



IBM Cloud Services

Advanced Monitoring Asset for IBM Integration Bus

***Monitoring the business flows of
IBM Integration Bus v10***



Patrick MARIE

IBM Cloud Services consultant

pmarie@fr.ibm.com

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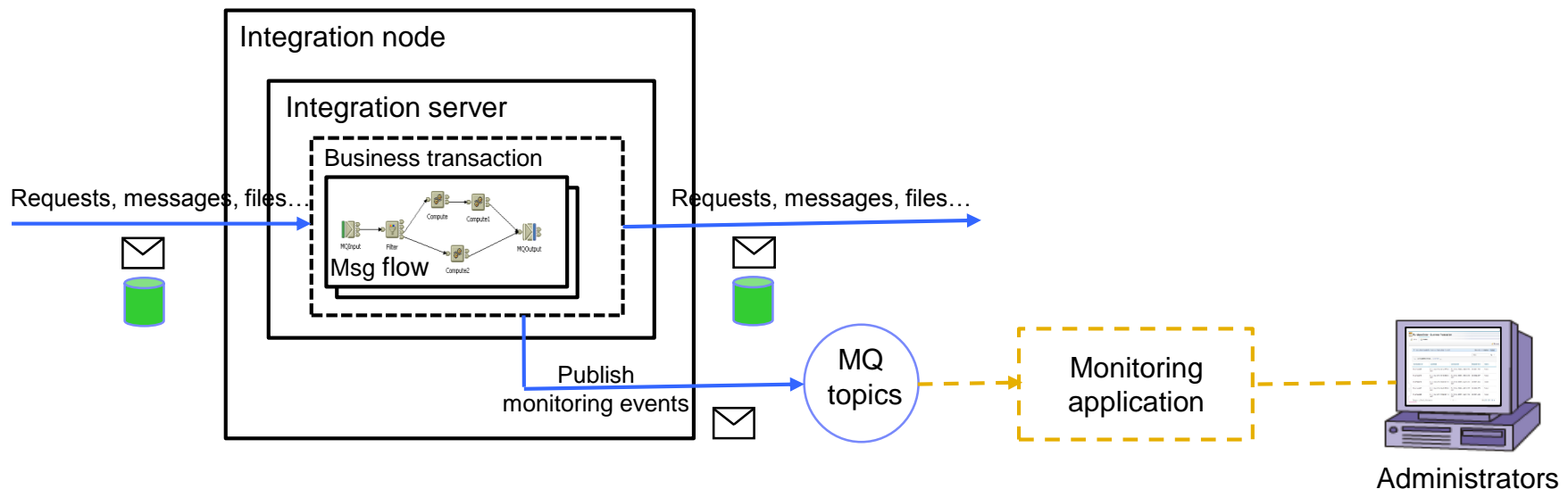
Introduction

- Monitoring message flows has been a concern for many customers since the origin of IBM Integration Bus (then named MQ Integrator):
 - Typical questions are:
 - What are my IIB servers and nodes doing?
 - How many message flows have been processed today?
 - Has the flow with reference “xxx” been processed? When and with which result?
- IBM Integration Bus v10 provides an infrastructure for monitoring:
 - Events can be generated by the message flows and routed to MQ topics.
- Several options based on this infrastructure exist for monitoring the flows:
 - The “Business Transaction Monitoring” functionality of IBM Integration Bus v10.
 - IBM Business Monitor.
 - Custom applications can be implemented by customers or integrators:

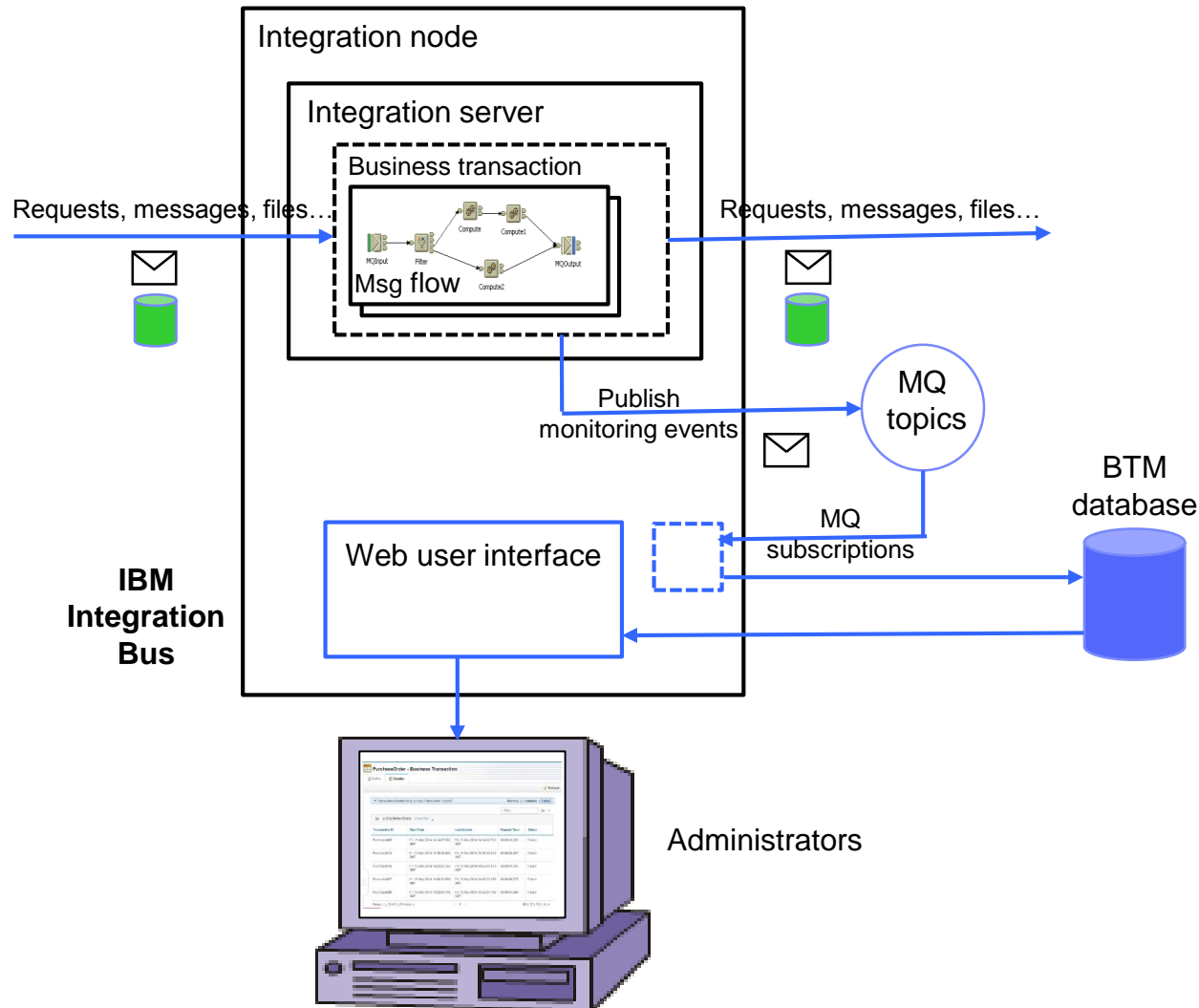
The “Advanced Monitoring Asset for IBM Integration Bus” is such an application and an advanced monitoring solution which extends the capabilities of the “Business Transaction Monitoring” functionality of IIB.

Infrastructure provided by IBM Integration Bus for monitoring

- The message flows can be set to emit monitoring events as MQ messages while being executed.
- These messages are routed to MQ topics.
- The monitoring applications must subscribe to these topics in order to receive the monitoring events and then use them as needed to enable administrators to monitor the message flows.



Native “Business Transaction Monitoring” of IIB v10

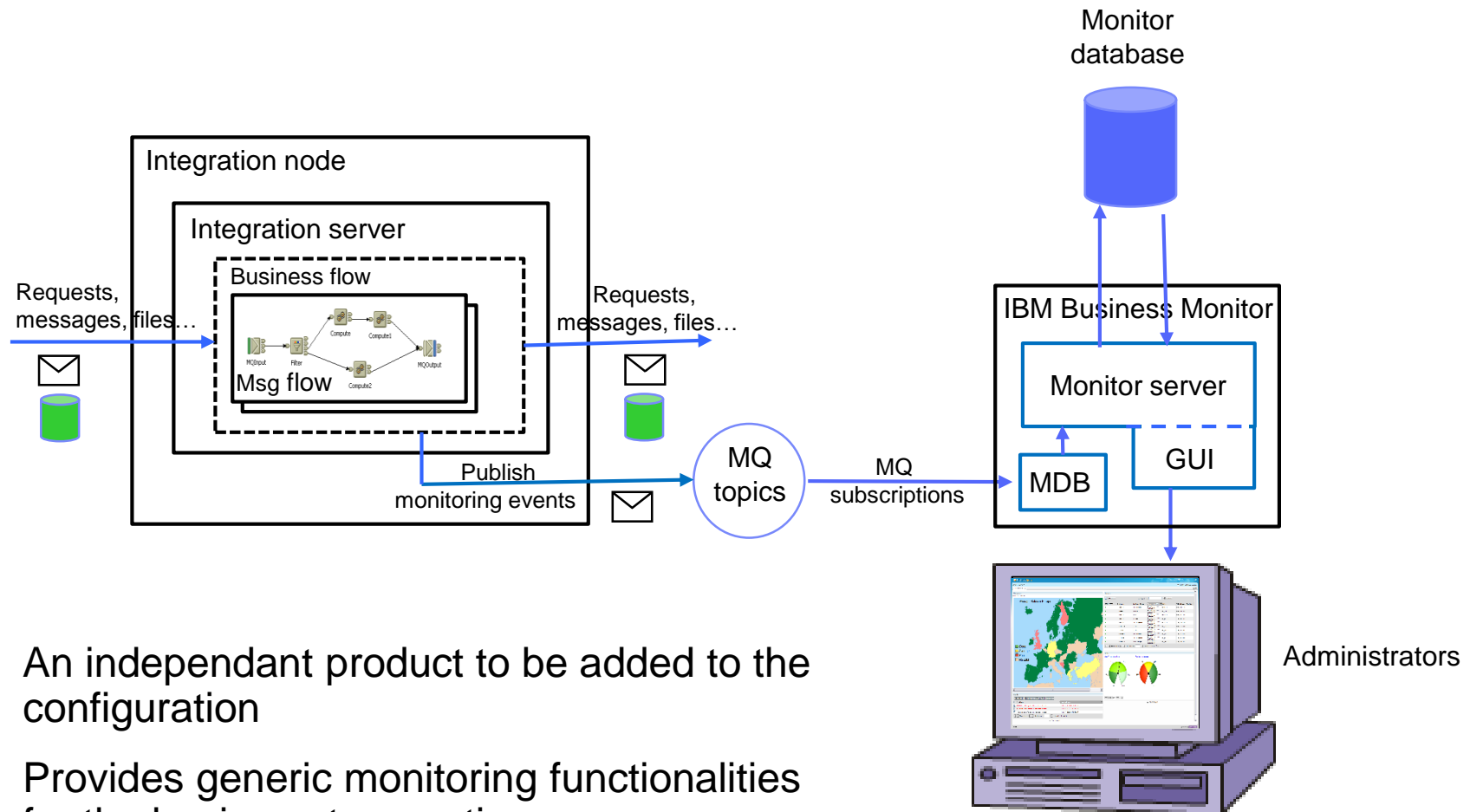


- A function included in IIB v10
- Provides basic monitoring functionalities for the business transactions

Advantages and limitations of the “Business Transaction Monitoring” functionality of IIB v10

- Advantages:
 - Provides basic monitoring functionalities for the business transactions.
 - Included in IIB and supported by the lab.
- Limitations:
 - Limited to monitoring one single integration node at a time.
 - Limited information about the flows.
 - Limited filtering:
 - Limited set of filtering criteria: not possible by dates/times, by application data...
 - No hierarchical filtering (for example: by node > by server > by message flow).
 - No statistics.

Monitoring message flows with IBM Business Monitor

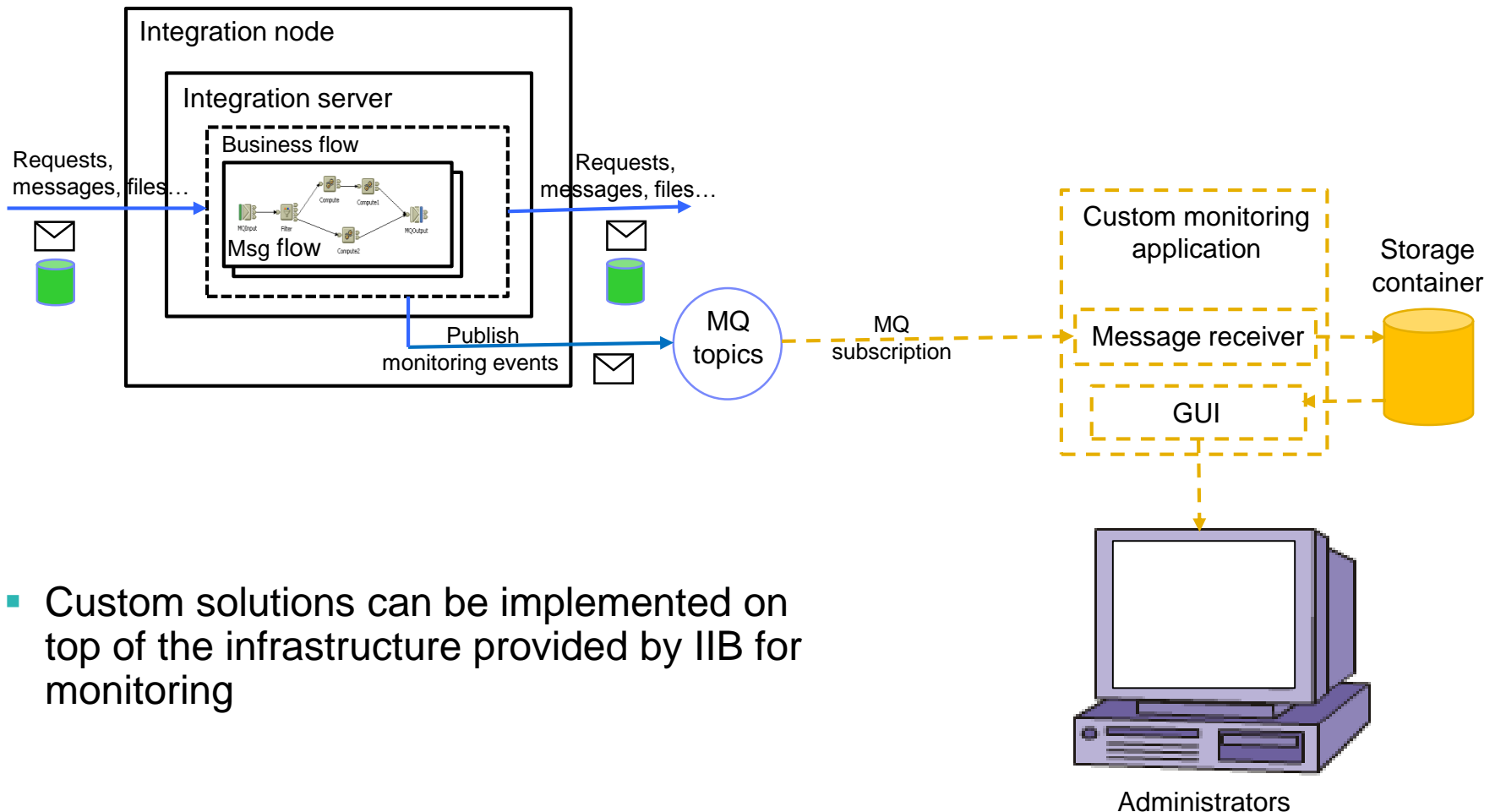


- An independent product to be added to the configuration
- Provides generic monitoring functionalities for the business transactions

Advantages and limitations of using IBM Business Monitor with IIB v10

- Advantages:
 - Provides full monitoring and statistics functionalities for the business transactions.
- Limitations:
 - An independent product which needs to be purchased in addition to IIB.
 - A monitoring model needs to be created for every message flow to be monitored.

Monitoring message flows with implementing a custom application



- Custom solutions can be implemented on top of the infrastructure provided by IIB for monitoring

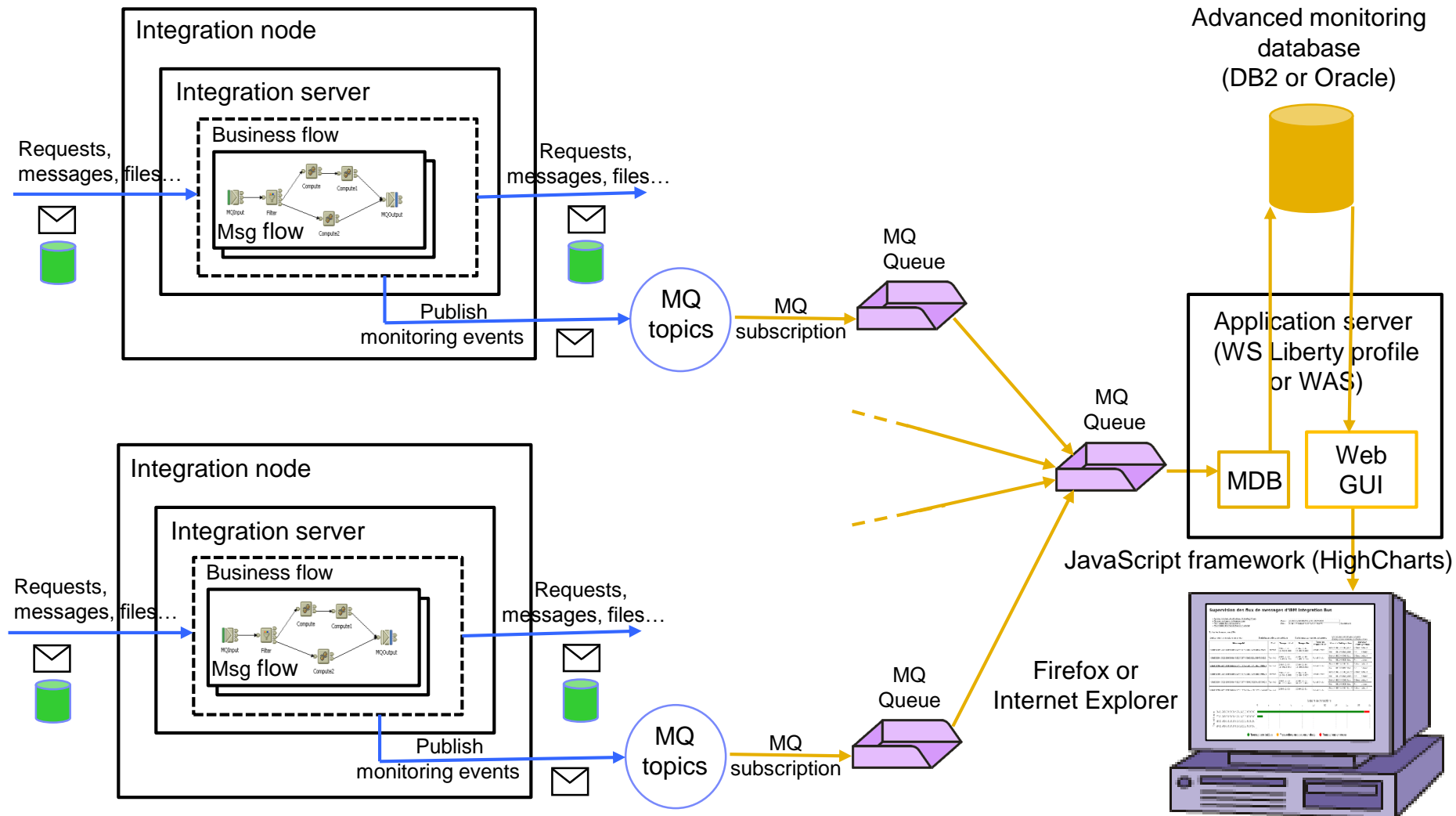
Monitoring message flows with implementing a custom application

- It is possible to implement custom applications for monitoring the message flows or the business transactions.
- Such applications must subscribe to the MQ topics used by IBM Integration Bus in order to receive monitoring events.
- It is then up to the developers to implement the logic needed to process the events and the GUI needed for the administrators to access the monitoring information.
- The Advanced Monitoring Asset for IBM Integration Bus was implemented according to these principles.

Purposes of the Advanced Monitoring Asset for IBM Integration Bus

- The “Advanced Monitoring Asset for IBM Integration Bus” is a monitoring application implemented on top of the monitoring infrastructure provided by IBM Integration Bus.
- It extends the capabilities of the native “Business Transaction Monitoring” of IBM Integration Bus v10:
 - Displays detailed information about the business flows.
 - Provides enhanced sorting and filtering:
 - More criteria: dates/times, nodes, servers, business flows, application data...
 - Hierarchical filtering (example: by nodes > by servers > by business flow types).
 - Provides statistics about the throughputs, the processing times...
 - Enables to monitor several integration servers and integration nodes from a single GUI.
 - Removes the need for a “monitoring model” (uses an implicit one), so that new business flows can immediately be monitored as soon as they are deployed and ready to publish events.

Architecture of the Advanced Monitoring Asset for IIB



Main components of the Advanced Monitoring Asset for IIB

- Message Driven Bean:
 - Reads event messages from the input MQ queue.
 - Extracts the monitoring data from the event messages.
 - For each event :
 - Creates an entry in the table of events.
 - Creates or updates an entry in the table of business flows.
- Database (DB2 or Oracle):
 - Table of events:

WME_ID	TRANSACTION_NAME	EVENT_NAME	EVENT_TYPE	BROKER...	ENV...	MSGFLOW_NAME	APPL_NAME	NODE_NAME	NODE_TYPE	TERMIN...	EVENT_TIMESTAMP	GLOBAL_TRANSACTION_ID	INJS	APPL_DATA
IC41445120494231...	Retail Order	Retail request received	S			Msg_Process_Order...	BTM_RETAIL_APP	Receive Retail Request	ConformMQInputNode	out	Feb 20, 2017 9:41:3...	41445120494231305144475...	IB10NODE_StudIdfault (orderId:3)-requestT...	
IC41445120494231...		Order Item Request ...	P			Order_Item_Request...	BTM_RETAIL_APP	Order Item Inout Qu...	ConformMQInputNode	out	Feb 20, 2017 9:41:3...	41445120494231305144475...	IB10NODE_StudIdfault (orderId:3)-requestT...	
IC41445120494231...		Item Despatched	P			Order_Item_Despatch...	BTM_RETAIL_APP	Item Despatched	ConformMQOutputNode	in	Feb 20, 2017 9:41:3...	41445120494231305144475...	IB10NODE_StudIdfault (orderId:3)-requestT...	
IC41445120494231...		Confirm Item Ordered	E			Order_Item_Respons...	BTM_RETAIL_APP	Confirm Item Ordered	ConformMQInputNode	out	Feb 20, 2017 9:41:3...	41445120494231305144475...	IB10NODE_StudIdfault (orderId:3)-requestT...	
IC41445120494231...		Retail Response Sent				Msg_Process_Order...	BTM_RETAIL_APP	Send Retail Response	ConformMQOutputNode	in	Feb 20, 2017 9:41:3...	41445120494231305144475...	IB10NODE_StudIdfault (orderId:3)-requestT...	

- Table of business flows:

GLOBAL_TRANSACTION_ID	TRANSACTION_NAME	START_TIMESTAMP	END_TIMESTAMP	STATUS	INJS_S	INJS_E	INJS_P	LAST_UPDT_TIMESTAMP	LAST_DATA_UPDT_TSP	APPL_DATA
41445120494231305144475...	Small Business Appl	Feb 20, 2017 9:34:4...	Feb 20, 2017 9:34:4...	F	(IB10NODE_Stud(def...	(IB10NODE_Stud(def...		Feb 20, 2017 9:34:45 AM	Feb 20, 2017 9:34:45 A...	{id:12345}{value:0}...
41445120494231305144475...	Multi Broker Transaction	Feb 20, 2017 9:34:4...	Feb 20, 2017 9:35:0...	E	(IB10NODE_Stud(def...	(IB10NODE_Stud2(def...	(IB10NODE_Stud(def...	Feb 20, 2017 9:35:02 AM		
41445120494231305144475...	Multi Broker Transaction	Feb 20, 2017 9:34:4...	Feb 20, 2017 9:35:0...	E	(IB10NODE_Stud(def...	(IB10NODE_Stud2(def...	(IB10NODE_Stud(def...	Feb 20, 2017 9:35:02 AM		
41445120494231305144475...	Retail Order	Feb 20, 2017 9:34:4...	Feb 20, 2017 9:34:4...	E	(IB10NODE_Stud(def...	(IB10NODE_Stud(def...	(IB10NODE_Stud(def...	Feb 20, 2017 9:34:45 AM	Feb 20, 2017 9:34:45 A...	{orderId:2}{requestT...
41445120494231305144475...	Retail Order	Feb 20, 2017 9:34:4...	Feb 20, 2017 9:34:4...	E	(IB10NODE_Stud(def...	(IB10NODE_Stud(def...	(IB10NODE_Stud(def...	Feb 20, 2017 9:34:45 AM	Feb 20, 2017 9:34:45 A...	{orderId:2}{requestT...

Main components of the Advanced Monitoring Asset for IIB

■ GUI:

- Enables administrators to query the business flow and event data from the database and list them and to build statistics.
- Business flow instances can be queried and listed with detailed information.
 - Filters can be used for the queries in order to limit the matches.
 - The events received for a business flow instance can also be queried and listed.

Id	Status	Start time	End time	Business flow type	Node / Server	Business data
414d512049423130514d47525f537475bfefa1582176511c	Completed	2017-02-20 09:34:44.776	2017-02-20 09:34:44.776	Small Business Appl	Start: IB10NODE_Stud / default2 End: IB10NODE_Stud / default2	Id: 12345 Details/Geography/Item/City: Paris Details/Geography/Item/City: London Details/Geography/Item/City: Berlin Details/Geography/Item/City: Madrid Value: 1 Details/Geography/Item/Country: France Details/Geography/Item/Country: UK Details/Geography/Item/Country: Germany Details/Geography/Item/Country: Spain
414d512049423130514d47525f537475bfefa1582176511e	Failed	2017-02-20 09:34:44.809	2017-02-20 09:34:44.81	Small Business Appl	Start: IB10NODE_Stud / default2 End: IB10NODE_Stud / default2	Id: 12345 Details/Geography/Item/City: Paris Details/Geography/Item/City: London Details/Geography/Item/City: Berlin Details/Geography/Item/City: Madrid Value: 0 Details/Geography/Item/Country: France Details/Geography/Item/Country: UK Details/Geography/Item/Country: Germany Details/Geography/Item/Country: Spain
414d512049423130514d47525f537475bfefa15821765120	Completed	2017-02-20 09:34:44.844	2017-02-20 09:34:44.853	Retail Order	Start: IB10NODE_Stud / default End: IB10NODE_Stud / default	orderId: 2 customerNumber: 5555 itemNumber: 1234-6789-1212 requestType: orderItem customerName: ChocolateFan itemName: Chocolate chip cookies
414d512049423130514d47525f537475bfefa15821765122	Completed	2017-02-20 09:34:44.883	2017-02-20 09:34:44.888	Retail Order	Start: IB10NODE_Stud / default End: IB10NODE_Stud / default	orderId: 2 customerNumber: 5670 itemNumber: 3529-9999-1937 requestType: orderItem customerName: CoffeeFan itemName: ColumbianSupreme
414d512049423130514d47525f537475bfefa15821765124	Completed	2017-02-20 09:34:44.918	2017-02-20 09:34:44.921	Retail Order	Start: IB10NODE_Stud2 / default End: IB10NODE_Stud2 / default	orderId: 3 customerNumber: 4785 itemNumber: 9876-5342-3847 requestType: orderItem customerName: TeaFan itemName: CeylonBlackTea
414d512049423130514d47525f537475bfefa15821765124	Completed	2017-02-20 09:34:44.95	2017-02-20 09:35:02.001	Multi Broker Transaction	Start: IB10NODE_Stud / default Other: IB10NODE_Stud2 / default End: IB10NODE_Stud2 / default2	
414d512049423130514d47525f537475bfefa15821765126	Completed	2017-02-20 09:34:44.986	2017-02-20 09:34:44.99	Retail Order	Start: IB10NODE_Stud / default End: IB10NODE_Stud / default	orderId: 2 customerNumber: 5555 itemNumber: 1234-6789-1212 requestType: orderItem customerName: ChocolateFan itemName: Chocolate chip cookies

Main components of the Advanced Monitoring Asset for IIB

■ GUI:

- Statistics can be built from the results of a query and displayed as a bar chart.
 - Various statistics about the business flow throughputs and the processing times are offered.



Main menu of the GUI

- The main menu offers different types of queries with various filters to query business flows from the database and display them as a table.

Advanced monitoring of IBM Integration Bus business flows

Start: End: ☒ Now

Business data (name, value):

Max number of business flows per page:

Welcome in the Advanced Monitoring application for IBM Integration Bus business flows!

Please select an action in the above menu.

Querying and listing business flow instances

- Business flow instances are retrieved from the database and displayed with a rich set of information:
 - Id, status, start/end dates & times, business flow type, node(s)/server(s), business data.

Advanced monitoring of IBM Integration Bus business flows

See all business flows Start: 2017/01/19 00:00:00 (CET) Business data (name, value): Max number of business flows per page: 7 Logout

See all failed business flows End: 2017/08/06 15:48:01 (CEST) ☒ Now

Monitor by integration nodes/servers

Monitor by business flow types

All business flows for the period from **January 19, 2017 12:00:00 AM CET** to **August 6, 2017 3:48:01 PM CEST** (from 15 to 21 of 10010):

Limit to failed flows Order: select a sort method... Statistics: select type and display...

Id	Status	Start time	End time	Business flow type	Node / Server	Business data
414d512049423130514d47525f537475bfefa1582176511c	Completed	2017-02-20 09:34:44.776	2017-02-20 09:34:44.776	Small Business Appli	Start: IB10NODE_Stud / default2	Id: 12345 Details/Geography/Item/City: Paris Details/Geography/Item/Country: France
					End: IB10NODE_Stud / default2	Details/Geography/Item/City: London Details/Geography/Item/Country: UK Details/Geography/Item/City: Berlin Details/Geography/Item/Country: Germany Details/Geography/Item/City: Madrid Details/Geography/Item/Country: Spain
414d512049423130514d47525f537475bfefa1582176511e	Failed	2017-02-20 09:34:44.809	2017-02-20 09:34:44.81	Small Business Appli	Start: IB10NODE_Stud / default2	Id: 12345 Details/Geography/Item/City: Paris Details/Geography/Item/Country: France
					End: IB10NODE_Stud / default2	Details/Geography/Item/City: London Details/Geography/Item/Country: UK Details/Geography/Item/City: Berlin Details/Geography/Item/Country: Germany Details/Geography/Item/City: Madrid Details/Geography/Item/Country: Spain
414d512049423130514d47525f537475bfefa15821765120	Completed	2017-02-20 09:34:44.844	2017-02-20 09:34:44.853	Retail Order	Start: IB10NODE_Stud / default	orderId: 2 customerNumber: 5555 itemNumber: 1234-6789-1212
					End: IB10NODE_Stud / default	requestType: orderItem customerName: ChocolateFan itemName: Chocolate chip cookies
414d512049423130514d47525f537475bfefa15821765122	Completed	2017-02-20 09:34:44.883	2017-02-20 09:34:44.888	Retail Order	Start: IB10NODE_Stud / default	orderId: 2 customerNumber: 5670 itemNumber: 3529-9999-1937
					End: IB10NODE_Stud / default	requestType: orderItem customerName: CoffeeFan itemName: ColumbianSupreme
414d512049423130514d47525f53747566a5a858224fd804	Completed	2017-02-20 09:34:44.918	2017-02-20 09:34:44.921	Retail Order	Start: IB10NODE_Stud2 / default	orderId: 3 customerNumber: 4785 itemNumber: 9876-5342-3847
					End: IB10NODE_Stud2 / default	requestType: orderItem customerName: TeaFan itemName: CeylonBlackTea
414d512049423130514d47525f537475bfefa15821765124	Completed	2017-02-20 09:34:44.95	2017-02-20 09:35:02.001	Multi Broker Transaction	Start: IB10NODE_Stud / default	
					Other: IB10NODE_Stud / default2	
					End: IB10NODE_Stud2 / default2	
414d512049423130514d47525f537475bfefa15821765126	Completed	2017-02-20 09:34:44.986	2017-02-20 09:34:44.99	Retail Order	Start: IB10NODE_Stud / default	orderId: 2 customerNumber: 5555 itemNumber: 1234-6789-1212
					End: IB10NODE_Stud / default	requestType: orderItem customerName: ChocolateFan itemName: Chocolate chip cookies

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Filtering on dates/times and business data

- Business flow instances can be filtered by dates/times and, optionally, by business data:

Advanced monitoring of IBM Integration Bus business flows

See all business flows
See all failed business flows
Monitor by integration nodes/servers
Monitor by business flow types

Start: 2017/01/19 00:00:00 (CET)
End: 2017/08/06 15:48:01 (CEST) ☒ Now

Business data (name, value):

Max number of business flows per page: 7

- Wildcard characters (_ and %) can be used in the business data values.

Displaying business flow instances from various nodes/servers

- Business flow instances having executed on various nodes/servers can be monitored together.
- Business flow instances may start on a node/server, continue on other node(s)/server(s) and complete on yet another node/server.

Id	Status	Start time	End time	Business flow type	Node / Server	
414d512049423130514d47525f53747509fc9c5892ec3b21	Completed	2017-02-19 16:09:54.932	2017-02-19 16:09:55.277	Retail Order	Start: IB10NODE_Stud / default	order custo itemN
					End: IB10NODE_Stud / default	
414d512049423130514d47525f53747509fc9c5899ec3b21	Completed	2017-02-19 16:09:54.953	2017-02-19 16:09:55.154	Multi Broker Transaction	Start: IB10NODE_Stud / default	
					Other: IB10NODE_Stud / default2 IB10NODE_Stud2 / default	
					End: IB10NODE_Stud2 / default2	
414d512049423130514d47525f53747509fc9c589bec3b21	Completed	2017-02-19 16:09:54.962	2017-02-19 16:09:54.965	Small Business Appli	Start: IB10NODE_Stud / default2	Id: 12 Detai Detai Detai Detai
					End: IB10NODE_Stud / default2	

Filtering failed business flow instances

- The query can also be limited to failed flow instances:

Advanced monitoring of IBM Integration Bus business flows

Start: 2017/02/10 00:00:00 (CET) End: 2017/08/12 22:56:03 (CEST) ☒ Now

Business data (name, value):

Max number of business flows per page:

All failed business flows for the period from **February 10, 2017 12:00:00 AM CET** to **August 12, 2017 10:56:03 PM CEST** (from 6 to 10 of 1001):

Order: select a sort method...
 Statistics: select type and display...

Id	Status	Start time	End time	Business flow type	Node / Server	Business data
414d512049423130514d47525f537475bfefa15821765166	Failed	2017-02-20 09:34:46.256	2017-02-20 09:34:46.257	Small Business Appli	Start: IB10NODE_Stud / default2	Id: 12345 Details/Geography/Item/City: Paris Details/Geography/Item/Country: France
					End: IB10NODE_Stud / default2	Details/Geography/Item/City: London Details/Geography/Item/Country: UK Details/Geography/Item/City: Berlin Details/Geography/Item/Country: Germany Details/Geography/Item/City: Madrid Details/Geography/Item/Country: Spain
414d512049423130514d47525f537475bfefa15821765178	Failed	2017-02-20 09:34:46.611	2017-02-20 09:34:46.612	Small Business Appli	Start: IB10NODE_Stud / default2	Id: 12345 Details/Geography/Item/City: Paris Details/Geography/Item/Country: France
					End: IB10NODE_Stud / default2	Details/Geography/Item/City: London Details/Geography/Item/Country: UK Details/Geography/Item/City: Berlin Details/Geography/Item/Country: Germany Details/Geography/Item/City: Madrid Details/Geography/Item/Country: Spain
414d512049423130514d47525f537475bfefa1582176518a	Failed	2017-02-20 09:34:46.975	2017-02-20 09:34:46.976	Small Business Appli	Start: IB10NODE_Stud / default2	Id: 12345 Details/Geography/Item/City: Paris Details/Geography/Item/Country: France
					End: IB10NODE_Stud / default2	Details/Geography/Item/City: London Details/Geography/Item/Country: UK Details/Geography/Item/City: Berlin Details/Geography/Item/Country: Germany Details/Geography/Item/City: Madrid Details/Geography/Item/Country: Spain
414d512049423130514d47525f537475bfefa1582176519c	Failed	2017-02-20 09:34:47.333	2017-02-20 09:34:47.333	Small Business Appli	Start: IB10NODE_Stud / default2	Id: 12345 Details/Geography/Item/City: Paris Details/Geography/Item/Country: France
					End: IB10NODE_Stud / default2	Details/Geography/Item/City: London Details/Geography/Item/Country: UK Details/Geography/Item/City: Berlin Details/Geography/Item/Country: Germany Details/Geography/Item/City: Madrid Details/Geography/Item/Country: Spain
414d512049423130514d47525f537475bfefa158217651ae	Failed	2017-02-20 09:34:47.698	2017-02-20 09:34:47.699	Small Business Appli	Start: IB10NODE_Stud / default2	Id: 12345 Details/Geography/Item/City: Paris Details/Geography/Item/Country: France
					End: IB10NODE_Stud / default2	Details/Geography/Item/City: London Details/Geography/Item/Country: UK Details/Geography/Item/City: Berlin Details/Geography/Item/Country: Germany Details/Geography/Item/City: Madrid Details/Geography/Item/Country: Spain

Hierarchical filtering of the business flows: by nodes, then by servers, then by flow types

Advanced monitoring of IBM Integration Bus business flows

[See all business flows](#)
 [See all failed business flows](#)
 [Monitor by integration nodes/servers](#)
 [Monitor by business flow types](#)

Start: 2017/01/19 00:00:00 (CET)
 End: 2017/08/06 15:55:19 (CEST)
☒ Now
 Business data (name, value):
 Max number of business flows per page: 5
[Logout](#)

All integration nodes:

Nodes

- [IB10NODE_Stud](#)
- [IB10NODE_Stud2](#)

Node "IB10NODE_Stud" selected:

[See its business flows](#)
[See its failed business flows](#)

Servers

- [default](#)
- [default2](#)

Server "default" selected:

[See its business flows](#)
[See its failed business flows](#)

Business flow types

- [Multi Broker Transaction](#)
- [Retail Order](#)

Business flows of node "IB10NODE_Stud", of server "default" and of business flow type "Multi Broker Transaction" for the period from **January 19, 2017 12:00:00 AM CET to August 6, 2017 3:55:19 PM CEST** (from 6 to 10 of 2002):

[Limit to failed flows](#)
 Order: select a sort method...
 Statistics: select type and display...

Id	Status	Start time	End time	Business flow type	Node / Server	Business data
414d512049423130514d47525f537475bfafa15821765136	Completed	2017-02-20 09:34:45.306	2017-02-20 09:35:02.05	Multi Broker Transaction	Start: IB10NODE_Stud / default Other: IB10NODE_Stud / default2 IB10NODE_Stud2 / default End: IB10NODE_Stud2 / default2	
414d512049423130514d47525f537475bfafa1582176513e	Completed	2017-02-20 09:34:45.449	2017-02-20 09:35:02.068	Multi Broker Transaction	Start: IB10NODE_Stud / default Other: IB10NODE_Stud / default2 IB10NODE_Stud2 / default End: IB10NODE_Stud2 / default2	
414d512049423130514d47525f537475bfafa15821765148	Completed	2017-02-20 09:34:45.663	2017-02-20 09:35:02.087	Multi Broker Transaction	Start: IB10NODE_Stud / default Other: IB10NODE_Stud / default2 IB10NODE_Stud2 / default End: IB10NODE_Stud2 / default2	
414d512049423130514d47525f537475bfafa15821765150	Completed	2017-02-20 09:34:45.809	2017-02-20 09:35:02.108	Multi Broker Transaction	Start: IB10NODE_Stud / default Other: IB10NODE_Stud / default2 IB10NODE_Stud2 / default End: IB10NODE_Stud2 / default2	
414d512049423130514d47525f537475bfafa1582176515a	Completed	2017-02-20 09:34:46.025	2017-02-20 09:35:02.124	Multi Broker Transaction	Start: IB10NODE_Stud / default Other: IB10NODE_Stud / default2 IB10NODE_Stud2 / default End: IB10NODE_Stud2 / default2	

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Hierarchical filtering of the business flows: by flow types, then by nodes, then by servers

Advanced monitoring of IBM Integration Bus business flows

Start: 2017/01/19 00:00:00 (CET) End: 2017/08/06 15:59:33 (CEST) ☒ Now

Business data (name, value):

Max number of business flows per page:

All types of business flows:

Business flow types
[Multi Broker Transaction](#)
[Retail Order](#)
[Small Business Appli](#)

Business flow type "Small Business Appli" selected:

Nodes
[IB10NODE_Stud](#)

Node "IB10NODE_Stud" selected:

Servers
[default2](#)

Business flows of type "Small Business Appli", of node "IB10NODE_Stud" and server "default2" for the period from January 19, 2017 12:00:00 AM CET to August 6, 2017 3:59:33 PM CEST (from 11 to 15 of 2002):

Order: select a sort method... Statistics: select type and display...

Id	Status	Start time	End time	Business flow type	Node / Server	Business data
414d512049423130514d47525f537475bfa15821765164	Completed	2017-02-20 09:34:46.22	2017-02-20 09:34:46.221	Small Business Appli	Start: IB10NODE_Stud / default2 End: IB10NODE_Stud / default2	Id: 12345 Details/Geography/Item/City: Paris Details/Geography/Item/Country: France Details/Geography/Item/Country: UK Details/Geography/Item/Country: Germany Details/Geography/Item/Country: Spain
414d512049423130514d47525f537475bfa15821765166	Failed	2017-02-20 09:34:46.256	2017-02-20 09:34:46.257	Small Business Appli	Start: IB10NODE_Stud / default2 End: IB10NODE_Stud / default2	Id: 12345 Details/Geography/Item/City: Paris Details/Geography/Item/Country: France Details/Geography/Item/Country: UK Details/Geography/Item/Country: Germany Details/Geography/Item/Country: Spain
414d512049423130514d47525f537475bfa15821765176	Completed	2017-02-20 09:34:46.575	2017-02-20 09:34:46.575	Small Business Appli	Start: IB10NODE_Stud / default2 End: IB10NODE_Stud / default2	Id: 12345 Details/Geography/Item/City: Paris Details/Geography/Item/Country: France Details/Geography/Item/Country: UK Details/Geography/Item/Country: Germany Details/Geography/Item/Country: Spain
414d512049423130514d47525f537475bfa15821765178	Failed	2017-02-20 09:34:46.611	2017-02-20 09:34:46.612	Small Business Appli	Start: IB10NODE_Stud / default2 End: IB10NODE_Stud / default2	Id: 12345 Details/Geography/Item/City: Paris Details/Geography/Item/Country: France Details/Geography/Item/Country: UK Details/Geography/Item/Country: Germany Details/Geography/Item/Country: Spain
414d512049423130514d47525f537475bfa15821765188	Completed	2017-02-20 09:34:46.94	2017-02-20 09:34:46.94	Small Business Appli	Start: IB10NODE_Stud / default2 End: IB10NODE_Stud / default2	Id: 12345 Details/Geography/Item/City: Paris Details/Geography/Item/Country: France Details/Geography/Item/Country: UK Details/Geography/Item/Country: Germany Details/Geography/Item/Country: Spain

Navigating in the list of retrieved business flows and sorting it

- Generally, only part of the list of the retrieved business flows gets displayed. Buttons enable to move forward and backward.

414d512049423130514d47525f53747566a5a858224fd808	Completed	2017-02-20 09:34:45.629	2017-02-20 09:34:45.632	Retail Order	Start: IB10NODE_Stud2 / default End: IB10NODE_Stud2 / default	orderId: 3 customerNumber: 4785 itemNumber: 9876-5342-3847	requestType: orderItem customerName: TeaFan itemName: CeylonBlackTea
414d512049423130514d47525f537475bfa15821765148	Completed	2017-02-20 09:34:45.663	2017-02-20 09:35:02.087	Multi Broker Transaction	Start: IB10NODE_Stud / default Other: IB10NODE_Stud2 / default End: IB10NODE_Stud2 / default2		

- The list can be sorted in various ways.

All business flows for the period from **February 9, 2017 12:00:00 AM CET** to **August 9, 2017 9:53:00 PM CEST** (from 1 to 20 of 10010):

Limit to failed flows

Order: select a sort method...

Order: select a sort method...

Sort by start times - Ascending

Sort by start times - Descending

Sort by end times - Ascending

Sort by end times - Descending

Sort by status - Ascending

Sort by status - Descending

Sort by flow types - Ascending

Sort by flow types - Descending

Sort by start nodes / servers - Ascending

Sort by start nodes / servers - Descending

Sort by end nodes / servers - Ascending

Sort by end nodes / servers - Descending

Statistics: select type and display...

Status	Start time	End time	Business flow type	Node / Server
Completed	2017-02-20 09:34:44.272	2017-02-20 09:34:44.337	Retail Order	Start: IB10NODE_Stud / default End: IB10NODE_Stud / default
Completed	2017-02-20 09:34:44.306	2017-02-20 09:34:44.353	Retail Order	Start: IB10NODE_Stud / default End: IB10NODE_Stud / default
Completed	2017-02-20 09:34:44.347	2017-02-20 09:34:44.354	Retail Order	Start: IB10NODE_Stud / default End: IB10NODE_Stud / default
Completed	2017-02-20 09:34:44.388	2017-02-20 09:35:01.935	Multi Broker Transaction	Start: IB10NODE_Stud / default Other: IB10NODE_Stud / default2 IB10NODE_Stud2 / default End: IB10NODE_Stud2 / default2
Completed	2017-02-20 09:34:44.423	2017-02-20 09:34:44.426	Small Business Appli	Start: IB10NODE_Stud / default2 End: IB10NODE_Stud / default2

Listing the monitoring events received for a business flow instance

- The events received for a business flow instance can also be displayed below the list of business flow instances:

414d512049423130514d47525f537475bfefa15821765112	Completed	2017-02-20 09:34:44.596	2017-02-20 09:35:01.968	Multi Broker Transaction	Start: IB10NODE_Stud / default Other: IB10NODE_Stud / default2 IB10NODE_Stud2 / default End: IB10NODE_Stud2 / default2
--	-----------	----------------------------	----------------------------	-----------------------------	---

Events received for business flow "414d512049423130514d47525f537475bfefa15821765112" (5):

Id	Event time	Event name	Event type	Node / Server	Application	Flow	Node	Node type	Terminal	Business data
ID:414d512049423130514d47525f537475bfefa158216f2e69	2017-02-20 09:34:44.596	MQ Input.OutTerminal	Démarré	IB10NODE_Stud / default	MultiBrokerTransactionApplication1	MultiBrokerTransactionFlow1	MQ Input	ComIbmMQInputNode	out	
ID:414d512049423130514d47525f537475bfefa158216f2e6e	2017-02-20 09:34:44.596	MQ Output.InTerminal	En cours	IB10NODE_Stud / default	MultiBrokerTransactionApplication1	MultiBrokerTransactionFlow1	MQ Output	ComIbmMQOutputNode	in	
ID:414d512049423130514d47525f537475bfefa15821704d6f	2017-02-20 09:34:44.597	MQ Output.InTerminal	En cours	IB10NODE_Stud / default2	MultiBrokerTransactionApplication2	MultiBrokerTransactionFlow2	MQ Output	ComIbmMQOutputNode	in	
ID:414d512049423130514d47525f53747566a5a858224a1e74	2017-02-20 09:35:01.944	MQ Output.InTerminal	En cours	IB10NODE_Stud2 / default	MultiBrokerTransactionApplication3	MultiBrokerTransactionFlow3	MQ Output	ComIbmMQOutputNode	in	
ID:414d512049423130514d47525f53747566a5a858224a167e	2017-02-20 09:35:01.968	MQ Output.InTerminal	Completed	IB10NODE_Stud2 / default2	MultiBrokerTransactionApplication4	MultiBrokerTransactionFlow4	MQ Output	ComIbmMQOutputNode	in	

Statistics about the throughputs and processing times of the business flows

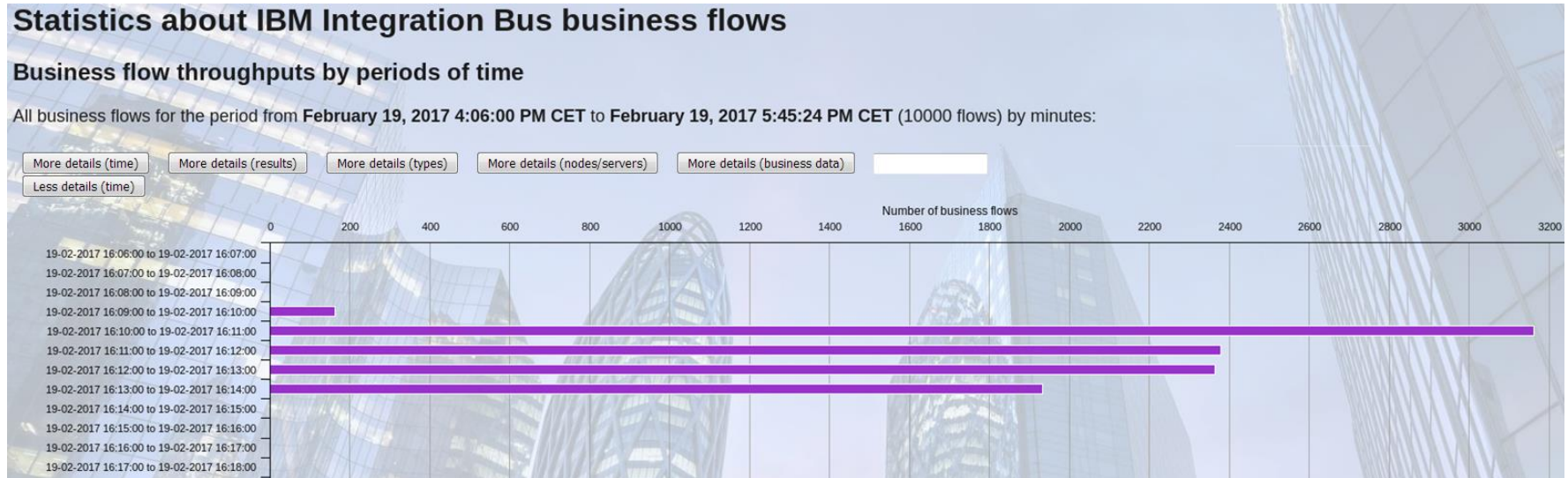
- Statistics are requested from the main panel and calculated from the results of a query (possibly filtered) executed in the main panel.
- Several types of statistics are offered about the throughputs and processing times of the business flows:

All business flows for the period from **February 9, 2017 12:00:00 AM CET** to **August 9, 2017 9:53:00 PM CEST** (from 1 to 20 of 10010):

Limit to failed flows	Order: select a sort method...	Statistics: select type and display...		
Id	St	Business flow type	Node / Server	
414d512049423130514d47525f537475bfefa15821765102	Completed	4:44.337 Retail Order	Start:	IB10NODE_Stud / default
			End:	IB10NODE_Stud / default
414d512049423130514d47525f537475bfefa15821765104	Completed	2017-02-20 09:34:44.306 2017-02-20 09:34:44.353 Retail Order	Start:	IB10NODE_Stud / default
			End:	IB10NODE_Stud / default

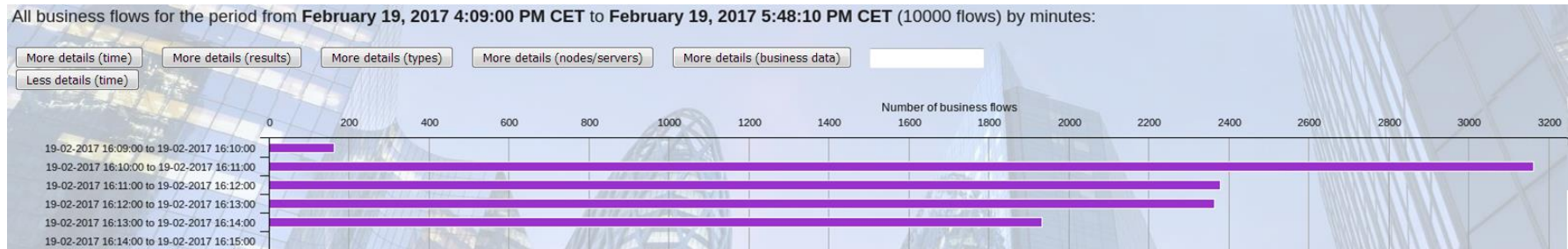
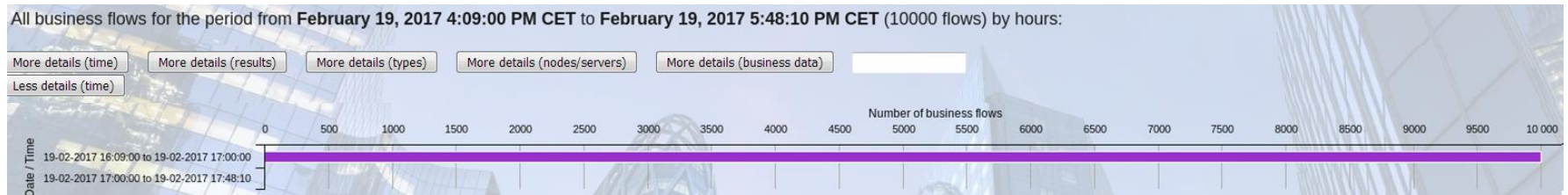
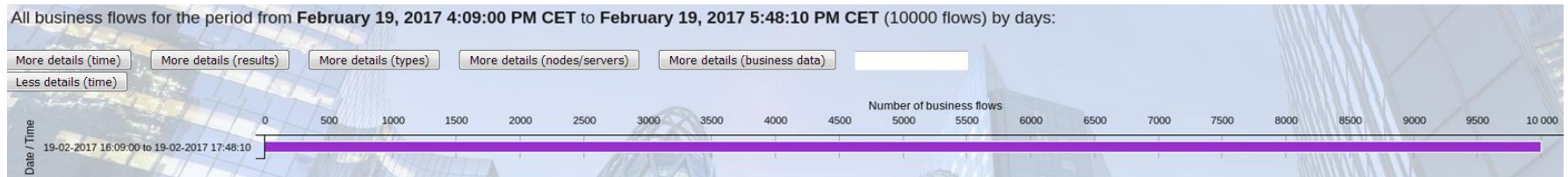
Statistics about throughputs by periods of time

- Global throughputs (number of instances per periods of time):



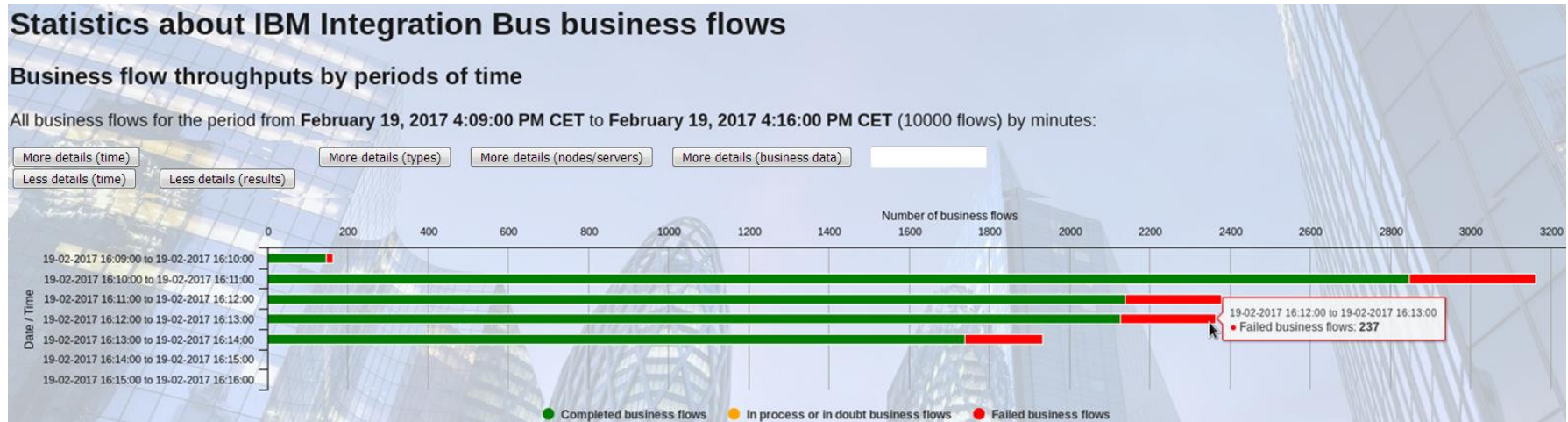
Statistics about throughputs by periods of time

- The periods of time can be chosen: seconds, minutes, hours, days, weeks, months or years.



Statistics about throughputs by periods of time

- The throughputs can be split by results (completed, failed, in process/in doubt):



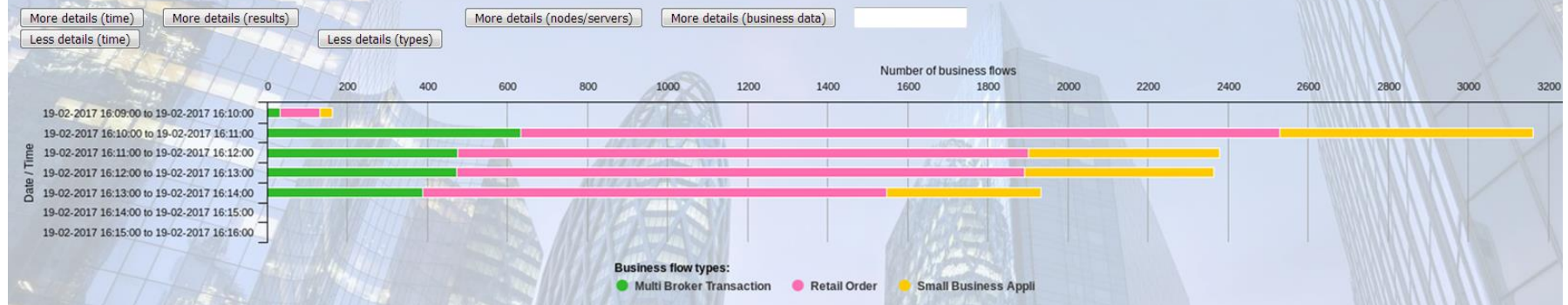
Statistics about throughputs by periods of time

- The throughputs can be split by business flow types:

Statistics about IBM Integration Bus business flows

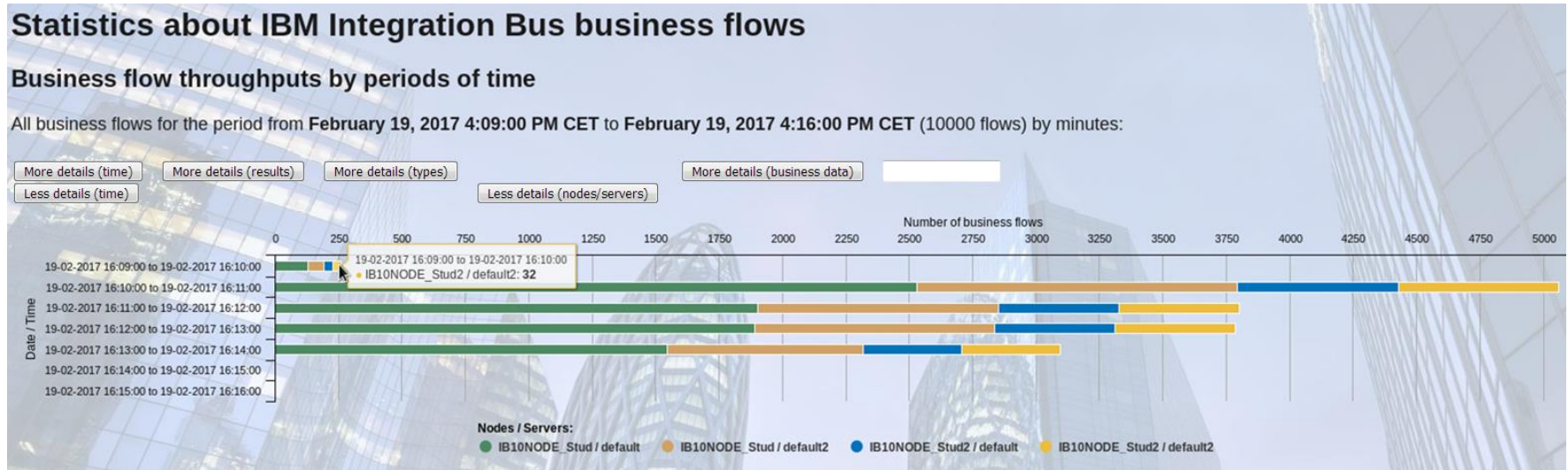
Business flow throughputs by periods of time

All business flows for the period from February 19, 2017 4:09:00 PM CET to February 19, 2017 4:16:00 PM CET (10000 flows) by minutes:



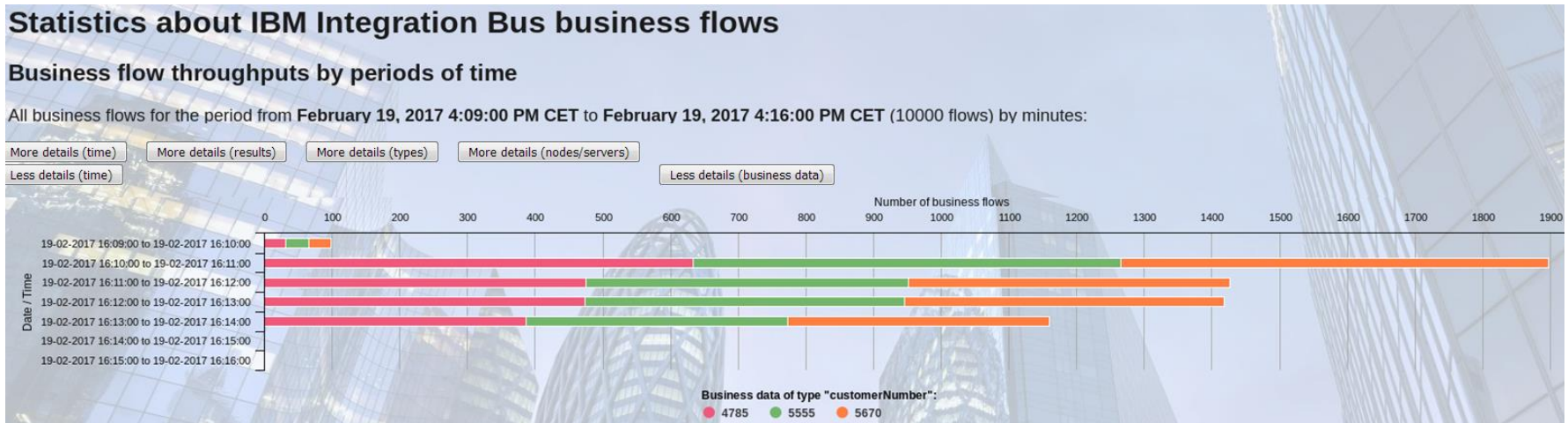
Statistics about throughputs by periods of time

- The throughputs can be split by nodes or by nodes / servers:



Statistics about throughputs by periods of time

- The throughputs can be split by business data values:

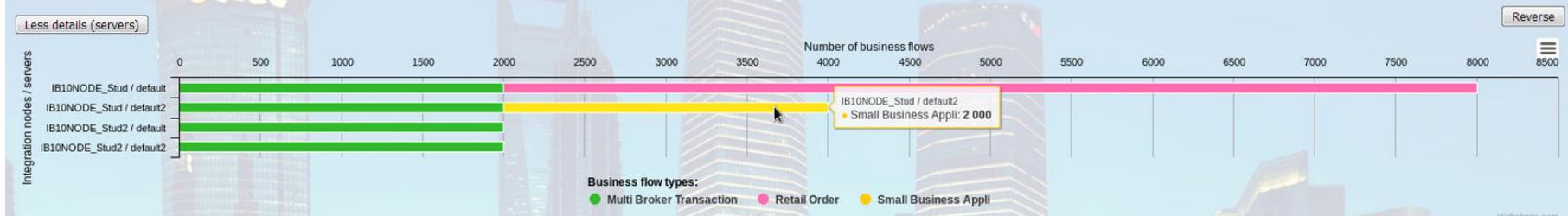


Statistics about throughputs by nodes/servers and by business flow types

Statistics about IBM Integration Bus business flows

Business flow throughputs by integration nodes and servers

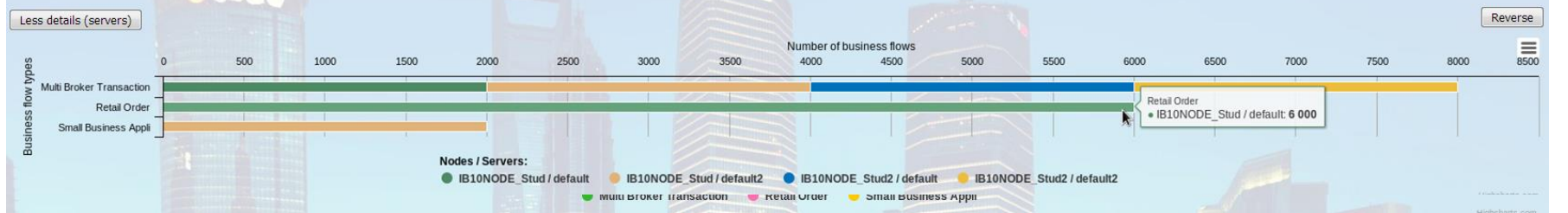
All business flows for the period from February 19, 2017 4:09:00 PM CET to February 19, 2017 4:16:00 PM CET (10000 flows):



Statistics about IBM Integration Bus business flows

Business flow throughputs by flow types

All business flows for the period from February 19, 2017 4:09:00 PM CET to February 19, 2017 4:16:00 PM CET (10000 flows):



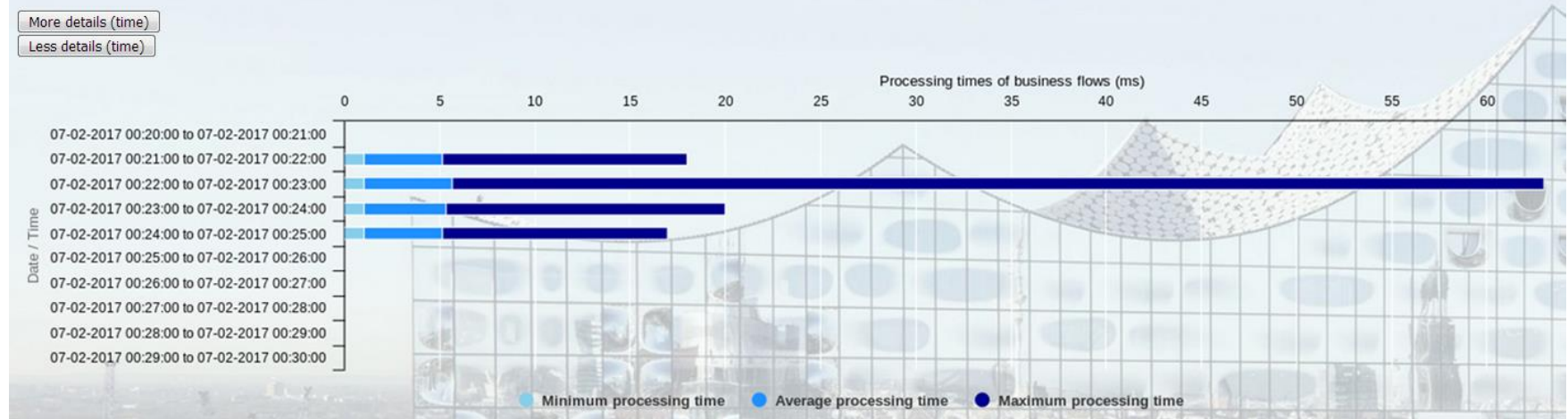
Statistics about processing times by periods of time

- The minimum, average and maximum processing times are displayed by periods of time.
- The periods of time can be chosen: seconds, minutes, hours, days, weeks, months or years.

Statistics about IBM Integration Bus business flows

Business flow processing times by periods of time

All business flows for the period from **February 7, 2017 12:20:00 AM CET** to **February 7, 2017 12:30:00 AM CET** (9000 completed flows) by minutes :



Additional information

- Supported environments and products:
 - Windows 64-bit or Linux 64-bit.
 - IBM Integration Bus v10.0.
 - IBM MQ v7.1 or higher.
 - DB2 v9.0 or higher or Oracle 12c or higher
 - WebSphere Liberty Profile v8.5 or higher or WebSphere Application Server v8.5 or higher (Java 1.7 or higher).
 - HighChart JS from Highsoft (included in the asset as OEM).
- Supported languages: English, French, German and Spanish for the GUI.
- Available as an IBM Cloud Services asset (an evaluation version is available for free).

Conclusion

- The “Advanced Monitoring Asset for IBM Integration Bus” provides first class monitoring and statistics capabilities for the business flows executed by IBM Integration Bus.
- Based on:
 - The infrastructure provided by IIB for implementing custom monitoring solutions.
 - Reputable components:
 - IBM MQ,
 - IBM DB2 or Oracle Database,
 - IBM WebSphere Liberty profile or WebSphere Application Server,
 - HighCharts JavaScript framework.
- Intuitive and easy to use GUI (no training needed).
- Little to be done to enable monitoring for new flows:
 - Uses a generic implicit “monitoring model”.
 - A new flow can be monitored as soon as it is deployed and ready to publish monitoring events.

धन्यवाद
Hindi

多謝
Traditional Chinese

ขอบพระคุณ
Thai

Спасибо
Russian

Gracias
Spanish

Thank You
English

شكراً
Arabic

Merci
French

Obrigado
Brazilian Portuguese

Grazie
Italian

多谢
Simplified Chinese

Danke
German

நன்றி
Tamil

ありがとうございました
Japanese

감사합니다
Korean

MQ architecture

