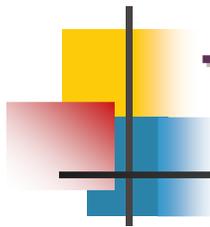


# IEEE P802.3ap Task Force

## Opening Plenary Meeting Report

Atlanta, GA

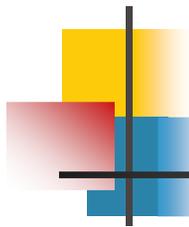
March 14, 2004



# Task Force Organization

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- Task Force Chair
  - Adam Healey ([ahealey@agere.com](mailto:ahealey@agere.com))
  
- Task Force Secretary
  - John D'Ambrosia ([john.dambrosia@tycoelectronics.com](mailto:john.dambrosia@tycoelectronics.com))
  
- Chief Editor
  - Schelto van Doorn ([schelto.vandoorn@intel.com](mailto:schelto.vandoorn@intel.com))
  
- Channel Model Ad Hoc Chair
  - Adam Healey (acting)
  
- Signaling Ad Hoc Chair
  - Mike Altmann ([michael.w.altmann@intel.com](mailto:michael.w.altmann@intel.com))



# Reflector and Web

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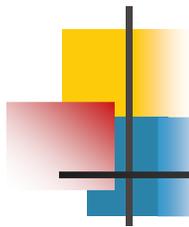
- To subscribe to the IEEE P802.3ap Backplane Ethernet Task Force reflector send an email to:  
[\*listserv@ieee.org\*](mailto:listserv@ieee.org)

with the following in the body of the message (do not include “<>”):  
***subscribe stds-802-3-blade <yourfirstname> <yourlastname>***

For complete instructions on reflector usage, subscription, and unsubscription:

<http://ieee802.org/3/ap/reflector.html>

- IEEE P802.3ap Task Force web page:  
<http://www.ieee802.org/3/ap/>
- Channel Model Ad Hoc web page:  
[http://www.ieee802.org/3/ap/public/channel\\_adhoc](http://www.ieee802.org/3/ap/public/channel_adhoc)
- Signaling Ad Hoc web page:  
[http://www.ieee802.org/3/ap/public/signal\\_adhoc](http://www.ieee802.org/3/ap/public/signal_adhoc)



# IEEE P802.3ap Task Force Documents

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- Approved PAR

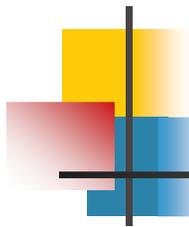
<http://standards.ieee.org/board/nes/projects/802-3ap.pdf>

- 5 Criteria

[http://ieee802.org/3/ap/802\\_3\\_ap\\_5criteria.pdf](http://ieee802.org/3/ap/802_3_ap_5criteria.pdf)

- Objectives

[http://ieee802.org/3/ap/802\\_3\\_ap\\_objectives.pdf](http://ieee802.org/3/ap/802_3_ap_objectives.pdf)



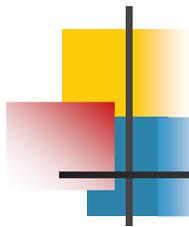
# IEEE P802.3ap Draft Repository

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- IEEE P802.3ap Private Area:

- username: ●●●●●●

- password: ●●●●●●

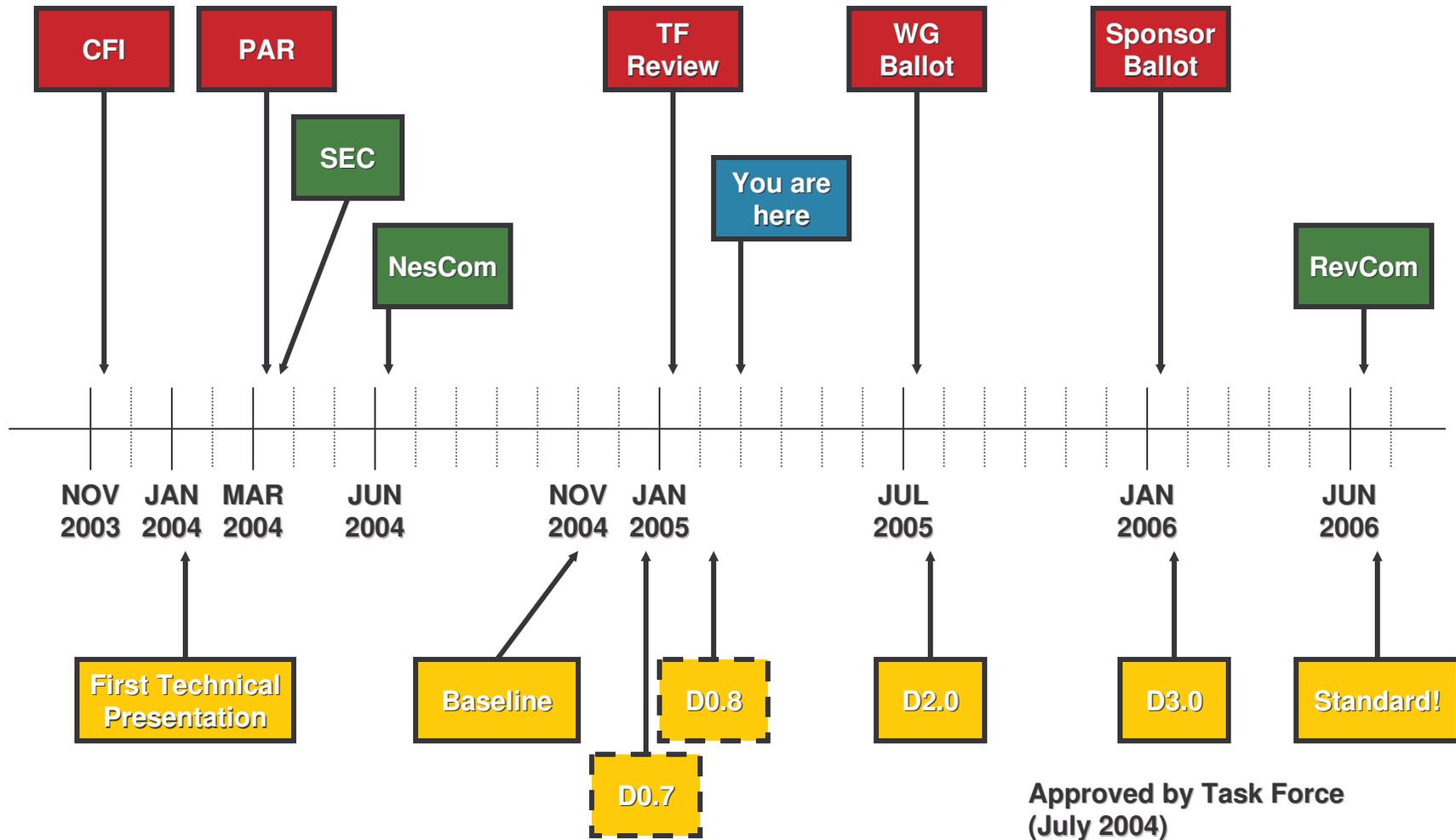


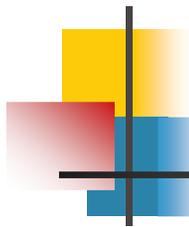
# IEEE P802.3ap Objectives

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- **Preserve the 802.3/Ethernet frame format at the MAC Client service interface.**
- **Preserve min. and max. frame size of current 802.3 Std.**
- **Support existing media independent interfaces.**
- **Support operation over a single lane across 2 connectors over copper traces on improved FR-4 for links consistent with lengths up to at least 1m.**
  - **Define a 1 Gb/s PHY**
  - **Define a 10 Gb/s PHY**
- **Define a 4-lane 10Gb/s PHY for operation over the 802.3ap channel model.**
- **Consider auto-negotiation.**
- **Support BER of  $10^{-12}$  or better.**
- **Meet CISPR/FCC Class A.**

# IEEE P802.3ap Timeline

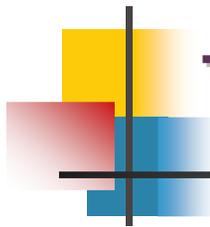




# January Interim Meeting

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- Adopted partial baseline for 10GBASE-KR.
  - Equalization distributed between transmitter and receiver.
  - Start-up protocol adopted to tune the transmit equalizer at link initialization.
  - Electrical specifications adopted as a basis for work.
- Adopted informative insertion loss specification methodology for the backplane channel.
  - Normative specification will be based in the time domain.
- Adopted Differential Manchester Encoding (DME) for Auto-Negotiation signaling over the backplane.
  - Replaces symbol sequence pulses (SSPs).
- Resolved register conflicts with 802.3an and 802.3aq.
- Resolved comments against D0.7.



# TF Motions (10GBASE-KR)

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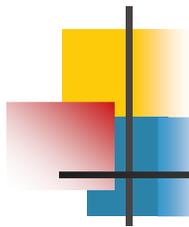
- Move that the Task Force adopt the following as part of the baseline for 10GBASE-KR:
  - 10.3125 GBaud
  - 1 bit/symbol
  - Adaptive transmitter and start-up protocol per brink\_01\_0105, as mandatory to implement and optional to use.

**Passed (All: 39/0/2)**

- Move that the Task Force adopt the electrical specifications (Slides 12, 13, 16, 17, 18, 19) from gaither\_01\_0105, as the basis for 10GBASE-KR.

**Passed (All: 38/0/2)**

- Move that the Task Force adopt Slide 20 from gaither\_01\_0105, as the basis for 10GBASE-KR.
- **Passed (All: 32/1/6, 802.3: 16/0/7)**



# TF Motions (Backplane Channel)

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- Move that the Task Force use the methodology proposed in dambrosia\_03\_0105 as the basis for determining an informative SDD21 channel model for TP1-TP4.

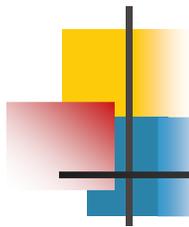
**Passed (All: 35/0/3)**

- Move that normative channel specification be defined in the time domain (applies to analysis and not necessarily measurement).

**Passed (All: 23/2/9, 802.3: 13/1/7)**

- Direct the channel model ad hoc to include reference transmitter, receiver, terminations (package and IC), and TP4-TP5 segment in the normative channel specification.

- **Passed (All: 25/1/10, 802.3: 16/0/7)**

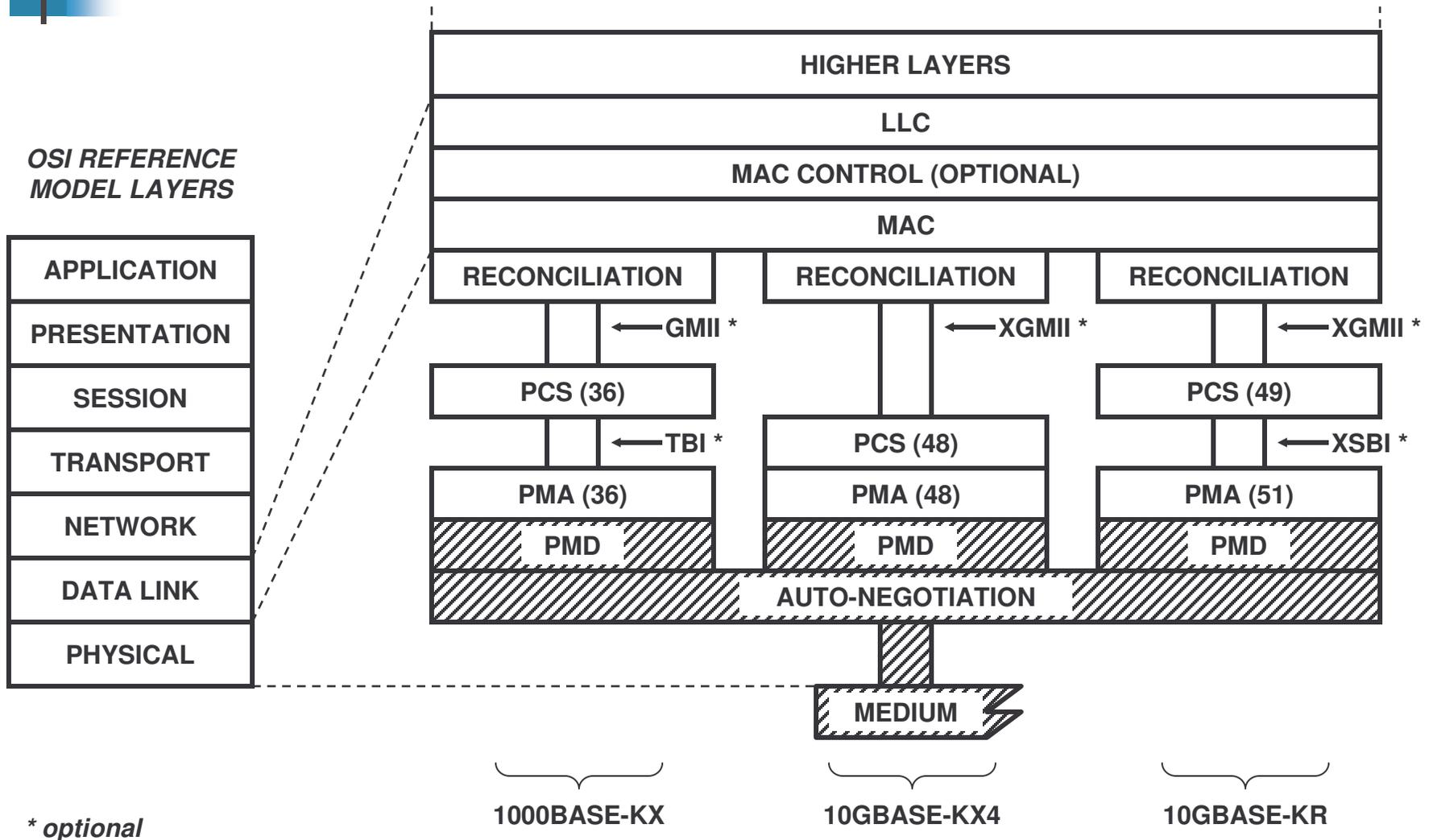


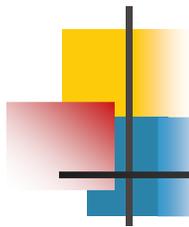
# TF Motions: Auto-Negotiation

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- Move that the Task Force adopt thaler\_01\_0105, including 49th bit to remove periodicity  
**Passed (All: 32/0/5)**
- Move that auto-negotiation be mandatory to implement, optional to use for 802.3ap PHY devices and parallel detect be provided for legacy connect.  
**Passed (All: 15/3/21, 802.3: 9/1/14)**

# IEEE P802.3ap Overview

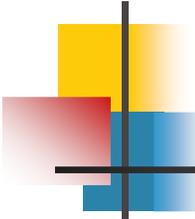




# Document Structure

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- Clause 69 – Introduction to Ethernet Operation over Electrical Backplanes
- Clause 70 – Physical Medium Dependent (PMD) sublayer and baseband medium, type 1000BASE-KX
- Clause 71 – Physical Medium Dependent (PMD) sublayer and baseband medium, type 10GBASE-KX4
- Clause 72 – Physical Medium Dependent (PMD) sublayer and baseband medium, type 10GBASE-KR
- Annex 28E – Auto-Negotiation for Electrical Backplanes
  - May transition to stand-alone clause 73.
- Appropriate changes to clauses 1, 30, 45, etc.



# Document Review

**Draft 0.7: 81 pages**

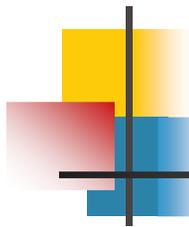
**Comments from 5 individuals**

Comment	TR	T	E	Total
Clause 01	0	0	0	0
Annex 28E	5	8	10	23
Clauses 30, 36, Annex 30B	0	0	0	0
Clause 45	2	2	0	4
Clause 69	0	1	1	2
Clause 70	1	8	4	13
Clause 71	0	2	0	2
Clause 72	0	4	1	5
Annex 72A	0	0	0	0
<b>Total</b>	<b>8</b>	<b>25</b>	<b>16</b>	<b>49</b>

**Draft 0.8: 122 pages**

**Comments from 15 individuals (9 companies)**

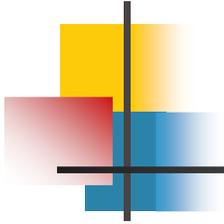
Comment	TR	T	E	Total
Clause 01	1	0	0	1
Annex 28E	11	17	11	39
Clauses 30, 36, Annex 30B	3	0	0	3
Clause 45	2	7	25	34
Clause 69	0	8	10	18
Clause 70	1	10	1	12
Clause 71	1	9	6	16
Clause 72	5	11	16	32
Annex 72A	0	0	7	7
<b>Total</b>	<b>24</b>	<b>62</b>	<b>76</b>	<b>162</b>



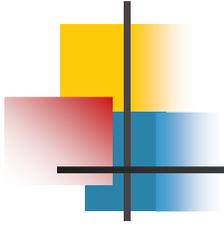
# Goals for this Meeting

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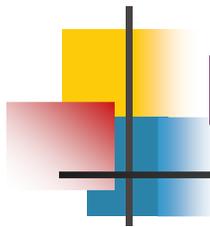
- Work toward a “technically complete” draft of IEEE P802.3ap.
  - Fill in TBD’s with specification values.
  - Fill in placeholders with specification text.
  - Still aiming for July 2005 Working Group ballot.
  
- “Big Ticket” Items
  - 10GBASE-KR signaling
  - Backplane channel specifications
  - Compliance test methodologies
  
- Hear presentations.
  - 22 presentations on the agenda for this week.
  
- Resolve comments against Draft 0.8.



Thank you!



# Back-up

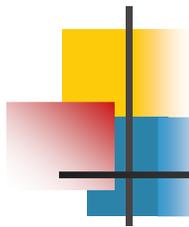


# Port Type Nomenclature

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- Existing Port Type Conventions
  - X = external sourced coding (4B5B for 100BASE-**z**X, 8B10B for 1000BASE-**z**X and 10GBASE-**z**X4)
  - R = 64b/66b coding (10GBASE-**z**R)
- Define new convention (**z**) for Backplane Ethernet
  - B as ***B**ackplane*?
    - bi-directional (EFM), backbone optics (10M)
  - P as in ***P**CB or **P**WB*?
    - passive optics (10M, and EFM)
  - As it turns out, only H, J, K, N, Y are unused
  - Suggestion was to use K, as in *back**K**plane*

*Thanks to Brad Booth for compiling the 802.3 port naming conventions.*

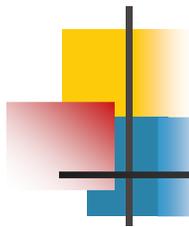


# Backplane Ethernet Port Types

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- 1-Gigabit Serial PMD
  - 1000BASE-KX
- 10-Gigabit 4-Lane PMD
  - 10GBASE-KX4
- 10-Gigabit Serial PMD
  - 10GBASE-KR

*Convention adopted by TF, September 2004 (All: 45/0/5)*



## TF Motions (Other)

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- Change the upper limit for 1000BASE-KX to 3.3V  
**Failed (All: 2/18/15)**
- Move that 1000BASE-KX common-mode voltage be changed to align with the 10GBASE-KX4 (-0.4 to 1.9V).  
**Passed (All: 22/0/13)**
- Move that Tx\_Disable, Loopback Mode, Transmit Fault, [and] Receive Fault [for 1000BASE-KX], be made to be consistent with 10GBASE-CX4  
**Passed (All: 21/1/14)**
- Move to adopt Slide 7 and 8 of gaither\_01\_0105, as the basis for 10GBASE-KR TX.  
**Failed (All: 18/17/5, 802.3: 13/10/2)**
- Move that the Task Force include the verbiage in moore\_01\_0105.pdf as an informative annex to Clause 72.  
**Passed (All: 19/3/15, 802.3: 13/2/7)**