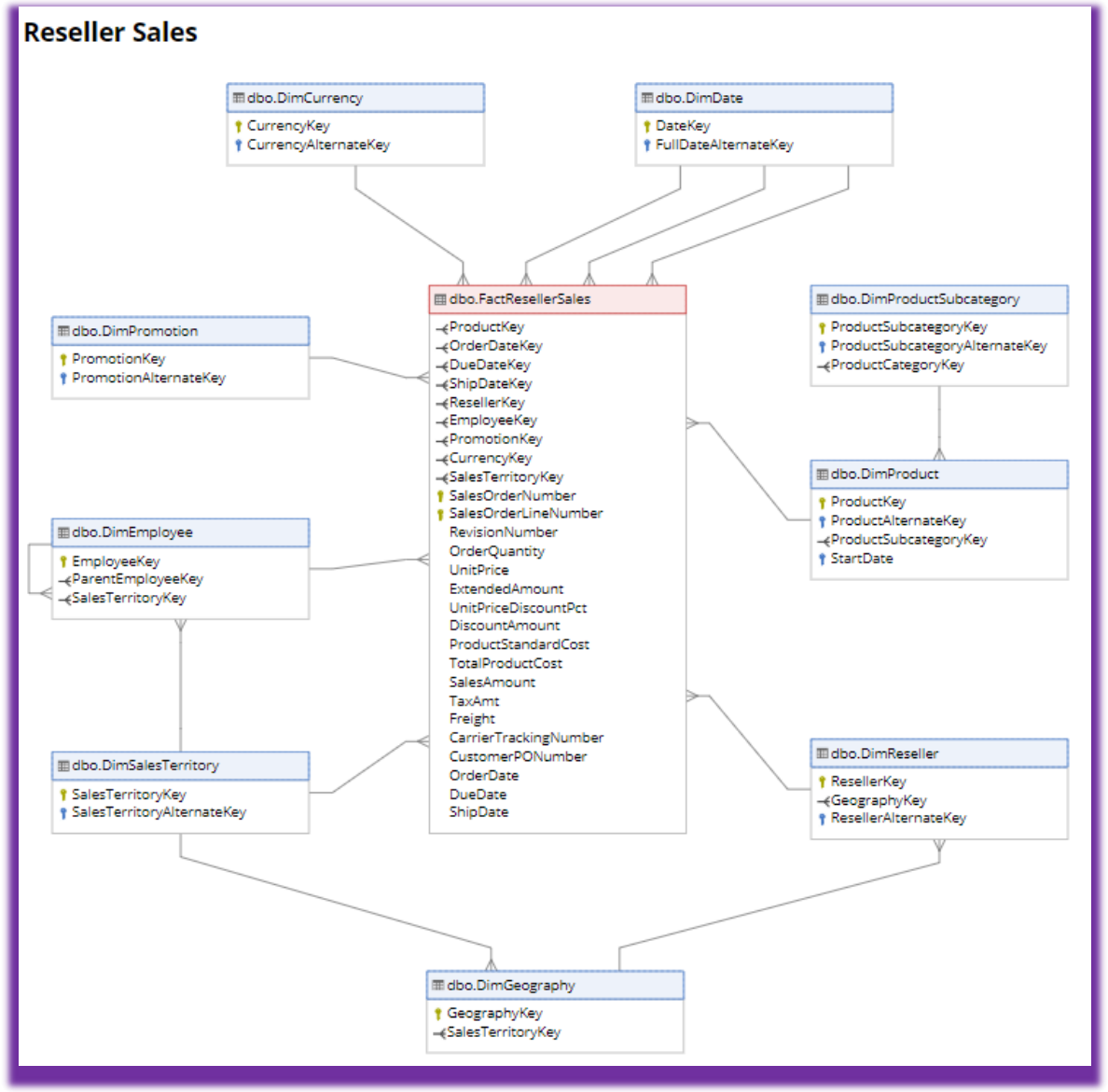
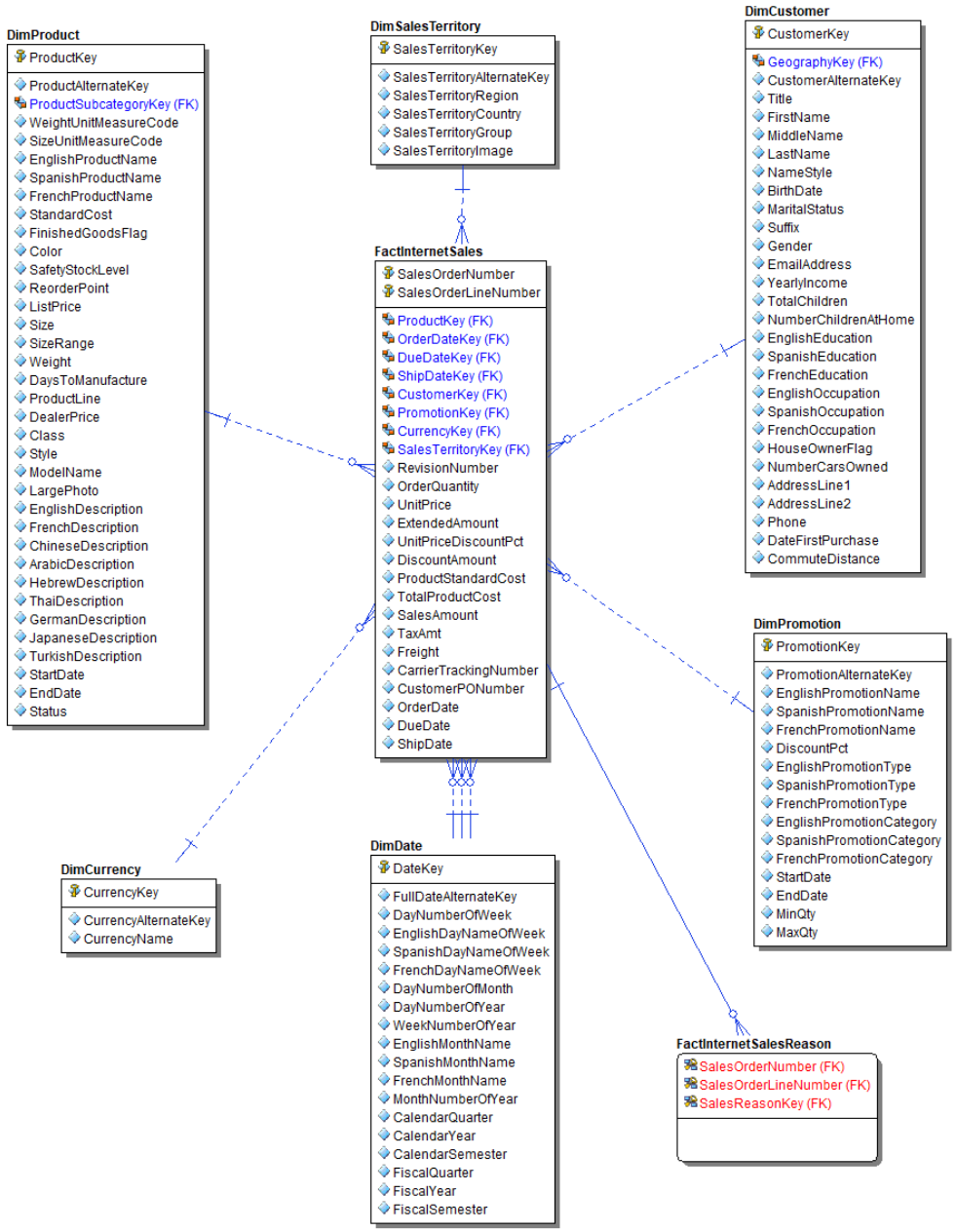
Reseller Sales





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Hierarchies

- Product: Category, Product Subcategory, Product Name
- Promotions: Promotion Type, Promotion Name
- Reseller Business: Business Type, Reseller Name
- Customer Geo: Country Region, State Province, City
- Reseller Geo: Country Region, State Province, City
- Employee Geo: Country Region, State Province, City
- Sales Territory: Sales Territory Group, Sales Territory Country, Sales Territory Region

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Reseller (Store) Sales

- Gross profit = Sales Amount – Total Product Cost
- Gross Profit Margin = (Sales Amount – Total Product Cost)/ Sales Amount

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Reseller (Store) Sales

- Gross profit = Sales Amount – Total Product Cost
- Gross Profit Margin = (Sales Amount – Total Product Cost)/ Sales Amount

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AdventureWorksDW

Reverse Engineer

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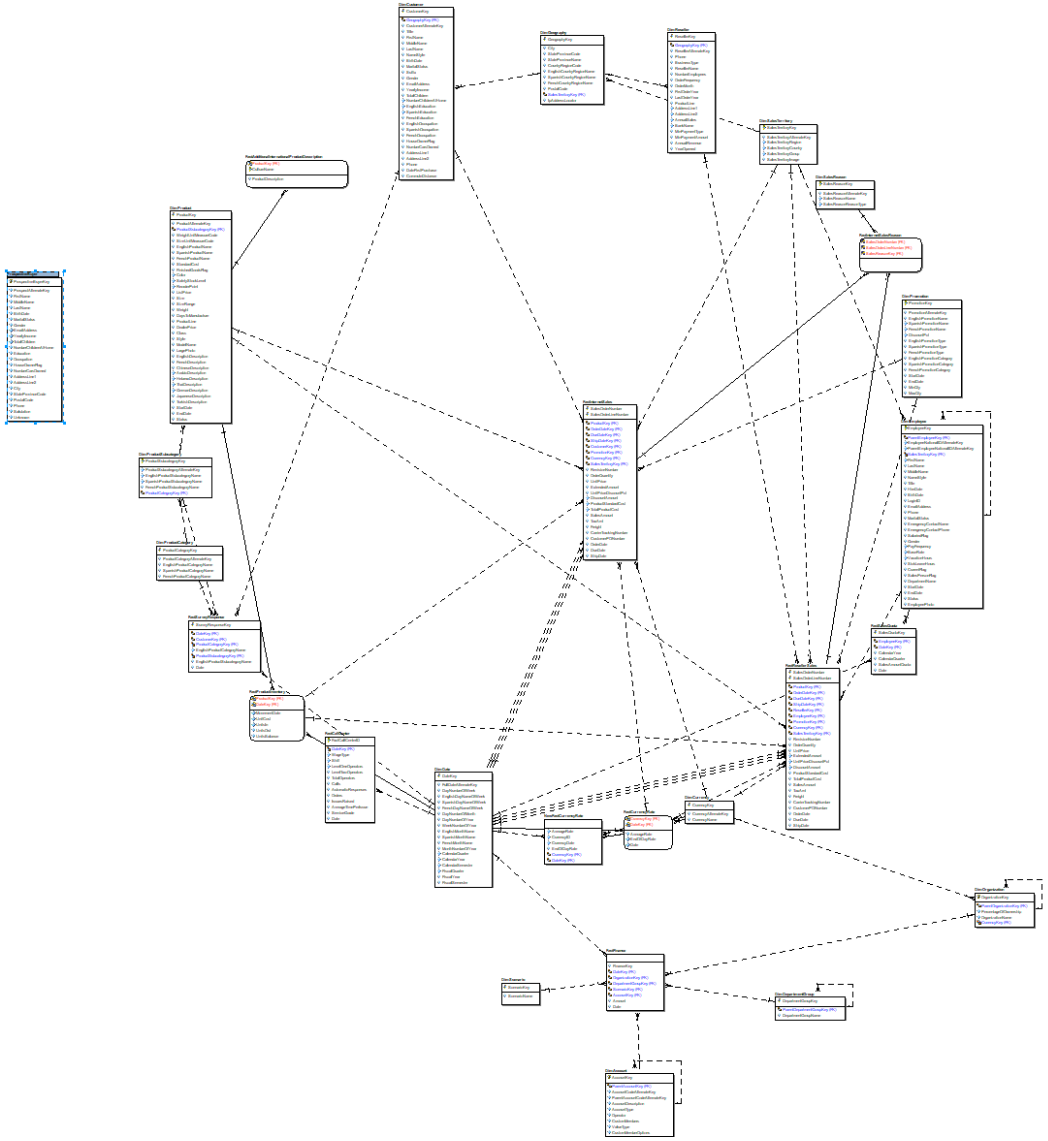
AdventureWorksDW: Reverse Engineer Data Model



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