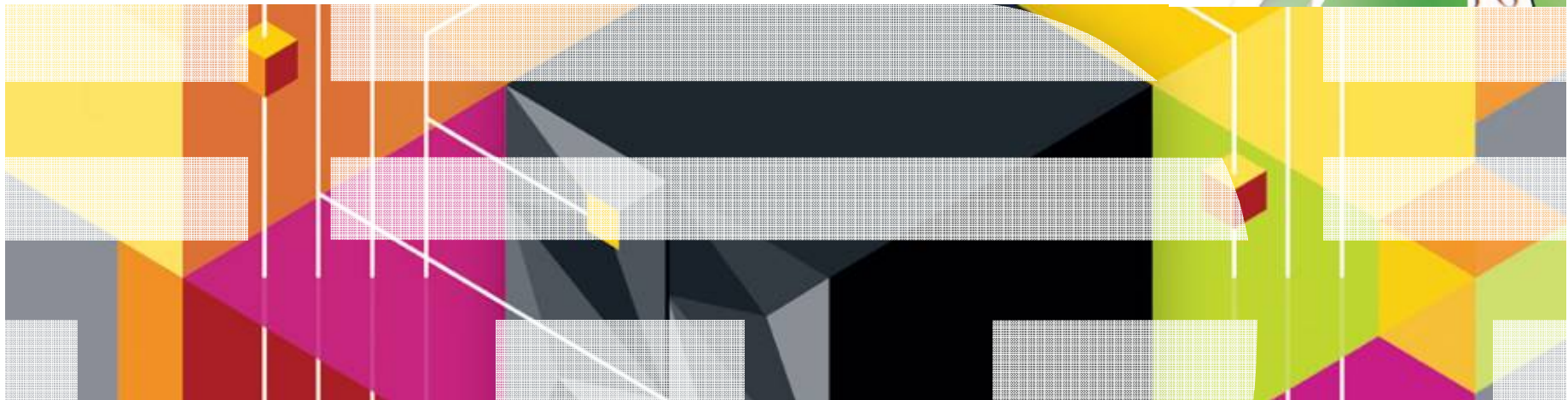




IBM System

Capacity on Demand GSE Tagung Leipzig 2013



Walter Necker
FTSS Germany
walter_necker@de.ibm.com



Trademarks

The following are trademarks of the International Business Machines Corporation in the United States and/or other countries.

AIX*	Geographically Dispersed Parallel Sysplex	OS/390*	Virtualization Engine
APPN*	HiperSockets	Parallel Sysplex*	VSE/ESA
CICS*	HyperSwap	PR/SM	VTAM*
DB2*	IBM*	Processor Resource/Systems Manager	WebSphere*
DB2 Connect	eServer	RACF*	z/Architecture
DirMaint	IBM logo*	Resource Link	z/OS*
DRDA*	IMS	RMF	z/VM*
Distributed Relational Database Architecture	InfoPrint*	S/390*	z/VSE
e-business logo*	Language Environment*	Sysplex Timer*	zSeries*
ECKD	MQSeries*	System z	
Enterprise Storage Server*	Multiprise*	System z9	
ESCON*	NetView*	System z10	
FICON*	On demand business logo	TotalStorage*	
GDPS*			

* Registered trademarks of IBM Corporation

The following are trademarks or registered trademarks of other companies.

Intel is a trademark of Intel Corporation in the United States, other countries, or both.

Java and all Java-related trademarks and logos are trademarks of Sun Microsystems, Inc., in the United States and other countries

Linux is a registered trademark of Linus Torvalds in the United States, other countries, or both.

UNIX is a registered trademark of The Open Group in the United States and other countries.

Microsoft, Windows and Windows NT are registered trademarks of Microsoft Corporation.

Red Hat, the Red Hat "Shadow Man" logo, and all Red Hat-based trademarks and logos are trademarks or registered trademarks of Red Hat, Inc., in the United States and other countries.

SET and Secure Electronic Transaction are trademarks owned by SET Secure Electronic Transaction LLC.

* All other products may be trademarks or registered trademarks of their respective companies.

Notes:

Performance is in Internal Throughput Rate (ITR) ratio based on measurements and projections using standard IBM benchmarks in a controlled environment. The actual throughput that any user will experience will vary depending upon considerations such as the amount of multiprogramming in the user's job stream, the I/O configuration, the storage configuration, and the workload processed. Therefore, no assurance can be given that an individual user will achieve throughput improvements equivalent to the performance ratios stated here.

IBM hardware products are manufactured from new parts, or new and serviceable used parts. Regardless, our warranty terms apply.

All customer examples cited or described in this presentation are presented as illustrations of the manner in which some customers have used IBM products and the results they may have achieved. Actual environmental costs and performance characteristics will vary depending on individual customer configurations and conditions.

This publication was produced in the United States. IBM may not offer the products, services or features discussed in this document in other countries, and the information may be subject to change without notice. Consult your local IBM business contact for information on the product or services available in your area.

All statements regarding IBM's future direction and intent are subject to change or withdrawal without notice, and represent goals and objectives only.

Information about non-IBM products is obtained from the manufacturers of those products or their published announcements. IBM has not tested those products and cannot confirm the performance, compatibility, or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products.

Prices subject to change without notice. Contact your IBM representative or Business Partner for the most current pricing in your geography.

Agenda

- The Basics - Capacity on Demand
- Admin Aspects
 - CoD Prerequisites
 - CoD Contracts
- Resource Link Order Process
 - Online - CoD Order Process
 - Flow of CoD Records
- Billing and Pricing
- Elements of the Offerings
 - Capacity Back Up
 - Capacity for Planned Events
 - On/Off Capacity on Demand
- Capacity Provisioning Manager (Software)



Capacity on Demand on System z – what is it all about?

- With the IBM System z you can:
 - change the number and type of configured processors
 - and/or change the processor performance values
 - either temporary ('pre-paid' or 'leased') or permanently,
 - permanently increase the amount of available memory,
 - even add or replace Processor Memory Books**while all your applications continue to run !**

*Imagine to upgrade the engine of your car or change the wheels,
while you are driving full speed!*

Capacity on Demand Basics

Two approaches:

- Add and activate Hardware after IML:
 - I/O resource Hardware can be hot-plugged
 - Even new books containing additional processors and memory can be added and resources activated via Concurrent Book Add

- Activate existing Hardware:
 - processor and memory resources are already physically present at System Startup / Initial Microcode Load (IML) time and prepared during IML for later concurrent activation under control of Licensed Internal Code Controlled Configuration (LICCC)

- **This presentation will focus on processor upgrades with LICCC**

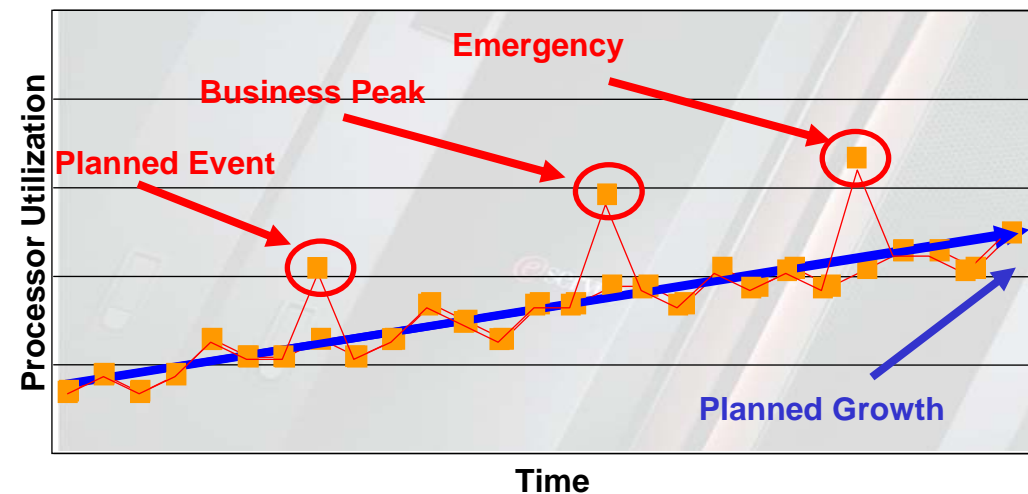
Capacity on Demand

Permanent Capacity Upgrade

- **Customer Initiated Upgrade**
 - ▶ (HW pay when purchased)

Temporary Capacity Upgrade

- **On/Off CoD**
 - ▶ (HW pay on a daily basis)
- **Capacity Back Up**
 - ▶ (HW pay prior to usage)
- **Capacity for Planned Events**
 - ▶ (HW pay prior to usage)



Capacity on Demand

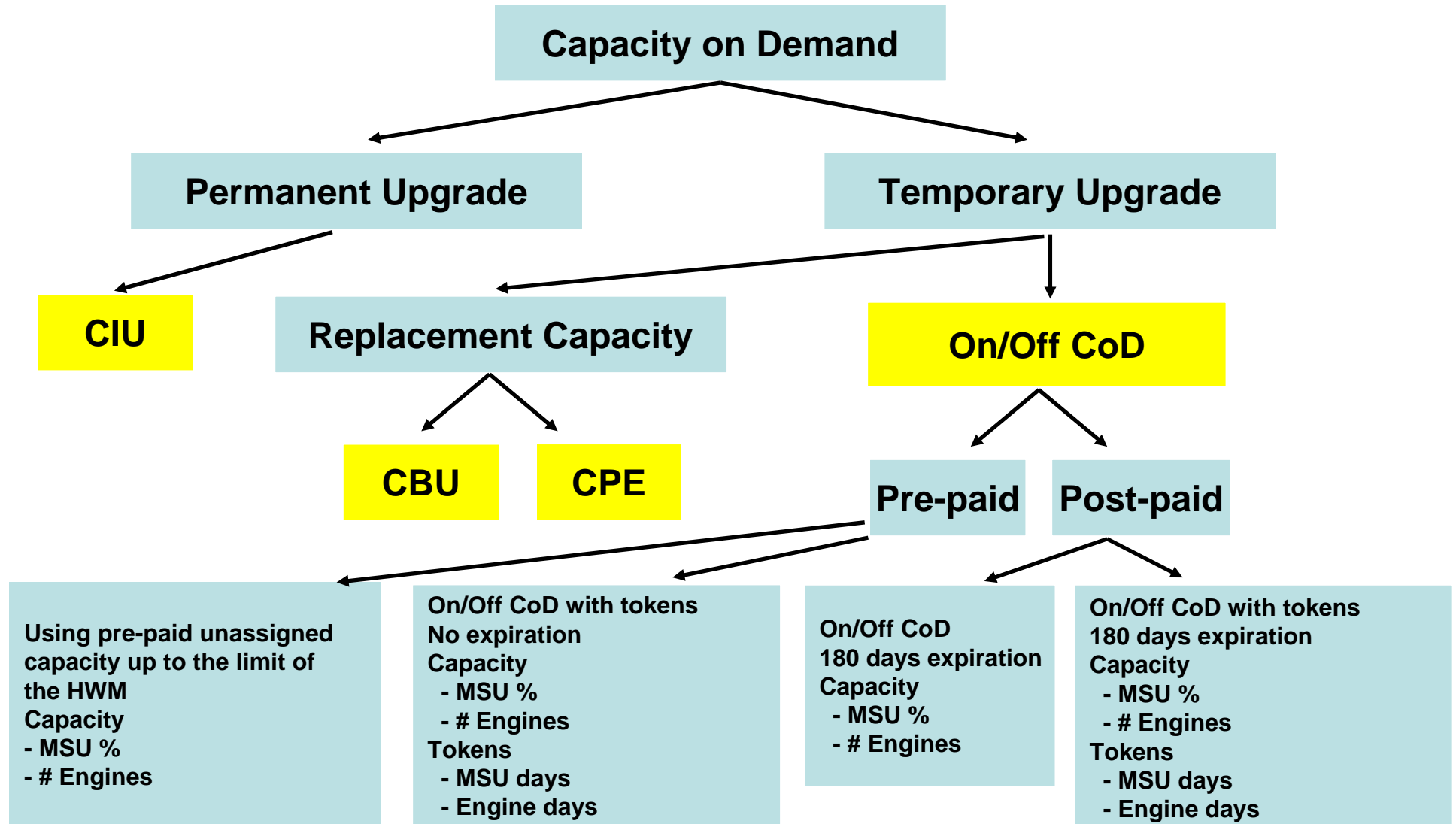
- **Permanent upgrade**
- **Temporary upgrade**
 - Replacement capacity
 - pre-paid
 - no additional IBM software charges
 - CBU, CPE
 - Billable capacity
 - post paid or pre-paid hardware (tokens)
 - involves also IBM software charges (post paid)
 - On/Off CoD

**Ordered via ResourceLink
CIU facility,
CBU and CPE can also be
ordered directly from IBM**

The Basics – Temporary Upgrades

- **On/Off Capacity on Demand (On/Off CoD)**
 - Satisfy periods of peak demand for computing resources
 - Concurrent 24 hour rental of CPs, IFLs, ICFs, zAAPs, zIIPs, SAPs
 - Supported through a new software offering – Capacity Provisioning Manager (CPM)
 - Post-paid or Pre-paid (tokens)
- **Capacity Backup (CBU)**
 - Predefined capacity to replace capacity on other “lost” server(s) in the enterprise for disaster recovery
 - Concurrently add CPs, IFLs, ICFs, zAAPs, zIIPs, SAPs
 - Pre-paid
- **Capacity for Planned Events (CPE)**
 - CBU-like offering, when a disaster is not declared
 - Example: System migration (push/pull) or relocation (data center move)
 - Predefined capacity for a fixed period of time (3 days)
 - Pre-paid

Basics of CoD



The Big Picture – a new approach since System z10

- All temporary capacity offering records are resident on machine
 - ▶ **No connection or passwords required at time of activation**
- Multiple records can be simultaneously active (eg CBU with OOCoD)
 - ▶ **Each has independent controls and policy**
 - ▶ **Each can be activated / deactivated in any sequence**
- Individual record can be used to temporarily reach multiple configurations
 - ▶ **Resources can be activated in any amount up to defined limit**
 - ▶ **Customer can customize activation real-time, based on circumstances**
 - ▶ **Eliminates unique record to be managed for all possible permutations**
 - ▶ **(i.e. multiple use for a single On/Off CoD record, even during a permanent upgrade)**
 - ▶ **Dynamic changes in activation level without reloading records**

The Big Picture – a new approach since System z10

- Various record limits can be dynamically updated / replenished
 - ▶ **Changes possible even if record is currently active**
- As records expire or are consumed, the resources will be deactivated
 - ▶ **System will not reduce to subcapacity when records expire**
 - ▶ **Will not deactivate if removing dedicated engines or last of that engine type**
- Ability to perform permanent upgrades while temporary capacity is active
 - ▶ **Allows quick conversion of temporary capacity to permanent**
 - ▶ **Modification of record entitlement performed dynamically and concurrently**
- API enhancements to support use by Capacity Provisioning Manager
 - ▶ **Capacity Provisioning Manager provides policy based advice and automation**



Capacity on Demand Comparisons – z9 vs z10

	System z9	System z10
Resources	CP, zIIP, zAAP, IFL, ICF	CP, zIIP, zAAP, IFL, ICF, SAP
Offerings	Require access to IBM/Retain to activate	Does not require access to IBM/Retain to activate
	CBU, On/Off CoD	CBU, On/Off CoD, CPE
	One offering at a time	Multiple offerings active
Permanent upgrades	Requires de-provisioning of temporary capacity first	Concurrent with temporary offerings
Replenishment	No	Yes with CBU & On/Off CoD
CBU Tests	5 tests per record	1 test per year, Up to 15 can be ordered per record
CBU expiration	No expiration	Specific term length
Capacity Provisioning Manager support	No	Yes

Capacity on Demand – zEnterprise (EC&BC)

zEnterprise uses the Capacity on Demand (CoD) architecture implemented on z10. This architecture improved the capability to access and manage processing capacity on a temporary basis, providing increased flexibility for On Demand environments.

- CBU Capacity Back Up
- CPE Capacity for Planned Events
- OOCoD On/Off Capacity on Demand (On/Off CoD)
- CIU Customer Initiated Upgrade



zEnterprise Capacity on Demand Enhancements

z10

Separate orders for purchase of unassigned engines

On/Off CoD records must be replenished manually

CBU records staged on machine deliver

No On/Off CoD administrative test



zEnterprise

Unassigned engine purchase via CIU (Resource Link)

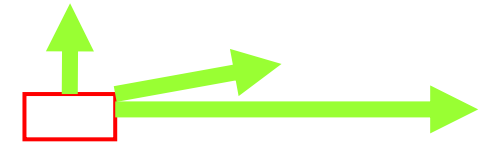
Auto replenishment of On/Off CoD records

Manufacturing install CBU records with system ship.

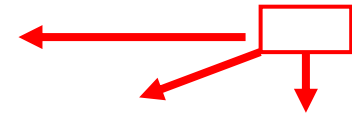
On/Off CoD Administrative tests

Temporary Upgrades (Example z10 EC)

- Upgrades only (no downgrades)
 - Any to Any is not permitted
 - **Capacity Backup**
 - Cannot reduce CP capacity level
 - Cannot reduce the number of engines that are active
 - **Capacity for Planned Event**
 - Cannot reduce CP capacity level
 - Cannot reduce the number of engines that are active
 - **On/Off Capacity on Demand**
 - Cannot reduce CP capacity level
 - Cannot reduce the number of engines that are active
 - Cannot be more than twice the purchased capacity (0-100%) capacity or more than twice the number of specialty processors

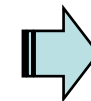


Permitted



Not permitted

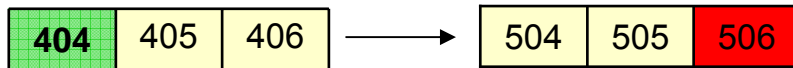
7xx	701	702	703	704	705	706	707	708	709	710	711	712	713	714
6xx	601	602	603	604	605	606	607	608	609	610	611	612		
5xx	501	502	503	504	505	506	507	508	509	510	511	512		
4xx	401	402	403	404	405	406	407	408	409	410	411	412		
N-way	1	2	3	4	5	6	7	8	9	10	11	12	13	14



764

CoD High Water Mark (HWM) (Example z10 EC)

- Active processors can be any capacity setting with a MSU rating below the MSU rating of the HWM
 - HWM = 506
- Example for Model Capacity Identifier = 404
 - This information is reported by STSI
 - Establishes maintenance prices
 - Establishes starting point for temporary capacity addition
- Temporary Upgrade from Capacity Identifier to HWM for no charge



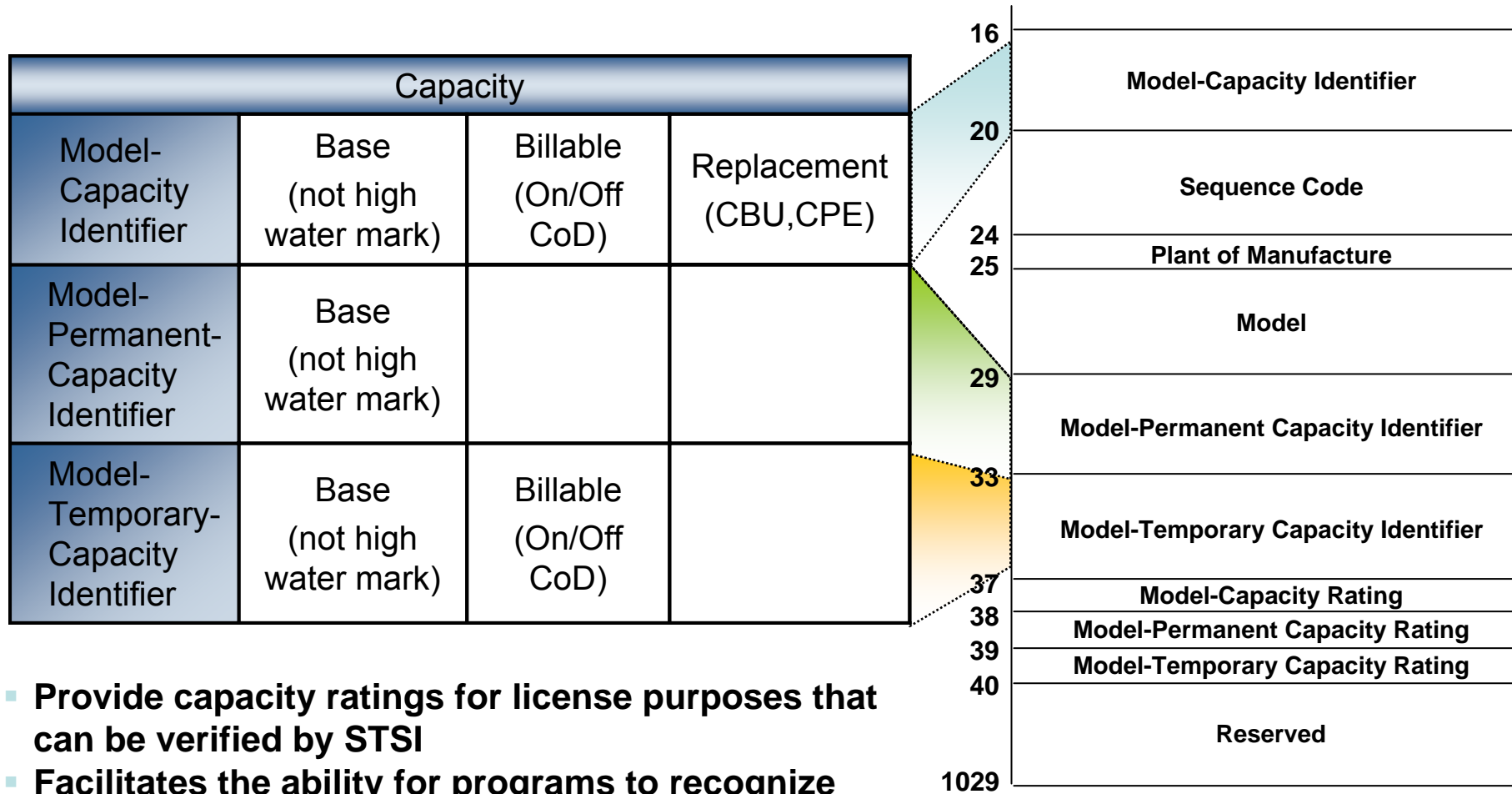
- Max. temporary upgrade is 2 x purchased capacity (0-100%)



7xx	701	702	703	704	705	706	707	708	709	710	711	712	713	714
6xx	601	602	603	604	605	606	607	608	609	610	611	612		
5xx	501	502	503	504	505	506	507	508	509	510	511	512		
4xx	401	402	403	404	405	406	407	408	409	410	411	412		
N-way	1	2	3	4	5	6	7	8	9	10	11	12	13	14

764
64

z10 SToRe System Information (STSI)



- Provide capacity ratings for license purposes that can be verified by STSI
- Facilitates the ability for programs to recognize On/Off CoD and CBU activity
- High Water Mark – documented in Resource Link

CoD Capacity Definitions (Example z10 EC)

- The CP features offered have varying (granular) capacity levels
 - The sub capacity CP features provide reduced capacity relative to the full capacity CP feature.

	Relative Capacity	PU core Type	Feature Code	Allowable Quantity
Full capacity	1.00	CP7	6810	0 - 64
Sub capacity	0.69	CP6	6809	1 - 12
Sub capacity	0.51	CP5	6808	1 - 12
Sub capacity	0.23	CP4	6807	1 - 12

- The capacity setting is based on the quantity and type of CP features
 - This is also known as Model Capacity Identifier
- Purchased quantity of CP features sets the High Water Mark (HWM)
 - HWM indicated by capacity marker features 7101 – 7201
- Active processors can be any Model Capacity Identifier with a MIPS rating below the MIPS rating of the HWM



CoD High Water Mark (HWM) (Example z10)

- Desired capacity = 408
- This equates to 8 CP4s

PU core	Feature	Quantity
Type	Code	
CP4	6807	8

- High Water Mark (HWM): 408, FC 7108
- Active processors can be any capacity setting with a MIPS rating below the MIPS rating of the HWM
- Example for Model Capacity Identifier = 502
 - This information is reported by STSI
 - Establishes maintenance prices
 - Establishes starting point for temporary capacity additions

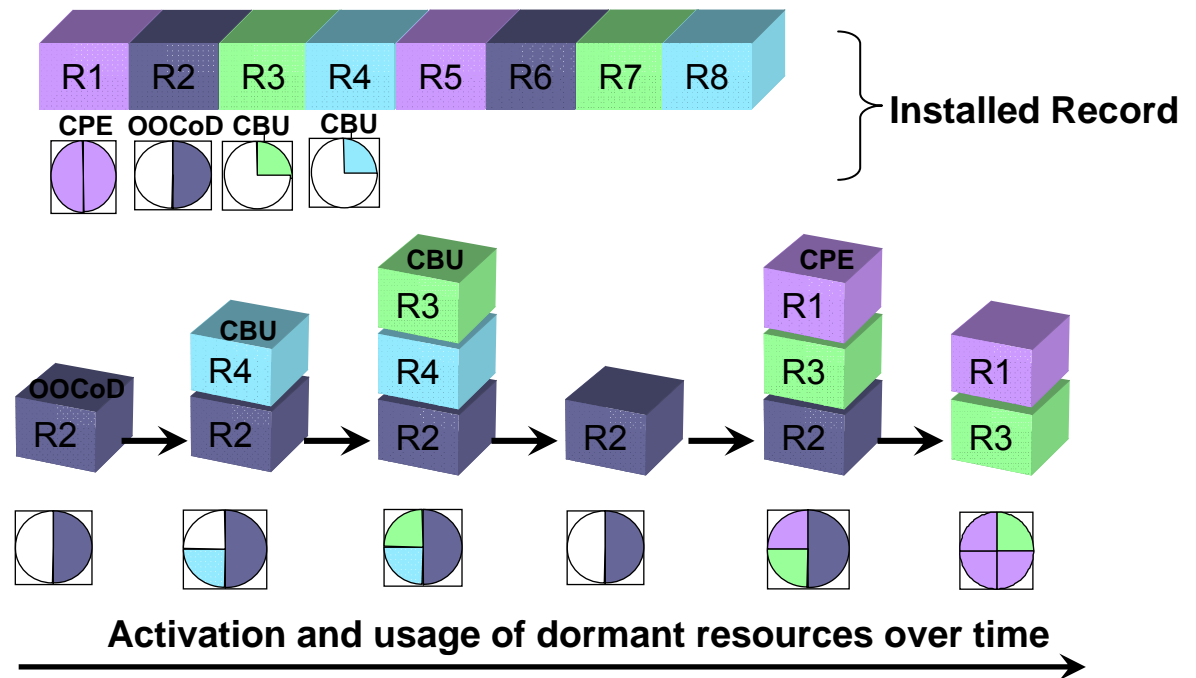
7xx	701													714
6xx	601											612		
5xx	501	502										512		
4xx	401	402	403	404	405	406	407	408				412		
N-way	1	2	3	4	5	6	7	8	9	10	11	12	13	14

764

64

Basic COD Design

- System z COD design fundamentally changed vs. System z9 and z990
- Significant improvements
 - Flexibility, Handling, Ordering
- Up to 200 Records could be staged on SE
- Eight CoD Records (LIC) could be installed and activated simultaneously, only one OOCoD Record



System z Capacity Back Up – CBU

New on z196 vs z10

- **Manufacturing install of up to 4 CoD records with system ship.**

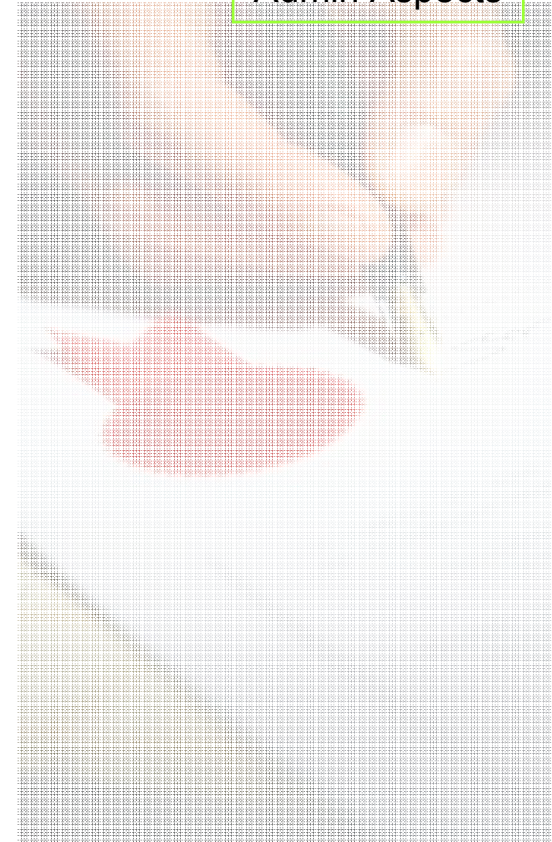
Agenda

- The Basics - Capacity on Demand
- **Admin Aspects**
 - CoD Prerequisites
 - CoD Contracts
- Resource Link Order Process
 - Online - CoD Order Process
 - Flow of CoD Records
- Billing and Pricing
- Elements of the Offerings
 - Capacity Back Up
 - Capacity for Planned Events
 - On/Off Capacity on Demand
- Capacity Provisioning Manager (Software)



Prerequisites

- CoD Featurest installed
- CoD Contracts signed
- Resource Link CoD Profile establsihed
- Negotiated Prices in place
- **IBM Maintenance Contract for RETAIN Support or RPQ for non RSF Support**



CoD Feature Codes

CoD Enabling Features detected in current VPD

CoD F/Cs are set in Resource Link if they were previously set via eConfig or a MES

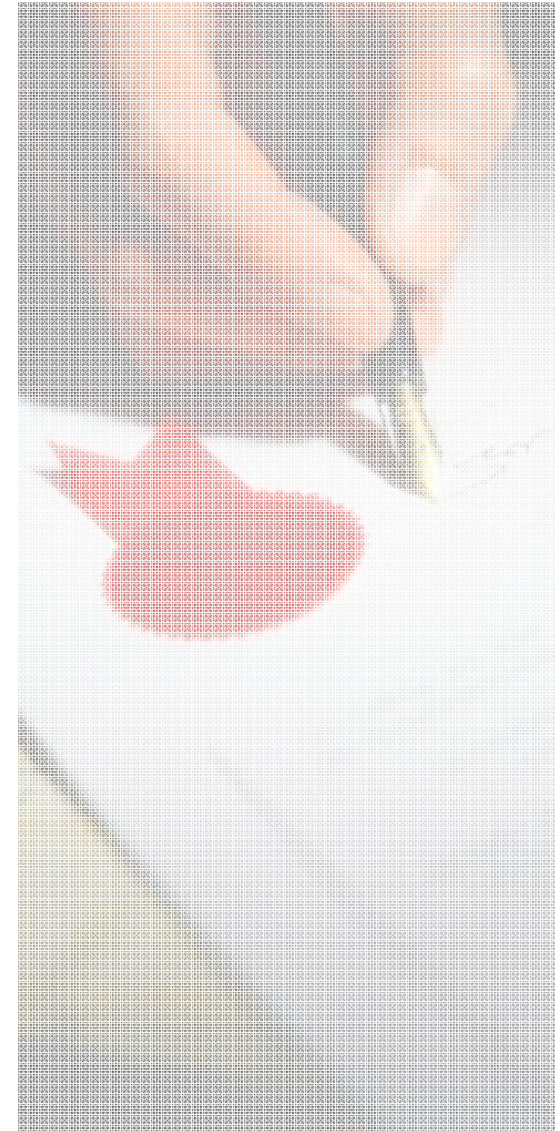
On Line CoD Buying, F/C 9900: Yes	CIU Enablement, F/C 9898: Yes
On/Off CoD Enablement, F/C 9896: Yes	CBU, F/C 9910: Yes
Capacity for Planned Event, F/C 9912: Yes	

- F/C 9900 Online CoD Buying Feature
- F/C 9896 On/Off CoD Enablement Feature
- F/C 9912 Capacity for Planned Event Feature
- F/C 9898 CIU Enablement Feature
- F/C 9910 CBU Feature

Recommendation: Configure all features with initial system configuration
All features are free of charge

CoD Contracts

- Since System z10 new contracts in place
- Signed contracts are prerequ. for CoD usage
- Contracts issued individually per customer
- BP/ IBM Sales in charge to handle contracts with customer
- Resource Link CoD Profile established based on signed contract

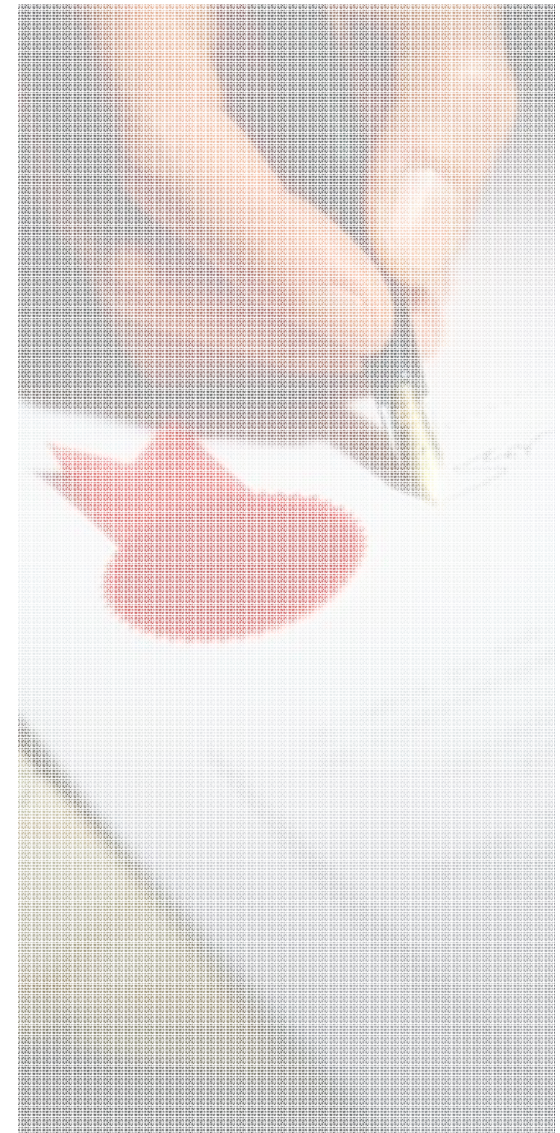


CoD Contracts

CoD from Contract Point of View !!!

New System z10 CoD capability and offerings
Only supported with new contract set

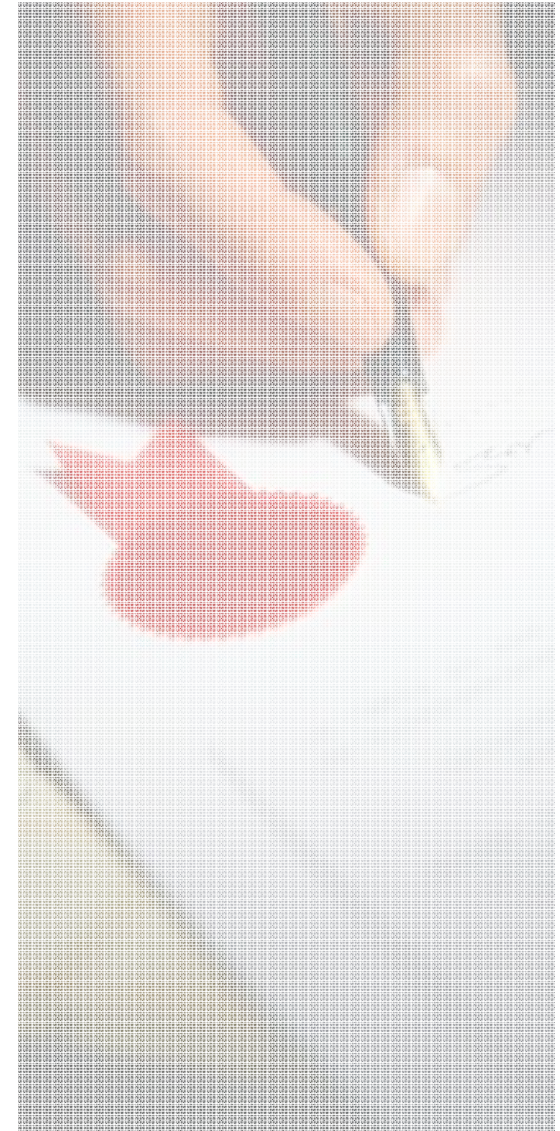
Existing contracts (\leq z9) CBU / CIU / OnOffCoD
Carried forward with **old features only**



CoD Contracts

CoD Offerings from Contract Point of View !!!

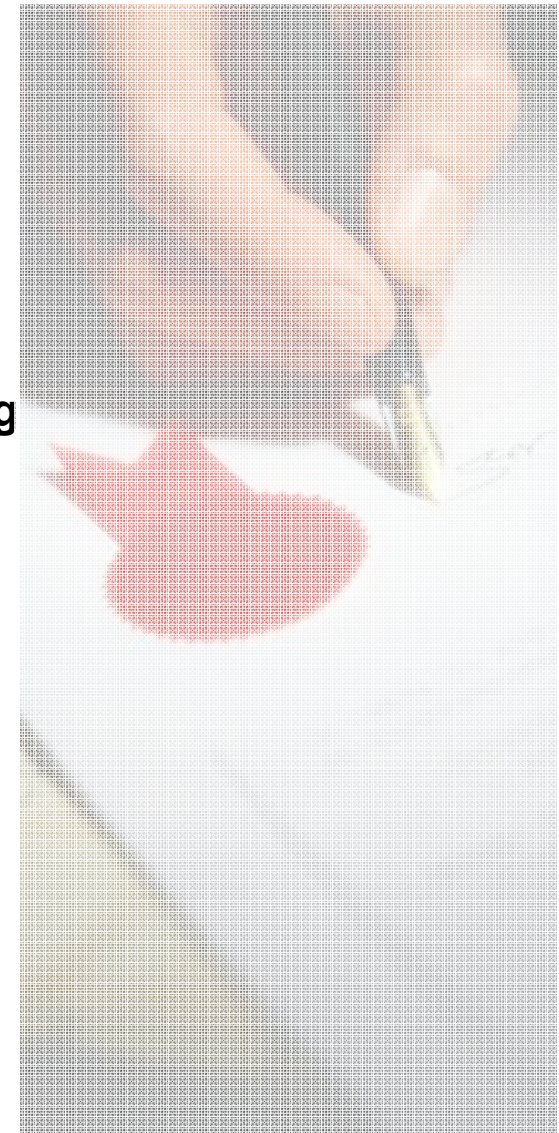
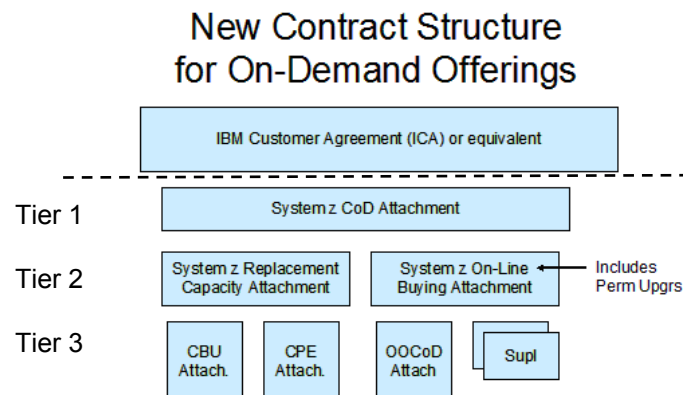
- Additional Capacity Offerings
 - **Permanent Capacity Upgrade**
 - **Temporary Capacity Upgrade**
- Replacement Capacity Offerings
 - **Capacity Back Up (CBU)**
 - **Capacity for Planned Events (CPE)**



CoD Contracts

CoD Offerings from Contract Point of View !!!

- **New contract structure eliminates redundancy between contract documents**
- **Contract documents structured in 3 tiers**
 - **Tier 1 High level terms for any CoD offering**
 - **Tier 2 Terms to support certain class of CoD offering**
 - **Tier 3 Terms to support particular offerings**



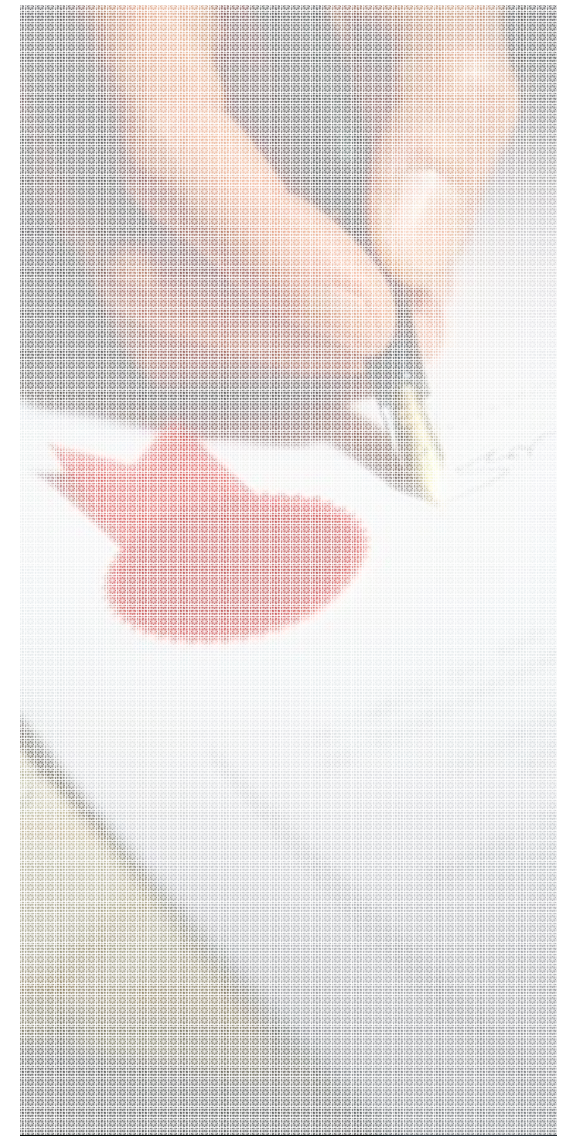
CoD Contracts CoD Vertragsmatrix

US Contract	German Contract	CBU	CPE	On/Off CoD	CIU
CoD Attachment Base Z125-7879	IBM System z Capacity on Demand-Angebote INTC-7879- xx	✓	✓	✓	✓
RC Attachment Z125-7880	System z Replacement Capacity-Angebote INTC-7880- xx	✓	✓		
CBU Attachment Z125-7881	System z Capacity Back Up INTC-7881- xx	✓			
CPE Attachment Z125-7882	z Capacity for Planned Events INTC-7882- xx		✓		
On/Off CoD Attachment Z125-7883	System z On/Off CoD INTC-7883- xx			✓	
Online CoD Buying Attachment Z125-7884	IBM System z CoD-Onlineerwerb INTC-7884- xx	✓ ₀	✓ ₀	✓	✓
Online CoD Buying Supplement Z125-7885 Direct Transaction for third Party Lessor Mach. Z125-7908	IBM System z CoD-Onlineerwerb INTC-7885- xx *Bedingungen II für den IBM System z CoD-Onlineerwerb INTC-7908- xx	✓ ₀	✓ ₀	✓	✓

Tier 1

Tier 2

Tier 2



Note: Tier 1 and Tier 2 contracts only required once per customer
 ✓ required for CBU/CPE Onliune ordering

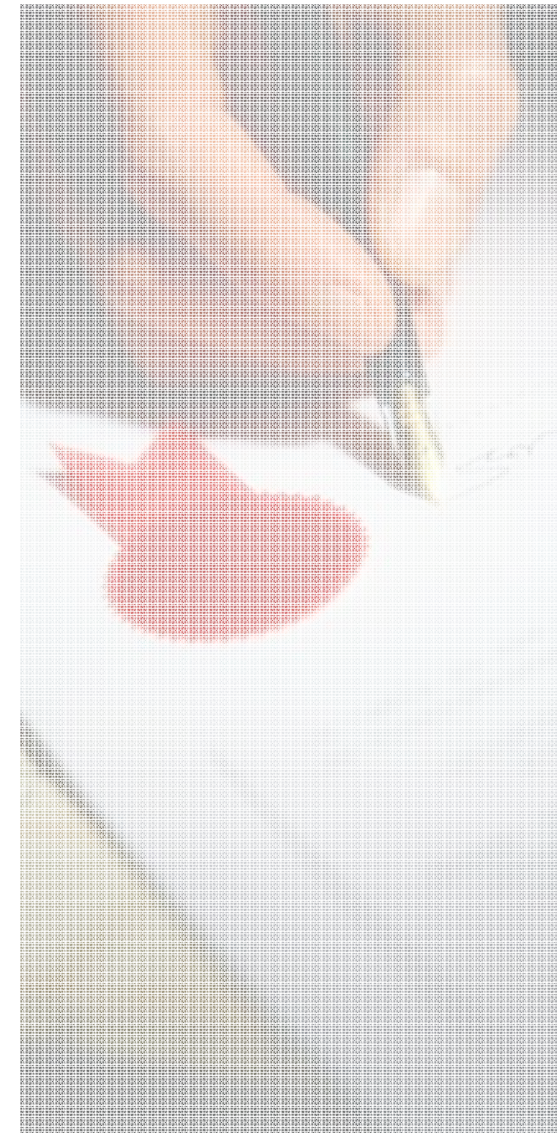
CoD Contracts

- **CBU**

- **IBM System z Capacity on Demand-Angebote** INTC-7879- xx
- **- Anlage für IBM System z Capacity on Demand-Angebote**
- **System z Replacement Capacity-Angebote** INTC-7880- xx
- **- Anlage für IBM System z Replacement Capacity-Angebote**
- **System z Capacity Back Up** INTC-7881- xx
- **- Anlage für IBM System z Capacity Back Up**

- **OOCoD**

- **IBM System z Capacity on Demand-Angebote** INTC-7879- xx
- **- Anlage für IBM System z Capacity on Demand-Angebote**
- **System z On/Off CoD** NTC-7883- xx
- **- Anlage für IBM System z On/Off Capacity on Demand**
- **IBM System z CoD-Onlineerwerb** INTC-7884- xx
- **- Anlage für den IBM System z CoD-Onlineerwerb**
- **IBM System z CoD-Onlineerwerb** INTC-7885- xx
- **- Ergänzende Bedingungen für den IBM System z CoD-Onlineerwerb**



IBM direct vs BP contract

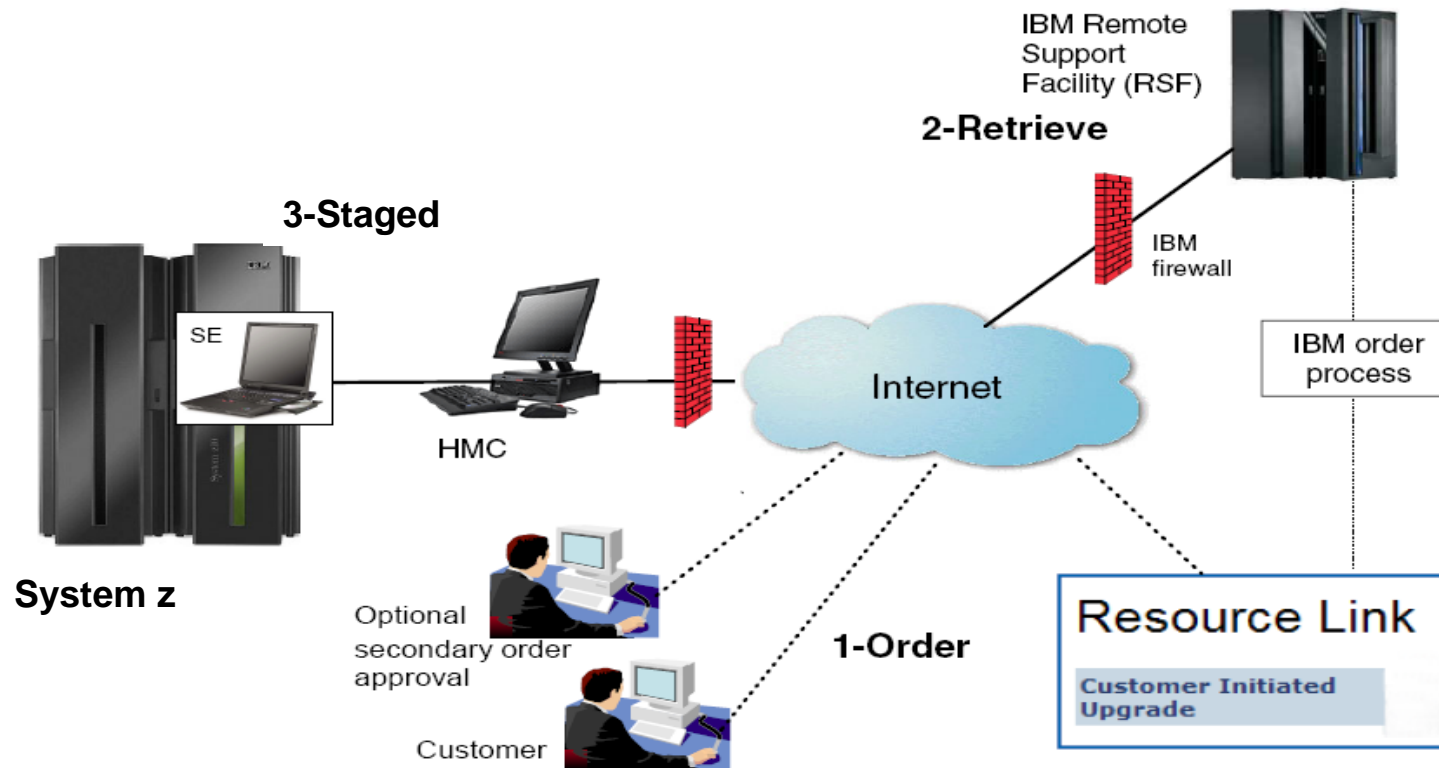
- **IBM direct OOCoD Contract**
 - Customer receives bill directly from IBM
 - Customer sees prices in RL
 - OOCoD will be made available immediately after order was placed and approved by customer
- **BP Contract**
 - BP negotiates prices with customer based on SBO
 - Prices are not visible for customer in RL
 - BP has to approve every OOCoD Order in RL before record will be made available to customer
 - BP issues bill to customer

Agenda

- The Basics - Capacity on Demand
- Admin Aspects
 - CoD Prerequisites
 - CoD Contracts
- **Resource Link Order Process**
 - Online - CoD Order Process
 - Flow of CoD Records
- Billing and Pricing
- Elements of the Offerings
 - Capacity Back Up
 - Capacity for Planned Events
 - On/Off Capacity on Demand
- Capacity Provisioning Manager (Software)



Online - CoD Order Process



Creating an On/Off CoD Order

IBM Systems > System z > Resource Link > Customer Initiated Upgrade >

Machine profile

2817 - WN002 - W996174

Current configuration	
Model Capacity:	721 (21 CPs)
ICF:	3
zAAP:	4
zIIP:	2
IFL:	2
SAP:	14
Memory:	224
Unassigned IFLs:	0

Current configuration as of 23 Sep 2010 12:34:56

Machine summary

Type, model, serial:
2817 - M80 - WN002

Customer summary

Company name:
IBM

Customer number:
W996174

GEO, country:
Americas - zDutchy of Merwyn

Ordering options

- Order permanent upgrade
- Order On/Off CoD record
- Order On/Off CoD test record
- Order On/Off CoD record with prepaid upgrades
- Order On/Off CoD record with spending limits
- Order administrative On/Off CoD test record
- Order Capacity Backup (CBU) record
- Order Capacity for Planned Events (CPE) record
- History of updates
- View configuration
- View CIU error logs
- Display upgrade matrix

About ordering

Authorization to create orders User ID: walter_necker@de.ibm.com Name: Walter Necker	Ordering options CIU Permanent: Enabled On/Off CoD: Enabled CBU: Enabled CPE: Enabled
---------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------

Authorization to approve orders
Not required

Order billing
Bill-to customer no.: W996174

Notes:

- A pre-negotiated price agreement exists for this machine.
- On/Off CoD Test: 0 staged out of 1 remaining

Permanent upgrades

Open orders Complete orders All orders

There are no open orders for this machine.

To update profile

- Upload VPD
- Upload upgrade billing XML data

For more information

- View machine's permanent order billing history
- View machine's On/Off CoD order billing history
- Users authorized to order upgrades
- Users authorized to view orders
- Order status definitions
- Customer Initiated Upgrade information

Creating an On/Off CoD Order



- Ordering options**
- Order permanent upgrade
 - Order On/Off CoD record
 - Order On/Off CoD test record
 - Order On/Off CoD record with prepaid upgrades
 - Order On/Off CoD record with spending limits
 - Order administrative On/Off CoD test record
 - Order Capacity Backup (CBU) record
 - Order Capacity for Planned Events (CPE) record
 - 📄 History of updates
 - 📄 View configuration
 - View CIU error logs
 - 📄 Display upgrade matrix

Creating an On/Off CoD Order

Address: http://www-304.ibm.com/servers/resourceLink/ciu03010.nsf/capacityRecordOrderConfigure/2817WN002?OpenDoc

United States [change]

Welcome Walter Necker [Not you?] [IBM Sign out]

IBM Systems > System z > Resource Link > Machine 2817 - WN002 >

Order On/Off CoD

Step 1 of 2: Configure the

The On/Off CoD upgrade options for upgrades that have prices set for CoD record that supports the wide machine configuration. Adjust the On/Off CoD upgrades that can be

(*) indicates setting a replenishment maximum date allowed.

Replenishment due date: 03/23/2011

Model capacity: 100%

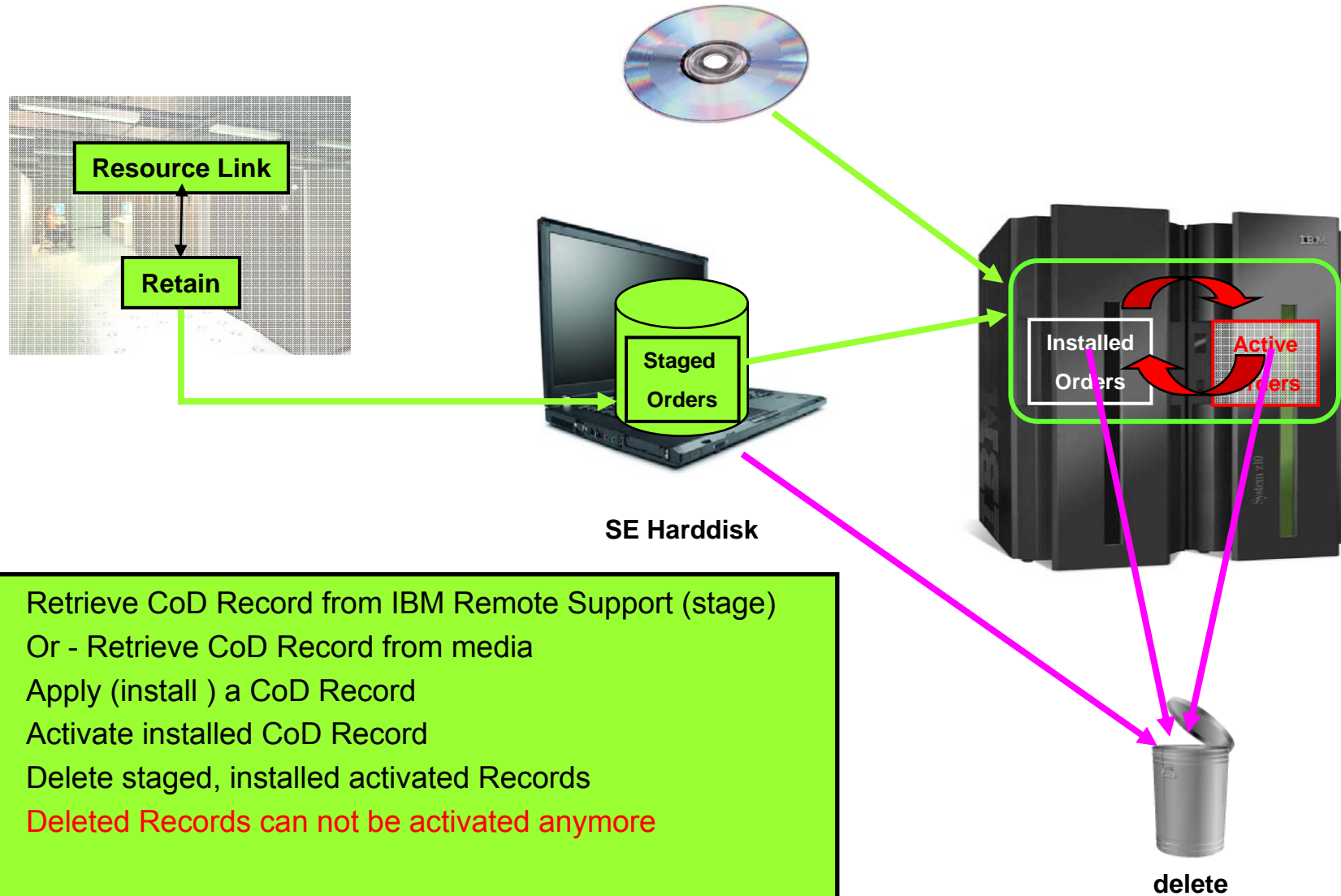
ICF: 3

zAAP: 4

Machine summary

Type:	2817 M80
Model:	721
Serial number:	WN002
Current configuration	
Model capacity:	21 CPs
ICF:	3
zAAP:	4
zIIP:	2
IFL:	2
SAP:	14

Flow of CoD Records



- Retrieve CoD Record from IBM Remote Support (stage)
- Or - Retrieve CoD Record from media
- Apply (install) a CoD Record
- Activate installed CoD Record
- Delete staged, installed activated Records
- Deleted Records can not be activated anymore

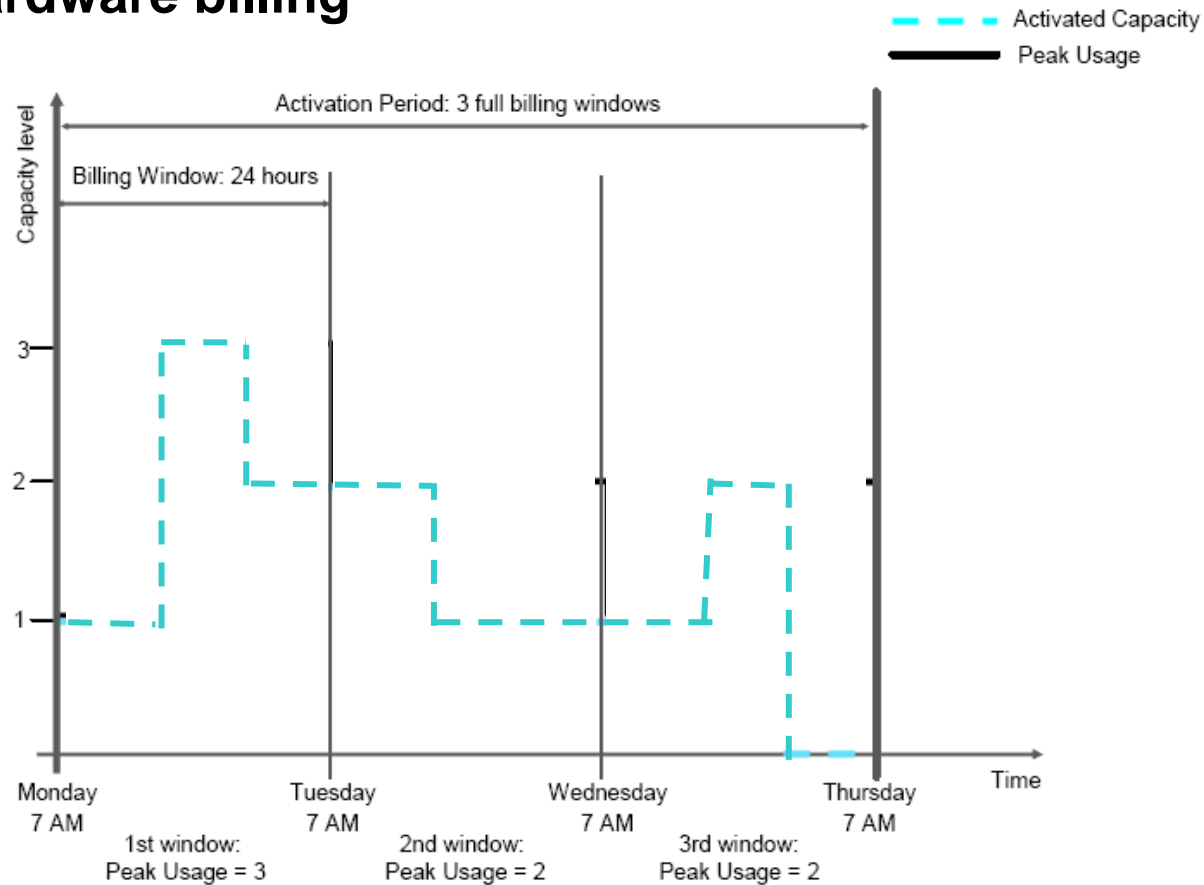
Agenda

- The Basics - Capacity on Demand
- Admin Aspects
 - CoD Prerequisites
 - CoD Contracts
- Resource Link Order Process
 - Online - CoD Order Process
 - Flow of CoD Records
- **Billing and Pricing**
- Elements of the Offerings
 - Capacity Back Up
 - Capacity for Planned Events
 - On/Off Capacity on Demand
- Capacity Provisioning Manager (Software)



On/Off CoDBilling and Pricing

Hardware billing



- On/Off CoD charging done in 24 hrs increments per processor
- 24 hrs block can start at any time during a day
- Consider highest number of CPs used within a 24 hrs periode

On/Off CoD Billing and Pricing

Software billing (IBM SW)

- IPLA products will be billed at the daily rate
 - ▶ max. MSU activated in 24 hrs period
- Sub capacity MLC – highest observed 4 hrs rolling average
- Full capacity MLC – separate bill for additional MSU capacity

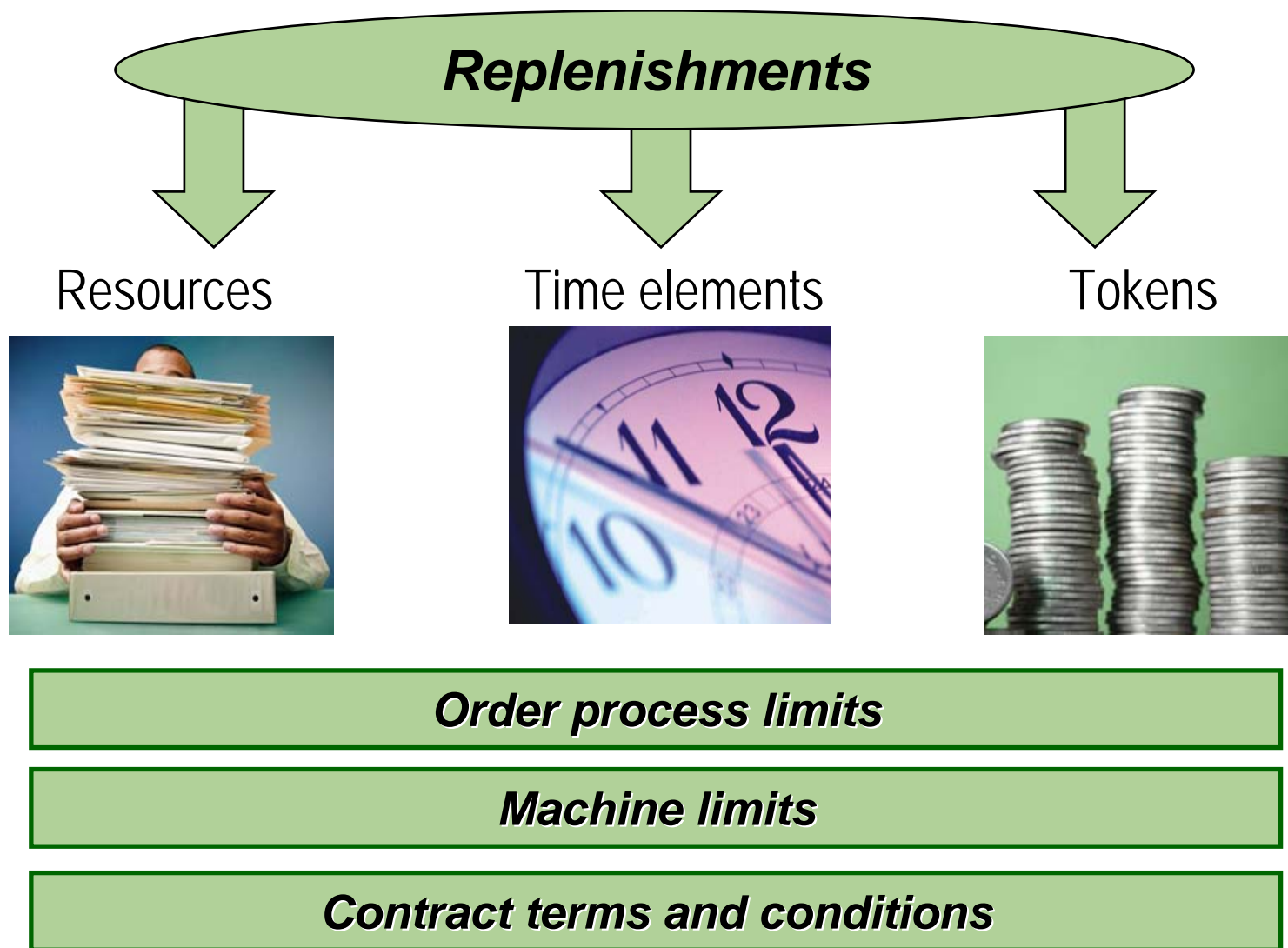
- Note: Please refer to customers sales rep. for customers agreed SW prices

Agenda

- The Basics - Capacity on Demand
- Admin Aspects
 - CoD Prerequisites
 - CoD Contracts
- Resource Link Order Process
 - Online - CoD Order Process
 - Flow of CoD Records
- Billing and Pricing
- **Elements of the Offerings**
 - Capacity Back Up
 - Capacity for Planned Events
 - On/Off Capacity on Demand
- Capacity Provisioning Manager (Software)



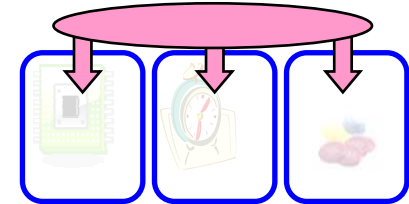
Elements of the Offerings



Offering Parameters – 3 ways of handling

Resources - (order process limits)

- ▶ *Limit the amount of a particular resource that can be activated*
- ▶ *Absolute number which represents maximum resource entitlement*
- ▶ *Activation to resource limits may not be achieved depending on current configuration*
- ▶ *e.g. #CPs, #IFLs, #Capacity levels*



Time Elements - (machine limits)

- ▶ *Limit the length of time that the record can be active; full or partial (applies to all record types)*
- ▶ *All time limits are measured in days or calendar date*
- ▶ *Absolute number which represents maximum time entitlement*
- ▶ *e.g. Number of days in test, Number of days in real activation, calendar date*

Tokens - (terms and conditions)

- ▶ *Consumable – record updated each 24 hours to reflect consumption level*
- ▶ *Values are treated as incremental delta to the current token level*
- ▶ *e.g. number of tests, number of real activations*
- ▶ *Limits (new) for limiting financial exposure: pre-paid and post paid tokens*

NOTE: *Negative updates to these limits are not allowed*

Expiration Date

- Definition: Last day a record is usable
 - Regardless of whether the record is installed, active or staged.
- Offering specific
 - On/Off CoD - 180 days from date of order
 - CBU - quantity of FC 6817 (CBU years) from date of order *
- Warning messages will begin at least 5 days prior to expiration for installed records
 - Warning messages appear on ResourceLink as well as the CoD panels on the SE/HMC

*** records ordered through manufacturing include 47 additional days to allow for fulfillment and installation of machine.**

System z Capacity Back Up – CBU

	<p>Resources</p> <p>CP Capacity Features Specialty engines: zIIP, zAAP, ICF, IFL, SAP</p>		<p>Time elements</p> <p>Test duration = 10 days Real activation = 90 days 2 day grace period Expiration date set to 1 through x years</p>		<p>Tokens</p> <p>Number of Tests = 1 per year (default) Up to 15 can be ordered Number of Real activations = 1</p>
--	--------------------------------------------------------------------------------------------------------------	--	------------------------------------------------------------------------------------------------------------------------------------------------------------------	--	-------------------------------------------------------------------------------------------------------------------------------------------

Order process limits

- Total CP Capacity features = number of net new engines + number of permanent engines changing capacity level
 - No limit to the resources ordered
- Number of zIIPs or zAAPs can not exceed total number of permanent + temporary CPs
- No more than 15 tests per record

Machine limits

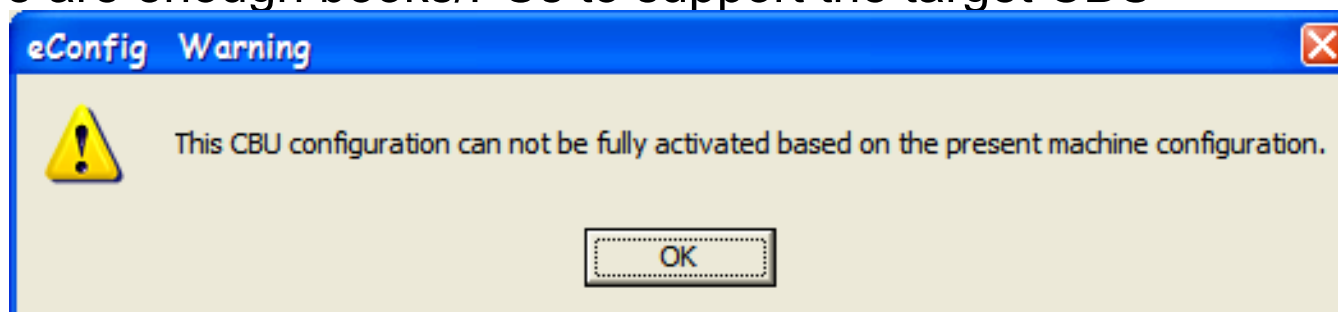
- Can not decrement capacity level
- Can not remove permanent engines from configuration
- No Tests while in Real activation
- No Tests if number of Real activations equals zero
- Auto deactivation of activated resources upon time limit
 - If any resource can not be removed all resources stay active
 - Ability to remove resources checked every 24 hours.

Contract terms and conditions

- To be used only for replacement capacity within an enterprise
- Priced for H/W. No IBM S/W charges

Model Dependency

- Ensure there are enough books/PUs to support the target CBU destination



HW Model	Model Capacity Identifier	Comments
E12	700 – 712, 6xx, 5xx, 4xx	Where xx = 1 to 12
E26	700 – 726, 6xx, 5xx, 4xx	
E40	700 – 740, 6xx, 5xx, 4xx	
E56	700 – 756, 6xx, 5xx, 4xx	
E64	700 – 764, 6xx, 5xx, 4xx	

System z Capacity for Planned Event

	<p>Resources</p> <p>CP Capacity Features Specialty engines: zIIP, zAAP, ICF, IFL, SAP</p>		<p>Time elements</p> <p>Test duration = NA Real activation = 3 days No grace period No Expiration date</p>		<p>Tokens</p> <p>Number of Tests = 0 Number of Real activations = 1</p>
--	--------------------------------------------------------------------------------------------------------------	--	-------------------------------------------------------------------------------------------------------------------------------	--	----------------------------------------------------------------------------------------

Order process limits

- No more than 1 real activation per record (replenished until end of contract)

Machine limits

- Can not decrement capacity level
- Can not remove permanent engines from configuration
- Auto deactivation of activated resources upon time limit
 - If any resource can not be removed all resources stay active
 - Ability to remove resources checked every 24 hours
- All dormant resources are available for use during the activation

Contract terms and conditions

- To be used only for replacement capacity within an enterprise
- Priced for H/W use BUT like CBU, no IBM S/W charges

System z On/Off Capacity on Demand

	<p>Resources</p> <p>CP Capacity % MSU Specialty engines: zIIP, zAAP, ICF, IFL, SAP</p>		<p>Time elements</p> <p>Test duration = NA Real activation = Unlimited 1 hr grace period Expiration date set to 180 days</p>		<p>Tokens</p> <p>Number of Tests = 0 Number of Real activations = Unlimited</p>
--	-----------------------------------------------------------------------------------------------------------	--	-----------------------------------------------------------------------------------------------------------------------------------------------------	--	------------------------------------------------------------------------------------------------

Order process limits

- Temporary CP capacity up to 100% or purchased capacity using MSU rating as metric
- Number of temporary zIIPs or zAAPs can not exceed total number of permanent + temporary CPs
- Number of temporary IFLs up to the total of purchased IFLs
- Number of temporary ICFs plus permanent ICFs not to exceed 16

Machine limits

- Can not decrement capacity level
- Can not remove permanent engines from configuration
- Positive increase in MSUs with temporary activations

Contract terms and conditions

- H/W and S/W charges

System z On/Off Capacity on Demand

New on z196 vs z10

- **Auto replenishment of On/Off CoD records**
- **On/Off CoD Administrative tests**

System z On/Off Capacity on Demand

On/Off CoD test

On/Off CoD test (one 24 hrs test per system)

- Validate that the retrieve, install, activate, and deactivate On/Off CoD capacity upgrade process performs nondisruptively
- Train your authorized users to activate an On/Off CoD record
- Test an LPAR configuration
- Verify you can change between CP activation levels.
- An On/Off CoD test record cannot be active at the same time as an On/Off CoD record
- An On/Off CoD test record deactivates at the end of the test period (24 hours)

Administrative On/Off CoD test (unlimited)

- Consider the following before implementing any administrative On/Off CoD test records:
- An administrative On/Off CoD test record allows you to test the Capacity on Demand process for training and API testing without incurring hardware or software charges.
- No capacity is activated with this test record.
- An administrative On/Off CoD test record cannot be active at the same time as another On/Off CoD record. You must deactivate the administrative On/Off CoD test record prior to activating any other On/Off CoD records.

System z Resources, Time elements and Tokens Summary

Resources	CBU	CPE	On/Off CoD	Remarks
CP	CP	CP	up to 100% more MSU CP capacity	
Specialty	zIIP, zAAP, ICF, IFL, SAP			
Time Elements	CBU	CPE	On/Off CoD	Remarks
Test Duration	10 days	NA	NA	
Real activations	90 days	3 days	Post-paid – Unlimited Prepaid – Limited	
Grace Period	2 days	N/A	One hour	Auto deactivation upon end of grace period
Expiration Date	1-5 years	No Expiry	180 days	Auto deactivation upon expiration
Tokens	CBU	CPE	On/Off CoD	Remarks
Number of test	Up to 15	0	1	On/Off CoD tests are managed via a separate record
Number of real activation	1	1	Post-paid – Unlimited Prepaid – Limited	

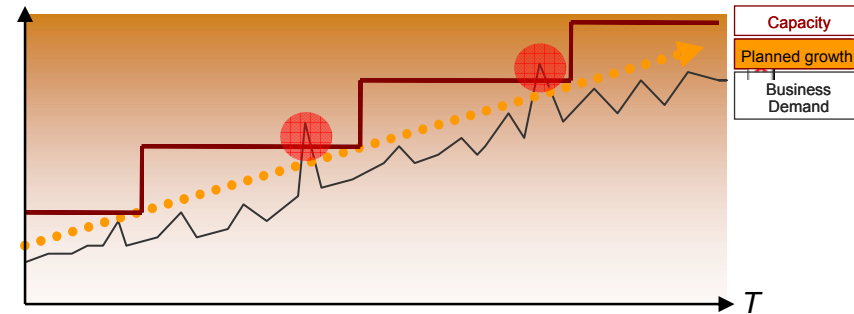
Agenda

- The Basics - Capacity on Demand
- Admin Aspects
 - CoD Prerequisites
 - CoD Contracts
 - IBM direct vs BP contract
- Resource Link Order Process
 - Online - CoD Order Process
 - Flow of CoD Records
- Billing and Pricing
- Elements of the Offerings
 - Capacity Back Up
 - Capacity for Planned Events
 - On/Off Capacity on Demand
- **Capacity Provisioning Manager (Software)**



IBM z/OS Capacity Provisioning - Rationale

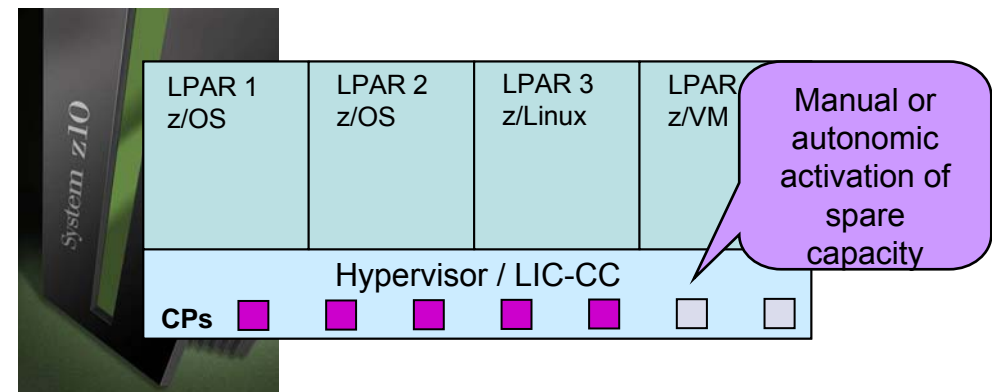
- Unpredictable or recurring workload spikes may exceed available capacity
- Business need may justify a temporary upgrade of capacity
 - ▶ On/Off Capacity on Demand
- System z10 provides improved and integrated OCoD and CBU concept
 - ▶ Faster activation and improved robustness
 - ▶ Can be activated incrementally and in combination
- **Values**
 - ▶ System z10 Capacity Provisioning allows managing processing capacity more reliably, more easily, and faster
 - ▶ Can help you to assure that sufficient processing power is available with the least possible delay, by:
 - Replacing manual monitoring with autonomic management, or
 - Supporting manual operations with recommendations
 - ▶ Based on Open Standards protocol [Common Information Model \(CIM\)](#)



Typical customer statements:

“CUoD has to become easier and faster!”

“Initiating a capacity upgrade at specific and agreed intervals is acceptable, and that's what we are doing today using human intervention.”



Capacity Provisioning Capabilities



- A Capacity Provisioning Manager (CPM) can control temporary processor resources on IBM System z10
 - Number of zAAPs
 - Number of zIIPs
 - General purpose capacity:
 - Considers different capacity levels (i.e. effective processor speeds) for subcapacity processors
 - Requires valid On/Off CoD record
 - Runs on z/OS Release 9
 - Management scope is one or more IBM System z10 servers
 - Can include multiple Sysplexes
- Capacity Provisioning actions can be initiated:
 - Manually at the z/OS console through Capacity Provisioning Manager commands
 - Via user defined policy at specified schedules

Questions?

ZEND

