IoT Academy

Digital Transformation: Enhancing IoT-driven Solutions for Smart Islands

Applied Use Cases in the implementing Smart Islands – Use Cases

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  - The 7 Element of Digital Citizenship
- LinkedIn

Upon completion of this course, the Participant will be able to:

- Apply / Implement the previous learning in real world use cases (5 use cases).

Use Cases

1. Enterprise Data Backup

Use Case Description

- ABC Enterprise currently keeps 18 months of CRM data in RDBMS and 7 years of archived data on tapes.
- ABC Enterprise wants to move from tape backups to HDFS backups
  - Access of data is easier
  - Can use commodity hardware with potential to move to the cloud
  - No offline backups required
- Provide adhoc querying capability on the data

Use Cases

1. Enterprise Data Backup

Characteristics

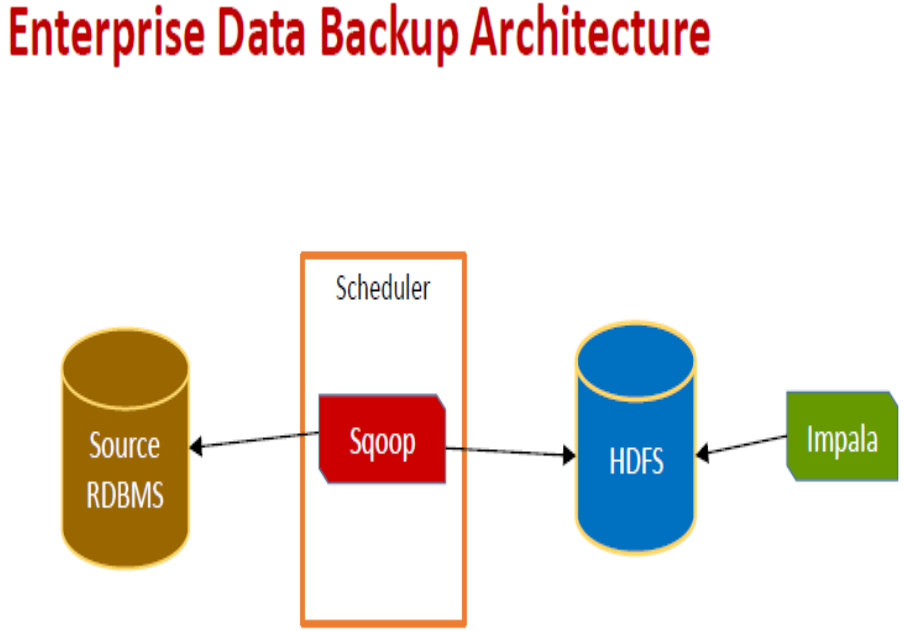
Characteristics	Type	Notes
Sources	RDBMS	
Data Types	Numeric and relational	
Mode	Historical	
Data Acquisition	Pull	
Availability	After 1 day	Data needs to be available in the data warehouse after 1 day since the original data is created
Store type	Write once, read many	
Response Times	As good as possible	Given adhoc querying requirements, queries can run for a few seconds.
Modelbuilding	None	

Use Cases

1. Enterprise Data Backup

Big Data Solution

Module	Technology option	Notes
Acquire	Sqoop	Default choice for Database Extract
Transport	N/A	
Persist	HDFS	Store in native HDFS format as Sequence Files
Transform	N/A	
Reporting	Impala	Basic adhoc querying tool
Advanced Analytic	N/A	



Use Cases

2. Media File Store

Use Case Description

- ABC Enterprise has contact center where all calls are recorded. These recordings need to be archived for analytics
- ABC Enterprise wants to move from tape archive to online archive
- Provide adhoc querying capability on the data

Use Cases

2. Media File Store

Characteristics

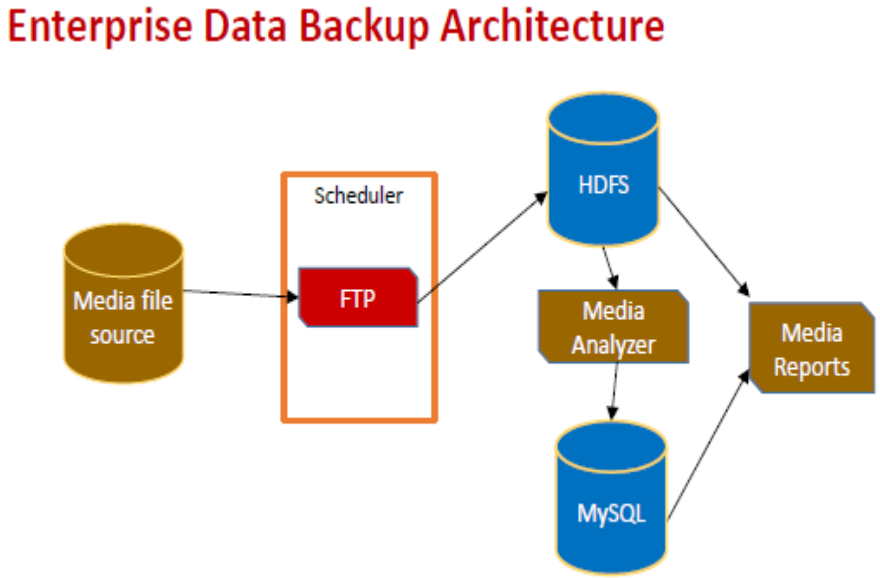
Characteristics	Type	Notes
Sources	Contact Center recording solutions	
Data Types	Media files	
Mode	Historical	
Data Acquisition	Pull	
Availability	After 1 day	Data needs to be available in the media store after 1 day since the original data is created
Store type	Write once, read many	
Response Times	As good as possible	Given adhoc querying requirements, queries can run for a few seconds.
Modelbuilding	None	

Use Cases

2. Media File Store

Big Data Solution

Module	Technology option	Notes
Acquire	Files	Only choice for media files
Transport	FTP	Easy transfer; security and compression capable
Persist	HDFS, MYSQL	Media files stored in HDFS ; Meta-data and analytics stored in MySQL
Transform	Custom	Custom Media Analyzer for tagging media files and storing meta data
Reporting	Impala	Custom Media Reporting tool to analyze meta data and listen to recordings
Advanced Analytic	N/A	



Use Cases

3. Social Media Sentiment Analysis

Use Case Description

- ABC news corporation tracks popular topics on social media and uses them for their news reporting
- They want an automated system to capture social media interactions on popular topics and do real time sentiment analysis
- Sentiment Analysis need to be summarized and archived for future analysis too.

Use Cases

3. Social Media Sentiment Analysis

Characteristics

Characteristics	Type	Notes
Sources	Twitter, Facebook	Social media popular topics. Topics are configurable
Data Types	Tweets, posts (JSON)	
Mode	Real time	
Data Acquisition	Streaming / push	
Availability	Real time	On the fly analytics
Store type	Write many, read many	
Response Times	Real time	Given adhoc querying requirements, queries can run for a few seconds.
Modelbuilding	Sentiment Analysis	

Use Cases

3. Social Media Sentiment Analysis

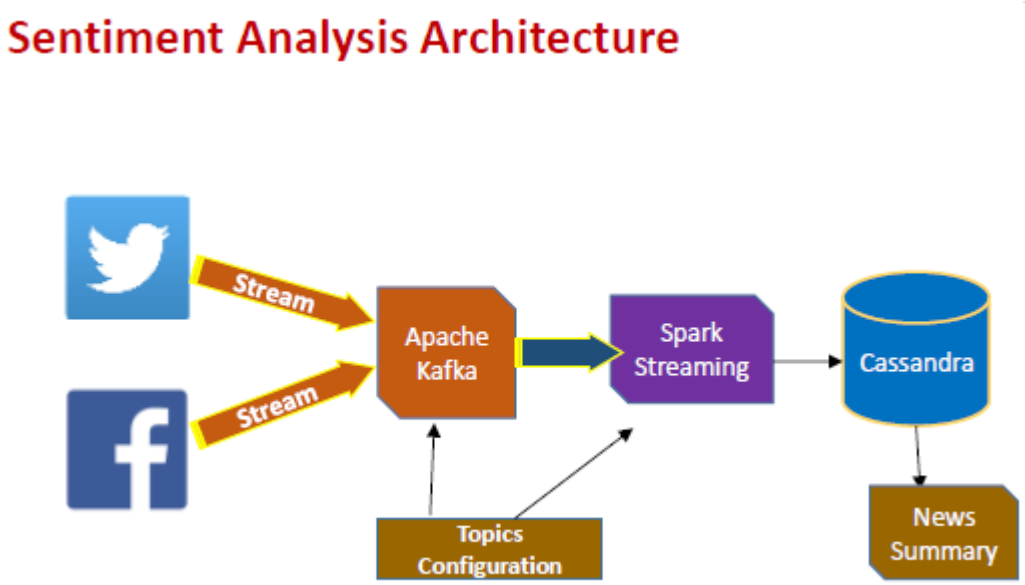
Big Data Solution

Module	Technology option	Notes
Acquire	Streaming	Streaming supported by all social media websites
Transport	Kafka	Kafka provides scalable real time transport for data. Has interfaces to Twitter streaming as well as Spark
Persist	Cassandra	Store data by topic. The social media topic would be used as the key.
Transform	Apache Spark	Real time stream subscription and transformation
Reporting	Custom	Custom application for reading Cassandra data and summarizing for news
Advanced Analytic	Apache Spark	Sentiment Analysis on the fly with stream processing

Use Cases

3. Social Media Sentiment Analysis

Big Data Solution



Use Cases

4. Credit Card Fraud Detection

Use Case Description

- ABC Systems runs a web based retail solution where customers can order any kind of products (like Amazon)
- Sometimes credit card thieves use stolen information to make purchases. This later results in loss of revenue
- ABC systems needs a real time Credit Card Fraud prediction system so that the purchase is blocked before its complete.

Use Cases

4. Credit Card Fraud Detection

Characteristics

Characteristics	Type	Notes
Sources	web transactions	Data is captured in real time while payment is being made on the web
Data Types	Numeric / CRM	
Mode	Real time / Historical	Historical data collection ; prediction in real time
Data Acquisition	Streaming / push	Data pushed from browser as transactions happen
Availability	Real time	Real time predictions
Store type	Write once , read many	
Response Times	Minimal	Prediction need to be made when the purchase is made.
Modelbuilding	Binary Classification	Model to predict if a transaction is fraudulent or not.

Use Cases

4. Credit Card Fraud Detection

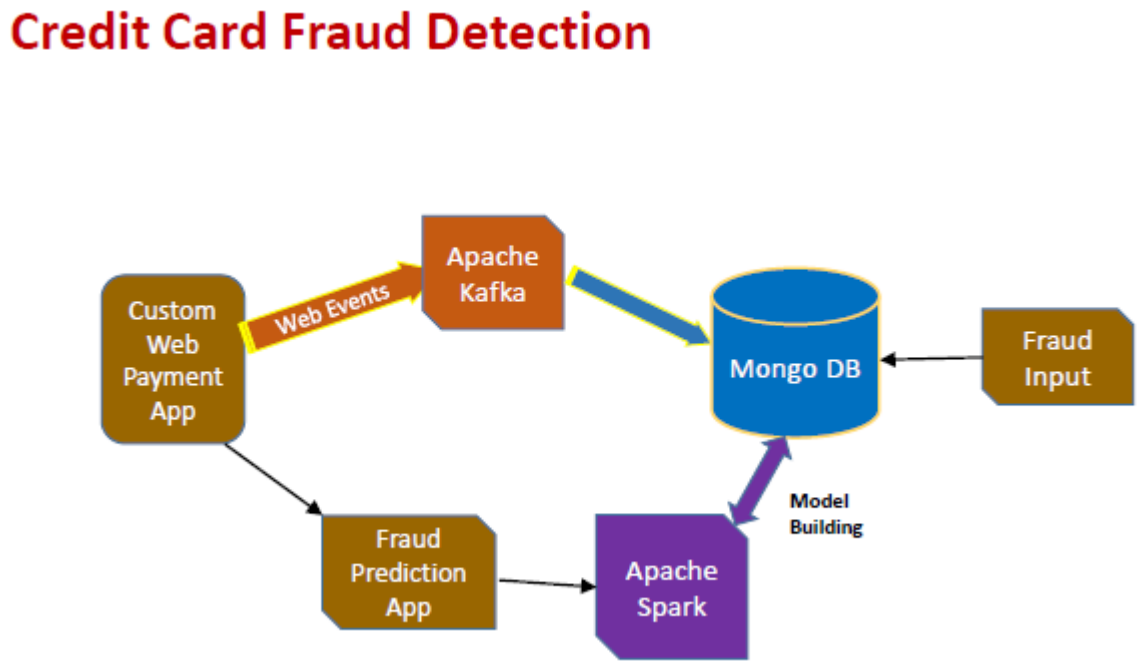
Big Data Solution

Module	Technology option	Notes
Acquire	Web Events	Generated by custom web app. Deployed on a web farm
Transport	Kafka	Kafka provides scalable real time transport for data. Web Transaction events from web app.
Persist	MongoDB	Web events/transactions accumulated and stored in Mongo DB; Also models built are stored in Mongo DB
Transform	Spark	
Reporting	None	Architecture can be enhanced to add adhoc reporting on the web transactions if required.
Advanced Analytic	Apache Spark	Binary Classification model building

Use Cases

4. Credit Card Fraud Detection

Big Data Solution



Use Cases

5. Connected Car - IOT

Use Case Description

- ABC Car company wants to connect cars in real time to analytics engine
- Cars have multiple sensors. Sensor data need to be analyzed (real time / historical) to generate alarms for possible failures to the driver
- ABC needs a satellite enabled data collection and alarm system backed by a big data infrastructure

Use Cases

5. Connected Car - IOT

Characteristics

Characteristics	Type	Notes
Sources	Car sensors	Sensors in car
Data Types	Numbers	Numeric event sensor data
Mode	Historical / Real time	Critical data processed real time. Rest historical
Data Acquisition	Push	Sensors send data to collection centers
Availability	Real time	Real time alarms needed
Store type	Write many, read many	Car profile need to be stored
Response Times	Real time	Real time profile fetches for real time alarming
Modelbuilding	Car issue prediction	Predict possible future issues

Use Cases

5. Connected Car - IOT

Big Data Solution

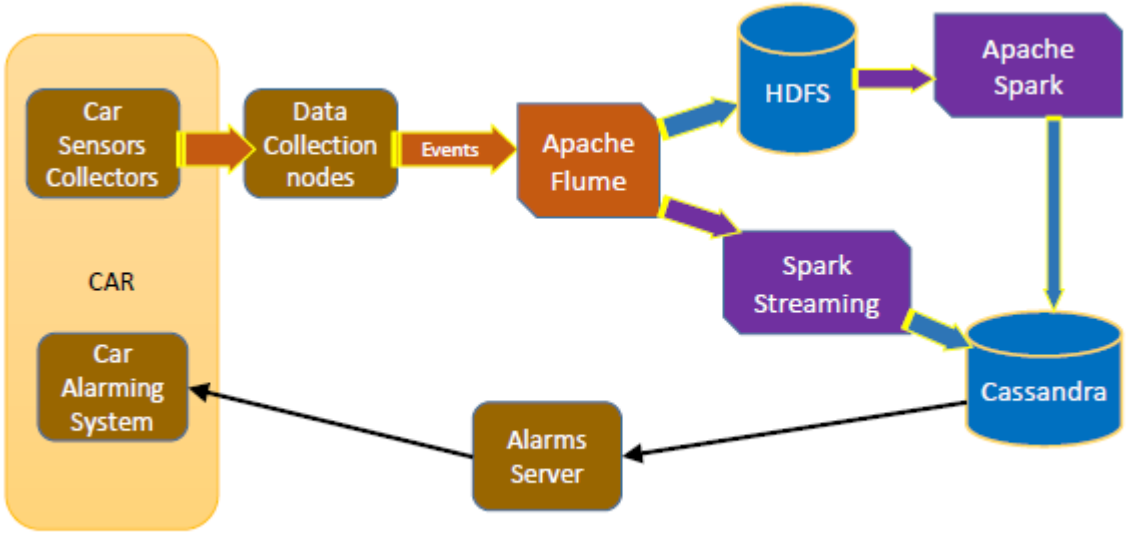
Module	Technology option	Notes
Acquire	Events from Car Sensors	
Transport	?	
Persist	?	
Transform	?	
Reporting	Custom	
Advanced Analytic	?	

Replace the Question Mark (?) with appropriate Technology option for each Big Data Module.

Use Cases

5. Connected Car - IOT

Big Data Solution




thank you
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ngiyabonga
teşekkür ederim
gracias
merci
obrigado
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bedankt
спасибо
Баярлалаа
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