

Checklist for high-availability setup

Hardware

Server	Number of servers	CPU	RAM	Disc	File system	OS, specify which...	Prepared (yes/no)?
Master		8	32	750			☐
Agent		8	32	150			☐
Analytics		4	16	150			☐
MS SQL		4	16	500			☐
RPA		8	16	150			☐

- ☐ Are disk volumes on all servers mounted separately from the root volume of the operating system?
- ☐ Have you allowed Javascript scripts to run on the Analytics server?
- ☐ Have you enabled the support of TLS 1.2 in your browser?
- ☐ Have you set the Timezone on your Agent servers to UTC?

System updates

- ☐ Have you verified that your Linux OS has the latest system updates? For that, run `yum check-update`.

Shared file system

Server	OS	Type of file system	Shared disk size	Prepared?
Master and Agents	<install_dir>/vds-data		250 GB	☐
Master	<install_dir>/shared		500 GB	☐

Load balancer

Have you prepared a hardware load balancer? Specify, which one.

☐ Does your load balancer support Layer 4 TCP load balancing?

☐ Does your load balancer listens to the following ports?

Port	Respective setting in config.yml	Open (yes/no)?
TCP: 80	lb_port	☐
TCP: 443	lb_port_ssl	☐
TCP: 8202	vault_port	☐

☐ Does your load balancer route all TCP traffic from the mentioned ports to the same ports on the Master1, Master2, and Master3 servers (round-robin balancing between Masters 1 – 3).

☐ Are all load balancer ports above accessible over VIP from every server of the environment?

☐ Have you configured the load balancer to perform TCP health-checks of the **lb_port_ssl** port of Master 1 – 3 servers every 5 seconds?

☐ Is TLS termination disabled on your LB?

Users

On Linux servers

☐ Is same application user created on all Linux servers?

Do you use a local Linux user or an LDAP user? Specify, which:

Does the user belong to a user group? Name the group:

☐ Is the user group the same on all Linux servers?

Enter the application user name:

Enter the application user password:

On Windows servers

BI installation user

☐ Is the same BI installation user created on all Analytics (BI) servers (if several)?

Enter the BI user name:

Enter the BI user password:

RPA installation user

☐ Is the same RPA installation user created on all RPA servers (if applicable)?

Enter the RPA user name:

Enter the RPA user password:

☐ Is WinRM (over HTTPS with CredSSP authentication) available from the Master server to all Windows servers for respective Windows users?

☐ Do you have Administrator permissions for at least 60 minutes?

☐ Is time synchronized on all servers?

DNS names

Prepare the domain names according to the planned installation mode:

Component	Example domain name	Real domain name	Prepared (yes/no)
Vault load balancer	vault-lb.example.com		☐
Minio s3 load balancer	minio-lb.example.com		☐
Nexus load balancer	nexus-lb.example.com		☐
RabbitMQ load balancer	rabbitmq-lb.example.com		☐
Mesos load balancer	mesos-lb.example.com		☐
Marathon load balancer	marathon-lb.example.com		☐
Workspace load balancer	workspace-lb.example.com		☐
Control tower load balancer	workfusion-lb.example.com		☐
Bot-manager load balancer	bot-manager-lb.example.-com		☐
Kibana load balancer	kibana-lb.example.com		☐
OCR load balancer	ocr-lb.example.com		☐
Tableau load balancer VIP	bi-lb.example.com		☐
Keycloak load balancer	keycloak-lb.workfusion.com		☐
SQL Server	mssql.example.com		☐
Master 1	master1.example.com		☐
Master 2	master2.example.com		☐
Master 3	master3.example.com		☐
Agent 1	agent1.example.com		☐
Agent 2	agent2.example.com		☐
Agent 3	agent3.example.com		☐
Analytics 1	bi1.example.com		☐

Analytics 2	bi2.example.com		☐
RPA 1	rpa1.example.com		☐
RPA 2	rpa2.example.com		☐

Certificates

- ☐ Are you going to use self-signed certificates? **If yes, ignore the other questions.**
- ☐ Have you prepared the Root certification authority (**ca.crt**) certificate in the .pem format?
- ☐ Does your **ca.crt** include any intermediate certificates?
- ☐ Have you prepared the **server.crt** certificate in the .pem format?
- ☐ Have you signed **server.crt** with **ca.crt**?
- ☐ Does your **server.crt** include the end certificate plus all intermediate certs, if exist?
- ☐ Is your server.crt being the SAN certificate?
- ☐ Do certificate's CommonName or Subject Alternative Names (SANs) match all DNS names of all servers and all DNS names assigned to a load balancer?
- ☐ Have you prepared the private **server.key** file in the PKCS#8 format for **server.crt**?
- ☐ Have you checked that your **server.key** is NOT protected with password?

Ports

Source server	Destination server	Destination port	Service name	Prepared
All servers	Master	80, 443/tcp	HAProxy (proxy for Control Tower, Workspace, bot-manager, AutoQC, Nexus, Minio, Tinymce, Kibana)	☐
		8202/tcp	HAProxy (proxy for Vault)	☐
		2181/tcp	Zookeeper	☐
		4567-4571/tcp, 15072/tcp	logstash	☐
		5672/tcp	RabbitMQ queue	☐
	BI	80, 443/tcp	Apache (proxy for Tableau Web Interface)	☐
	LB	80/tcp	Control Tower, Workspace, Bot Manager, AutoQC, Nexus, Minio, Kibana, OCR, Mesos, Marathon, RabbitMQ	☐
		443/tcp	Control Tower (mTLS), Bot Manager (mTLS), Task Dispatcher Service, Worker Management Service, AutoML Gateway Service, AutoML Model Service, AutoML Model Management Service, AutoQC, Nexus, Minio, Kibana, OCR, Mesos, Marathon, RabbitMQ	☐
		8202/tcp	Vault	☐
	MSSQL	1433	MS SQL	☐
Master	Master	22/tcp	SSH	☐
		4084/tcp	nginx (mTLS proxy for SQC)	☐
		8443/tcp	nginx (proxy for Control Tower, Workspace, bot-manager, AutoQC, Nexus, Minio, Tinymce, Kibana)	☐
		5050/tcp	mesos-master	☐
		8480/tcp	nginx (proxy for marathon)	☐
		9073/tcp	nginx (mTLS for AutoML gateway-service)	☐
		9075/tcp	nginx (mTLS proxy for AutoML model-service)	☐
		9076/tcp	nginx (mTLS proxy for AutoML model-management-service)	☐
		9063/tcp	nginx (mTLS proxy for hazelcast server)	☐
		9093/tcp	nginx (mTLS proxy for worker-management service)	☐

Source server	Destination server	Destination port	Service name	Prepared
		9702/tcp	hazelcast server communication port	☐
		8200/tcp	Vault (secure store)	☐
		8443/tcp	nginx (proxy for Nexus, Minio and RabbitMQ API)	☐
		9092/tcp	nginx (mTLS proxy for the task dispatcher service)	☐
		9200/tcp	ElasticSearch	☐
		9300	Elasticsearch cluster services	☐
		45672/tcp	nginx (proxy for RabbitMQ API)	☐
		32768-61000/tcp+udp	mesos-master, filebeat, heartbeat, metricbeat	☐
		2888,3888/tcp	Zookeeper cluster services	☐
		4369,25672/tcp 35672-35682/tcp	RabbitMQ discovery services	☐
		7600/tcp	Keycloak cluster services	☐
	BI	5986/tcp	WinRM	☐
	RPA	3389/tcp	RDP	☐
		5986/tcp	WinRM	☐
		8443/tcp	nginx (proxy for RPA hub)	☐
Agent	Agent	5051/tcp	mesos-slave	☐
	Master	111/tcp+udp	NFS	☐
		2049/tcp+udp	NFS	☐
		5050/tcp	mesos-master	☐
		8480/tcp	nginx (proxy for marathon)	☐
		9073/tcp	nginx (mTLS for AutoML gateway-service)	☐
		9702/tcp	hazelcast server communication port	☐
		20048/tcp+udp	NFS	☐
		32768-61000/tcp+udp	mesos-master, filebeat, heartbeat, metricbeat	☐

Source server	Destination server	Destination port	Service name	Prepared
Master	Agent	5051/tcp	mesos-slave	☐
		22/tcp	SSH	☐
		32768-61000/tcp+udp	mesos-slave, filebeat, heartbeat, metricbeat	☐
LB	Master	80, 443/tcp	Control Tower, Workspace, Bot Manager, AutoQC, Nexus, Minio, Kibana, OCR, Mesos, Marathon, RabbitMQ	☐
		8202/tcp	Vault	☐
RPA	Master	9073/tcp	nginx (mTLS for AutoML gateway-service)	☐
		9702/tcp	hazelcast server communication port	☐

Additional ports for Marathon

Source server(s)	Destination server(s)	Destination port	Service name	Open (yes/no)
Operators workstations	Master server(s)	8480	mesos-master	☐

Additional ports for external NFS server

Open the following ports on the Master servers, if you use an external NFS.

Port to open	Source server	Service name	Open (yes/no)
111/tcp+udp	all	NFS	☐
2049/cp+udp	all	NFS	☐

Database

- ☐ Have you installed MS SQL Server 2016 SP2 v. 13.0.5698.0?
- ☐ Have you activated your MS SQL Server software?
- ☐ Have you enabled the mixed authentication mode on your MS SQL Server software?
- ☐ Have you ensured that only local users are used?
- ☐ Does your SQL server listens to connections on a statically-assigned TCP port?
- ☐ Does your database reside in a separate network segment?
- ☐ Does your MS SQL server features DB Engine?
- ☐ Have you set the SQL_Latin1_General_CP1_CI_AS server-level collation?
- ☐ Have you set the database-level collation?
- ☐ Have you created the following MS SQL logins in your database:
 - ☐ mssql_dba_user: "wf_dba"
 - ☐ mssql_ct_user: "workfusion"
 - ☐ mssql_ws_user: "workspace"
 - ☐ mssql_sqc_user: "sqc"
 - ☐ mssql_ds_user: "ds"
 - ☐ mssql_rpa_user: "rpa"
 - ☐ mssql_pm_user: "pm"
 - ☐ mssql_ocr_user: "ocr"
 - ☐ mssql_dm_user: "dm"
 - ☐ mssql_rapi_user: "rapi"
 - ☐ mssql_automl_mms_user: "automl_mms"
 - ☐ mssql_keycloak_user: 'keycloak'
- ☐ Have you provided **mssql_dba_user** with the **db_owner** permissions?
- ☐ Have you enabled snapshot isolation?
- ☐ Have you configured Windows clustering to setup the SQL clustering in the Always-on mode?
- ☐ Have you created your database under Always-on Active-Active cluster?
- ☐ Have you configured the database with a static AG listener?
- ☐ Have you set the asynchronous replication between the primary and the secondary replicas?

RPA server

- ☐ Have you installed the required business applications that you want to be automated on the RPA server(s)? Specify, which ones.

- ☐ Have you already purchased the Microsoft RDS license?
- ☐ Have you created Windows user **Bot Master** on all RPA servers?
- ☐ Is the **Bot Master** user included in the **Administrators** and **Remote Desktop Users** groups on all RPA servers?
- ☐ Does your **Bot Master** user belong to Active Directory?
- ☐ Have you created Windows user **Bot Unit** on all RPA servers?
- ☐ Is the **Bot Unit** user included in the **Remote Desktop Users** group on all RPA servers?
- ☐ Does the Bot Unit user have the write permissions for the installation directory on all RPA servers?
- ☐ Does your **Bot Unit** user belong to Active Directory?