

Appendices

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Appendix A – Shortcut keys

- `CTRL+ALT+END` Brings up the Windows Security dialog box.
- `ALT+PAGE UP` Switches between programs from left to right.
- `ALT+PAGE DOWN` Switches between programs from right to left.
- `ALT+INSERT` Cycles through the programs in the order they were started.
- `ALT+HOME` Displays the Start menu.
- `ALT+DELETE` displays the system menu.

Appendix B – Browser support

Browser	Minimum version	Comments
Mozilla Firefox	11.0	Audio redirection: 51
Google Chrome	16.0 (Desktop), 18.0 (Android)	Audio redirection: 49
Apple Safari (Desktop and iOS)	6.0	Audio redirection: 10 (recording is not supported)
Internet Explorer	10.0	Audio redirection: Flash player (recording is not supported)
Opera	12.0	Audio redirection: 43
Edge	14.0	Audio redirection: 14.0

Appendix C – EchoHandler and network check

There is an EchoHandler on the gateway which can be used to check network connectivity and latency. Please check the NetworkChecker tool in rdp.page.js. This can be used to check the network latency between browser and gateway.

Appendix D – configuration example for nginx

```
server {
    listen 80;
    location / {
        proxy_set_header Host $host;
        proxy_set_header X-Real-IP $remote_addr;
        proxy_set_header X-Forwarded-For $proxy_add_x_forwarded_for;
        proxy_pass http://192.168.8.2;
    }
    location ~ /LIST|/RDP|/VNC|/LOGIN|/GATEWAY|/PLAY|/CONF|/JOIN|/SSH|/TELNET|/ECHO {
        proxy_set_header X-Real-IP $remote_addr;
        proxy_set_header Host $host;
        proxy_set_header X-Forwarded-For $proxy_add_x_forwarded_for;
        proxy_http_version 1.1;
        proxy_set_header Upgrade $http_upgrade;
        proxy_set_header Connection "upgrade";
        proxy_pass http://192.168.8.2;
        proxy_buffering off;
        tcp_nodelay on;
    }
}
```

Appendix E – configuration example for Apache Proxy

```
<VirtualHost *:443>
  ServerName spark.gateway.com
  DocumentRoot C:/Apache24/htdocs/reverseproxy
  RequestHeader unset Accept-Encoding
  Header Set MCOE-Gateway "spark.gateway.v1"

  Header set Content-Security-Policy-Report-Only "default-src https://spark.gateway.com; \
  script-src https: 'unsafe-inline'; \
  style-src https: 'unsafe-inline'; \
  img-src data: https://spark.gateway.com; \
  connect-src wss: https://spark.gateway.com; \
  report-uri https://myserver.com/csp-report-master/report.php;"

  CustomLog "c:/apache24/logs/spark_access.log" common
  ErrorLog "c:/apache24/logs/spark_error.log"

  SSLEngine on
  SSLProxyEngine On
  SSLProtocol ALL -SSLv2 -SSLv3
  SSLHonorCipherOrder On
  SSLCipherSuite
  ECDH+AESGCM:DH+AESGCM:ECDH+AES256:DH+AES256:ECDH+AES128:DH+AES:ECDH+3DES:DH+3DES:
  RSA+AESGCM:RSA+AES:RSA+3DES:!aNULL:!MD5:!DSS

  SSLCACertificateFile "c:/sslcerts/startcom.crt"
  SSLCertificateFile "c:/sslcerts/spark.gateway.com.crt"
  SSLCertificateKeyFile "c:/sslcerts/private.key"

  ProxyRequests Off
  ProxyPreserveHost Off
  ProxyHTML5Enable On
  ProxyHTML5Extended On
```

```
ProxyHTMLCharsetOut UTF-8
SetOutputFilter INFLATE;proxy-html;DEFLATE

# For SparkView WebSocket
ProxyPass "/LIST" "wss://internal.spark.gateway/LIST"
ProxyPass "/RDP" "wss://internal.spark.gateway/RDP"
ProxyPass "/GATEWAY" "wss://internal.spark.gateway/GATEWAY"
ProxyPass "/CONF" "wss://internal.spark.gateway/CONF"
ProxyPass "/LOGIN" "wss://internal.spark.gateway/LOGIN"

ProxyPassReverse "/LIST" "wss://internal.spark.gateway/LIST"
ProxyPassReverse "/RDP" "wss://internal.spark.gateway/RDP"
ProxyPassReverse "/GATEWAY" "wss://internal.spark.gateway/GATEWAY"
ProxyPassReverse "/CONF" "wss://internal.spark.gateway/CONF"
ProxyPassReverse "/LOGIN" "wss://internal.spark.gateway/LOGIN"

ProxyPass / https://internal.spark.gateway/
ProxyPass / wss://internal.spark.gateway/

ProxyPassReverse / https://internal.spark.gateway/
ProxyPassReverse / wss://internal.spark.gateway/
</VirtualHost>
```

Must work with mod_proxy and mod_proxy_wstunnel.

Appendix F – configuration for Juniper, Cisco, Dell etc SSL VPN

It's very easy if the VPN supports WebSocket. You just need to create a web application resource profile (bookmark) or application offloading and specify the URL of the gateway.

Make sure you update SparkView to 4.8.6 or later which improved the compatibility of SSL VPN.

You can enable HTTP Basic Authentication in SparkView for VPN SSO integration (set authorization = Basic in gateway.conf).

SparkView also supports HTTP Post integration. Please specify your URL as `http://yourGateway/CONNECT`. Please also check `html\examplePost.html` for reference.

Appendix G – SMB path

SMB Path can also be used for recording, drive redirection etc., for example:

```
recdir = smb://domain;username:password@sparkcloud/ShareName/path
```

```
tmpdir = smb://domain;username:password@sparkcloud/ShareName/path
```

Variables can also be used in drive direction path (tmpdir):

```
tmpdir = smb://${domain};${user}:${pwd}@sparkcloud/ShareName/path
```

Appendix H – Ping

You can enable Ping on client side by setting `pingInterval` (seconds) parameter, or use `rdp.startPing(interval)`. The client will only send ping package when the session is idle.

This is helpful if there is idle timeout configuration in user's environment (routers, firewall, proxy etc). The client can also immediately notice a network disconnection.

Appendix I – TrustStore

When you RDP server or VNC server are using TLS encryption. You can allow user connect to trusted server only:

- Export the certificate from the server (Public key only). For RDP server, run “certlm.msc”, Click “Remote Desktop” -> Certificates. Right click on the certificate, “All Tasks -> Export”.
- Import the certificate to a trustStore:

```
keytool -import -file C:\cascerts\rdpserver.cer -alias rdpserver -keystore myTrustStore.jks
```
- Set trustStore location and trustStorePassword in gateway.conf
- Restart the gateway.
- “unable to find valid certification path to requested target” message will be displayed to end user (also in the gateway log).

Appendix J – Features

Feature list for the different versions of SparkView:

	Community	Professional	Enterprise
	<i>Explore SparkView</i>	<i>For SMEs and institutions</i>	<i>For highly scalable solutions</i>
# of concurrent connections	2	unlimited	unlimited
RDP audio redirection	✓	✓	✓
Clipboard redirection	✓	✓	✓
RDP multi monitor	✓	✓	✓
RDP printer redirection	✓	✓	✓
SSH/SFTP	✓	✓	✓
Wake on LAN (WoL)	✓	✓	✓
Network Level Authentication (NLA)	✓	✓	✓
Active Directory/LDAP/Radius		✓	✓
RDP RemoteApp		✓	✓
RDP microphone redirection		✓	✓
RDP camera redirection		✓	✓
RDP drive redirection		✓	✓
RDP scanner redirection		✓	✓
RDP smart card redirection		✓	✓
RDP USB redirection		✓	✓
HTTP Proxy		✓	✓
RemoteFX		✓	✓
Session Shadowing		✓	✓
Telnet		✓	✓
VNC		✓	✓
Two-factor authentication		✓	✓
Burst license			✓

	Community	Professional	Enterprise
RDP Hyper-V console			
Monitoring dashboard			
SAML/OAuth2			
Session Recording			
VMWare Console			
RDP Native Shadowing/Remote Assistant			
SMB2 File Proxy			
SNMP			
Syslog			

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