Ruckus Wireless™
FlexMaster™

Release Notes for 9.12.0.0.101

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Contents

About This Release

1

This document provides release information on FlexMaster version 9.12.0.0.101, including new features, enhancements, known issues, caveats, workarounds, upgrade details and interoperability information.

NOTE: Beginning with the 9.9.0 release, the ZoneFlex Release Notes (which previously included ZoneDirector, FlexMaster and ZoneFlex access points) are now divided into three separate Release Notes documents. This document covers FlexMaster only. For ZoneDirector and Ruckus Wireless access point release information, please refer to their respective Release Notes documents.

By downloading this software and subsequently upgrading FlexMaster and/or Ruckus Wireless controllers to version 9.9.0 or later, and/or Ruckus Wireless APs to base image 100.0.0 or later, please be advised that:

• The ZoneDirector periodically connects to Ruckus and Ruckus collects the ZoneDirector serial number, software version and build number. Ruckus transmits a file back to the ZoneDirector and this is used to display the current status of the ZoneDirector Support Contract.

• The AP may send a query to Ruckus containing the AP's serial number. This allows your AP to autonomously connect with a wireless LAN controller operated by your choice of cloud service provider. Ruckus may transmit the Fully Qualified Domain Name (FQDN) or IP address of the controller that the AP will subsequently attempt to join back to the AP.

• Please be advised that this information may be transferred and stored outside of your country of residence where data protection standards may be different.

Continue with the following:

- [Minimum Recommended RAM and CPU](#)
- [Supported Country Codes](#)
- [What's New in This Release](#)

Minimum Recommended RAM and CPU

- The amount of memory and CPU power required on the FlexMaster server depends on the number of ZoneDirector devices and standalone APs that FlexMaster is to manage, and on the FM system configuration.

Refer to the following:

- Three-Tier Model
- Purge Policy
- ZD1200 Scaling Capacity without UE Sessions

Three-Tier Model

Refer to the following table for the minimum recommended RAM and CPU for managing ZoneDirector devices using the FM 3-tier model.

Table 1.   Minimum recommended RAM and CPU for the FM 3-tier model

Managed Population	Minimum RAM	Minimum CPU
Up 500 ZD-managed APs (with up to two UE sessions per hour, **NOTE**)	8GB	2.0GHz Quad Core Intel® Xeon® E5606 or equivalent
Up to 10,000 ZoneDirector-managed APs	48GB	2* 2.5GHz Six Core Intel® Xeon® E5670 or equivalent

NOTE: User Equipment session services provide more accurate client traffic reports. However, if the FlexMaster manager is managing many ZoneDirector controllers, then the FM database may become overloaded with inputs. Enable User Equipment sessions in *Administer > System Settings*.

Purge Policy

Since release 9.5, FM can store up to 31 days of AP history data. In addition to the recommended RAM listed above, the number of APs that the FlexMaster server can support is determined by the amount of available RAM and the number of days of historical data defined in the *Purge Policy* setting. Refer to the following table for additional RAM requirements.

Table 2.   Minimum RAM and CPU for various Purge Policies

Purge Policy	Max Capacity	Recommended Capacity
2 days	12k APs//120k Clients	10k APs/100k Clients
7 days	10k APs/100k Clients	6k APs/60k Clients
31 days	1.5k APs/15k Clients	1k APs/10k Clients

The capacity decreases when FM is hosted on a VMware Virtual Machine.

Table 3.   Sample FM Capacity Decreases on a VMware Virtual Machine

Purge Policy	FM Max Capacity	Recommended Capacity	Hardware Notes (RAM/Disk RPM)
7 days	1k APs + 10k clients + 10M events	600 APs	8G/10000 RPM
	1k APs + 50k clients + 14M events		16G/10000 RPM
	1k APs + 10k clients + 6M events		8G/7200 RPM
	1k APs + 50k clients + 9M events		16G/7200 RPM

Too many SSIDs on the ZDs impacts the FM capacity. So when the FM is fully loaded, Ruckus Wireless recommends that the operator not implement the *64 SSID* feature for the ZDs.

Because adding User Equipment sessions (refer to **NOTE** in Table 1) affects the XML memory in FM, the FM capacity is affected when there are more client sessions with different purge policies. Ruckus Wireless recommends that customers install 48GB RAM in the FM server, and then observe the maximum and recommended capacity limitations for two-day, seven-day, and 31-day Purge Policies listed in Table 4.

Table 4.   Sample FM Capacity Decreases on a VMware Virtual Machine

Purge Policy	FM Max Capacity	Recommended Capacity	Hardware Notes (RAM/Disk RPM)
2 days	12k APs/120k Clients	10k APs/100k Clients	48G/10000 RPM/ 7200RPM

Table 4.   Sample FM Capacity Decreases on a VMware Virtual Machine (Continued)

Purge Policy	FM Max Capacity	Recommended Capacity	Hardware Notes (RAM/Disk RPM)
7 days	10k APs/100k Clients	6k APs/60k Clients	48G/10000 RPM/ 7200RPM
31 days	1.5k APs/15k Clients	1k APs/10k Clients	48G/10000 RPM/ 7200RPM

ZD1200 Scaling Capacity without UE Sessions

Table 5.   ZD1200 Scaling Capacity (no UE sessions)

Scenario	ZDs	APs for each ZD 1200	Total APs	Clients per AP (concurrent)	Total Clients	Status	Hardware Notes (CPU\RAM\ Disk RPM)
1	300	15	4500	30 (100 clients for 1 hour, 2 times every day, and 30 clients on at other times; 10 clients at night)	141000	(300ZDs + 4.5k APs + 141k clients.) Reports can be generated, FM cannot generate Client Association Activity 7days reports on the Dashboard.	2* 2.5G Eight Core (Intel Xeon X5670 equivalent or above) 48G/10000 RPM/ 7200RPM
2	250	15	3750	50	187500	(250 ZDs + 3.75k APs + 187k clients.) All reports can be generated.	2* 2.5G Eight Core (Intel Xeon X5670 equivalent or above) 48G/10000 RPM/ 7200RPM

Included ZD Firmware Loads

There are no ZD firmware images included with FlexMaster since the 9.5.0.0.11 build. However, the operator can upload any required ZD firmware image in the **Configure -> Manage Firmware Files** window.

Supported Country Codes

Refer to the Ruckus Wireless Price List for available country certifications.

What's New in This Release

- Added support for the P300 Wireless Bridge.
- Added support for the R710 Wireless Bridge.
- For a list of features that have been added in this release, refer to the *What's New in ZoneFlex 9.12* document, available from the Ruckus Wireless support website. Please refer to the Release Notes for prior releases for information on previously documented caveats, limitations, enhancements and resolved issues. These documents can be found at:

  https://support.ruckuswireless.com

Supported ZDs and APs

2

Supported ZoneDirector Models

This release supports the following ZD models:

- ZD1200
- ZD3000
- ZD5000

Supported Access Point Models

This release supports the following AP models:

- H500
- P300
- R300
- R500
- R600
- R700
- R710
- SC8800-S
- SC8800-S-AC
- T300
- ZF2741
- ZF2942
- ZF7025
- ZF7055
- ZF7321
- ZF7321-U
- ZF7341
- ZF7341-U
- ZF7343

- ZF7343-U
- ZF7351
- ZF7351-U
- ZF7352
- ZF7352-U
- ZF7363
- ZF7363-U
- ZF7372
- ZF7372-E
- ZF7372-U
- ZF7441
- ZF7761CM
- ZF7762
- ZF7762-AC
- ZF7762-S
- ZF7762-S-AC
- ZF7762-T
- ZF7781-M
- ZF7781CM
- ZF7781CM-E
- ZF7781CM-S
- ZF7781FN
- ZF7781FN-E
- ZF7781FN-S
- ZF7782
- ZF7782-E
- ZF7782-N
- ZF7782-S
- ZF7962
- ZF7982

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Caveats, Limitations, and Known Issues

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This section lists the caveats, limitations, and known issues for FlexMaster in this release. Please also refer to previous (for example, 9.10.0, 9.9.0, 9.8.1, 9.8.0, and 9.7.0) Release Notes documents for previously documented caveats and limitations.

Supported Web Browsers

- Refer to [Interoperability Information](#) for supported web browsers.

- IE 7.0 is not recommend because of some critical compatibility issues (bug ZF-736/738/BUGZ-10434).

- Even though basic function is supported, IE 8.0/9.0/10.0 are not recommended because of some UI compatibility issues (bug ZF-622/293/689/691/848/5696/56871/5716/5717).

TR069 Limitations

- FlexMaster is not a real time update server. Some tasks do not trigger immediately, and wait for the CPE or the ZD to respond at the next INFORM interval.

- Once the CPE loses communication after a task is established during an inform interval, FlexMaster marks the task as expired if it does not receive the AP's inform three times in a row.

- If the FlexMaster tasks are 'Firmware Upgrade' and 'Reboot', then FlexMaster marks the task as expired after the AP reboot if it does not receive the AP's inform response for 60 minutes.

- FM supports both SSLv3 and TLS by default. To resolve the Poodle SSL v3 vulnerability, run the `script setSSLOption.sh` on the FM server, and then disable or enable SSLv3. Customer should completely upgrade all ZDs and SAP to 9.9, then turn off SSLv3. If FM manages ZD and SAP firmware earlier than 9.9 (for example, ZD 9.8/9.8.1), and the customer disables SSLv3 on the FM server, then ZD and SAP disconnects from FM.

NOTE: The ZF7731 is a Multipoint Backhaul AP that does not have a 9.9 image. If FM disables SSLv3, this type of AP cannot be managed by FM 9.9.

FlexMaster Installation

- In order for the CPE device to connect to the FlexMaster manager, the image must be TR069 supported.

FlexMaster Upgrade

- For better upgrade process control, FM is delivered in tar format as a patch since release 9.4. There are new upgrade scripts and patch files in this tarball.

  Please refer to following steps as an upgrade example:

  a Upload the patch file (e.g. 9.10.0.0.7-9.12.0.0.101.tar) to the FM server.

  b Copy the patch file (e.g. 9.10.0.0.7-9.12.0.0.101.tar) to the FM folder (for example, `/opt/FlexMaster/`):

  ```
  # cp 9.10.0.0.36-9.12.0.0.x.tar /opt/FlexMaster/
  ```

  c Untar the patch file with following command:

  ```
  # tar -vxf 9.1.0.0.7-9.12.0.0.101.tar
  ```

  d Make sure the *.patch (9.12.0.0.101.patch) file has been extracted from the tar file and then upgrade the FM with following command:

  ```
  # ./upgrade.sh 9.12.0.0.101
  ```

Licenses

- There are 100 licenses in the default installation.

- If the license number is exceeded then the *Dashboard* and the *Administer > License* pages display notices that this license number is exceeded.

- ZoneDirector uses FlexMaster server licenses after registering successfully. For example, the ZD3500 uses 500 licenses even there are not 500 APs managed by that ZoneDirector.

- Standby ZDs occupy one license each, but on the FlexMaster Web UI, the Standby ZD license displays as zero.

- When a trial license expires, FM checks the number of licenses and automatically deletes devices that lack licenses.

- The Trial license only applies to FM 9.7 or later.

FlexMaster Web UI

- Information displayed in ZoneDirector *Dashboard > Device View* is based on the database which is updated from ZoneDirector and it is the same as the information in the linked report.

- The graph displayed in the Dashboard is based on the database, which is collected from ZoneDirector and refreshed once per hour.

FlexMaster URL

- The FlexMaster URL received from DHCP option 43 is overwritten when the operator chooses to keep the FM URL via the FM template.

User Security

- FlexMaster allows the same user account to log into the system multiple times simultaneously. This means there is no restriction on login sessions.

- Sessions time out in five minutes if there is no action by user, unless the page displayed is the Dashboard.

- There is no session timeout for page kept in the Dashboard.

- In some FlexMaster web pages, the database periodically queries the status from the server. So, if users stays in the pages that use the AJAX application, the http session does not time out.

- The session timeout function is disabled whenever the operator turns on the 'Alarm Light' setting.

Device View

- Any parameter changed by the operator in the CPE Web UI does not update FlexMaster in real time. FlexMaster is updated only when user clicks on the associated "Device View" in the FlexMaster Web UI.

- Ruckus Wireless suggests that users check on the "success" message for the particular task ID in the "Status Area" which is at the top-right of the Device View page before they make another change.

- VLAN settings in FlexMaster Device View are virtually created before any interfaces connect to their far end.

Network Environment/Firewall

- FlexMaster cannot wake up a device through the firewall NAT using TCP or UDP protocol.
- The only way to communicate with the CPE is waiting until the next periodic inform interval time for the CPE. And at that time the CPE sends an inform packet to FlexMaster using the HTTP and/or HTTPS protocol.
- The minimum periodic inform interval value is one minute, and the maximum is four weeks.

Other Caveats and Limitations

- Port forwarding in FlexMaster is designed for users to configure the port mapping for different ZoneDirectors while these ZoneDirectors are located behind NATs.
- FlexMaster can only be operated properly by restarting the FlexMaster process manually after the VeriSign certificate is imported.
- SpeedFlex does not support NAT topology.
- SpeedFlex does not support wireless clients that associate with standalone APs.
- SpeedFlex does not support VF2825 and VF7811.
- The wireless channel change to "Smart Select" after changing the AP's wireless mode to 'Smart Select' using FlexMaster.
- The current FlexMaster release only supports one SMTP server but supports multiple email addresses.
- Parameters changed in the template are not applied to the restart configuration upgrade task.
- The automatic report is sent out at the end of the month if the month does not have a day specified for the automatic report.
- VLAN ID settings are displayed in the Device View before any Ethernet or Wireless interface joins in.
- ZF7731 APs do not perform the provisioning task if the AP becomes far-end from near-end without reboot.
- Using a template to change the ZF7731 SSID and encryption will make the ZF7731 bridge disconnect.
- The task will fail if the operator changes the country code and the channel width within the same template.

- Operators cannot delete a ZD backup configuration file after using this file for a Configure Task.
- An AP's down time information maybe incorrect if the AP's inform time setting is over 1 hour in a 2-Tier environment.
- The ZF7025 LAN5 port only supports 'Trunk Port'.
- Regarding system performance, the 'Association > Connected Clients' report does not show the client 'on/off time' info.
- When exporting to an XLS/CSV file, the maximum rows that FM supports are 65536 and the excess rows are deleted from the exported XLS/CSV file.
- It is not allow to multiple exports to XLS within a short time. Operators have to wait a few seconds (depend on the XLS size) before he/she can initiate another export task.
- The maximum pages in the pull-down menu that FM supports is 1000. The excess pages cannot be selected from the pull-down menu, but can be shown by clicking the 'next page' icon.
- The Dashboard most recent events auto refresh every 15 seconds. The operator can pause the auto refresh by clicking the '10 more records' or 'show all' icon.
- The AP Ping Test function is disabled by default.
- When configuring 802.1x for standalone APs via template, the operator should configure the 802.1x parameter on both 'VLAN & LAN Port Setting' and '802.1X Settings' tabs, and apply them to the AP together.
- The 'external IP' will be blank when a ZD or Standalone AP registers with FM using IPV6.
- The operator should sync the FM time with the ZD time, otherwise the FM report will become incorrect.
- The connected status of Standalone APs and ZDs on the dashboard connectivity graph only refer to the AP status on the hour.
- The Inventory 'Client Associated Time' is inaccurate.
- Whenever a deleted ZD re-registers with FM, there will be some duplicate records in the ap_statistic and hotzone_associate_xxx tables (bug BUGZ-10430).
- The dashboard 'Client OS Information' graph only count the clients which are associated with 9.4 or later ZDs.

- The 'Client OS'/'HostName'/'Manufacture' info are NOT support by the 9.3 or previous release ZD and FM, so when the operator upgrades the system from previous releases, all this Info is erased and FM does not update these columns until the client re-associates with the upgraded system.

- After an N+1 ZD disconnect, duplicated APs can occur (ZF-8967).

- Dashboard -> 'Standalone AP device view' is updated only every 15 minutes, while report ->'device view' is a real time report, so there is a gap between the number in Dashboard -> 'Standalone AP device view' and report ->'device view'.

- The Monitor -> Client Trend -> Association State report is bases on the 'client join/disconnect' event. In some cases, ZD/Client fails to send these events to FM and can cause the report to become incorrect.

- Due to the SSL update, the operator should upgrade ZF7731 to 9.2.0.0.165 or above version before registering it to 9.5 or later FM (Bug ZF-1354).

- FM can store more than 10 template files per ZD, and the operator can change this number in 'Configure -> Configure Backup' tab. However, operator should set this number according to their partition size since storing too many ZD templates increase the FM's database size.

- Create a template, modify server Registration User Name and password, configuration cannot take effect by SAP template (ZF-8937).

- In the client trend report, client association stats 24/12 hour is incorrect (ZF-8934).

- Columns can be customize in reports, but the column customized setting are stored using cookies. When the browser cookies are deleted, the customized columns disappear and return to the column defaults.

- If SAP is deleted the from Device Registration, then the SAP cannot successfully execute the Auto Configuration task (ZF-8924).

- SAP cannot be set to be Local bridge and NAT using a Template. (ZF-8923)

- After Changing the IP address of an AP from *dhcp* mode to *static* mode using a SAP template, the AP cannot be accessed (ZF-8919).

- [Report->client association] When checking client connectivity, there are sometimes clients showing associations with other WLANs and other APs (ZF-8920/ER-1403).

- When 15k AP + 150k Client +[day(6session/client/hr)*12hr + night(2session/client/hr)*12] + 14M events occur, FM fails to generate the '# of Associated Clients' 24-hour report (ZF-8890).

- FM cannot export report CSV&PDF files on 2/7/31days scaling server, 12k APs/ 120k Clients over 2 days, or 10k APs/100k Clients over 7 days, or 1.5k APs/ 15k Clients over 31 days (ZF-8885).
- New SSL certificates cannot be imported to FM (ZF-8861).
- Rogue AP last seen is incorrect in PCI report (ZF-9501).
- When the operator clicks the 'query' button, PCI googlemaps adds one more 'hide/show indoor map' choice (ZF-10073).
- In Inventory-ZD Redundancy ZD, the local device IP changes to 'undefined' after refreshing twice (ZF-10186).
- in Report -> Events, FM cannot display all client join or disconnect events in the report (ZF-10198).
- In Report -> Events, FM failed to send client join/disconnect event emails (ZF-10271).
- In Monitor-alarm email, FM can generate the 'AP lost connection' alarm, but cannot send out the 'AP lost connection' alarm email (ZF-10287).
- In Report -> PCI, almost all of rogue APs did not have the detecting AP in email and FTP files (ZF-10293).
- The value of rate limiting on template is not consistent with ZD web UI. For instance, when the maximum value on a template is 20mbps, the maximum value on ZD web UI is 50mbps. (ZF-11411/ZF-11410.)
- In display period/generate graph time /export files time reports, all of the times are dependent on the current server time.
- Renamed *Report -> SLA -> AP_Uptime to AP_ConnectionTime* and removed *Report -> SLA -> AP_Downtime*.
- After upgrading to FlexMaster 9.12.0.0.101, Ruckus Wireless recommends deleting browser cookies.
- The following reports have been replaced by the new reports and the information was consolidated:

Old Report	New Report
AP Traffic-TX/RX	Network Capacity
# of Associated Clients	
AP Traffic -TX/RX	AP Traffic-TX/RX Histogram
# of Associated Clients	# of Associated Clients-Histogram

Resolved Issues

4

- A ZD's information cannot be seen if any client hostname includes special characters (ER-1977).
- FlexMaster supports ZD3512 after 9.4 release (ER-1804).
- FlexMaster supports ZD3512 after 9.4 release (ER-2079).

Upgrading to This Release

5

This section lists important notes on installing and upgrading FlexMaster, ZoneDirector, and Ruckus Wireless Access Points to this version.

- FlexMaster Environment Notes
- Editing the Hosts File
- FlexMaster Upgrades

FlexMaster Environment Notes

NOTE: Also refer to Caveats, Limitations, and Known Issues for further information.

FlexMaster requires the following:

- RedHat Enterprise 5.5 (64 bit) or RedHat Enterprise 6.5 (64 bit).
    --OR--
    CentOS release 6.3 (64 bit) or CentOS release 6.5 (64 bit).

- Ruckus Wireless recommends that you use the 'Web Server' option during RedHat Enterprise or CentOS installation. Do not use the 'Minimal' option, since that causes FM startup failure (ZF-6874).

- The FM installation requires several MySQL packages that are not included in a Minimal CentOS (or RHEL) install.

    a When installing or upgrading to 9.12.0.0.101 *install.sh* or *upgrade.sh* will check that the following packages are installed on your system:

    - PERL

    - UNZIP

    - Libaio

    If the check is successful, you can install or upgrade FlexMaster 9.12.0.0.101 successfully.

    If the check is unsuccessful, you will need to install the Perl, Unzip and/or libiao packages before installing or upgrading FlexMaster 9.12.0.0.101:

    - **yum -y install unzip**

    - **yum -y install perl**

    - **yum -y install libaio**

b Once the packages are installed, you can install or upgrade FM normally.

Other Notes

- When FM is installed on RedHat or CentOS, FM may have port conflicts with the following. Modify those port numbers as required.
  - MySQL (3306)
  - apache (80)
  - tomcat (80)
  - or the default port on RedHat or CentOS.
- Because of compatibility issues between MySQL and the ext4 partition (for details, refer to http://bugs.mysql.com/bug.php?id=46959), Ruckus Wireless recommends that you install FM with an ext3 partition.
- If the operator has to use an ext4 partition, for better system performance, Ruckus Wireless recommends that you disable the barrier option on the partition where FM is installed. Following is an example of how to disable the barrier option:

```
# umount /opt
# mount -o barrier=0 /dev/sda1 /opt
```

Editing the Hosts File

FlexMaster stores some of its configuration settings in a MySQL server database that is installed with the FM software. To make sure that FM can connect to this MySQL database after installation, you need to edit your Linux server's hosts file to include its DNS-related information (ER-1631).

1 Go to the **/etc** directory, and then open the *hosts* file.

2 Add the following line to the *hosts* file:

```
127.0.0.1    hostname hostname.domainname
```

3 Save the *hosts* file.

   NOTE: If you use a full stop (.) in the hostname, then you are not allowed to use only digits after the full stop. If you use a domain in the *hosts* file, then the domainname is also not allowed to consist of a digit or only digits.

   • Valid hostname/hostname.domainname combinations:
     ```
     FlexMaster/FlexMaster.ruckus
     FlexMaster.98ABC/FlexMaster.98ABC
     FlexMaster.com/FlexMaster.orange
     ```
   • Invalid hostname/hostname.domainname combinations:
     ```
     FlexMaster.98/FlexMaster.98
     FlexMaster.126/FlexMaster.126
     Localhost.12345/Localhost.12345
     ```

FlexMaster Upgrades

Official 9.12.0.0.101 upgrade paths supported:

- FM 9.10.0.0.7 -> FM 9.12.0.0.101

If you are running an earlier version, then you must first upgrade to FM 9.10.0.0.7 before upgrading to FM 9.12.0.0.101.

NOTE: The FM manager and ZD controllers are generally updated in the following order:

- Operator upgrades the FM first and then upgrades the ZDs.
- Operator upgrades the FM and ZDs release by release; please refer to Table 6 for details.
- For multi-release upgrade, operator should align the ZD version with FM first, and then continue with the FM upgrade. For instance, FM/ZD 9.8 -> 9.12 upgrade:

    Step 1, upgrade FM 9.8 -> 9.9
    Step 2, upgrade ZD 9.8 -> 9.9
    Step 3, upgrade FM 9.9 -> 9.10
    Step 4, upgrade ZD 9.9 -> 9.10
    Step 5, upgrade FM 9.10 -> 9.12
    Step 6, upgrade ZD 9.10 -> 9.12

Table 6 contains a comprehensive list of FM upgrade paths and corresponding ZD alignments.

Table 6.   FM Upgrade Path and ZD Alignments

FM version	Official FM Upgrade Path	ZD Alignment
FM 9.2	N/A	ZD 9.2
FM 9.3	9.2 -> 9.3	ZD 9.3
FM 9.3.2	9.3 -> 9.3.2	ZD 9.3.2
FM 9.4	9.3 -> 9.4	ZD 9.4
FM 9.5	9.3 -> 9.5 9.3.2 -> 9.5 9.4 -> 9.5	ZD 9.5
FM 9.5.1	9.5 -> 9.5.1	ZD 9.5.1
FM 9.5.2	9.5.1 -> 9.5.2	ZD 9.5.2
FM 9.6	9.5 -> 9.6 9.5.1 -> 9.6	ZD 9.6
FM 9.7	9.6 -> 9.7	ZD 9.7 (or ZD9.5.1)
FM 9.8	9.7 -> 9.8	ZD 9.8
FM 9.8.1	9.8 -> 9.8.1	ZD 9.8.1 ZD 9.8.
FM 9.9	9.8 -> 9.9 9.8.1->9.9	ZD 9.9
FM 9.10	9.9 -> 9.10	ZD 9.10
FM 9.12	9.10 -> 9.12	ZD 9.12

Interoperability Information

6

The following client web browsers have been tested for compatibility with this release:

NOTE: Ruckus Wireless strongly recommends that you use the latest release of an officially-supported browser with FlexMaster.

- *Officially Supported Browsers:*
    - Internet Explorer 8.0 and later (refer to Caveats, Limitations, and Known Issues)
    - Firefox 3.0 and later
    - Safari 5.1.7 and later
    - Chrome 5.0 and later
- *Not Officially Supported Browsers:*
    - Dolphin, Opera Mini, Android Default, BlackBerry Default, and others.