IBM Software Group

IP Interconnectivity (IPIC) Connection Overview

Byron Baldwin
bdbaldwi@us.ibm.com

WebSphere® Support Technical Exchange

ON DEMAND BUSINESS

Acknowledgements

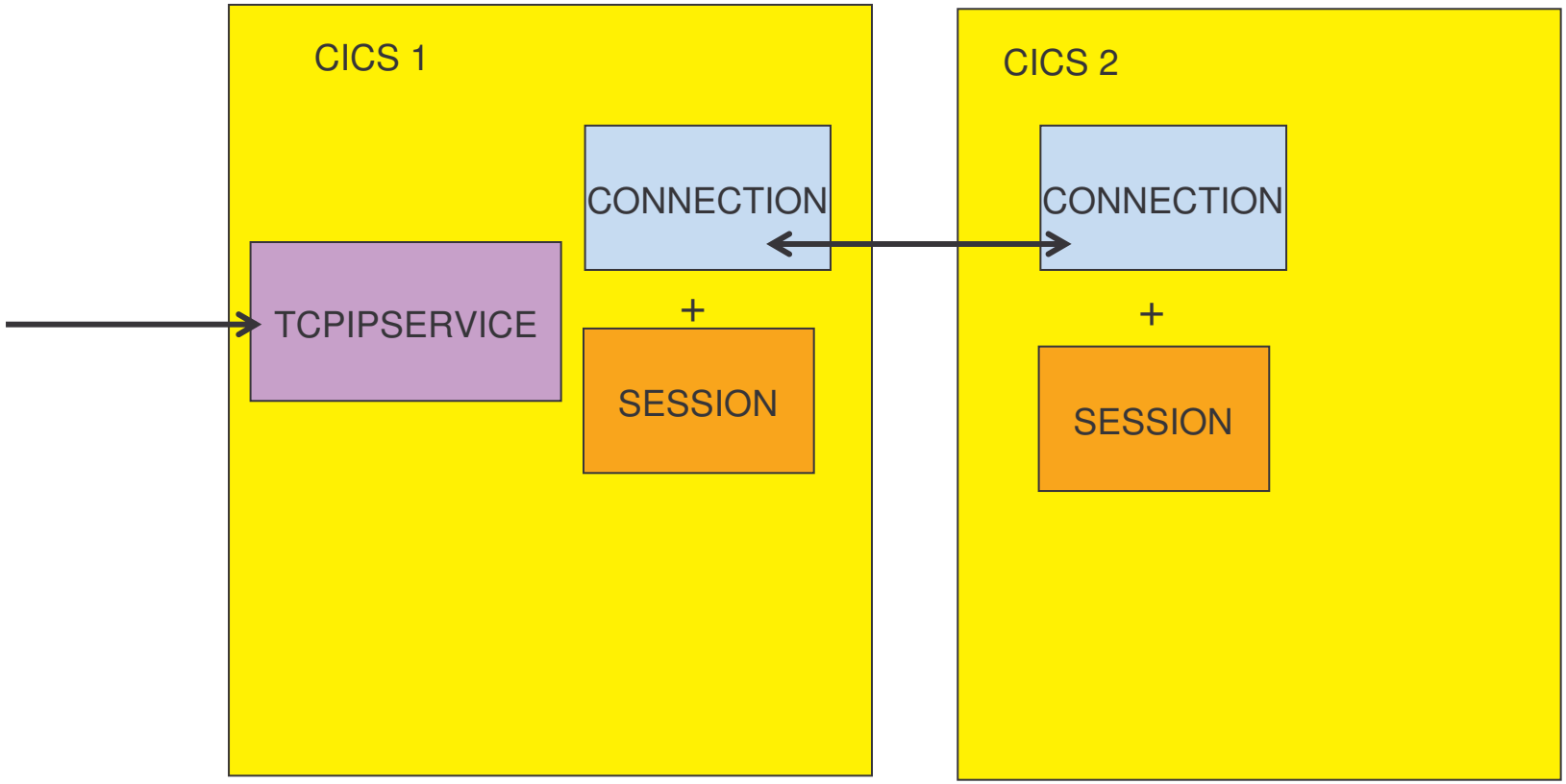
Topic Agenda

- Connectivity
  - Resource definitions
    - IPCONN
    - TCPIPSERVICE
  - Functions supported
    - Distributed Program Link
- Systems Management
  - Customization
    - AUTOINSTALL
    - User exits for Correlation data
  - Monitoring and Statistics

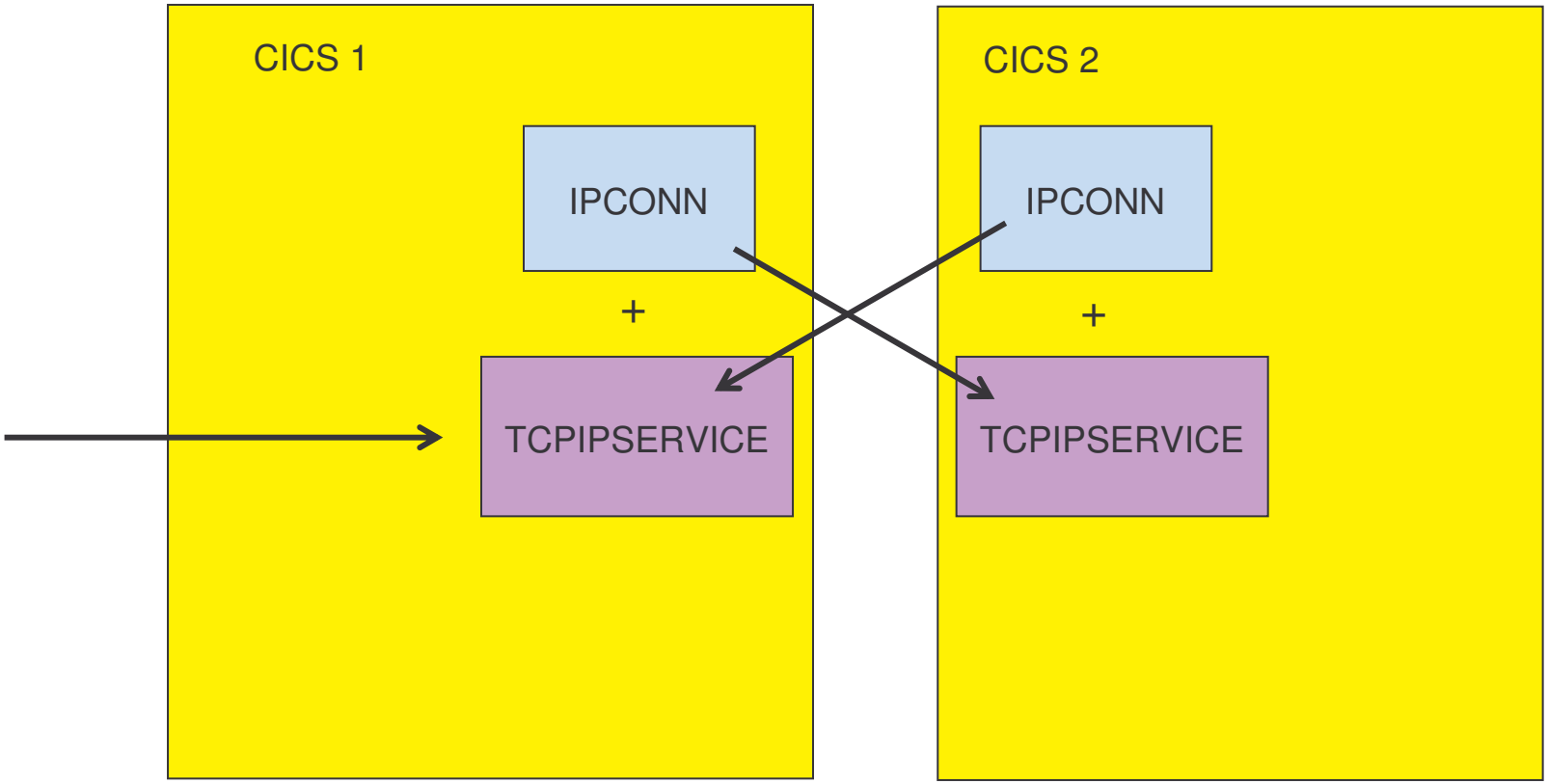
Background

- **SNA networking and VTAM have been at the heart of CICS for 30 years**
  - No plan to remove existing SNA support
- **Customers are asking for TCP/IP alternatives for CICS to CICS connectivity**
  - Network convergence
  - SNA skills shortage
- **CICS Transaction Server IP Standardization**
  - Provide a new transaction IP communications protocol for connectivity between and into CICS
  - Long term plan to provide CICS with IP choice for most of the CICS programming model
    - CICS TS 3.2
      - Distributed Program Links (DPL)
      - JCA
  - No requirement to change the CICS applications to exploit IP
- **CICS TCP/IP network management will be provided**
  - Systems and User correlation data tracking with CICSPlex Systems Manager

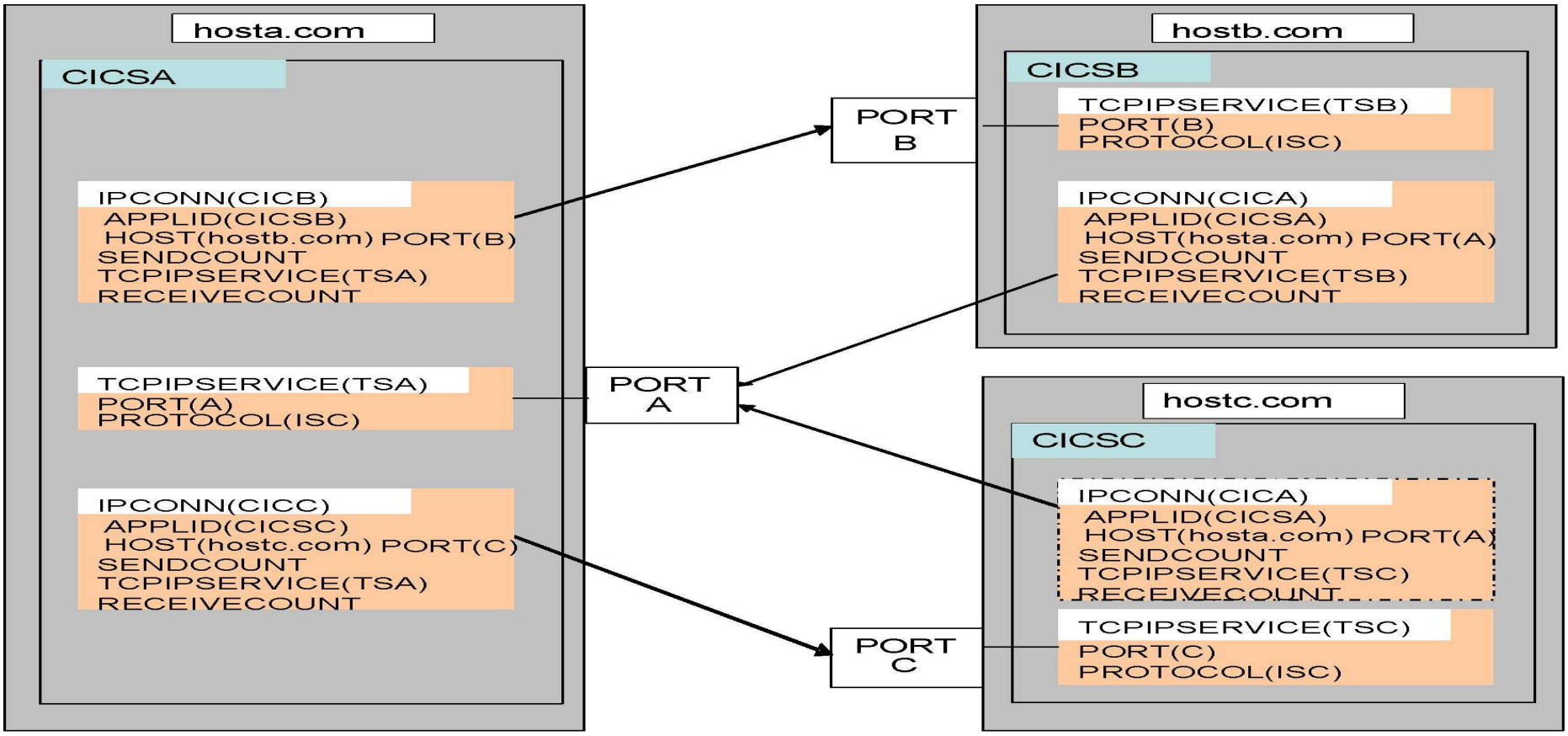
Current Resource Definitions



CICS 3.2 Resource Definitions



CICS 3.2 Resource Definitions Review…



Systems Initialization Table Changes

- APPLID
  - Must be unique with a sysplex
  - Will be enforced by CICS
- CONFDATA={SHOW|HIDETC}
  - Applies to initial input on IPIC over TCP/IP connections
- ICVTSD
  - Applies to IPIC over TCP/IP connections
- TCPIP=YES
- UOWNETQL
  - Valid for VTAM=NO systems

IPCONN Resource Definition

IPCONN (name)
GROUP (groupname)
APPLID (IPCONN name | applid)
DESCRIPTION (text)
AUTOCONNECT (NO | YES)
INSERVICE (YES | NO)
HOST (name)
MAXQTIME (NO | seconds)
NETWORKID (networkID)
QUEUELIMIT (NO | number)
PORT (number)
RECEIVECOUNT (1 | number) **SENDCOUNT** (1 | number)
XLNACTION (KEEP | FORCE)
TCPIPSERVICE (name)

TCPIPSERVICE Resource Definition

TCPIPSERVICE (name)

GROUP (groupname) **DESCRIPTION** (text)

BACKLOG (1 | backlog) **GRPCRITICAL** (NO | YES)

DNSGROUP (dnsgroup) **IPADDRESS** (INADDR_ANY | ipaddress)

PORTNUMBER (port)

PROTOCOL (IPIC) **TRANSACTION** (CISS | transaction)

SOCKETCLOSE (NO | hhmmss) **STATUS** (OPEN | CLOSED)

URM (NO | DFHISAIP | program_name)

Security

- TCPIPSERVICE and IPCONN settings
  - Bind time security
    - SSL client certificates on the TCPIPSERVICE definition
  - Link security
    - SECURITYNAME parameter on the IPCONN definition
  - User security
    - USERAUTH parameter on the IPCONN definition

IPCONN Resource Definition

IPCONN (name)

GROUP (groupname)

CERTIFICATE (label)

CIPHERS (value)

SSL (NO | YES)

SECURITYNAME (userid)

USERAUTH ({LOCAL|IDENTIFY|VERIFY|NO|CERTIFICATE})

TCPIPSERVICE Resource Definition

TCPIPSERVICE (name)

GROUP (groupname)

PROTOCOL (IPIC)

CIPHERS (value)

SSL (NO | YES | CLIENTAUTH)

SYSID Processing: IPCONN v CONNECTION

- CICS TS 3.2 supports DPL over TCP/IP
- If a single region supports both DPL and other forms of function shipping then:
  - Then both an IPCONN and a CONNECTION, with the same name, will have to be installed
  - DPL will search for IPCONN match before looking for CONNECTION
  - IPCONN and CONNECTION with same name must have same APPLID, and vice versa

Resource Definition

- Manual
  - CEDA
  - DFHCSDUP
  - CPSM BAS
- Programmatic
  - AUTOINSTALL
  - CREATE commands

IPCONN AUTOINSTALL

- Enabling AUTOINSTALL for IPCONN
  - TCPIPSERVICE must be defined with PROTOCOL (IPIC) and URM (DFHISAIP | program_name)
  - An IPCONN definition to be used as a template must be installed
- URM (DFHISAIP | program_name)
  - Invoked at INSTALL
    - Specifies name of installed IPCONN to be used as a template
    - May override APPLID, HOST and PORT
  - Invoked at DELETE
    - No action necessary
  - Values returned by the user program in its communications area

IPCONN AUTOINSTALL…

- Parameter list at Install

```
isaic_function    char(1)       Function code (X'F0' for Install)
*                       char(3) Reserved
isaic_ipconn            char(8) Name for the autoinstalled IPCONN
isaic_applid            char(8) The applid of remote system
isaic_suggested_applid char(8) Suggested applid, if isaic_applid blank
isaic_networkid         char(8) Network ID of remote system
isaic_tcpipservice      char(8) Name of the TCPIPSERVICE on which
                                this connect flow arrived

isaic_template          char(8) Name of the template IPCONN
isaic_host              char(116)Host name of remote system
isaic_port              bin(32) Call back port number of remote system

isaic_receivecount      bin(32) Number of receive sessions wanted by
                                remote system
```

IPCONN AUTOINSTALL…

- Parameter list at Delete

```
isaic_function          char(1) Function code (X'F1' for Delete)
*                  char(3)      Reserved
isaic_ipconn       char(8)      Name of the autoinstalled IPCONN
isaic_applid       char(8)      Applid of the autoinstalled IPCONN
isaic_networkid    char(8)      Network ID of the autoinstalled IPCONN
isaic_tcpipservice     char(8) Name of the TCPIPSERVICE on which
                   the connect flow arrived
```

IPCONN AUTOINSTALL…

- Default AUTOINSTALL program
  - Assembler language program called DFHISAIP
  - Communications area copy book is DFHISAIC
  - Actions:
    - At INSTALL
      - Specify that IPCONN definition, DFHISAIT, is to be used as the template
      - Specify a name for the new connection using the last 4 non-blank characters of the connecting system's applid
      - If the isaic_applid field is blank, set its value, and the connection name, to the "suggested applid" in the isaic_suggested_applid field.
      - Return
    - At DELETE
      - Return

Global User Exits

- New exit XAPADMGR
  - Application Associated Data exit
    - Add user information to a task's Associated Data Origin Descriptor
    - Invoked at attach of a non-system task that has no inherited Associated Data Origin Descriptor data passed to it.
      - Exit-specific parameters
      - UEPADPL
        - Address of the mandatory association data parameter list structure.
      - UEPADCB
        - Address of the selectable association data parameter list. This is mapped by the DFHMNADS DSECT.
      - UEPADCBL
        - Length, in bytes, of the associated data control block.
      - UEPUCD
        - Address of a 64-byte output area in which the exit program can place the user correlation data.

Global User Exits…

- Changed exits
  - XRSINDI (Invoked at install and discard)
    - New flag for IPCONN resources
- New exit
  - XISQUE (Manage intersystem queues on IP connections)
    - Control the number of queued distributed program link (DPL) requests
      - Enables allocate requests to be queued or rejected
      - Allows an IP connection to be terminated and then re-established
    - Exit specific parameters
      - UEPIPCNM name of the IP connection
      - UEPREQTR identifier of the requesting transaction
      - UEPFSPL address of the parameter list for the DPL request
      - UEPCONST address of the IP connection statistics record
      - UEPEMXQT field containing the maximum queuing time specified for the IP connection
      - UEPSACNT number of allocate requests processed since the queue was started
      - UEPQUELM field containing the queue limit specified for this IP connection

User Replaceable Modules

- Dynamic Routing Exit
  - Dynamic routing will continue to be supported for DPL requests
    - The routing program provides a SYSID, which is then used to match against an IPCONN resource.
    - If the IPCONN resource is not found then a match will be attempted on a CONNECTION resource
  - Once an IPCONN resource is matched
    - If the DPL request fails, CICS will not attempt a match on a CONNECTION resource
    - Control will be returned to the routing program to select an alternative SYSID

New SPI Commands

- INQ IPCONN
  - Retrieve information about an IP connection
- SET IPCONN
  - Change the attributes of an IP connection or cancel outstanding AIDs
- CREATE IPCONN
  - Define an IP connection in the local CICS region
- DISCARD IPCONN
  - Remove an IPCONN definition
- INQ ASSOCIATION
  - Retrieve association information for a specified task
- INQ ASSOCIATION LIST
  - Retrieve a list of tasks, based on user correlation data contained in the tasks' association information

Statistics

- New IP Connection report
  - Similar to the ISC/IRC report except for TCP/IP connections
- New RESTYPE on the EXTRACT STATISTICS
  - IPCONN

Summary

- Connectivity
  - CICS now has the ability to connect to other CICS regions using TCP/IP
  - DPL is support over IPCONN in CICS TS V3.2
- Systems Management
  - New AUTOINSTALL option for IPCONN resources
  - New Associated Data user exit for tracking distributed requests

Additional Hints and Tips

You cannot install two or more IPCONN definitions that specify the same APPLID and the same NETWORKID. (The combination of APPLID and NETWORKID can be used to ensure unique naming of systems across the network.)

You can install an IPCONN definition that specifies the same APPLID as the NETNAME of an installed MRO, APPC, or LUTYPE6.1 CONNECTION definition.

If an installed IPCONN definition has the same name as an installed CONNECTION definition, the APPLID of the IPCONN definition must match the NETNAME of the CONNECTION definition. If they do not, the message that results depends on the situation:

- **DFHIS3009** if the error is detected during IPCONN autoinstall
- **DFHAM4913** if the error is detected during IPCONN install
- **DFHZC6312** if the error is detected during CONNECTION install or autoinstall

Additional Hints and Tips…

The IPCONN definition takes precedence over the CONNECTION definition: that is, if an IPCONN and a CONNECTION have the same name, CICS uses the IPCONN.

A CONNECTION and an IPCONN with the same NETNAME and APPLID are not required to have the same name.

This allows the possibility to use a distinct sysid for communication over TCP/IP rather than relying on the CICS default of routing all supported function via the IPCONN, if it exists.

If the CICS extended recovery facility (XRF) is used by any of the regions in the sysplex, the specified applid must not duplicate the specific applid of any XRF CICS region. If, on CICS startup, the specified applid is found to duplicate the (specific or only) applid of any other CICS region currently active in the sysplex, CICS issues message **DFHPA1946** and fails to initialize.

The above rules are validated at install time

Additional WebSphere Product Resources

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- Learn about other upcoming webcasts, conferences and events: http://www.ibm.com/software/websphere/events_1.html
- Join the Global WebSphere User Group Community: http://www.websphere.org
- Access key product show-me demos and tutorials by visiting IBM Education Assistant: http://www.ibm.com/software/info/education/assistant
- View a Flash replay with step-by-step instructions for using the Electronic Service Request (ESR) tool for submitting problems electronically: http://www.ibm.com/software/websphere/support/d2w.html
- Sign up to receive weekly technical My Notifications emails: http://www.ibm.com/software/support/einfo.html

Questions and Answers