Leading the way in 360º Capacity Management

Capacity Management for z Systems & License Charge Reporting

Charles Johnson – Principal Consultant
Agenda

• Capacity Management from an Enterprise level
• z Systems License Charges
• Manual vs. Automatic Capping
• Reporting on License Charges
• Forecasting for the Future
For an IT department, one of the largest if not the largest expense is for mainframe software.

Companies are always looking for ways to control their cost and know what their bill will be each month from IBM to plan for forecasts and budgeting.

Capacity Management is a Business Decision.
Capacity Management at the Enterprise Level
Capacity Management

Business Capacity
Predict future capacity requirements from the business demand

Service Capacity
To manage items in the input directly to service a component capacity management, improved management.

Component Capacity
Capacity information of each component to monitor and to manage change in.

Business Index
Forecasting required capacity according to Business plan

Revenue
# of Users

Response Availability

Maintain SLA
L.O.B

Workload Management

Service Management

Resource Management

Storage size

CPU Usage
Monitor, Analyze Optimize, Upgrade, Increase

Component Resource
Quality of Service for Stakeholders
z Systems License Charges
Types of License Charges

- **MLC or WLC (Monthly or Workload License Charges)**
  - The charge based upon usage of an LPAR
  - Aggregates usage for the complete environment
  - MSUs of z Systems Subsystem Components consumed

- **CMLC (Country Multiplex License Charges) or CMP (Country Multiplex Pricing)**
  - Sub-capacity offering that allows clients to use their z Systems capacity within a given country with the objective of creating a flexible, country-wide z Systems platform. Clients can configure and balance workloads more easily without the constraints of Sysplex aggregation rules and many of the limitations of previous reporting methodologies.
  - A Multiplex is the collection of all eligible IBM z Systems machines or Sysplexes or both within a single country, measured as one machine for purposes of software sub-capacity reporting.
Manual vs. Automatic Capping
Capping the Environment

Manual or Automatic control of resources to ensure the MLC is stable but optimize the system performance

Modification of the LPARs Defined Capacity (DC) to account for workload behavior and needs of all the LPARs.
Manual Process
Manual Process
Automated Soft Capping

• The LPARs’ DCs (Defined Capacity) are dynamically modified by taking into account the behavior and needs of all the LPARs.
• When one LPAR requires capacity to handle an instantaneous workload increase, its DC can be dynamically increased, temporarily, while other less-busy LPARs can have their DCs reduced temporarily.
• When the demand for extra capacity has passed, all of the LPAR DCs are returned to their normal levels, based on the CPC DC aggregate.
Automated Soft Capping (ASC)
How to Minimize Billing Contribution

When IMSU > R4HA
DC just greater than R4HA
DC MSUs taken from pool (or capping enforced)

When IMSU < R4HA
DC just greater than IMSU
DC MSUs release to pool
Reporting on License Charges
How to calculate MLC

- Calculation is made for the period from the 2nd day of the month to the 1st day of the next month.
- MLC is charged based on the maximum value of total R4HA MSU of all LPARs during the calculation period.
- Charge for each IBM software product is made for the period while the product is running. (Except z/OS)
athene® ES/1 - Rolling 4 Hour Average

SYSA
Rolling 4 Hour Average
Reporting Period June-17

- Long-term average MSUs
- Software MSUs Consumed
- Software MSUs

June 17

0 200 400 600 800 1000 1200 1400

0 3:00 6:00 9:00 12:00 15:00 18:00 21:00 24:00

2017
Sample Reports for IBM WLC - SCRT

**① LPAR Sub Capacity Report**

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<tr>
<th>LPAR Name</th>
<th>MSU</th>
<th>COUNT YY/MM/DD HH</th>
<th>MSU</th>
<th>COUNT YY/MM/DD HH</th>
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<tr>
<td>LPAR1M1</td>
<td>62</td>
<td>2 14/01/13 12</td>
<td>59</td>
<td>1 14/01/13 14</td>
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<tr>
<td>LPAR1M2</td>
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<td>39</td>
<td>1 14/01/12 02</td>
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<tr>
<td>CPC</td>
<td>78</td>
<td>2 14/01/13 12</td>
<td>74</td>
<td>1 14/01/13 14</td>
</tr>
</tbody>
</table>

MSU Usage by LPAR is reported to see and to review the highest and the second highest of MSU usage with its date.

**② Product Summary Report**

<table>
<thead>
<tr>
<th>PROD ID</th>
<th>PRODUCT NAME</th>
<th>FEATURE NAME</th>
<th>VERSION</th>
<th>MSU</th>
<th>COUNT YY/MM/DD HH</th>
<th>MSU</th>
<th>COUNT YY/MM/DD HH</th>
</tr>
</thead>
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<td>1 14/01/13 14</td>
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<td>5635-A03</td>
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<td>DBCTL</td>
<td>12.1</td>
<td>75</td>
<td>2 14/01/13 12</td>
<td>74</td>
<td>1 14/01/13 14</td>
</tr>
<tr>
<td>5655-R36</td>
<td>MQM MVS/ESA</td>
<td>CSQ1</td>
<td>V7</td>
<td>75</td>
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<td>1 14/01/13 14</td>
</tr>
<tr>
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<td>DFHSIP</td>
<td>V4</td>
<td>75</td>
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<td>1 14/01/13 14</td>
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<td>5655-U80</td>
<td>WS MQ FILE TRANS</td>
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<td>07</td>
<td>62</td>
<td>2 14/01/13 12</td>
<td>59</td>
<td>1 14/01/13 14</td>
</tr>
</tbody>
</table>

MSU Usage by Product is reported to see and to review the highest and the second highest value with its date.
Product Usage

Example product usage in MSUs

- IBM CORP+CICS+V4 R1.0
- IBM CORP+DB2+10.01.00
- IBM CORP+MQM MVS/ESA+V8 R0.0
- IBM CORP+z/OS+01.13.00

Usage MSUs

06/10/2015
Sample Chart for IBM WLC

WLC MSU Value and Change by Product

Highest MSU value(*) and usage change can be viewed

Highest value of product on each day during the product was running can be viewed throughout the Month. You can see all products’ highest values were on Nov 1.

Monthly

Highest value by each product during the Month can be checked. All products have the same value means all products were running at the point of the maximum MSU usage recorded.

Monthly

Proportion of a specific product running time (CICS at this chart) during the product was running can be checked. Low utilized product is also charged even though it was run in a short time period, so you should check whether the product can be ceased to use.

(*) : R4HA MSU

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Forecasting for the Future
Forecasting

Quality of Service to Stakeholder

Modeling

Trend
Business Transactions vs. CPU Usage

Sales Transactions, Detroit
CPU Utilization % and Transactions Per Hour
Reporting Period: November 23 - December 03

Warning  Critical  CPU  Transactions

CPU Percent

Transactions

www.metron-athene.com
athene® ES/1 Model Baseline – SYSA
CPU/CEC Modeling – Hardware & I/O
athene® ES/1 Model – Increase ProdOnl 5%
CPU/CEC Modeling – Hardware & I/O
athene® ES/1 Model – Change CPU Configuration
CPU/CEC Modeling – hardware
The image shows a software interface for CPU/CEC Modeling, specifically highlighting the results of CPU Change. The interface includes various graphs and charts that display projected SYSA Utilization and Device Utilization for different system components. The graphs illustrate the percentage utilization over different time periods, providing insights into system performance and resource allocation.
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