(54) Title: METHOD AND APPARATUS FOR PROVIDING RINGBACK IN A TELECOMMUNICATIONS NETWORK
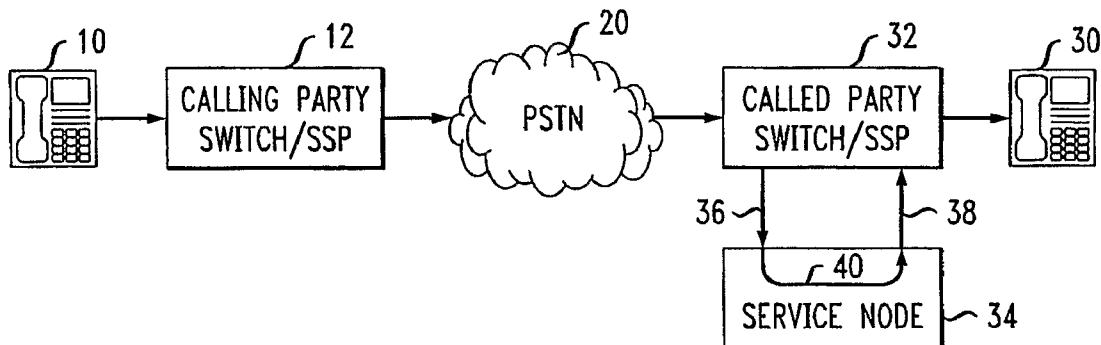
(57) Abstract: A method of providing ringback in a telecommunications network (100) includes: receiving a call at a service
switching point (114) for a called party (112) served by the service switching point (114), the call being from a calling party (122);
encountering a trigger detection point (116) while engaging in a call setup for the call, the trigger detection point (116) being provi-
sioned for the called party (112) at the service switching point (114); in response to encountering the trigger detection point (116),
extending a first leg of the call to a service node (130) that provides ringback to the calling party (122); setting-up a second leg of the
call between the service node (130) and the called party (112); bridging together the first and second legs of the call at the service
switching point (114); and, removing the service node (130) from participation in the call after the first and second legs have been
bridged together at the service switching point (114).

METHOD AND APPARATUS FOR PROVIDING RINGBACK
IN A TELECOMMUNICATIONS NETWORK

Field

The present inventive subject matter relates to the telecommunication arts. One particular application is found in conjunction with ETSI (European Telecommunications Standards Institute) wire-line networks, and the
5   specification makes particular reference thereto. However, it is to be appreciated that aspects of the present inventive subject matter are also amenable to other like applications.

Background

In telephony, ringback or a ringback signal is an audible tone or series of
10   tones or an audible message or other like signal provided to a calling party's telephone or other device or end user terminal (EUT) to indicate that the called party's EUT is receiving a ringing signal or is otherwise being alerted. Traditionally, in wire-line networks such as those conforming to the ETSI standards, the ringback signal is generated and/or provided by a
15   telecommunications switch within the PSTN (Public Switched Telephone Network). For example, the switch may be a class 5 telecommunications switch such as Lucent Technologies 5ESS or another like switch. The ringback signal is commonly provided by the switch serving the called party, and the ringback signal is the same for all calls.

20   More recently, customized ringback services have been introduced in telecommunications networks. Using such a service, a called party subscriber is able to choose which one of a plurality of different ringback signals are played or provided to a calling party based upon one or more determinate factors.

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For example, with reference to FIGURE **1**, a calling party **10** being served by a switch or SSP (Service Switching Point) **12** places a call over the PSTN **20** to a called party **30** being served by a switch or SSP **32**. Suitably, the customized ringback signals are generated and/or provided by a service node

5   (SN) **34** operatively connected to the SSP **32**, e.g., via trunks or other like transmission channels. Assuming the called party **30** subscribes to the customized ringback service, when the call placed by the calling party **10** makes its appearance at the SSP **32** (i.e., via the PSTN **30**), the SSP **32** detects that special handling is to be provided by the SN **34**. Accordingly, the

10   SSP **32** extends the call to the SN **34** via one of the trunks (e.g., trunk **36**). Traditionally, the SN **34** initiates a second leg of the call for the called party using a separate trunk (e.g., trunk **38**), and in parallel, provides the subscriber selected ringback signal to the calling party **10**. When the called party **30** answers the call, the SN **34** "bridges" or otherwise connects the two legs of the

15   call together, as indicated by the hairpin or arrow **40**.

As can be appreciated from the above example, call hair-pinning at the SN **34** in the manner shown unduly ties-up various resources. For example, the two trunks **36** and **38** are both occupied for the duration of the call. Moreover, resources within the SN **34** (e.g., ports, conference circuits, etc.) also remain

20   used for the entire duration of the call. Accordingly, it is desirable to circumvent or bypass call hair pinning and/or extricate the SN **34** from participation in the call after the called party **30** has answered the call. That is to say, it is desirable to have a "call drop back" feature or function, whereby once the called party **30** has answered the call, the two call legs are bridged at the SSP **32** rather that

25   being hair-pinned in the SN **34**, thereby allowing the SN **34** to be dropped out of the call.

In an Advanced Intelligent Network (AIN) such as the kind used in the North American Region, there have been developed standards and/or techniques to avoid call hair-pinning at the service node. For example, there

30   are known Telcordia specification of TBCT (Two B Channel Transfer) and the Nortel-specific RLT (Release Link Trunk) approach. However, there have been heretofore no similar standards or approaches developed in or for ETSI networks that provide the desired call drop back functionality.

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Accordingly, a new and improved method and/or system for providing a customized ringback service without hair pinning at the SN is disclosed that overcomes the above-referenced problems and others.

Summary

5   In accordance with one embodiment, a method of providing ringback in a telecommunications network includes: receiving a call at a service switching point for a called party served by the service switching point, the call being from a calling party; encountering a trigger detection point while engaging in a call setup for the call, the trigger detection point being provisioned for the called

10   party at the service switching point; in response to encountering the trigger detection point, extending a first leg of the call to a service node that provides ringback to the calling party; setting-up a second leg of the call between the service node and the called party; bridging together the first and second legs of the call at the service switching point; and, removing the service node from

15   participation in the call after the first and second legs have been bridged together at the service switching point.

In accordance with another embodiment, a system is provided for supplying ringback in a telecommunications network. The system includes: means for receiving a call at a service switching point for a called party served

20   by the service switching point, the call being from a calling party; means for encountering a trigger detection point while engaging in a call setup for the call, the trigger detection point being provisioned for the called party at the service switching point; in response to encountering the trigger detection point, means for extending a first leg of the call to a service node that provides ringback to

25   the calling party; means for setting-up a second leg of the call between the service node and the called party; means for bridging together the first and second legs of the call at the service switching point; and, means for removing the service node from participation in the call after the first and second legs have been bridged together at the service switching point.

30   In accordance with yet another embodiment, a system for providing a customized ringback service in a telecommunications network includes: a service switching point operatively connected to an end user terminal of a

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called party served by the service switching point, the called party being provisioned with a trigger detection point at the service switching point; and, a service node operatively connected to the service switching point, the service node providing the customized ringback service, whereby a particular ringback

5   is selected from a plurality of different ringbacks and provided to a calling party. When a call from a calling party arrives at the service switching point for the called party, the service switching point sets-up the call in accordance with a terminating basic call state model, such that during the call setup the trigger detection point is encountered, whereupon the service switching point extends

10   a first leg of the call to the service node.

Numerous advantages and benefits of the inventive subject matter disclosed herein will become apparent to those of ordinary skill in the art upon reading and understanding the present specification.

Brief Description of the Drawings

15   The inventive subject matter may take form in various components and arrangements of components, and in various steps and arrangements of steps. The drawings are only for purposes of illustrating preferred embodiments and are not to be construed as limiting. Further, it is to be appreciated that the drawings are not to scale.

20   FIGURE 1 is a diagrammatic illustration showing a prior art approach for providing a customized ringback service with call hair pinning at a service node.

FIGURE 2 is a diagrammatic illustration of an exemplary telecommunications network suitable for practicing aspects of the present inventive subject matter.

25   FIGURE 3 is a message/call flow diagram illustrating an exemplary approach for providing a customized ringback service, which embodies aspects of the present inventive subject matter.

Detailed Description

For clarity and simplicity, the present specification shall refer to structural

30   and/or functional elements, entities and/or facilities, relevant communication standards, protocols and/or services, and other components and features that

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are commonly known in the art without further detailed explanation as to their configuration or operation except to the extent they have been modified or altered in accordance with and/or to accommodate the embodiment(s) presented herein.

5   With reference to FIGURE 2, there is shown an exemplary wire-line or landline telecommunications network **100** that includes, in the usual manner, a PSTN **110**. Suitably, the network **100** is an ETSI network or other like network, e.g., employing similar standards and/or protocols. For purposes of the present example, a called party employs an EUT **112** (e.g., a telephone or other like

10   end user device or instrument or customer premises equipment (CPE)) to receive calls via the PSTN **110**. As shown, the EUT **112** is, in the usual manner, operatively connected to and/or served by a telecommunication switch or SSP **114** that is in turn operatively connected to the PSTN **110** in the usual manner. For example, the SSP **114** is optionally implemented as an end office

15   (EO) or other like facility including a class 5 switch or another suitable telecommunications switch.

Another EUT **122** (e.g., also a telephone or other like end user device or instrument or CPE) is used by a calling party in the usual manner to access the PSTN **110** and/or to call the called party. In the illustrated example, the EUT

20   **122** is wire-line device operatively connected to and/or served by another telecommunication switch or SSP (not shown) that is in turn operatively connected to the PSTN **110** in the usual manner. Alternately, the EUT **112** is a wire-line device operatively connected to and/or served by the same SSP **114** that serves the EUT **112**. In yet another variation, the calling party EUT **122** is a

25   wireless device (e.g., a mobile telephone or the like) that accesses the PSTN **110** and/or the called-party serving SSP **114** via a suitable wireless network (not shown).

For purposes of the present example, the EUT **112** shall correspond to and/or be referred to as the called party and the EUT **122** shall correspond to

30   and/or be referred to as the calling party. That is to say, in the present example, it shall be assumed that the calling party employs the EUT **122** to place a call over the network **110** to the called party employing the EUT **112**. While only a single calling party, a single called party and a single SSP are shown in the

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present example for purposes of simplicity and clarity, in practice, it is to be appreciated that a plurality of calling parties and/or a plurality of called parties are likely to be similarly situated and/or served by a plurality of various similar SSPs arranged throughout the network. Additionally, for purposes of simplicity
5   and clarity herein, the illustrated example shows the SSP **114** serving only one user or party (namely, the called party **112**). However, it is to be appreciated that in practice the SSP **114** is likely to serve a plurality of similarly situated users or parties.

       As illustrated, a service node (SN) **130** is operatively connected to the
10   SSP **114** in the usual manner, e.g., via a plurality of signaling and/or bearer links or channels. Suitably, the SN **130** provides a customized ringback service for subscribing parties served by the SSP **114**. For purposes of the present example, it shall be assumed that the called party **112** is in fact a subscriber to the customized ringback service. Again, for purposes of simplicity and clarity
15   herein, the illustrated example shows the SSP **114** serving only one subscriber (namely, the party **112**). However, it is to be appreciated that in practice the SSP **114** is likely to serve a plurality of similarly situated subscribers.

       As shown, the SN **130** includes a call control component and/or function **132** (nominally referred to herein as the call controller) and a ringback
20   generation and/or providing component **134** (nominally referred to herein as the ringback server). Optionally, the switch for the SSP **114** and the SN **130** are supported on the same hardware platform, or alternately, on separate platforms. Similarly, the call controller **132** and the ringback server **134** are optionally supported on the same hardware platform, or alternately, on
25   separate platforms, such as a Service Control Point (SCP) and an Intelligent Peripheral (IP) respectively.

       Suitably, as those of ordinary skill in the art will appreciate, operation of the SSP **114** is carried out based on a call model. Generally, the call model is a finite state machine used in the SSP **114** that accurately and concisely reflects
30   the current state of a call at any given point in time, e.g., as specified by the ETSI. The call model is made up of states or PICs (Points-In-Call) and transitions therebetween. In the present example, the SSP **114** is suitably provisioned to function in accordance with a Basic Call State Model (BCSM) or

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other like model. Since the customized ringback service is invoked on the terminating side of the BCSM, the terminating model of the BCSM, i.e., the TBCSM, is applicable to such calls.

Suitably, inter-state transitions involve passing through elements
5   commonly referred to as Detection Points (DPs). While operating in accordance with the TBCSM, DPs are identified which are encountered during the call setup in which the SSP **114** is engaged. The identified DPs optionally include one or more triggers which have firing criteria associated therewith. When a trigger is armed (i.e., made active), and its associated firing criteria are
10   satisfied, it fires. For example, when a trigger fires, a message is formatted with call state information and transmitted by the SSP **114** to the SN **130**. Suitably, the SN **130** then reads this call related data and generates a response that the SSP **114** uses in further call processing.

Generally, a TDP (Trigger Detection Point) refers to a DP that is
15   provisioned with a statically and/or manually armed trigger, e.g., armed via a suitable service management tool (SMT) **115** or the like. That is to say, a DP is made or turned into a TDP by arming a trigger associated with the DP. Optionally, different TDPs are classified as "Request" or "Notification" TDPs. Thus, during a call setup, either TDP-R's and/or TDP-N's may be encountered
20   by the SSP **114**. If an "-R" or "Request" type of TDP is encountered, then the SSP **114** suspends call processing when communication with the SN **130** is initiated. Suitably, call processing by the SSP **114** resumes when a response is received from the SN **130**. Alternately, if an "-N" or "Notification" type of TDP is encountered, then the SSP **114** continues with call processing when the trigger
25   fires, e.g., after it sends out the message to the SN **130** notifying the SN **130** that a certain event has occurred. Additionally, the TDPs encounter by the SSP **114** in the TBCSM may also be unconditional or conditional TDPs. Suitably, unconditional TDPs, e.g., invoke access to the SN **130** regardless of the call status or call data at that moment, while conditional TDPs, e.g., have additional
30   criteria to be fulfilled before accessing of the SN **130** is performed.

Suitably, when a call (e.g., from the calling party **122**) appears for the called party **112** at the SSP **114**, the SSP **114** recognizes that the called party **112** has a TDP-R active and accesses the SN **130**. That is to say, e.g., when a

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party served by the SSP **114** (e.g., such as the party **112**) subscribes to the customized ringback service provided by the SN **30**, the subscriber is provisioned with a TDP **116** at the SSP **114**, e.g., via the SMT **115**. For example, a Terminating Attempt Authorized (TAA) DP or DP-12 or other like

5   DP has its trigger statically and/or manually armed for the subscriber **112**. Optionally, the TDP **116** is an unconditional TDP-R.

As the terminating or called-party serving entity, when a call appears at the SSP **114** for a called party served by the SSP **114**, the SSP **114** engages in a call setup in accordance with the TBCSM. As the PICs and/or states of the

10   TBCSM are advanced through one after the other, eventually a DP is reached and/or identified indicating that the SSP **114** is authorized to attempt termination of the call to the called party. This DP is commonly referred to and/or known as a TAA DP, or alternately, DP-12 in an ETSI network. Normally, at this point, the SSP **114** responds by attempting to terminate the

15   call to the called party. However, in the present example, the subscriber **112** has been provisioned with the TDP **116** at the SSP **114**. That is to say, the TAA DP or DP-12 has had an associated trigger armed for the subscriber **112**, hence becoming the TDP **116**. Suitably, the TDP **116** is optionally an unconditional TDP-R. Accordingly, when the TDP **116** is encountered during

20   the otherwise normal call setup cycle, the SSP **114** does not in fact attempt to terminate the call to the called party **112**. Rather, the SSP **114** formats a message referred to as an initial DP (IDP), and transmits the same to the SN **130**. Meanwhile, the SSP **114** also suspends further call processing until it receives a response from the SN **130**.

25   Suitably, the call controller **132** on the SN **130** processes the IDP message and responds with instructions to the SSP **114** to extend the call to the ringback server **134**, whose identification is provided to the SSP **114** by the SN **130** as part of the response to the IDP. In general, SSP **114** complies with the instructions and extends a first leg of the call (i.e., the leg originating with

30   calling party **112**) to the ringback server **134**, which in turn chooses, from a plurality of different ringback signals, a particular ringback to provide to the calling party **122**. Suitably, the ringback server **134** also initiates the setting up of a second call leg for the original called party **112**. The second leg of the call

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(i.e., the leg terminating with the called party **112**) is setup through the SSP **114**, and the chosen ringback signal is returned from the SN **130** via the first leg of the call to the calling party **122**. At this point, two different trunks or transmission links or channels are established and/or being used between the

5   SSP **114** and the SN **130** to support the call. For example, the first (or originating) leg of the call extends between the SN **130** and the calling party **122** via a first trunk or transmission link or channel operatively connecting and/or established between SN **130** and the SSP **114**, and the second (or terminating) leg of the call extends between the SN **130** and the called party

10 **122** via a second trunk or transmission link or channel operatively connecting and/or established between SN **130** and the SSP **114**. However, once the called party **122** answers the call, a call drop back function is initiated whereby the first and second legs of the call are requested by the SN **130** to be bridged or otherwise connected to one another at the SSP **114**, and the trunks or

15 transmission links or channels between the SSP **114** and the SN **130** are released and/or torn-down. Accordingly, at this point, the SN **130** has been extricated from further participation in the call.

More specifically, with reference to FIGURE **3**, there is illustrated a message and/or call flow diagram showing an exemplary series of messages,

20 signals, commands, responses and/or other communications exchanged between various network elements and/or entities (i.e., the calling party **122**, the SSP **114**, the ringback server **134**, the call controller **132**, and the called party **112**) which is suitable for practicing one or more aspects of the present inventive subject. In FIGURE **3**, each step or element or exchanged

25 communication in the message/call flow is identified by a corresponding reference numeral listed along the left-hand side of the figure. Furthermore, the messages identified by their names are defined in the ETSI standards and suitably comply with the same.

At step **200**, the calling party **122** initiates a call to the called party **122**,

30 e.g., by dialing the called party's telephone number. Suitably, at this point, the usual call setup signaling and/or messages are exchanged between the calling party **122** and the SSP **114**. In the present example, however, the called party **122** is a subscriber to the customized ringback service provided by the SN **130**,

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and accordingly, is provisioned with the TDP **116** at the SSP **114**. Suitably, the call controller **132** has also been previously provisioned at the SSP **114** as the entity or element that is to be provided call control when the TDP **116** is encountered. Therefore, at step **202**, the appearance of the call for the

5   subscriber **122** at the SSP **114** causes the TDP **116** to be encountered, and a corresponding IDP or other like message is sent from the SSP **114** to the call controller **132** of the SN **130**. The IDP message includes call data such as the calling party's identity or telephone number, the called party's identity or telephone number and/or any other relevant call status data or call information.

10   Suitably, the TDP **116** is a TDP-R, and call processing at the SSP **114** is suspended until a response and/or further instructions are received by the SSP **114** from the call controller **132**.

       Suitably, the call controller **132** recognizes the call is meant for a subscriber of the customized ringback service (e.g., by recognizing the called

15   party's identity or telephone number in the IDP received in step **202**), and that a customized ringback is warranted in this instance. Therefore, at step **204**, the call controller **132** issues a CONNECT or other like message or command to the SSP **114**, instructing the latter to extend the call to a specific entity, component and/or platform whose address is provided in the message. More

20   specifically, the connect message of step **204** identifies and/or references the address of the ringback server **134**. In turn, the component or platform **134**, nominally termed the ringback server to distinguish it from the call controller **132**, provides the customized or specialized ringback for this call. Of course, as previously noted, the functions of the call controller **132** and the ringback server

25   **134** are optionally performed on the same physical platform.

       In response to receiving the connect message in step **204**, at step **206**, the SSP **114** issues a SETUP or other like message to the address identified and/or referenced in the recently received connect message, i.e., to the ringback server **134**. At this point, the ringback server **134** determines which

30   one of a plurality of different customized or specialized ringback signals is to be played or otherwise provided to the calling party **122**. For example, using logic and/or algorithms provisioned in the SN **130** and/or the ringback server **134**, the chosen ringback is selected based upon one or more determinate factors.

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For example, the determinate factors are optionally, the identity of the calling party, the time, day and or date of the call, etc. Based upon the status or state of the determinate factors, the subscriber **122** sets as desired which one or more ringback signals are to be played and/or provided to the calling party **122**.

5 More specifically, e.g., the subscriber may select a ringback like the song "happy birthday" to be provided to the calling party **122** if the call in question is received on the calling party's birthday. Alternately, a subscriber may select a ringback that plays a customized message or a specific song to a calling party based upon the calling party's particular identity. Suitably, the subscriber **112**

10 has a wide variety of different ringback signals to chose from and/or optionally they may create their own personalized ringback. Suitably, for a particular combination of determinate factors, the subscriber **112** optionally assigns one or more ringback signals to be chosen for playback to the calling party **122**. In an exemplary embodiment, the actual states of the determinate factors for any

15 given call are suitably obtained from the relevant call data and/or information contained in the setup message received in step **206**. For example, the setup massage of step **206** includes the identity and/or telephone number of the calling party **122**, the identity and/or telephone number of the called party **112**, date and/or time stamp information, etc.

20   In parallel to choosing a ringback to be provided for this call, at step **208**, the ringback server **134** initiates the setup for the second leg of the call to the original called party, i.e., the subscriber **112**. That is to say, the ringback server **134** issues a SETUP or other like message to the SSP **114**. Suitably, the setup message of step **208** is similar to the setup message of step **206**. This time,

25 however, the redirecting party information in the SETUP message indicates that the call is being redirected from the ringback server **134**, and the called party information remains set to the original called party **112**. The original calling party remains unchanged to ensure that any called party active supplementary service, like caller ID display or similar service, remains

30 unaffected by the inclusion of SN **130** and/or ringback server **134** in the call instance.

       Since the called party **112** has been provisioned with the TDP **116** at the SSP **114**, in response to the setup message of step **208**, the SSP **114** issues a

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second IDP message at step **210** to the call controller **132** when the TDP **116** is again encountered during the call setup carried out by the SSP **114** to the SETUP request from the SN **130** in accordance with the TBCSM employed by the SSP **114**. Suitably, the second IDP identifies the tone server **134** as the
5   redirecting party based on the values received in the SETUP message **208**. At step **212**, the call controller **132** detects or recognizes that the call has been initiated by the tone server **134** (e.g., from redirecting party information contained in the IDP of step **210**), and in response, instructs the SSP **114** to simply continue processing the call, e.g., via a CONTINUE or other like
10   message issued by the call controller **132** to the SSP **114**.

Having received the CONTINUE message in step **212**, the SSP **114** rings the original called party **112** and informs the ringback server **134** that the called party **112** is being alerted (or rung) via an ALERTING or other like message issued from the SSP **114** to the ringback server **134** in step **214**.
15   Suitably, the alerting message of step **214** is sent on the second or called party leg of the call to the ringback server **134**. In turn, the ringback server **134** reflects the alerting message on the first or calling party leg of the call at step **216**. Suitably, the reflected alerting message cuts trough the bearer or voice path of the call. At step **218**, the customized or specialized ringback signal
20   previously selected is played on the calling party leg, i.e., the customized ringback is provided by the ringback server **134** to the calling party **122**.

Meanwhile, at step **220**, the SSP **114** provides ringing to the called party **112**, e.g., such that the original called party's telephone or other EUT rings. At step **222**, it is shown that the called party **112** answers the call. That is to say,
25   an off-hook or other like signal indicating the answering of the call is sent from the called party **112** to the SSP **114**. Accordingly, the SSP **114** detects the called party answer and cuts through the call path to the ringback server **134** by sending, in step **224**, a CONNECT or other like message to the ringback server **134** for the called party leg. Suitably, at step **226**, the ringback server **134**
30   acknowledges the connect message of step **224** with a CONNECT ACK or other like acknowledgement message returned from the ringback server **134** to the SSP **114**.

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At step **228**, the ringback server **134** recognizes the connect message of step **224** and removes the ringback signal from the calling party leg of the call, i.e., the first leg of the call. The ringback server **134** also sends a CONNECT or other like message to the SSP **114** on the calling party leg of the call to

5   complete the cut-thru of that leg in both directions (from and to the calling party). In response, at step **230**, the SSP **114** cuts through the forward call path from the calling party, and sends a CONNECT ACK or other like acknowledgement message back to the ringback server **134**. At this point, the ringback server **134** is in the voice or bearer path for both legs of the call, i.e.,

10   the first or calling party leg of the call and the second or called party leg or the call. Suitably, the ringback server **134** stands ready at this point to perform call-bridging therethrough in case the call drop back feature fails.

At step **232**, the ringback server **134** declares its intent to initiate call drop-back and obtains the identity of or reference to the primitive used by the

15   SSP **114** to identify the operation. For example, the ringback server **134** issues a FACILITY or other like message to the SSP **114**, with the Facility Information Element (FIE) containing an invoke operation (Inv) to get or request a reference to a LinkID for Explicit Call Transfer (ECT). Suitably, the FACILITY message also includes a reference to the second call leg (i.e., the leg of the call between

20   the ringback server **134** and the original called party **112**). In the present example, CR2 serves as the aforementioned reference to the second call leg. At step **234**, the SSP **114** returns a response to the ringback server **134** containing the requested LinkID. For example, the response is optionally another FACILITY message containing the LinkID in the FIE.

25   At step **236**, the ringback server **134** directs the SSP **114** to bridge or otherwise connect the two call legs with one another. For example, the ringback server **134** issues yet another FACILITY message with the FIE set to invoke an execution of ECT. Suitably, the facility message uses the LinkID previously obtained by the ringback server **134** and provides a reference to the

30   other call leg (CR1) so that the SSP **114** knows which two call legs are to be bridged at the SSP **114**. In the present example, CR1 serves as the reference to the first call leg, i.e., the leg of the call between the ringback server **134** and the calling party **122**. At step **238**, the SSP **114** bridges or otherwise connects

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the two call legs with one another in accordance with the facility message received in step **236**. Having successfully bridged the two call legs at the SSP **114**, the parties **112** and **122** are now free to engage in conversation or otherwise communicate as they see fit.

5   Suitably, at this point, the process begins for extricating the SN **130** from further participation in the call. For example, at step 240, the SSP **114** initiates the call tear down for the call leg reference that was used in the ECT invoked using the facility message of step **236**, i.e., the tear down of the call leg referenced by CR1 or the first or calling party leg of the call between the SSP

10   **114** and the ringback server **134**.

More specifically, for the first call leg, the SSP **114** issues at step **240** a DISCONNECT or other like message to the ringback server **134**. In response, at step **242**, the ringback server **134** sends a RELEASE or other like message to the SSP **114** instructing the SSP **114** to release the corresponding trunk,

15   transmission link and/or channel between the SSP **114** and the ringback server **134**. At step **224**, the SSP **114** performs the release as instructed and returns a RELEASE COMPLETE or other like message to the ringback server **134** to notify the ringback server **134** of the successful release. Similarly, for the second call leg, the SSP **114** issues at step **246** a DISCONNECT or other like

20   message to the ringback server **134**. In response, at step **248**, the ringback server **134** sends a RELEASE or other like message to the SSP **114** instructing the SSP **114** to release the corresponding trunk, transmission link and/or channel between the SSP **114** and the ringback server **134**. At step **250**, the SSP **114** performs the release as instructed and returns a RELEASE

25   COMPLETE or other like message to the ringback server **134** to notify the ringback server **134** of the successful release. At this point, the SN **130** has been extricated from further participation in the call.

It is to be appreciated that in connection with the particular exemplary embodiments presented herein certain structural and/or function features are

30   described as being incorporated in defined elements and/or components. However, it is contemplated that these features may, to the same or similar benefit, also likewise be incorporated in other elements and/or components where appropriate. It is also to be appreciated that different aspects of the

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exemplary embodiments may be selectively employed as appropriate to achieve other alternate embodiments suited for desired applications, the other alternate embodiments thereby realizing the respective advantages of the aspects incorporated therein.

5   It is also to be appreciated that particular elements or components described herein may have their functionality suitably implemented via hardware, software, firmware or a combination thereof. Additionally, it is to be appreciated that certain elements described herein as incorporated together may under suitable circumstances be stand-alone elements or otherwise

10   divided. Similarly, a plurality of particular functions described as being carried out by one particular element may be carried out by a plurality of distinct elements acting independently to carry out individual functions, or certain individual functions may be split-up and carried out by a plurality of distinct elements acting in concert. Alternately, some elements or components

15   otherwise described and/or shown herein as distinct from one another may be physically or functionally combined where appropriate.

It is also to be appreciated that the call flow depicted in FIGURE 3 may be suitably altered while still incorporating aspects of the present inventive subject matter; the alternate embodiments thereby realizing the respective

20   advantages of the aspects incorporated therein. For example, the functions of cut through to the calling party on the calling party leg and providing specialized ringback signal to the calling party, shown in steps **216** and **218** of FIGURE **3**, may occur immediately upon receipt of the SETUP message from the SSP **114**, i.e., immediately following step **206**. This embodiment has the advantage that

25   the calling party will start hearing the specialized ringback signal earlier than if the service is implemented as shown in FIGURE **3**; however, if the called party is busy then the calling party will subsequently hear a busy signal following the special ringback signal which may cause the calling party confusion. Such a confusion is avoided in the call flow depicted in FIGURE **3**, by holding back

30   providing the specialized ringback signal until step **218**. In case a busy indication is received in the ALERTING message of **214**, the busy is reflected back in step **216** and the rest of the FIGURE **3** call flow is skipped. In any

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event, all such variations of the call flow that can be appreciated by those of ordinary skill in the art are contemplated as alternate embodiments.

In short, the present specification has been set forth with reference to preferred embodiments. Obviously, modifications and alterations will occur to 5   others upon reading and understanding the present specification. It is intended that the invention be construed as including all such modifications and alterations insofar as they come within the scope of the appended claims or the equivalents thereof.

What is claimed is:

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Claims

1.   A method of providing ringback in a telecommunications network, said method comprising:

5   (a)   receiving a call at a service switching point for a called party served by the service switching point, said call being from a calling party;

(b)   encountering a trigger detection point while engaging in a call setup for the call, said trigger detection point being provisioned for the called party at the service switching point;

10   (c)   in response to encountering the trigger detection point, extending a first leg of the call to a service node that provides ringback to the calling party;

(d)   setting-up a second leg of the call between the service node and the called party;

15   (e)   bridging together the first and second legs of the call at the service switching point; and,

(f)   removing the service node from participation in the call after the first and second legs have been bridged together at the service switching point.

2.   The method of claim 1, further comprising:

20   selecting a particular ringback from a plurality of different ringbacks based upon one or more determinate factors; and,

providing the selected ringback to the calling party.

3.   The method of claim 2, wherein the one or more determinate factors includes at least one of an identity of the calling party, a time of the call,

25   a date of the call and a day of the call.

4.   The method of claim 1, wherein the first leg of the call is extended to the service node from the service switching point via a first communication link therebetween, and the second leg of the call is setup over a second

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communication link between the service node and the service switching point, said second link being different from the first link.

5.   The method of claim 1, wherein step (e) comprises:

sending a first message from the service node to the service switching

5   point, said first message invoking an operation in the service switching point to establish a link identity for an explicit call transfer, said first message including a reference to the second call leg, such that the obtained link identity is associated therewith;

responding to the first message with a second message sent from the

10   service switching point to the service, said second message including the established link identity; and,

sending a third message from the service node to the service switching point, said third message invoking execution of the explicit call transfer to the link identity included in the second message, said third message also

15   referencing the first leg of the call so that the first leg of the call is transferred to the link identity via the executed explicit call transfer.

6.   A system for providing ringback in a telecommunications network, said system comprising:

means for receiving a call at a service switching point for a called party

20   served by the service switching point, said call being from a calling party;

means for encountering a trigger detection point while engaging in a call setup for the call, said trigger detection point being provisioned for the called party at the service switching point;

in response to encountering the trigger detection point, means for

25   extending a first leg of the call to a service node that provides ringback to the calling party;

means for setting-up a second leg of the call between the service node and the called party;

means for bridging together the first and second legs of the call at the

30   service switching point; and,

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means for removing the service node from participation in the call after the first and second legs have been bridged together at the service switching point.
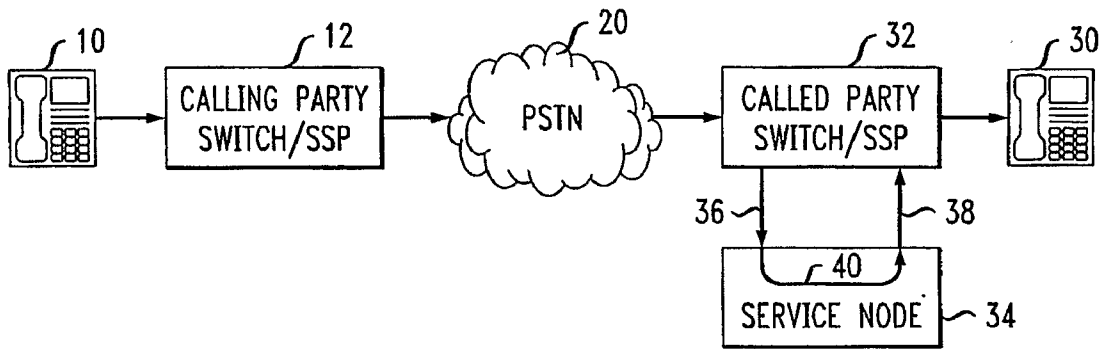
7.   The system of claim **6**, further comprising:

means for selecting a particular ringback from a plurality of different ringbacks based upon one or more determinate factors; and,

means for providing the selected ringback to the calling party.

8.   The system of claim **7**, wherein the one or more determinate factors includes at least one of an identity of the calling party, a time of the call, a date of the call and a day of the call.

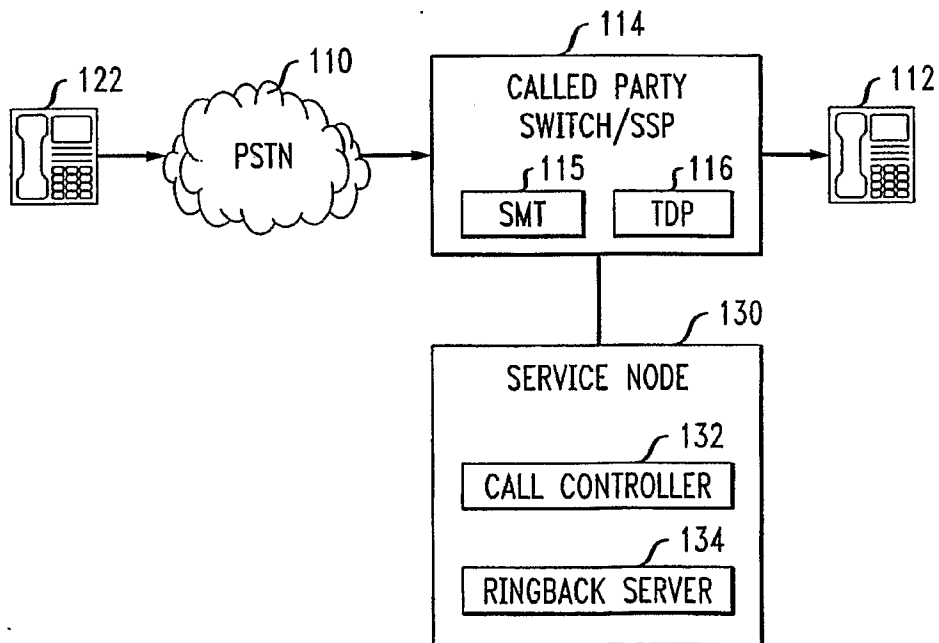9.   The system of claim **6**, wherein the telecommunications network is a European Telecommunications Standards Institute wire-line network.

10.   The system of claim **6**, wherein the first leg of the call is extended to the service node from the service switching point via a first communication link therebetween, and the second leg of the call is setup over a second communication link between the service node and the service switching point, said second link being different from the first link.

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FIG. 1
PRIOR ART

FIG. 2
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FIG. 3