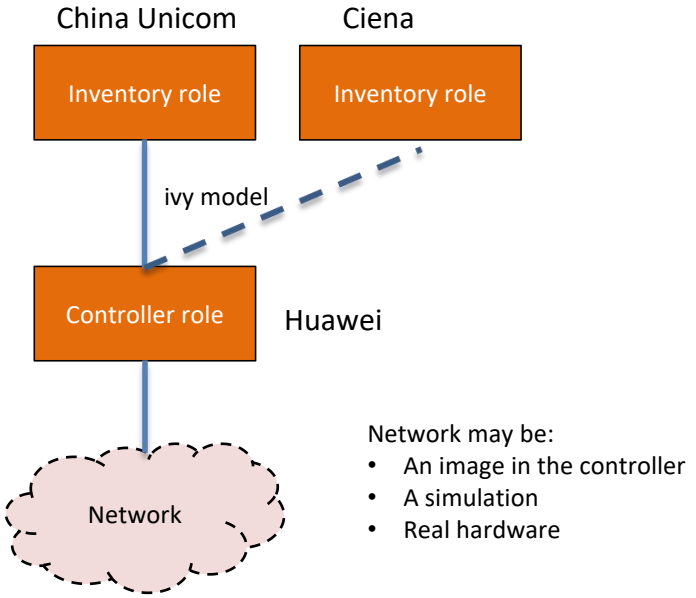
IETF Hackathon

-YANG Data Model for Network Inventory (IVY)

IETF 125
14–15 March 2026
Shenzhen, China

IVY YANG Model Interop Test

- Most likely testbed configuration:
  - A controller from one vendor plays the role of inventory system (inventory role)
  - Several controllers from different vendors are plays the role of inventory controller (controller role)
  - Each controller role provides a view of network elements and their physical inventory
- If a vendor has an inventory system, this can take the inventory role

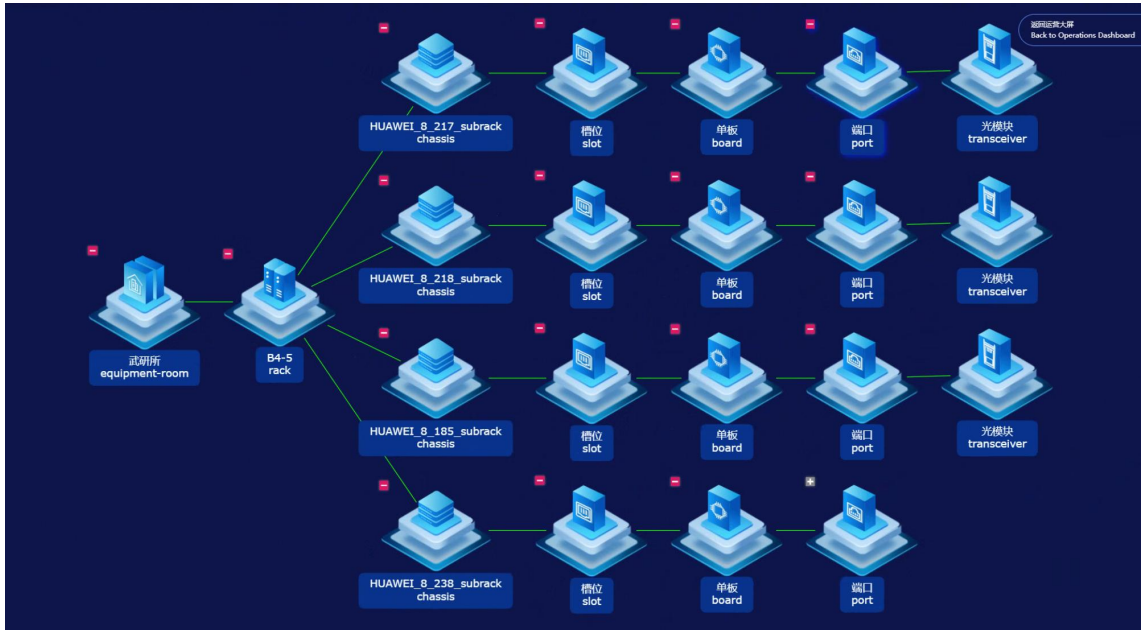


Ideally network elements would be a mix of IP, Ethernet, OTN and optical where there were various NEs of different mixes of capabilities. This should have no impact on the ivy interface capability.

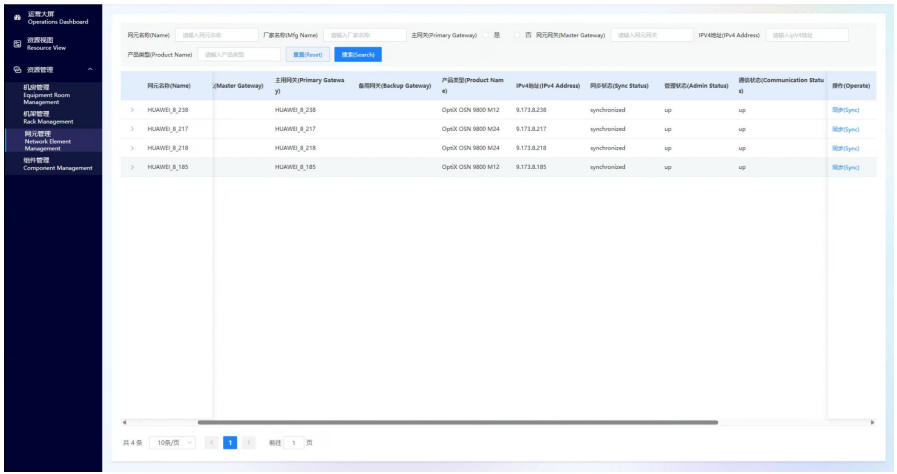
```
module: ietf-network-hardware-inventory
 +--ro network-hardware-inventory
   +--ro network-elements
     +--ro network-element* [uuid]
       +--ro uuid           yang:uuid
       +--ro name?          string
       +--ro description?   string
       +--ro alias?         string
       +--ro ne-location
       |  +--ro equipment-room-name*   leafref
       +--ro hardware-rev?  string
       +--ro software-rev?  string
       +--ro mfg-name?      string
       +--ro mfg-date?      yang:date-and-time
       +--ro part-number?   string
       +--ro serial-number? string
       +--ro product-name?  string
       +--ro components
         +--ro component* [uuid]
           +--ro uuid                    yang:uuid
           +--ro name?                   string
           +--ro description?            string
           +--ro alias?                  string
           +--ro location?               string
           +--ro class?                  identityref
           +--ro contained-child*        -> ../uuid
           +--ro parent-rel-pos?         int32
           +--ro parent-component-references
           |  +--ro component-reference* [index]
           |     +--ro index   uint8
           |     +--ro class?  -> ../../../class
           |     +--ro uuid?   -> ../../../uuid
           +--ro hardware-rev?           string
           +--ro firmware-rev?           string
           +--ro software-rev?           string
           +--ro serial-num?             string
           +--ro mfg-name?               string
           +--ro part-number?            string
           +--ro asset-id?               string
           +--ro is-fru?                 boolean
           +--ro mfg-date?
           |     yang:date-and-time
           +--ro uri*                    inet:uri
           +--ro (component-class)?
             +--:(chassis)
             |  +--ro chassis-specific-info
             +--:(container)
             |  +--ro slot-specific-info
             +--:(module)
             |  +--ro board-specific-info
             +--:(port)
                +--ro port-specific-info
\
```

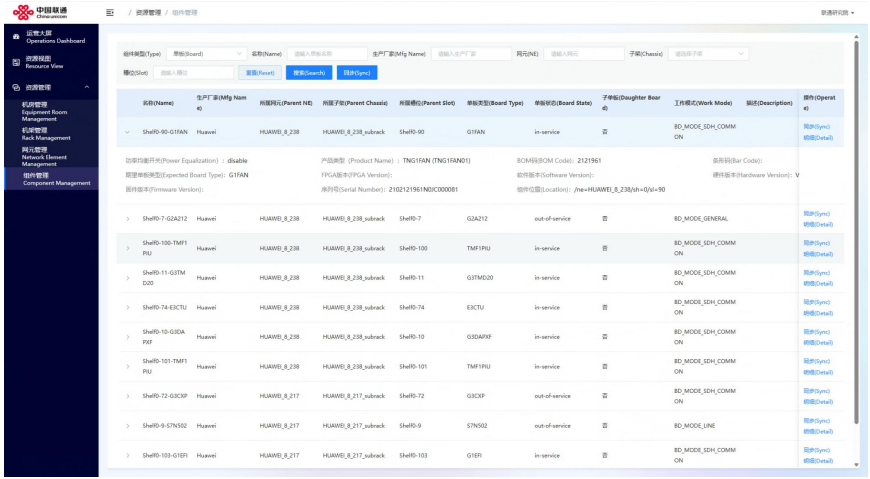
Ivy model

- <What draft were involved?>
  - draft-ietf-ccamp-network-inventory-yang-02



Ivy system(China Unicom Orchestrator)



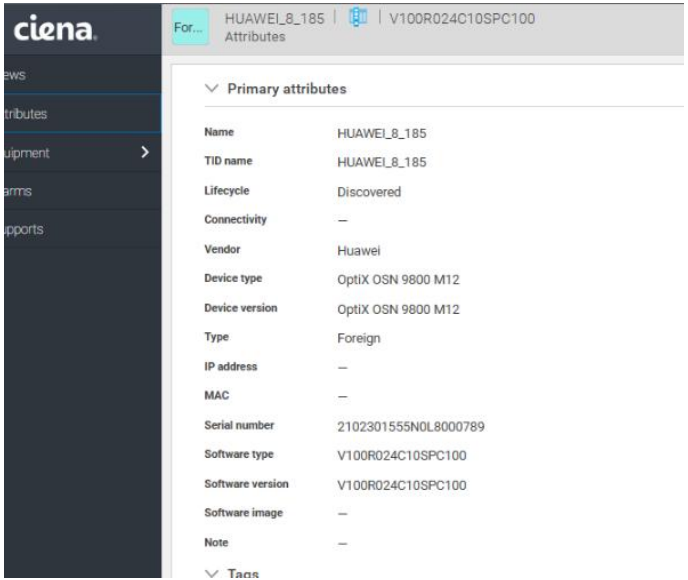


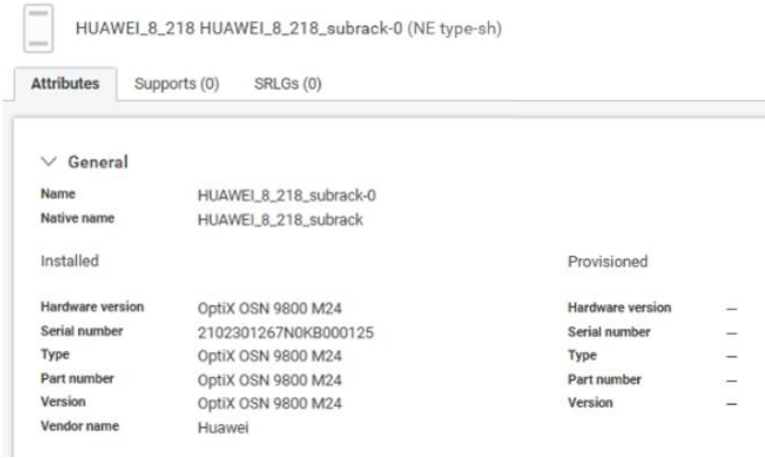
Ciena Results

- We received ivy conformant JSON in a file from the Hackathon
- We were able to take that and use our ivy mediation component (with a few refinements as we are using a different draft version) to extract the NE and equipment data and display it on the Navigator UI
- The following screenshot snips show that data
- This has been a very productive preparation for the planned hackathon in IETF 126

Name	Native name	Network element	Shelf	Slot	Serial #	Type	Part #	Hardware version
HUAWEI_8_218_subrack-0 (t...	HUAWEI_8_218_subrack	HUAWEI_8_218	0		2102301267N0KB000125	OptiX OSN 9800 ...	OptiX OSN 9800 M24	OptiX OSN 9800 M24
RX1/TX1-0-1 (type-sh-sl)	RX1/TX1	HUAWEI_8_218	0	1				
IN1/OUT1-0-10 (type-sh-sl)	IN1/OUT1	HUAWEI_8_218	0	10				
Shelf0-0-100 (type-sh-sl)	Shelf0-100-G2PIU	HUAWEI_8_218	0	100	024EPKW0KB001569	VER.B	VER.B	VER.B
Shelf0-0-101 (type-sh-sl)	Shelf0-101-G2PIU	HUAWEI_8_218	0	101	024EPKW0KB001567	VER.B	VER.B	VER.B
NMETH1/NMETH1-0-103 (ty...	NMETH1/NMETH1	HUAWEI_8_218	0	103				
Shelf0-0-105 (type-sh-sl)	Shelf0-105-G2PIU	HUAWEI_8_218	0	105	024EPKW0KB001566	VER.B	VER.B	VER.B
Shelf0-0-106 (type-sh-sl)	Shelf0-106-G2PIU	HUAWEI_8_218	0	106	024EPKW0KB001568	VER.B	VER.B	VER.B
C_VO-0-13 (type-sh-sl)	C_VO	HUAWEI_8_218	0	13				
NMETH1/NMETH1-0-71 (typ...	NMETH1/NMETH1	HUAWEI_8_218	0	71				
ETH1/ETH1-0-72 (type-sh-sl)	ETH1/ETH1	HUAWEI_8_218	0	72				
IN2/OUT2-0-8 (type-sh-sl)	IN2/OUT2	HUAWEI_8_218	0	8				
RX30/TX30-0-9 (type-sh-sl)	RX30/TX30	HUAWEI_8_218	0	9				
Shelf0-0-13 (type-sh-sl)	Shelf0-13-G6WDAPXF	HUAWEI_8_218	0	13				
Shelf0-0-90 (type-sh-sl)	Shelf0-90-G1FAN	HUAWEI_8_218	0	90	2102121961N0KB000940	VER.B	VER.B	VER.B
Shelf0-0-91 (type-sh-sl)	Shelf0-91-G1FAN	HUAWEI_8_218	0	91	2102121961N0KB000941	VER.B	VER.B	VER.B

		Connectivity								
	Name	Network element	IP addr...	Management owner	Vendor	Type	Version	Device vers...	F...	N
	Con... FS_IETF	Connected	10.123.1....	Navigator MC	Ciena	Controller-Navigator	TAPI 2.5.0			
	Fore... HUAWEI_8_185			Navigator MC	Huawei	Foreign	V100R024C10SPC100	OptiX OSN 98...		
	Fore... HUAWEI_8_217			Navigator MC	Huawei	Foreign	V100R024C10SPC100	OptiX OSN 98...		
	Fore... HUAWEI_8_218			Navigator MC	Huawei	Foreign	V100R024C10SPC100	OptiX OSN 98...		
	Fore... HUAWEI_8_238			Navigator MC	Huawei	Foreign	V100R024C10SPC100	OptiX OSN 98...		





Wrap Up

Team members:

Yanxia Tan(Chinaunicom)
Italo Busi(Huawei)
Xiao Li(Huawei)
Navin Purohit(Ciena)
Yanlei Zheng(Chinaunicom)
Aihua Guo(Futurewei)
Haomian Zheng(Huawei)
Henry Yu(Huawei)
Nigel Davis(Ciena)
Abhay Sombanshi(Ciena)
Chaode Yu(Huawei)

First timers @ Hackathon:

Yanxia Tan
Xiao Li
Yanlei Zheng
Italo Busi

- On our github we have: https://github.com/tanyanxia/IETF125-Hackathon-ivy-project
  - Full Video clip (7min)
  - JSON code
  - This presentation
- Plan in Vienna (Hackathon IETF126)
  - Continue implementing the model from other vendors (interests collected)