Leveraging BCPii in Automation

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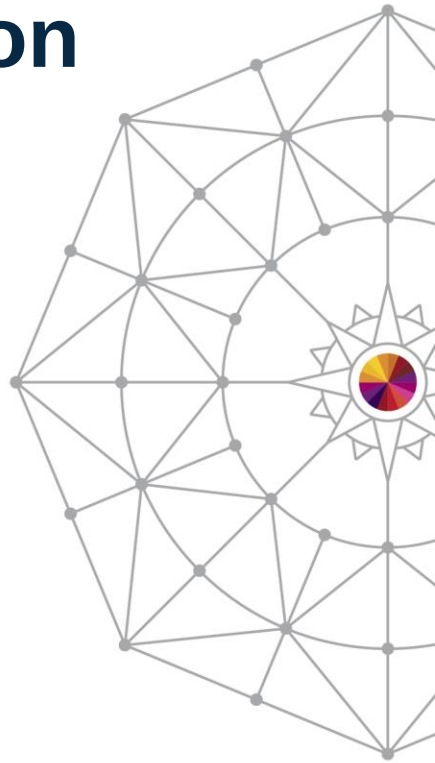


Agenda

- BCPii
- Use Case
- Discussion

Goal

How do we make our jobs easier by using BCPii in automation.

- Glossary
  - BCPii = Base Control Program internal interface
  - SE = Support Element
  - OOCOD = On/Off Capacity On Demand
  - CAPREC = Capacity Record
  - CF = Coupling Facility
  - MSU = Million Service Units
  - (E)CSA = (Extended) Common Services Area
  - MQ = Message Queuing (IBM WebSphere MQ)
  - CPC = Central Processor Complex
  - HMC = Hardware Management Console
  - CBU = Capacity Back Up
  - ZBX = system Z Blade center eXtension
  - GP = General Processor
  - IFL = Integrated Facility for Linux
  - zIIP = z/OS Integrated Information Processor
  - WLM = Work Load Manager

BCPii - Overview

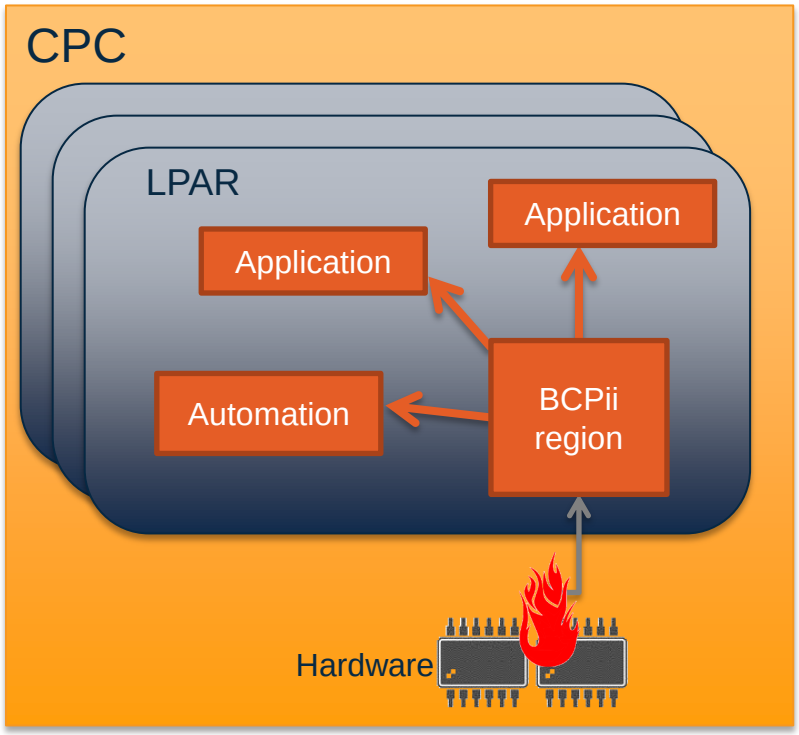
Events Attributes Commands

Programmatically access HMC hardware functionality.

BCPii - Overview

Events Attributes Commands

Applications can register for hardware and software events on the current CPC.



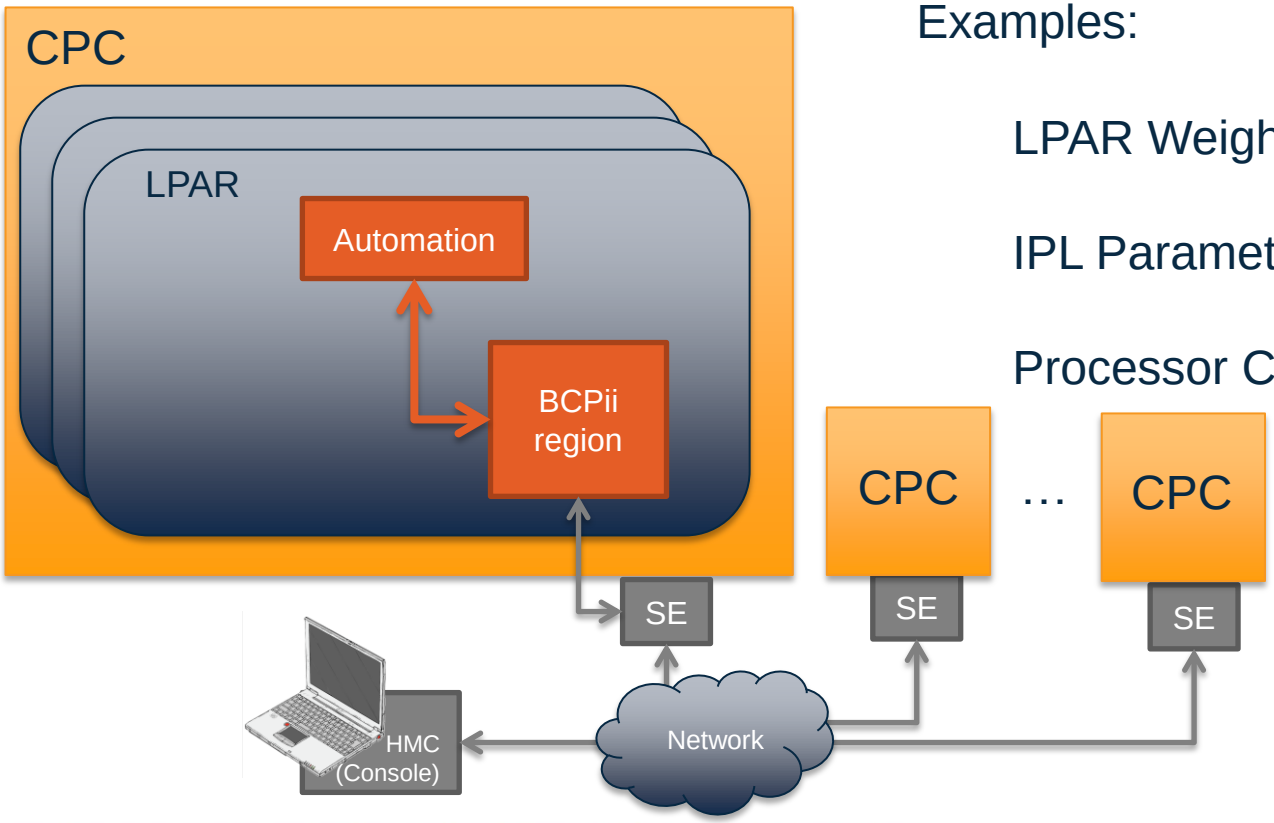
Examples:

- Activation Profile Change
- Capacity Record Change
- Hardware Message
- Command Response

BCPii - Overview

Events Attributes Commands

Applications can securely and programmatically retrieve or update HMC managed objects associated with CPCs, LPARs and Activation Profiles.



Examples:

LPAR Weights,

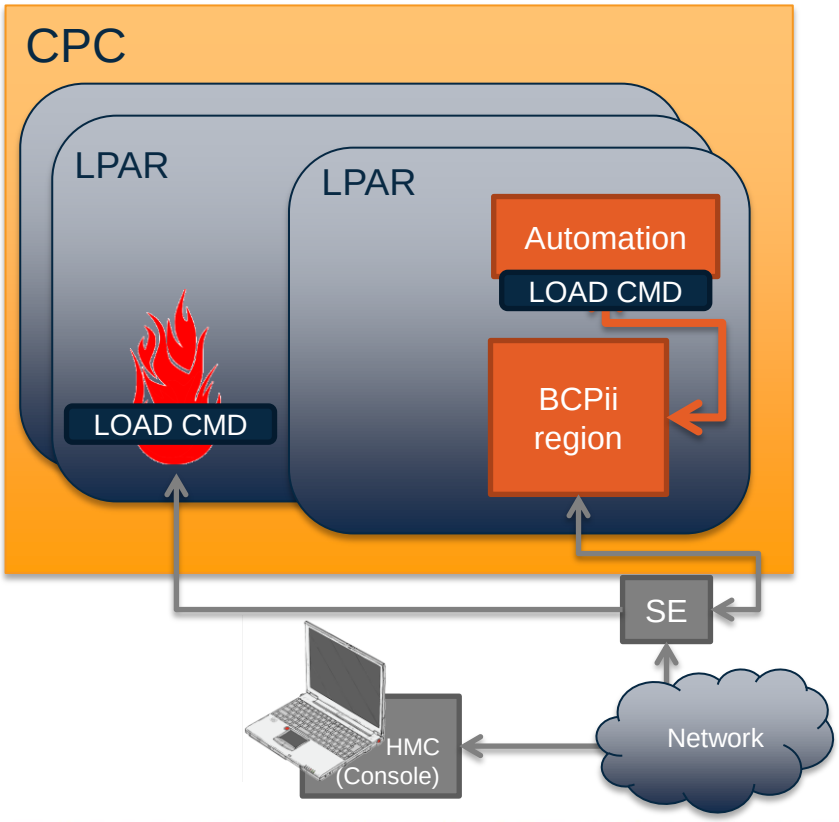
IPL Parameters

Processor Configuration

BCPii - Overview

Events Attributes **Commands**

Applications can issue commands asynchronously against HMC managed objects.



Examples:

Capacity (OOCOD/CBU/tempcap)

Activate/Deactivate/Load

Power Control

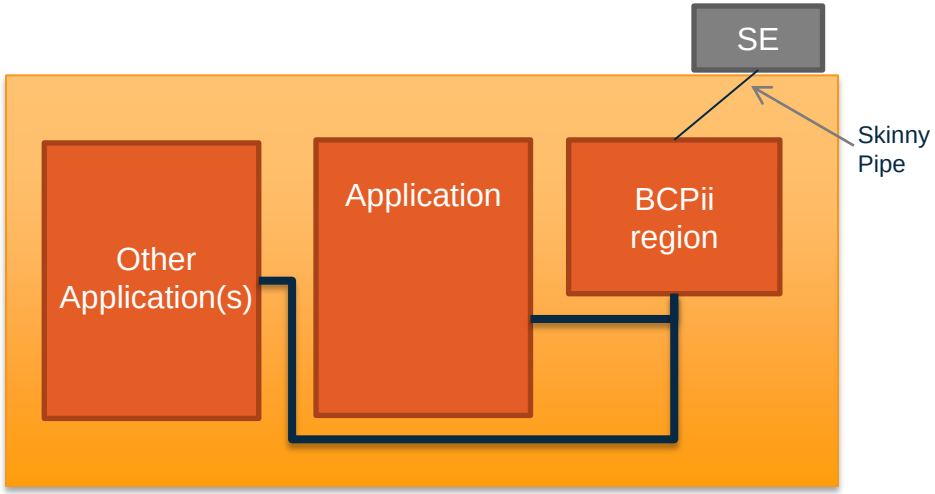
BCPii - Tips, tricks, and other thoughts

Caching	Enhanced Topology	Deriving Attributes	Security

BCPii - Tips, tricks, and other thoughts

Caching | Enhanced Topology | Deriving Attributes | Security

Issue: BCPii is hardware constrained and retrieval time of certain attributes can be slow. Also many attributes do not change frequently.

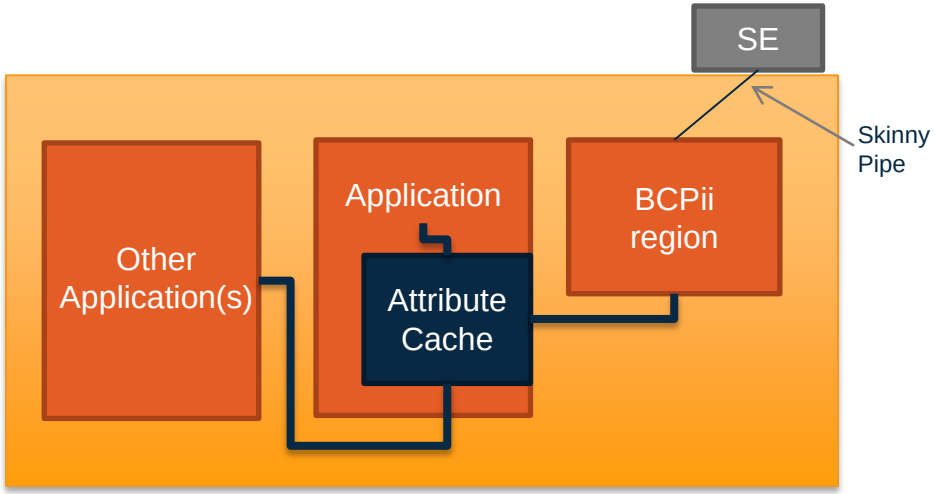


BCPii - Tips, tricks, and other thoughts

Caching | Enhanced Topology | Deriving Attributes | Security

Issue: BCPii is hardware constrained and retrieval time of certain attributes can be slow. Also many attributes do not change frequently.

Solution: Caching the attributes locally makes access time super fast.

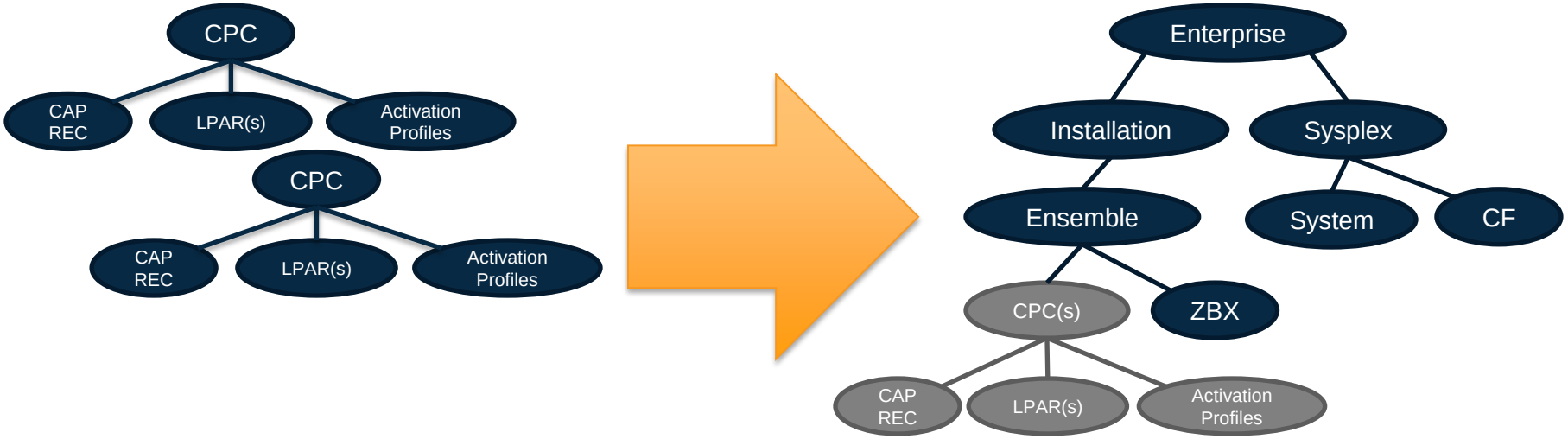


BCPii - Tips, tricks, and other thoughts

Caching | Enhanced Topology | Deriving Attributes | Security

Issue: For our use the BCPii's topological model was restrictive. For example the current model doesn't allow for dynamic addition of CPCs.

Solution: Create an enhanced topology extending the hierarchy of elements.



Increase flexibility and scalability

BCPii - Tips, tricks, and other thoughts

Caching | Enhanced Topology | Deriving Attributes | Security

Issue: The relationship between attribute values and their names can be challenging to understand for software people.

Solution: Create additional attributes which are more consistent and contain more meaningful values; They are derived from original attributes.

```
OPERSTAT  ("OPERATING")
IMLMODE   ('ESA-390TPF', 'CF-PROD')
OPSYS     ('MVS', 'VSE', 'OTHER')
OSLEVEL   (OS dependent release level)
```

```
OPSYSNAME = z/LINUX
OPSYSVERS = aa.bb.cc
```

Treat as normal attributes and cache all of them

BCPii - Tips, tricks, and other thoughts

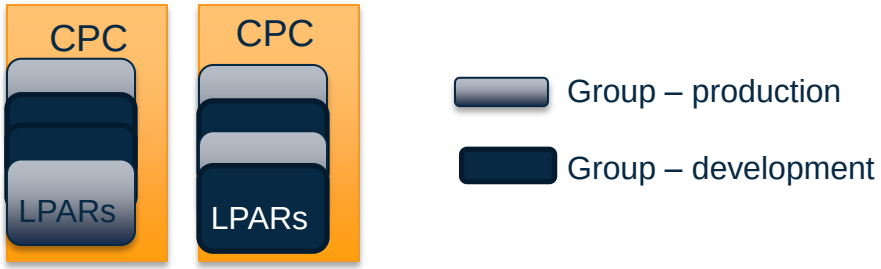
Caching | Enhanced Topology | Deriving Attributes | Security

Issue: We found the BCPii security model to be constraining. For example, when attempting to having different permissions levels for the same type of hardware entity.

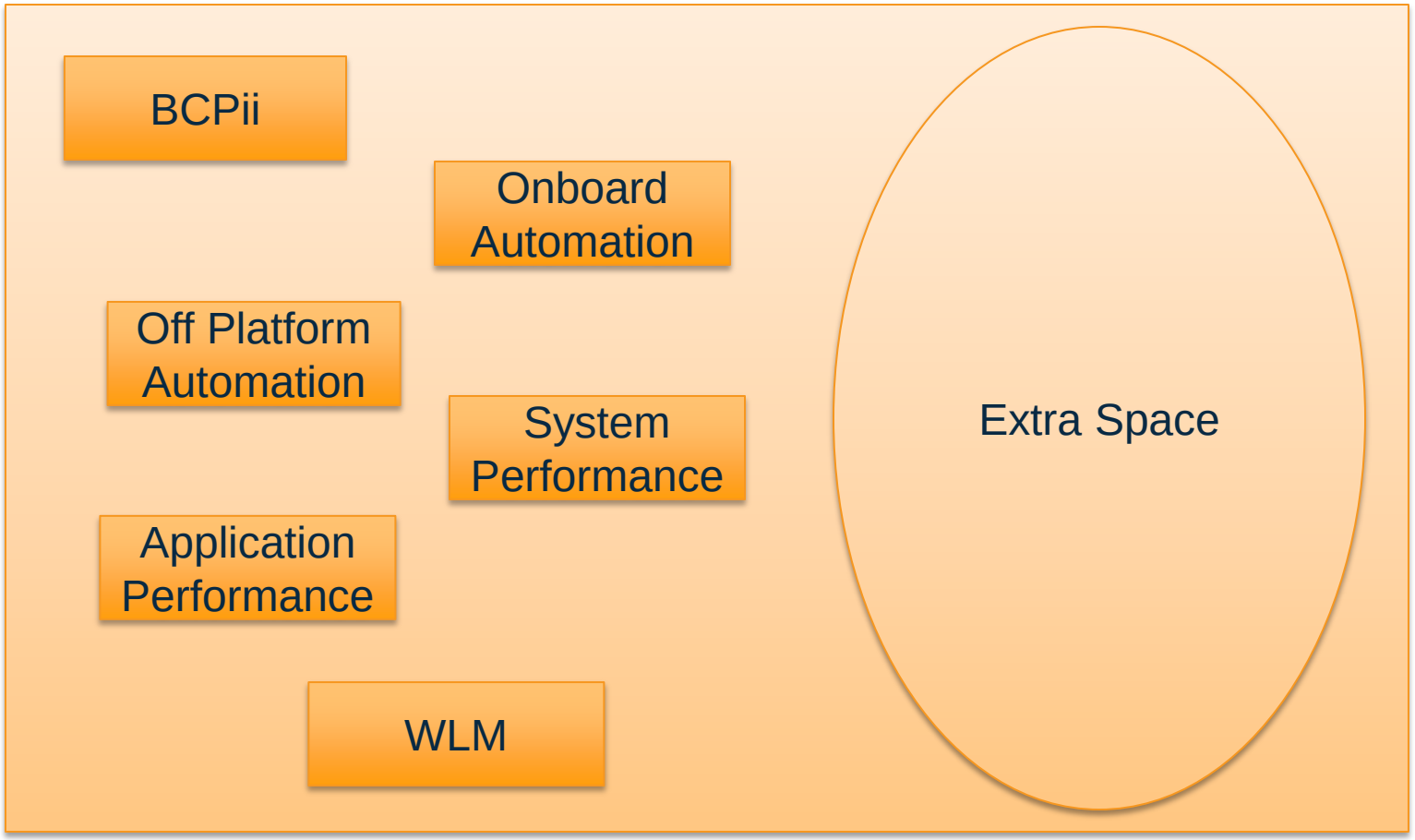
Solution: Create a different security model which allows for user defined groups.

Some Features:

- Allow different types of hardware entities to be grouped together
- Allow/Deny access to a subset of a specific entity type
- Make read only access the default (no security definitions required)



Tools in the Box



Automation

- OPS/MVS / Automation Point / other automation products

On Board

Able to perform automated tasks based on hardware and performance related events.

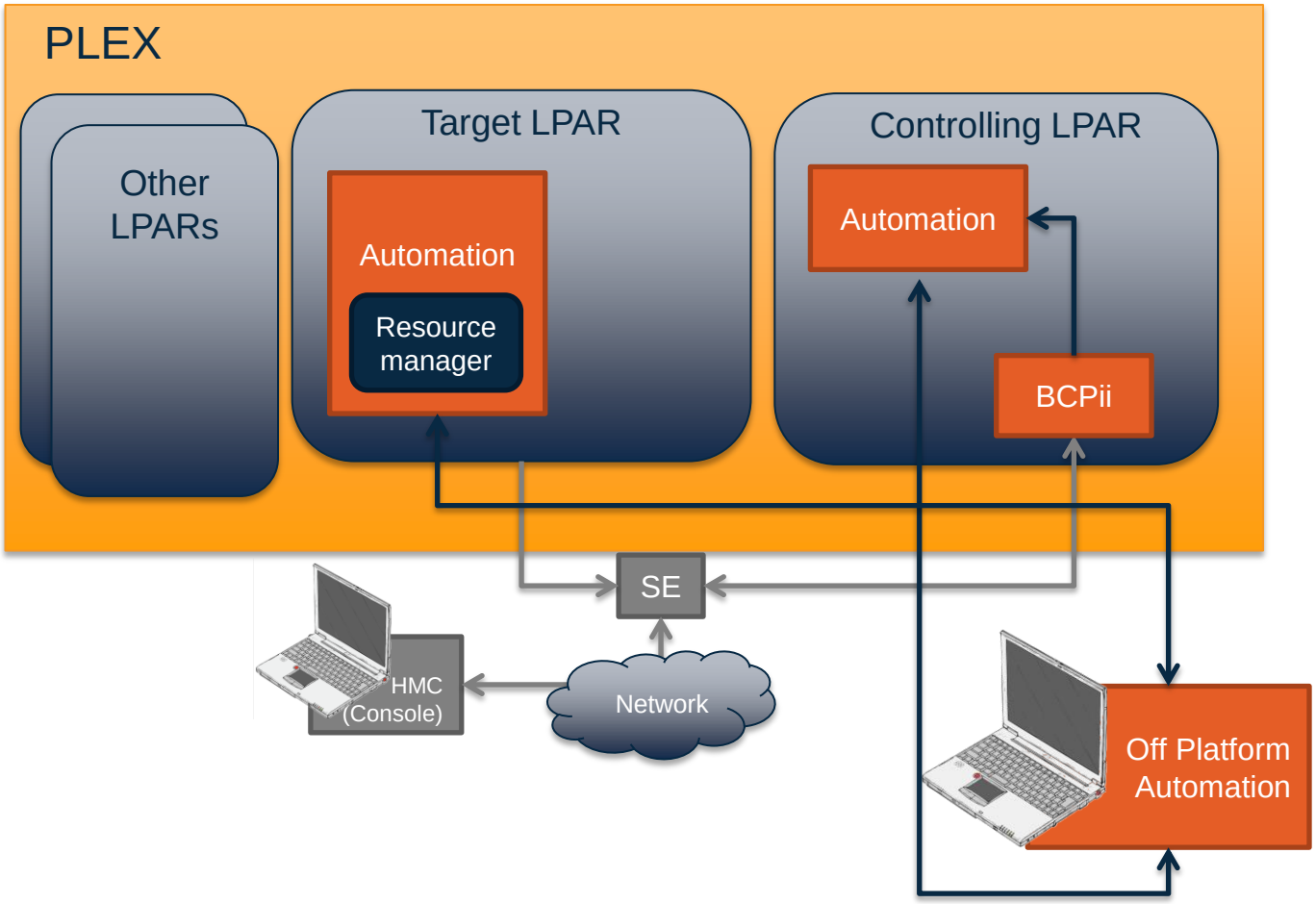
Able to interface with BCPii to automate hardware related actions.

Off platform

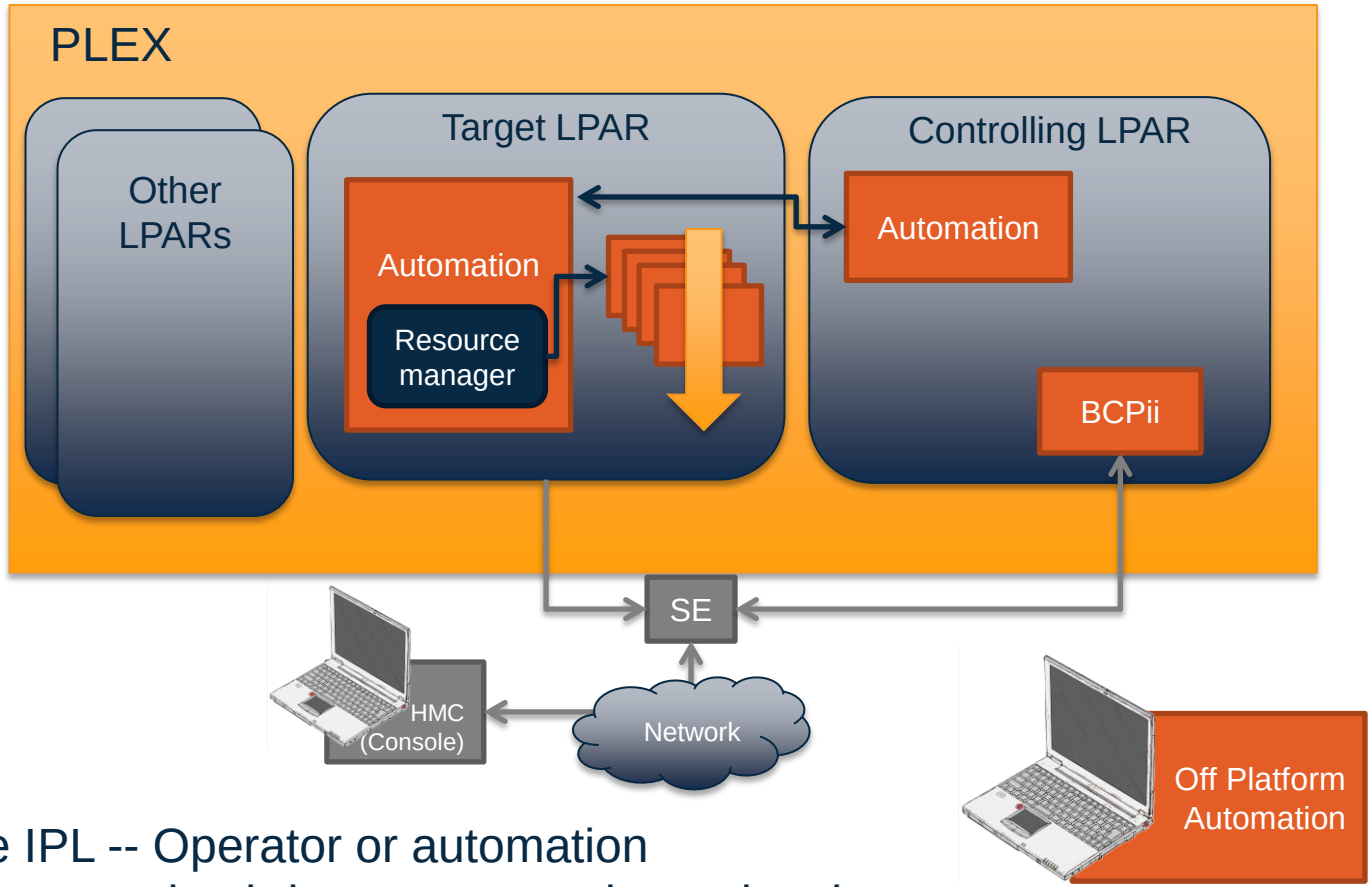
Same hardware interaction capabilities as Onboard Automation

Able to see entire installation from the outside, not trapped in the environment as it is being changed.

Use Case: Automated IPLs

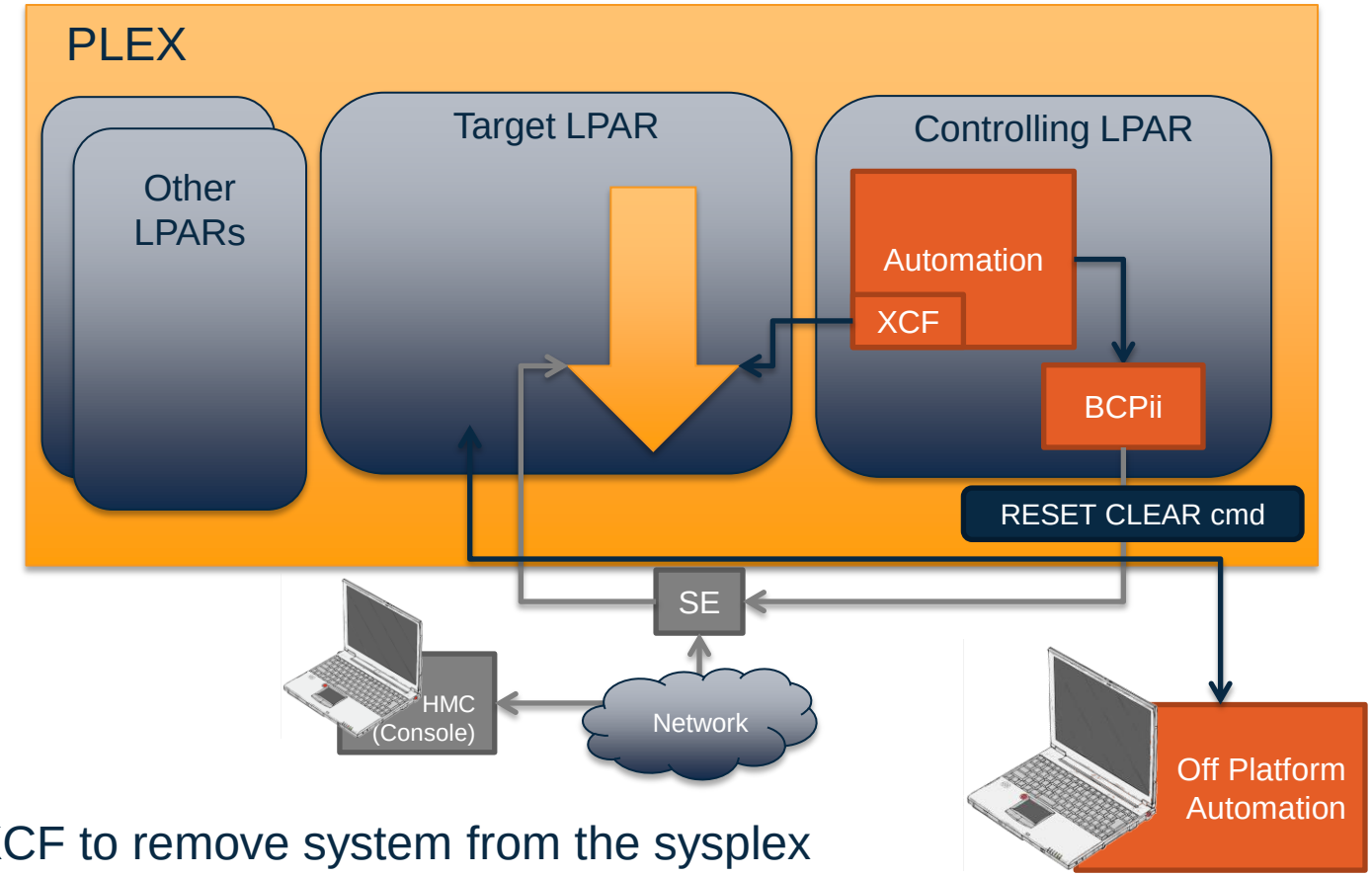


Use Case: Automated IPLs



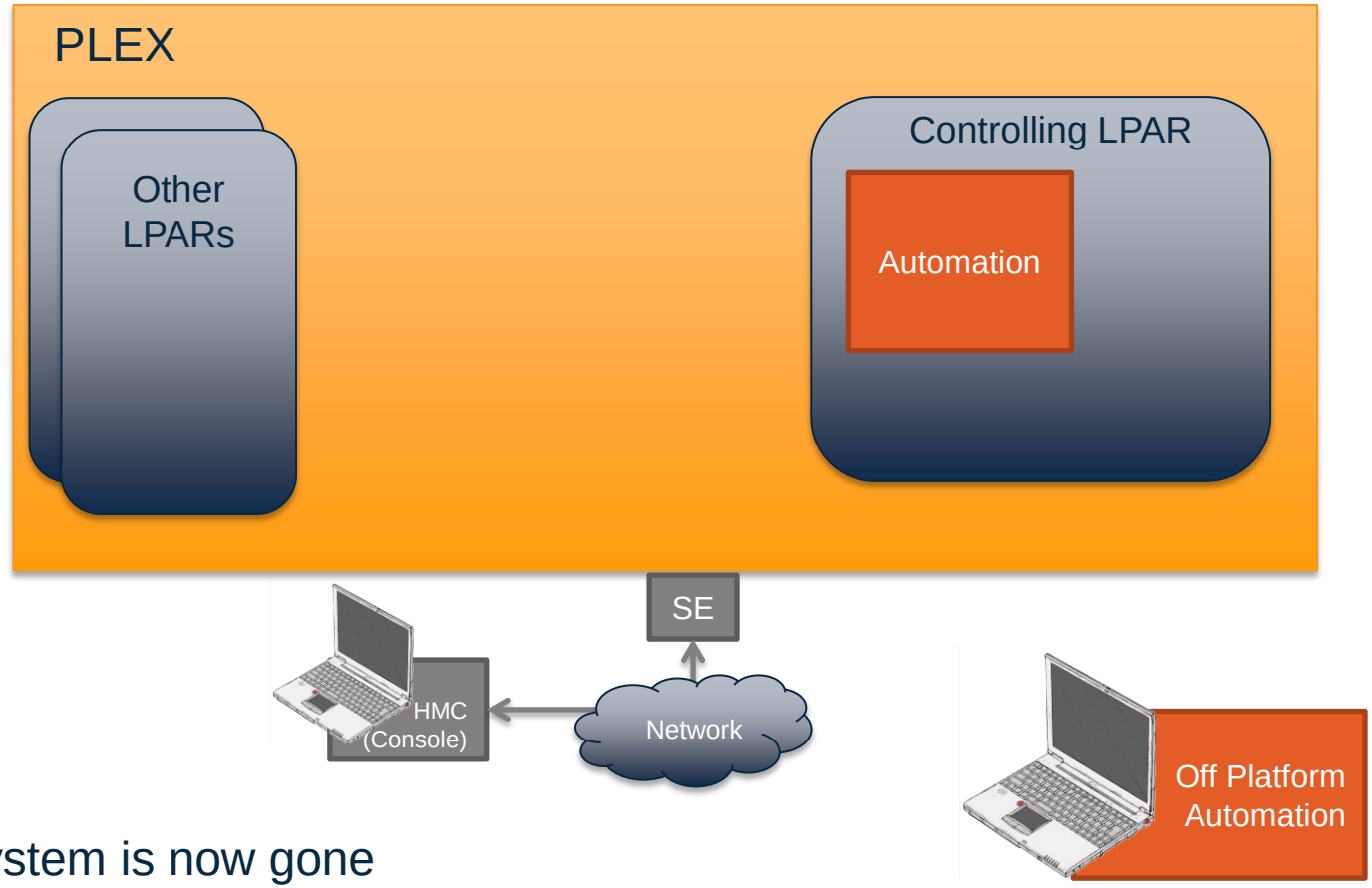
Initiate IPL -- Operator or automation
Have automation bring resources down cleanly

Use Case: Automated IPLs



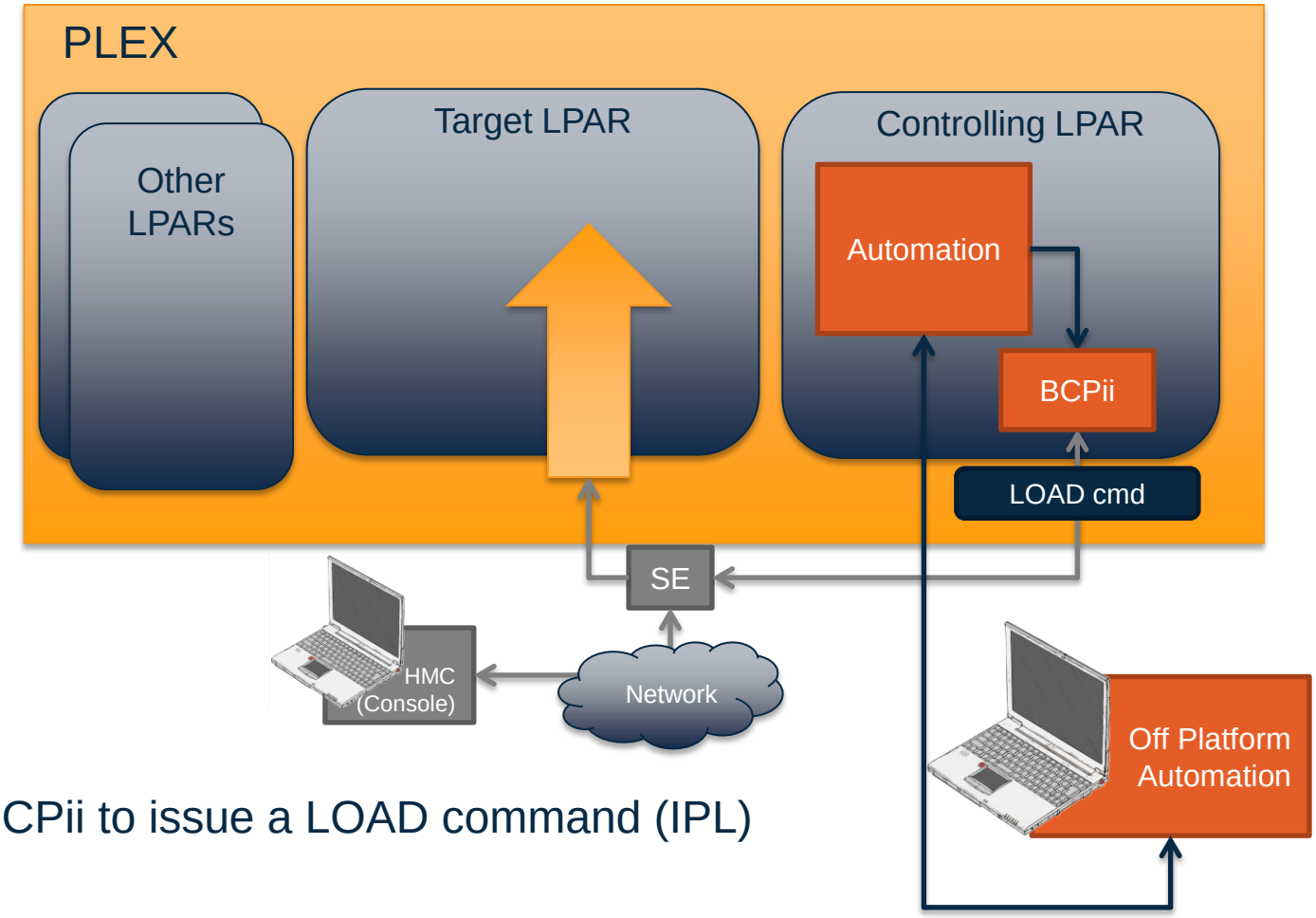
Use XCF to remove system from the sysplex
Use BCPii to issue reset with clear command

Use Case: Automated IPLs



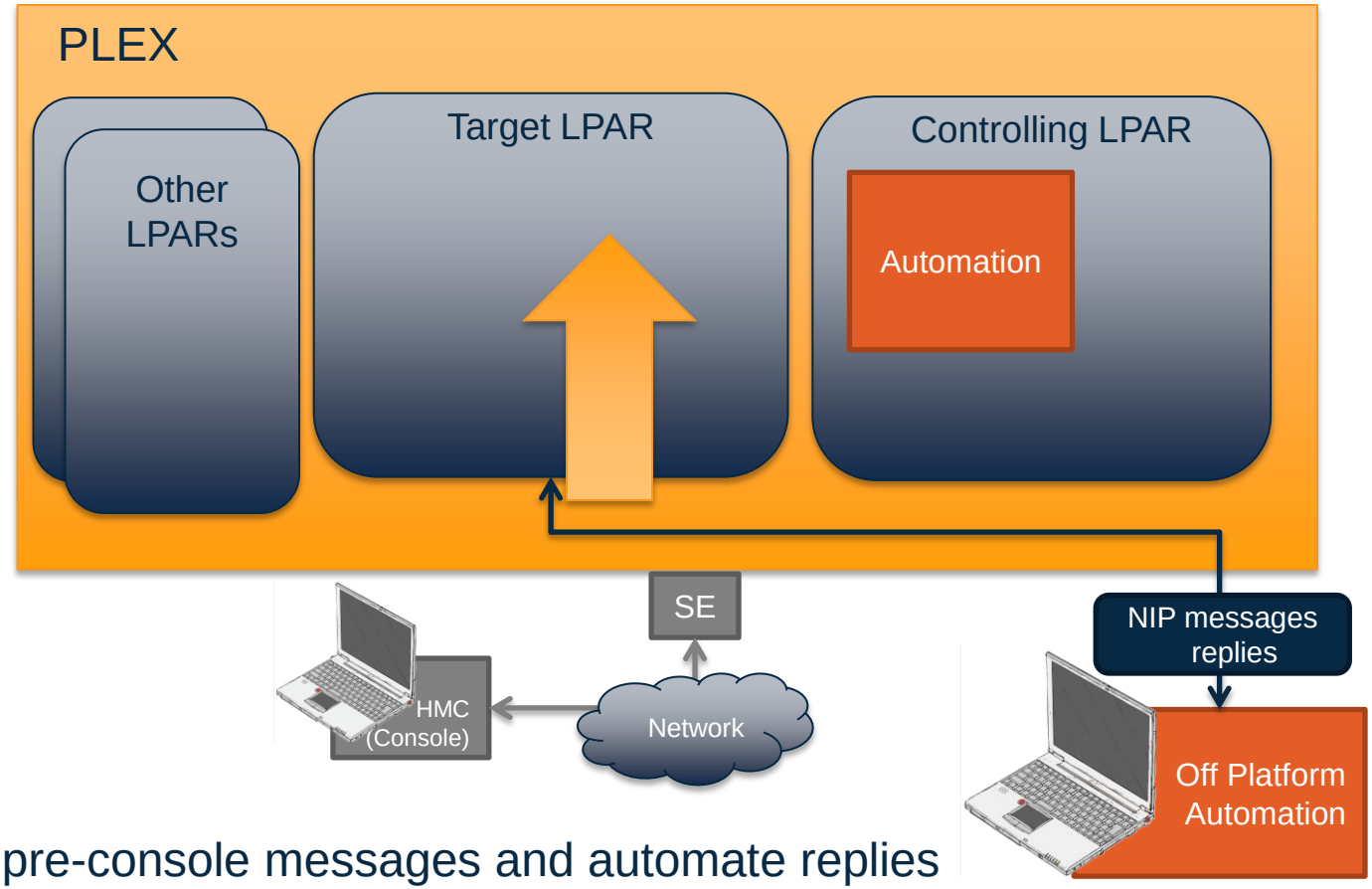
The system is now gone

Use Case: Automated IPLs



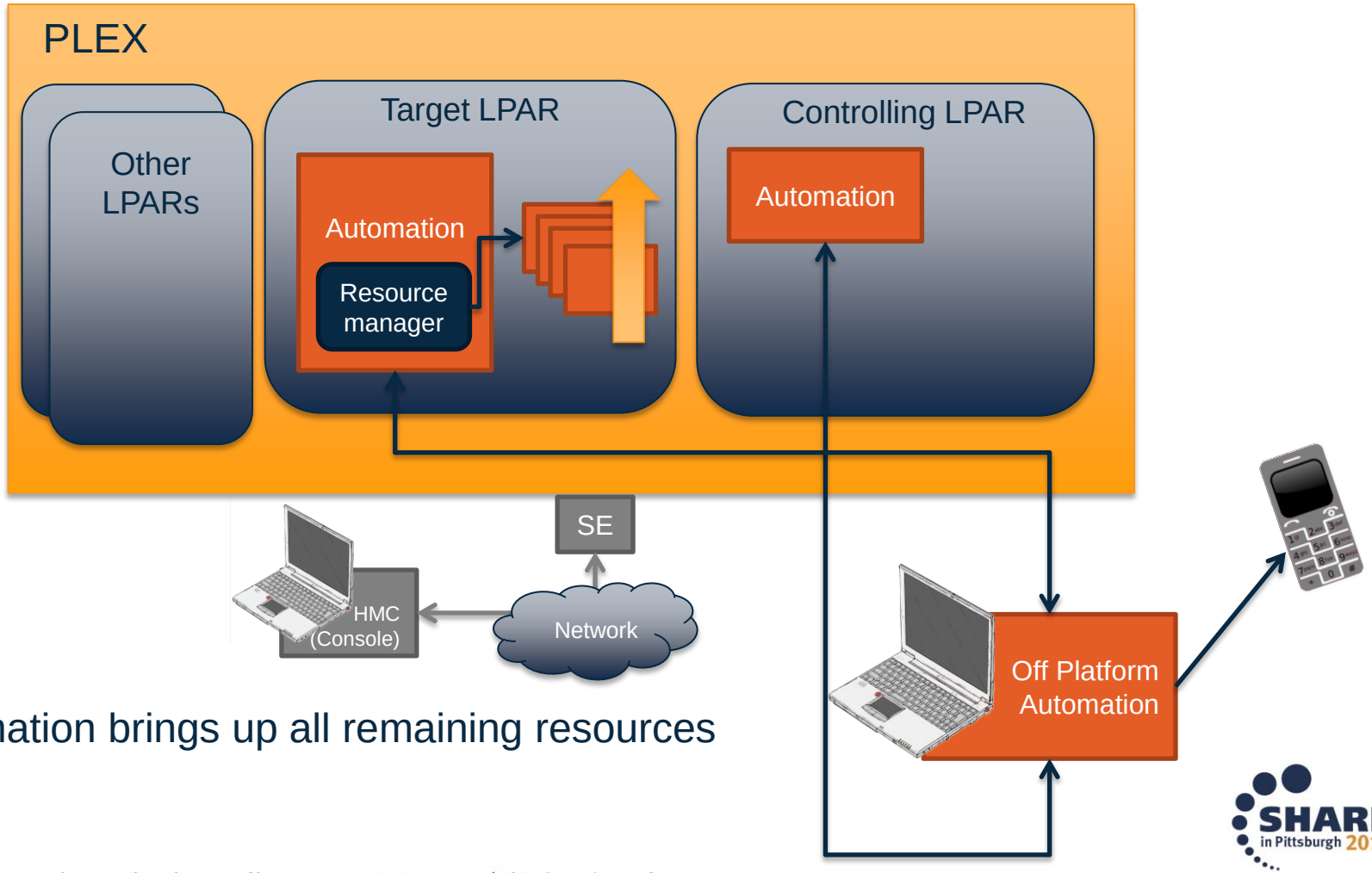
Use BCPii to issue a LOAD command (IPL)

Use Case: Automated IPLs



Catch pre-console messages and automate replies

Use Case: Automated IPLs



Automation brings up all remaining resources

Questions / Comments / Thoughts / Discussion

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Additional Use Cases

- Change LPAR weights on a scheduled basis (time of day)
- Change LPAR weights based on performance thresholds.
- Turn on/off capacity on demand based on performance.
- Get hardware configuration information (attributes) and save it off platform for “big data” analysis.
- Changing power settings based on performance or DR system switch.
- Change activation profile to adjust how systems come back up (like a safe mode).
- Change weights/capacity to maintain SLAs (1 to 1, system to application).
- Change weights/capacity based on queue depth (1 to 1, system to application).