

Appendix

LINEORDER	
ORDERKEY	
LINENUMBER	
FC_CUSTOMER	CUSTKEY
	NAME
	ADDRESS
	CITY
	NATION
	REGION
	PHONE
	MKYSEGMENT
FC_SUPPLIER	SUPPKEY
	NAME
	ADDRESS
	CITY
	NATION
	REGION
	PHONE
FC_PART	PARTKEY
	NAME
	MFGR
	CATEGOTY
	BRAND1
	COLOR
	TYPE
	SIZE
	CONTAINER

LINEORDER (suite)	
FC_DATE	ORDERDATE
	DAYOFWEEK
	MONTH
	YEAR
	YEARMONTHNUM
	YEARMONTH
	DAYNUMINWEEK
	DAYNUMINMONTH
	DAYNUMINYEAR
	MONTHNUMINYEAR
	WEEKNUMINYEAR
	SELLINGSEASON
	LASTDAYINWEEKFL
	LASTDAYINMONTHFL
	HOLIDAYFL
	WEEKDAYFL
	COMMITDATE
	ORDERPRIORITY
	SHIPPRIORITY
QUANTITY	
EXTENDEDPRICE	
ORDERTOTALPRICE	
DISCOUNT	
REVENUE	
SUPPLYCOST	
TAX	
SHIPMODE	

Fig. 7 – SameCF data model

LINEORDER	
ORDERKEY	
LINENUMBER	
FC_CUSTOMER	CUSTKEY
	NAME
	ADDRESS
	CITY
	NATION
	REGION
	PHONE
	MKYSEGMENT

LINEORDER	
ORDERKEY	
LINENUMBER	
FC_SUPPLIER	SUPPKEY
	NAME
	ADDRESS
	CITY
	NATION
	PHONE

LINEORDER	
ORDERKEY	
LINENUMBER	
FC_PART	PARTKEY
	NAME
	MFGR
	CATEGOTY
	BRAND1
	COLOR
	TYPE
	SIZE
	CONTAINER

LINEORDER	
ORDERKEY	
LINENUMBER	
FC_DATE	ORDERDATE
	DAYOFWEEK
	MONTH
	YEAR
	YEARMONTHNUM
	YEARMONTH
	DAYNUMINWEEK
	DAYNUMINMONTH
	DAYNUMINYEAR
	MONTHNUMINYEAR
	WEEKNUMINYEAR
	SELLINGSEASON
	LASTDAYINWEEKFL
	LASTDAYINMONTHFL
	HOLIDAYFL
	WEEKDAYFL
	COMMITDATE

LINEORDER	
ORDERKEY	
LINENUMBER	
ORDERPRIORITY	
SHIPPRIORITY	
QUANTITY	
EXTENDEDPRICE	
ORDERTOTALPRICE	
DISCOUNT	
REVENUE	
SUPPLYCOST	
TAX	
SHIPMODE	

Fig. 8. DLA-CF data model

LINEORDER	
ORDERKEY	
LINENUMBER	
FC_CUSTOMER	CUSTKEY
	NAME
	ADDRESS
	CITY
	NATION
	REGION
	PHONE
	MKYSEGMENT

LINEORDER	
ORDERKEY	
LINENUMBER	
FC_SUPPLIER	SUPPKY
	NAME
	ADDRESS
	CITY
	NATION
	PHONE

LINEORDER	
ORDERKEY	
LINENUMBER	
FC_PART	PARTKEY
	NAME
	MFGR
	CATEGOTY
	BRAND1
	COLOR
	TYPE
	SIZE
	CONTAINER

LINEORDER	
ORDERKEY	
LINENUMBER	
ORDERPRIORITY	
SHIPPRIORITY	
QUANTITY	
EXTENDEDPRICE	
ORDERTOTALPRICE	
DISCOUNT	
REVENUE	
SUPPLYCOST	
TAX	
SHIPMODE	
FC_DATE	ORDERDATE
	DAYOFWEEK
	MONTH
	YEAR
	YEARMONTHNUM
	YEARMONTH
	DAYNUMINWEEK
	DAYNUMINMONTH
	DAYNUMINYEAR
	MONTHNUMINYEAR
	WEEKNUMINYEAR
	SELLINGSEASON
	LASTDAYINWEEKFL
	LASTDAYINMONTHFL
	HD_IDAYFL
	WEEKDAYFL
	COMMITDATE

Fig. 9. FactDate data model

COLUMNAR STAR SCHEMA BENCHMARK QUERIES

Query 1.1 from CNSSB

select sum(lo_extendedprice*lo_discount) as revenue from lineorder,
date where lo_orderdate = d_datekey and d_year = 1993 and lo_discount
between 1 and 3 and lo_quantity < 25;

Query 1.2 from CNSSB

select sum(lo_extendedprice*lo_discount) as revenue from lineorder, date where
lo_orderdate = d_datekey and d_yearmonthnum = 199401 and lo_discount between 4 and
6 and lo_quantity between 26 and 35;

Query 1.3 from CNSSB

select sum(lo_extendedprice*lo_discount) as revenue from lineorder, date
where lo_orderdate = d_datekey and d_weeknuminyear = 6 and d_year = 1994
and lo_discount between 5 and 7 and lo_quantity between 26 and 35;

Query 2.1 from CNSSB

select sum(lo_revenue), d_year, p_brand1 from lineorder, date, part, supplier
where lo_orderdate = d_datekey and lo_partkey = p_partkey and lo_suppkey =
s_suppkey and p_category = 'MFGR#12' and s_region = 'AMERICA'
group by d_year, p_brand1 order by d_year, p_brand1;

Query 2.2 from CNSSB

select sum(lo_revenue), d_year, p_brand1 from lineorder, date, part, supplier
where lo_orderdate = d_datekey and lo_partkey = p_partkey and lo_suppkey =
s_suppkey and p_brand1 between 'MFGR#2221' and 'MFGR#2228' and s_region
= 'ASIA'
group by d_year, p_brand1 order by d_year, p_brand1;

Query 2.3 from CNSSB

select sum(lo_revenue), d_year, p_brand1 from lineorder, date,
part, supplier
where lo_orderdate = d_datekey and lo_partkey = p_partkey and lo_suppkey =
s_suppkey and p_brand1 = 'MFGR#2221' and s_region = 'EUROPE'
group by d_year, p_brand1 order by d_year, p_brand1;

Query 3.1 from CNSSB

select c_nation, s_nation, d_year, sum(lo_revenue) as revenue from customer,
lineorder, supplier, date where lo_custkey = c_custkey and lo_suppkey =
s_suppkey and lo_orderdate = d_datekey and c_region = 'ASIA' and s_region
= 'ASIA' and d_year >= 1992 and d_year <= 1997
group by c_nation, s_nation, d_year order by d_year asc, revenue desc;

Query 3.2 from CNSSB

select c_city, s_city, d_year, sum(lo_revenue) as revenue from customer, lineorder, supplier, date
where lo_custkey = c_custkey and lo_suppkey = s_suppkey and lo_orderdate = d_datekey and
c_nation = 'UNITED STATES' and s_nation = 'UNITED STATES' and d_year >= 1992 and d_year
<= 1997 group by c_city, s_city, d_year order by d_year asc, revenue desc;

Query 3.3 from CNSSB

select c_city, s_city, d_year, sum(lo_revenue) as revenue from customer, lineorder, supplier, date where
lo_custkey = c_custkey and lo_suppkey = s_suppkey and lo_orderdate = d_datekey and (c_city='UNITED
KI1' or c_city='UNITED KI5') and (s_city='UNITED KI1' or s_city='UNITED KI5') and d_year >= 1992
and d_year <= 1997 group by c_city, s_city, d_year order by d_year asc, revenue desc;

Query 3.4 from CNSSB

select c_city, s_city, d_year, sum(lo_revenue) as revenue from customer, lineorder, supplier, date where
lo_custkey = c_custkey and lo_suppkey = s_suppkey and lo_orderdate = d_datekey and (c_city='UNITED
KI1' or c_city='UNITED KI5') and (s_city='UNITED KI1' or s_city='UNITED KI5') and d_yearmonth
= 'Dec1997' group by c_city, s_city, d_year order by d_year asc, revenue desc;

Query 4.1 from CNSSB

```
select d_year, c_nation, sum(lo_revenue - lo_supplycost) as profit from date, customer, supplier, part, lineorder where  
lo_custkey = c_custkey and lo_suppkey = s_suppkey and lo_partkey = p_partkey and lo_orderdate = d_datekey and  
c_region = 'AMERICA' and s_region = 'AMERICA' and (p_mfgr = 'MFGR#1' or p_mfgr = 'MFGR#2') group by  
d_year, c_nation order by d_year, c_nation
```

Query 4.2 from CNSSB

```
select d_year, s_nation, p_category, sum(lo_revenue - lo_supplycost) as profit from date,  
customer, supplier, part, lineorder where lo_custkey = c_custkey and lo_suppkey = s_suppkey
```

```
and lo_partkey = p_partkey and lo_orderdate = d_datekey and c_region = 'AMERICA' and s_region  
= 'AMERICA' and (d_year = 1997 or d_year = 1998) and (p_mfgr = 'MFGR#1' or p_mfgr = 'MFGR#2') group by  
d_year, s_nation, p_category order by d_year, s_nation, p_category
```

Query 4.3 from CNSSB

```
select d_year, s_city, p_brand1, sum(lo_revenue - lo_supplycost) as profit from date, customer,  
supplier, part, lineorder where lo_custkey = c_custkey and lo_suppkey = s_suppkey and  
lo_partkey = p_partkey and lo_orderdate = d_datekey and c_region = 'AMERICA' and s_nation  
= 'UNITED STATES' and (d_year = 1997 or d_year = 1998) and p_category = 'MFGR#14'  
group by d_year, s_city, p_brand1 order by d_year, s_city, p_brand1
```

COLUMNAR STAR SCHEMA BENCHMARK QUERIES ADAPTED TO CASSANDRA

Query 1.1 adapted from CNSSB

```
select discount, quantity from
cnssb.nlineorder_v3 where year = 1993
and yearmonth in ('Jan1993', 'Feb1993', 'Mar1993', 'Apr1993', 'May1993', 'Jun1993',
'Jul1993', 'Aug1993', 'Sep1993', 'Oct1993', 'Nov1993', 'Dec1993') and quantity in
(0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25) and discount in(1,2,3);
```

Query 1.2 adapted from CNSSB

```
select extendedprice, discount as revenue from
cnssb.nlineorder_v3 where year = 1994 and yearmonth
= 'Jan1994' and quantity in (26,27,28,29,30,31,32,33,34,35) and
discount in(4,5,6);
```

Query 1.3 adapted from CNSSB

```
select extendedprice, discount as revenue from
cnssb.nlineorder_v4 where year = 1994 and weeknuminyear
= 6
and quantity in (26,27,28,29,30,31,32,33,34,35) and discount
in(5,6,7);
```

Query 2.1 adapted from CNSSB

```
select revenue, year, brand1 from
cnssb.nlineorder_v5
where suppreion = 'AMERICA' and category = 'MFGR#12';
```

Query 2.2 adapted from CNSSB

```
select revenue, year, brand1 from
cnssb.nlineorder_v1 where suppreion
= 'ASIA'
and brand1 <= 'MFGR#2228' and brand1 >= 'MFGR#2221';
```

Query 2.3 adapted from CNSSB

```
select revenue, year, brand1 from
cnssb.nlineorder_v1
where suppreion = 'EUROPE' and brand1 = 'MFGR#2221';
```

Query 3.1 adapted from CNSSB

```
select nation, suppnation, year, revenue as revenue from
cnssb.nlineorder_v6 where suppreion = 'ASIA' and region
= 'ASIA' and year >= 1992 and year <= 1997;
```

Query 3.2 adapted from CNSSB

```
select city, suppcity, year, revenue as revenue from
cnssb.nlineorder_v8
where nation = 'UNITED STATES' and suppnation = 'UNITED STATES' and year >= 1992 and
year <= 1997;
```

Query 3.3 adapted from CNSSB

```
select city, suppcity, year, revenue as revenue from cnssb.nlineorder_v2 where city in ('UNITED K11', 'UNITED
K15') and suppcity in ('UNITED K11', 'UNITED K15') and yearmonth in
('Jan1992', 'Feb1992', 'Mar1992', 'Apr1992', 'May1992', 'Jun1992',
'Jul1992', 'Aug1992', 'Sep1992', 'Oct1992', 'Nov1992', 'Dec1992',
'Jan1993', 'Feb1993', 'Mar1993', 'Apr1993', 'May1993', 'Jun1993',
'Jul1993', 'Aug1993', 'Sep1993', 'Oct1993', 'Nov1993', 'Dec1993',
'Jan1994', 'Feb1994', 'Mar1994', 'Apr1994', 'May1994', 'Jun1994',
'Jul1994', 'Aug1994', 'Sep1994', 'Oct1994', 'Nov1994', 'Dec1994',
'Jan1995', 'Feb1995', 'Mar1995', 'Apr1995', 'May1995', 'Jun1995',
'Jul1995', 'Aug1995', 'Sep1995', 'Oct1995', 'Nov1995', 'Dec1995',
'Jan1996', 'Feb1996', 'Mar1996', 'Apr1996', 'May1996', 'Jun1996',
'Jul1996', 'Aug1996', 'Sep1996', 'Oct1996', 'Nov1996', 'Dec1996',
```

'Jan1997','Feb1997','Mar1997','Apr1997','May1997','Jun1997','Jul1997','Aug1997','Sep1997','Oct1997','Nov1997','Dec1997') and year >= 1992 and year <= 1997;

Query 3.4 adapted from CNSSB

```
select city, suppcity, year, revenue as revenue from
cnssb.nlineorder_v2
where city in ('UNITED K11', 'UNITED K15')
and suppcity in ('UNITED K11', 'UNITED K15') and yearmonth = 'Dec1997';
```

Query 4.1 adapted from CNSSB

```
select year, nation, revenue, supplycost from
cnssb.nlineorder
where region = 'AMERICA' and suppreregion = 'AMERICA' and mfgr in
('MFGR#1','MFGR#2');
```

Query 4.2 adapted from CNSSB

```
select year, nation, revenue, supplycost from
cnssb.nlineorder
where region = 'AMERICA' and suppreregion = 'AMERICA' and year in
(1997,1998) and mfgr in ('MFGR#1','MFGR#2');
```

Query 4.3 adapted from CNSSB

```
select year, nation, revenue, supplycost from cnssb.nlineorder_v7 where region = 'AMERICA' and suppnation = 'UNITED STATES' and year in (1997,1998) and category = 'MFGR#14';
```