

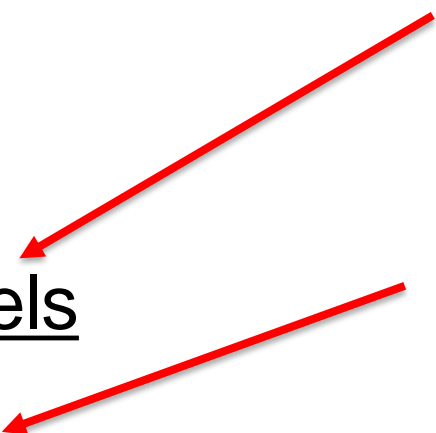
IEEE P802.3da Motor Control Center Use Case

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Purpose

- Introduce the Motor Control Center (MCC) Use Case
- Highlight relevant 3da objectives
- Show potential benefit of Repeaters

ODVA Use Cases

- “Industrial EtherNet/IP In-cabinet Bus Media and Physical Layer”
 - Incorporates 10BASE-T1S and PLCA
 - Installation in:
 - UL 508A Industrial Control Panels
 - UL 845 Motor Control Centers
- Many devices in large fixed cabinets
- Few devices in each small cabinet – cabinets in an array
- Same devices and cabling**
- 
- The diagram consists of two red arrows. The first arrow originates from the text 'Many devices in large fixed cabinets' and points to the underlined text 'Control Panels' in the list. The second arrow originates from the text 'Few devices in each small cabinet – cabinets in an array' and points to the underlined text 'Motor Control Centers' in the list.

Motor Control Center (MCC)

Line (mains) enters MCC and is bussed to Buckets

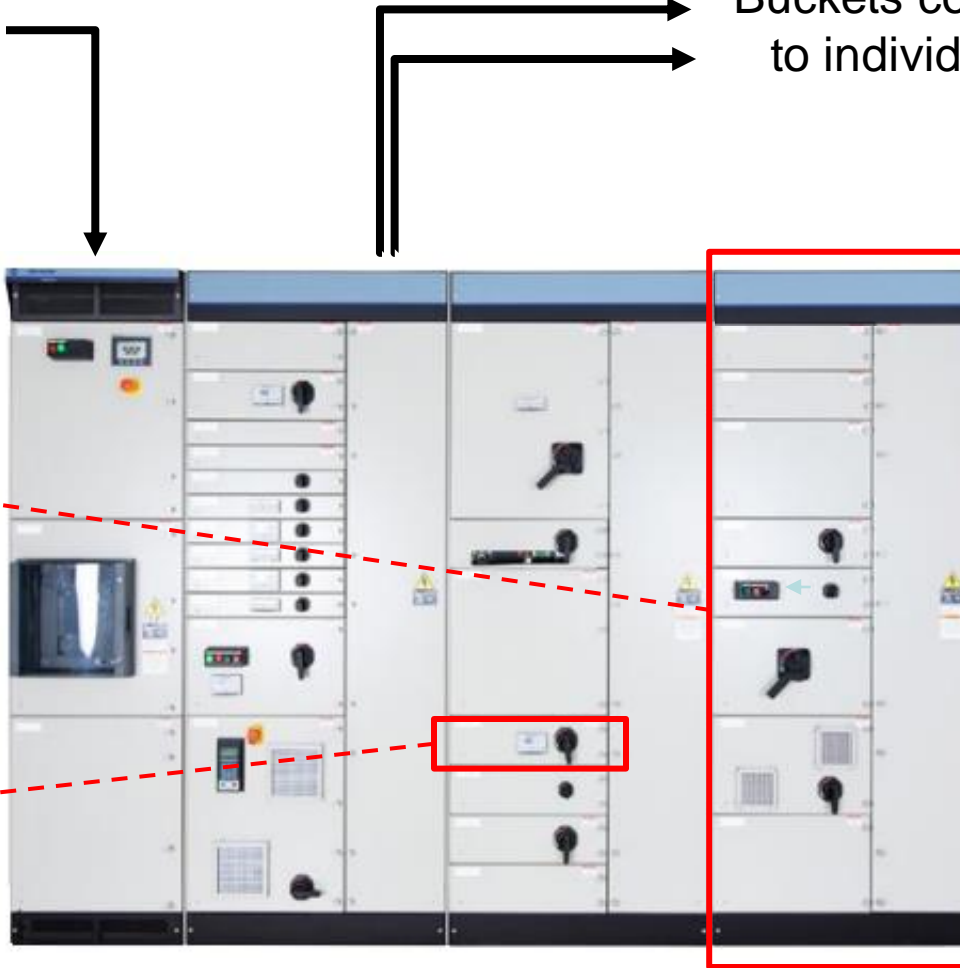
Buckets control power to individual Loads

An MCC "Lineup" is composed of *Columns* ...

Column

... which are composed of *Buckets*

Bucket

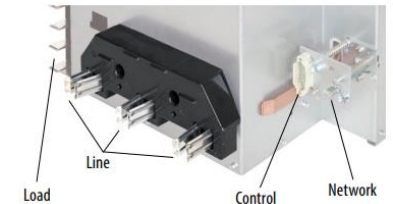


Bucket has "service positions"



May be fully removed during replacement

Back of Bucket has connections



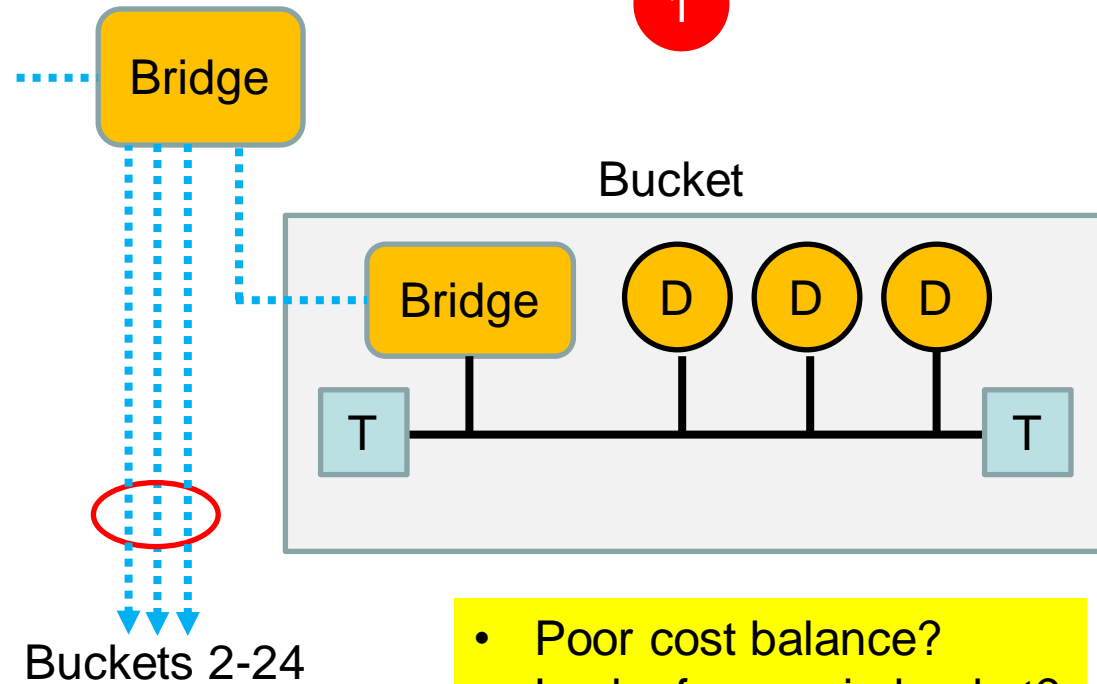
Line, Load, and Network are disconnected

MCC-relevant 3da Objectives

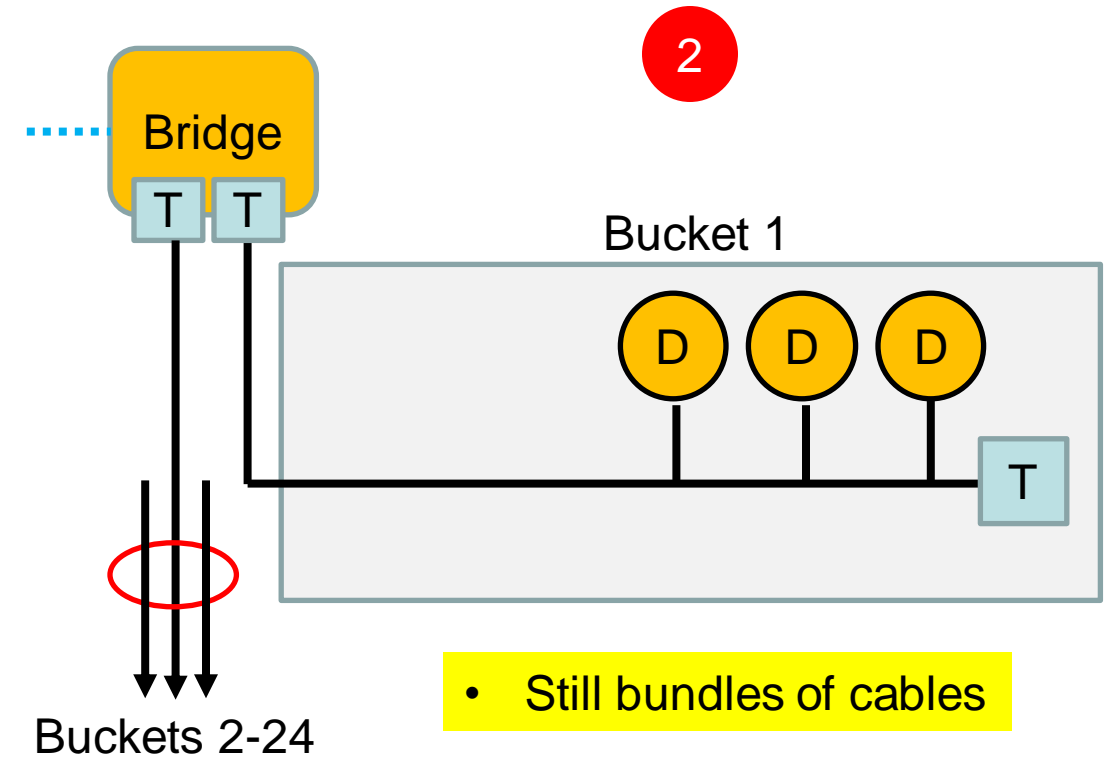
- **11. Support addition and removal of a node or set of nodes to a continuously operating powered mixing segment**
- **4. Support interoperability with Clause 147 multidrop**
- **1. Define performance characteristics of a mixing segment for 10Mb/s multidrop single balanced pair networks supporting up to at least 16 nodes, for up to at least 50m reach.**
- **8. Support operation in the noise environments for building, industrial, and transportation applications**

MCC Topology Examples

100/1000BASE-T

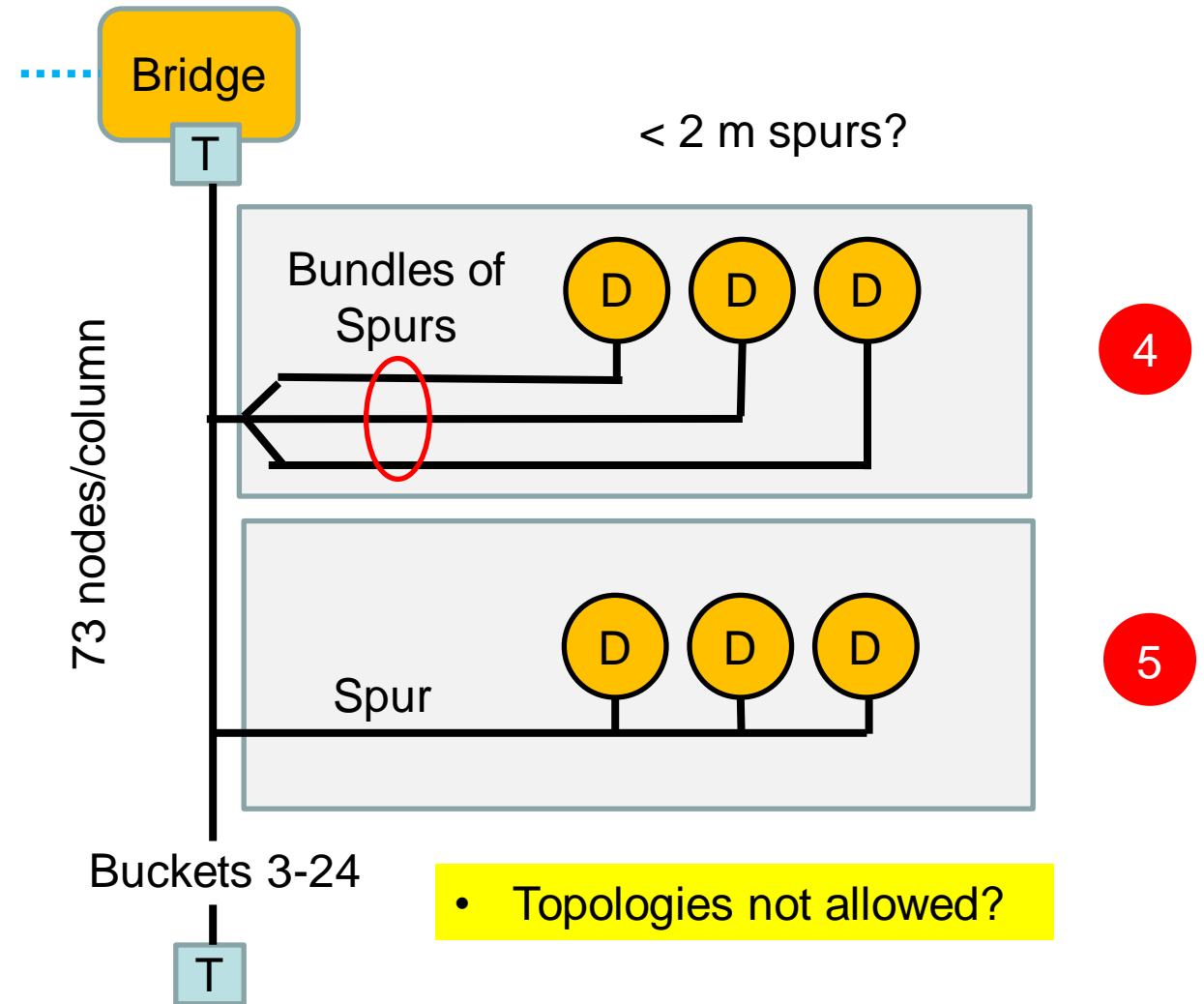
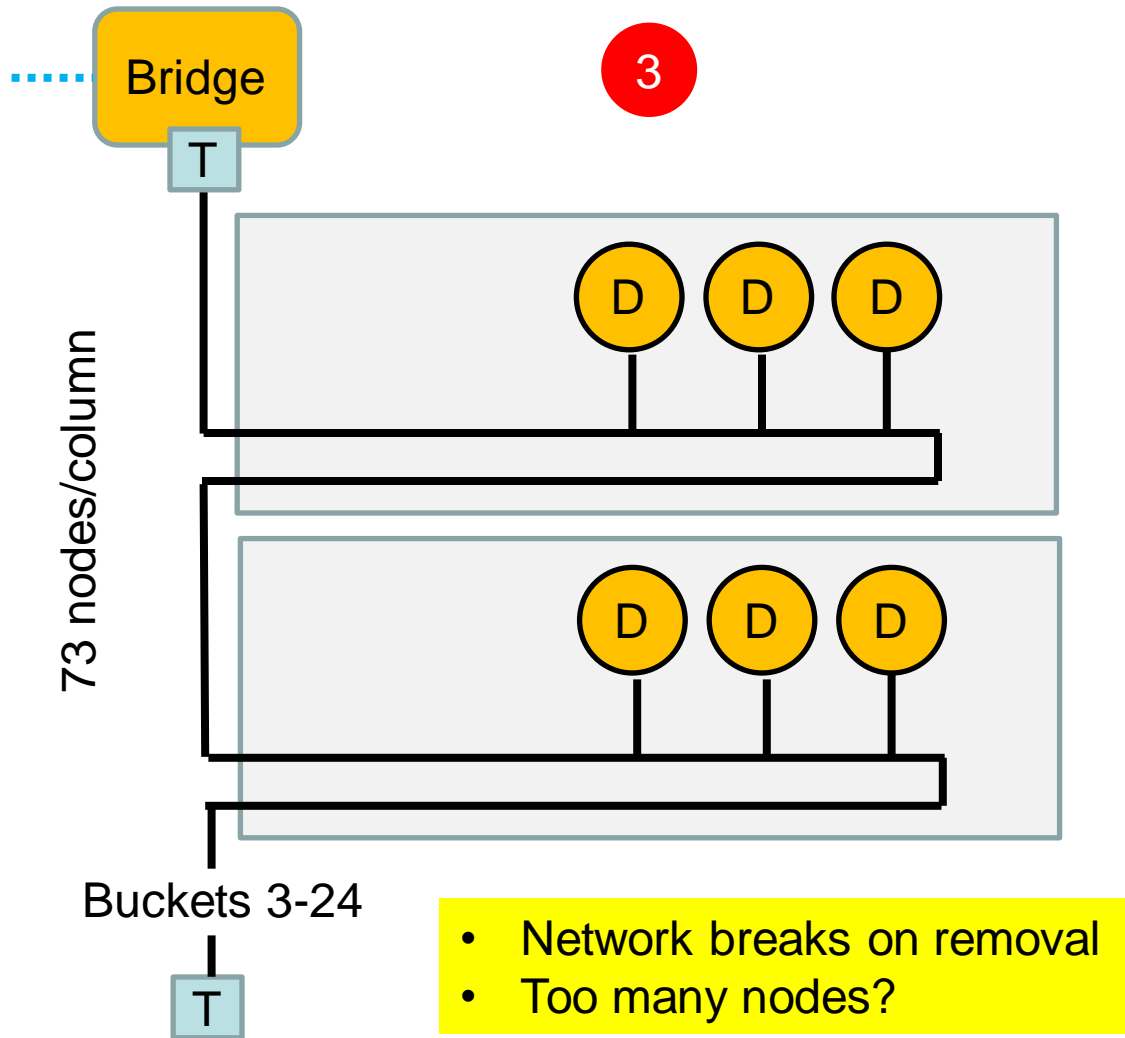


- Poor cost balance?
- Lack of space in bucket?
- Bundles of cables

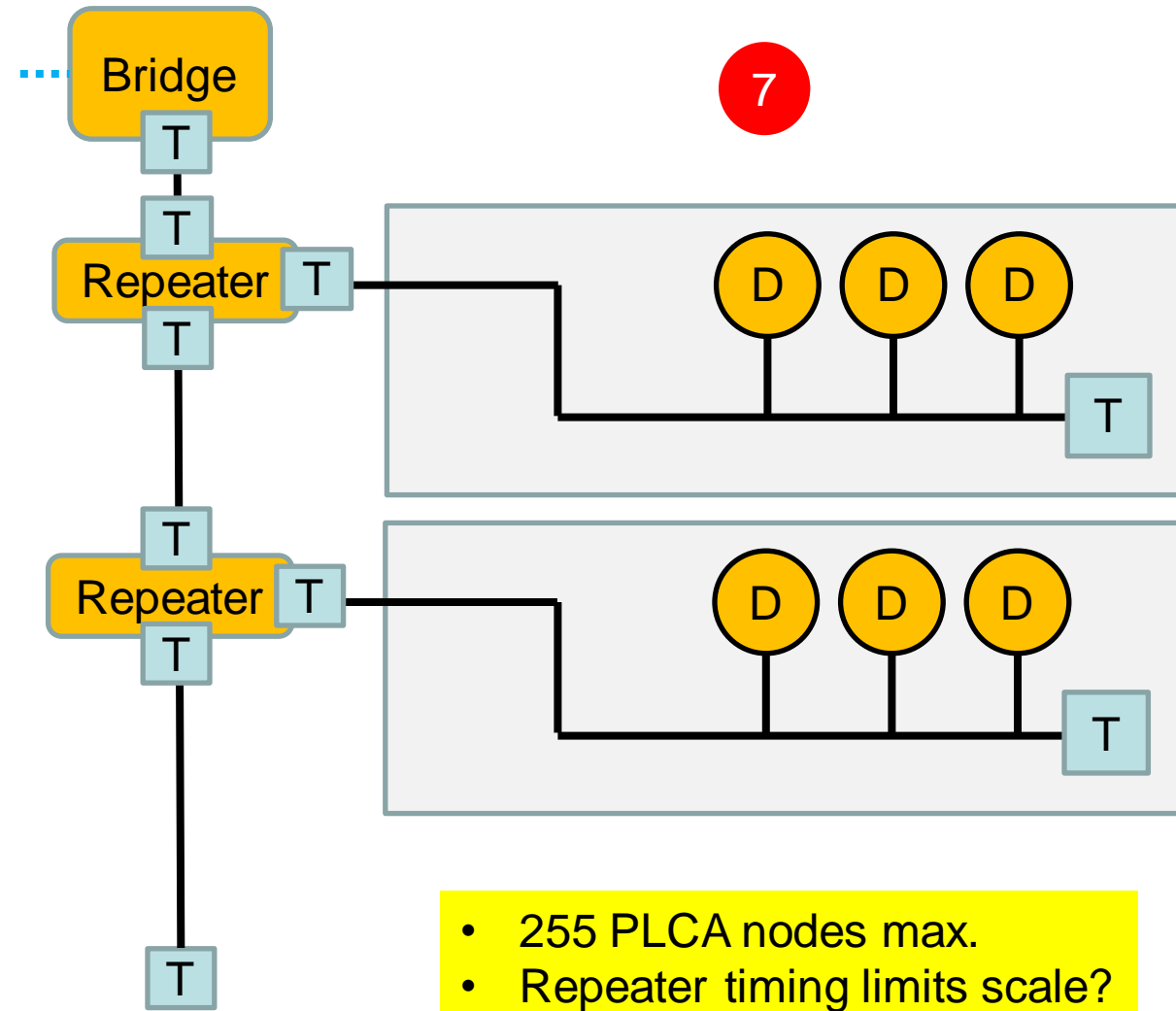
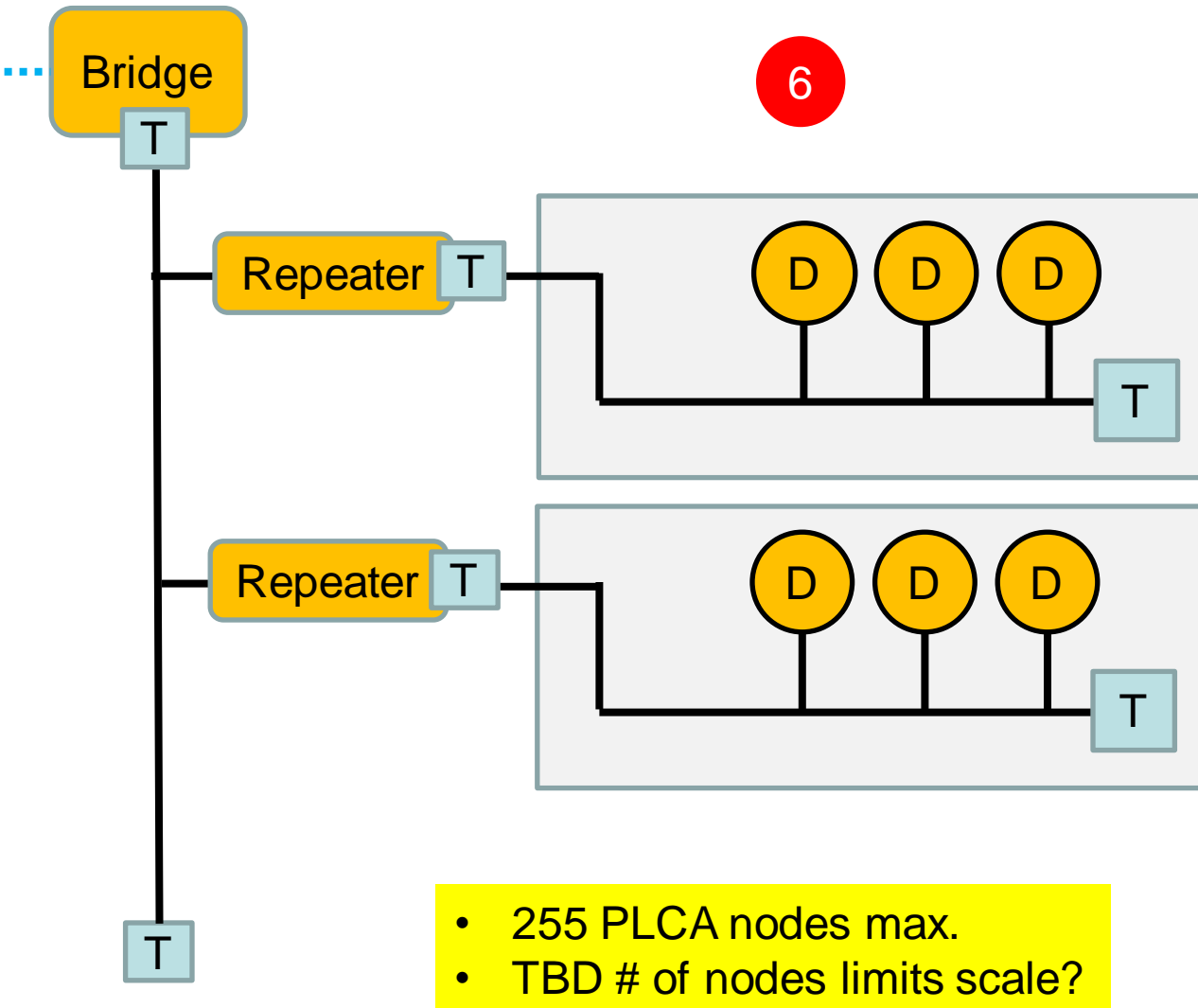


- Still bundles of cables

MCC Topology Examples



MCC Topology *Repeater* Examples



Conclusions

- Motor Control Center (MCC) Use Case could benefit from 3da enhancements
- Removal of a “set of nodes” is a requirement matching a 3da objective
- Repeaters may provide benefits in:
 - Non-disruptive removal/insertion of node sets
 - Larger multidrop scale up to PLCA limit of 255 nodes
 - Appears to minimize wiring and semiconductors

QUESTIONS?