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Business Communication Manager

Interoperability with

Communication Server 1000 and Meridian 1 IP Trunk

Version 4.0

May 2005

Revision History

<u>Version</u>	<u>Date</u>	<u>Reason for Release</u>
1.0	Dec 2003	Introduction of BCM 3.5 and Communication Server 1000Rls 3.0
2.0	June 2004	Introduction of BCM 3.6
3.0	March 2005	Update to include Communication Server 1000 Rls 4.0
4.0	May 2005	Update to include BCM 3.7 and BCM50

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Business Communications Manager Interoperability with Communication Server 1000 and Meridian 1 with IP Trunk

Table 1 represents the interoperability between various software releases of the Business Communications Manager (BCM), the Communication Server 1000, and Meridian 1 IP Trunk (formerly known as ITG Trunk) products. Blank cells indicate an unsupported configuration. Table 2 provides a summary of the PEPs and BCM Patches that are applicable to interoperability between the products. Table 3 through Table 5 provide a list of specific features that are supported between the latest releases of the BCM (i.e. 3.6, 3.7, and BCM50) with the Communication Server 1000 Rls 4.0, Succession 3.0, and Meridian 1 IP Trunk 3.0x releases, respectively. Similarly, Table 6 through Table 8 identify the known issues that exist between the latest BCM releases and the Communication Server 1000 Rls 4.0, Succession 3.0 and IP Trunk 3.0x releases, respectively. Table 9 provides additional detail into codec configuration rules and diagnostic information.

Note: In this document, “CS1000 4.0” refers to Communication Server 1000 Release 4.0, while “Succession 3.0” refers to both Communication Server 1000 Release 3.0 and Succession 1000M Release 3.0.

Table 1: H.323 Interoperability by Software Release

	BCM3.0	BCM3.0.1	BCM3.5	BCM 3.6	SRG 1.0	BCM 3.7	BCM50
Meridian 1 IP Trunk 2.x.26	<i>Supported</i>	<i>Supported</i>					
Succession 1000 Rls 2	<i>Supported</i>	<i>Supported</i>	<i>Supported</i>				
Meridian 1 IP Trunk 3.0		<i>Supported</i>	<i>Supported</i>				
Meridian 1 or Succession 1000M w/ IP Trunk 3.01		<i>Supported</i>	<i>Supported</i>	<i>Supported</i>		<i>Supported</i>	<i>Supported</i>
Succession 3.0 (using Signaling Server 2.10.81))		<i>Supported</i>	<i>Supported</i>	<i>Supported</i>	<i>Supported</i>	<i>Supported</i>	<i>Supported</i>
Succession 3.0 (using Signaling Server 2.11.03)		<i>Supported</i>	<i>Supported</i>	<i>Supported</i>	<i>Supported</i>	<i>Supported</i>	<i>Supported</i>
Communication Server 1000 Rls 4.0			<i>Supported</i>	<i>Supported</i>	<i>Supported</i>	<i>Supported</i>	<i>Supported</i>

Table 2: Interoperability Patch Reference Table

	BCM 3.6	SRG 1.0	BCM 3.7	BCM50
Meridian 1 or Succession 1000M IP Trunk 3.01	T1, T2		T1, T2	T1, T2
Succession 3.0 (Signaling Server 2.10.81)	S1, S2, B1	S1, S2 S3, B1	S1, S2	S1, S2
Succession 3.0 (Signaling Server 2.11.03)	S4, B1,	S3, S4, B1,	S4	S4
Communication Server 1000 Rls 4.0	S4, B1, B2	S3, S4, B1, B2	S4	S4

Succession Patch References:

Reference	Patch ID	Status
S1	MPLR19288	Required for BCM interoperability.
S2	MPLR18243	Required for BCM interoperability
S3	MPLR18267	Required for SRG interoperability
S4	Refer to Nortel Networks Enterprise Solutions PEP Library (http://www.nortel.com/espl) for Core and Interop DepLists	

Meridian 1 with IP Trunk Patch References:

Reference	Patch Name	Status
T1	MPLR18316	Optional (Required to allow V.34 fax machines to revert to G3 operation for T.38) <i>Note: This has been fixed in IP Trunk upissue 3.01.52</i>
T2	MPLR17721	Required when MCDN not configured on BCM <i>Note: This has been fixed in IP Trunk upissue 3.01.09</i>

BCM Patch References:

Reference	Patch Name	Status
B1	BCM 3.6 Cumulative Patch 2.0	Released December, 2004 (NTAB3664 / N0014631 BCM 3.6 Cumulative Patch 2.0 CD)
B2	FEPS 37.130.0.33 patch to support H323 Overlap Signaling	Allows the CS1000 to be configured to use Overlap Signaling although BCM rejects CS1000 Overlap Signaling requests resulting in Enbloc Signaling being used.

Note: The Supported Functionality tables (following) assume that the patches identified in Table 2 have been applied as required to the respective platforms.

Table 3: Supported Functionality - BCM and Communication Server 1000 Release 4.0

Supported Functionality (with CS1000 4..0)	Description	BCM 3.6 and SRG 1.0	BCM 3.7 and BCM50
CS1000 4.0 Network Routing Server (NRS)	Registration: • Registers as an H.323 Endpoint	<i>Supported</i>	<i>Supported</i>
	Signaling method: • Gatekeeper Resolved	<i>Supported</i>	<i>Supported</i>
	Alternate Gatekeeper	<i>Supported (Programmable)</i>	<i>Supported (Programmable)</i>
Succession 4.0 IP Peer Gateway (Signaling Server)	H.225 Call Signaling (using Nortel Networks Interoperability format) H.245 Media Channel Signaling	<i>Supported</i>	<i>Supported</i>
H.323 Basic Call	Call connection with Calling Line ID	<i>Supported</i>	<i>Supported</i>
Dial Plan	CDP dial plan	<i>Supported</i>	<i>Supported</i>
	UDP dial plan	<i>Supported</i>	<i>Supported</i>
	• BCM can only be configured for either CDP or UDP, not both simultaneously.		
MCDN Networking	Applications:		
	The following are typical applications that can be supported using MCDN features: • Centralized Voicemail, • Central Attendant (Basic), • Centralized Trunking	<i>Supported</i>	<i>Supported</i>
	MCDN Features:		
	Private Name/Number	<i>Supported</i>	<i>Supported</i>
	Trunk Anti-Tromboning (TAT) * Refer to Table 6	<i>Supported*</i>	<i>Supported*</i>
	Trunk Route Optimization: • Before Answer (TRO-BA) • Call Modification (TRO-CM) * Refer to Table 6	<i>Supported* Not Supported*</i>	<i>Supported* Not Supported*</i>
	Network Call Redirection	<i>Supported</i>	<i>Supported</i>
	Message Waiting Indication (MWI)	<i>Supported</i>	<i>Supported</i>
	Message Indicator Key (MIK)	<i>Supported</i>	<i>Supported</i>
	Message Cancel Key (MCK)	<i>Supported</i>	<i>Supported</i>
	Station Camp-on	<i>Supported</i>	<i>Supported</i>
	Barge-In	<i>Supported</i>	<i>Supported</i>
	ISDN Call Connection Limit (ICCL)	<i>Supported</i>	<i>Supported</i>
T.38 Fax	Fax detection during H.323 call; renegotiation to T.38 * Refer to Table 6	<i>Supported*</i>	<i>Supported*</i>
Overlap Signaling	Ability for the CS1000 to be configured to use Overlap Signaling on call setup.	<i>Supported (Reference B2 in Table 2)</i>	<i>Supported</i>
	Notes: • The referenced patch (B2) for BCM 3.6 and SRG 1.0 allows the BCM to interoperate with the CS1000 when the CS1000 has been configured to use Overlap Signaling. However, the BCM rejects the Overlap Signaling call setup attempts and requires		

BCM Interoperability with Communication Server 1000 and Meridian 1 with IP Trunk

Supported Functionality (with CS1000 4.0)	Description	BCM 3.6 and SRG 1.0	BCM 3.7 and BCM50
Overlap Signaling (cont'd)	Enbloc Signaling to be used. The same functionality is provided in BCM 3.7 and BCM50.		
H.245 Tunneling	H.245 messages use existing H.225 connection (instead of new TCP connection)	<i>Supported</i>	<i>Supported</i>
	Notes: <ul style="list-style-type: none"> • By default, CS1000 4.0 will attempt to use H.245 tunneling. If the BCM is configured for its' default setting (H.245 Tunneling: Off), then it negotiates with the CS1000 to turn H.245 tunneling off. • The BCM data services (NAT and Firewall) do not support H.323 when H.245 Tunneling is configured. 		

Table 4: Supported Functionality between BCM and Succession 3.0
(Signaling Servers 2.10.81 and 2.11.03)

Supported Functionality (with Succession 3.0)	Description	BCM 3.6 and SRG 1.0	BCM 3.7 and BCM50
Succession 3.0 Gatekeeper (Signaling Server)	Registration: • Registers as an H.323 Endpoint	<i>Supported</i>	<i>Supported</i>
	Signaling method: • Gatekeeper Resolved	<i>Supported</i>	<i>Supported</i>
	Alternate Gatekeeper	<i>Supported</i> (Programmable)	<i>Supported</i> (Programmable)
Succession 3.0 IP Peer Gateway (Signaling Server)	H.225 Call Signaling (using Nortel Networks Interoperability format) H.245 Media Channel Signaling	<i>Supported</i>	<i>Supported</i>
H.323 Basic Call	Call connection with Calling Line ID	<i>Supported</i>	<i>Supported</i>
Dial Plan	CDP dial plan	<i>Supported</i>	<i>Supported</i>
	UDP dial plan	<i>Supported</i>	<i>Supported</i>
	• BCM can only be configured for either CDP or UDP, not both simultaneously.		
MCDN Networking	Applications:		
	The following are typical applications that can be supported using MCDN features: • Centralized Voicemail, • Central Attendant (Basic), • Centralized Trunking	<i>Supported</i>	<i>Supported</i>
	MCDN Features:		
	Private Name/Number	<i>Supported</i>	<i>Supported</i>
	Trunk Anti-Tromboning (TAT) * Refer to Table 7	<i>Supported*</i>	<i>Supported*</i>
	Trunk Route Optimization: • Before Answer (TRO-BA) • Call Modification (TRO-CM) * Refer to Table 7	<i>Supported*</i> <i>Not Supported*</i>	<i>Supported*</i> <i>Not Supported*</i>
	Network Call Redirection	<i>Supported</i>	<i>Supported</i>
	Message Waiting Indication (MWI)	<i>Supported</i>	<i>Supported</i>
	Message Indicator Key (MIK)	<i>Supported</i>	<i>Supported</i>
	Message Cancel Key (MCK)	<i>Supported</i>	<i>Supported</i>
	Station Camp-on	<i>Supported</i>	<i>Supported</i>
	Barge-In	<i>Supported</i>	<i>Supported</i>
	ISDN Call Connection Limit (ICCL)	<i>Supported</i>	<i>Supported</i>
T.38 Fax	Fax detection during H.323 call and renegotiation to T.38 * Refer to Table 7	<i>Supported*</i>	<i>Supported*</i>

Table 5: Supported Functionality between BCM and Meridian 1 with IP Trunk 3.0x

Supported Functionality (with IP Trunk 3.0x)	Description	BCM 3.6 (Not applicable to SRG 1.0)	BCM 3.7 and BCM50
Network Routing Server (NRS) <i>Note that NRS can refer to the NRS on CS1000 Rls 4.0, or the Succession 3.0 or 2.0 Gatekeeper (Signaling Server)</i>	Registration: • Stand-alone or Co-resident GK	<i>Supported</i>	<i>Supported</i>
	Signaling method (to IP Trunk 3.01 nodes registered with the NRS) • Gatekeeper Resolved	<i>Supported</i>	<i>Supported</i>
	Alternate NRS (Stand-alone or Co-resident): • IP Address received during the registration process	<i>Supported</i> (Programmable)	<i>Supported</i> (Programmable)
IP Trunk 3.01 Node Registered with NRS as H323 Endpoint	H.225 Call Signaling using: • Direct routed to standard UDP port • NRS to resolve destination telephone number • Nortel Networks Interoperability format capability, including GK-resolved MCDN Non-Call-Associated Signaling (NCAS).	<i>Supported</i>	<i>Supported</i>
	Notes: • BCM supports the Redirect FACILITY message that IP Trunk 3.01 Node Leader uses to redirect all incoming calls to a reserved trunk resource in the node. • BCM supports codec negotiation with IP Trunk 3.01 using Fast Start signaling elements and H.245 Media Path signaling. • BCM side (Node B) initiates H.245 Media Channel Signaling for direct media path between IP Trunk 3.01 nodes (A and C) that have a tandem IP Trunk call signaling connection via the BCM (Node B). • IP Trunk 3.01 side (Node B) never initiates H.245 Media Channel Signaling for direct media path between BCM nodes (A and C) that have a tandem IP Trunk call signaling connection via IP Trunk 3.01 (Node B).		
IP Trunk 3.01 Node Not Registered with NRS	H.225 Call Signaling using: • Direct routed to standard TCP port • Local BCM and IP Trunk dialing plan to resolve the destination telephone number, • ITG ISDN IP Trunk format. <i>MCDN NCAS using:</i> • Direct routed to a proprietary TCP port • Local BCM and IP Trunk dialing plan to resolve the destination telephone number.	<i>Supported</i>	<i>Supported</i>
	Notes: • The BCM should be configured to use “CSE” as the Gateway Protocol in the BCM Remote Gateway Table (for BCM 3.5, reference Error! Reference source not found. in Table 2). The IPT should be configured to use “CSE” mode in the dial plan table. • BCM supports the Redirect FACILITY message that IP Trunk 3.01 Node Leader uses to redirect all incoming calls to a reserved trunk resource in the node. • BCM supports codec negotiation with IP Trunk 3.01 using Fast Start signaling elements and H.245 Media Path signaling. • BCM side (Node B) initiates H.245 Media Channel Signaling for direct media path		

Supported Functionality (with IP Trunk 3.0x)	Description	BCM 3.6 (Not applicable to SRG 1.0)	BCM 3.7 and BCM50
IP Trunk 3.01 Node Not Registered with NRS (cont'd)	<p>between IP Trunk 3.01 nodes (A and C) that have a tandem IP Trunk call signaling connection via the BCM (Node B).</p> <ul style="list-style-type: none"> • IP Trunk 3.01 side (Node B) never initiates H.245 Media Channel Signaling for direct media path between BCM nodes (A and C) that have a tandem IP Trunk call signaling connection via IP Trunk 3.01 (Node B). • IPT 3.0x systems require a PEP (reference T2 in Table 2) when networked with BCMs that do not have MCDN functionality activated. 		
H.323 Basic Call	Call connection w/ Calling Line ID	<i>Supported</i>	<i>Supported</i>
Dial Plan	CDP dial plan	<i>Supported</i>	<i>Supported</i>
	UDP dial plan	<i>Supported</i>	<i>Supported</i>
	• BCM can only be configured for either CDP or UDP, not both simultaneously.		
MCDN Networking	Applications:		
	<p>The following are typical applications that can be supported using MCDN features:</p> <ul style="list-style-type: none"> • Centralized Voicemail, • Central Attendant (Basic), • Centralized Trunking 	<i>Supported</i>	<i>Supported</i>
	Features supported:		
	Private Name/Number	<i>Supported</i>	<i>Supported</i>
	Trunk Anti-Tromboning (TAT) * Refer to Table 8	<i>Supported*</i>	<i>Supported*</i>
	Trunk Route Optimization: • Before Answer (TRO-BA) • Call Modification (TRO-CM) * Refer to Table 8	<i>Supported*</i> <i>Not Supported*</i>	<i>Supported*</i> <i>Not Supported*</i>
	Network Call Redirection	<i>Supported</i>	<i>Supported</i>
	Message Waiting Indication (MWI) (Using call server RCAP of MWI)	<i>Supported</i>	<i>Supported</i>
MCDN Networking (cont'd)	Message Indicator Key (MIK)	<i>Supported</i>	<i>Supported</i>
	Message Cancel Key (MCK)	<i>Supported</i>	<i>Supported</i>
	Station Camp-on	<i>Supported</i>	<i>Supported</i>
	Barge-In	<i>Supported</i>	<i>Supported</i>
	ISDN Call Connection Limit (ICCL)	<i>Supported</i>	<i>Supported</i>
T.38 Fax	Fax detection during H.323 call and renegotiation to T.38	<i>Supported</i>	<i>Supported</i>

Table 6: Known Interop Issues Between BCM and CS1000 Release 4.0

Known Issues with CS1000 4.0	Description	BCM 3.6 and SRG 1.0	BCM 3.7 and BCM50
Support for Multiple Codecs, Payload Sizes	Advertised Codec Payload Configuration	<i>Supported</i>	<i>Supported</i>
	Notes: <ul style="list-style-type: none"> • Prior to BCM 3.6, the BCM could only support a 30 ms codec size, and the Succession 1000 was also required to be configured with 30 ms setting. • Beginning with BCM 3.6, the BCM can advertise multiple payload sizes in fast start calls. (reference B1 in Table 2). • However, as per the previous release(s) of BCM, CS1000, and Meridian 1 with IP Trunk, for proper BCM to Succession 1000 interoperability, the codec settings must be coordinated for all H.323 and Unistim endpoints in the network, particularly if H.323 tandem call scenarios are anticipated (such as blind transfers). • Refer to Table 9 for details on codec configuration rules and diagnostic information. 		
T.38 Fax over IP	T. 38 Fax detection & renegotiation	<i>Supported</i>	<i>Supported</i>
	Notes: <ul style="list-style-type: none"> • Note that BCM and M1 with IP Trunk 3.01 allow the use of V.34 based faxed machines, (although they do reject V.34 negotiation attempts) while CS1000 does not. 		
MCDN Networking:	TRO - BA (Before Answer): (Pre -Succession 3.0 feature)	<i>Supported</i>	<i>Supported</i>
	TRO - CM (Call modification) (New Succession 3.0 feature)	<i>Partially Supported</i>	<i>Partially Supported</i>
	Notes: <ul style="list-style-type: none"> • TRO-CM works as follows in a mixed Succession 4.0/3.0 and BCM VoIP environment: <ul style="list-style-type: none"> ○ When BCM is a transferring party node (B), not an originating or terminating node (A or C), TRO-CM works and both the Media and Signaling are direct (A to C). ○ If BCM is originating or terminating node (A or C), TRO-CM does not work; the Media is direct (A to C), but a tandem Signaling path is maintained (A to B to C). ○ TRO-CM does not work in Succession 4.0/3.0 for Blind Transfer calls to a station that is Call Forward No-Answer. The transferring user must remain on the transferred call until it is answered to ensure that TRO-CM will optimize the call when the Call Transfer is completed. ○ TRO – BA and TRO – CM depend on implementation of a perfectly coordinated (CDP) and/or uniform (UDP) dialing plan across all nodes in the private IP Telephony network. ○ All Succession 4.0/3.0 and IP Trunk 3.01 routes must be configured to enable automatic insertion of UDP access codes (INAC = YES) in order for UDP Location Codes to work with TRO. All nodes must send TRO-BA Offer and TRO-CM Invoke messages with the correct NPI/TON values for the destination telephone number. ○ In Succession 4.0/3.0 and Meridian 1 with IP Trunk, all network translations where TRO is required must point to a Route List Block (RLB) with an ENTR 0 that contains an IP Peer Virtual Trunk or IP Trunk 3.01 route with idle trunk members 		

Known Issues with CS1000 4.0	Description	BCM 3.6 and SRG 1.0	BCM 3.7 and BCM50
MCDN Networking: (cont'd)	Trunk Anti-Tromboning (TAT) (Pre -Succession 3.0 implementation)	<i>Supported</i>	<i>Supported</i>
	Trunk Anti-Tromboning (TAT) (Succession 3.0 enhancement)	<i>Not directly Supported (See notes)</i>	<i><u>BCM 3.7:</u> Supported <u>BCM50:</u> Not directly Supported</i>
	<p>Notes:</p> <ul style="list-style-type: none"> • BCM50, BCM 3.6, and SRG 1.0 do not support the TAT and NAS enhancement of the Nortel Networks H.323 Interoperability format that was introduced in Succession 3.0 and IP Trunk 3.01 to accurately validate the trombone condition by comparing the unique gateway id (MAC address or IP address) in the extended TAT information element in the non-standard data of the H.225 Setup, Alerting, and Facility messages. The following text describes what is necessary for TAT to function between these versions of BCM and the Succession 1000 and/or IP Trunk 3.01 call servers. Note that BCM 3.7 has included support for the Succession 3.0 TAT enhancement. • In the absence of the extended TAT IE in H.225 messages received from BCM, Succession 4.0/3.0 and IP Trunk 3.01 D-Channel/H.323 Gateway falls back to comparing the Called and Calling numbers on the outgoing and incoming side of the tromboned trunk connection. • If the Called and Calling numbers on the two sides of the call don't match, then the TAT Invoke message from BCM is discarded regardless of matching Call Reference. This prevents wrong connections that can occur due to false TAT optimization when Call References assigned by different Gateways across the network randomly matched for unrelated calls. • Incoming calls to BCM that are answered and transferred within the BCM before being routed in a trombone connection back to Succession 4.0/3.0 or IP Trunk 3.01 will not be optimized by TAT because the Called and Calling numbers do not match on the two sides of the tromboned call. • In a private IP telephony voice network with mixed CDP Steering Codes and UDP Location Codes, incoming calls to BCM that are forwarded using a different type of number in a trombone connection back to Succession 4.0/3.0 or IP Trunk 3.01 will not be optimized by TAT because the Called and Calling numbers do not match on the two sides of the tromboned call. • BCM sets up a direct media path between the two ends of the tromboned connection, but this can still result in multiple transcoding and voice quality degradation due to media path loopback via Succession 4.0/3.0 Voice Gateway Media Cards or IP Trunks. 		
	Interop with ESN5 Signaling	<i>Not Supported</i>	<i>Not Supported</i>
	<p>Notes:</p> <ul style="list-style-type: none"> • Succession 4.0/3.0 and Meridian 1 with IP Trunk use ESN5 signaling with MCDN to signal the Network Class of Service (NCOS) of the originating terminal among Succession 4.0/3.0 nodes in order to control access to PSTN trunk facilities at a remote Call Server and Media Gateway. • The Nortel Networks Interoperability format introduced in Succession 2.0 supports an extended ESN5 Information Element in the Non-standard data of the H.225 Call Setup message, but BCM does not send optional ESN5 Information Element in the H.225 Call Setup message. • If ESN5 signaling is enabled on a Succession 4.0/3.0 IP Peer virtual trunk route, you must configure an appropriate default NCOS value for incoming calls in Element 		

Known Issues with CS1000 4.0	Description	BCM 3.6 and SRG 1.0	BCM 3.7 and BCM50
	<p>Manager from BCM to a Virtual Trunk route that has ESN5 signaling enabled.</p> <ul style="list-style-type: none"> • Succession 4.0/3.0 IP Peer H.323 Gateways insert a default NCOS value in the ESN5 prefix for calls received from BCM without the extended ESN5 information element. 		
	VPNI IE for Bandwidth Management Zone signaling	<i>BCM: Not Supported SRG: Partially Supported</i>	<i>Not Supported</i>
	<p>Notes:</p> <ul style="list-style-type: none"> • Succession 4.0/3.0/2.0 provides an optional MCDN Information Element that signals the Virtual Private Network Identifier and the Bandwidth Management Zone over IP Peer Virtual Trunk routes to allow Call Servers to coordinate codec selection appropriately for different Internet Telephones depending on network location. This VPNI IE is not generated or used on BCM systems. In SRG 1.0, this VPNI IE is generated so that the Succession 1000 can determine which zone calls are originated or destined for bandwidth management. However, SRG 1.0 does not process any incoming VPNI IE and does not provide bandwidth management capabilities. 		
Network Redirection Server Functionality (NRS)	Failover to Alternate	<i>Supported</i>	<i>Supported</i>
	Maintenance switchover to Alternate	<i>Not Supported</i>	<i>Not Supported</i>
	Graceful recovery to Primary	<i>Supported</i>	<i>Supported</i>
	<p>Notes:</p> <ul style="list-style-type: none"> • Prior to BCM 3.6, the failover time BCM systems was much longer than the Succession 1000 and Meridian IPT failover period. More flexibility in how quickly the BCM identifies a failure of the primary NRS and switches to the Alternate NRS was introduced in BCM 3.6. Beginning in BCM 3.6 and SRG 1.0, BCM uses the Registration Time-To-Live (TTL) value in the BCM Gatekeeper settings to establish the point at which re-registration is attempted. If no response is received from the primary NRS, the BCM will send up to two additional registration requests, each 12 seconds apart, at which point the alternate NRS registration process is initiated, with a total elapsed time 24 seconds longer than the TTL setting. • The Succession NRS also supports a mechanism to instruct gateways to switch to the Alternate NRS for maintenance purposes. Succession 4.0/3.0 gateways and IP Trunk 3.01 nodes will re-register to the Alternate GK almost immediately, while the BCM will treat the condition as a failure, and use the Alternate NRS failover procedures identified above. • Prior to BCM 3.5, the correct setting for the BCM Route DN type for all 10+ digit calls on VoIP trunks was "Public". Beginning in BCM 3.5 (including systems that were upgraded to BCM 3.5 or higher), the Route DN Type for 10+ digit calls on VoIP trunks should be set to "National". This also requires the Gatekeeper dial plan/numbering plan to be configured as "publicNumber.nationalNumber" (not "publicNumber.internationalNumber"). BCM does not currently send the appropriate values for the Gatekeeper to be configured for an international dial plan. 		

Table 7: Known Interop Issues Between BCM and Succession 3.0
(Signaling Servers 2.10.81 and 2.11.03)

Known Issues with Succession 3.0	Description	BCM 3.6 and SRG 1.0	BCM 3.7 and BCM50
Support for Multiple Codecs, Payload Sizes	Advertised Codec Payload Configuration	<i>Supported</i>	<i>Supported</i>
	Notes: <ul style="list-style-type: none"> • Prior to BCM 3.6, the BCM could only support a 30 ms codec size, and the Succession 1000 was also required to be configured with 30 ms setting. • Beginning with BCM 3.6, the BCM can advertise multiple payload sizes in fast start calls. (reference B1 in Table 2). • However, as per the previous release(s) of BCM, CS1000, and Meridian 1 with IP Trunk, for proper BCM to Succession 1000 interoperability, the codec settings must be coordinated for all H.323 and Unistim endpoints in the network, particularly if H.323 tandem call scenarios are anticipated (such as blind transfers). • Refer to Table 9 for details on codec configuration rules and diagnostic information. 		
T.38 Fax over IP	T. 38 Fax detection & renegotiation	<i>Supported</i>	<i>Supported</i>
	Notes: <ul style="list-style-type: none"> • Note that BCM and M1 with IP Trunk 3.01 allow the use of V.34 based faxed machines, (although they do reject V.34 negotiation attempts) while Communication Server 1000 does not. 		
MCDN Networking:	TRO - BA (Before Answer): (Pre -Succession 3.0 feature)	<i>Supported</i>	<i>Supported</i>
	TRO - CM (Call modification) (New Succession 3.0 feature)	<i>Partially Supported</i>	<i>Partially Supported</i>
	Notes: <ul style="list-style-type: none"> • TRO-CM works as follows in a mixed Succession 3.0 and BCM VoIP environment: <ul style="list-style-type: none"> ○ When BCM is a transferring party node (B), not an originating or terminating node (A or C), TRO-CM works and both the Media and Signaling are direct (A to C). ○ If BCM is originating or terminating node (A or C), TRO-CM does not work; the Media is direct (A to C), but a tandem Signaling path is maintained (A to B to C). ○ TRO-CM does not work in Succession 3.0 for Blind Transfer calls to a station that is Call Forward No-Answer. The transferring user must remain on the transferred call until it is answered to ensure that TRO-CM will optimize the call when the Call Transfer is completed. ○ TRO – BA and TRO – CM depend on implementation of a perfectly coordinated (CDP) and/or uniform (UDP) dialing plan across all nodes in the private IP Telephony network. ○ All Succession 3.0 and IP Trunk 3.01 routes must be configured to enable automatic insertion of UDP access codes (INAC = YES) in order for UDP Location Codes to work with TRO. All nodes must send TRO-BA Offer and TRO-CM Invoke messages with the correct NPI/TON values for the destination telephone number. ○ In Succession 3.0 and Meridian 1 with IP Trunk all network translations where TRO is required must point to a Route List Block (RLB) with an ENTR 0 that contains an IP Peer Virtual Trunk or IP Trunk 3.01 route with idle trunk members 		

Known Issues with Succession 3.0	Description	BCM 3.6 and SRG 1.0	BCM 3.7 and BCM50
MCDN Networking: (cont'd)	Trunk Anti-Tromboning (TAT) (Pre -Succession 3.0 implementation)	<i>Supported</i>	<i>Supported</i>
	Trunk Anti-Tromboning (TAT) (Succession 3.0 enhancement)	<i>Not directly Supported (See notes)</i>	<i><u>BCM 3.7:</u> Supported <u>BCM50:</u> Not directly Supported</i>
	<p>Notes:</p> <ul style="list-style-type: none"> • BCM50, BCM 3.6, and SRG 1.0 do not support the TAT and NAS enhancement of the Nortel Networks H.323 Interoperability format that was introduced in Succession 3.0 and IP Trunk 3.01 to accurately validate the trombone condition by comparing the unique gateway id (MAC address or IP address) in the extended TAT information element in the non-standard data of the H.225 Setup, Alerting, and Facility messages. The following text describes what is necessary for TAT to function between these versions of BCM and the Succession 1000 and/or IP Trunk 3.01 call servers. Note that BCM 3.7 has included support for the Succession 3.0 TAT enhancement. • In the absence of the extended TAT IE in H.225 messages received from BCM, Succession 3.0 and IP Trunk 3.01 D-Channel/H.323 Gateway falls back to comparing the Called and Calling numbers on the outgoing and incoming side of the tromboned trunk connection. • If the Called and Calling numbers on the two sides of the call don't match, then the TAT Invoke message from BCM is discarded regardless of matching Call Reference. This prevents wrong connections that can occur due to false TAT optimization when Call References assigned by different Gateways across the network randomly matched for unrelated calls. • Incoming calls to BCM that are answered and transferred within the BCM before being routed in a trombone connection back to Succession 3.0 or IP Trunk 3.01 will not be optimized by TAT because the Called and Calling numbers do not match on the two sides of the tromboned call. • In a private IP telephony voice network with mixed CDP Steering Codes and UDP Location Codes, incoming calls to BCM that are forwarded using a different type of number in a trombone connection back to Succession 3.0 or IP Trunk 3.01 will not be optimized by TAT because the Called and Calling numbers do not match on the two sides of the tromboned call. • BCM sets up a direct media path between the two ends of the tromboned connection, but this can still result in multiple transcoding and voice quality degradation due to media path loopback via Succession 3.0 Voice Gateway Media Cards or IP Trunks. 		
Interop with ESN5 Signaling		<i>Not Supported</i>	<i>Not Supported</i>
<p>Notes:</p> <ul style="list-style-type: none"> • Succession 3.0 and Meridian 1 with IP Trunk use ESN5 signaling with MCDN to signal the Network Class of Service (NCOS) of the originating terminal among Succession 3.0 nodes in order to control access to PSTN trunk facilities at a remote Call Server and Media Gateway. • The Nortel Networks Interoperability format introduced in Succession 2.0 supports an extended ESN5 Information Element in the Non-standard data of the H.225 Call Setup message, but BCM does not send optional ESN5 Information Element in the H.225 Call Setup message. • If ESN5 signaling is enabled on a Succession 3.0 IP Peer virtual trunk route, you must configure an appropriate default NCOS value for incoming calls in Element Manager from BCM to a Virtual Trunk route that has ESN5 signaling enabled. 			

Known Issues with Succession 3.0	Description	BCM 3.6 and SRG 1.0	BCM 3.7 and BCM50
	Succession 3.0 IP Peer H.323 Gateways insert a default NCOS value in the ESN5 prefix for calls received from BCM without the extended ESN5 information element.		
	VPNI IE for Bandwidth Management Zone signaling	<i>BCM: Not Supported SRG: Partially Supported</i>	<i>Not Supported</i>
	Notes: <ul style="list-style-type: none"> Succession 4.0/3.0/2.0 provides an optional MCDN Information Element that signals the Virtual Private Network Identifier and the Bandwidth Management Zone over IP Peer Virtual Trunk routes to allow Call Servers to coordinate codec selection appropriately for different Internet Telephones depending on network location. This VPNI IE is not generated or used on BCM systems. In SRG 1.0, this VPNI IE is generated so that the Succession 1000 can determine which zone calls are originated or destined for bandwidth management. However, SRG 1.0 does not process any incoming VPNI IE and does not provide bandwidth management capabilities. 		
Gatekeeper Functionality	Failover to Alternate	<i>Supported</i>	<i>Supported</i>
	Maintenance switchover to Alternate	<i>Not Supported</i>	<i>Not Supported</i>
	Graceful recovery to Primary	<i>Supported</i>	<i>Supported</i>
	Notes: <ul style="list-style-type: none"> Prior to BCM 3.6, the failover time for BCM systems was much longer than the Succession 1000 and Meridian IPT failover period. More flexibility in how quickly the BCM identifies a failure of the primary NRS and switches to the Alternate NRS was introduced in BCM 3.6. Beginning in BCM 3.6 and SRG 1.0, BCM uses the Registration Time-To-Live (TTL) value in the BCM Gatekeeper settings to establish the point at which re-registration is attempted. If no response is received from the primary Gatekeeper, the BCM will send up to two additional registration requests, each 12 seconds apart, at which point the alternate gatekeeper registration process is initiated, with a total elapsed time 24 seconds longer than the TTL setting. The Succession Gatekeeper also supports a mechanism to instruct gateways to switch to the Alternate Gatekeeper for maintenance purposes. Succession 3.0 gateways and IP Trunk 3.01 nodes will re-register to the Alternate GK almost immediately, while the BCM will treat the condition as a failure, and use the Alternate Gatekeeper failover procedures identified above. Prior to BCM 3.5, the correct setting for the BCM Route DN type for all 10+ digit calls on VoIP trunks was "Public". Beginning in BCM 3.5 (including systems that were upgraded to BCM 3.5 or higher), the Route DN Type for 10+ digit calls on VoIP trunks should be set to "National". This also requires the Gatekeeper dial plan/numbering plan to be configured as "publicNumber.nationalNumber" (not "publicNumber.internationalNumber"). BCM does not currently send the appropriate values for the Gatekeeper to be configured for an international dial plan. 		

Table 8: Known Interop Issues between BCM and Meridian 1 with IP Trunk 3.0x

Known Issues with Meridian 1 with IP Trunk 3.0x	Description	BCM 3.6 (Not applicable to SRG 1.0)	BCM 3.7 and BCM50
Support for Multiple Codecs, Payload Sizes	Advertised Codec Payload Configuration	<i>Supported</i>	<i>Supported</i>
	Notes: <ul style="list-style-type: none"> • Prior to BCM 3.6, the BCM could only support a 30 ms codec size, and the Succession 1000 was also required to be configured with 30 ms setting. • Beginning with BCM 3.6, the BCM can advertise multiple payload sizes in fast start calls. (reference B1 in Table 2). • However, as per the previous release(s) of BCM, CS1000, and Meridian 1 with IP Trunk, for proper BCM to Succession 1000 interoperability, the codec settings must be coordinated for all H.323 and Unistim endpoints in the network, particularly if H.323 tandem call scenarios are anticipated (such as blind transfers). • Refer to Table 9 for details on codec configuration rules and diagnostic information. 		
T.38 Fax over IP	T. 38 Fax detection & renegotiation	<i>Supported</i>	<i>Supported</i>
	Notes: <ul style="list-style-type: none"> • Note that BCM and M1 with IP Trunk 3.01 allow the use of V.34 based faxed machines, (although they do reject V.34 negotiation attempts) while Communication Server 1000 does not. 		
MCDN Networking	TRO - BA (Before Answer): (Pre -Succession 3.0 feature)	<i>Supported</i>	<i>Supported</i>
	TRO - CM (Call modification) (New Succession 3.0 feature)	<i>Partially Supported</i>	<i>Partially Supported</i>
	Notes: <ul style="list-style-type: none"> • TRO-CM feature works as follows in a mixed Meridian 1 with IP Trunk 3.0x and BCM VoIP environment: • When BCM is a transferring party node (B), not an originating or terminating node (A or C), both the Media and Signaling are direct (A to C). • When BCM is an originating or terminating node (A or C), the Media and the Signaling path is maintained between the three sites. 		
	Trunk Anti-Tromboning (TAT) (Pre -Succession 3.0 implementation)	<i>Supported</i>	<i>Supported</i>
	Trunk Anti-Tromboning (TAT) (Succession 3.0 enhancement)	<i>Not directly Supported (See notes)</i>	<u>BCM 3.7:</u> <i>Supported</i> <u>BCM50:</u> <i>Not directly Supported</i>
	Notes: <ul style="list-style-type: none"> • BCM50, BCM 3.6, and SRG 1.0 do not support the TAT and NAS enhancement of the Nortel Networks H.323 Interoperability format that was introduced in Succession 3.0 and IP Trunk 3.01 to accurately validate the trombone condition by comparing the unique gateway id (MAC address or IP address) in the extended TAT information element in the non-standard data of the H.225 Setup, Alerting, and Facility messages. The following text describes what is necessary for TAT to function between these versions of BCM and the Succession 1000 and/or IP Trunk 3.01 call servers. Note that BCM 3.7 has included support for the Succession 3.0 TAT enhancement. • In the absence of the extended TAT IE in H.225 messages received from BCM, Succession 3.0 and IP Trunk 3.01 D-Channel/H.323 Gateway falls back to comparing 		

Known Issues with Meridian 1 with IP Trunk 3.0x	Description	BCM 3.6 (Not applicable to SRG 1.0)	BCM 3.7 and BCM50
	<p>the Called and Calling numbers on the outgoing and incoming side of the tromboned trunk connection.</p> <ul style="list-style-type: none"> • If the Called and Calling numbers on the two sides of the call don't match, then the TAT Invoke message from BCM is discarded regardless of matching Call Reference. This prevents wrong connections that can occur due to false TAT optimization when Call References assigned by different Gateways across the network randomly matched for unrelated calls. • Incoming calls to BCM that are answered and transferred within the BCM before being routed in a trombone connection back to Succession 3.0 or IP Trunk 3.01 will not be optimized by TAT because the Called and Calling numbers do not match on the two sides of the tromboned call. • In a private IP telephony voice network with mixed CDP Steering Codes and UDP Location Codes, incoming calls to BCM that are forwarded using a different type of number in a trombone connection back to Succession 3.0 or IP Trunk 3.01 will not be optimized by TAT because the Called and Calling numbers do not match on the two sides of the tromboned call. • BCM sets up a direct media path between the two ends of the tromboned connection, but this can still result in multiple transcoding and voice quality degradation due to media path loopback via Succession 3.0 Voice Gateway Media Cards or IP Trunks. 		
	Interop with ESN5 Signaling	<i>Not Supported</i>	<i>Not Supported</i>
	<p>Notes:</p> <ul style="list-style-type: none"> • Succession 3.0 and Meridian 1 with IP Trunk use ESN5 signaling with MCDN to signal the Network Class of Service (NCOS) of the originating terminal among Succession 3.0 nodes in order to control access to PSTN trunk facilities at a remote Call Server and Media Gateway. • If BCM sends H.225 Call Setup with ITG ISDN IP Trunk format, IP Trunk 3.0x does not recognize BCM as non-ESN5-signaling originating endpoint. • The IP Trunk 3.0x must be configured with a Gatekeeper-resolved Network Numbering. This can be provided by either by a co-resident or stand-alone NRS running Succession1000 Release 2, or Succession1000 Release 3. The standalone NRS is supported from BCM 3.0.1 or later releases. • If ESN5 signaling is enabled on a IPT Trunk route or upgraded Succession 1000M, you must configure an appropriate default NCOS value on the IP Trunk node for incoming calls from BCM to a Virtual Trunk route that has ESN5 signaling enabled. 		

Table 9: Succession and Meridian 1 with IP Trunk Codec Configuration Rules

Succession 3.0 Element Manager IP Telephony Node VGW Profile:	
Payload	<p>Prior to BCM 3.6, the BCM used fixed payload sizes, so Succession 1000 settings were impacted as follows:</p> <ul style="list-style-type: none"> • G.711 payload size defaults to 20 ms and must be changed to 30 ms. • G.729 payload size defaults to 20 ms and must be changed to 30 ms. • G.723.1 payload size is fixed at 30 ms. <p>Beginning with BCM 3.6, the BCM payload size is configurable, so the above restrictions no longer apply.</p> <ul style="list-style-type: none"> • For each BCM/SRG and CS 1000 node in the network the codec list including payload size must be identical, and the BCM/SRG should be provisioned to advertise a list of CODECS (i.e. NOT a single CODEC with the biggest payload). • BCM50 does not support G.723.1 codecs on calls terminating or originating on TDM sets or trunks on the BCM50.
Silence Suppression Or Voice Activity Detection (VAD)	<ul style="list-style-type: none"> • G.711 Silence suppression or Voice Activity Detection (VAD) is disabled and cannot be enabled. • G.729A setting on the Communication Server 1000 is equivalent to “G.729 Silence suppression disabled” setting on the BCM (i.e. VAD is disabled). G.729AB setting on the Communication Server 1000 is equivalent to “G.729 Silence suppression enabled” setting on the BCM (i.e. VAD is enabled). Both devices must be configured with equivalent settings. • G.723.1 Silence suppression or Voice Activity Detection (VAD) is disabled and cannot be enabled.
IP Trunk 3.0x OTM 2.1 ITG ISDN IP Trunk Node Properties DSP Profile:	
Payload	<p>Prior to BCM 3.6, the BCM used fixed payload sizes, so IP Trunk 3.0x settings were impacted as follows:</p> <ul style="list-style-type: none"> • G.711 payload size defaults to 10 ms and must be changed to 30 ms. • G.729A payload size defaults to 30 ms. Verify that it remains set to 30 ms. • G.723.1 payload size is fixed at 30 ms. • G.729A and G.723.1 cannot be selected together for IP Trunk 3.0x. <p>Beginning with BCM 3.6, the BCM payload size is configurable, so the above restrictions no longer apply.</p> <ul style="list-style-type: none"> • For each BCM/SRG and CS 1000 node in the network the codec list including payload size must be identical, and the BCM/SRG should be provisioned to advertise a list of CODECS (i.e. NOT a single CODEC with the biggest payload). • BCM50 does not support G.723.1 codecs on calls terminating or originating on TDM sets or trunks on the BCM50.
Silence Suppression Or Voice Activity Detection (VAD)	<ul style="list-style-type: none"> • G.711 Silence suppression or VAD is disabled by default. Verify that it remains disabled for interoperation with BCM. • G.729A Silence suppression (VAD) is enabled by default. Ensure that the VAD setting on IP Trunk matches the Silence suppression setting on BCM. • G.723.1 Silence suppression or VAD is enabled by default. Ensure that the VAD setting on IP Trunk matches the Silence suppression setting on BCM. IPT 3.00 G.723.1 VAD is always enabled regardless of VAD setting. IPT 3.01 G.723.1 VAD is enabled or disabled according to the VAD setting.

Fax Setting	<ul style="list-style-type: none"> T.38 FAX and V.21 FAX tone detection is enabled by default. Verify that V.21 FAX tone detection remains enabled for T.38 FAX. Group 3 T.38 FAX protocol is wrongly identified as T.30 in OTM 2.1 ITG ISDN IP Trunk Node Properties DSP Profile General tab. Don't be misled -- the FAX protocol is T.38.
Codec Mismatch Diagnostics:	
BCM to Succession	<p>Calls from BCM to Succession 3.0 with a codec mismatch are released immediately by Succession 3.0 without ringing the terminating telephone and without seizing an outgoing trunk for a tandem routed call.</p> <p>Succession 3.0 Overlay 96 D-Channel monitor shows the following diagnostic messages:</p> <p>(For incoming calls from BCM that terminate to a station or an outgoing ISDN PRI)</p> <pre>DCH 10 IMSG SETUP REF 00008021 CH 84 0 0 0 TOD 17:18:46 CALLING #:1405 NUM PLAN: PRIVATE/ABBREVIATED (CDP) CALLED #:4015 NUM PLAN: PRIVATE/ABBREVIATED (CDP)</pre> <pre>DCH 10 OMSG REL COMP REF 00008021 CH 84 0 0 0 TOD 17:18:46 CAUSE :SWED EQIP CONGESTION DIAG: 171</pre> <p>(For incoming calls from BCM that terminate to a non-ISDN PRI trunk)</p> <pre>CH 10 IMSG SETUP REF 00008001 CH 83 0 0 0 TOD 18:33:18 CALLING #:1405 NUM PLAN: PRIVATE/ABBREVIATED (CDP) CALLED #:5010 NUM PLAN: PRIVATE/ABBREVIATED (CDP)</pre> <pre>DCH 10 OMSG REL COMP REF 00008001 CH 83 0 0 0 TOD 18:33:18 CAUSE :NO CHANNEL/CIRC AVAIL DIAG: 095</pre>
Succession to BCM	<p>Calls from Succession 3.0 to BCM with a codec mismatch ring the terminating telephone until the call is answered, then BCM disconnects the call.</p> <p>Succession 3.0 Overlay 96 D-Channel monitor shows the following diagnostic messages:</p> <pre>DCH 10 IMSG CONNECT REF 000001A1 CH 84 0 0 0 TOD 17:30:36 DCH 10 OMSG CONN ACK REF 000001A1 CH 84 0 0 0 TOD 17:30:36 DCH 10 IMSG DISC REF 000001A1 CH 84 0 0 0 TOD 17:30:36 CAUSE :INCOMPATIBLE DEST DCH 10 OMSG RELEASE REF 000001A1 CH 84 0 0 0 TOD 17:30:36 DCH 10 IMSG REL COMP REF 000001A1 CH 84 0 0 0 TOD 17:30:36</pre>