WebSphere Appliances…

WebSphere CloudBurst & the DataPower XC10

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Innovative Elastic Caching Solutions

DataPower XC10 Appliance

- Drop-in cache solution optimized and hardened for data oriented scenarios
- High density, low footprint improves datacenter efficiency

"Data Oriented"

Session management
Elastic DynaCache
Web side cache
Worldwide cache
Data buffer
Event Processing
Petabyte analytics
In-memory OLTP
In-memory SOA

"Application Oriented"

WebSphere software

eXtreme Scale

- Ultimate flexibility across a broad range of caching scenarios
- In-memory capabilities for application oriented scenarios

Elastic caching for linear scalability
High availability data replication
Simplified management, monitoring and administration

Modern Application Infrastructure Topology

Web Server Tier

IBM HTTP Server

App Server Tier

WebSphere software

WebSphere Application Server

Elastic Data Grid

New!

1

DataPower XC10 for simple data oriented scenarios:
- HTTP Session Replication
- Elastic Dynacache
- Web Side Cache

2 WebSphere software

eXtreme Scale for maximum flexibility covering data and application oriented scenarios

Database Tier

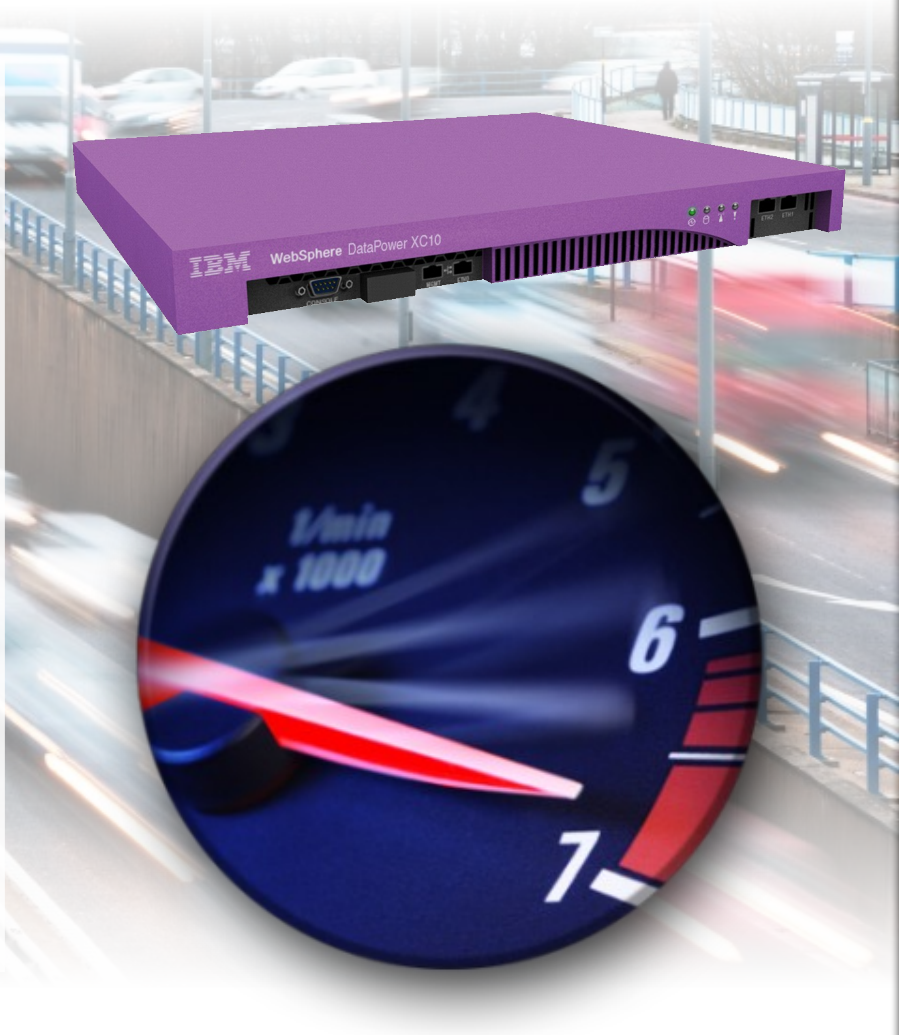
Information Management

DB2 UDB

Introducing IBM WebSphere DataPower XC10 Appliance

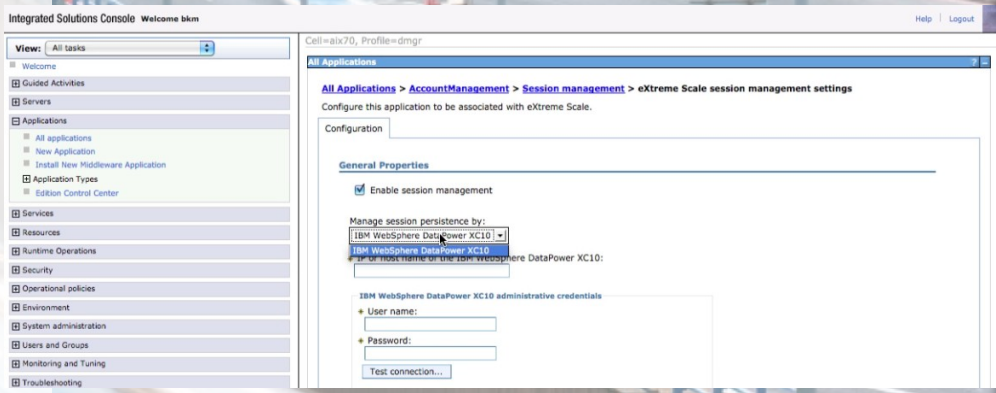
New!

- Easy drop in use for common scenarios
  - Support for **data-oriented caching scenarios** without rip & replace
- Scale out with ease
  - **Large, elastic cache** allows you to scale more economically while providing high Quality of Service
- Fault tolerance
  - Lower risk of data loss while providing **continuous availability**
- Flexible and simple user management
  - Simple solution for **real world management and monitoring**



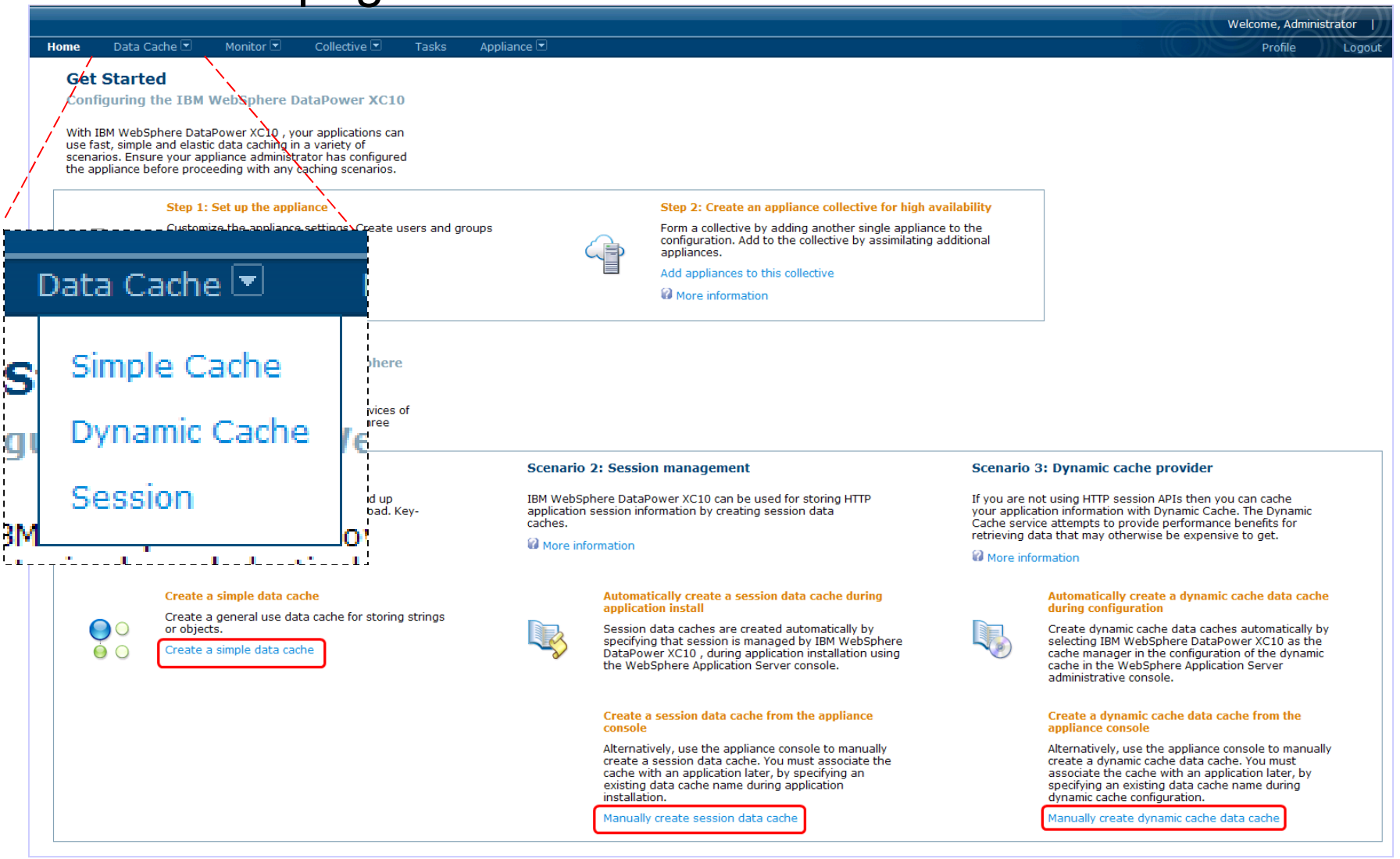
Easy drop-in use for common scenarios

- HTTP Session Management
- WAS Dynamic Cache Service (“Dynacache”) support
- Web Side Cache



Little or no code changes required!

“Get Started” page links for data caches



Offloaded session management for HTTP requests

- WebSphere Application Server connects seamlessly to the DataPower XC10 appliance
  - Client code must be installed on WebSphere Application Server systems
- Easily configure WebSphere applications to store HTTP session data to a data cache on the DataPower XC10 appliance through the WebSphere Application Sever administrative console
- Replaces other session replication mechanisms

End-to-end Session Management Scenario

WebSphere Application Server side

WebSphere Application Server

2 **Install DataPower XC10 client code**

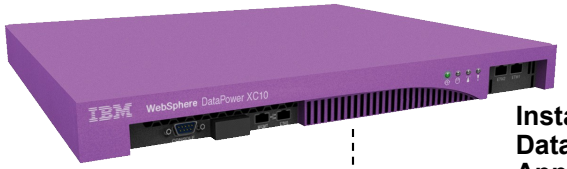
Integrated console

3 **Configure to use data cache on the DataPower XC10 Appliance for session management**

Application

DataPower XC10 servlet agent

DataPower XC10 appliance side



1 **Install DataPower XC10 Appliance**

DataPower XC10 Appliance console

DataPower XC10 session data

4 **Session data can be monitored on the appliance web console**

Dynamic Cache service support

- DataPower XC10 provides client code and a plug-in for WebSphere Application Server applications to support DynaCache API

- Allows applications deployed to WebSphere servers to use DataPower XC10 as a “drop-in” cache, instead of storing cache data in local memory or multiple instances of a disk cache

Web Side Cache

- Used to store data for fast, lower-cost access than a database
- Uses ObjectMap APIs from WebSphere eXtreme Scale
- Every time data is needed, the web side cache on the DataPower XC10 Appliance is checked first
- If the value is not found (cache miss), then the data is retrieved from the backend database and inserted into the cache
- Client can run in a standard Java EE compliant server environment or in any Java Virtual Machine compliant with Java SE V1.4 or beyond

Scale out with Ease

- ***160 GB*** elastic cache for your business-critical applications
- Scales **elastically** without application downtime
- Linear, **predictable** scaling at predictable cost
- Quickly and easily increase cache capacity as needs grow
- Unbinds cache from application server memory constraints

Form “Collectives” of XC10 Appliances

- Collectives are a set of appliances which know about each other
- Allows for failover recovery if one of the appliances in the collective fails
- Default collective contains the appliance where you logged on
  - Add additional appliances using the console interface
- Add additional appliance by supplying:
  - Host name or IP address of the appliance to be added
  - Secret key of the appliance to be added
- Adding one appliance to collective that contains only 1 appliance:
  - Provides failover capability because 2nd appliance automatically gets replica of **all** data

Fault Tolerance

- Create an appliance “collective” for high availability
- Lowers risk of data loss through automatic replication of data
- Continuous Availability!
- Self Healing - Failures are automatically detected
- Easy to configure

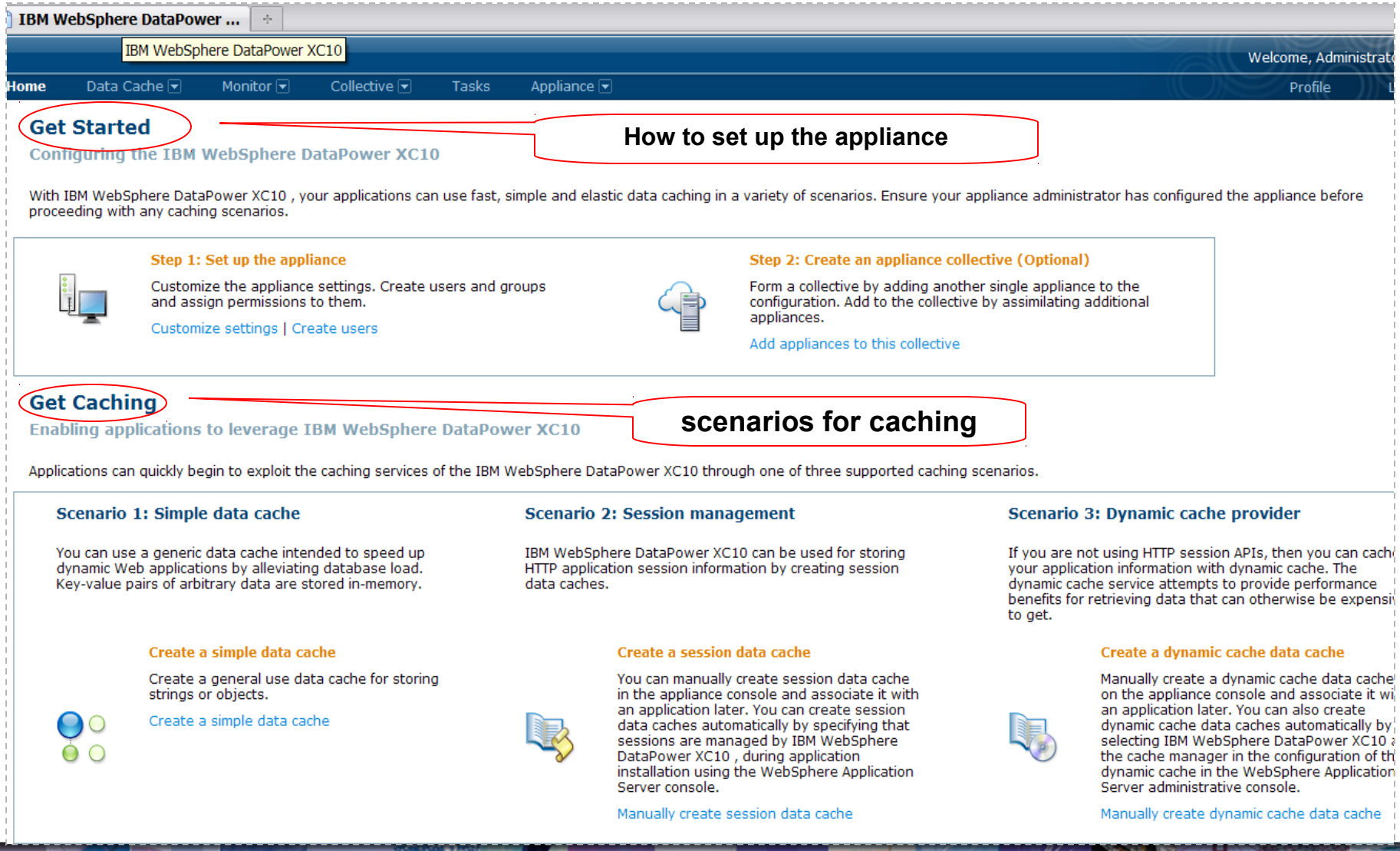
Replication

- Collective replicates data between members
- Replication provides a backup of primary cache data
- Replicas act as drones
  - They are completely slaved to the primary
  - Modifications can only be made using the primary
- The replication mechanism uses a check-pointing technique to bring replicas up to date as fast as possible with minimum disruption to work occurring on the primary
- Synchronous replication
  - Data is replicated before transaction completes
  - Highly reliable
  - Can cause performance bottleneck.
- Asynchronous replication
  - Allows the transaction to complete before the data is replicated, providing greater speed than synchronous replication

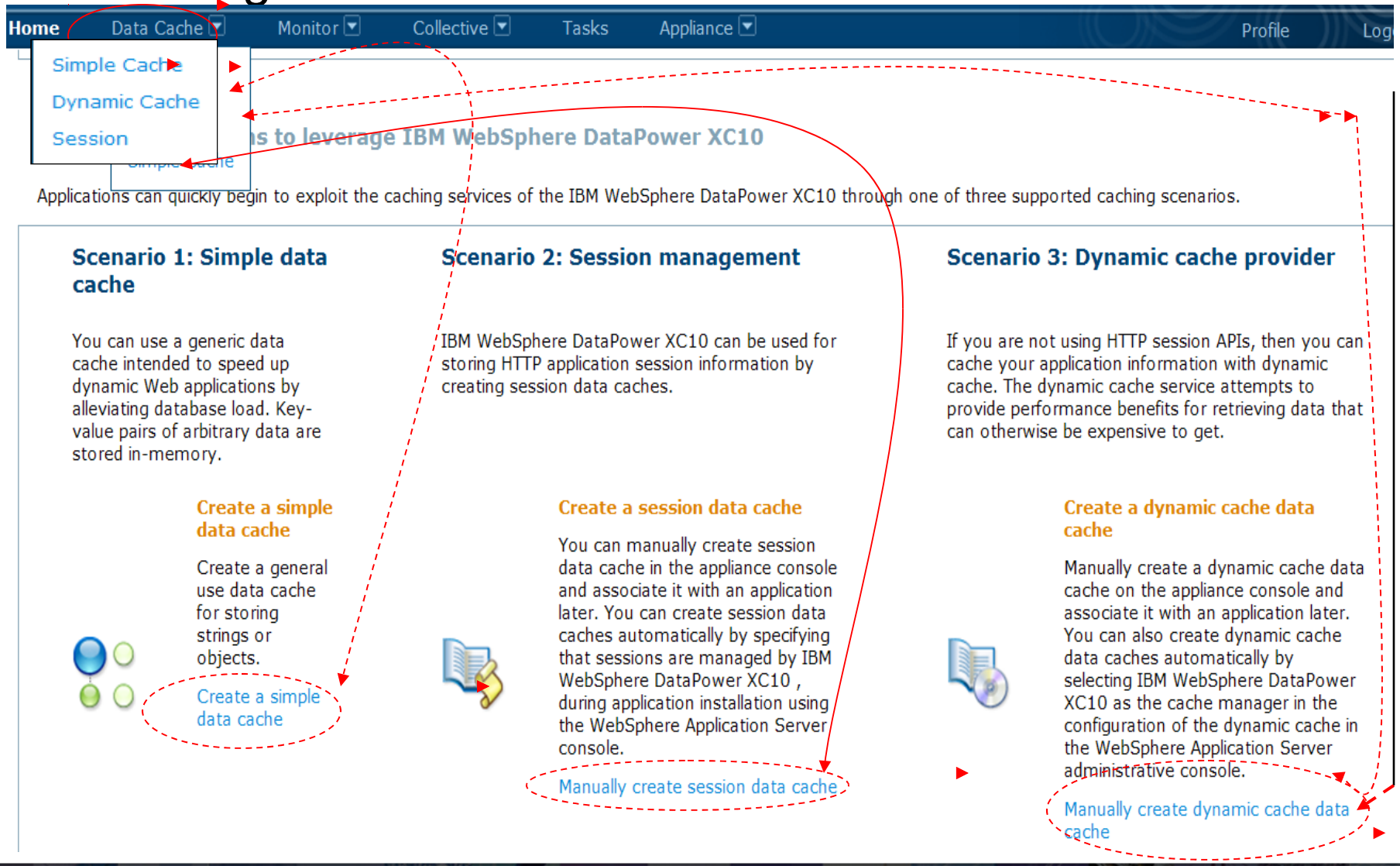
Flexible and Simple Management

- Native interfaces for administration and monitoring
- Relief to simple real world problems!
  - Real-time monitoring that dynamically updates with the number of entries in the grid

Built-in console for management and administration



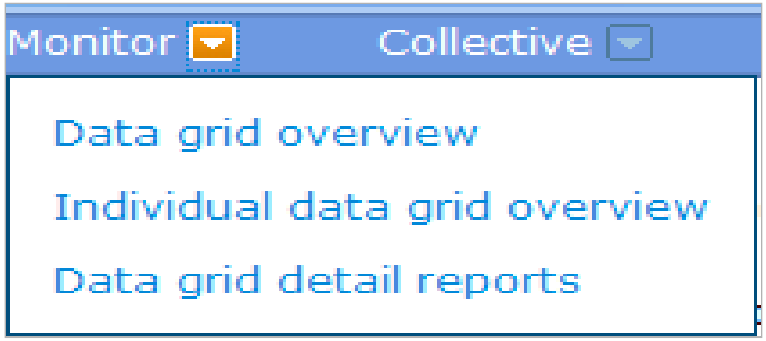
Start Caching



Monitoring

Monitor settings:

- Allow users to monitor load for an application connected to the DataPower XC10 appliance



- Three view options available:
  - Data grid overview
  - Individual data grid overview
  - Data grid detail reports

Monitor Data Grid

IBM WebSphere DataPower XC10 Appliance

Current Data Cache Used Capacity Distribution

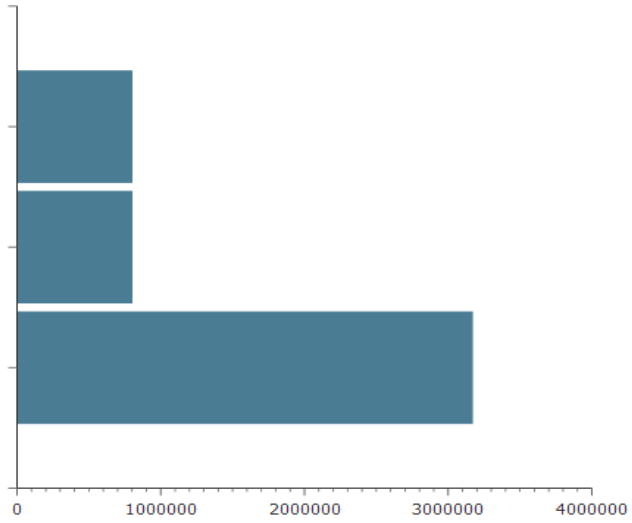
in Bytes

Total Pool

0 171798691840

Top Used Capacity Consumers:

Chart | Table



Used Capacity Over Time

Top 5 Data Caches

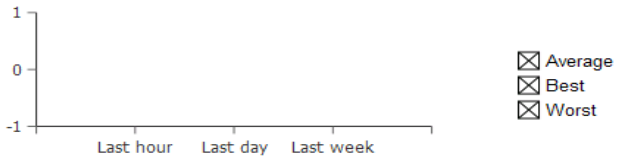
by Average Transaction Time in milliseconds

Data Caches	Current	Data over last 466 min	[Min | Max | Avg]
JoesSession.session	.00		[.00|3.39|.02]
user2SessionCache.session	.00		[.00|3.39|.02]
mjs.session	.00		[.00|1.60|.03]

Average Throughput Over Time

in transactions/second

Chart | Table



Top 5 Data Caches

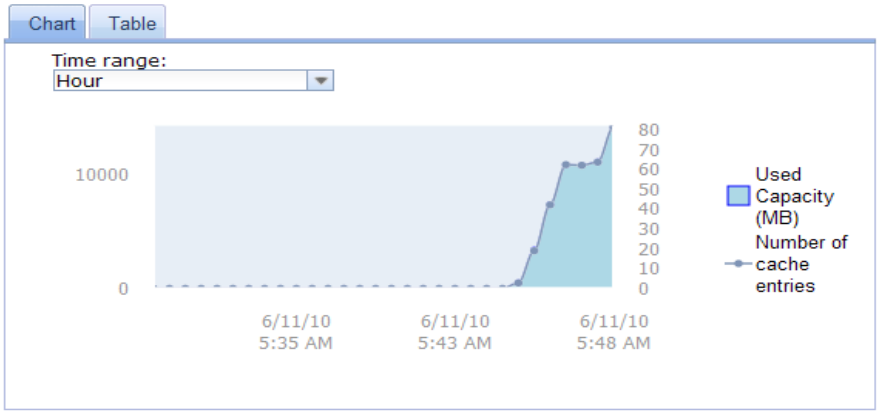
by Average Throughput in transactions/second

Data Caches	Current	Data over last 466 min	[Min | Max | Avg]
JoesSession.session	.00		[.00|12.94|.38]

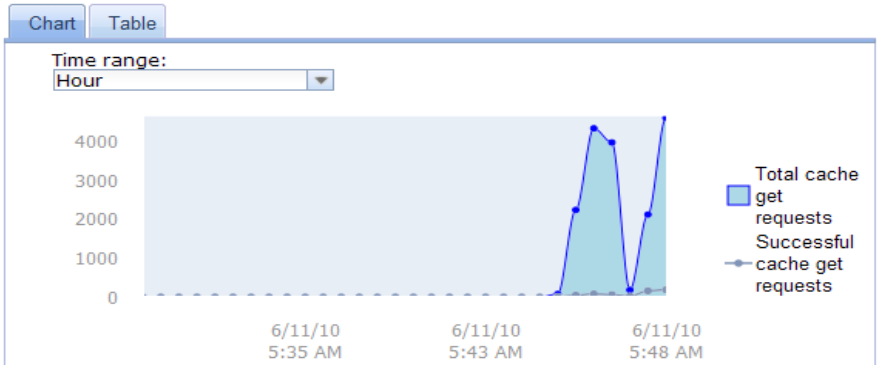
Monitoring Individual data grids

Number of cache entries: **14220** Average Transaction Time (milliseconds): **64.37** Average Throughput (transactions/second): **17.30**

Used Capacity (MB) vs. Number of cache entries



Total cache get requests vs. Successful cache get requests

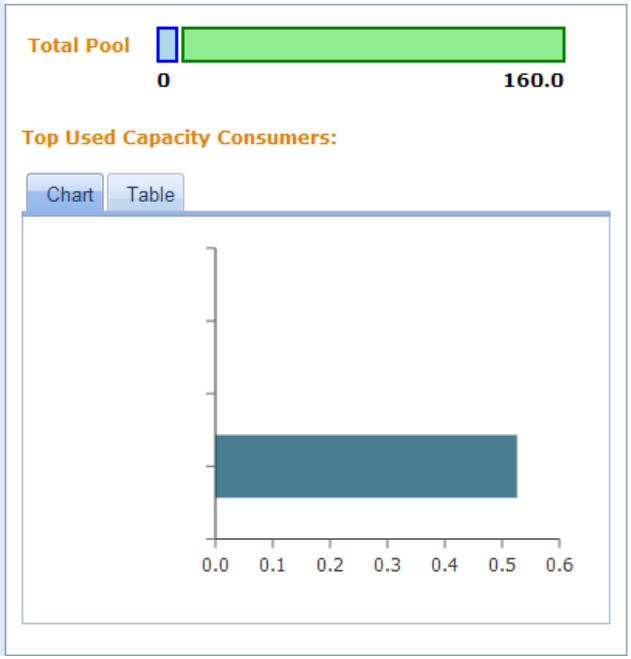


Data grid detail view

Current summary

Used Capacity (MB): 537.42 Zones: 9.3.75.209

Current eXtreme Scale Object Grid Map Used Capacity Distribution
in GigaBytes



Current summary

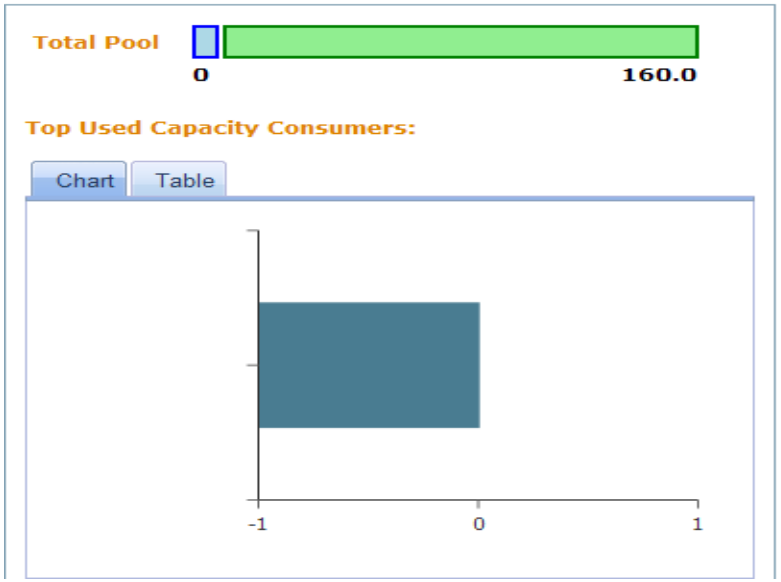
Used Capacity (B):0.00

Number of cache entries:0

Average Throughput (transactions/second):27.23

Average Transaction Time (milliseconds):40.24

Current Partition Used Capacity Distribution
in GigaBytes



Summary

- **Accelerated Time to Value**
  - *Reduces the time necessary for install, setup and configuration through out-of-the-box, 'drop-in' use for simple side cache scenarios, HTTP Session replication and WebSphere Application Server dynamic cache service*
- **Simplified management and administration**
  - *Offers a built-in, simplified administration and monitoring console to enable efficient setup, configuration, and management of the appliance and transaction load within your datacenter*
- **Ensures high availability of data for mission-critical applications**
- **Scales with simplicity**
- **Delivers high performance and consistent response times**

Learn More

- XC10 Web Site
  http://www-01.ibm.com/software/webservers/appserv/xc10/

- Getting Started Wiki - eXtreme Scale and XC10
  ftp://ftp.software.ibm.com/common/ssi/pm/sp/n/wsd14072usen/WSD14072USEN_HR.PDF

- Announcement Letter
  http://www-01.ibm.com/common/ssi/ShowDoc.jsp?docURL=/common/ssi/rep_ca/2/897/ENUS110-102

Additional resources

Weekly video podcasts covering customers questions and forum posts on the IBM WebSphere eXtreme Scale product.

http://www.youtube.com/user/ibmextreme

developerWorks.

WebSphere Extreme Transaction Processing for Developers Space will discuss various topics for developing and deploying XTP applications and will point out emerging trends, benefits, challenges, and features associated with it.

http://www.ibm.com/developerworks/spaces/xt

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