ICN R4 Timeline

Goals

- EMCO V2
- SD-EWAN Controller
- SFC in OVN4NFV
- ICN Readiness
- ICN Maturity

JIRA TRACKER

	Release /Tag	Features	Plan/Status Tracking (Please update your JIRAs and note any issues/road blocks with date stamp)
		• EMCO DCM	Igor Duarte Cardoso DCM v1 (see in ONAP)

Epic	JIRA Story	Sprint/Estimated Completion	Status/Actual Completion	Notes
~~ICN-214~~ - DCM dev works DONE	~~ICN-376~~ - DCM re-ramp on Itohan's docs DONE	Sprint 21	Sprint 21	
	~~ICN-380~~ - Install Istio for replicated control planes DONE	Sprint 21	Sprint 21	
	~~ICN-397~~ - Run apply.go and API testing scripts DONE	Sprint 22	Sprint 22	
	~~ICN-384~~ - Evaluate apply.go implementation DONE	Sprint 22	Sprint 22	
	~~ICN-408~~ - Deploy full EMCO outside of k8s DONE	Sprint 22	Sprint 22	
	~~ICN-383~~ - Evaluate "Kubeconfig API (WORK IN PROGRESS)" DONE	Sprint 22	Sprint 22	
	~~ICN-409~~ - Implement gRPC calling from DCM to RSync DONE	Sprint 22	Sprint 22	
	~~ICN-410~~ - Implement terminateHandler DONE	Sprint 22	Sprint 22	
	~~ICN-417~~ - Reimplement quota field parsing DONE	Sprint 23	Sprint 23	
	~~ICN-418~~ - Generate kubeconfigs for logical cloud DONE	Sprint 23	Sprint 23	
	~~ICN-419~~ - Store user key in MongoDB DONE	Sprint 23	Sprint 23	
	~~ICN-421~~ - Create User to access logical cloud DONE	Sprint 23	Sprint 23	
	~~ICN-423~~ - Create OpenAPI spec for DCM API DONE	Sprint 23	Sprint 23	
	~~ICN-425~~ - Implement missing HTTP returns DONE	Sprint 23	Sprint 23	
	~~ICN-422~~ - Initial work on rsync certificate approval DONE	Sprint 23	Sprint 24	
	~~ICN-411~~ - Implement dcm certificate approval DONE	Sprint 23	Sprint 24	
	~~ICN-428~~ - Ramp on appcontext state, status and resource status DONE	Sprint 24	Sprint 24	
	~~ICN-429~~ - Obtain signed cert from cluster/rsync DONE	Sprint 24	Sprint 24	
	~~ICN-430~~ - Update kubeconfig with signed cert DONE	Sprint 24	Sprint 24	
	~~ICN-431~~ - Update appcontext with new action `approve` DONE	Sprint 24	Sprint 24	

				~~ICN-432~~ - Switch from /resource to /subresources DONE	Sprint 25	Sprint 25	
				~~ICN-443~~ - Add subresource-level order/dependency logic DONE	Sprint 25	Sprint 25	
				~~ICN-441~~ - Implement CSR monitor controller DONE	Sprint 25	Sprint 25	
				~~ICN-442~~ - Improve wiki doc regarding DCM DONE	Sprint 25	Sprint 25	
				~~ICN-461~~ - Fix breaking CI issue DONE	Sprint 26	Sprint 26	
				~~ICN-462~~ - Fix terminate issue on rsync DONE	Sprint 26	Sprint 26	
				~~ICN-463~~ - Split patches and refactor/fix DONE	Sprint 26	Sprint 27	
				~~ICN-464~~ - Test DCM end-to-end DONE	Sprint 27	Sprint 27	
				~~ICN-465~~ - Associate logical clouds to projects DONE	Sprint 27	Sprint 27	
				~~ICN-466~~ - Reimplement Terminate operation as async DONE	Sprint 27	Sprint 27	
				~~ICN-467~~ - Improve DCM OpenAPI with missing schema fields DONE	Sprint 27	Sprint 27	
				~~ICN-468~~ - Resource quota validation DONE	Sprint 27	Now tracked in EMCO	
				~~ICN-469~~ - Improve logging DONE	Sprint 27	Sprint 27	
				~~ICN-470~~ - Refactor calls to DeleteCompositeApp DONE	Sprint 27	Sprint 27	
				~~ICN-471~~ - Final refactoring DONE	Sprint 27	Now tracked in EMCO	
				~~ICN-472~~ - Update deployment file to include DCM DONE	Sprint 27	Sprint 27	
				~~ICN-473~~ - Update helm chart to include DCM DONE	Sprint 27	Sprint 27	
				ICN-489 - Integrate EMCO DCM in ICN TO DO	Sprint 30+		not started

- SD-EWAN Restful API (MWAN3) definition
- WMAN3 Restful API POC
- SD-EWAN Service Restful API
  - Get available services (e.g. mwan3, ipsec, firewall)
  - Execute Service

Huifeng Le

Epic	JIRA Story	Sprint /Estimated Completion Date	Status /Actual Completion Date	Notes
ICN-190 - E2E usages for SDWAN module in ICN to support multiple cluster communcation through security WAN intertaces TO DO	~~ICN-211~~ - MWAN3 Restful API DONE	Sprint 9	Sprint 9	
	~~ICN-221~~ - EWAN Restful API POC DONE	Sprint 10	Sprint 10	
	~~ICN-222~~ - EWAN Restful API Go Client POC DONE	Sprint 10	Sprint 10	
	~~ICN-238~~ - EWAN Service Restful API DONE	Sprint 10	Sprint10	
	~~ICN-271~~ - EWAN MWAN3 API implementation DONE	Sprint 11	Sprint 11	
	~~ICN-272~~ - EWAN Firewall API definition DONE	Sprint 12	Sprint 12	
	~~ICN-273~~ - EWAN Firewall API implementation DONE	Sprint 13	Sprint 13	
	~~ICN-301~~ - EWAN Firewall CRD/Rest API integration DONE	Sprint 13	Sprint20	postpone to R3.1
	~~ICN-313~~ - PoC for integration scenario DONE	Sprint15	Sprint15	
	~~ICN-314~~ - SDEWAN E2E test scenario integration DONE	Sprint16	Sprint17	
	~~ICN-372~~ - SDEWAN Central Controller /Traffic Hub design DONE	Sprint23		
	~~ICN-391~~ - SDEWAN Central Controller: POC for golang Restful API Server DONE	Sprint21	Sprint21	
	~~ICN-420~~ - SDEWAN Central Controller: POC for rsync integration DONE	Sprint23	Sprint23	
	~~ICN-427~~ - SDEWAN Central Controller: POC for remote k8s connection through hub DONE	Sprint24	Sprint24	
	~~ICN-447~~ - SDEWAN Central Controller: Cert Manager Utility DONE	Sprint25	Sprint25	
	~~ICN-440~~ - SDEWAN Central Controller: framework with basic features DONE	Sprint26	Sprint27	
	~~ICN-454~~ - SDEWAN Central Controller: IP Address Manager DONE	Sprint26	Sprint26	
	~~ICN-484~~ - SDEWAN Central Controller: Hub Manager DONE	Sprint28/Sprint29 /Sprint30	Sprint30	
	~~ICN-485~~ - SDEWAN Central Controller: Connection Manager DONE	Sprint28	Sprint28	
	~~ICN-493~~ - SDEWAN Central Controller: Device Manager DONE	Sprint29/Sprint30		
	~~ICN-494~~ - SDEWAN Central Controller: Hub-Device Manager DONE	Sprint29/Sprint30		

- ICN R3 Delieverables

Kuralamudhan Ramakrishnan

- All bug fixed for ICN R2 and customer readiness
- DCM, SD-eWAN, Openness in ICN R3 release
- Offline deployment & Global controller completion in R3
- Launch & Performance Dashboard
- CI/CD system & ICN maturity

Epic	JIRA Stroy	Sprint/Estimated Completion Date	Status/Actual Completion Date	Notes

ICN-61 - ICN CI / CD works TO DO	~~ICN-178~~ - ICN SDL works DONE	Sprint 9	Sprint 9	
ICN-1 - Metal3 Baremetal Operator in ICN Stack IN PROGRESS	~~ICN-193~~ - Metal3 Refactoring & ICN R2 bug Fixes - OS and user data DONE	Sprint 9	Sprint 11	
~~ICN-214~~ - DCM dev works DONE	~~ICN-192~~ - DCM lighting talk - API & Design development DONE	Sprint 9	Sprint 9	
ICN-191 - Integration OpenNESS with ICN TO DO	~~ICN-194~~ - Openness & SDWAN Lighting talks - API & design prep DONE	Sprint 9	Sprint 9	
ICN-236 - OVN4K8SNFV development work IN PROGRESS	~~ICN-228~~ - Ramp up on OVN4NFV and running the patches DONE	Sprint 11	Sprint 11	
~~ICN-228~~ - Ramp up on OVN4NFV and running the patches DONE	~~ICN-257~~ - ICN script updates DONE	Sprint 11	Sprint 11	
ICN-236 - OVN4K8SNFV development work IN PROGRESS	~~ICN-250~~ - OVN containerization DONE	Sprint 12	Sprint 12	
ICN-236 - OVN4K8SNFV development work IN PROGRESS	~~ICN-263~~ - Adding OVN4K8s in Kubespray DONE	Sprint 14/15/16/17	Sprint 17	
ICN-236 - OVN4K8SNFV development work IN PROGRESS	~~ICN-264~~ - Making OVN4NFV as the primary network DONE	Sprint 12/13	Sprint 13	
ICN-236 - OVN4K8SNFV development work IN PROGRESS	~~ICN-293~~ - Refactoring OVN coding for OVN containerzation daemonset DONE	Sprint 13/14	Sprint 13/14	
ICN-236 - OVN4K8SNFV development work IN PROGRESS	~~ICN-311~~ - Introducing Provider Network Direct type DONE	Sprint 14	Sprint 14	
ICN-1 - Metal3 Baremetal Operator in ICN Stack IN PROGRESS	~~ICN-321~~ - Bug fixes & Testing for ICN Baremetal Operator version DONE	Sprint 14	Sprint 14	
ICN-1 - Metal3 Baremetal Operator in ICN Stack IN PROGRESS	~~ICN-319~~ - Fix the ICN baremetal operator version DONE	Sprint 14	Sprint 14	
ICN-236 - OVN4K8SNFV development work IN PROGRESS	~~ICN-322~~ - Bug fixes for the OVN4NFV-K8s plugin primary routing issues DONE	Sprint 15	Sprint 15	
ICN-236 - OVN4K8SNFV development work IN PROGRESS	~~ICN-315~~ - Akraino ICN installation issue on barametal server #ICN DONE	Sprint 15	Sprint 15	
ICN-236 - OVN4K8SNFV development work IN PROGRESS	~~ICN-330~~ - CNI Server development in ONAP4K8s DONE	Sprint 16	Sprint 16	
ICN-236 - OVN4K8SNFV development work IN PROGRESS	~~ICN-331~~ - CNI shim development in ONAP4K8s DONE	Sprint 16	Sprint 16	
ICN-189 - ICN CI/CD TO DO	~~ICN-351~~ - ICN BM and VM installer script improvement DONE	Sprint 17	Sprint 17	
ICN-236 - OVN4K8SNFV development work IN PROGRESS	~~ICN-343~~ - Post review patches for OVN4NFV DONE	Sprint 20/21	Sprint 21	
ICN-189 - ICN CI/CD TO DO	~~ICN-340~~ - Documentation and patch review for ICN Release DONE	Sprint 18/19/20	Sprint 21	
ICN-236 - OVN4K8SNFV development work IN PROGRESS	~~ICN-358~~ - Post review for Kubespray DONE	Sprint 20/21	Sprint 21	
ICN-189 - ICN CI/CD TO DO	~~ICN-350~~ - Code review and CI/CD Testing DONE	Sprint 18/19	Sprint 19	
ICN-236 - OVN4K8SNFV development work IN PROGRESS	~~ICN-403~~ - Unit testing in OVN4NFV CNI DONE	Sprint 24/25/26	Sprint 26	
ICN-236 - OVN4K8SNFV development work IN PROGRESS	~~ICN-406~~ - OVN4NFV Kubespray with Centos 7 DONE	Sprint 24/25/26	Sprint 26	
ICN-236 - OVN4K8SNFV development work IN PROGRESS	~~ICN-404~~ - OVN4NFV Service Function Chaining development DONE	Sprint 22	sprint 22	
ICN-236 - OVN4K8SNFV development work IN PROGRESS	~~ICN-405~~ - EMCO and SFC demo preparation DONE	Sprint 22	sprint 22	
ICN-236 - OVN4K8SNFV development work IN PROGRESS	~~ICN-415~~ - Dev. rebased OVN4NFV SFC development with Kubespray DONE	Sprint 23	Sprint 23	

			ICN-236 - OVN4K8SNFV development work IN PROGRESS	~~ICN-416~~ - Test rebased OVN4NFV SFC Development with Kubespray DONE	Sprint 23	Sprint 23
			ICN-236 - OVN4K8SNFV development work IN PROGRESS	~~ICN-435~~ - SFC Demo DONE	Sprint 24	Sprint 24
			ICN-236 - OVN4K8SNFV development work IN PROGRESS	~~ICN-434~~ - ICN SDL works DONE	Sprint 29/30	Sprint 30
			ICN-236 - OVN4K8SNFV development work IN PROGRESS	~~ICN-436~~ - SRIOV and SFC chaining CR proposal DONE	Sprint 24/25	Sprint 25
			ICN-236 - OVN4K8SNFV development work IN PROGRESS	~~ICN-452~~ - Ramp up on OVN with VLAN and OVN Load balancer DONE	Sprint 28/29	Sprint 29
			ICN-236 - OVN4K8SNFV development work IN PROGRESS	~~ICN-459~~ - Creating OVN ACL based Network policy PoC DONE	Sprint 28/29/30	Sprint 30
			ICN-236 - OVN4K8SNFV development work IN PROGRESS	~~ICN-460~~ - Network Policy Controller initial PoC work DONE	Sprint 28/29/30	Sprint 30
			ICN-189 - ICN CI/CD TO DO	~~ICN-502~~ - ICN Documentation and release works DONE	Sprint 30/31	
			ICN-236 - OVN4K8SNFV development work IN PROGRESS	ICN-505 - Network Policy Port Group creating using OVS ACN ACL IN PROGRESS	Sprint 31	
			ICN-236 - OVN4K8SNFV development work IN PROGRESS	ICN-506 - Construct Egress /Ingress OVN ACL based on the NP Matches IN PROGRESS	Sprint 31	
			ICN-236 - OVN4K8SNFV development work IN PROGRESS	~~ICN-507~~ - Network Policy Namespace selector and Pod Selector DONE	Sprint 31	

- SD-EWAN CRD definition
- MWAN3 CRD definition
- SD-EWAN operator
  - Framework
  - Create SD-EWAN CNF based on SD-EWAN CRD

Cheng Li

Epic	JIRA Story	Sprint/Estimated Completion Date	Status/Actual Completion Date	Notes
ICN-190 - E2E usages for SDWAN module in ICN to support multiple cluster communcation through security WAN intertaces TO DO	~~ICN-209~~ - SDEWAN CRD definition DONE	Sprint 9	Sprint 9	
	~~ICN-210~~ - MWAN3 rule CRD definition DONE	Sprint 9	Sprint 9	
	~~ICN-205~~ - SDEWAN Operator Framework DONE	Sprint 10/11/12	Sprint 12	
	~~ICN-269~~ - Firewall CRD definition DONE	Sprint 12	Sprint 12	
	~~ICN-312~~ - Sdewan CRD re-design DONE	Sprint 13	Sprint14	
	~~ICN-329~~ - Sdewan controller framework DONE	Sprint14/15	Sprint 17	
	~~ICN-339~~ - Extract similar logical of CRD controllers DONE	Sprint 17	Sprint 17	Postpone to R3.1
	~~ICN-368~~ - implement label based permission system, phase one DONE	Sprint 18	Sprint 18	Postpone to R3.1
	~~ICN-369~~ - implement label based permission system, phase two DONE	Sprint 19	Sprint 19	Postpone to R3.1
	~~ICN-270~~ - Sdewan firewall controller implementation DONE	Sprint 13	Sprint 19	Postpone to R3.1
	~~ICN-288~~ - Add Sdewan firewall CRD DONE	Sprint 13	Sprint 19	Postpone to R3.1
	~~ICN-301~~ - EWAN Firewall CRD /Rest API integration DONE	Sprint 13		Postpone to R3.1
	~~ICN-313~~ - PoC for integration scenario DONE	Sprint15	Sprint15	
	~~ICN-314~~ - SDEWAN E2E test scenario integration DONE	Sprint16	Sprint17	

Le Yao

- Todo

Epic	JIRA Story	Sprint/Estimated Completion Date	Status/Actual Completion Date	Notes
ICN-217 - KuD R3 Release works IN PROGRESS	~~ICN-260~~ - KUD Multi Vagrant 18.04 issue DONE	Sprint 11/12/14/15	Sprint 15	
	~~ICN-281~~ - Vagrant vm can not get correct name server in ubuntu-1804. DONE	Sprint 11	Sprint 11	
	~~ICN-285~~ - Installer vm cannot install nfs because of nameserver issues. DONE	Sprint 12/14/15	Sprint 15	
	~~ICN-286~~ - All other VMs are unreachable for Installer VM DONE	Sprint 12	Sprint 12	
	~~ICN-303~~ - Compute01 no spcae left in KUD Multi Vagrant DONE	Sprint 12	Sprint 12	
	~~ICN-316~~ - Vagrant Box Build with base Ubuntu-18.04 for ICN DONE	Sprint 13	Sprint 13	
	~~ICN-308~~ - Upgrade the Kubespray 2.12 for KUD DONE	Sprint 16/17/18/19	Sprint 19	
	~~ICN-327~~ - criproxy failed to start up after node reboot DONE	Sprint 16/17	Sprint 17	
	~~ICN-326~~ - Vagrant Virtlet testing not working in proxy testings DONE	Sprint 16	Sprint 16	
	~~ICN-327~~ - QAT device plugin deploy issue DONE	Sprint 18/19/20	Sprint 20	
	~~ICN-367~~ - KUD CI Folder installer DONE	Sprint 18/19	Sprint 19	
	~~ICN-377~~ - Catch the cnf Pod no IP error DONE	Sprint 19	Sprint 19	
	~~ICN-378~~ - Add watch function for cnf deployment and CR DONE	Sprint 19	Sprint 19	
	~~ICN-389~~ - Apply watch to all controllers and test DONE	Sprint 19	Sprint 19	
	~~ICN-354~~ - Fix ICN node reboot issue for the containerized version DONE	Sprint 19/20	Sprint 31	
	~~ICN-393~~ - Create CNF helm chart DONE	Sprint 20	Sprint 20	
	~~ICN-394~~ - Create helm chart for ICN SDEWAN controller DONE	Sprint 20	Sprint 20	
	~~ICN-412~~ - A watch to monitor the service IPs changes DONE	Sprint 22	Sprint 22	
	~~ICN-413~~ - A new custom Service controller to hold watch function DONE	Sprint 22	Sprint 22	
	~~ICN-430~~ - Implement the service RESTful API DONE	Sprint 24/25/26/27	Sprint 27	
	~~ICN-445~~ - Implement the CR for Services DONE	Sprint 26/27	Sprint 27	
	~~ICN-446~~ - Change the Firewall restart script to update the iptables NAT rules DONE	Sprint 26/27	Sprint 27	
	~~ICN-455~~ - Implement the CR for Application DONE	Sprint 29/30/31	Sprint 31	
	~~ICN-401~~ - Implement RESTful API for Application DONE	Sprint 29/30	Sprint 30	
	~~ICN-492~~ - Test the network connection PoC with Calico as default network DONE	Sprint 29	Sprint 29	
	~~ICN-495~~ - Create the Application network accession PoC for flannel and OVN DONE	Sprint 28	Sprint 28	

~~ICN-508~~ - Create Non-root user in CNF DONE	Sprint 31	Sprint 31	
~~ICN-509~~ - Update scripts from helm version v2 to v3 DONE	Sprint 30	Sprint 30	
~~ICN-510~~ - CNF configuration and rule change DONE	Sprint 30	Sprint 30	
~~ICN-511~~ - Handle some missing errors and response it DONE	Sprint 31	Sprint 31	
~~ICN-512~~ - License updates in CNF RESTful API DONE	Sprint 31	Sprint 31	
~~ICN-514~~ - Add watch mechanism for pod to auto sync DONE	Sprint 32	Sprint32	
~~ICN-493~~ - SDEWAN Central Controller: Device Manager DONE	Sprint 33		

	JIRA Story	Sprint/Estimated Completion Date	Status/Actual Completion Date	Notes
ICN-217 - KuD R3 Release works IN PROGRESS	ICN-296 - add CMK support in multicloud/k8s KuD IN PROGRESS			

Ruoyu Ying

- Todo

Epic	JIRA Story	Sprint/Estimated Completion Date	Status/Actual Completion Date	Notes
ICN-190 - E2E usages for SDWAN module in ICN to support multiple cluster communcation through security WAN intertaces TO DO				
	~~ICN-242~~ - Investigate IPSec implementation in strongswan DONE	Sprint 11/12		
	~~ICN-275~~ - IPSec CRD Design DONE	Sprint 11/12	Sprint 11	
	~~ICN-276~~ - IPSec RESTful API Design DONE	Sprint 11/12	Sprint 11	
	~~ICN-280~~ - IPSec CRD and REST API implementation DONE	Sprint 18	Sprint 18	
	~~ICN-313~~ - PoC for integration scenario DONE	Sprint15	Sprint15	
	~~ICN-314~~ - SDEWAN E2E test scenario integration DONE	Sprint16	Sprint17	
	~~ICN-390~~ - SDEWAN end-to-end scenario with CRD & controller DONE	Sprint19	Sprint19	
	~~ICN-275~~ - Enable end-to-end test scenario in bare-metal DONE	Sprint20/21		De-prioritized
	~~ICN-273~~ - SDEWAN CNF: enable VTI router based IPSec DONE	Sprint21/22	Sprint 26	
	ICN-451 - Investigation on BGP /OSPF support IN PROGRESS	Sprint26/27		De-prioritized
	~~ICN-484~~ - SDEWAN Central Controller: Hub Manager DONE	Sprint 28/29/Sprint30		
	~~ICN-500~~ - SDEWAN Central Controller: Setup Demo on BM environment DONE	Sprint29/Sprint30	Sprint30	
	~~ICN-503~~ - SDEWAN R4 CI testing DONE	Sprint30	Sprint30	

Mark Scott

- To deploy ICN and KUD in CentOS 8

Epic	JIRA Stroy	Sprint/Estimated Completion Date	Status/Actual Completion Date	Notes
ICN-407 - KuD Development works TO DO	~~ICN-395~~ - Docker ramp up DONE	Sprint 21/22		
	~~ICN-396~~ - Kubernetes ramp up DONE	Sprint 21/22		
	~~ICN-399~~ - KUD setup DONE	Sprint 22/23		
	~~ICN-400~~ - Run up Vagrant with CentOS 7 DONE	Sprint 22/23		
	~~ICN-401~~ - Run KUD with Centos 7 in aio setup DONE	Sprint 22/23/24/25		
	~~ICN-402~~ - Run the KUD Vagrantfile with Centos 7 - phase 1 DONE	Sprint 22/23/24/25		
	~~ICN-427~~ - Centos Docker installation in installer.sh DONE	Sprint 25/26		
	~~ICN-428~~ - Centos Kubespray installation in installer.sh DONE	Sprint 25/26		

Todd Malsbary

- Todo

Epic	JIRA Stroy	Sprint/Estimated Completion Date	Status/Actual Completion Date	Notes
ICN-5 - Kud for ICN TO DO	~~ICN-433~~ - Creating EMCO V2 script in KUD DONE	Sprint 23	Sprint 24	
	~~ICN-448~~ - Create plugin test script for vFW for EMCO V2 script in KUD DONE	Sprint 25	Sprint 27	
	~~ICN-456~~ - Run vFW V2 test script as part of ICN install DONE	Sprint 26	Sprint 29	
	~~ICN-479~~ - Review and update plugin_fw_v2.sh for changes to genericPlacementIntent DONE	Sprint 27	Sprint 27	
	~~ICN-480~~ - Update plugin_fw_v2.sh to use emcoctl DONE	Sprint 28		Postponing this to future release
	~~ICN-486~~ - Upgrade the Kubespray 2.14 for KUD DONE	Sprint 28	Sprint 30	
	~~ICN-513~~ - Installed kernel cmdline needs intel_iommu=on iommu=pt to support QAT DONE	Sprint 31	Sprint 31	
	~~ICN-487~~ - Get bluval running as part of CI for R4 release DONE	Sprint 29	Sprint 29	
	~~ICN-501~~ - Resolve security PASS /FAIL criteria for R4 DONE	Sprint 30	Sprint 31	
	~~ICN-453~~ - Re-playing the vm-setup/setup-playbook causes subsequent provisioning to fail DONE	Sprint 26	Sprint 29	
	~~ICN-475~~ - Baremetal deploy make_bm_hosts step fails when baremetal-operator repo is not present DONE	Sprint 27	Sprint 29	
	~~ICN-476~~ - "./02_verify.sh: line 22: [: too many arguments" when the state is "registration error" DONE	Sprint 27	Sprint 29	
	~~ICN-477~~ - interface is spelled inteface (missing r) in several places DONE	Sprint 27	Sprint 29	
	~~ICN-481~~ - metal3 provisioning fails for nvme devices DONE	Sprint 28	Sprint 29	
	~~ICN-490~~ - The ironic-python-agent.tar link on http://images.rdoproject.com is gone which breaks bare metal deploy DONE	Sprint 28	Sprint 29	
	~~ICN-497~~ - username and password from nodes.json are unused DONE	Sprint 29	Sprint 29	
	~~ICN-504~~ - Clean steps should treat missing resources as already deleted DONE	Sprint 30	Sprint 31	