

# WestJet: Siebel on Exadata

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# WestJet: Overview

## THE AIRLINE INDUSTRY IS TOUGH

“If I’d been at Kitty Hawk in 1903 when Orville Wright took off, I would have been farsighted enough, and public-spirited enough – I owed this to future capitalists – to shoot him down.”  
- Warren Buffet



# WestJet: Overview

## Canadian airlines operating today

Adler Aviation	Aklak Air	Cargojet Airways	KD Air	North-Wright Airways	Sunwing Airlines
Aeropro	Alberta Citylink	Central Mountain Air	Keewatin Air	Orca Airways	Superior Airways
Air Canada	Aldair Aviation	CHC Helicopter	Kelowna Flightcraft	Pacific Coastal Airlines	Thunder Airlines
Air Canada Jazz	Alkan Air	Cloud Air	Kenn Borek Air	Pascan Aviation	Tofino Air
Air Canada Jetz	Alta Flights	Corporate Express	Keystone Air Service	Perimeter Aviation	Trans Capital Air
Air Creebec	Arctic Sunwest	Cougar Helicopters	Kivalliq Air	Porter Airlines	Transwest Air
Air Express Ontario	Charters	Craig Air	Kootnay Direct Airlines	Prince Edward Air	Universal Helicopters
Air Georgian	Bar XH Air	Enerjet	Lakeland Aviation	Pronto Airways	Vancouver Island Air
Air Inuit	BCWest Air	Enterprise Airlines	LR Helicopters Inc.	Provincial Airlines	Voyageur Airways
Air Labrador	Bearskin Airlines	First Air	Maritime Air Charter	Regional 1	Wasaya Airways
Air Mikisew	Brock Air Services	Flair Airlines	Morningstar Air	Salt Spring Air	West Coast Air
Air North	Buffalo Airways	Green Air	Express	SkyLink Aviation	West Wind Aviation
Air Nunavut	Calm Air	Harbour Air	Nolinor Aviation	SkyNorth Air	Westex Airlines
Air Saguenay	Canadian Air Taxi	Harv's Air Service	Nor-Alta Aviation	Skyservice	WestJet
Air Satellite	Canadian Metro	Hawkair	North Cariboo Air	Skyxpress Airline	White River Air
Air Southwest	Airlines	Helijet	Northern Thunderbird	Stanton Airways	Wilderness Air, ltd
Air Tindi	Canadian North	Innu Mikun Airlines	Air	Summit Air	
Air Transat	CanJet	Integra Air	Northwestern Air	Sunwest Aviation	

# WestJet: Overview

## Canadian airlines graveyard

30000 Island Air	Canadian Regional Airlines	Norcanair	Transair
Air Alliance	City Express	Nordair	Trans-Canada Air Lines
Air Atlantic	Colonial Airlines	NorOntair	Trans-Provincial Airlines
Air Baffin	Eastern Provincial Airways	North Canada Air	Triton Airlines
Air BC	Fortunair	NWT Air	Val Air
Air Canada Tango	Globemaster Air Cargo	Odyssey International	Vision Airways Corporation
Air Club International	Great Lakes Airlines	Ontario Express	Vistajet
Air Dawson	Greyhound Air	Pacific Western Airlines	Wardair
Air Nova	Harmony Airways	Peace Air	Western Canada Airways
Air Ontario	Iford-Riverton Airways	Pem Air	Westex Airlines
All Canada Express	Inter-Canadien	Quebecair Express	Wilderness Air LTD.
Austin Airways	Jetsgo	Queen Charlotte Airlines	Winnport
Baxter Aviation	Knighthawk Air Express	QuikAir	Worldways Canada
Canada 3000	Lamb Air	Regal Air	World-Wide Airways
Canada West Air	Maestro	Roots Air	Zip
Canada West Airlines	Maritime Central Airways	Royal Aviation	Zoom Airlines
Canadian Airlines	Millardair	Sonicblue Airways	
Canadian Airways	NAC Airways	Southern Frontier Airlines	
Canadian Colonial Airways	Nationair	Time Air	
Canadian Pacific Air Lines	Newfoundland Airways	Torontair	

# WestJet: Overview

## US airlines graveyard – “A” only page...

AAXICO Airlines (1946-1965, to Saturn Airways)  
Access Air (1998 - 2001)  
ADI Domestic Airlines  
Aeroamerica (1974 – 1982)  
Aero Coach (1983 – 1991)  
Aero International Airlines  
Aeromech Airlines (1951 - 1983, to Wright Airlines)  
AeroSun International  
AFS Airlines  
Air America (operated by the CIA in SouthEast Asia)  
Air America (1980s)  
Air Astro  
Air Atlanta (1981 - 88)  
Air Atlantic Airlines  
Air Bama  
Air Berlin, Inc. (1978 – 1990)  
Airborne Express (1946 - 2003, to DHL)

Air California, later AirCal (1967 - 87, to American)  
Air Carolina  
Air Central (Michigan)  
Air Central (Oklahoma)  
Air Chaparral (1980 - 82)  
Air Chico  
Air Colorado  
Air Cortez  
Air Florida (1972 - 84)  
Air Gemini  
Air General  
Air Great Lakes  
Air Hawaii (1960s)  
Air Hawaii (ceased Operations in 1986)  
Air Hyannix  
Air Idaho  
Air Illinois  
Air Iowa

Airlift International (1946 - 81)  
Air Kentucky  
Air LA  
Air-Lift Commuter  
Air Lincoln  
Air Link Airlines  
Air Link Airways  
Air Metro  
Air Miami  
Air Michigan  
Air Mid-America  
Air Midwest  
Air Missouri  
Air Molakai (1980)  
Air Molakai (1990)  
Air Molakai-Tropic Airlines  
Air Nebraska  
Air Nevada  
Air New England (1975 - 81)

# WestJet: Overview

## By the numbers

**1996**

5 destinations

1 country

3 aircraft

220 WestJetters

**2013**

87 destinations

18 countries

100+ 737 aircraft

9,600 WestJetters

10 code-share agreements

33 interline partnerships

1,300 resumes each week

432 marriage proposals

**17 million guests**

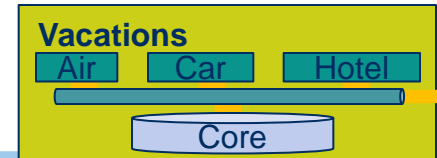
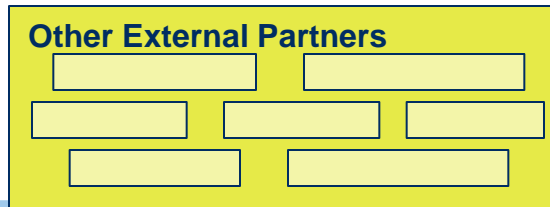
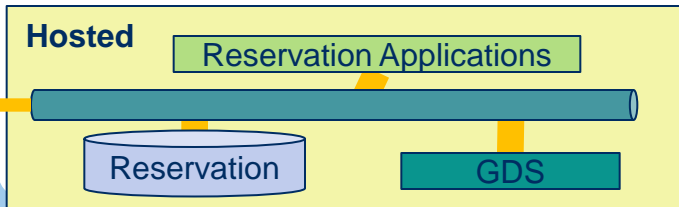
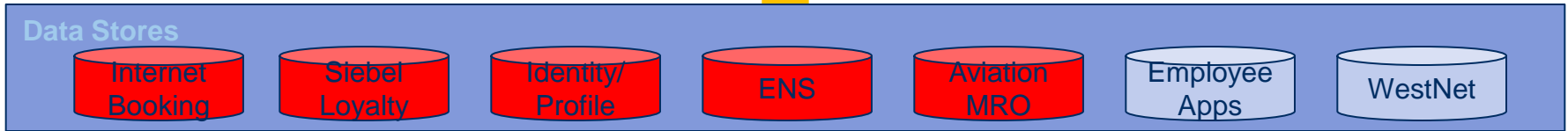
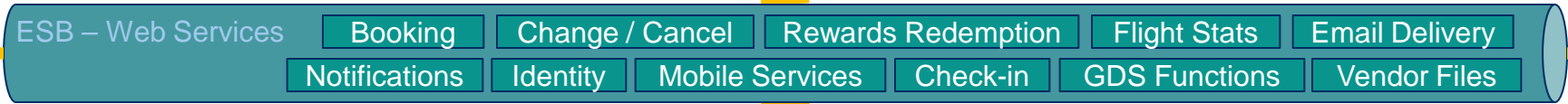
Our new regional airline: WestJet Encore

# WestJet: Business Case

## Goals

- By 2016, to grow Guest Self Service to 60%
  - Multi-channel shopping and reservation features
  - Enhanced ancillary sales
- Implement a database platform that will provide WestJet's exceptional Guest Experience
  - Operational efficiency
  - Service availability
  - Performance consistency
  - Enhanced support
  - Efficiently utilize Oracle RDBMS licensing

# WestJet: Process – Look to Book





# WestJet: Siebel

## Functionality

- Loyalty
  - Frequent flyer system - WestJet Dollar & Vouchers
  - Compensation – Price guarantees, irregular operations
- Guest Profiles
- Guest Portal
- Member Promotions – Giveaways, etc.
- Member Statements
- Marketing campaigns – Bulk Email, Vacation Deals
- OBIEE
  - Analytical reporting for marketing and loyalty programs
  - Financial reconciliation

# WestJet: Siebel

- Statistics
  - 1.2 million Loyalty member accounts
  - 2.4 million Profiles
  - 300 agents and 300 portal connections at any given time
  - 100,000/day batch transactions from 3<sup>rd</sup> parties
- Versions
  - 8.1.1.5

# WestJet: Consolidation

- 25+ servers → 2 Exadata
- Consolidated 16 DBs
- Oracle Platinum Services
- Reduced data center admin needs

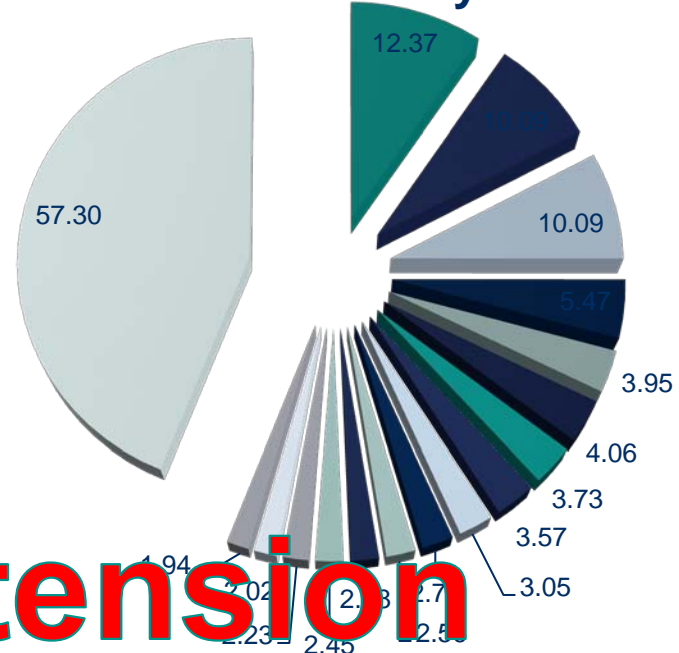


**SIEBEL**  
**MRO**  
**IDENTITY**  
**NOTIFICATIONS**  
**INTERNET BOOKING**

**16**

**Memory Extension**

Server Memory



# WestJet: Siebel Performance

## Siebel on HP-UX and EVA storage

- Expert application and database tuning
- Customized database statistics
- Frequent I/O performance issues
- Long running backup
- Overlap in heavy batch processing

## Siebel on Exadata

- No tuning required post migration – 1 index added
- Default Oracle Maintenance statistics used
- No I/O performance issues
- Faster backup
- Batch jobs fit in the allocated windows

# WestJet: Siebel Performance

**Response time: 0.01 centi-seconds**

**Backup time: 5h (HP) → 0.5h (Exadata + Data Domain)**

Process	HP Average Before Exadata	Average After Exadata	Improvement
Revenue Accounting – Corrections	13.5 min	5 sec	16,200%
Customer Profiles	33 minutes	13 minutes	253%
Revenue Accounting – Daily TX	174 minutes	9 minutes	1,900%

# WestJet: Data Center Replication



Picture From:  
**MAA Best Practices**  
Replication Technologies for High Availability and  
Disaster Recovery –A Technical Overview

Joseph Meeks, HA/MAA Product Management, Oracle  
Lawrence To, MAA Development, Oracle

# WestJet: Data Center Replication

## Western Data Centre



VM Farm for Siebel

TAF  
Connection Pooling



Consolidated  
Exadata

DC rented from 3<sup>rd</sup> party •  
Platinum support on hardware •

- DC Managed and owned by WestJet
- Platinum support on hardware

Physical Data Guard

3200 km - Asynchronous  
Fast Switchover or Failover  
Simplicity and Performance

Protection from Lost Writes and Corruption

## Eastern Data Centre

VM Farm for Siebel



TAF  
Connection Pooling



Consolidated  
Exadata

# WestJet: IBE - Hybrid Columnar Compression

RESVCOMPADDITINFO			
1			
2			
3			
4			
...			

March  
2013

**Partition 1** No compression

**Partition 2** Compress for query

**Partition 3** Compress for archival

**X 50**

**X 170**

April  
2013

**+ 55 GB**

March  
2014

**+ 1.1 TB**





# WestJet: IBE - Hybrid Columnar Compression

Hint 1:

Find right data and partition  
by frequency of data updates

Hint 2:

Use DBMS\_REDEFINITION for  
partitioning

- Technology is unique to Exadata
- No additional license cost 
- Partitioned tables will guarantee performance
- Delay additional storage purchases 

<b>Archive</b>	54 GB	➔	0.32 GB
<b>Query</b>	34 GB	➔	0.68 GB

Disk space saved : 87 GB

- Decreased network requirements for replication

# WestJet: Future

- Siebel 8.2.2.3 – 3<sup>rd</sup> Qtr. 2013
- Siebel HCC (1-2 Million/Week) – 4<sup>th</sup> Qtr. 2013
- Memory Optimization – September 2013
- Purchasing two additional ¼ Rack X3-2 – 1<sup>st</sup> Qtr. 2014
  - Additional Siebel Functionality
    - Travel Agent Commission – 2013
    - Call Center CTI integration and Case Management - 2014
  - Revenue Management - 2013
  - BI Analytics Initiative – 2014
  - Other Tier 1 database consolidations ... - 2013/2014
- Active Data Guard / Golden Gate - 2014

# WestJet: Benefit Summary

- Exadata: A platform that enables WestJet's exceptional Guest Experience
  - High Availability and Performance
  - Exceptional Oracle support
- Consistent patching practice and schedule
- Cost avoidance of additional hardware and software
- Time to Market benefits
  - Initial build and configuration
  - Performance Load testing
- Smaller Data Center footprint

# WestJet: Resources

## **WestJet Oracle Exadata Technical Case Study**

***<http://www.oracle.com/technetwork/server-storage/engineered-systems/exadata/index.html>***

## **WestJet Video**

***<http://medianetwork.oracle.com/media/>***

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